DRAFT EIR

RESTORATION OF HISTORIC STREETCAR SERVICE IN DOWNTOWN LOS ANGELES

STATE CLEARINGHOUSE NO. 2013011001

ENGINEERING CITY OF LOS ANGELES

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ERRATA TO THE DRAFT EIR

The City of Los Angeles ("City") has prepared this Errata sheet to correct information in the Draft Environmental Impact Report ("Draft EIR" or "DEIR") for the Restoration of Historic Streetcar Service in Downtown Los Angeles ("Project"), State Clearinghouse No. 2013011001. This Errata sheet includes a global edit to the DEIR that entirely removes the 11th Street and Olive (West) Maintenance and Storage Facility ("MSF") from the Project and DEIR. The revision herein does not contain significant new information that deprives the public of a meaningful opportunity to comment upon a substantial adverse environmental effect of the Project or a feasible way to mitigate or avoid such an effect.

The Project requires a MSF to provide for secure storage of streetcar vehicles when they are not in operation, and regular light maintenance of the vehicles to keep them clean and in good operating condition. This Errata is intended to clarify that the MSF would be located at one of three potential sites; these three potential sites do not include the 11th Street and Olive Street (West) MSF site; it is not a part of the Project. This Errata sheet corrects the DEIR by removing the 11th Street and Olive Street (West) MSF from the list of potential MSF locations.

The removal of the 11th Street and Olive (West) MSF herein merely corrects the DEIR and no new information is added. In conformance with Section 15121 of the State California Environmental Quality Act ("CEQA") Guidelines, the DEIR, together with this Errata, are intended to serve as documents that would generally inform the decision-makers and the public of environmental effects of the Project.

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RESTORATION OF HISTORIC STREETCAR SERVICE IN DOWNTOWN LOS ANGELES

STATE CLEARINGHOUSE NO. 2013011001

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Acronyms and Abbreviations

2010 Standards	2010 ADA Standards for Accessible Design
$\mu G/M^3$	micrograms per cubic meter
°F	Fahrenheit
AA	Alternatives Analysis
AADT	annual average daily traffic
AB	Assembly Bill
AC	Alternating Current
ACHP	Advisory Council on Historic Preservation
ACM	asbestos-containing materials
ACWM	asbestos-containing waste materials
ADA	Americans with Disabilities Act
Alquist-Priolo	Alquist-Priolo Earthquake Fault Zoning Act
APE	area of potential effect
AQMP	Air Quality Management Plan
ARB	California Air Resources Board
ASTM	American Society for Testing and Materials
AVO	average vehicle occupancy
BACT	Best Available Control Technology
Basin	South Coast Air Basin
BIDs	business improvement districts
BOE	Bureau of Engineering
BMPs	Best Management Practices
B.P.	Before Present
BSMP	Broadway Streetscape Master Plan
BTU	British thermal unit
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAFE	Corporate Average Fuel Economy
CA FID	California Facility Inventory UST database
Cal ARP	California Accidental Release Prevention
Cal/EPA	California Environmental Protection Agency
Cal/OSHA	California Division of Occupational Safety and Health
CalEEMod	California Emissions Estimator Model
California Register	California Register of Historical Resources
Caltrans	California Department of Transportation
CBSC	California Building Standards Code

CBC	California Building Code
CCAA	California Clean Air Act
CCR	California Code of Regulations
CEC	California Energy Commission
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation and Liability Information System
CFC	Chlorofluorocarbons
CFD	Community Facilities District
CFR	Code of Federal Regulations
CH_4	methane
City	City of Los Angeles
CNEL	Community Noise Equivalent Level
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	CO_2 equivalent
CO Protocol	Transportation Project-Level Carbon Monoxide Protocol
Commission	California Building Standards Commission
CPUC	California Public Utilities Commission
CRA/LA	Community Redevelopment Agency of the City of Los Angeles
CRHR	California Register of Historical Resources
CUPA	Certified Unified Program Agency
DASH	Downtown Area Short Hop
dB	decibel
dBA	A-Weighted Sound Level
DC	direct current
DDG	Downtown Design Guide
DOT	U.S. Department of Transportation
DPM	diesel particulate matter
DPR	Department of Pesticide Regulation
DPW	Department of Public Works
DTSC	Department of Toxic Substances Control
E	Environmental
EA	Environmental Assessment
EDR	Environmental Data Resources
EIA	U.S. Energy Information Administration
EIR	Environmental Impact Report

EIS	Environmental Impact Statement
EJ	environmental justice
EO	Executive Order
EPA	U.S. Environmental Protection Agency
EPD	Environmental Programs Division
ESA	environmental site assessment
FHWA	Federal Highway Administration
FIDM	Fashion Institute of Design and Merchandising
FONSI	finding of no significant impact
FR	Federal Register
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
FY	fiscal year
GHG	greenhouse gas
H_2S	hydrogen sulfide
HAPS	hazardous air pollutants
HCFCs	hydrochlorofluorocarbons
HCMs	Historic-Cultural Monuments
HD	heavy duty
HDLADG	Historic Downtown Los Angeles Design Guidelines
HDR	HDR Engineering, Inc.
HFCs	Hydroflourocarbons
HIST UST	Historical UST registered database
HMMP	Hazardous Materials Management Plan
HP	horsepower
HREC	Historical Recognized Environmental Conditions
HSC	Health and Safety Code
HWCL	Hazardous Waste Control Law
Hz	Hertz
ICIS	Integrated Compliance Information System
Interstate 110	Harbor Freeway
kHz	kilohertz
KOPs	Key observation points
LABOE	City of Los Angeles Department of Public Works, Bureau of Engineering
LACE	Los Angeles Consolidated Electric Railway
LADOT	City of Los Angeles Department of Transportation
LADWP	Los Angeles Department of Water and Power
LAFD	Los Angeles Fire Department
LAMC	Los Angeles Municipal Code

LAPD	Los Angeles Police Department
LARy	Los Angeles Railway Corporation
LASI	Los Angeles Streetcar Inc.
LASD	Los Angeles County Sheriff's Department's
LASED	Los Angeles Sports and Entertainment District
LACM	Natural History Museum of Los Angeles County
LCFS	low carbon fuel standard
L_{dn}	Day/Night Noise Level
LED	Light Emitting Diode
LEED	Leadership in Energy & Environmental Design
LEP	limited English proficiency
L_{eq}	equivalent noise level
LID	Low Impact Development
LOS	level of service
LPA	Locally Preferred Alternative
LST	localized significance threshold
LUST	leaking underground storage tank
MA	millions of years ago
MAP-21	Moving Ahead for Progress in the 21st Century Act
MATES III	Multiple Air Toxics Exposure Study III
MBTA	Migratory Bird Treaty Act
MDHD	medium-and heavy-duty vehicle
Metro	Los Angeles County Metropolitan Transportation Authority
MG/M_3	micrograms per cubic meter
MMBTU/yr	million British thermal units per year
MMRP	Mitigation Monitoring & Reporting Program
MMT	million metric tons
MOA	Memorandum of Agreement
MOCA	Museum of Contemporary Art
mph	miles per hour
MPO	metropolitan planning organization
MSAT	mobile source air toxics
MSF	maintenance and storage facility
msl	mean sea level
MT	metric tons
MTBE	methyl tertiary butyl ether
$MTCO_2e$	metric tons of carbon dioxide equivalent
MTY	metric tons per year
MW	megawatt

N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NCP	National Contingency Plan
NEPA	National Environmental Policy Act
NGO	Non-Governmental Organization
NHPA	National Historic Preservation Act
NHTSA	National Highway Traffic Safety Administration
NO	Nitric Oxide
NOAA	National Oceanic and Atmospheric Administration
NOP	notice of preparation
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NRHP	National Register of Historic Places
O_3	Ozone
OCS	overhead contact system
OEHHA	Office of Environmental Health Hazard Assessment
OSHA	Occupational Safety and Health Administration
OVA	organic vapor analyzer
PDF	Project Design Feature
PB	lead
PE	Pacific Electric
PFCs	Perfluorocarbons
PM2.5	fine particulate matter (2.5 microns in diameter or less)
PM10	respirable particulate matter (10 microns in diameter or less)
PMT	person miles traveled
POAQC	project of air quality concern
ppb	parts per billion
PPD	pounds per day
ppm	parts per million
PPV	peak particle velocity
PRC	Public Resources Code
Project	Restoration of Historic Streetcar Service in Downtown Los Angeles
PSI	Preliminary Site Investigation
psi	pounds per square inch
RCM	Regulatory Compliance Measures
RCP	Regional Comprehensive Plan
RCPG	Regional Comprehensive Plan and Guide
RCRA	Resource Conservation and Recovery Act of 1976

REC	Recognized Environmental Conditions
Reporting Rule	Greenhouse Gas Reporting Rule
RMP	Risk Management Plan
RMPP	Risk Management and Prevention Program
RTP	regional transportation plan
RWQCB	Regional Water Quality Control Board
SARA	Superfund Amendments and Reauthorization Act
SB	Senate Bill
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCS	Sustainable Communities Strategy
SF_6	sulfur hexafluoride
sf	square feet
SHPO	State Historic Preservation Officer
SIATech	School for Integrated Academics and Technologies
SIP	State Implementation Plan
SRA	Source Receptor Area
SLIC	spills, leaks, investigation and cleanup
SO_2	sulfur dioxide
SSO	State Safety Oversight
STOPS	Simplified Trips-On-Project Software
SUSMP	Standard Urban Storm Water Mitigation Plan
SSPWC	Standard Specification for Public Works Construction
SWEEPS	Statewide Environmental Evaluation and Planning System UST database
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TACs	toxic air contaminants
Tanner Act	Toxic Air Contaminant Identification and Control Act
TBA	tertiary butyl alcohol
TIP	transportation improvement program
TMP	Traffic Management Plan
TPH	total petroleum hydrocarbon
TPSS	traction power substation
TRPH	total recoverable petroleum hydrocarbons
TSCA	Toxic Substance Control Act
TWC	train-to-wayside-communication
UBC	Uniform Building Code
UFC	Uniform Fire Code
USC	U.S. Government Code

USDOT	U.S. Department of Transportation
UST	Underground Storage Tank
V/C	vehicle to capacity
VdB	velocity decibel
VIA	Visual Impact Assessment
VMT	vehicle miles traveled
VOCs	volatile organic compounds
VRP	visibility reducing particles
WCI	Western Climate Initiative
WRCC	Western Regional Climate Center
ZIMAS	Zone Information and Map Access System

Executive Summary

ES.1 Introduction

The purpose of this Draft Environmental Impact Report (EIR) is to inform decision-makers and the general public of potential environmental impacts that could result from development of the Restoration of Historic Streetcar Service in Downtown Los Angeles (Project). For more information regarding the EIR process, refer to Chapter 1, *Introduction*.

The Project would require certain discretionary approvals from the City of Los Angeles (City) and other government agencies. Therefore, the Project is subject to environmental review requirements under the *California Environmental Quality Act* (CEQA). The lead agency for the Project under CEQA is the City. The Project may seek funding for construction and project development costs through the Federal Transit Administration (FTA) Capital Investment "Small Starts" Grant Program. Therefore, the Project may also be subject to subsequent *National Environmental Policy Act* (NEPA) review process. If federal funding is sought, a separate Environmental Assessment (EA) document would need to be completed for FTA review. If federal funding is sought, the City would be a joint lead agency with FTA under NEPA.

ES.2 Background

At one time, the historic streetcar network in Los Angeles spanned more than 600 miles of the metropolitan area; by the 1920s it was the largest trolley system in the world (Los Angeles County Metropolitan Transportation Authority 2012). Over a period of years, service was gradually discontinued, one route at a time, and by 1963, diesel buses had replaced the entire streetcar system. In more recent years increasing traffic congestion and worsening environmental impacts have resulted in a renewed interest in new forms of mass transit. Developing a streetcar system in downtown Los Angeles is part of this effort.

Restoration of downtown streetcar service is an idea that has been considered intermittently, for over a decade, by Los Angeles County Metropolitan Transportation Authority (Metro), as well as the former Community Redevelopment Authority (CRA/LA), and the former Central City Association Red Car Advisory Committee. Advocacy groups such as Los Angeles Streetcar, Inc. (LASI), and members of Council District 14's "Bringing Back Broadway" initiative have also been important drivers of the effort. Beginning as a concept aimed at tourism, research and outreach conducted over the past 15 years has resulted in a project geared toward promoting community revitalization, reactivating historic resources, and supporting general economic development in downtown Los Angeles, in addition to enhancing transit opportunities. In 2006, CRA/LA finalized the *Feasibility Study for the Resurrection of the Red Car Trolley Services in the Los Angeles Downtown Area*, which analyzed various alignment concepts, determined the feasibility of restoring the streetcar system, and identified engineering considerations, ridership estimates and needs, potential costs of implementing the streetcar, and potential funding sources (CRA/LA 2006). As contracted by CRA/LA, Metro moved the development process forward and assisted CRA/LA with the *Restoration of Historic Streetcar Service in Downtown Los Angeles Alternatives Analysis*, which was completed in January 2012 (Metro 2012). That document analyzed a multitude of potential alignments in its initial screening process, leading to the development of seven feasible alternatives. Those alternatives were then evaluated across a variety of factors, including capital and operating cost, design constraints, service area, connections to transit and other modes of transportation, environmental impacts, and economic development opportunities. A final screening analysis identified 7th Street, which was designated at that time by the CRA/LA Board of Commissioners and the Los Angeles City Council as the Locally Preferred Alternative (LPA), for further environmental analysis in this EIR. The 7th Street Alternative (see description of alternatives below) was selected because of favorable ridership estimates, a high combined average of daily boardings, and total boardings per mile; low capital, operating, and maintenance costs; and local community support. In addition to the LPA, a second concept that would use 9th Street instead of 7th Street between Figueroa Street and Hill Street was identified as part of this process to account for vehicle lane reductions along 7th Street implemented by Los Angeles Department of Transportation (LADOT) as part of the *2010 Bicycle Master Plan*. The 9th Street Alternative was therefore included to provide an alternative to address potential traffic impacts that could occur on 7th Street.

ES.3 Project Description and Alternatives Considered

The Project would construct and operate a streetcar route in downtown Los Angeles, along a loop up to 3.8 miles in length. The project route would run along 1st Street, Broadway, 11th Street, Figueroa Street, 7th Street or 9th Street, and Hill Street. A Grand Avenue Extension is also being considered, west on 1st Street from Hill Street, then south on Grand Avenue to a terminal point north of 2nd Street. The streetcar would travel through several neighborhoods or districts within the *Central City Community Plan* area of the City including: Civic Center, Bunker Hill, Historic Core, Jewelry District, Financial District, South Park, Fashion District, and LA Live and the Convention Center. The route would be traversed by a fleet of electrically powered streetcars, which would make stops at platforms along the alignment. Power to the streetcar vehicles would be provided by traction power substations (TPSSs) supplying power via an overhead contact system (OCS). The number and placement of passenger boarding platforms and traction power substations are subject to change, based upon further development of the project design. A maintenance and storage facility (MSF) site would also be constructed as part of the Project. A detailed description of the Project is provided in Chapter 2, *Project Description*. In summary, five project alternatives are being considered; these include four build alternatives for the proposed Project and a No Project Alternative. Figure ES-1 shows the regional location of the proposed Project. Figure ES-2 shows the Project's routing within downtown Los Angeles.

Figure ES-1. Regional Location Map

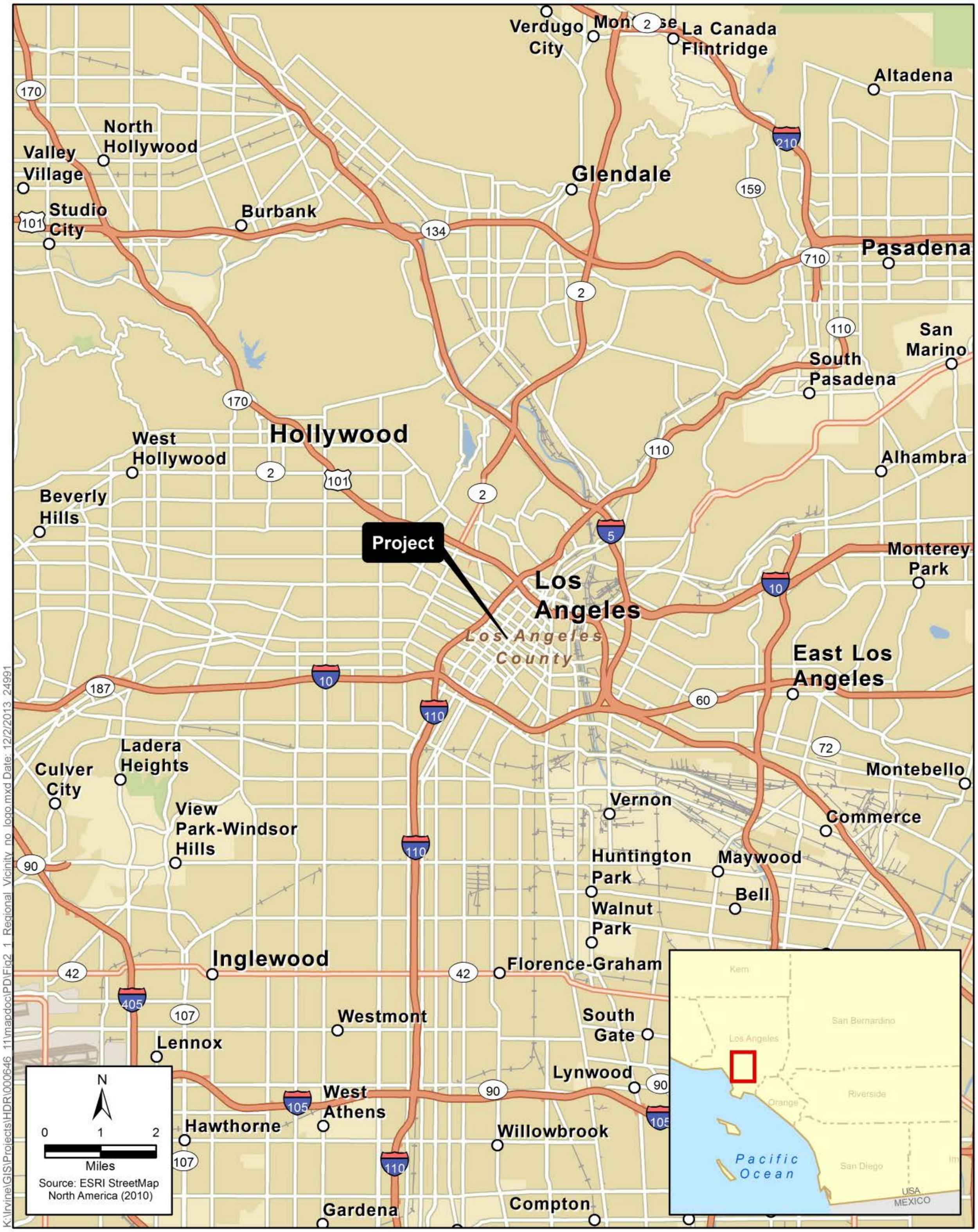

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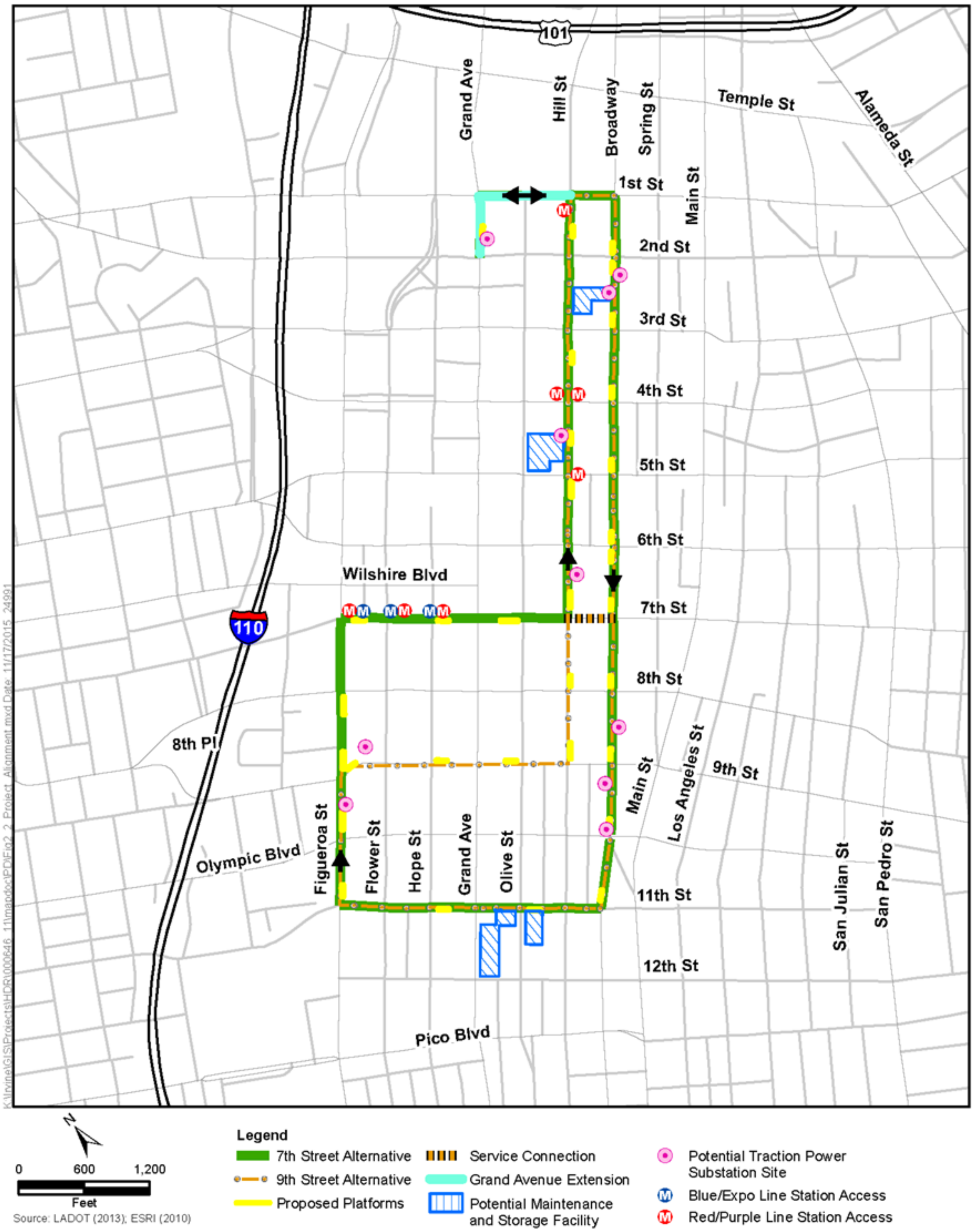
Figure ES-2. Proposed Downtown Los Angeles Streetcar Route[1]



[1] Platform locations subject to change in final design.

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ES.3.1 Alternative 1: No Project Alternative

The No Project Alternative, which is required by Section 15126.6(e) of the State CEQA Guidelines, represents conditions in the project study area that would remain if the proposed Project would not occur.

ES.3.2 Alternative 2: 7th Street with Grand Avenue Extension

The 7th Street with Grand Avenue Extension Alternative would construct and implement streetcar service along an alignment that would begin on Grand Avenue north of 2nd Street adjacent to the Disney Concert Hall, then continue northward until turning east on 1st Street. From 1st Street, the streetcar would turn south on Broadway, traveling to 11th Street where it would turn west and continue on to Figueroa Street. The streetcar would then turn north on Figueroa Street and travel to 7th Street, where it would turn east. From 7th Street, the streetcar would turn north on Hill Street, then continue back to 1st Street, completing the circuit by turning west on 1st Street to return to the streetcar stop on Grand Avenue.

ES.3.3 Alternative 3: 7th Street without Grand Avenue Extension

Alternative 3 would follow the same alignment as Alternative 2, with the exception that the Grand Avenue Extension would not be incorporated. Therefore, Hill and 1st Streets would be the terminal point, rather than Grand Avenue north of 2nd Street.

ES.3.4 Alternative 4: 9th Street with Grand Avenue Extension

The 9th Street with Grand Avenue Extension Alternative would follow the same alignment as the 7th Street with Grand Avenue Extension Alternative, but it would run eastbound on 9th Street between Figueroa Street and Hill Street, rather than 7th Street. The project alignment would still begin and terminate on Grand Avenue, north of 2nd Street.

ES.3.5 Alternative 5: 9th Street without Grand Avenue Extension

Alternative 5 would follow the same alignment as Alternative 3, but it would run eastbound on 9th Street between Figueroa Street and Hill Street, rather than 7th Street.

ES.3.6 Maintenance Storage Facility

The proposed Project would require an MSF to provide a location for secure storage of streetcar vehicles when they are not in operation, and regular light maintenance of the vehicles to keep them clean and in good operating condition. The MSF is currently planned at one of four potential sites: (1) the southwest corner of 11th and Olive Streets; (2) the southeast corner of 11th and Olive Streets; (3) the northwest corner of Hill and 5th Streets; or (4) the west side of Broadway between 2nd and 3rd Streets.

ES.4 Areas of Controversy

The City of Los Angeles has hosted a number of meetings with the community and local businesses to solicit questions and concerns related to the Project. Potential areas of controversy or concern that surfaced during the alternatives analysis process and as a result of public comments submitted during the scoping period (January 3 to February 1, 2013) include the following issues (not listed in any particular order):

- Purpose and Need—Public comments regarding the purpose of and need for the project predominantly expressed the concern that the proposed Project would be duplicative (due to DASH), would increase traffic, reduce mobility and accessibility, and would not help revitalize downtown Los Angeles.
- Maintenance and Storage Facility—Public comments were received stating that the MSF would be incompatible with a residential district; decrease property values; displace parking for residential buildings; and add traffic, noise, and air pollution to a residential area. Residents directly affected by the MSF site expressed further concern over safety—particularly for children and pets—due to the elimination of secure parking and the addition of a maintenance yard.
- Transportation/Traffic—Public comments were received stating the proposed streetcar would add additional traffic to streets that already experience congestion (11^{th} and 7^{th} Streets), and the curbside alignment would conflict with Broadway theater revitalization due to traffic impacts and decreased operational flexibility for the theaters. Comments also included the view that the proposed Project is redundant and would not enhance transportation in the downtown Los Angeles area. Additional comments raised concerns about streetcar operations blocking residential vehicle entrances.
- Aesthetics/Visual Quality—Concerns over the proposed Project's compatibility with surrounding residential and urban infrastructure were expressed during the scoping period. The potential for streetcar infrastructure to interfere with views of historic buildings and to be inappropriately scaled and massed with surrounding buildings (particularly MSF sites) were concerns expressed by the public.
- Safety—Public comments raised concerns over pedestrian safety and the potential for increased hazards at intersections and corners.
- Historic Resources—Members of the public stated that the proposed Project could interfere with restoration of historic buildings by preventing or limiting the use of space in front of buildings for staging. Comments also raised concerns that the proposed Project would negatively affect the revitalization of historic Broadway theaters due to traffic, and that the designs of the streetcar, MSF sites, and TPSS are incompatible with historic districts.
- Air Quality—Public comments noted the adverse air quality impacts due to dust generated by construction of the streetcar and supporting facilities, and the additional exhaust created from idling cars on downtown streets due to increased congestion.
- Noise and Vibration—Concerns regarding noise levels during construction and operation of the proposed Project, particularly at night, were received. Construction noise during work hours, and noise and vibration impacts on the Colburn School were also raised as concerns.

A detailed description of the comments received during the scoping period is provided in Appendix B.

ES.5 Issues to Be Resolved

Issues to be resolved include the selection of a preferred alternative, which will be identified in the Final EIR, following consideration of comments on the Draft EIR. For purposes of this EIR, a number of potential station platforms, TPSS locations, and four MSF sites are evaluated. The final number and placement of TPSSs, stops, and the identification of a preferred MSF site will be determined based on the results of the environmental review process and further operational and design analyses.

In addition to the decisions regarding the selection of the preferred alternative and MSF sites, various design- and construction-related issues and special activities would need to be addressed as planning and design of the Project proceed. Site-specific studies will be required to develop precise impact avoidance and mitigation plans and to ensure regulatory compliance.

Stakeholder, agency, and community coordination will be required during advanced design, including but not limited to the following:

- Coordination with property owners/agencies regarding the construction schedule.
- Coordination with the Los Angeles City Department of Public Works.

Funding for the Project has not as yet been completely secured. A combination of sources is being assembled, including transfer funds from the former CRA/LA, receipts from the Community Facilities District that was formed in downtown Los Angeles to provide funding for the Project, potential FTA Small Starts funds, public-private partnership opportunities, and potential revenues forthcoming from the currently proposed extension of Measure R, which is scheduled to be voted on in the upcoming November 2016 General Election. A final financial plan for the Project remains to be formulated, using some or all of the above funding sources.

ES.6 Permits, Approvals, and Intended Uses of the EIR

This EIR is being circulated in draft form to the public and agencies for review and comment. The document is intended to inform the public and agencies of potential significant environmental effects associated with the Project. It also evaluates reasonable alternatives and proposes mitigation measures to reduce significant effects.

The final version of this EIR will be used for discretionary approvals that may be required by the City, or other reviewing agencies. Accordingly, this EIR will be used by the City, as the CEQA lead agency, to support decisions regarding project approval. The information in this EIR will be used by other agencies to support decisions regarding whether to grant the permits or approvals that may be necessary to construct and/or operate the Project.

Certification of the Final EIR, adoption of a Mitigation Monitoring & Reporting Program (MMRP), and approval of the LPA by the City of Los Angeles would be required prior to construction and implementation of the Project. Also, if federal funds are sought, an Environmental Assessment

(EA)/Finding of No Significant Impact (FONSI) would be necessary, managed under the direction of the FTA. Those federal activities, if necessary, would occur subsequent to completion of the CEQA process for which this EIR has been prepared.

This Draft EIR is a project EIR, as defined by Section 15161 of the State CEQA Guidelines and, as such, serves as an informational document for the general public and the Project's decision-makers. The City has the responsibility for preparing and distributing the Draft EIR pursuant to State CEQA Guidelines Section 21067. This EIR would be used in connection with all other permits and approvals necessary for construction and operation of the Project. This EIR would be used by LADOT, Los Angeles Department of Public Works, Bureau of Engineering (LABOE), the Los Angeles Department of Building and Safety, Los Angeles Bureau of Street Lighting, California Public Utilities Commission (CPUC), and other responsible public agencies that must approve activities undertaken with respect to the Project.

Implementation of the Project would require discretionary actions and permits from the following agencies:

- City Council Committee(s)—Recommendations for approval of the Project and certification of the EIR by the City Council.
- City Council—Certification of the EIR, adoption of Findings and Statement of Overriding Considerations, adoption of an MMRP, approval of an LPA, potential approval of eminent domain actions (should they become necessary), and possible amendments to Downtown Street Standards.
- California Public Utilities Commission—Approval regarding safety of rail crossings; the Project design related to tracks, overhead structures, and site planning; and some operational requirements.
- Los Angeles Department of Transportation—Approval of traffic signal/transit priority system improvements and street restriping plans; temporary street closures and haul routes.
- Los Angeles Department of Building and Safety—Issuance of grading haul permits, building permits, certification of occupancy, etc., for improvements such as the MSF and TPSS off the public right-of-way.
- Los Angeles Department of Public Works, Bureau of Engineering (local lead agency)—Approval of all engineering drawings and street-widening plans, related to work within the public right-of-way.
- Los Angeles Department of Public Works, Bureau of Street Services—Responsibility for street maintenance and approvals related to landscape architecture and urban forestry issues.
- Los Angeles Department of Public Works, Bureau of Street Lighting—Approval of lighting design.
- Federal Transit Administration (potential joint lead agency with City of Los Angeles under NEPA)—Approval of Project for federal funding, and approval of an EA/FONSI.
- City Planning Department:
    - Public Benefits Project approval.
    - Approval of Project subject to Urban Design Studio recommendations and Downtown Design Guide.

- Board of Police Commissioners—Approval for certain construction activities during nighttime hours, on weekends, and over holiday periods, pursuant to Los Angeles Municipal Code (LAMC) Section 41.40(j).
- Additional actions as determined to be necessary.

ES.7 Summary of Environmental Impacts of the Project Alternatives

ES.7.1 No Project Alternative

The No Project Alternative assumes that the proposed operation of a streetcar service in downtown Los Angeles would not be implemented. Consequently, no adverse effects would occur under the No Project Alternative; however, this alternative would not satisfy the statement of purpose and need for the Project.

ES.7.2 Alternatives 2, 3, 4, and 5

Under CEQA, significant environmental impacts before mitigation have been identified in the following areas:

- Noise and Vibration (construction and cumulative/construction)
- Traffic (construction, operations, and cumulative/construction and operations)

Environmental impacts associated with the four build alternatives are detailed in Tables ES-1 through ES-3 by resource area, along with mitigation measures, and the level of significance after mitigation. Table ES-1 provides a summary of impacts that would occur during the construction period, Table ES-2 provides a summary of impacts that would occur during operation of the Project, and Table ES-3 summarizes the Project's potential to contribute to cumulative impacts. Where differences among alternatives occur, such differences are clearly identified. Tables ES-1 through ES-3 provide summaries of information contained in the EIR; for further information, the reader is referred to the individual impact sections in Chapter 3 for details regarding the impacts and any associated proposed mitigation.

Table ES-1. Summary of Construction Period Environmental Impacts[a,b]

Impact/Description	Alternative	Significance Prior to Mitigation	Mitigation/Description	Impact Significance After Mitigation
3.1 Aesthetics				
Removal, alteration, or demolition of existing visual features. The project could result in removal of existing street trees, which are features or elements that may be considered to contribute to the valued visual character or image of a neighborhood, community, or vicinity within the project area.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	**MM-AES-C3: Tree Removal/Relocation.** Should street trees, need to be trimmed or removed, the Project would comply with the City of Los Angeles Tree Preservation Ordinance and Tree Preservation Policy. City policy requires all tree removals be replaced on a 2:1 basis for street trees and 4:1 basis for protected private property trees. Replacement trees would be placed as near to their original locations as possible. Alternative methods and options to removal, such as trimming, would be explored prior to considering potential tree removal.	LTS
Natural open space areas. The project area does not contain any natural or open space areas. The project would not result in the grading or development of such areas.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	NI	None required.	N/A
Structures within open space areas. The project area does not contain any natural open space areas. The project would not site any structures within such areas.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	NI	None required.	N/A

[a] NI = No Impact, LTS = Less Than Significant, PS = Potentially Significant, S = Significant, SU = Significant and Unavoidable

[b] MSF 1 = Broadway and 2nd Street, MSF 2 = Hill Street and 5th Street, MSF 3 = 11th Street and Olive Street (East), MSF 4 = 11th Street and Olive Street (West)

Table ES-1. Summary of Construction Period Environmental Impacts[a,b]

Impact/Description	Alternative	Significance Prior to Mitigation	Mitigation/Description	Impact Significance After Mitigation
Visual contrast with existing features. Construction activities and equipment would contrast with existing features, but such contrast would be transitory and temporary.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	**MM-AES-C1: Construction Staging/Stockpiled Materials and Equipment.** Under the direction of the LABOE, the construction contractor shall be the responsible party for providing temporary construction fencing along the periphery of active construction areas to screen as much of the construction activity as possible from view at the street level. To minimize views of stockpiled materials and idled construction equipment in staging areas and to reduce visual clutter and disorder, consistent with Bureau of Engineering Master Specification Environmental Control Measures, project construction staging areas shall be enclosed or screened from view at the street level with appropriate screening materials. The contractor shall provide daily visual inspections to ensure that the immediate surroundings of construction staging areas are free from construction-related clutter and graffiti and maintain the areas in a clean and orderly manner throughout the construction period. Graffiti shall be promptly painted over, masked out, or cleaned off. Routine sidewalk and window washing to remove dust generated by construction shall be scheduled weekly. LABOE, through the construction contractor per bid specifications, shall be the responsible party. Enforcement shall be achieved through the DPW Contract Administration Bureau Construction Inspector.	LTS
Zone changes. Project construction would not require a zone change.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	NI	None required.	N/A

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Table ES-1. Summary of Construction Period Environmental Impacts[a,b]

Impact/Description	Alternative	Significance Prior to Mitigation	Mitigation/Description	Impact Significance After Mitigation
Contribution to area's aesthetic value. Project construction would not contribute to the area's aesthetic value, because construction elements and activities could adversely affect the visual quality or character of the immediate area. These effects would be temporary and transitory.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS
Applicable guidelines and regulations. Construction of the project would comply with all applicable guidelines and regulations as per the construction specifications.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS
Nature and quality of recognized or valued views. Construction activities and the presence of construction equipment could adversely affect the visual quality or character of views from and within the immediate area encompassing the project site. These effects would be temporary and transitory.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS
Views from scenic highways, corridors, or parkways. The Project would not affect views from a designated scenic highway, corridor, or parkway.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	NI	None required.	N/A

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Table ES-1. Summary of Construction Period Environmental Impacts[a,b]

Impact/Description	Alternative	Significance Prior to Mitigation	Mitigation/Description	Impact Significance After Mitigation
Obstruction. Project construction would result in the temporary, minor diminution and/or partial obstruction of views in the immediate project vicinity. These effects would be temporary and transitory.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS
Effects on recognized views from transportation corridors. Project construction would result in temporary obstructions of views along lengths of public roadways. These effects would be temporary and transitory.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS
Changes in ambient illumination during nighttime. Nighttime construction would result in new sources of lighting that would change existing ambient illumination levels.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	**MM-AES-C2: Nighttime Construction Activities.** Should construction activities with associated lighting occur during nighttime, the City shall ensure that lighting will be directed away from surrounding sensitive land uses and toward the specific location intended for illumination. Lighting associated with construction activities and security purposes shall be shielded to minimize the production of glare and spill light around sensitive land uses in the surrounding area. LABOE, through the construction contractor per bid specifications, shall be the responsible party. Enforcement shall be achieved through the DPW Contracts Administration Bureau Construction Inspector.	LTS

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Table ES-1. Summary of Construction Period Environmental Impacts[a,b]

Impact/Description	Alternative	Significance Prior to Mitigation	Mitigation/Description	Impact Significance After Mitigation
Lighting spill that would affect adjacent light-sensitive areas. Nighttime construction would result in new sources of lighting that may spill off the project site and affect light-sensitive receptors.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	**MM-AES-C2**	LTS
Shading of shadow-sensitive uses. Construction is not expected to require large cranes or other major construction-related structures and equipment that would cast large shadows on shadow-sensitive uses.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS
3.2 Air Quality				
Regional Emissions. Construction would not result in regional impact criteria pollutant emissions that would exceed South Coast Air Quality Management District (SCAQMD) thresholds.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS
Local Emissions. Construction would result in local impact criteria pollutant emissions (NO_X, PM10, and PM2.5) that would exceed South Coast Air Quality Management District (SCAQMD) thresholds.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	**MM-AQ-C1: Use cleaner-burning off-road construction equipment.** The contractor shall ensure that all off-road diesel-powered construction equipment greater than 50 horsepower (hp) shall meet the Tier 4 emission standards. In addition, all construction equipment shall be outfitted with best available control technology (BACT) devices certified by ARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control	LTS

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Table ES-1. Summary of Construction Period Environmental Impacts[a,b]

Impact/Description	Alternative	Significance Prior to Mitigation	Mitigation/Description	Impact Significance After Mitigation
			strategy for a similarly sized engine as defined by ARB regulations.	
Toxic Air Contaminants. Construction would not expose receptors to significant levels of TACs.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS
Odors. Construction odors could be created from construction equipment diesel exhaust and application of architectural coatings. Such odors, if noticeable at nearby sensitive receptors, would be temporary and transitory.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS
3.3 Cultural				
Archaeological resources. Archaeological resources were not identified within the project area and are not expected to be encountered during construction activities, including excavation. Should archaeological discoveries be made during construction, however, appropriate procedures would be followed.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	Archaeological discoveries shall be addressed as specified in the City of Los Angeles Bureau of Engineering "Green Book" (2009).	LTS
Historical resources. Construction activities would not demolish or otherwise adversely affect historic resources. One potential exception would be historic sidewalk features, such as terrazzo installations, vault lights, basement vault hatch doors, and other features that are considered character defining features	Alt 2, 3, 4, & 5. MSF 2	LTS	**MM-CUL-C1:** The following mitigation activities shall be conducted: As part of final design, a detailed field survey would be done to identify historic sidewalk features to be avoided, protected during construction, or altered in conformance with the Secretary's Standards. Conditions to protect historic sidewalk features and preserve	LTS

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Table ES-1. Summary of Construction Period Environmental Impacts[a,b]

Impact/Description	Alternative	Significance Prior to Mitigation	Mitigation/Description	Impact Significance After Mitigation
within the Broadway Theater and Commercial District. Adherence to appropriate mitigation measures would ensure that no substantial change to the significance of historical resources would occur.			the material in place during construction would be required: (1) Historic sidewalk features shall be covered with a protective material to avoid scratches and staining from adjacent construction work. (2) OCS poles will not be installed in terrazzo installations or vault lights. (3) Sidewalk ramps will be designed or located to avoid physical damage or alteration of historic sidewalk features. (4) The existing concrete curb will not be removed at bump out areas, in order to protect the historic sidewalk feature from being saw cut or from cracking. (5) Should incidental damage occur during construction, the historic sidewalk feature would be repaired or replaced in kind by a qualified contractor in a manner consistent with the Secretary's Standards. In the unlikely event that the sidewalk feature cannot be treated in accordance with the Secretary's Standards, there would still be a less than significant impact on the historic building that fronts the sidewalk, and there would be no substantial adverse change in the overall significance of the historical resource. **MM-AES-C1**	

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Table ES-1. Summary of Construction Period Environmental Impacts[a,b]

Impact/Description	Alternative	Significance Prior to Mitigation	Mitigation/Description	Impact Significance After Mitigation
Paleontological resources. The project area has been heavily disturbed by past construction activities; project construction activities are unlikely to encounter significant resources. Excavation occurring at depths below five feet may encounter older Quaternary deposits or the Fernando Formation, which may contain paleontological resources.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4 TPSS	LTS	**MM-CUL-C2:** Excavations greater than five feet shall be monitored by a qualified paleontological monitor. If excavations below a depth of five feet are determined to be in artificial fill materials, or otherwise determined not to yield resources, monitoring may be reduced. Paleontological resources discovered during excavation will be salvaged, transported to a paleontological laboratory for processing, and deposited in a designated paleontological curation facility (such as the Natural History Museum of Los Angeles County).	LTS
3.4 Energy				
Energy Consumption, Conservation, and Standards. Construction energy use would be temporary and would be controlled and managed so as to not be wasteful, inefficient, or unnecessary. Minor differences in construction-period energy consumption, among Alternatives 2 and 4 compared to Alternatives 3 and 5, would occur due to the absence of two blocks of construction work associated with the Grand Avenue Extension under Alternatives 3 and 5.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS
Demand for New Energy Supplies and Infrastructure. Construction would result in a negligible use of diesel fuel and no new or	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS

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Table ES-1. Summary of Construction Period Environmental Impacts[a,b]

Impact/Description	Alternative	Significance Prior to Mitigation	Mitigation/Description	Impact Significance After Mitigation
expanded sources of energy would be required.				
3.5 Geology				
Seismicity. Construction would not exacerbate existing seismic hazards or create new hazards due to the negligible risk of disturbing faults.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS
Liquefaction and Lateral Spreading. The Project would be susceptible to liquefaction and lateral spreading, primarily in the northern portion of the alignment. Adherence to Regulatory Compliance Measures would ensure that risks, if any, would be minimized.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	**RCM-GEO-C1**: Temporary shoring will be used for lateral support of excavations and properly compacted fill soils or cement slurry shall be used for excavation backfill. A geotechnical report shall be prepared during final design, subject to approval by the City, which will recommend specific measures, including but not limited to, the following: in situ ground modification, removal of liquefiable layers and replacement with compacted fill, or support of project improvements on piles. Additional recommendations for controlling liquefaction may include densification by installation of stone columns, vibration, deep dynamic compaction, and/or compaction grouting.	LTS
Landslides. Construction is not anticipated to increase the risk of landslides, because the project area is currently developed and is stabilized with structures or plantings.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS
Expansive Soils. The project area is underlain with soils types that are not known to have expansive properties. Construction would not	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS

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Table ES-1. Summary of Construction Period Environmental Impacts[a,b]

Impact/Description	Alternative	Significance Prior to Mitigation	Mitigation/Description	Impact Significance After Mitigation
introduce new or adversely modify existing expansive soils.				
Erosion. During construction, some erosion and a temporary reduction in soil stability may occur, particularly on steep grades. (e.g., along 1st Street). Adherence to regulatory requirements would ensure that proper soil stability is maintained.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	**RCM-GEO-1**: Requirements under the National Pollutant Discharge Elimination System (NPDES) permit process shall be followed, including preparation of a Stormwater Pollution Prevention Plan (SWPPP) that incorporates Best Management Practices (BMP).	LTS
Landform Alteration. Construction would occur within street rights-of-way or on graded off-street land parcels; distinct or prominent geologic or topographic features would not be disturbed.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	NI	None required.	NI
3.6 Greenhouse Gas Emissions				
Greenhouse Gas Emissions. The Project would directly and indirectly generate greenhouse gas (GHG) emissions during construction, but quantities would negligible, as compared with daily GHG production in the downtown area as well as globally.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS
Plan Consistency. GHG production during construction would be temporary and sufficiently small such that the Project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS

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Table ES-1. Summary of Construction Period Environmental Impacts[a,b]

Impact/Description	Alternative	Significance Prior to Mitigation	Mitigation/Description	Impact Significance After Mitigation
the emissions of greenhouse gases.				
3.7 Hazards and Hazardous Materials				
Risk of Upset/Emergency Preparedness. Construction could result in excavation and disposal of hazardous materials, potential for groundwater contamination, and release of hazardous materials. Adherence to applicable Mitigation Measures would ensure adequate control of and protection from potential accidental release or explosion of a hazardous substance.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	**MM-HM-C1:** During construction, a focused Preliminary Site Investigation (PSI) shall be conducted at specified locations of concern and the proposed locations for the MSF and TPSS. The PSI shall include soil borings and laboratory analysis. Also, soils indicating a potential contamination shall be tested according to appropriate ASTM, or EPA methods. **MM-HM-C2:** Soil shall be sampled in a random and representative manner and analyzed, as applicable, for Total Recoverable Petroleum Hydrocarbons (TRPH), VOCs, Total Petroleum Hydrocarbons (TPH), *Title 22* heavy metals, reactivity (pH), corrosivity, and toxicity. **MM-HM-C3:** If VOCs are present at concentrations exceeding South Coast Air Quality Management District thresholds, a permit shall be required, for proper handling and storage. **MM-HM-C4:** Suspected contaminated soil samples shall be taken to a state-certified environmental laboratory or tested in the field in accordance with appropriate testing methods. Materials with elevated levels of TRPH, metals, or other regulated contaminants shall require handling by workers who have been adequately trained for health and safety aspects of hazardous material handling. **MM-HM-C5:** Any contaminated material (soil, asphalt, railroad ballast, concrete, or debris) that is to be hauled off-	LTS

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Impact/Description	Alternative	Significance Prior to Mitigation	Mitigation/Description	Impact Significance After Mitigation
			site and is considered a "waste product" shall be classified as hazardous or nonhazardous waste prior to disposal. A hazardous waste manifest shall be prepared and the material transported to an appropriate class of facility for proper recycling or landfill disposal. If the soil is nonhazardous but still exceeds levels that preclude its return to the excavation, a less restrictive method of handling a disposal would be permitted. **MM-HM-C6:** All construction contractors shall be instructed to immediately stop all subsurface activities in the event that potentially hazardous materials are encountered, an odor is identified, or significantly stained soil is visible. Contractors shall be instructed to follow all applicable regulations regarding discovery and response for hazardous materials encountered during the construction process. Hazardous waste generated by the contractor at the site shall be disposed of in accordance with the City's Notification of Hazardous Substances General Conditions in the construction contract. **MM-HM-C7:** In the event groundwater is encountered during construction, dewatering shall be minimized. Sampling ports shall be provided in the dewatering system. The produced water shall be temporarily stored in large Baker-type tanks and analyzed by a state-certified environmental laboratory. If the groundwater quality falls within guidelines established by the City Department of Public Works, Bureau of Sanitation, a permit shall be obtained to discharge the water into a nearby	

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			sewer. **MM-HM-C8:** If hydrocarbon or other water contamination precludes the measures in **MM-HM-C7**, contaminated groundwater shall be treated on-site (such as in an oil-water separator) or hauled off-site for treatment and disposal in accordance with applicable regulations.	
Human Health Hazards. During construction, the transport of contaminated soils could involve potential exposure risks to construction workers and to the general public along roadways. Sensitive uses (e.g., schools) would be taken into account when selecting haul routes.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	**MM HM-C1** through **MM-HM-C6**	LTS
3.8 Land Use				
Land Use Plan Consistency. Construction would occur with the public street rights-of-way or on one of four MSF sites under consideration. Construction activities, which would be temporary and transitory, would follow applicable controls and regulations and therefore would not be in conflict with applicable land use plans for the study area.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS
Land Use Compatibility. Construction would	Alt 2, 3, 4,	LTS	**RCM-LU-C1: Business Access and Signage.** The construction	LTS

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Impact/Description	Alternative	Significance Prior to Mitigation	Mitigation/Description	Impact Significance After Mitigation
occur with the public street rights-of-way or on one of four MSF sites under consideration, and therefore would not divide, isolate, or substantially disrupt a community or neighborhood Temporary loss of on-street parking and impairment of access to businesses would occur during construction.	& 5. MSF 1, 2, 3, & 4		contractor shall provide signs for businesses whose frontage is obstructed by construction work indicating that the business is open during construction, and provide information regarding access to the business.	
One business (Guadalupe Wedding Chapel) and one vacant business are located on MSF1, and ongoing parking lot businesses are located on all four MSF sites. Acquisition of any of the four MSF sites would require displacement of the affected parking lot businesses. If MSF1 were to be chosen, the Guadalupe Wedding Chapel business would also be displaced. Compensation to the property owner and business operator(s), and relocation assistance would be provided.	MSF 1, 2, 3, & 4	LTS	**RCM-LU-C2: Business Displacement.** Proposed displacement of the Guadalupe Wedding Chapel and any other businesses subject to displacement as a result of the Project would occur in accordance with applicable laws and regulations, including the *Uniform Business Relocation Assistance and Real Property Acquisition Policies Act of 1970*, as mentioned. If MSF1 were to be chosen, the business would also be displaced. Compensation to the property owner and business operator(s), and relocation assistance would be provided.	LTS
3.9 Noise and Vibration				
Noise. Construction noise levels would exceed specified limits in the *L.A. CEQA Thresholds Guide*. Impacts will, however, be temporary and transitory, with impacts moving away from affected locations to the next area of construction. Noise associated with	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	PS	**MM-NV-C1:** The contractor shall limit nighttime construction to generate lower noise levels. **MM-NV-C2:** The contractor shall use specialty equipment with enclosed engines and/or high-performance mufflers, where practicable and available. **MM-NV-C3:** The contractor shall locate equipment and staging	SU

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Impact/Description	Alternative	Significance Prior to Mitigation	Mitigation/Description	Impact Significance After Mitigation
construction of the MSF will be experienced by receptors in the vicinity for extended periods of time. Mitigation measures would reduce impacts, but residual impacts would remain.			areas as far from noise-sensitive receivers as practicable. **MM-NV-C4:** The contractor shall limit unnecessary idling of equipment. **MM-NV-C5:** The contractor shall install temporary noise barriers to enclose stationary noise sources, such as compressors, generators, laydown and staging areas, and other noisy equipment as appropriate and practicable. **MM-NV-C6:** The contractor shall reroute construction-related truck traffic away from residential buildings to the extent practicable. **MM-NV-C7:** The contractor shall sequence the use of equipment so that simultaneous use of the loudest pieces of equipment is avoided as much as practicable. **MM-NV-C8:** The contractor shall avoid the use of impact equipment and, where practicable, use non-impact equipment. Non-impact equipment could include electric or hydraulic-powered equipment rather than diesel and gasoline-powered equipment where feasible. **MM-NV-C9:** The contractor shall use portable noise control enclosures for welding in the construction staging area. **MM-NV-C10:** If a noise variance from Section 41.40(a) of the Los Angeles Municipal Code is required, a noise limit shall be specified. The contractor shall employ a combination of recommended noise-reducing approaches to meet the noise limit.	

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Impact/Description	Alternative	Significance Prior to Mitigation	Mitigation/Description	Impact Significance After Mitigation
			MM-NV-C11: Specific measures to be employed to mitigate construction noise impacts shall be developed by the contractor and presented in the form of a Noise Control Plan. The Noise Control Plan shall be submitted for review and approval before the beginning of construction activities.	
Vibration. Construction activities, such as compaction, pavement breaking, and the use of excavators, could result in perceptible levels of groundborne vibration. Physical damage to structures, including fragile buildings, is not expected and can be avoided with proper mitigation.	Alt 2, 3, 4, and 5. MSF 1, 2, 3, & 4	LTS	**MM-NV-C12:** A preconstruction survey shall be conducted, including an inspection of building foundations and photographs of pre-existing conditions. The survey can be limited to (1) the first row of buildings along the selected alignment and will include the locations of the glass blocks and associated subterranean vaults and (2) buildings within approximately 200 feet of the construction zone that are deemed to be extremely susceptible to vibration. These will be included in the survey. **MM-NV-C13:** Per the *FTA Guidance Manual*, construction vibration shall be limited to the PPV, ranging from 0.12 inch per second for "buildings identifiable as being extremely susceptible to vibration damage" to 0.5 inch per second for "reinforced concrete, steel, or timber" buildings. The contract specifications shall establish appropriate damage risk vibration limits for historic properties within 200 feet of construction. **MM-NV-C14:** The contractor shall be required to monitor vibration at any building where the lower vibration limit is applicable and at any location where complaints about vibration are received from building occupants. This shall	LTS

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			include "special" land uses, such as the Disney Concert Hall, Music Center, and the Colburn School. **MM-NV-C15:** If the contractor's plan calls for high-vibration construction activities being performed close to structures, the contractor may be required to use alternative procedures that produce lower vibration levels. Alternative procedures shall include the use of non-vibratory compaction in limited areas and concrete saws in place of jackhammers or pavement breakers for demolition. To avoid potential interference with "special" land uses caused by construction vibration, the contractor shall be required to coordinate with building owners to limit high-vibration construction activities to times when sensitive activities are not occurring inside the buildings. **MM-NV-C16:** The Contractor shall hire a Mitigation Coordinator to provide notice to venues and sound-sensitive land uses along the corridor at least two weeks in advance of construction activities. The role of the Mitigation Coordinator will be to respond to concerns related to implementation of construction-related mitigation measures.	
3.10 Transportation and Traffic				
Intersection Capacity. Intersections would experience deterioration in performance due to project construction activities. Adherence to Mitigation Measures will lessen the impacts.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4.	LTS	**MM-TRAF-C1: Develop a Construction Traffic Management Plan.** The Los Angeles Department of Transportation shall develop and implement a Traffic Management Plan (TMP) to reduce construction-related traffic impacts. The TMP shall be prepared during final design for	LTS

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Impact/Description	Alternative	Significance Prior to Mitigation	Mitigation/Description	Impact Significance After Mitigation
			implementation during construction to mitigate the traffic impacts caused by construction of the Project. The TMP shall identify potential measures such as public awareness and changeable message signs (CMS). The TMP shall be developed in consultation with emergency service providers (i.e., local police and fire departments). The TMP shall address temporary traffic signals, bicycle lane detours, or using flagmen adjacent to construction activities, as appropriate. A community affairs entity shall be established to administer a construction impact mitigation program. This program shall keep the community informed of all construction activities and shall also set up a hotline number with a direct connection to project staff. The program shall identify community/business needs prior to and during the construction period through the use of surveys and community meetings. **MM-TRAF-C2: Construction Mitigation Monitoring**. A construction mitigation program shall be established with participation of BOE, Bureau of Contracts Administration, and the construction contractor. All mitigation measures shall be monitored and reported to BOE on a quarterly basis.	

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Impact/Description	Alternative	Significance Prior to Mitigation	Mitigation/Description	Impact Significance After Mitigation
Project Access. Traffic operations at intersections adjacent to construction activities may deteriorate as a result of temporary reduced capacity.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4.	LTS	**MM-TRAF-C1**	LTS
Transit System Capacity. Delays associated with lane closures would affect public transit vehicles if services are not rerouted.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4.	LTS	**MM-TRAF-C1**	LTS
Parking. During construction, removal of on-street parking would not substantially alter the overall availability of parking during peak hours.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4.	LTS	None required.	LTS
In-Street Construction Impacts. Construction would involve temporary lane closures which would result in delays for vehicles using roadways.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4.	LTS	**MM-TRAF-C1** **MM-TRAF-C2**	LTS

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Table ES-2. Summary of Operation Period Environmental Impacts[a,b]

Impact/Description	Alternative	Significance Prior to Mitigation	Mitigation/Description	Impact Significance After Mitigation
3.1 Aesthetics				
Removal, alteration, or demolition of existing visual features. Built elements of the proposed Project include the streetcar vehicles, platforms, shelters, catenary poles and OCS wires. The introduction of these built features would not remove, alter or demolish existing features or elements that contribute to the visual character throughout the project area.	Alt 2 Alt 3, 4, & 5. MSF 1, 2, 3, & 4.	LTS	**MM-AES-O1: Design of Traction Power Substation Structures.** The City of Los Angeles shall ensure that all TPSS structures will be designed to minimize their visual presence. Where site and design allow, the TPSS structures shall incorporate design and location features, such as the minimization of the size of the structures, setbacks from adjoining street frontages, screening, and/or architectural treatments that are appropriate to the design setting where visible from the public right-of-way at street level. All TPSS structures shall be designed and built to satisfy the established final design requirements and in compliance with all applicable design guidelines, policies, development standards, and Public Benefits projects performance measures, if necessary. Should a TPSS be located within the public right-of-way, it shall be designed in conformance with the Los Angeles Above-Ground Facility regulations contained in Section 62.08 of the LAMC. **MM-AES-O2: Maintenance Storage Facility Design and Operational Lighting.** The City of Los Angeles shall ensure that the MSF site plan, building treatments and architecture will be appropriate in scale, proportion, and detail with appropriate use of material, texture, articulation, and color in consideration of the surrounding design context. The aesthetic	LTS

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Table ES-2. Summary of Operation Period Environmental Impacts[a,b]

Impact/Description	Alternative	Significance Prior to Mitigation	Mitigation/Description	Impact Significance After Mitigation
			treatment shall be designed and built in compliance with all applicable design guidelines, policies, and development standards. Light associated with the MSF shall be properly controlled and directed on site in a manner that would minimize the potential for spill light. The Project would adhere to the requirements of LAMC Section 14.00 in all respects and will follow all applicable procedures. All applicable performance standards or alternative compliance measures will be addressed and all procedures for review and approval will be followed. **MM-AES-O3: Overhead Contact System Poles.** The City of Los Angeles shall ensure that design and installation of the OCS poles will be consistent with the surrounding design context. OCS poles shall be designed and installed in compliance with all applicable design guidelines, policies, and development standards.	
Natural open space areas. The project area does not contain natural open space areas.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	NI	None required.	N/A

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Table ES-2. Summary of Operation Period Environmental Impacts[a,b]

Impact/Description	Alternative	Significance Prior to Mitigation	Mitigation/Description	Impact Significance After Mitigation
Structures within open space areas. The project area does not contain natural open space areas.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	NI	None required.	N/A
Visual contrast with existing features. Operation activities and equipment would be consistent with features of the urban downtown environment, including restoration of historic streetcar service to the downtown. Application of design Mitigation Measures would ensure proper fit of project elements into its surroundings.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS
Zone changes. The Project would not require a zoning consideration for all elements installed within the public streets and sidewalks. TPSS locations, if within private property, would not be a building that would detract from the existing style or image of the area.	Alt 2, 3, 4, & 5. TPSS	NI	None required.	N/A
Regarding any of the four candidate MSF sites, at none of the sites would there be buildings that would detract from the existing style or image of the area, with adherence to proper design integration. (See also 3.8 *Land Use*.)	MSF 1, 2, 3, & 4.	LTS	**MM-AES-O2** **MM-AES-O3**	LTS

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Table ES-2. Summary of Operation Period Environmental Impacts[a,b]

Impact/Description	Alternative	Significance Prior to Mitigation	Mitigation/Description	Impact Significance After Mitigation
Contribution to area's aesthetic value. Project elements (streetcar vehicles, platforms, shelters, catenary OCS poles and wires) would be unobtrusive and would not alter the visual quality of the project area. In the sense that the Project would restore a prior historic streetcar system in downtown Los Angeles, the Project would be consistent with its surroundings in character.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS
Applicable guidelines and regulations. Operation of the project would comply with applicable guidelines and regulations.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS
Nature and quality of recognized or valued views. Project elements would not adversely affect visual quality or character, and thus, valued views, of the immediate area encompassing the project site.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS
Views from scenic highways, corridors, or parkways. The project would not affect views from a designated scenic highway, corridor, or parkway.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	NI	None required.	N/A

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Table ES-2. Summary of Operation Period Environmental Impacts[a,b]

Impact/Description	Alternative	Significance Prior to Mitigation	Mitigation/Description	Impact Significance After Mitigation
Obstruction. Project elements would result in the minor diminution and partial obstruction of some views in the immediate project vicinity.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	**MM-AES-O3**	LTS
Effects on recognized views from transportation corridors. Project elements would result in minor visual impacts on the nature or quality of recognized views available from public roadways.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS
Changes in ambient illumination during nighttime. Project elements would not change existing ambient illumination levels; however, the MSF sites would introduce new light sources that would change the ambient illumination levels to the project area.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	**MM-AES-O2**	LTS
Lighting spill that would affect adjacent light-sensitive areas. Project elements would not result in new sources of lighting that may spill off the project site and affect light-sensitive receptors, however the MSF sites would introduce a new source that would affect light-sensitive receptors.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	**MM-AES-O2**	LTS

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Table ES-2. Summary of Operation Period Environmental Impacts[a,b]

Impact/Description	Alternative	Significance Prior to Mitigation	Mitigation/Description	Impact Significance After Mitigation
Shading of shadow-sensitive uses. Project elements would not create bulk and large scale structures sufficient to cast large shadows on shadow-sensitive uses.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS
3.2 Air Quality				
Regional Emissions. The Project would not result in regional criteria pollutant emissions (Pb, ROG, NO_X, CO, SO_X, PM10, and PM2.5) that would exceed South Coast Air Quality Management District (SCAQMD) thresholds. A small reduction may be expected from reduced auto use in downtown.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS
Local Emissions. The Project would not result in local impact criteria pollutant emissions (NO_X, PM10, and PM2.5) that would exceed South Coast Air Quality Management District (SCAQMD) thresholds. A small reduction may be expected from reduced auto use in downtown. The Project would not be considered a Project of Air Quality Concern nor would it result in a concern related to mobile air toxics.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS
California CO standards. Operation of the project would not result in an exceedance or	Alt 2, 3, 4, & 5. MSF 1,	LTS	None required.	LTS

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Table ES-2. Summary of Operation Period Environmental Impacts[a,b]

Impact/Description	Alternative	Significance Prior to Mitigation	Mitigation/Description	Impact Significance After Mitigation
exacerbate an existing exceedance of an AAQS.	2, 3, & 4			
TAC/MSAT. The Project would not result in meaningful changes in traffic volumes, vehicle mix, basic project location, or any other factor that would cause an increase in MSAT impacts of the Project.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS
Onsite Stationary Sources. The Project would not result in on-site stationary source emissions of TACs.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS
Onsite Hazardous Materials. On site storage and use of potentially hazardous materials would follow applicable regulations and requirements. The Project and MSF operation would not expose receptors to significant levels of TACs.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS
Occupancy of Sensitive Individuals. The Project would not involve the use of hazardous materials on its vehicles nor would times of exposure for passengers waiting at stations result in any hazard.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS

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Table ES-2. Summary of Operation Period Environmental Impacts[a,b]

Impact/Description	Alternative	Significance Prior to Mitigation	Mitigation/Description	Impact Significance After Mitigation
Odor. The Project and MSF operation would not create objectionable odors at nearby sensitive receptors.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS
3.3 Cultural Resources				
Archaeological resources. Operation would not involve activities that could cause an adverse change in the significance of archaeological resources.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	NI	None required.	N/A
Historical resources. Design and installation of the project elements would be consistent with the period of significance for many of the historic properties residing in the project area. Careful design integration of project elements would maintain that consistency.	Alt 2, 3, 4, & 5. MSF 2 TPSS	LTS	**MM-CUL-O1:** The City of Los Angeles shall ensure that design and installation of all project facilities and elements that are adjacent to or abutting historical resources or within a historic district will be consistent with the surrounding design context, through consultation with and approval by the City of Los Angeles Office of Historic Resources. Project facilities and elements shall be designed for consistency and installed to be in compliance with *the Historic Downtown Los Angeles Design Guidelines* and the *Broadway Streetscape Master Plan*, as applicable. **MM-AES-O3** **MM-AES-O1, MM-AES-O3, & MM-CUL-O1** for TPSS and MSF	LTS

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Table ES-2. Summary of Operation Period Environmental Impacts[a,b]

Impact/Description	Alternative	Significance Prior to Mitigation	Mitigation/Description	Impact Significance After Mitigation
Paleontological resources. Operation of the project would not have the potential to disturb unknown significant paleontological resources.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	NI	None required.	N/A
3.4 Energy				
Direct Energy Consumption, Conservation, and Standards. Energy use would not be wasteful, inefficient, or unnecessary. Energy resources for streetcar operation would be partially offset by reduced auto travel.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS
Indirect Energy Consumption, Conservation, and Standards. Operation would reduce VMT resulting in energy savings and reducing indirect operational energy consumption. Estimated savings in VMT-related energy would range from 7.566 to 10,634 gallons of gasoline, annually.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	NI	None required.	N/A
Demand for New Energy Supplies and Infrastructure. Operation would result in a negligible increase in the overall demand for electricity within the LADWP service area as planned for in the City's power system. Project electricity requirements are acknowledged to be within planned LADWP supply estimates.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS

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Table ES-2. Summary of Operation Period Environmental Impacts[a,b]

Impact/Description	Alternative	Significance Prior to Mitigation	Mitigation/Description	Impact Significance After Mitigation
3.5 Geology				
Seismicity. Seismic hazards cannot be completely avoided, but operation would not exacerbate existing seismic hazards or create new hazards due to the negligible risk of disturbing faults.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS
Liquefaction and Lateral Spreading. The Project would be susceptible to liquefaction and lateral spreading.	Alt 2, 3, 4, & 5. MSF 1	LTS	**RCM-GEO-C1**	LTS
Landslides. Operation of the Project would not involve earth movement and therefore would not create new or exacerbate existing landslide hazards.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS
Expansive Soils. Operation of the Project would occur on City streets and within an MSF site that would have been constructed to address hazards associated with expansive soils.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS
Erosion. Operation of the Project would occur on City streets and within an MSF site that would be resurfaced or landscaped. The potential for erosion would be avoided.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	NI	None required.	N/A

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Table ES-2. Summary of Operation Period Environmental Impacts[a,b]

Impact/Description	Alternative	Significance Prior to Mitigation	Mitigation/Description	Impact Significance After Mitigation
Landform Alteration. Operation would not alter a distinct or prominent geologic or topographic feature.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	NI	None required.	N/A
3.6 Greenhouse Gas Emissions				
Greenhouse Gas Emissions. The Project would generate greenhouse gas emissions. However, reductions in automobile use resulting from improved transit service in downtown Los Angeles would result in a net reduction of GHG emissions. Estimated GHG reductions range from 371 to 866 metric tons of CO_2 e annually.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS
Plan Consistency. The Project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS
3.7 Hazards and Hazardous Materials				
Risk of Upset/Emergency Preparedness. Operation would entail the routine use of potentially hazardous materials for daily functions within the selected MSF site. All applicable regulatory procedures and practices would be followed to properly use, control and store such materials.	MSF 1, 2, 3, & 4	LTS	None required.	LTS

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Table ES-2. Summary of Operation Period Environmental Impacts[a,b]

Impact/Description	Alternative	Significance Prior to Mitigation	Mitigation/Description	Impact Significance After Mitigation
Human Health Hazards. The use and transport of any hazardous materials, such as lubricants and cleaning solvents, required for the operation would be minimal, would comply with applicable regulations, and would therefore not pose a danger to sensitive receptors.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS
3.8 Land Use				
Land Use Plan Consistency. The Project would not conflict with any land use plans or policies.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	**RCM-LU-O1: *Downtown Design Guidelines*.** Design of the Project would comply with all applicable guidelines and requirements included in the *Downtown Design Guidelines* and Public Benefit projects performance measures, if necessary.	LTS
Land Use Compatibility. The project elements and features would be consistent with their surroundings and would not divide, isolate, or substantially disrupt a community or neighborhood.	Alt 2, 3, 4, & 5.	LTS	None required.	LTS
Creation of an MSF on one of the four candidate sites would be done to be in satisfaction of the Los Angeles Municipal Code (LAMC), Section 14.00, Article 4, pertaining to Public Benefit Projects.	MSF 1, 2, 3, & 4	LTS	**MM-LU-O1: LAMC Public Benefits Projects Conformity.** The Project shall adhere to the requirements of LAMC Section 14.00 in all respects and shall follow all applicable procedures. All applicable performance standards or alternative compliance measures shall be addressed and all procedures for review and approval shall be followed. The City of Los Angeles BOE shall ensure the carrying out of the mitigation	LTS

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Table ES-2. Summary of Operation Period Environmental Impacts[a,b]

Impact/Description	Alternative	Significance Prior to Mitigation	Mitigation/Description	Impact Significance After Mitigation
			measure.	
3.9 Noise and Vibration				
Streetcar Noise. Noise generated from streetcar operations (i.e., wheel squeal) would exceed FTA Moderate impact criteria and CEQA significance threshold at Disney Hall. Adequate mitigation is available.	Alt 2 & 4	S	**MM-NV-O1:** The contractor shall install a "low impact" frog, for special trackwork as well as wheel dampers if wheel squeal occurs.	LTS
Streetcar Noise. Noise generated from streetcar operations would exceed FTA Moderate impact criteria and CEQA significance threshold at several receivers in 2020 and 2040. Impacts are all due to growth in traffic. Mitigation is not available.	Alt 2, 3, 4, & 5.	S	None feasible.	SU
Streetcar Noise. Noise generated from MSF operations would exceed FTA criteria and CEQA significance thresholds at Guadalupe Wedding Chapel (M1), multi-family apartments at Hill and 4th Street (M2) and the Grand Lofts (M4).	MSF 1, 2, & 3	LTS	**MM-NV-O2:** The contractor shall use a "low impact" frog, for all special trackwork within the MSF. Rail lubricators shall be installed at all tight radius curves within the MSF to reduce and control wheel squeal.	LTS
Streetcar Noise. TPSS operations would not exceed FTA criteria or CEQA significance thresholds.	TPSS	LTS	**MM-NV-O3:** TPSS units shall be ordered specifying adherence to the Contract Specification noise level limit of 50 dBA at 50 feet from any side of the TPSS unit.	LTS

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Impact/Description	Alternative	Significance Prior to Mitigation	Mitigation/Description	Impact Significance After Mitigation
Streetcar Vibration. Streetcar operations could result in vibration impacts inside some sensitive spaces such as theatres and concert halls.	Alt 2, 3, 4, and 5.	LTS	**MM-NV-O4:** If the track would be less than 1 foot from any part of a building foundation, mitigation measures, such as a resilient mat installed under the trackbed or comparable design measure, would be used.	LTS
3.10 Transportation and Traffic				
Intersection Capacity. Intersections would operate with delays exceeding LADOT impact significance criteria at the following locations:				
• Hill Street/1st Street • Hill Street/7th Street • Grand Avenue/1st Street	(Alt 2, 3, & 4) (Alt 2 & 3) (Alt 2 & 4)	S	None Available	SU
• None	Alt 5	NI	None required	NI
Bicycle Safety. Bicycle/rail flangeway conflicts would exist on street segments without designated bicycle lanes and where bicycles and streetcars must share the curb travel lane. This occurs at the following locations: • Broadway – 1st to 11th Streets (Alt 2, 3, 4, & 5) • 9th Street – Figueroa to Hill Streets (Alt 2 and 3) • Hill Street – 9th or 7th Street to 1st Street	Alt 2, 3, 4, & 5.	PS	**MM-TRAF-O1** Mitigation to be considered would include: • Signage and pavement markings to alert bicyclists to the presence of streetcar tracks. • Instruct cyclists to cross tracks perpendicular to the direction of the rails for left-turning cyclists; pavement markings shall be provided to encourage perpendicular bicycle turning movements, such as "Copenhagen Left" turns. The signage and/or pavement markings would also clearly identify the presence of the flangeway to cyclists traveling parallel	SU

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Impact/Description	Alternative	Significance Prior to Mitigation	Mitigation/Description	Impact Significance After Mitigation
(Alt 2, 3, 4, & 5) Conflicts consist of the potential for bicycle tires to become lodged in streetcar track flangeways.			to the fixed guideway. • Alert bicyclists to use parallel bike routes (or Class II bike facilities) where available, such as Spring Street as an alternative to southbound Broadway. • Recommended alternate routes.	
Pedestrian Safety. Streetcar operations and station boarding areas would be designed to provide for adequate pedestrian safety while boarding and alighting.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS
Vehicular Safety. Streetcar operations would not increase the risks related to vehicles.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS
Transit System Capacity. Operation would supplement both regional transit services and local circulators.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS

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Table ES-3. Summary of Cumulative Environmental Impacts[a,b]

Impact/Description	Alternative	Significance Prior to Mitigation	Mitigation/Description	Impact Significance After Mitigation
3.1 Aesthetics				
The project would not contribute to a cumulatively considerable significant impact to visual resources.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	NI	None required.	N/A
3.2 Air Quality				
The Project would not have a cumulatively considerable contribution to cumulative impacts with respect to criteria pollutant emissions.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	NI	None required.	N/A
3.3 Cultural				
Archaeological resources. The Project would not have a considerable contribution to significant cumulative impacts on archaeological resources.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	NI	None required.	N/A
Historical resources. The Project would not have a considerable contribution to significant cumulative impacts on historical resources.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	NI	None required.	N/A
Paleontological resources. The Project would not have a considerable contribution to significant cumulative impacts on paleontological resources following mitigation.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	**MM-CUL-C2**	LTS

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Table ES-3. Summary of Cumulative Environmental Impacts[a,b]

Impact/Description	Alternative	Significance Prior to Mitigation	Mitigation/Description	Impact Significance After Mitigation
3.4 Energy				
The Project would not have a cumulatively considerable effect on overall energy supplies, conservation, and the demand for new energy infrastructure.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	NI	None required.	N/A
3.5 Geology				
The Project would not have a cumulatively considerable effect on geologic hazards, erosion, and landforms.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	**RCM-GEO-C1**	LTS
3.6 Greenhouse Gas				
While cumulative greenhouse gas emissions would continue to be significant on a global basis, the Project's contribution would not be considered cumulatively considerable.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	NI	None required.	N/A
3.7 Hazards and Hazardous Materials				
The Project would not have a cumulatively considerable effect on hazardous materials.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	**MM-HM-C1** through **MM-HM-C8**	LTS
3.8 Land Use				
The Project would not have a cumulatively considerable effect on consistency with land use plans and land use compatibility.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS

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Table ES-3. Summary of Cumulative Environmental Impacts[a,b]

Impact/Description	Alternative	Significance Prior to Mitigation	Mitigation/Description	Impact Significance After Mitigation
3.9 Noise and Vibration				
The Project could have a cumulatively considerable effect on noise and vibration levels during construction.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	PS	**MM-NV-C1** through **MM-NV-C16**	SU
The Project would not have a cumulatively considerable effect on noise levels during operation.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4 TPSS	LTS	**MM-NV-O1**through **MM-NV-O4**	LTS
The Project would not have a cumulatively considerable effect on vibration levels during operation.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	LTS
3.10 Transportation and Traffic				
The Project would result in a cumulatively considerable contribution to a significant cumulative impact at the following intersections:				
• Hill Street/1st Street • Hill Street/7th Street • Grand Avenue/1st Street	(Alt 2, 3, & 4) (Alt 2 & 3) (Alt 2 & 4)	SU	None available.	SU

[a] NI = No Impact, LTS = Less Than Significant, PS = Potentially Significant, S = Significant, SU = Significant and Unavoidable

[b] MSF 1 = Broadway and 2nd Street, MSF 2 = Hill Street and 5th Street, MSF 3 = 11th Street and Olive Street (East), MSF 4 = 11th Street and Olive Street (West)

Table ES-3. Summary of Cumulative Environmental Impacts[a,b]

Impact/Description	Alternative	Significance Prior to Mitigation	Mitigation/Description	Impact Significance After Mitigation
Bicycle and Pedestrian Infrastructure and Safety. The Project could have a cumulatively considerable impact related to bicycle infrastructure and safety.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	PS	**MM-TRAF-O1**	PS
Emergency Access. The Project would not result in a cumulatively considerable contribution to cumulative effects related to emergency services.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	N/A
Public Transit. The Project would not result in a cumulatively considerable contribution to cumulative effects related to public transit.	Alt 2, 3, 4, & 5. MSF 1, 2, 3, & 4	LTS	None required.	N/A

[a] NI = No Impact, LTS = Less Than Significant, PS = Potentially Significant, S = Significant, SU = Significant and Unavoidable

[b] MSF 1 = Broadway and 2nd Street, MSF 2 = Hill Street and 5th Street, MSF 3 = 11th Street and Olive Street (East), MSF 4 = 11th Street and Olive Street (West)

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[a] NI = No Impact, LTS = Less Than Significant, PS = Potentially Significant, S = Significant, SU = Significant and Unavoidable

[b] MSF 1 = Broadway and 2nd Street, MSF 2 = Hill Street and 5th Street, MSF 3 = 11th Street and Olive Street (East), MSF 4 = 11th Street and Olive Street (West)

Chapter 1
Introduction

1.1 Purpose of the EIR

The purpose of this Draft Environmental Impact Report (EIR) is to inform decision-makers and the general public of potential environmental impacts that could result from development of the Restoration of Historic Streetcar Service in Downtown Los Angeles (Project). A detailed description of the Project is provided in Chapter 2, *Project Description*.

The lead agency for the Project under *California Environmental Quality Act* (CEQA) is the City of Los Angeles (City). Development of the project and its environmental review process are being managed through the joint cooperation of the Los Angeles County Metropolitan Transportation Authority (Metro) and the City's Department of Transportation and Bureau of Engineering. Additional support is being provided by Council District 14 and Los Angeles Streetcar Inc., an independent non-profit agency.

The Project is subject to environmental review requirements under CEQA. The Project may seek funding for construction and project development costs through the Federal Transit Administration (FTA) Capital Investment "Small Starts" Grant Program. Therefore, if federal funding is sought the Project would also be subject to subsequent *National Environmental Policy Act* (NEPA) review process and a separate Environmental Assessment document would be completed for FTA review. If federal funds are sought, the City would be a joint lead agency with FTA under NEPA. The Project would require certain discretionary approvals from FTA (if federal funding is sought), the City, and other governmental agencies.

The major components of the CEQA EIR analysis are provided in Chapter 3, *CEQA Environmental Impact Analysis*. As described in Section 15121(a) and 15362 of the State CEQA Guidelines, an EIR is an informational document that informs public agency decision-makers and the public of the significant environmental effects of a project, identifies possible ways to avoid or minimize or mitigate the significant effects, and describes reasonable alternatives to a project. The purpose of this EIR, therefore, is to discuss potential effects on the environment resulting from the Project that the City has determined may be significant. In addition, feasible mitigation measures are recommended, where applicable, to significant environmental impacts. A Mitigation Monitoring and Reporting Program will be prepared and adopted by the City pursuant to Section 15097 of the State CEQA Guidelines.

The EIR is prepared by or under the direction of the City, which has primary responsibility for approving or carrying out the Project.

1.2 Intended Uses of the EIR

This EIR is being circulated to the public and agencies for review and comment. The document is intended to inform the public and agencies of potential significant environmental effects associated with the Project. It also evaluates reasonable alternatives and proposes mitigation measures to reduce significant effects.

The information in this EIR will be used for discretionary approvals that may be required by the City or other reviewing agencies. Accordingly, this EIR will be used by the City, as the CEQA lead agency, to support decisions regarding project approval. The information in this EIR will be used by other agencies to support decisions regarding whether to grant the permits or approvals that may be necessary to construct and/or operate the Project. Refer to Section 2.10, *Permits, Approvals, and Intended Uses of the EIR*, for more information.

1.3 Environmental Review Process

An EIR is prepared in two key stages. First, a Draft EIR is prepared and distributed for public and agency review. Once comments on the Draft EIR are received, responses to those comments, as well as any additional relevant Project information, are prepared and compiled in a Final EIR. Both of these documents, along with any related technical appendices, represent the complete record of the EIR.

The Final EIR is used by the recommending bodies and the final decision-makers (the City) to weigh the benefits of the Project against the environmental impacts.

This Draft EIR will be circulated for review and comment by the public and other interested parties, agencies, and organizations for at least 45 calendar days. A public meeting on the Project will be held during the review period. Notices regarding the time and location will be published prior to the public meeting date. All comments or questions about the Draft EIR should be addressed to:

William Jones, Environmental Supervisor II
Los Angeles Department of Public Works, Bureau of Engineering
Environmental Management Group
1149 South Broadway, Suite 600
Los Angeles, CA 90015-2213
Email: eng.lastreetcarproject@lacity.org

Following public review of the Draft EIR, a Final EIR will be prepared in response to comments received during the public review period. The Final EIR will be available for public review at least 10 days prior to its certification (State CEQA Guidelines Section 15088(b)). Following certification of the EIR, a Notice of Determination will be filed with the Los Angeles County Clerk (Section 15373 of the State CEQA Guidelines).

1.4 Community/Public Outreach Efforts

Alternatives Analysis

- May 3, 2011 – Agency Workshops
- May 4, 2011 - Inter-agency Meeting
- May 10, 2011 - Downtown Los Angeles Neighborhood Council
- May 17, 2011 - Pre-Scoping Open House and Hearing
- June 21, 2011 – Review of Routes for Initial Screening
- August 2, 2011 – Results of Initial Screening
- November 3, 2011 – Preliminary Results of Final Screening

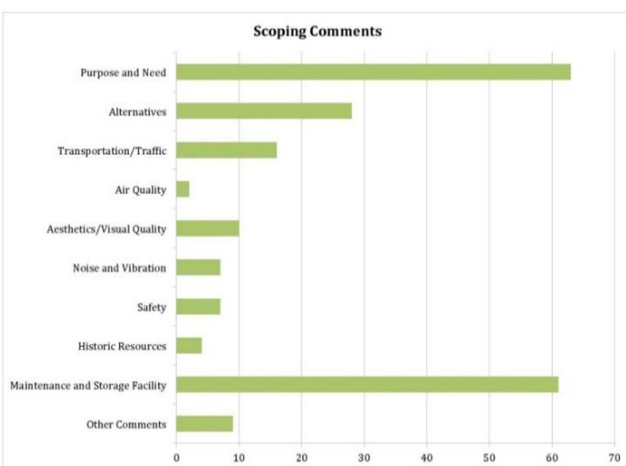
Draft EIR

- January 3, 2013 - Notice of Preparation
- January 3 to February 1, 2013 – Scoping Period
- January 23, 2013 – Scoping Meeting
- June 24 , 2016– Notice of Availability
- June 24 to August 8, 2016 – Public Review Period
- July 12, 2016 - Public Meeting

Metro hosted a series of early scoping meetings and community updates for the Alternatives Analysis in 2011. The City published the Notice of Preparation (NOP) for the EIR on January 3, 2013. The NOP (see Appendix A) provided formal notice of the opportunity to comment in writing and/or in person at the public scoping meeting. The CEQA scoping period started on January 3 and ended on February 1, 2013. Subsequently, the environmental study required updating to include several additional studies that became necessary: an FTA-required STOPS Model ridership estimation, analysis of two additional Maintenance and Storage Facility (MSF) sites, analysis of three proposed locations for a layover track, modification of the Project opening year from 2016 to 2020, modification of the Project horizon year from 2035 to 2040, updating of patronage estimates, and evaluation of two additional build alternatives (7th Street Alternative without a Grand Avenue Extension and 9th Street Alternative without a Grand Avenue Extension).

This Draft EIR is being publicly circulated for 45 days. During the 45-day review period, the public, organizations, and government agencies are encouraged to comment on the environmental issues discussed in this Draft EIR (see Section 1.3). In addition, all of the Project's public outreach efforts comply with applicable federal requirements, in accordance with Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency (August 11, 2000), which requires federal programs and activities to be accessible to persons with limited English language proficiency.

1.5 Areas of Public Concern and Known Controversy



Public comments submitted during the scoping period (January 3 to February 1, 2013) expressed concerns regarding the issues listed in the chart to the left. A detailed description of the comments received during the scoping period is provided in Appendix B. As illustrated in the chart, the areas of greatest concern and controversy were identified as the purpose and need, MSF, and alternatives. Traffic, visual quality, and safety were also identified as key concerns.

1.6 Organization of the EIR

This Draft EIR conforms to the content requirements of the State CEQA Guidelines. A list of the chapters and a brief description of their content is provided here to assist the reader in locating information.

Executive Summary: Located at the front of this document, the Executive Summary provides a brief description of the Project, including an overview of the impact analysis, recommended mitigation measures, and net residual impact. Summary information regarding the alternatives and key conclusions is also provided.

Chapter 1: Introduction: The Introduction provides a general orientation regarding the purpose of CEQA, as well as this Draft EIR, and includes information on scoping for the Draft EIR, availability of documents, and the review process.

Chapter 2. Project Description: This chapter presents a statement of the project objectives as well as the purpose and need, a description of the location and setting for the Project, a detailed description of the Project's physical and operating characteristics, and related information regarding phasing and implementation.

Chapter 3. CEQA Environmental Impact Analysis: This chapter analyzes potential impacts under CEQA from implementation of the Project. The impact discussion is organized into topical issues that have the potential to result in significant impacts.

Chapter 4. Alternatives to the Proposed Project: This chapter includes a discussion of the proposed alternatives and discusses the comparative merits of each, in accordance with State CEQA Guidelines Section 15126.6.

Chapter 5. Other Environmental Considerations: This chapter evaluates contextual impacts related to growth-inducing effects, impacts found not to be significant, and irretrievable resource impacts.

Chapter 6. Organizations and Persons Consulted: This chapter lists persons who contributed directly to the preparation of this EIR.

Chapter 7. List of Preparers: This chapter lists the persons who prepared this EIR.

Chapter 8. References: This chapter lists the sources of information that were referenced for the analyses contained within this EIR.

Chapter 2
Project Description

2.1 Introduction

This chapter describes the proposed Restoration of Historic Streetcar Service in Downtown Los Angeles (referred to as “Project” or “proposed Project”) and discusses the Project’s objectives and need, alternatives considered, project elements, and construction activities.

The lead agency for the Project under CEQA is the City of Los Angeles (City). Development of the Project and its environmental review process are being managed through the joint cooperation of the Los Angeles County Metropolitan Transportation Authority (Metro) and the City’s Department of Transportation and Bureau of Engineering. Additional support is being provided by Council District 14 and Los Angeles Streetcar Inc. (LASI), an independent non-profit agency. The Project is seeking funding for construction and project development costs through the Federal Transit Administration (FTA) Capital Investment “Small Starts” Grant Program. Funding for the proposed Project is also being sought through public private partnerships, and provided by Los Angeles Community Redevelopment Agency (CRA/LA[1]) funds, and funds raised by the Community Facilities District (CFD).

Simulated View, North along Figueroa Street at Olympic Boulevard (NC3D 2013)

The Project consists of the construction and operation of streetcar service in downtown Los Angeles, California, along a 3.8-mile one-way loop. The project alignment would begin at Hill and 1st Streets, run east along 1st Street, south along Broadway, west along 11th Street, north along Figueroa Street, east along 7th Street or 9th Street, and north along Hill Street, back to its beginning at 1st Street. Potential inclusion of a Grand Avenue Extension would also provide a two-way alignment spur west along 1st Street, beginning at Hill Street, and continuing south along Grand Avenue to a stop north of 2nd Street.

The project route would cover an area composed primarily of commercial land uses with a mix of residential, public, and entertainment land uses. The Project would link several neighborhoods or

[1] CRA/LA is the Designated Local Authority Successor Agency to the Community Redevelopment Agency of the City of Los Angeles. Successor Agencies were established to facilitate the winding down process of local Redevelopment Agencies following their dissolution effective February 1, 2012.

districts within the Central City Community Plan area of the City of Los Angeles: Civic Center, Bunker Hill, Historic Core, Jewelry District, Financial Core, South Park, Fashion District, and LA Live/Convention Center. This dense urban area is the region's largest employment center and one of the region's largest tourist destinations. Also, the downtown Los Angeles resident population has grown to over 52,000 residents with 6,880 new residents between 2011 and 2013, and 23,520 new residents from 2006 to 2013 (Downtown LA Demographic Study 2013). Streetcar stops would be located approximately every block in the north/south direction and approximately every other block in the east/west direction.

Figure 2-1 shows the regional location of the proposed Project.

The proposed configuration of track and roadway lanes would permit a mixed flow of vehicles and a fleet of electrically powered streetcars. The proposed streetcar service would operate 7 days a week with an estimated three to six streetcars running at any given time. At an estimated operating speed of 6 miles per hour (mph), the run time for a round trip would be approximately 35 to 40 minutes. At morning and evening peak hours, an estimated six vehicles would be in operation, with headways of approximately 7 minutes at a given location. Power to the streetcar vehicles would be provided by approximately five traction power substations (TPSSs) and an overhead contact system (OCS). A maintenance and storage facility (MSF) site would also be constructed as part of the Project.

Five project alternatives are being studied as part of this EIR:

- Alternative 1: No Project Alternative
- Alternative 2: 7th Street With Grand Avenue Extension
- Alternative 3: 7th Street Without Grand Avenue Extension
- Alternative 4: 9th Street With Grand Avenue Extension
- Alternative 5: 9th Street Without Grand Avenue Extension

These alternatives are described in detail in Section 2.4, *Project Alternatives*, and Chapter 4, *Alternatives to the Project*. Figure 2-2 shows the Project's routing within downtown Los Angeles. The number and placement of passenger boarding platforms and traction power substations are subject to change, based upon further development of the project design.

Figure 2-1. Regional Location Map

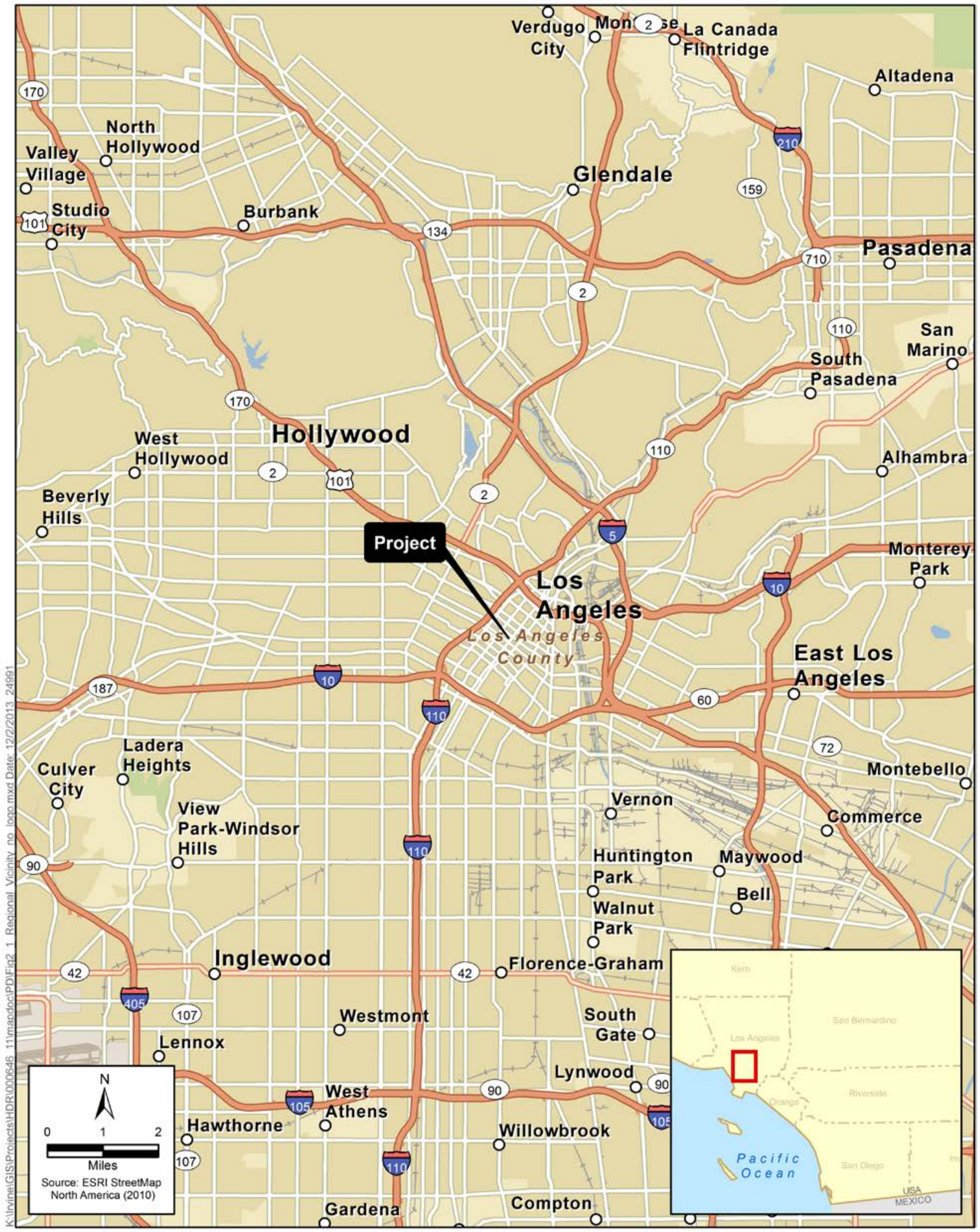


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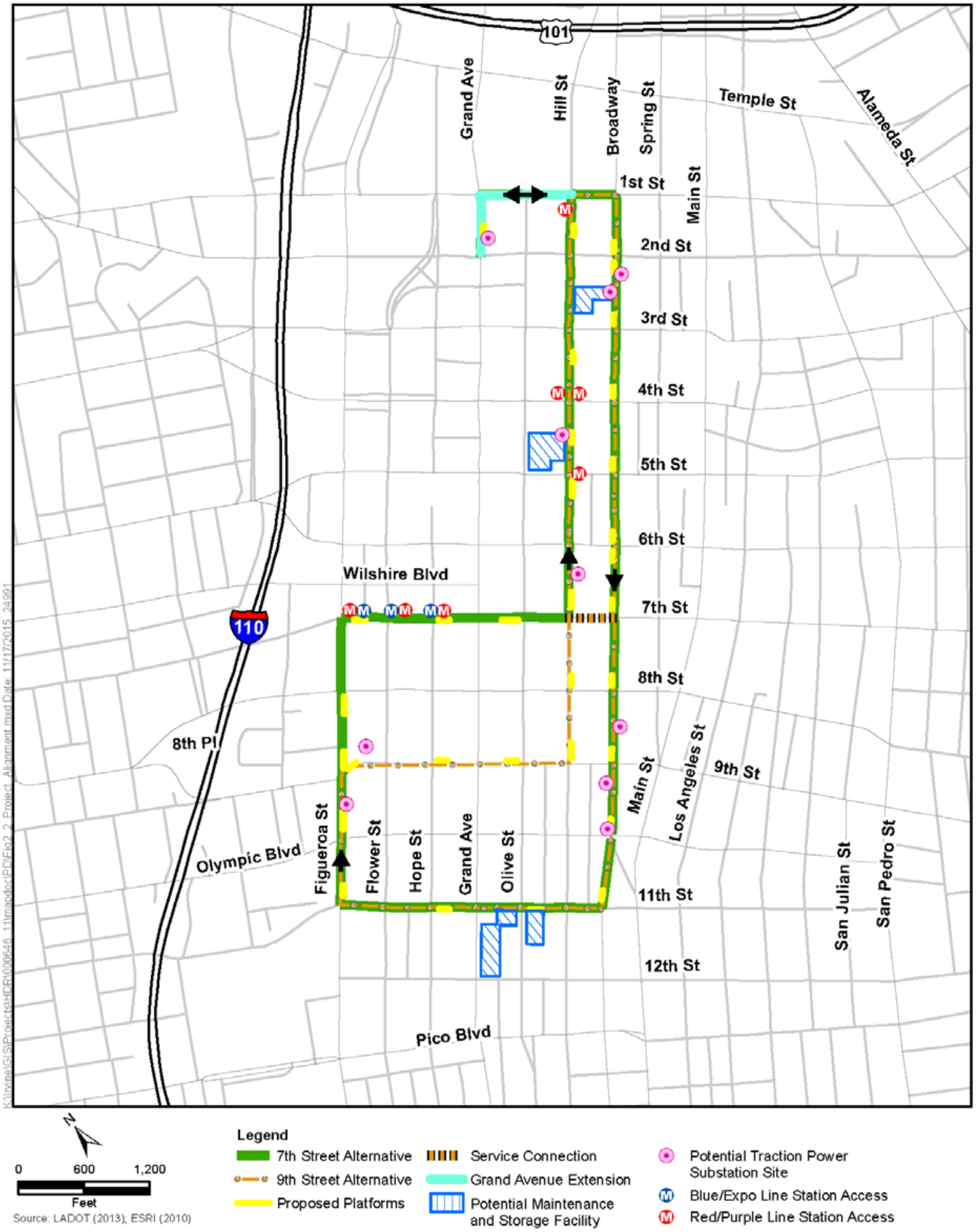
Figure 2-2. Proposed Downtown Los Angeles Streetcar Route[2]



2 Platform locations subject to change in final design.

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2.2 Project History and Background

Looking South down Broadway at the Intersection of 5th Street in 1926.
Streetcars Proceed down the Center of Broadway.
Source: Los Angeles Public Library

At one time, a comprehensive historic streetcar network was operated in Los Angeles by five companies: Los Angeles Railway, Pacific Electric Railway, Pacific Electric Inter-Urban Railway Company, Los Angeles Pacific Railroad, and Los Angeles Redondo Railway Company. This historic streetcar network spanned more than 600 miles of track in the Los Angeles metropolitan area and, by the 1920s, was the largest trolley system in the world (Los Angeles County Metropolitan Transportation Authority 2012). Following World War II, development of single-family tract housing and expanding use of personal automobiles began to reduce the region's reliance on the streetcar system, resulting in declining ridership, and streetcar service on the large network was discontinued one route at a time. By1963, streetcar service was completely discontinued, with diesel buses replacing the last leg of the streetcar network. Since that time, a number of factors, such as rising fuel prices and increasing traffic congestion, have generated a renewed interest in restoring historic streetcar service that would provide enhanced mobility in downtown Los Angeles.

Restoration of downtown streetcar service is an idea that has been considered intermittently for over a decade, by CRA/LA, Metro, and the former Central City Association Red Car Advisory Committee, as well as advocacy groups such as LASI and members of Council District 14's "Bringing Back Broadway" initiative. In the early years of the downtown streetcar movement, the general concept was aimed at creating a tourist attraction by focusing on historically significant resources while providing transportation services. However, after considerable research and outreach, the scope of streetcar development has been broadened to include promoting revitalization, reactivating historic resources, and supporting general economic development in downtown Los Angeles.

In 2006, CRA/LA finalized the *Feasibility Study for the Resurrection of the Red Car Trolley Services in the Los Angeles Downtown Area* (CRA/LA 2006), which analyzed various alignment concepts, determined the feasibility of restoring the streetcar system, and identified engineering considerations, ridership estimates and needs, potential costs of implementing the streetcar, and potential funding sources. As contracted by CRA/LA, Metro moved the development process forward and assisted CRA/LA with the *Restoration of Historic Streetcar Service in Downtown Los Angeles Alternatives Analysis* (Metro 2012), which was completed in January 2012. That document analyzed a multitude of potential alignments in its initial screening process, leading to the development of seven feasible alternatives. Those alternatives were then evaluated across a variety of factors, including capital and operating cost, design constraints, service area, connections to transit and other modes of transportation, environmental impacts, and economic development opportunities. A final screening analysis identified 7th Street, which was designated at that time by the CRA/LA Board of Commissioners and the Los Angeles City Council as the Locally Preferred Alternative (LPA), for further environmental analysis in this EIR. The 7th Street Alternative was selected because of favorable ridership estimates, a high combined average of daily boardings, and total boardings per mile; low capital, operating and maintenance costs; and local community support.

The LPA included an alternative alignment that would use 9th Street instead of 7th Street, between Figueroa Street and Hill Street. Los Angeles Department of Transportation (LADOT) has implemented vehicle lane reductions on 7th Street in order to provide space for bicycle lanes, as part of the *City of Los Angeles 2010 Bicycle Master Plan*. Recognizing this development, the 9th Street Alternative is therefore included to provide an alternative to the 7th Street route.

Further information regarding these and other alternatives that have been considered can be found in Chapter 4.

2.3 Project Objectives and Need

The primary objectives of the proposed Project are to enhance mobility through expanded transit circulation service and support the growth and revitalization of downtown Los Angeles. By connecting residential and employment areas, shopping districts, civic resources, cultural institutions, historic districts and landmarks, and entertainment venues, and by providing connectivity to other transit services, the proposed Project would improve mobility and accessibility with a new transportation mode for people who live and work in the downtown area, as well as for visitors.

2.3.1 Statement of Need

The Project's study area, as outlined in the Alternatives Analysis (AA) report (Metro 2012), is bounded by Cesar Chavez Avenue, Chinatown, and Union Station to the north; Washington Boulevard to the south; Los Angeles Street to the east; and the Harbor Freeway (Interstate 110) to the west. In evaluating the activity centers, districts, characteristics, demographics, and travel conditions within the study area, the following themes have emerged that reinforce the need for the Project:

- A topographically and geographically disconnected pedestrian network exists in the downtown area.
- There is a lack of an available centralized downtown transit route to complement the Downtown Area Short Hop [DASH] service.
- Increased demand for transit service is emerging from development and population, household, and employment growth in downtown that existing facilities cannot serve.

- Traffic patterns and parking demands both currently constrain intra-downtown mobility by automobile.
- Underutilized land and historic buildings could be brought to higher and better uses if additional means of access were available.

The restoration of historic streetcar service in downtown Los Angeles would provide a convenient mode of transit, with frequent service on a simple route configuration. The streetcar's easily understood route and ease of use would encourage ridership by residents, workers, and visitors within the downtown area. The Project would provide a direct and convenient means for local circulation, connecting to activity centers, parking, offices, and residences. With low floor-level or near-level boarding, the streetcar would improve transit accessibility for persons with mobility impairments, allowing them to board the streetcar without assistance or use of a bus kneeling feature or "flip-out" ramp.

The following sections discuss how the proposed Project would meet the specific needs identified above.

2.3.1.1 Topographically and Geographically Disconnected Pedestrian Network

The project study area extends approximately 3 miles, from the Los Angeles Convention Center at the southwestern end to Union Station and Chinatown at the northeastern end, with various commercial, residential, and entertainment areas in between. Within downtown Los Angeles, size, topography, and the street grid make it difficult to make convenient walking connections between many of the activity centers and districts, which inhibits pedestrian circulation. For example, Bunker Hill, which is the commercial core of downtown Los Angeles, rises 90 to 120 feet above surrounding areas, creating steep grades (15 to 30 percent) that are difficult for pedestrians to navigate. The street grid similarly impedes pedestrian circulation. Blocks in downtown Los Angeles (650 by 400 feet, on average) are longer than most central business districts, compared with examples such as downtown San Francisco (300 by 300 feet) or downtown Portland, Oregon (225 by 225 feet). Interruptions in the grid network are common, which also inhibit pedestrian trips. The combined effect of these topographic and geographic factors means that many internal downtown trips exceed comfortable walking distances (typically 0.25 to 0.5 mile), inhibiting pedestrian circulation between districts such as from South Park to Grand Central Market (1.2 miles, approximately 25 minutes walking time, based on an estimated pace of approximately 3 miles per hour), the Jewelry District to Bunker Hill (0.6 mile, approximately 16 minutes walking time, including a 14 percent grade), or from the Pershing Square subway station to the Orpheum Theater (0.6 mile, approximately 13 minutes walking time).

2.3.1.2 Lack of Centralized Downtown Transit Route

There is an abundance of transit services in downtown Los Angeles, including heavy and light rail and bus service, most of which generally serve long, commute-based travel markets. Metro and other regional operators provide transit service in downtown Los Angeles, but this service relies on a grid-oriented network with dozens of regional lines that make local circulation difficult and complex. Metro operates about 50 bus routes in the study area. There are nine other transit operators within the study area. However, currently no single line ties together the major activity centers in downtown Los Angeles. With the exception of Metro, LADOT, Montebello Bus Lines, and Gardena Municipal Bus

Lines, these transit operators run mostly peak commute hour, peak-direction commuter bus service in and out of the downtown area. The Regional Connector project (currently under construction) would provide accessibility and mobility to the Bunker Hill area, which would not be provided to other areas within downtown.

LADOT operates a local downtown-serving shuttle bus service (DASH) in the study area along five routes that serve defined sets of destinations. It should be noted that LADOT is restructuring its downtown routes to better serve a changing downtown. However, DASH currently does not tie together the activity centers in downtown that would be served by the proposed streetcar; a "one seat ride" among these locations is not possible using the DASH service. An enhanced local transit network is needed that would complement DASH service.

In addition, the proposed Project would supplement and improve the efficiency of the rail and bus service by providing transit connections in downtown once passengers disembark from regional transit services, and by locating stops at shorter intervals at strategic locations near activity and transit nodes. The proposed Project would augment existing bus and rail service by local circulator coverage that connects communities in the downtown area. The Project would complement the efficiency and effectiveness of existing transit services, including DASH, by adding a travel option that connects employment and commercial districts, tourist destinations, and residences along the alignment. The combination of proposed streetcar service and existing transit service, particularly DASH, would provide frequency and reliability of service that would make midday travel by transit more efficient and attractive to users.

2.3.1.3 Increased Transit Demand from Development and Population, Household, and Employment Growth

Significant levels of growth have been occurring and are projected to continue in downtown Los Angeles during the next 20 years. The projected growth will generate greater travel demand for both local transit services and roadway capacity that will tax the current supply. Over the past decade, significant new commercial and residential development and associated population growth have occurred in downtown Los Angeles, which has increased the strain on the transportation system. Between 2000 and 2012, a total of 9,391 housing units were constructed in the study area (City of Los Angeles 2013b). Since 1999, 22,703 residential units have been developed in downtown Los Angeles. In addition, 10,369 units are currently under construction. According to estimates, the current population of downtown Los Angeles is 59,187, which would rise to 76,918 once the projects currently under construction are completed (Downtown Center Business Improvement District 2015). Nonresidential projects, such as LA Live, have been constructed and numerous retail and commercial developments are in the planning stages, suggesting considerable future growth and development (Metro 2012).

According to estimates from the Southern California Association of Governments (SCAG), by 2035 the population of the study area is projected to grow by more than 10 percent, and employment is projected to grow by more than 6 percent. Furthermore, transit-dependent populations such as low-income individuals and the elderly are expected to increase by 18 and 34 percent, respectively, by 2035 (SCAG 2012a). This growth in development, population, and employment will increase the trips to/from and within downtown Los Angeles and place a strain on the local transportation system. The proposed Project would provide additional transit service to assist in accommodating the needs of projected population and employment growth in the study area.

2.3.1.4 Traffic Patterns and Parking Demand

The combination of short trip lengths to destinations within downtown Los Angeles and normal commuter parking requirements creates a high demand for parking, and this, coupled with the fact that on-street parking is difficult to find, compounds mobility issues in parts of the study area. Because further projected growth will be concentrated in the downtown area, the proposed Project, in addition to other transit services, is needed for shorter, local trips that connect residential areas, employment centers, and retail services. Users would be able to “park once” and circulate throughout downtown by using transit instead of making multiple short trips by automobile and parking in multiple on-street parking spaces. By augmenting the current local transit services in the downtown core, the proposed Project would provide yet another opportunity for transit use rather than the automobile and it would also facilitate increased pedestrian access.

2.3.1.5 Interconnectivity to Underutilized Land and Historic Buildings

Despite considerable development and investment over the past decade, some commercial spaces and historic buildings remain that could be brought to higher and better use in the study area, particularly along Broadway and in South Park. These areas, because of their separation distance, are geographically isolated from the primary employment centers of Bunker Hill and the Financial District and have reduced local transit circulation opportunities and fewer connections to Metro Rail. Approximately one million square feet of potential commercial and residential space is currently unused in historic buildings, primarily on and around Broadway (*Los Angeles Times* 2015). It would be beneficial to strengthen the connection between Broadway, South Park, and the major activity centers in downtown.

2.3.1.6 Restoration of Streetcar Service

Restoring the streetcar service would provide a strong connection between Los Angeles’ past, which was built around the streetcar, and its goals for a more transit-oriented future, through the following:

- Restore streetcar service which was historically important to the development of the Los Angeles County region;
- Establish a visible focal point for local transit service which is easily identifiable and distinctive; and
- Convey a sense of permanency through the implementation of fixed-guideway transit.

2.3.2 Project Objectives

The proposed Project is intended to fulfill the following objectives:

- **Land Use and Economic Development:** Support the growth and revitalization of downtown Los Angeles, including its historic districts, through the following:
  - Revitalize geographically isolated, underutilized areas.
  - Promote smart, sustainable growth that helps to reduce sprawl.
  - Implement transit policies that support the City's General Plan.
  - Integrate transit and land use within the study area.
  - Encourage historic restoration and transit-oriented development.
  - Strengthen downtown's economic competitiveness.
  - Foster a more livable downtown.
  - Create a distinctive tourist draw that would expand the economic base of the City and maximize tax revenue.
  - Improve transit access to existing and planned developments.
  - Improve interconnectivity between residential areas, employment and activity centers, and retail services.
  - Help to create a vibrant outdoor ambience that would attract residents and visitors to the streets of downtown Los Angeles.
- **Mobility**: Enhance mobility and transit circulation in downtown Los Angeles through the following:
  - Connect major districts, destinations, and activity centers.
  - Improve transit coverage and circulation.
  - Provide easy to use, localized, high-frequency service.
  - Serve transit-dependent populations.
  - Improve transit accessibility and operational efficiency.
- **Congestion Relief**: Create pedestrian-oriented amenities interconnected with sidewalks and public space that will enhance downtown Los Angeles' distinct identity through the following:
  - Reduce dependency on automobiles by implementing transit services and improving walkability.
  - Increase mobility and accessibility for visitors and people who live and work in downtown.
- **Environmental Benefits**: Protect and improve aspects of the downtown core through the following:
  - Preserve the area's historic significance and revitalize the Historic Core.
  - Reduce automobile trips within downtown.

2.4 Project Alternatives

Five project alternatives are being considered, as described below. These include four build alternatives for the proposed Project – 7th or 9th Street alignments, either with or without a Grand Avenue Extension. In addition, a No Project Alternative is being evaluated. Alignment details by street segment are described in Section 2.5, *Street Segments*.

2.4.1 Alternative 1 – No Project Alternative

The No Project Alternative is required by Section 15126.6(e) of the State CEQA Guidelines. It also represents conditions in the project study area that would remain if the proposed Project would not occur. The No Project Alternative would not achieve any of the objectives of the proposed Project. An analysis of the potential impacts of the No Project Alternative, as defined by CEQA, is presented in Chapter 4, *Alternatives to the Project*.

2.4.2 Alternative 2 – 7th Street with Grand Avenue Extension

The 7th Street with Grand Avenue Extension Alternative would construct and implement streetcar service along an alignment that would begin on Grand Avenue north of 2nd Street adjacent to the Disney Concert Hall, then continue northward until turning east on 1st Street. From 1st Street, the streetcar would turn south on Broadway, traveling to 11th Street where it would turn west and continue on to Figueroa Street. The streetcar would then turn north on Figueroa Street and travel to 7th Street, where it would turn east. From 7th Street, the streetcar would turn north on Hill Street, then continue back to 1st Street, completing the circuit by turning west on 1st Street to return to the streetcar stop on Grand Avenue.

2.4.3 Alternative 3 – 7th Street without Grand Avenue Extension

Alternative 3 would construct and implement streetcar service along a one-way loop that would begin at 1st and Hill Streets, run east along 1st Street, south along Broadway, west along 11th Street, north along Figueroa Street, east along 7th Street, and north along Hill Street.

2.4.4 Alternative 4 – 9th Street with Grand Avenue Extension

The 9th Street with Grand Avenue Extension Alternative would follow the same alignment as the 7th Street with Grand Avenue Extension Alternative, but it would run eastbound on 9th Street between Figueroa Street and Hill Street, rather than 7th Street, and the project alignment would still begin and terminate on Grand Avenue, north of 2nd Street.

2.4.5 Alternative 5 – 9th Street without Grand Avenue Extension

Alternative 5 would follow the same alignment as the 7th Street without Grand Avenue Extension Alternative, but it would run eastbound on 9th Street between Figueroa Street and Hill Street, rather than 7th Street.

2.5 Street Segments

The following sections describe the streetcar alignment along each street segment.

2.5.1 Grand Avenue

The Grand Avenue Extension, if selected, would begin at a station on Grand Avenue north of 2nd Street, adjacent to the Walt Disney Concert Hall. The streetcar would operate on a single-track alignment in an exclusive streetcar-only lane that would occupy approximately 300 feet of the easternmost southbound lane of Grand Avenue. A median platform for passenger on- and off-loading is proposed just north of 2nd Street to the east of the tracks. A new mid-block pedestrian crosswalk and traffic signal would allow pedestrian access from both the west and east sides of Grand Avenue. Grand Avenue would maintain the same number of traffic lanes but would have shortened turn lanes to accommodate the track and median platform.

From the Grand Avenue stop, the streetcar would use train-to-wayside-communication (TWC) to call for a streetcar-only traffic signal phase that would allow it to proceed north and turn east onto 1st Street safely and without conflicting with traffic. A TWC system selects a route by activating powered track switches and allows the streetcar operator to automatically communicate with the traffic signal controller for a streetcar-only traffic signal phase. Southbound traffic on Grand Avenue could cross the 1st Street intersection simultaneously with the streetcar turn. From 1st Street, the streetcar would turn south and proceed into the dedicated streetcar stop with use of normal traffic signals.

The Grand Avenue segment would serve the Bunker Hill District, located generally between 1st Street on the north, Hill Street on the east, 4th Street on the south, and Figueroa Street on the west. Major downtown destinations within Bunker Hill include the Walt Disney Concert Hall, the Museum of Contemporary Art, the Broad Art Museum, and several high-rise office towers, senior and market-rate housing developments, hotels, and commercial/retail centers.

2.5.2 1st Street

1st Street is a modified Boulevard II oriented in the east/west direction. The streetcar would operate along two tracks on 1st Street, if the Grand Avenue extension is selected. For westbound travel, the track would operate in the southernmost westbound through lane of 1st Street. The westbound streetcar would cross Olive Street then curve into the southernmost left-turn lane of the two left-turn lanes. Bicycle signs and pavement markings would be installed where tracks would cross the eastbound bicycle lane at Grand Avenue and at Broadway to ensure that bicycles would cross safely at an angle. No platforms or streetcar stops are proposed along 1st Street; therefore, there would be no bicycle lane conflicts.

The eastbound track would be placed in the southernmost through lane north of the existing bicycle lane, which was recently installed as part of the *City of Los Angeles 2010 Bicycle Plan* (City of Los Angeles 2011a). The eastbound track would cross Olive and Hill Streets before turning south onto Broadway.

In the absence of the Grand Avenue Extension, a single track in the eastbound direction would operate between Hill Street and Broadway. No streetcar track or operations would occur west of Hill Street.

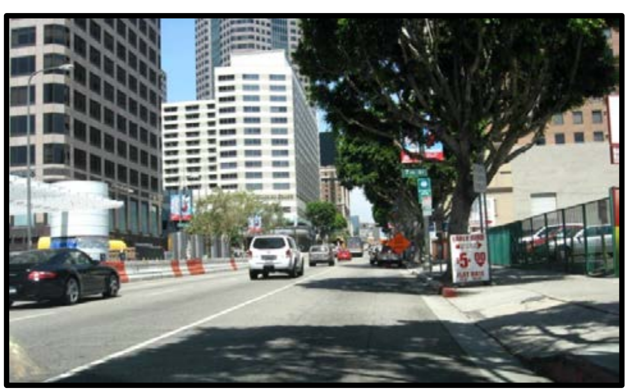
2.5.3 Broadway

Broadway at West 7th Street, Looking South (ICF 2013)

Broadway is a modified Avenue II oriented in the north/ south direction. Under the *Broadway Streetscape Master Plan,* Broadway would be reconfigured to provide one southbound through lane and two northbound through lanes. The streetcar would operate in mixed flow with vehicular traffic on a track in this newly configured southbound through lane. Platforms for passenger boarding would be located on the west side of the proposed streetcar track on the curb proposed as part of the *Broadway Streetscape Master Plan*. The streetcar would travel southward within the shared southbound through lane at platforms that could be located at or near intersection corners or mid-block, until reaching 11th Street. Curb extensions proposed as part of the *Broadway Streetscape Master Plan* would connect to each platform, and buses would share stops with the streetcar as feasible. Southbound right turns would be permitted from turn pockets in the southbound travel lane at 3rd, 5th, 8th, and 11th Streets. Platforms are currently proposed to be located at the following street blocks: 2nd Street, 3rd Street, 4th Street, 5th Street, 6th Street, 7th Street, 8th Street, 9th Street, Olympic Blvd, and 11th Street; the final number and placement of platforms will be determined as further design of the Project proceeds. Sidewalks along the west side of Broadway would extend approximately 8 feet, and there would be estimated 8-foot parking lanes between bulb-outs on both sides of Broadway.

2.5.4 11th Street

11th Street is a modified collector street oriented in the east/west direction. Between Figueroa Street and Flower Street, 11th Street has a single eastbound lane and two westbound through lanes. On-street parking is prohibited along both sides of the street. East of Flower Street, this facility becomes a one-way westbound street consisting of two through lanes. On-street parking is allowed along both sides with some restrictions, east of Hope Street. The proposed My Figueroa Streetscape Project (see below) would also reconfigure 11th Street. Changes would include a bicycle lane along the north side of 11th Street, a reduction to one traffic lane westbound, and alterations to the existing curbs along both sides of the street. The project design is intended to be consistent with these improvements to the extent practicable. From Broadway, the streetcar would make a right turn onto westbound 11th Street where the newly configured through lane (under the My Figueroa Streetscape Project improvements) would serve as a shared lane for streetcar and passenger vehicle traffic. Platforms are currently proposed at or near the corners of 11th Street/Olive



Figueroa Street, Looking North to West 7th Street (ICF 2013)

Street and 11th Street/Hope Street; final locations are subject to further design of the Project. These platforms would be constructed within the parking lane by tying into the proposed curb.

2.5.5 Figueroa Street

Figueroa Street is a modified Boulevard II oriented in the north/south direction. North of Olympic Boulevard, Figueroa Street is a one-way northbound street. The My Figueroa Streetscape Project would include a combination of northbound and southbound one-way bike paths (travelling in the direction of adjacent traffic) within the existing roadway and next to the curb, separated from vehicular traffic lanes by physical barriers, and Class II bicycle lanes with painted buffers along a 3-mile stretch of Figueroa Street through downtown and South Los Angeles from 7th Street to Martin Luther King Jr. Boulevard. The My Figueroa Streetscape Project bicycle and streetscape facilities would be compatible with the proposed streetcar where possible. The streetcar would operate within the east side, northbound Figueroa Street travel lane, which would be shared with buses and extend north toward 7th Street or 9th Street. Platforms along Figueroa Street are currently proposed to be located along the east side of Figueroa Street but west of the proposed bicycle lane, at the intersections of Figueroa Street with 11th Street, Olympic Boulevard, 9th, and 8th Streets; final locations of platforms are subject to further development of the project design and the selected project alternative. Under the 9th and 7th Street Alternatives, the streetcar would turn right onto eastbound 9th or 7th Street, respectively.

2.5.6 9th Street

9th Street is a modified Avenue II and III oriented in the east/west direction. It is a one-way eastbound street. It consists of four eastbound travel lanes with on-street parking allowed along both sides with some restrictions. Along the 9th Street segment, the streetcar is currently planned to make stops at platforms located at or near the corners of the intersections of 9th Street with Figueroa, Hope, and Olive Streets; final locations will be determined by further project design. Under the 9th Street Alternatives, the service connection between Hill Street and Broadway would remain on 7th Street.

2.5.7 7th Street

7th Street is a modified Avenue II oriented in the east/west direction. Under the *City of Los Angeles 2010 Bicycle Plan*, bicycle lane improvements were implemented along 7th Street, reconfiguring the roadway to include one through traffic lane and one bicycle lane in each direction. A second westbound traffic lane starts just west of Grand Avenue. Under the 7th Street Alternatives, the proposed streetcar would operate within the eastbound lane of 7th Street and travel east to Hill Street. The streetcar is currently planned to make stops at platforms located at or near the corners of the intersections of 7th Street with Figueroa, Hope, and Olive Streets; final locations will be determined by further project design. As the bicycle lanes are proposed between the through and on-street parking lanes, streetcar platforms would replace some on-street parking spaces and extend out to the tracks. The bicycle lane is planned to be routed between the streetcar platform and the sidewalk because the resulting distance between the nearest rail and the platform would be inadequate for a bicycle lane. A currently planned railing along the back of the platform with designated crossing areas would control bicycle and pedestrian crossings. The final configuration of the street layout would be determined by further design of the Project and implementation of the City's *7th Street Improvement Plan*.

7th Street would also provide a double-track non-revenue service connection, one eastbound and one westbound, between Hill Street and Broadway. This service connection is not planned to be used for regularly scheduled service but would rather be available if a disruption were to occur on the north or south portions of the project route. This connection could also be used to enhance special-event service.

2.5.8 Hill Street

Hill Street at West 6th Street, Looking North (ICF 2013)

Hill Street is a modified Avenue II oriented in the north/south direction. The streetcar would turn left from either 9th or 7th Streets into the easterly northbound lane of Hill Street and travel north to 1st Street. The roadway would be reconfigured and restriped to preserve as much on-street parking and loading areas as practicable while also maintaining two northbound through traffic lanes.

Platforms along Hill Street would be located within the parking lane or on the existing sidewalk. Platform locations would be chosen to avoid conflicts with existing driveways; therefore, they could be located mid-block or on the far side of intersections, as required. At the north end of the Hill Street segment, the streetcar would either make a turn to the east on 1st Street or transition into the left-turn lane to westbound 1st Street on its way back to the Grand Avenue Extension platform. If the Grand Avenue Extension is selected, a service connection would also be provided to turn right from Hill Street to eastbound 1st Street, which would provide flexibility to bypass Bunker Hill, if necessary. For the 7th Street Alternatives, platforms are currently planned at 7th, 5th, mid-block between 4th and 3rd Streets, and at 2nd Street. If one of the 9th Street Alternatives is selected, additional platforms would be provided at 9th and 8th Streets. An optional platform is being considered mid-block between 4th and 5th Streets. The final number and placement of platforms will be determined by further project design.

2.6 Elements of Streetcar Alternatives

This section describes the elements of the proposed streetcar system that are common to the build alternatives of the Project. A summary of the vehicle type, platform layout, support facilities such as the OCS, the TPSS, MSF, signaling, and proposed intersection improvements are described below.

2.6.1 Vehicles

Typical Streetcar (Portland, Oregon) (HDR 2013)

The Project's operating plan calls for 7-minute headways (i.e., time spacing between vehicles) during peak periods. A fleet of six electrically powered streetcars is currently estimated to be needed to operate at that frequency. An estimated two additional streetcars would serve as backup vehicles to the operating fleet, for a total estimated fleet size of eight vehicles. Each vehicle would measure approximately 65 to 85 feet long and be approximately 13 feet high. The streetcars would be articulated to make tight turns and have a capacity of approximately 100 passengers. The streetcars would be similar to the modern streetcar models that are currently used in other cities in the United States. The streetcars would be designed with low floors to be compliant with the *Americans with Disabilities Act* (ADA). Operating speeds would be at the maximum posted downtown speed limit, which is currently 25 mph on all streets other than Figueroa Street, between 5th Street and Pico Boulevard, where it is 30 mph. Power for the streetcars would be transmitted by overhead catenary wires supported by poles along the streetcar tracks (see Section 2.6.3.1).

2.6.2 Platforms

The streetcars would make stops at approximately 25 platforms along the alignment; the number of platforms is subject to change based upon further design of the Project. With varying configurations, the platforms would generally consist of a raised concrete pad approximately 8 feet wide by 70 feet long. Some of the streetcar platforms would be shared by Metro, other regional operators, and LADOT DASH buses. Shared platforms would generally be approximately 120 feet long, though physical constraints on some street segments could limit them to approximately 70 feet long. The maximum curb height would be approximately 8 to 14 inches. Platforms could be located either in the center of the roadway or adjacent to the sidewalk, along the curb. Platforms would transition from the sidewalk to

Simulated View along Broadway, between 5th and 6th Streets (NC3D 2013) match or nearly match the floor height of the streetcar vehicles. Platforms would be designed and constructed to connect to the sidewalk in a way that meets ADA and building access requirements.

The platforms would resemble typical bus stops, would have distinctive signage, and may include amenities such as shelters, benches, Light Emitting Diode (LED) signs displaying minutes to expected streetcar arrival, and kiosks containing information on the route, schedule, and fares. The design and location of the platforms would be developed so as to be consistent with related projects that may construct streetscape elements such as curb extensions, bus stops, or other street amenities along the project alignment. Platform locations would be chosen to avoid conflicts with existing driveways; therefore, they could be located mid-block or on the far side of intersections, as required.

2.6.3 Support Facilities

2.6.3.1 Overhead Contact System

Sample Cantilever OCS Unit (HDR 2015)

Sample Span OCS Unit (HDR 2015)

There are two potential configurations for the OCS contact wires, which would supply electrical power to the streetcar vehicles. One configuration would be to support the contact wire with a span wire between two poles located on either side of the street, perpendicular to the streetcar track. Another configuration would support the contact wire from cantilever arms connected to single poles. Configurations would be site-specific and be made based upon engineering design and aesthetic considerations. Both of these configurations could use decorative poles chosen to be consistent with the streetscape along the project alignment. It is possible that poles used for delivering streetcar power could also be integrated with other streetscape infrastructure such as street lighting, traffic signals, or traffic signs. OCS suspension at corner turning locations (e.g., Hill/1st Streets, 1st Street/ Broadway, Broadway/11th Street, 11th/Figueroa Streets, Figueroa/9th or /7th Streets, 9th/ or 7th/Hill Streets) would be more specialized and tailored to each location, possibly requiring a combination of wire-mounting configurations. OCS poles would be approximately 25 to 30 feet tall and would be typically installed at intervals of about 80 to 120 feet, with added poles at turns. Wire heights above the tracks would typically range between approximately 18 and 19 feet in the public right-of-way.

2.6.3.2 Traction Power Substations

The streetcars would be powered by an estimated five TPSS units spaced relatively evenly throughout the alignment to provide Direct Current (DC) power for the streetcars; final number and placement will be determined by further project design. Each unit would be a durable structure containing electrical and electronic equipment. Based on typically-sized equipment used in other cities, the TPSS units would most likely measure approximately 17 feet long by 11 feet wide by 11 feet high, although these dimensions could vary. The footprint needed for the TPSS installations could be up to approximately 250 square feet. The substations, typically rated at 350 kilowatts, would convert 480-volt commercial Alternating Current (AC) power to 750-volt DC power for the streetcars.

Dallas Sample Streetcar
Traction Power Substation Units (HDR 2013)

Each TPSS would typically be placed in an off-street location, such as a parking lot or other suitable site. At one location, 2nd Street and Grand Avenue, the currently recommended potential TPSS site may need to occupy space in the public right-of-way. A number of potential TPSS locations and alternate sites are being evaluated in the event that primary sites are found to be infeasible.

Portland, Oregon

Seattle, Washington

Tucson, Arizona

Recommended TPSS sites have been identified based upon the following criteria.

- Available publically owned property.
- Proximity to equal (0.95 mile) spacing increments.
- Maintenance access—easy access from street, with identified entrance/exit access points.
- Lot size.
- Proximity to mainline.
- Maintaining site driveways and access points.

Potential TPSS sites are shown in Figure 2-2 at currently estimated locations.

2.6.3.3 Maintenance and Storage Facility

The proposed Project would require an MSF to provide a location for secure storage of streetcar vehicles when they are not in operation, and regular light maintenance of the vehicles to keep them clean and in good operating condition.

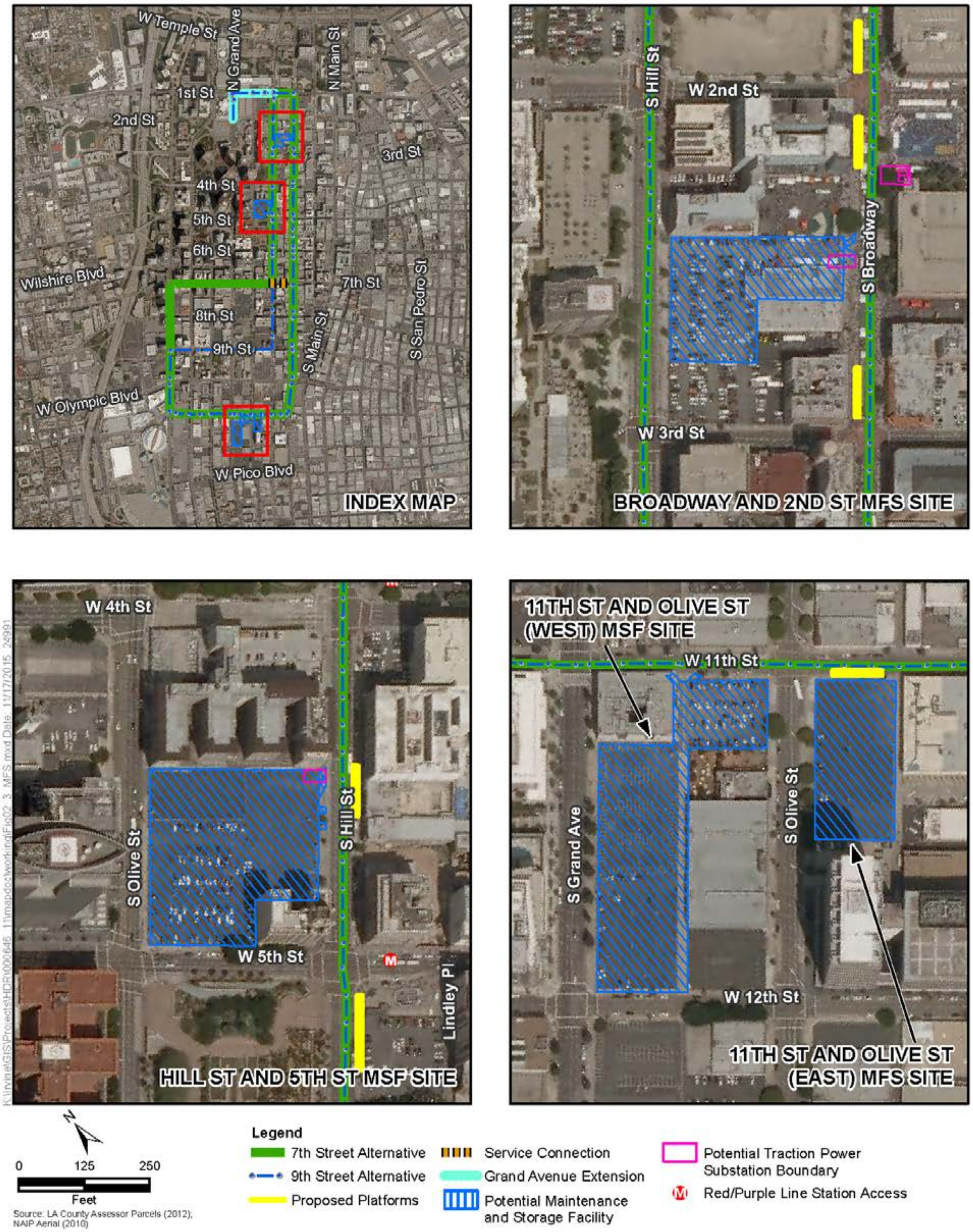
The MSF is currently planned at one of four potential sites: (1) the southwest corner of 11th and Olive Streets; (2) the southeast corner of 11th and Olive Streets; (3) the northwest corner of Hill and 5th Streets; or (4) the west side of Broadway between 2nd and 3rd Streets (see Table 2-1 and Figure 2-3). Should all of the currently evaluated sites become unavailable, another site will be identified and evaluated. The MSF would consist of an enclosed building and an outdoor area where routine inspections, maintenance work, and light repairs could be performed. The facility would have sufficient storage capacity to handle the needs of the streetcar system, with paved maintenance aisles, a pit track, overhead crane, paved truck access, staff offices, parts storage areas, and a machine shop. An employee parking area may also be provided. A maintenance building for a system of the size of the proposed Project would generally be 12,000 to 18,000 square feet, approximately two to three stories tall, contain tracks inside a garage enclosure for maintenance of the vehicles, and be constructed to comply with the City's *Green Building Code* and also meet minimum Leadership in Energy & Environmental Design (LEED) certification requirements. Acquisition of private property for an MSF would probably not require the entire parcel; however, until such time as a site design and configuration has been completed, the project evaluation assumes full acquisition would be needed. Streetcars would gain access to the facility from a short segment of track that would be connected to the mainline. A storage area outside of the maintenance facility would provide an area for overnight cleaning (i.e., wash facility with clarifier) and secure storage of streetcar vehicles. The photograph below shows an example of an MSF site.

Seattle South Lake Union Streetcar Maintenance and Storage Facility (HDR 2013)

Table 2-1. Potential Maintenance and Storage Facility Properties Currently Under Consideration

Potential MSF Locations	Address	Assessor's Identification Number	Parcel Square Footage	Existing Use
Broadway and 2nd Street Total area: Approximately 57,719 square feet	233 S Broadway	5149-009-018	18,960	Unoccupied single-story commercial building (former Goodwill)
	229 S Broadway	5149-009-014	18,960	Surface parking lot
	236 S Hill St	5149-009-011	14,168	Surface parking lot
	240 S Hill St	5149-009-025	5,631	Surface parking lot
	237 S Broadway	5149-009-004	9,990	Wedding chapel
Hill Street and 5th Street Total area: 98,690 square feet	431 S Hill St	5149-027-013	32,460	Surface parking lot
	440 S Olive St	5149-028-003	9,900	Surface parking lot
	427 W 5th St	5149-028-012	29,040	Surface parking lot
	441 S Hill St	5149-028-013	11,130	Surface parking lot
	415 W 5th St	5149-028-011	4,760	Surface parking lot
	447 S Hill St	5149-028-009	5,040	Surface parking lot
	437 S Hill St	5149-028-004	6,360	Surface parking lot
11th Street and Olive Street (East) Total area: 51,197 square feet	1124 S Olive St	5139-019-011	10,138	Surface parking lot
	218 W 11th St	5139-019-015	4,759	Surface parking lot
	1100 S Olive St	5139-019-040	31,500	Surface parking lot
	Alley		4,800	Alley
11th Street and Olive Street (West) Total area: 103,300 square feet	1120 S Grand Ave	5139-020-024	64,000	Surface parking lot
	1114 S Grand Ave	5139-020-016	9,300	Surface parking lot
	1105 S Olive St	5139-020-025	18,000	Surface parking lot
	Alley		12,300	Alley
Source: Metro, 2015, ICF 2015				

Figure 2-3. Potential Maintenance and Storage Facility Locations Currently Under Consideration



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2.6.3.4 Signaling

Streetcar movement would be governed by "line-of-sight" operations, with passage through intersections controlled by traffic signals. Line-of-sight operations means that streetcars would be controlled by an operator who would proceed when traffic signals and traffic allow, and who would stop for traffic signals, station stops, pedestrians, bicycles, and other vehicles. A separate signal head may be provided at intersections for streetcar control. The streetcar control signal would be interconnected with the traffic signals and would clearly indicate to the streetcar operator when it is clear for the streetcar to move or required to stop.

Transit signals (i.e., special signals separated from the general purpose signal system) would be necessary when the streetcar requires a special traffic signal phase to maneuver so as to avoid conflicting with general traffic. These signals are also required at locations where a track switch is used by the streetcar operator to choose between different paths. Most of the route for the proposed Project would not have transit signals. Operation of transit signals would be separated from the normal traffic signals in order to not be confusing to the general public.

Where necessary, TWC would be used to limit conflicting traffic at turning locations and provide streetcars a dedicated signal phase to move safely across an intersection.

2.6.3.5 Potential Layover Locations

Locations on the streetcar route are needed to provide space for a streetcar to layover out of traffic, to allow dispatch according to a regular schedule, or to provide space for a streetcar to be temporarily taken out of service. In addition, these locations would allow the streetcar operator to take a short break. For the route currently proposed, two such locations would be desirable.

Under the Grand Avenue Extension (Alternatives 2 and 4), at the stop on Grand Avenue at 2nd Street, a single track in an exclusive median is currently proposed. This configuration would allow the streetcars to complete their round trip and layover out of traffic for several minutes until the next scheduled departure. The streetcar vehicles will have operator cabs on both ends of the cars so that they are able to operate in either direction of travel.

In addition to the Grand Avenue location, four other locations have currently been identified as potential layover sites. At these locations, a short section of parallel track would need to be provided to allow space for the streetcar to move off the main line while the layover is taking place. These sites include (a) Broadway, near-side at 2nd Street; (b) Broadway, far-side at 2nd Street; (c) Broadway, mid-block between 2nd and 3rd Streets; and (d) 11th Street, near-side at Hill Street.

All of the above currently considered layover locations are being evaluated as part of further design advancement of the Project, and are therefore subject to change with regard to location and/or track layout.

2.7 Project Design Elements

2.7.1 Proposed Intersection Improvements

In order to properly integrate streetcar service into the flow of traffic within downtown, maintain adequate operating conditions for all modes, and provide conditions to achieve optimum streetcar travel times, several improvements to the downtown street system are proposed. The following traffic signal improvements (see Section 3.10 for further details) are currently proposed for Alternatives 2, 3, 4, and 5:

- Protected northbound right-turn phase at the intersection of Grand Avenue and 1st Street (Grand Avenue Extension).
- Mid-block pedestrian crosswalk traffic signal on Hill Street between 1st Street and 2nd Street to allow streetcar to move from right lane to left-turn lane (Grand Avenue Extension).
- Protected northbound left-turn phase at the intersection of Hill Street and 1st Street (Grand Avenue Extension).
- Protected eastbound left-turn phase at the intersection of Hill Street and 7th Street (all alternatives).
- It is assumed that existing right-turn lanes from southbound Broadway to 3rd, 5th, 8th, and 11th Streets are to be permanently maintained.
- It is assumed that a “Pedestrian Scramble” phase would be added to 7th Street and Figueroa Street as part of a 7th Street streetscape improvement project. It is also assumed that a right-turn lane would be provided on eastbound 7th Street from the Streetcar Platform to Flower Street.
- Mid-block signal with pedestrian crosswalk added to Grand Avenue between 1st and 2nd Streets for access to median platform (Grand Avenue Extension).

Green signal time allocated to streetcar movement would be redistributed, within the existing signal cycle length, at the following currently anticipated locations; the amount of time would vary according to operating conditions at each intersection:

- Grand Avenue/1st Street
- 1st Street/Hill Street
- Broadway/2nd Street
- Broadway/8th Street
- Broadway/Olympic Boulevard
- 11th Street/Hill Street
- 11th Street/Hope Street
- Figueroa Street/9th Street
- Figueroa Street/8th Street
- Hill Street/5th Street
- Hill Street/6th Street

Protected right-turn arrows are currently expected to be provided to clear right-turn queues before or after the crossing of pedestrians, at the following locations:

- Broadway/3rd Street
- Broadway/8th Street
- Figueroa Street/7th Street

Right-turn only pocket lanes are currently proposed to be added or maintained at the following locations:

- Broadway/3rd Street – a right-turn only lane from southbound Broadway at 3rd Street.
- Broadway/5th Street – a right-turn only lane from southbound Broadway at 5th Street.
- Broadway/8th Street – a right-turn only lane from southbound Broadway at 8th Street.
- Broadway/11th Street – a right-turn only lane from southbound Broadway at 11th Street.
- Hill Street/6th Street – a right-turn only lane from northbound Hill Street at 6th Street.

The eastbound right-turn storage lane is currently expected to be extended on eastbound 7th Street to southbound Flower Street to minimize queue spillover. Figure 2-4 depicts the proposed intersection improvements within the downtown Los Angeles Streetcar route. It should be noted that further development of the Project's design and operating characteristics may result in a change to one or more of the above currently estimated improvements.

2.7.2 Proposed Lane Reconfiguration

In order to accommodate the streetcar, Hill Street would need to be reconfigured; however, the proposed changes would not reduce the existing number of travel lanes along Hill Street. On-street parking and/or center turn lanes along certain segments would be removed. Reconfiguration would include bump outs at some street corners to accommodate station platforms, which would create and allow for full-time on-street parking/loading spaces along the east side of Hill Street.

2.7.3 Streetcar Safety Elements

The Project would be designed to maximize pedestrian safety and accessibility through the implementation of measures that would minimize or avoid vehicular/pedestrian and vehicular/bicycle conflicts. Design elements of the streetcar system may include, but would not be limited to, the following: streetcars equipped with lighting and audible warning devices, train to wayside communication (TWC), signage, striping, and wayfinding.

Operators would also develop transit safety programs, with the goal of raising streetcar safety awareness in the community.

2.7.4 Bus Service Coordination and Traffic Rerouting Notifications

The City would coordinate with bus operators, including, but not limited to, Metro, DASH, Montebello Bus Lines, and Gardena Municipal Bus Lines, prior to implementation of designs that could result in necessary rerouting of buses.

Before any major rerouting changes are made as a result of the Project, fliers would be provided on buses at least 2 weeks in advance notifying riders of route modifications. In addition, hoods would be placed over bus-stop signs, also notifying riders of what modifications have been made to the bus route.

2.8 Construction Activities

2.8.1 Introduction

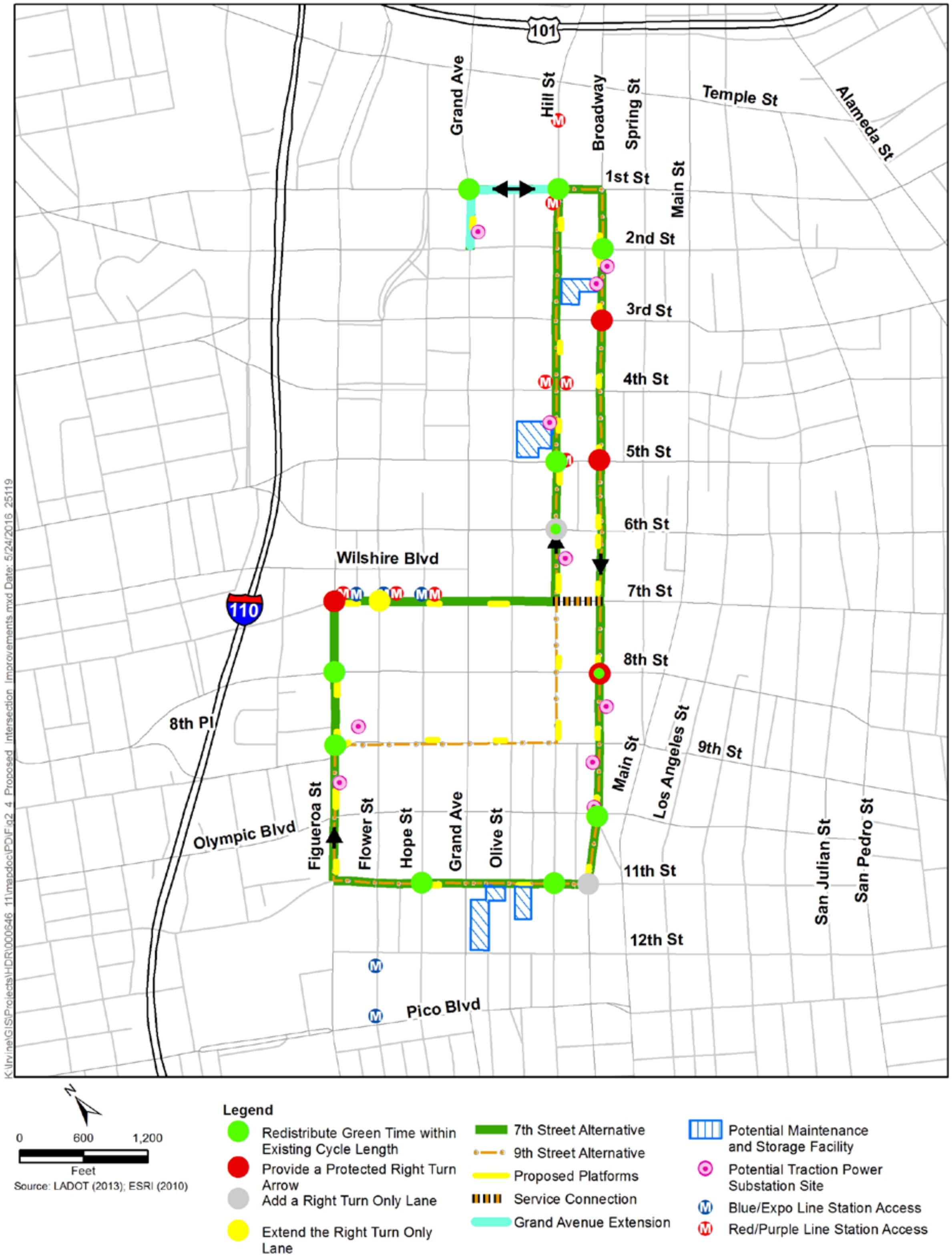
Construction activities for the Project would be managed from a contractor's office that would be maintained throughout the construction process. The contractor's office may use portable trailers or vacant office space in an existing building. Parking for approximately 20 to 30 vehicles would be needed for construction management personnel and visiting agency or owner representatives and visitors. The location of the contractor's office will be chosen prior to the start of construction.

Construction activities associated with the Project would affect portions of Grand Avenue, 1st Street, Broadway, 11th Street, Figueroa Street, 7th Street or 9th Street, and Hill Street, as well as the selected MSF and TPSS sites. Construction activities would include pavement removal, utility relocation, excavation, construction of track drains, installation of concrete track slab and rails, construction of station platforms, installation of special track work units, reconstruction of ramps and sidewalks, paving, and striping. Other activities would include installation of specialty system work, such as traction power, overhead contact wire, communications systems, train/traffic signaling, and OCS pole foundations. The remainder of this section offers a typical description of how the construction process would proceed. It should be noted that the actual construction process and schedule will be determined by the contractor at the time of construction; therefore, the information presented below should be regarded as illustrative of similar typical construction processes.

Construction equipment that may be required for the Project would typically include backhoes, small cranes, dump trucks, concrete trucks, paving equipment, rail transporters, bulldozers, graders, cranes, compactors, rollers, drill rigs, paving machines, rail welding equipment, concrete mixers, flatbed trucks, dump trucks to haul dirt, rail installation vehicles, and various hand and power tools. Additional information regarding the construction equipment assumptions used in this EIR analysis is provided in Section 3.2, *Air Quality and Greenhouse Gas Emissions*.

It is estimated that the maximum number of construction workers expected at any one time could be approximately 70 to 75, including utility workers; demolition workers; track workers; paving, sidewalk, and curb workers; construction management; inspectors; and MSF workers.

Figure 2-4. Proposed Intersection Improvements



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Laydown and storage area(s) for construction would be established near the project alignment and would be used for storage of equipment and materials. The laydown and storage area(s) could be located within the right-of-way, in parking lots, or on vacant land, and would be used to store equipment and materials. Four potential laydown and storage areas have been currently identified for evaluation: (1) the southeast corner of 3rd Street and Main Street; (2) northeast corner of 3rd Street and Spring Street; (3) 243 S. Spring Street; and (4) Grand Avenue to Olive Street, between 8th Street and 9th Street. However, these should be regarded as example sites, and other locations within the study area may become available and be chosen. All four example locations are currently being used as parking lots adjoining City streets within one block of the project alignment.

Material removed to make room for the Project and brought in to be installed as part of the Project will use haul routes designated by the LADOT. Potential routes from the north end of the Project could be north along Broadway to enter U.S. 101 or east along 1st Street and then north along Los Angeles Street to enter U.S. 101. From the south end of the Project, a potential route could be west along 11th Street and then south along Los Angeles Street to enter Interstate 10. It should be noted that these routes are illustrative examples; designated routes will be determined by LADOT in consultation with the project contractor.

Project construction activities would typically take place on weekdays between 7 a.m. and 9 p.m., in accordance with *Los Angeles Municipal Code* (LAMC) 41.40(a). To expedite construction, certain construction activities may occur during nighttime, weekend, and holiday periods with the approval of the Board of Police Commissioners pursuant to LAMC Section 41.40(j). In addition, construction within City roadways may occur during peak periods (i.e., 6 a.m. to 9 a.m. and 3:30 p.m. to 7 p.m.) in accordance with Mayor's Executive Directive No. 2 and Bureau of Engineering Special Order No. 001-0406, which provide an exemption to the rush hour roadway construction prohibition for major public works projects having traffic mitigation plans. More information on the Project's Traffic Mitigation Plan can be found in Section 3.10.

Furthermore, construction activities will follow the City Planning Department's new policy (in effect June 2015) to maintain safe adjacent pedestrian access at all times during construction.

The analysis in this document assumes that, unless otherwise stated, the Project would be designed, constructed, and operated following all applicable laws, regulations, ordinances, and formally adopted City standards, including but not limited to the LAMC; LADOT design standards and special provisions; *California Manual on Uniform Traffic Control Devices;* and all City bureaus' design manuals, special provisions, and standard plans, including the latest *Standard Specification for Public Works Construction* (SSPWC or Green Book); the City of Los Angeles Department of Public Works, Bureau of Engineering (LABOE) Brown Book; the *Work Area Traffic Control Handbook*; and any FTA requirements.

2.8.2 Utility Relocation

The approach required to handle utilities during construction would depend on the type, length, number, and complexity of the utility to be constructed, protected, or relocated. Utilities in potential conflict with streetcar construction would include, but are not limited to, storm drains, sanitary sewers, water pipelines, power lines, gas pipelines, electrical duct banks, lighting cables, fiber optic lines, telephone, cable lines, and underground conduits for traffic signals and roadway lighting. To the extent possible, the streetcar trackway and facilities would be located to avoid or minimize conflicts with existing utilities.

In addition to relocation of existing utilities, new utilities would be installed as part of the Project, including electrical duct banks, traffic signal conduits, and electrical service lines. Utility relocation is typically the first work item to be performed on a project. Once utility relocation has been completed within a segment, track work and civil construction will commence, and the utility relocation work crews would move on to the next segment. This method of sequencing typically would allow crews to keep utility relocation work proceeding ahead of the track work, and would keep construction activity confined to two segments at a given time.

2.8.3 Track Construction

All tracks and platforms would be located within the public right-of-way. The majority of the tracks would be located within existing traffic lanes, providing a mixed-flow traffic operation. A short segment of Grand Avenue (under the Grand Avenue Extension) would operate in an exclusive trackway south of 1st Street in order for the operator to stop the vehicle and switch directions safely.

The construction of a trackway within an existing City street would involve the use of embedded track (rails encased in a concrete track slab). Temporary street closures, affecting traffic lanes, driveway access, and bicycle lanes, will be needed. Widely publicized advance notice will be provided to property owners, business owners, tenants, and the general public.

Track work construction would include demolition of the roadway sections being displaced by the track slab, preparation of the track bed, placement of reinforcing-steel (if used), and placement of rails in their exact alignment. Once the rail is positioned using adjustable gauge rods and wrapped with rail boot to minimize stray current leakage, concrete would be poured around the rail and rebar to form the concrete track slab.

It may be possible that precast concrete track panel sections would be used as a method to increase the rate of trackway production. These may be proposed across intersections and other access points that would benefit from a reduced duration of temporary closure.

Construction of station platform foundations, restoration of pavement, and reconstruction of any sidewalks and ramps would begin simultaneously or immediately following the track slab within each segment. Once the track is placed, the pavement is restored, and sidewalks and ramps are reconstructed, the closed roadway lanes could typically reopen to traffic.

2.8.4 Maintenance and Storage Facility

The vehicle MSF would typically be constructed early to midway during track construction to provide the ability to test and store the streetcar vehicles prior to operation. Constructing the MSF may involve a greater level of disruption than that associated with the tracks or stops because it requires excavation; soil remediation, if necessary; street closures; construction staging areas; traffic control; and utility issues related to building a permanent structure. The MSF would be constructed from standard building materials that would be durable and resistant to vandalism.

2.8.5 Streetcar Stop Platforms

The first step of platform construction involves setting forms, installing underground service utilities, and pouring concrete foundations and curbs. The platform surface, along with ramps and steps connecting to the platform, would be constructed next, followed by setting canopies and other platform amenities. Platforms would be constructed from standard building materials that are durable and resistant to vandalism.

2.8.6 Operating Systems Installation

This segment of construction would include installation of rail system elements, such as the OCS for streetcar power distribution (i.e., poles and wiring), TPSS, and communication systems.

Systems installation generally follows the completion of track construction. Finishing for platforms usually overlaps with systems work and is completed prior to final testing and pre-revenue operations. Systems installation work is less disruptive to communities than track construction work. Because the work area would be confined to the track area, a minimal number of partial lane closures are anticipated.

2.8.7 Testing and Start-Up

This stage includes testing of streetcar operations and communication systems, signal coordination, and personnel training prior to the opening of the streetcar system.

2.9 Streetcar Operations

The currently proposed operating plan assumes that the streetcar system would operate 7 days a week with an estimated three to six streetcars running at any given time. The run time for a round trip would be on average approximately 35 to 40 minutes for any of the Build Alternatives. As shown in Table 2-2, at morning and evening peak hours, an estimated six vehicles would be in operation, with headways of approximately 7 minutes at a given location. During non-peak mid-day hours, an estimated four vehicles would be in operation, with headways of approximately 10 minutes. During non-peak evening hours, an estimated three vehicles would be in operation, with headways of approximately 15 minutes. Hours of operation would be 6 a.m. to 12 midnight, Monday through Thursday; 6 a.m. to 2:30 a.m. on Friday; 9 a.m. to 2:30 a.m. on Saturday; and 9 a.m. to 12 midnight on Sunday and holidays. The maximum operating speed is assumed to be 30 mph on Figueroa Boulevard, and 25 mph or less everywhere else.

Table 2-2. Estimated Streetcar Operating Plan

Number of Vehicles	Operating Hours	Headway (minutes)	Monday to Thursday	Friday	Saturday	Sunday/ Holidays
6	AM/PM Peak Hour	7	6 a.m.– 9 a.m. 3 p.m.–6 p.m.	6 a.m.–9 a.m. 3 p.m.–6 p.m.	--	--
4	Mid-Day Non-Peak	10	9 a.m.–3 p.m.	9 a.m.–3 p.m.	9 a.m.–5 p.m.	9 a.m.–5 p.m.
3	Evening Non-Peak	15	6 p.m.– 12 midnight	6 p.m.–2:30 a.m.	5 p.m.–2:30 a.m.	5 p.m.– 12 midnight
Source: HDR 2013.						

2.9.1 Streetcar Ridership

Daily ridership for the proposed Project was projected using the FTA tool for estimating transit ridership: the Simplified Trips-On-Project Software (STOPS) model. Estimates of daily riders and associated auto person miles reduced, as well as the calculated estimates of vehicle miles reduced, for each of the four Build Alternatives, is displayed in Table 2-3.

Table 2-3. LA Streetcar Daily Ridership and Auto Travel Reduction Estimates

Alternative	2015			2020			2040		
	Riders	Auto Person Miles Reduced	Auto Vehicle Miles Reduced[a]	Riders	Auto Person Miles Reduced	Auto Vehicle Miles Reduced[a]	Riders	Auto Person Miles Reduced	Auto Vehicle Miles Reduced[a]
2 – 7th Street with Grand Avenue Extension	5,134	8,448	6,813	5,583	8,893	7,172	7,379	10,672	8,606
3 – 7th Street without Grand Avenue Extension	3,795	6,775	5,464	4,123	7,098	5,724	5,434	8,391	6,767
4 – 9th Street with Grand Avenue Extension	5,301	8,301	6,694	5,773	8,748	7,055	7,660	10,539	8,499
5 – 9th Street without Grand Avenue Extension	3,522	6,042	4,873	3,851	6,352	5,123	5,170	7,592	6,123

Source: Metro, Simplified Trips-On-Project Software (STOPS), 2016.
[a] Auto occupancy conversion factor (1.24 persons/vehicle) taken from the City of Los Angeles Travel Demand Model.

2.10 Permits, Approvals, and Intended Uses of the EIR

Certification of the Final EIR, adoption of a Mitigation Monitoring & Reporting Program (MMRP) and approval of a Locally Preferred Alternative (LPA) by the City of Los Angeles would be required prior to construction and implementation of the Project. Also, if federal funds are sought, the completion of a federally required Environmental Assessment (EA)/Finding of No Significant Impact (FONSI) would be necessary, a process managed under the direction of the FTA, who would be providing funding under its Small Starts Program. Those federal activities would occur subsequent to completion of the CEQA process for which this EIR has been prepared.

This Draft EIR is a project EIR, as defined by Section 15161 of the State CEQA Guidelines and, as such, serves as an informational document for the general public and the Project's decision-makers. The City has the responsibility for preparing and distributing the Draft EIR pursuant to State CEQA Guidelines Section 21067. This EIR would be used in connection with all other permits and approvals necessary for construction and operation of the Project. This EIR would be used by LADOT, Los Angeles Department of Public Works, Bureau of Engineering, the Los Angeles Department of Building and Safety, Los Angeles Bureau of Street Lighting, California Public Utilities

Commission (CPUC), and other responsible public agencies that must approve activities undertaken with respect to the Project.

Implementation of the Project would require discretionary actions and permits from the following agencies.

- Board of Public Works—Recommendations for approval of the Project and certification of the EIR by the City Council.
- City Council—Certification of the EIR, adoption of Findings and Statement of Overriding Considerations, adoption of an MMRP, approval of an LPA, potential approval of eminent domain actions (should they become necessary), and possible amendments to Downtown Street Standards.
- California Public Utilities Commission—Approval regarding safety of rail crossings; the Project design related to tracks, overhead structures, and site planning; and some operational requirements.
- Los Angeles Department of Transportation—Approval of traffic signal/transit priority system improvements and street restriping plans; temporary street closures and haul routes.
- Los Angeles Department of Building and Safety—Issuance of grading haul permits, building permits, certification of occupancy, etc., for improvements such as the MSF and TPSS off the public right-of-way.
- Los Angeles Department of Public Works, Bureau of Engineering (local lead agency)—Approval of all engineering drawings and street-widening plans, related to work within the public right-of-way.
- Los Angeles Department of Public Works, Bureau of Street Services—Responsibility for street maintenance and approvals related to landscape architecture and urban forestry issues.
- Los Angeles Department of Public Works, Bureau of Street Lighting—Approval of lighting design.
- Federal Transit Administration (potential joint lead agency with City of Los Angeles under NEPA)—Approval of Project for federal funding, and approval of an EA/FONSI.
- City Planning Department:
    - Public Benefits Project approval.
    - Approval of Project subject to Urban Design Studio recommendations and Downtown Design Guide.
- Board of Police Commissioners—Approval for certain construction activities during nighttime hours, on weekends, and over holiday periods, pursuant to LAMC Section 41.40(j).
- Additional actions as determined to be necessary.

2.11 Related Projects

Section 15130 of the State CEQA Guidelines stipulates that EIRs must consider the "cumulative impacts" of a Project as well as significant environmental impacts. A cumulative impact is defined as an impact that is created as a result of the combination of the project evaluated in the EIR together with other projects, causing related impacts (State CEQA Guidelines Section 15355). As provided in the State CEQA Guidelines, Section 15130(a)(1), the cumulative impacts discussion in an EIR need not discuss impacts that do not result in part from the project evaluated in the EIR. Cumulative impacts may be analyzed by considering a list of past, present, and probable future projects producing related or cumulative impacts (State CEQA Guidelines Section 15130[b][1][A]).

All projects that are proposed (i.e., with pending applications), recently approved, under construction, or reasonably foreseeable that could produce a cumulative impact on the local environment when considered in combination with the proposed project are included in the EIR. These projects should include, if necessary, projects outside of the control of the lead agency. If a concise list of related projects is not available, cumulative impacts may be analyzed using the regional or area-wide growth projections contained in an adopted or certified general plan or related planning document.

Typically, for purposes of the cumulative impacts analysis contained in this Draft EIR, the related projects list is the approach used. However, as provided in State CEQA Guidelines, Section 15130(b)(1)(B), there are certain circumstances where it is appropriate to include a growth rate into the cumulative impacts analysis (e.g., traffic analysis). Where such circumstances occur, the methodology is explained and it is hereby acknowledged that this approach is conservative and presents a worse-case scenario.

Table 2-4 lists the related projects that were considered in the cumulative impact analysis as of 2015. The list consists of all potential projects located within approximately 2 miles of the study area. The locations of the related projects are depicted on Figure 2-5.

Table 2-4. Related Projects

Map No. (Figure 2-5)	Project Name	Location	Description	Size
1	Ava Little Tokyo (2005-Cen-1993)	200 Los Angeles Street	Condominiums Apartments Retail	570 units 280 units 50,000 sf
2	TenTen Wilshire Expansion (The Icon)	1027 W Wilshire Blvd	Condominiums Retail	402 units 7,428 sf
3	Vibiana Lofts	225 S Los Angeles Street	Condominiums Retail	300 units 3,400 sf
4	Northeast Tower	215 W 9th Street	Condominiums Retail	210 units 9,000 sf
5	Amacon Project	1133 S Hope Street	Condominiums Restaurant	159 units 6,827 sf
6	Mixed-Use Redevelopment Project	745 S Spring Street	Condominiums Retail	247 units 10,675 sf
7	5th & Olive	427 W. 5th Street	Apartments Restaurant	615 units 16,309 sf
8	11th & Hill Project	1115 S Hill Street	Condominiums Restaurant	172 units 6,850 sf
9	Bixel & Lucas	1102 W. 6th Street	Apartments Retail	649 units 3,996 sf
10	8th/Hope/Grand Project	609 W 8th Street	Condominiums Hotel Retail Restaurant	225 units 200 units 30,000 sf 32,000 sf
11	Office Building	1130 W Wilshire Boulevard	n/a	n/a
12	6th & Main Residential Project	601 S Main Street	Condominiums Retail	777 units 20,000 sf
13	Mixed-Use Project (*Herald Examiner*)	1111 S Broadway	Apartments	391 units

Map No. (Figure 2-5)	Project Name	Location	Description	Size
			Office Retail	39,725 sf 49,000 sf
14	Mixed-Use	1148 S Broadway	Apartments Retail	94 units 2,500 sf
15	DTLA South Park Site 1	1120 S Grand Avenue	Apartments Hotel Retail	461 units 300 room 8,700 sf
16	Variety Arts (Mixed-Use)	940 S Figueroa Street	Office Restaurant Bar	3,295 sf 10,056 sf 5,119 sf
17	Restaurant	1036 S Grand Avenue	Restaurant	7,149 sf
18	Residential	459 S Hartford Avenue	Apartments	49 units
19	Mixed-Use	1150 W Wilshire Blvd	Apartments Restaurant	80 units 4,589 sf
20	Mixed-Use	737 S Spring Street	Apartments Pharmacy	320 units 25,000 sf
21	Apartments	1218 W Ingraham Street	Apartments	90 units
22	Condominiums	742 S Hartford Avenue	Condominiums	58 units
23	Mixed-Use	732 S Spring Street	Apartments Pharmacy/Drug Store	400 units 15,000 sf
24	Mixed-Use	340 S Hill Street	Apartments Retail	428 units 6,700 sf
25	Glass Tower Project (Mixed Use)	1050 S Grand Avenue	Condominiums Retail Restaurant	151 units 3,472 sf 2,200 sf
26	Embassy Tower	848 S Grand Avenue	Condominiums Restaurant	420 units 38,500 sf
27	Zen Mixed-Use Project (Kawada Tower)	250 S Hill Street	Condominiums Retail	330 units 12,000 sf
28	Apartments	1027 S Olive Street	Apartments	100 units

Map No. (Figure 2-5)	Project Name	Location	Description	Size
29	Mixed-Use	928 S Broadway	Apartments Retail Live/Work Office	662 units 47,700 sf 11,000 sf 34,824 sf
30	Mixed Use	534 S Main Street	Apartments Retail Restaurant	160 units 18,000 sf 7,000 sf
31	Mixed Use	840 S Olive Street	Condominiums Restaurant Retail	303 units 9680 sf 1500 sf
32	Mixed Use	710 S Grand Avenue	Apartments Retail Restaurant	700 units 27,700 sf 5,000 sf
33	ISAF – Retail/Restaurant	201 S Broadway	Retail/Restaurant	27,765 sf
34	Mixed-Use	400 S Broadway	Apartments Retail Bar	430 units 10,000 sf 5,000 sf
35	1001 S Olive Street Project	1001 S Olive Street	Apartments Restaurant	225 units 5,000 sf
36	Mixed-Use	1000 S Grand	Apartments Restaurant	274 units 12,000 sf
37	Hill Street Mixed-Use	920 S Hill Street	Apartments Retail	239 units 5,400 sf
38	Broadway Mixed-Use	955 S Broadway	Residential Retail	169-218 units 7,000 sf
39	Mixed-Use	801 S Olive Street	Apartments Restaurant	331 units 10,000 sf
40	Olympic & Olive Mixed-Use Project	960 S Olive Street	Apartments Restaurant	263 units 14,500 sf

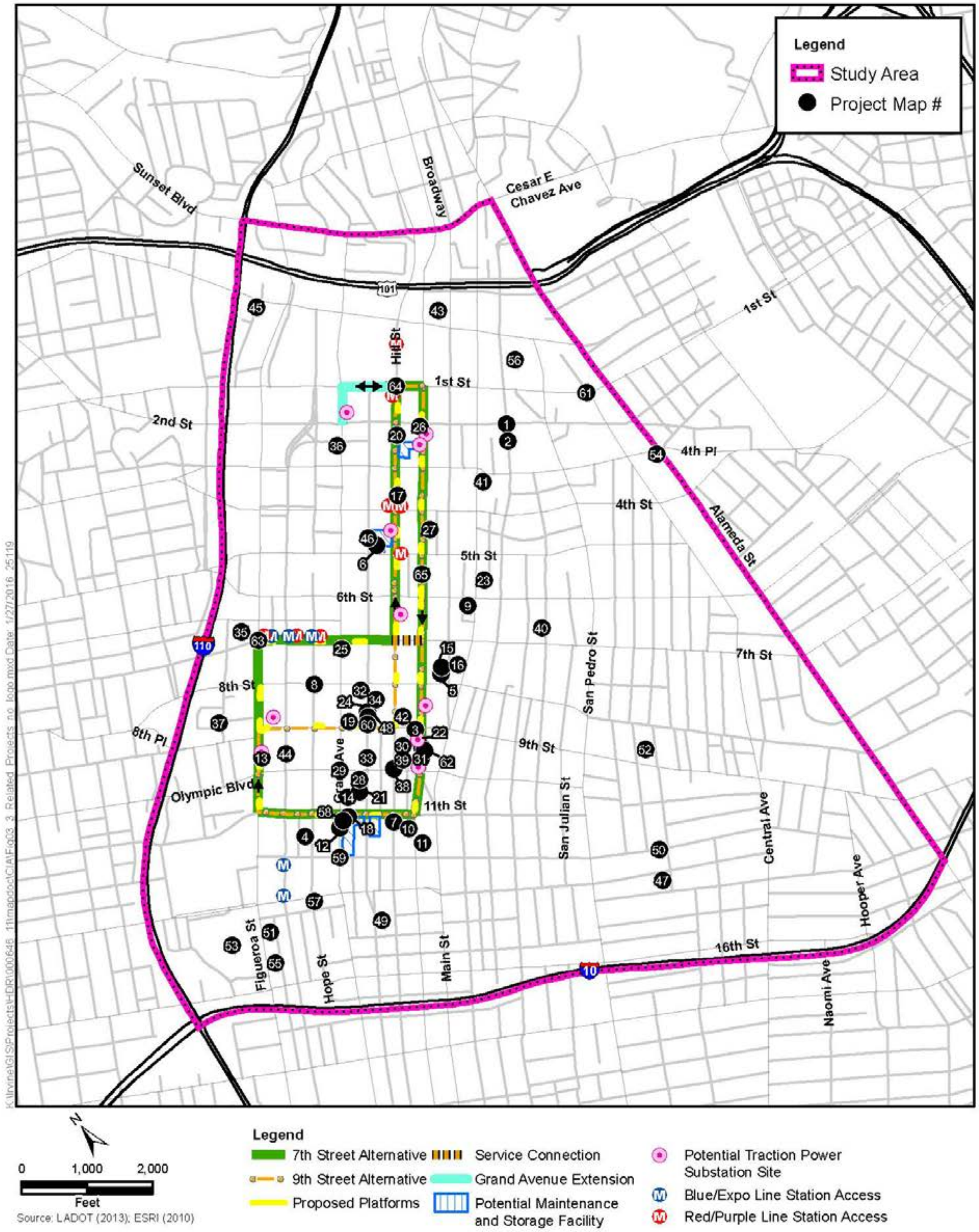
Map No. (Figure 2-5)	Project Name	Location	Description	Size
41	Mixed-Use	820 S Olive Street	Apartments Retail	589 units 4,500 sf
42	Wilshire Grand Project	900 W Wilshire Boulevard	Hotel Office Restaurant/Retail	900 units 400,000 sf 45,100 sf
43	Grand Avenue (Parcel M-2 Rev)	237 S Grand Avenue	Apartments Museum Restaurant	265 units 120,000 sf 5,200 sf
44	Metropolis Mixed Use	851 S Francisco Street	Condominiums Hotel Office Retail	836 units 480 units 988,225 sf 46,000 sf
45	Olympic and Hill Mixed-Use Project	301 W Olympic Boulevard	Apartments Retail Restaurant	300 units 14,500 sf 8,500 sf
46	Mixed-Use	1145 W 7th Street	Condos Apartments Retail	126 units 100 units 7,200 sf
47	Sapphire Mixed-Use	1111 W 6th Street	Apartments Retail Restaurant	362 units 18,959 sf 3,504 sf
48	940 S Hill MU	940 S Hill Street	Apartments Retail	240 units 14,000 sf
49	Clinic at 7th & Wall	649 S Wall Street	Assisted Living Beds Medical Office w/employees	55 beds 55 employees
50	Medallion Phase 2	300 S Main Street	Residential Retail Restaurant	471 units 5,190 sf 27,780 sf
51	Alexan South Broadway	850 S Hill Street	Apartments Retail	300 units 3,500 sf

Map No. (Figure 2-5)	Project Name	Location	Description	Size
			Restaurant	3,500 sf
52	Hall of Justice Reuse Project	211 W Temple Street	Other	456,900 sf
53	FIDM 2006 Campus Expansion	939 S Flower Street	School Campus	95,700 sf
54	Da Vinci (Mixed Use)	327 N Fremont Avenue	Apartments Retail	600 units 30,000 sf
55	Park Fifth Project (formerly)	450 S Olive Street	Condominiums Retail Restaurant	900 units 19,000 sf 19,200 sf
56	Condominium Project	810 E Pico Boulevard	Condominiums	131 units
57	9th/Olive Mixed Use	860 S Olive Street	Condominiums Retail Restaurant	255 units 18,900 sf 6,000 sf
58	Condominiums	1340 S Olive Street	Condominiums	150 units
59	Manufacturing	800 E 12th Street	Manufacturing	320,497 sf
60	Avant (Mixed-Use Project)	1340 S Figueroa Street	Condominiums Retail Restaurant Spa	273 units 11,000 sf 9,000 sf 10,000 sf
61	LAUSD 9th Street Span K-8 Redevelopment Project	820 S Towne Avenue	Elementary enrollment Middle school enrollment	100 seats 405 seats
62	Convention Center Modernization & Farmers Field Project	1110 W 11th Street	Stadium Rentable Event Center Meeting Room	76,250 sf 143,500 sf 102,150 sf
63	Bowling Alley	333 S Alameda Street	Bowling Alley	40,800 sf
64	1500 S Figueroa Mixed Use	1500 S Figueroa Street	Apartments Retail	190 units 10,922 sf
65	LA Civic Center Office	150 N Los Angeles Street	Retail Office Child Care	35,000 sf 712,000 sf 2,500 sf

Map No. (Figure 2-5)	Project Name	Location	Description	Size
66	Onyx (SPR Mixed Use)	1306 S Hope Street	Apartments Retail	419 units 42,200 sf
67	Mixed-Use Project	1150 S Grand Avenue	Condominiums Retail Restaurant	351 units 12,500 sf 12,500 sf
68	G12 Mixed Use	1200 S Grand Avenue	Apartments Retail	640 units 45,000 sf
69	Omni Group Tower	888 S Olive Street	Apartment	283 units
70	Regional Connector	1st Street and Central Avenue to 7th Street and Flower Street	Light Rail	
71	*Broadway Streetscape Master Plan*	Broadway and 2nd Street to Broadway and Olympic Boulevard	Streetscape	
72	Figueroa Corridor Streetscape Project/ *City of Los Angeles 2010 Bicycle Master Plan*	Figueroa Street and 7th Street to Figueroa Street and King Boulevard	Streetscape	
73	Federal Courthouse	1st Street and Hill Street	Courthouse	600,000 sf
74	Department of Water and Power Elysian Park-Downtown Water Recycling Projects	Elysian Park to University of Southern California	Recycled water pipes and facilities	

sf = square feet
Source: LADOT 2015, *Los Angeles Downtown News* 2013, and ICF International 2015.

Figure 2-5. Related Projects Map



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Chapter 3
CEQA Environmental Impact Analysis

Based on public comments, public agency input, and the previously prepared Alternatives Analysis, the City has determined that an EIR would be required for this Project to fulfill the requirements of CEQA. In addition, the City considered agency and public input received during the Notice of Preparation (NOP) comment period (January 3, 2013 to February 1, 2013) and the two scoping meetings held on January 23, 2013 to determine the scope of the evaluation for the EIR.

The comments received during the NOP comment period (see Appendix B) identified 10 issue areas as potentially having significant environmental impacts associated with the Project. These environmental issues and their corresponding section numbers are as follows:

- Section 3.1 Aesthetics
- Section 3.2 Air Quality
- Section 3.3 Cultural Resources
- Section 3.4 Energy
- Section 3.5 Geology and Soils
- Section 3.6 Greenhouse Gas Emissions
- Section 3.7 Hazards and Hazardous Materials
- Section 3.8 Land Use and Planning
- Section 3.9 Noise and Vibration
- Section 3.10 Transportation and Traffic

The Initial Study that was prepared and circulated with the NOP (see Appendix A) concluded that other environmental impact categories would result in a less-than-significant impact or no impact (see Chapter 5). Therefore, only the 10 environmental issue areas noted above are evaluated in this chapter.

Sections 3.1 through 3.10 provide a detailed discussion of: (a) the environmental setting, (b) impacts associated with the project alternatives and also the No Project alternative, (c) cumulative impacts, and (d) both Regulatory Compliance Measures and Mitigation Measures intended to avoid, minimize or reduce significant impacts.

Each section contains the following information:

- **Regulatory Setting** summarizes the regulations, plans, policies, and standards that apply to the Project and relate to the specific issue area in question.
- **Environmental Setting/Affected Environment** describes the physical environmental conditions in the Project's study area relevant to the scope of the particular environmental topic. According to the State CEQA Guidelines, the environmental setting normally constitutes the baseline physical conditions by which the lead agency determines whether or not an impact is significant. For purposes of this document, the baseline is defined as conditions in 2015.

- **Environmental Impact Analysis** discusses the analysis methods, the thresholds of significance, and the relevant construction and operational impacts of the Project. For each impact identified in the EIR, a statement of the level of significance is provided. Impacts are categorized as follows:
  - A designation of **no impact** is given when no adverse changes in the environment are expected.
  - A **less-than-significant impact** would cause no substantial adverse change in the environment.
  - A **less-than-significant impact with mitigation** would or may have a substantial adverse impact on the environment but can be reduced to a less-than-significant level with incorporation of mitigation measure(s).
  - A **significant unavoidable impact** would cause a substantial adverse effect on the environment, and mitigation measures are either insufficient or are not available to reduce the impact to a less-than-significant level.
  - **Level of significance after mitigation** is the remaining impact after the identified mitigation is implemented and has satisfactorily reduced the level of impact.
- **Mitigation Measures:** where it is determined that the Project would generate potentially significant impacts, mitigation measures are recommended to reduce the level of those potential environmental impacts. It also discusses the level of significance of the impacts following implementation of the mitigation measures.

  State CEQA Guidelines, Section 15126.4(A), states that "the discussion of mitigation measures shall distinguish between the measures which are proposed by project proponents to be included in the Project and other measures proposed…which are not included but the lead agency determines could reasonably be expected to reduce adverse impacts if required as conditions of approving the project."

  Project Design Elements have in some cases been identified that would either serve to avoid or minimize impacts.

  This EIR also distinguishes between Mitigation Measures and Regulatory Compliance Measures (RCMs).
- **Regulatory Compliance Measures** are actions or policies that are required by existing local, state, or federal law or regulation. Because RCMs are incorporated into the Project, they do not constitute mitigation measures. RCMs will be reflected in the Mitigation Monitoring and Reporting Program required under Section 15097 of the State CEQA Guidelines to ensure that they are implemented as a part of the Project.
- **Cumulative Impacts** discusses whether the Project's impacts would combine with the impacts of other past, present, or anticipated future related projects and anticipated growth to result in a considerable contribution to a cumulative impact.

3.1 Aesthetics

This section addresses the potential for the Project to result in impacts on aesthetic resources. The information presented in this section is based on the Project's Visual Impact Assessment (VIA), which is hereby incorporated by reference and is included as Appendix D to this EIR.

3.1.1 Regulatory Setting

The Project would be subject to a number of local plans, policies, and regulations related to aesthetics and visual character, including the *California Environmental Quality Act* (CEQA), the *Los Angeles Municipal Code* (LAMC), the *City of Los Angeles General Plan* inclusive of the *Mobility Plan* and *Framework Element*, the *Central City Community Plan*, the *Bunker Hill Specific Plan*, the *Los Angeles Sports and Entertainment District Specific Plan*, the *Convention and Event Center Specific Plan*, the *City of Los Angeles Walkability Checklist*, the *Citywide Urban Design Guidelines*, the *Downtown Design Guidelines*, the *Historic Downtown Los Angeles Design Guidelines*, the *Broadway Streetscape Master Plan*, the *Figueroa Corridor Streetscape Project*, the *City of Los Angeles Tree Preservation Ordinance*, and the *City of Los Angeles Tree Preservation Policy*.

3.1.2 Federal

3.1.2.1 Federal Highway Administration Visual Impact Assessment Guidance

The Federal Highway Administration's (FHWA's) *Visual Impact Assessment for Highway Projects* provides an analytical framework for identifying and assessing qualitative changes to the visual environment that could be introduced as part of a transportation project, regardless of whether the project calls for public transit or highway improvements, parkland improvements, or architectural design interventions. The FHWA guidance is widely used by local, regional, state, and federal planning agencies in California to assess the potential of a project to affect visual quality. It is intended to satisfy the provisions of both NEPA and CEQA as they relate to aesthetic impacts. The process used in the Visual Impact Assessment (VIA) generally follows the guidelines outlined in *Visual Impact Assessment for Highway Projects* (Federal Highway Administration 1988).

3.1.3 State

3.1.3.1 *California Environmental Quality Act*

CEQA requires an evaluation of scenic resources when considering project effects on the environment. The evaluation considers site-specific history, context, and area sensitivity, such as whether light and glare, demolition, and new development could potentially change visual character and affect scenic views and natural and human-made visual resources.

3.1.4 Local and Regional

3.1.4.1 *Los Angeles Municipal Code*

The LAMC sets forth regulations and standards regarding the allowable type, density, height, and design of new development projects. In particular, Chapter 1 of the LAMC, *General Provisions and Zoning*, provides development standards for the various zoning districts in the City of Los Angeles. In addition, the LAMC also sets forth the following specific regulations regarding lighting:

> Section 12.21A.5(k) restricts light spill onto adjacent properties and provides minimum luminance levels for safety within and around parking facilities.

The selected Maintenance and Storage Facility (MSF) site and TPSS installation components of the Project could be considered a development project within the meaning of the LAMC, and it would occupy a land parcel; therefore the LAMC would apply to that element of the Project.

3.1.4.2 *City of Los Angeles General Plan*

The *City of Los Angeles General Plan* is a comprehensive, long-term declaration of purposes, policies, and programs for the development of the City (Los Angeles Department of City Planning 2013c). It sets forth goals, objectives, and programs to provide a guideline for day-to-day policies and meet the existing and future needs and desires of the community while integrating a range of state-mandated elements (e.g., Transportation [Mobility], Noise, Safety, Housing, Conservation). As a part of the General Plan, the City of Los Angeles includes community plans that establish policies and standards for each of the 35 geographic areas in the City. The community plans are focused on specific geographic areas of the City, locally defining the general plan's more general citywide policies and programs. The Project is located with the Central City Community Plan area. For detailed information on applicable general plan policies and objectives related to the proposed Project, see Section 3.8*, Land Use and Planning*.

3.1.4.3 *Central City Community Plan*

As part of the *City of Los Angeles General Plan*, the *Central City Community Plan* guides development within its planning area to create a healthful and pleasant environment. Chapter III, *Land Use Policies and Programs*, serves as the Land Use Element of the General Plan for the downtown area. It includes a number of objectives and policies that address the visual aspects of new development. The Community Plan provides broad urban design objectives for each district in the Community Plan area. It provides urban design objectives for the revitalization of Broadway as a regional-scale, nighttime entertainment district that promotes the preservation and reuse of its rare collection of historic theaters in the downtown area.

3.1.4.4 *Bunker Hill Specific Plan*

The *Bunker Hill Specific Plan* area is bounded generally by Interstate (I-) 110 on the west, 5th Street on the south, Hill Street on the east, and 1st Street on the north. The purposes and intentions of the *Bunker Hill Specific Plan* are to maintain a high quality built form, enhance the district's identity, encourage compatible infill development, and support the improvement of the business environment by providing an attractive public realm.

3.1.4.5 *Los Angeles Sports and Entertainment District Specific Plan*

The *Los Angeles Sports and Entertainment District (LASED) Specific Plan* area is bounded generally by Olympic Boulevard on the north, Flower Street on the east, Pico Boulevard on the south, and I-110 on the west. The purpose of the plan is to provide continued and expanded improvements to the plan area as a major entertainment/mixed-use development and assure orderly infill of public facilities consistent with the intensity and design of the existing district.

3.1.4.6 *Convention and Event Center Specific Plan*

The *Convention and Event Center Specific Plan* area is generally bounded by Chick Hearn Court on the north, Figueroa Street on the east, Venice Boulevard on the south, and I-110 on the west. The purpose of the plan is to enhance the area as a major convention and event center, assure orderly infill of public facilities consistent with the intensity and design of the existing district, and provide public gathering places and a lively pedestrian-friendly environment through the establishment of unique streetscape and open space places.

3.1.4.7 *City of Los Angeles Walkability Checklist*

The *2008 Walkability Checklist for Entitlement Review* was developed by the City Planning Department's Urban Design Studio to encourage City planning staff, project proponents, and community stakeholders to pursue high quality urban design that provides enhanced pedestrian movement, access, comfort, and safety, both in the public right-of-way and on private properties. It specifies urban design guidelines that are generally applicable to all projects requiring discretionary approval for new construction. The Walkability Checklist consists of objectives, goals, and implementation strategies regarding various design elements that are intended to improve the pedestrian environment, protect neighborhood character, and promote high quality urban form. Such topics as sidewalks, crosswalks/street crossings, on-street parking, utilities, building orientation, off-street parking and driveways, onsite landscaping, building façades, and building signage and lighting are addressed and should be considered in the design of a project.

3.1.4.8 *Citywide Design Guidelines*

The *2011 Citywide Design Guidelines* were adopted by the City Planning Commission for use in reviewing applications for commercial, multi-family, mixed use, and industrial projects. The *Commercial Guidelines* (dated May 2011) serve to implement the ten Urban Design Principles, a part of the *Framework Element*. The first two principles deal with mobility and transit access in the public right-of-way. These principles are a statement of the City's vision for the future of Los Angeles, providing guidance for new development and encouraging projects to complement existing urban form in order to enhance the built environment in Los Angeles. One principle is designed with the intended purpose of developing inviting and accessible transit areas, which, among other objectives, would be done by augmenting the streetscape environment with pedestrian amenities and improving the streetscape by reducing visual clutter.

3.1.4.9 *Downtown Design Guide*

With the exception of the Historic Core, which is also governed separately by the *Historic Downtown Los Angeles Design Guidelines* (2002), the *Downtown Design Guide* (DDG) (City of Los Angeles 2009a) provides guidelines for all of downtown. Its overarching goal is to create a better and more livable downtown, in part by promoting sustainable development with a focus on walkability and the formation of "great streets," neighborhoods, and districts offering good connections to transit. Implemented by the City's Planning, Transportation, and Public Works departments, the DDG is tailored to protect and enhance the character of downtown's streetscapes, while respecting the contributions to those streetscapes made by historically significant districts and buildings (namely, massing, scale, and design context). It is intended for application in conjunction with the City's new street standards and emphasizes mobility alternatives to the automobile. Improvement projects undertaken by public agencies must comply with the Downtown Street Standards and all standards and guidelines in the DDG, including sidewalk width, sidewalk configuration, and streetscape improvements.

The DDG contains 11 topic areas: sidewalks and setbacks, ground floor treatment, parking access, massing and streetwall, onsite open space, architectural detail, streetscape improvements, signage, sustainable design, public art, and civic and cultural life.

3.1.4.10 *Historic Downtown Los Angeles Design Guidelines*

The 2002 *Historic Downtown Los Angeles Design Guidelines* (HDLADG) were developed to aid in implementing effective preservation and adaptive reuse projects that protect, highlight, and promote downtown's historic character. Based on the Secretary of the Interior's Standards for the Treatment of Historic Properties, the HDLADG apply to properties located along portions of Main, Spring, Broadway, and Hill Streets, between approximately 3rd Street on the north and 9th Street on the south. This district contains a significant concentration of historic office buildings, department store buildings, and the largest and most architecturally impressive collection of early twentieth-century movie theaters found anywhere in the United States.

Although focused almost entirely on building design, retrofit, maintenance, appropriate building addition design and integration, and signage design, HDLADG guidance is premised on the eventual reintroduction of streetcars and/or trolley lines in the Historic Downtown neighborhood. The HDLADG state that new construction should be planned so that it results in minimal impacts on primary historic building façades.

3.1.4.11 *Broadway Streetscape Master Plan*

The *Broadway Streetscape Master Plan* (BSMP) provides a vision for design improvements along Broadway, a menu of design tools and streetscapes, and other design criteria germane to design within individual street blocks. It presents eight overarching design principles. Among these principles are keeping the new streetscape elements simple, with clean lines and materials, preserving views to historic key buildings, and promoting environmentally responsible design.

Under the provisions of the BSMP, street curb extensions, crosswalk and street paving, transit stop locations, and all signage (including wayfinding and informational signage) require review by the City Planning Department. Also under the BSMP, the Los Angeles Department of Transportation (LADOT) reviews all street right-of-way changes to median strips, crosswalks, bus stop locations, directional and informational signage, bicycle facilities, and any changes to the standard LADOT menu of hardware, colors, and materials.

Although there are numerous non-historic replacement streetlight poles along Broadway, the surviving so-called "Broadway Rose" streetlight bases are considered worthy of retention as part of the streetscape proposed under the BSMP (even though they are not considered historic elements). These bases, as well as historic terrazzo sidewalk installations, historic sidewalk vault lights, basement vault hatch doors, flagpole holders, and utility and ventilation covers, are itemized in the BSMP and are considered character-defining historic fabric.

3.1.4.12 Figueroa Corridor Streetscape Project

The Figueroa Corridor Streetscape Project calls for a series of design improvements along Figueroa, extending between Martin Luther King Jr. Boulevard and West 7th Street, and along 11th Street, extending west from Broadway. This project includes several overall goals, supported by design features, such as the creation of protected bike lanes, a reduction in vehicle traffic lanes, sidewalk/curb retention, and retrofitted streetlights. Among the goals are the creation of distinctive paving and landscape palette along Figueroa and West 11th Streets and the clearer marking of and design enhancement of public transit stops.

3.1.4.13 *City of Los Angeles Tree Preservation Ordinance*

City Ordinance number 177404 (2006), as amended, regulates the removal of Southern California native tree species commonly found in the City of Los Angeles when those trees measure four inches or more in cumulative diameter, or four and one-half feet above the ground level at the base of the tree. Protected tree species include: nearly all indigenous oak trees of the genus *Quercus*; Black Walnut (*Juglans californica*), California Sycamore (*Platanus racemosa*), and California Bay trees (*Umbellularia californica*). Removal or relocation of protected trees requires a permit from the Board of Public Works. Removal or relocation are defined as "any act that will cause a protected tree to die, including but not limited to acts that inflict damage upon the root system or other part of the tree by fire, application of toxic substances, operation of equipment or machinery, or by changing the natural grade of land by excavation or filling the drip line area around the trunk." A protected tree report must be submitted to the Board of Public Works to apply for a tree removal permit.

3.1.4.14 *City of Los Angeles Tree Preservation Policy*

The City of Los Angeles Department of Recreation and Parks established the *Tree Preservation Policy* as a regulatory tool to provide additional protections to urban forest trees within parks beyond the protections regulated by the *City of Los Angeles Tree Preservation.* In addition to the trees protected by the *Tree Preservation,* the *Tree Preservation Policy* regulates protection of Heritage, Special Habitat Value, and Common Park trees. The definitions of each are included below:

- Heritage trees are individual trees of any size or species that are specifically designated as heritage because of their historical, commemorative, or horticultural significance. Before a Heritage tree is pruned, damaged, relocated, or removed, recommendations from Department of Recreation Parks staff arborists must be obtained. The Forestry Arborist makes a recommendation to the General Manager of Recreation and Parks for removal. The General Manager or designee must make the final approval before the tree(s) can be removed.
- Special Habitat Value trees include three of the tree species covered under the *City of Los Angeles Tree Preservation Ordinance*, including California Black Walnut, California Sycamore and

California Bay, as well as other shrubs and trees, such as Toyon (*Heteromeles arbutifolia*), Hollyleaf Cherry (*Prunus ilicifolia*), Catalina Cherry (*Prunus lyonii*), Fremont Cottonwood (*Populus fremontii*), and at least four species of willow (*Salix sp.)*. Before a Special Habitat Value tree is pruned, damaged, relocated, or removed, recommendations from Department of Recreation Parks staff arborists must be obtained. The Forestry Arborist makes a recommendation to the General Manager for removal. The General Manager or designee must make the final approval before the tree(s) can be removed.

- Common Park Trees provide aesthetic, sentimental, economical, and environmental value. Every tree in the City of Los Angeles' parks is recognized as a valuable asset and must be protected.

3.1.5 Environmental Setting/Affected Environment

The visual setting of the Project is defined below in terms of (a) scenic vistas in the study area; (b) visual resources within the study area; (c) the visual quality and character of the downtown area; and (d) light, glare and shadow considerations.

3.1.5.1 Scenic Vistas

The Project's viewshed, defined as the downtown central business district, is constrained by the highly urban environment, which includes multiple skyscrapers and multi-story buildings that obstruct expansive views of the landscape beyond downtown. There are few scenic vistas, other than views that may be available to occupants from the taller buildings in downtown Los Angeles. Due to the lack of distant views from within downtown, and because no views from the higher floors of buildings would be noticeably affected by the Project, no scenic vistas or designated scenic corridors have been identified for analysis in this EIR.

Similarly, Eligible and/or Officially Designated State and/or County Scenic Highways in Los Angeles County, as defined by the California Department of Transportation (Caltrans), include portions of Pacific Coast Highway (State Route [SR]-1), SR-2, I-5, SR-27, SR-39, SR-57, US-101, SR-118, SR-126, and I-210 (Caltrans 2011). No Eligible and/or Officially Designated State and/or County Scenic Highways are located in the vicinity of the proposed Project. State Route 2, the only Official State Scenic Highway in Los Angeles County, is approximately 17.5 miles north of the proposed alignment. Additionally, a segment of I-110 is designated as a Historic Parkway (Caltrans 2011). The southern terminus of the eligible portion is located at the intersection of I-110 and I-5, which is approximately 3 miles northeast of the proposed project site.

The closest scenic highways identified in the City's General Plan include Stadium Way (approximately one mile north of the Project), a portion of Silver Lake Boulevard bordering Silver Lake Reservoir (approximately 2.5 miles northwest of the Project), and Adams Boulevard (west of Figueroa Street and approximately 1.5 miles south of the Project). All of these scenic highways are well outside of the project viewshed. Again, no scenic vistas or designated scenic corridors have been identified for analysis in this EIR.

3.1.5.2 Visual Resources

Visual and scenic resources within downtown primarily consist of groupings of architecturally and historically significant buildings and other design elements of secondary importance, such as landscape features, including Pershing Square and the Los Angeles Civic Center, and mature street trees. A qualified biologist at ICF International reviewed the project alignment and candidate sites for the maintenance and storage facility for the presence of protected trees. No protected trees were identified throughout the alignment or at the candidate sites.

Unique modern buildings along Grand Avenue, such as the Disney Concert Hall and the Museum of Contemporary Art (MOCA), and the historic buildings within and around the Broadway Theater and Commercial Historic District (described below) serve as the primary visual resources within the project viewshed.

Broadway Theatre and Commercial Historic District

A portion of Broadway, generally bounded by 3rd Street on the north and 9th Street on the south, is listed on the National Register of Historic Places (NRHP) as part of the Broadway Theatre and Commercial Historic District. The Historic District, which includes properties on both the east and west sides of the street, was listed on the NRHP in 1979, with a boundary expansion in 2001. It comprises 60 contributing and 38 non-contributing resources,[1] such as sidewalk elements (e.g., terrazzo in front of some theaters and store fronts and sidewalk vault lights) (Chattel Architecture, Planning and Preservation 2010:1).

In addition to the Broadway Theatre and Commercial Historic District, there are numerous other properties within downtown that have been listed or deemed eligible for listing on the California Register of Historical Resources (CRHR) and/or the NRHP. Other properties also have received official historic landmark recognition as City of Los Angeles Historic-Cultural Monuments (HCMs). Because historic resources are also considered potential visual resources for the purposes of CEQA, those properties, as well as other character-defining features within the historic district, such as terrazzo sidewalk displays and the bases of historic streetlights, are considered to be visual resources for the purposes of this section. Among the more architecturally noteworthy historic resources adjoining the project alignment outside the Broadway Theatre and Commercial Historic District are the Herald-Examiner Building (1111 South Broadway), the Fine Arts Building (811 West 7th Street), the Music Center (135 North Grand Avenue), and the County Hall of Administration and Stanley Mosk Courthouse campus (1st to Temple Streets, between Hill Street and Grand Avenue).

3.1.5.3 Visual Quality and Character

Downtown is located on an alluvial outwash of the main channel of the Los Angeles River in the northeastern portion of the Los Angeles Basin. The Elysian Hills are on the western and northwestern edges of downtown. One prominent feature associated with the Elysian Hills is Bunker Hill—an area that generally extends east from I-110 to Hill Street, north of 5th Street. Due to the alluvial outwash plain as well as the presence of the Elysian Hills and Bunker Hill, downtown Los Angeles slopes downward in a southeasterly direction towards the Los Angeles River and I-10. From its highest elevation adjoining Temple Street and Grand Avenue, at 391 feet above mean sea level (msl), the terrain drops approximately 50 feet between Grand Avenue and Spring/Temple Streets to 339 feet above msl. East of Los Angeles Street, and extending south to Broadway and 5th Street, the terrain is generally flat, at approximately 260 to 267 feet above msl. There are no rock outcroppings in the project area.

The project study area falls within or borders six contiguous design districts: Civic Center, Civic Center South, Bunker Hill, Historic Downtown, South Park, and Financial Core. In its alignment along Figueroa Street, between 11th Street and Olympic Boulevard, the Project also borders the LASED/Convention Center design district. Although offices with ground-floor retail predominate,

[1] See Section 3.3 for definitions of these terms.

the setting is a densely developed urban area containing a range of land uses and building types and supports a growing residential population.

In visual terms, 2nd Street east of Broadway is distinguished by the grouping of large-scale federal, state, and local government office and civic buildings that occupy entire city blocks and feature landscaped grounds with park-like attributes—such as expanses of lawn, landscaped spaces located to the north (e.g., County Administrative/Courts complex)—and typical zero-front-setback multi-story commercial buildings with ground-floor retail uses on smaller urban commercial lots located to the south in Historic Downtown (Figure 3.1-1).

The cultural institutions comprising the Music Center—including Disney Concert Hall (to the south, across 1st Street)—are part of a large campus located between Grand Avenue and Hope Street (on the east and west, respectively) and Temple and 2nd Streets (on the north and south, respectively). This civic cultural complex includes four theaters/auditoriums housing theatrical, concert, and opera productions; restaurants; and a partially belowground parking garage. The Colburn School of Performing Arts, MOCA, the Broad (a new public museum of contemporary art), and high-rise apartment buildings adjoin Disney Concert Hall on the south, between 2nd and 3rd Streets on Grand Avenue, and are within the Bunker Hill design district (Figure 3.1-2).

Along Broadway and portions of Hill Street, retail businesses in early twentieth-century buildings, as well as historic movie theaters, are dominant, with newer intermittent residences located above the ground-floor levels (Figure 3.1-3).

Along 7th, Hill, and Figueroa Streets, large office buildings are dominant, with ground-floor restaurants and retail businesses (Figures 3.1-4, 3.1-5, and 3.1-6). Large retail centers and hotels are on 7th Street at Figueroa Street (e.g., the Fig at 7th shopping center and Wilshire Grand Redevelopment Project), and at 7th and Flower Streets (The Bloc).

Figure 3.1-1. Broadway at West 2nd Street, Looking South

Figure 3.1-2. Grand Avenue at West 2nd Street, Looking South

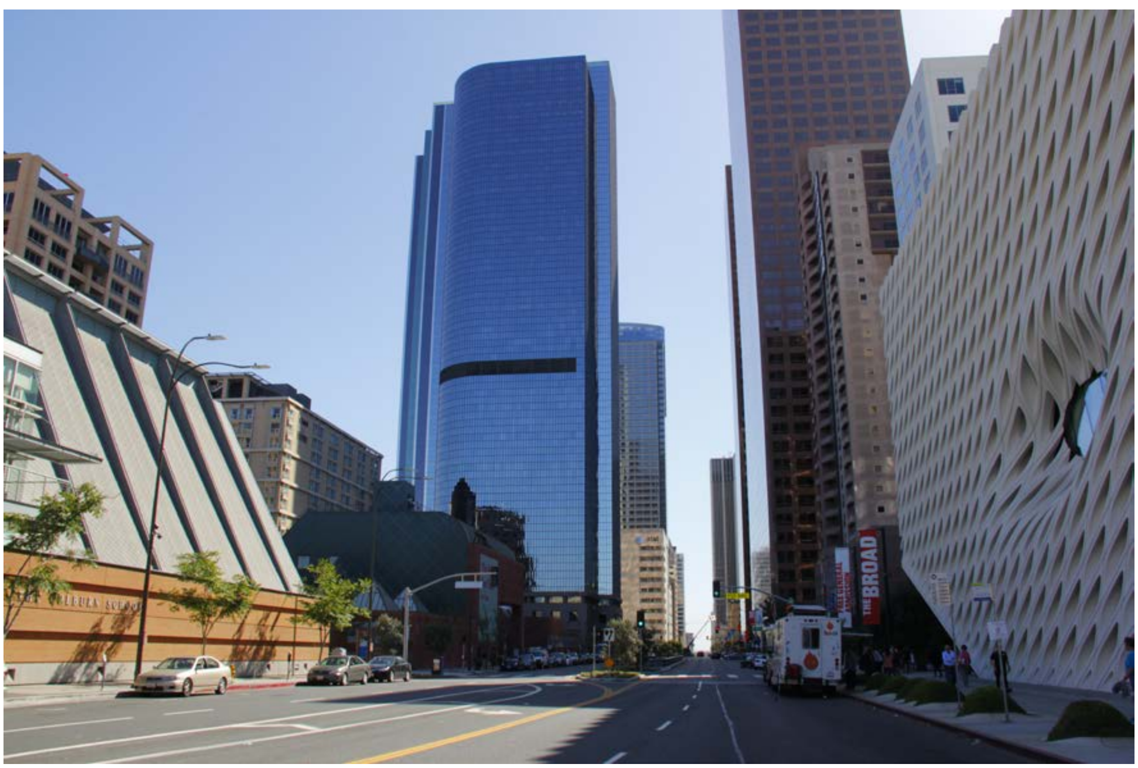


Figure 3.1-3. Broadway, Mid-block between West 5th and 6th Streets, Looking South

Figure 3.1-4. Hill Street, at West 6th Street, Looking North

Figure 3.1-5. West 7th Street, Approaching Flower Street, Looking East

Figure 3.1-6. Figueroa Street at Olympic Boulevard, Looking North

By contrast, 11th Street, in the South Park design district, is a blend of light industrial, office, and loft residences in a variety of contemporary and early-twentieth century buildings ranging in height from low-rise (1- and 3-story) to tall (10-story or more), and with large surface parking lots occasionally separating land uses (Figure 3.1-7).

Figure 3.1-7. West 11th Street, Approaching Olive Street, Looking West

The *Central City Community Plan* classifies a majority of the land within the study area as commercial; significantly smaller portions of the area are designated for multiple-family residential and public facilities land uses. Development along West 9th Street is an example of a combination of residential and commercial land uses (Figure 3.1-8).

Figure 3.1-8. West 9th Street, Approaching Hope Street, Looking East

Visual character throughout the downtown area varies by location and relative position of the viewer. Visual quality in the same area ranges from Low-Quality to High-Quality (terminology is described in more detail below in Section 3.1.6.1, *Methodology*), depending on the presence of visual resources and the distance, speed and angle of the viewer, and other variables. As typified by the photos shown above and in the key views depicted in Figures 3.1-9 through 3.1-15, views throughout the project area are mostly Medium-Quality, where Medium Quality views contain some variety in vegetation and color, and/or moderate overall scenery. The views captured in the selected key views and in viewsheds and lines of sight throughout the immediate project vicinity, particularly those where the visual resources described in Section 3.1.5.2, *Visual Resources*, form a large portion of the foreground or middleground, have moderate intactness, as they combine fairly well-kept urban features and natural settings, are somewhat free from encroaching elements (i.e., lampposts, street signage, etc.), and, thus, maintain an overall moderate level of visual integrity. The same views are moderately vivid, as the juxtaposition of landscaped features and surrounding manmade elements, such as multi-story buildings, form partially distinctive and memorable visual patterns. As such, views throughout the Project are also fairly unified, given the visual coherence and compositional harmony of the human-built components and natural features present in the visual setting.

For the highest quality views in the immediate project vicinity, the primary visual resources described in Section 3.1.5.2 and associated landscape features (if present) dominate the viewshed, where manmade features and street trees create visual diversity for the setting. However, the vertical size and density of downtown real estate and relatively close proximity between neighboring buildings often constrains sightlines to/from visual resources throughout the project area, depending on the location and angle of the viewer. Viewers with higher exposure and sensitivity to the project area would be accustomed to the vertical presence of the multi-story buildings and other manmade visual elements. Views found throughout the project area are encapsulated in the key views shown below (Figures 3.1-9 through 3.1-15), and form a fairly colorful ocular palette, contain a range of visual textures, and provide moderate scenic relief to its viewer groups. As such, views throughout the project area are mostly Medium-Quality.

3.1.5.4 Light, Glare, and Shadow Environment

As is typical in urban environments, the Project's viewshed contains numerous sources of light and glare. Light is emitted from high-rise buildings; security lighting; architectural lighting on building façades, in landscaped areas, and along pedestrian walkways and plaza areas; and vehicle headlights. In addition, light is produced by illuminated signage, including building identification signs and billboards or other types of advertising signage, and streetlights within commercial areas. Nighttime illumination is lowest in the area's primarily multi-family residential neighborhoods. Major nighttime light sources within the Project's viewshed include the land uses in the Los Angeles Sports and Entertainment District (LA Live and Staples Center), the Disney Concert Hall and its surroundings, light spill from signage on major buildings such as the US Bank building, and light spill from vehicle headlights on local roadways and surrounding freeways.

Glare sources generally include the exterior finishes and windows on the high-rise buildings throughout the Project's viewshed. Shadow/shade effects are typical in the downtown area because of the numerous high-rise buildings.

3.1.6 Environmental Impact Analysis

3.1.6.1 Methodology

This analysis generally follows the methodology outlined in the *Visual Impact Assessment for Highway Projects* (FHWA 2015), which is considered an industry standard for evaluating the visual effects associated with highway, railroad, and a wide range of non-transportation–related projects. However, in addition to the FHWA methodology, the *L.A. CEQA Thresholds Guide* (2006) is used to assess impacts and ensure that local planning guidance related to aesthetics has been fully considered as part of this analysis (refer to Section 3.1.6.2*, Thresholds of Significance*).

The basic components of the FHWA methodology include the following:

- Define the project setting and viewshed.
- Identify key views for visual assessment.
- Assess existing visual resources and viewer response.
- Depict the visual appearance of project alternatives.
- Assess changes to visual resources and predict viewer response to those changes.
- Assess the visual impacts of project alternatives. and
- Propose methods to mitigate adverse visual impacts.

Consistent with FHWA guidance, the following steps have been taken:

- The visual environment and existing landscape characteristics within the visual resources study area have been defined and documented. The visual environment has been evaluated for both the existing and future planned conditions.
- Applicable planning documents (e.g., the General Plan, Los Angeles Municipal Code, Downtown Design Guidelines) have been reviewed for pertinent policy and guidance information.
- Major viewer groups have been identified, and anticipated viewer responses have been documented.
- Typical views for the visual assessment have been identified, based on the actual and anticipated responses of representative viewers.
- The project description and conceptual design plans have been reviewed, and the type and degree of visual changes expected to result in the visual resources study area have been documented.
- Design recommendations for specific project features and locations were considered to enhance the visual environment for stationary and transient viewers.
- Appropriate mitigation measures have been identified.

A number of variables affect the degree of visibility, visual contrast, and the ultimate aesthetic impact of a project. Such variables include the scale and size of facilities, distances and viewing angles, color and texture, and the influences of adjacent scenery or land uses. Even where visible, viewer response and sensitivity vary depending on viewer attitudes and expectations. The viewsheds (all the surface areas visible from an observer's viewpoint) along the proposed project alignment are used to characterize the visual setting throughout the corridor and, in this assessment, also include the locations of viewers who are likely to be affected by visual changes brought about by the Project. Rather than offering sweeping views, viewsheds along the project alignment are typically constrained and canyon-like because of existing buildings. Given the dense urban character of the viewshed and the constrained sight lines to the project area from one street to other portions of downtown, this assessment uses a *key view* approach rather than a *landscape unit* approach.[2]

Determining Quality and Character of Visual Resources

Visual Character. The visual character of a view is described by the topography, land uses, scale, form, and natural resources in the view. The assessment of visual character is based on defined attributes such as physical traits—including form, color, line, and texture (pattern elements)—as well as pattern character traits, the dominance, scale, and diversity or continuity of visual elements.

[2] A *landscape unit* is a specific portion of the regional landscape and can be thought of as an outdoor room that exhibits a distinct visual character. A landscape unit often corresponds to a place or district that is commonly known among local viewers. The landscape unit approach is useful when a highway or railroad project traverses visually distinct settings that can be readily defined geographically, whereas the *key view* approach is useful when the views are largely homogeneous throughout the viewshed, and in densely urbanized, developed settings where development on a specific parcel might be proposed, and in which sightlines are often constrained by human-made elements, such as buildings, and natural elements, such as topography.

Visual Quality. Determining the quality of a view is subjective because it is based, in part, on the viewer's values and notions about what constitutes a quality setting. In an effort to establish an objective framework, this analysis applies the evaluative criteria (i.e., vividness, intactness, and unity) and qualitative rankings (low, medium, and high) presented in the FHWA guidelines.

This method should correlate with public judgments of visual quality well enough to predict those judgments, and can also help identify specific methods for mitigating each impact that may occur as a result of a project. The three criteria for evaluating visual quality are the following:

- *Vividness* is the visual power or memorability of landscape components as they combine in distinctive visual patterns.
- *Intactness* is the visual integrity of the natural and human-built landscape and its freedom from encroaching elements. It can be present in well-kept urban and rural landscapes, as well as in natural settings.
- *Unity* is the visual coherence and compositional harmony of the landscape considered as a whole. It frequently attests to the careful design of individual human-made components in the landscape.

As a general rule, High Quality Views are found to have topographic relief, a variety of vegetation, rich colors, impressive scenery, and unique natural and/or built features. Medium Quality Views have interesting but minor landforms, some variety in vegetation and color, and/or moderate scenery. Low Quality Views contain uninteresting features, little variety in vegetation and color, uninteresting scenery, and/or common elements. In addition to their use as descriptors, vividness, unity, and intactness are used more objectively as part of a rating system to assess a landscape's visual quality.

Assessing Viewer Response

Viewer response is composed of two elements: *viewer sensitivity* and *viewer exposure*. These elements combine to form a method of predicting how the public might react to visual changes brought about by a project.

Viewer sensitivity is both the viewer's concern for scenic quality and the viewer's response to change in the visual resources that make up the view. **Viewer exposure** is assessed by measuring the number of viewers exposed to the resource change, as well as the frequency of the viewing opportunity, type of viewer activity, duration of their view, speed at which the viewer moves, and position of the viewer. High viewer exposure heightens the importance of early consideration of design, art, and architecture and their roles in managing the visual resource effects of a project. Because objects in the foreground have more detail, views from nearby locations are more detailed than objects that are indistinguishable at a distance. Viewers experience visibility of a project to varying degrees in a particular viewshed, depending on distance or intervening structures or obstacles.

There are two basic groups of viewers present in downtown as well as several sub-groups: (1) viewers associated with specific buildings (e.g., residents, business owners, workers) and (2) mobile viewers (e.g., commuting motorists, pedestrians, sightseers). Residential viewers typically have the highest level of sensitivity to visual quality and changes to visual quality because of their familiarity with the view over a period of time, investment in the area, and sense of ownership of the view. Business owners share some of the sensitivity to visual quality typical of residents for similar reasons, including concern about development activities that could adversely affect their business operations (e.g., construction activities that restrict customer access, project operations that obscure their business signage). Other viewers, with exceptions, usually have a low or average sensitivity to visual quality or change. These include people on the local roadway system, such as commuting motorists and pedestrians. If they are traveling simply to get from one place to another for work reasons or while doing errands, their sensitivity would normally be average. However, when motorists are traveling for pleasure, or sightseers are present, it is likely that they would be somewhat more sensitive to their surroundings. The level of sensitivity increases based upon the level of familiarity the person has with the visual setting and the viewer's concern for scenic quality (e.g., downtown residents who regularly walk downtown versus persons who visit offices and are seldom downtown).

Key Views/Key Observation Points

A key view is a point from which a select view is analyzed from the perspective of potential key viewer groups. In order to represent the visual setting of the Project, a number of key views have been selected that most clearly convey the visual setting. As mentioned, key views also represent the perspective of the primary viewer groups that would potentially be affected by the Project.

A view is considered key if at least one of the following circumstances applies:

- Visual resources are present, regardless of the quality of the view. The sensitivity of the affected viewer group is medium or high, and the duration of the view is long-term.
- The quality of the view is medium or high, regardless of whether visual resources are present. The sensitivity of the viewer group is medium or high, and the duration of the view is long-term.
- The view is distinct, clear, and unobstructed from the street to adjacent buildings and is viewed regularly by a large number of commuters. In this case, the viewer sensitivity would be medium, and the view would be long-term.

Figures 3.1-1 through 3.1-8 above capture views of the existing visual setting along the project corridor, and are identified by the location and direction of view. Figures 3.1-9 through 3.1-15 that follow capture seven key views that could noticeably change as a result of the Project and are presented with simulations showing the same view with project features included (see Section 3.1.6.3, *Environmental Impacts*) so as to show the difference between the existing visual environment and the visual elements that are proposed as a part of the Project.

The seven key views that represent the potential noticeable changes as a result of the Project, also known as Key Observation Points (KOPs), have been selected to document the visual character and quality of the corridor and to reflect the perspective of sensitive viewers (e.g., residents) and viewer groups. KOPs are selected in order to best represent the area's overall visual quality, character, and aesthetic image as seen by its key viewers and viewer groups. All KOPs have been evaluated using "before-and-after" visual simulations. The KOPs identified for this analysis are the following:

- **KOP 1 (Figure 3.1-9): Grand Avenue, near 2nd Street, looking north to 1st Street.** Disney Concert Hall is in the foreground on the left. The view documents the streetcar terminus adjoining the Music Center, Disney Concert Hall, Colburn School of Performing Arts, MOCA, and The Broad art museum.
- **KOP 2 (Figure 3.1-10): Broadway between 5th and 6th Streets, looking north,** documents a heavily traveled retail shopping street framed by historic commercial buildings and movie theaters. Broadway draws large numbers of pedestrians.
- **KOP 3 (Figure 3.1-11): Figueroa Street, looking north toward Olympic Boulevard,** documents the streetscape adjoining the LASED and is defined north of Olympic Boulevard by

highly varied architectural design. Figueroa Street is a highly traveled thoroughfare and is familiar to many LASED and downtown visitors and commuting motorists.

- **KOP 4 (Figure 3.1-12): West 7th Street at Flower Street, looking east**, documents a representative section of the street framed by historic commercial buildings of comparable height that form a strongly defined streetwall. West 7th Street marks the southern boundary of the Financial District and is a major transit transfer location for Metro trains and buses, as well as DASH. It features large numbers of pedestrians.
- **KOP 5 (Figure 3.1-13): Hill Street at 6th Street, looking north.** Pershing Square, a well-known downtown visual landmark, appears as a vivid visual element at middle ground, framed by tall buildings of highly varied design.
- **KOP 6 (Figure 3.1-14): West 11th Street at Broadway, looking west.** The Herald-Examiner Building, which is an architectural and historic landmark, appears in the foreground portion of the view on the left.
- **KOP 7 (Figure 3.1-15): West 11th Street between Hope and Flower Streets, looking west.** The view documents the dense cluster of high-rise residential development that exists along this segment of 11th Street east of the LASED.

3.1.6.2 Thresholds of Significance

For purposes of evaluating potential impacts associated with the Project, the *L.A. CEQA Thresholds Guide* (2006) is being followed. The following factors are to be used to determine impact significance, on a case-by-case basis:

Aesthetics

1. The amount or relative proportion of existing features or elements that substantially contribute to the valued visual character or image of a neighborhood, community, or localized area, which would be removed, altered, or demolished.
2. The amount of natural open space to be graded or developed.
3. The degree to which proposed structures in natural open space areas would be effectively integrated into the aesthetics of the site, through appropriate design, etc**.**
4. The degree of contrast between proposed features and existing features that represent the area's valued aesthetic image.
5. The degree to which a proposed zone change would result in buildings that would detract from the existing style or image of the area due to density, height, bulk, setbacks, signage, or other physical elements.
6. The degree to which the project would contribute to the area's aesthetic value.
7. Applicable guidelines and regulations.

Obstruction of Views

8. The nature and quality of recognized or valued views (e.g., natural topography, settings, human-made or natural features of visual interest, resources such as mountains or the ocean).
9. Whether the project affects views from a designated scenic highway, corridor, or parkway.
10. The extent of obstruction (e.g., total blockage, partial interruption, or minor diminishment).

11. The extent to which the project affects recognized views available from a length of a public roadway, bike path, or trail, as opposed to a single, fixed vantage point.

Nighttime Illumination

12. The change in ambient illumination levels as a result of project sources.
13. The extent to which project lighting would spill off the project site and effect adjacent light-sensitive areas.

Shading

14. Whether shadow-sensitive uses would be shaded by project-related structures for more than 3 hours between 9 a.m. and 3 p.m. Pacific Standard Time (between late October and early April), or for more than 4 hours between 9 a.m. and 5 p.m. Pacific Daylight Time (between early April and late October).

3.1.6.3 Environmental Impacts

The environmental impact analysis that follows discusses the Project's potential impacts on aesthetics as it relates to each of the build alternatives. Each build alternative is discussed individually and, thereafter, potential visual impacts introduced by the Traction Power Substations (TPSS) and MSF, the latter of which are also discussed individually as there are four candidate sites currently being considered.

Alternative 1: No Project Alternative

Construction Impacts

No impact. Under the No Project Alternative, no new construction or building would take place as a result of the Project within the project area. Therefore, no new visual elements would be introduced and no construction-period impacts related to *Aesthetics*, *Obstruction of Views*, *Nighttime Illumination*, or *Shading* would occur under Alternative 1.

Operational Impacts

No impact. Under the No Project Alternative, no new transportation facilities would be in operation within the project area as a result of the Project. Therefore, no new visual elements beyond those previously planned/approved facilities would be introduced and, therefore, no further operational impacts related to *Aesthetics*, *Obstruction of Views*, *Nighttime Illumination*, or *Shading* would occur under Alternative 1.

Alternative 2: 7th Street Alternative with the Grand Avenue Extension

Construction Impacts

The section below follows the *L.A. CEQA Thresholds Guide* and discusses the potential construction-related impacts associated with the proposed Project as it relates to overall aesthetic character and quality and the existing visual environment. Key Observation Points, associated visual simulations, and other resources, where appropriate, are used in order to establish the visual setting, identify visual resources throughout the project area(s), and identify potential visual intrusions that could occur as a result of construction. Impacts are expected to be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Aesthetics

Following the *L.A. CEQA Thresholds Guide*, *Aesthetics* impacts should be evaluated considering the following factors.

The amount or relative proportion of existing features or elements that substantially contribute to the valued visual character or image of a neighborhood, community, or localized area, which would be removed, altered, or demolished.

Less-than-significant impact. Construction of Alternative 2 would occur over an estimated 24-month period and may take place during daytime and/or nighttime hours. Construction activities associated with the proposed streetcar, due to their short-term nature, would have no long-term impact on the existing features or elements that substantially contribute to the visual character or image of the neighborhood, community. Although construction would result in a temporary disturbance because of the presence of construction equipment, staging areas, exposed excavation areas, and other general activities associated with construction would be visible to nearby viewers, there would be no long-term effect on the scenic or primary visual resources as identified above in Sections 3.1.5.2 and 3.1.5.3, such as Disney Concert Hall, MOCA, Pershing Square, and/or historic buildings within and around the Broadway Theater and Commercial Historic District, as none of the existing features or contributing elements of these visual resources would be removed, altered, or demolished as a result of project construction. Construction impacts related to the removal, alteration, or demolition of these primary visual resources would be less than significant.

However, as a result of project construction, some trees may have the potential to be trimmed or removed. City policy requires all tree removals be replaced on a 2:1 basis for street trees. Alternative methods and options to removal, such as trimming, would be explored prior to considering potential tree removal. The removal of trees may slightly alter the visual character along the proposed alignment. Implementation of Mitigation Measure **MM-AES-C3** would ensure the Project's compliance with the *City of Los Angeles Tree Preservation Ordinance* and *Tree Preservation Policy* such that any trees slated for removal would be planted at or near their original locations at a 2:1 ratio. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

The amount of natural open space to be graded or developed.

No impact. The proposed Project does not contain natural space that would be graded or developed. No impacts would occur.

The degree to which proposed structures in natural open space areas would be effectively integrated into the aesthetics of the site, through appropriate design, etc.

No impact. The proposed project alignment would not be located in a natural open space area. Thus, construction activities would not involve integrating structures into existing natural open space areas, and no impacts would occur.

The degree of contrast between proposed features and existing features that represent the area's valued aesthetic image.

Less-than-significant impact. As mentioned, due to the short-term nature of construction activities, no long-term impact on the area's valued aesthetic image is expected. Construction-period activities would include excavation in streets, the installation of new drainage systems, the pouring of concrete for station platforms, and the installation of new sidewalk paving. Belowground utility relocation activities along project alignment streets would require trenching, possible soil remediation, and the installation of barricading and street circulation-related detour infrastructure. In general, these activities would not create a long-term degree of contrast because of their short-term nature, and also because a majority of this work would take place within the street rights-of-way, similar to other public works projects that occur on a routine basis within the public rights-of-way in downtown Los Angeles. Thus, prior to implementation of mitigation measures, construction activities/equipment would not introduce a substantial degree of contrast with existing conditions that would affect the area's aesthetic image. The impact related to construction activities/equipment and its contrast with existing conditions would be less than significant. Implementation of Mitigation Measures **MM-AES-C1** and **MM-AES-C2** would help minimize construction-related visual impacts and the degree of visual contrast. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

The degree to which a proposed zone change would result in buildings that would detract from the existing style or image of the area due to density, height, bulk, setbacks, signage, or other physical elements.

No impact. The proposed Project would not propose a zone change to accommodate greater or taller structures than surrounding development or otherwise detract from the existing style or image of the area due to density, height, bulk, setback, signage, or other physical elements. No impacts would occur.

The degree to which the project would contribute to the area's aesthetic value.

Less-than-significant impact. Construction activities would not contribute to the area's aesthetic value. During construction, site preparation and grading activities, construction staging on the project sites, barricade installation, and placement of other minor structures and signage would be required to secure the construction site, which could adversely affect the visual quality or character of the immediate area encompassing the project sites. Similarly, the delivery and stockpiling of construction materials and placement of construction equipment on the project site might also temporarily diminish the visual character of the immediate area. However, construction is temporary, and upon its completion, the site is expected to maintain the visual quality of the area and would not result in significant long-term impacts on primary and secondary visual resources throughout the alignment or on the area's overall aesthetic value, which is discussed in more detail below under *Operational Impacts*. Implementation of Mitigation Measures **MM-AES-C1** through **MM-AES-C3** would minimize construction-related visual impacts. These mitigation measures would minimize views of stockpiled materials and idle construction equipment in staging areas, reduce visual clutter and disorder, and require appropriate screening materials, daily visual inspections, and the removal of debris and graffiti. Therefore, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Applicable guidelines and regulations.

Less-than-significant impact. All project construction would be completed in conformance with applicable City regulations and standards. Implementation of Mitigation Measures **MM-AES-C1** through **MM-AES-C3** would help ensure compliance with applicable guidelines and regulations (as described in Section 3.1.1, *Regulatory Setting*) and minimize construction-related visual impacts.

Based on the discussion above, construction of the proposed streetcar would not substantially degrade the existing visual character or aesthetic quality of the site and its surroundings. Thus, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Obstruction of Views

Following the *L.A. CEQA Thresholds Guide*, *Obstruction of Views* impacts should be evaluated considering the following factors.

The nature and quality of recognized or valued views (e.g., natural topography, settings, human-made or natural features of visual interest, resources such as mountains or the ocean).

Less-than-significant impact. As discussed in Sections 3.1.5.2 and 3.1.5.3, visual resources throughout the project area that contribute to its overall aesthetic quality include, but are not limited to, human-made elements and architectural buildings that provide visual interest, such as the Disney Concert Hall, MOCA, Pershing Square, and historic buildings within and around the Broadway Theater and Commercial Historic District. Secondary visual resources consist of mature street trees, formal garden spaces (e.g., Los Angeles County Courthouse gardens), and parks.

Views of visual resources would be partially obstructed on a temporary basis by construction equipment. However, project construction would not result in a long-term impact on the nature or quality of valued public views in the immediate project vicinity, as discussed in more detail below under *Operational Impacts*. Temporary construction activities and the presence of other construction equipment could adversely affect the visual quality or character and, thus, valued views, of the immediate area encompassing the project site. However, because the impacts would be temporary and short term, they would be less than significant. Once construction is complete, valued views to/from the primary visual resources therein would be preserved. Implementation of Mitigation Measures **MM-AES-C1** through **MM-AES-C3** would ensure impacts would be less than significant prior to and following implementation of mitigation.

Whether the project affects views from a designated scenic highway, corridor, or parkway.

No impact. No officially designated scenic resources, vistas, corridors or Eligible/Officially Designated State/County Scenic Highways have been identified within the project viewshed. Because no officially designated scenic highways, corridors or parkways have been identified within the immediate project vicinity, no impacts would occur.

The extent of obstruction (e.g., total blockage, partial interruption, or minor diminishment).

Less-than-significant impact. Project construction would result in the temporary, minor diminishment and partial obstruction of views in the immediate project vicinity. As mentioned, no large cranes would be required, and, therefore, views of visual resources would not be substantially obstructed by this type of, and/or similar, construction equipment. Partial interruption and/or minor diminishment could occur in places with sightlines along the proposed alignment under Alternative 2, depending on the location, distance, speed, and angle of the viewer. Residential viewer groups and regular visitors would be more sensitive to this type of temporary visual intrusion than recreationists or local commuters; however, project construction would not create permanent blockage of these visual resources or substantially diminish the nature and quality of recognized or valued private and public views. Because construction activities and the presence of construction equipment would be temporary, no long-term obstruction of views, including those depicted in KOPs 1 through 7, would occur. Again, implementation of Mitigation Measures **MM-AES-C1** through **MM-AES-C3** would minimize construction-related visual impacts, and impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

The extent to which the project affects recognized views available from a length of a public roadway, bike path, or trail, as opposed to a single, fixed vantage point.

Less-than-significant impact. Project construction would not result in a long-term impact on the nature or quality of recognized views available from a length of a public roadway, bike path, or trail, such as those represented in the selected KOPs. Project construction would result in temporary, minor visual impacts; however, upon completion of construction, recognized views would be preserved/maintained. Based on the discussion above, construction of the proposed streetcar would not substantially degrade the existing visual character or aesthetic quality of the site and its surroundings and a less-than-significant impact would result. Again, implementation of Mitigation Measures **MM-AES-C1** through **MM-AES-C3** would minimize construction-related visual impacts. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Nighttime Illumination

Following the *L.A. CEQA Thresholds Guide*, *Nighttime Illumination* impacts should be evaluated considering the following factors.

The change in ambient illumination levels as a result of project sources.

Less-than-significant impact. Because nighttime construction is anticipated in order to reduce daytime traffic impacts, some nighttime lighting at the construction site(s) would be required. Nighttime construction lighting may result in changes in ambient illumination levels, an impact that is potentially significant. Implementation of Mitigation Measure **MM-AES-C2** would ensure that lighting would be directed downward, and spill light would be minimized. Therefore, significant changes in ambient illumination levels as a result of project construction activities are not expected to occur, and it is not expected that construction lighting would be a significant nuisance to nearby residents and businesses, due to their familiarity with ongoing construction projects in the downtown area and existing ambient illumination levels from nearby light sources such as neighboring buildings, street lamps, and vehicle traffic. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

The extent to which project lighting would spill off the project site and affect adjacent light-sensitive areas.

Less-than-significant impact. As mentioned, nighttime construction is anticipated. Again, through the implementation of Mitigation Measure **MM-AES-C2**, lighting would be directed downward, and spill light would be minimized. Therefore, it is expected that project lighting would not spill off the project site and affect adjacent light-sensitive areas, and construction lighting would not be a significant nuisance to nearby residents, due to their familiarity with ongoing construction projects in the downtown area and existing ambient illumination levels from nearby light sources such as neighboring buildings, street lamps, and vehicle traffic. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Shading

Whether shadow-sensitive uses would be shaded by project-related structures for more than 3 hours between 9 a.m. and 3 p.m. Pacific Standard Time (between late October and early April), or for more than 4 hours between 9 a.m. and 5 p.m. Pacific Daylight Time (between early April and late October).

Less-than-significant impact. As previously mentioned, construction is not expected to require large cranes or other major construction-related structures and equipment that would cast large shadows. Similarly, the vertical elements proposed as part of the project (e.g., overhead contact system [OCS] poles, station platform shelters) would not cast shadows that would affect shade-sensitive uses or viewers. Therefore, shading impacts would be less than significant during construction of the proposed Project.

Operational Impacts

This section follows the *L.A. CEQA Thresholds Guide* and discusses the potential impacts associated with the operation of the proposed Project as it relates to overall aesthetic character and quality and the existing visual environment. Key Observation Points, associated visual simulations, and other resources, where appropriate, are used in order to establish the visual setting, identify visual resources throughout the project area(s), and identify potential visual intrusions that could occur as a result of operation.

Aesthetics

The amount or relative proportion of existing features or elements that substantially contribute to the valued visual character or image of a neighborhood, community, or localized area, which would be removed, altered, or demolished.

Less-than-significant impact. Major visible, built elements of the proposed Project include the streetcar vehicles, platforms, shelters, catenary poles, and OCS wires. Photo simulations of the proposed streetcar, once built, are shown in Figures 3.1-9A through 3.1-15A (below), and represent expected changes in the visual setting from existing conditions as a result of the Project. The introduction of these built features, as shown in the aforementioned figures, would not remove, alter, or demolish existing features or elements that contribute to the visual character throughout the project area, such as the Los Angeles Civic Center, Pershing Square, MOCA, Disney Concert Hall, architecturally and/or historically significant buildings within and around the Broadway Theater and Commercial Historic District. As shown in the photo simulations, built features associated with the streetcar would not remove, alter, or demolish existing features that contribute to the project area’s visual character, and thus a less than significant impact would result. Implementation of Mitigation Measure **MM-AES-O3** would ensure that the catenary poles and OCS wires would be designed and installed in compliance with all applicable design guidelines, policies, and development standards. As a result, catenary poles and OCS wires would be subject to approval and would be consistent with the surrounding design context. Impacts related to built elements of the proposed Project and their effects on existing features or elements of the local visual character would be less than significant prior to mitigation and would remain less than significant following implementation of mitigation.

The amount of natural open space to be graded or developed.

No impact. The proposed project alignment contains no natural open space that would be graded or developed. No impacts would occur.

The degree to which proposed structures in natural open space areas would be effectively integrated into the aesthetics of the site, through appropriate design, etc.

No impact. The proposed project alignment would not be located in a natural open space area(s). No impacts would occur.

The degree of contrast between proposed features and existing features that represent the area's valued aesthetic image.

Less-than-Significant. As discussed *in* Section 3.1.6.1, *Methodology*, above, KOPs are selected in order to best represent the area' s overall visual quality, character and aesthetic image as seen by its key viewers and viewer groups. As such, the selected KOPs and associated photo simulations shown and discussed below depict the visual environment with and without the proposed streetcar and inform the impacts analysis for the following thresholds:

Aesthetics

- The degree of contrast between proposed features and existing features that represent the area's valued aesthetic image
- The degree to which the project would contribute to the area's aesthetic value

Obstruction of Views

- The nature and quality of recognized or valued views (e.g., natural topography, settings, human-made or natural features of visual interest, resources such as mountains or the ocean).
- The extent of obstruction (e.g., total blockage, partial interruption, or minor diminishment).
- The extent to which the project affects recognized views available from a length of a public roadway, bike path, or trail, as opposed to a single, fixed vantage point.

As shown in Figures 3.1-9 and 3.1-9A below, the Disney Concert Hall would be within the viewshed under Alternative 2 and serves as the primary visual resource from this view. Depending on the position and angle of the viewer, views can be had of visually prominent hillsides that define the northern edges of the City. The San Gabriel Mountains and their foothills form the backdrop for many views and viewsheds (all of the surface areas visible from an observer's viewpoint) throughout the community. Although no officially recognized scenic views are in this setting, views of the buildings are considered to be important due to the design quality, and sightlines to the foothills of the San Gabriel Mountains are publicly valued. As seen in Figure 3.1-9A, despite the placement of a proposed station stop adjacent to the Disney Concert Hall, project features would read as extensions of the street and of the downtown public transit system. From KOP 1, the degree of contrast introduced by the proposed Project's visible, built elements would be low. It should also be noted that OCS electrical wiring could include two potential configurations. In the first, the OCS wires would support the contact wire between two poles perpendicular to the streetcar track. The second configuration would support the contact wire from cantilever arms connected to a single pole. Both of these configurations would use decorative poles consistent with the streetscape along the project alignment, with the possibility of integrating poles used for street lighting, traffic signals, or traffic signs. For the purposes of this analysis, neither configuration would introduce a more substantial visual impact than the other, and the degree of contrast introduced by the proposed Project under Alternative 2 would still be relatively low.

Figure 3.1-9. (KOP 1) Existing View along Grand Avenue at 2nd Street, Looking North

Figure 3.1-9A. Simulated View along Grand Avenue at 2nd Street, Looking North

As depicted in Figures 3.1-10 and 3.1-10A below, the Alternative 2 alignment would traverse the Broadway Theatre and Commercial Historic District. Independent of the proposed Project, streetscape improvements are proposed along Broadway as part of the *Broadway Streetscape Master Plan* project (e.g., trees and groundcover plantings, paving, street furniture, additional design context-appropriate street lighting, and wayfinding signs). Again, although no officially recognized scenic views are in this setting, views along Broadway are considered to be important due to the concentration of architectural/historical resources, which serve as the primary visual resources within the viewshed. Because the visible, built project features shown in Figure 3.1-10A would be consistent with other transportation modes within the public right-of-way and would contain small-scaled design elements (seating, limited signage, and poles) that would not substantially block views, the degree of contrast introduced by the proposed Project's visible, built elements would be low at KOP 2.

Figure 3.1-10. (KOP 2) Existing View along Broadway, between 5th and 6th Streets, Looking North

Figure 3.1-10A. Simulated View along Broadway, between 5th and 6th Streets, Looking North

As shown in Figures 3.1-11 through 3.1-13A below, KOP 3 is located along Figueroa Street, approaching Olympic Boulevard, looking north; KOP 4 is at West 7th Street and Flower Street, looking east; and KOP 5 is located on Hill Street, approaching West 6th Street, looking north. Impacts at KOPs 3 through 5 would be similar to those at KOP 2. At these KOPs, under Alternative 2, the Project's visible, built elements would be integrated into its design setting with a fairly minor degree of contrast. The visual impacts associated with the Project would be within the public right-of-way and would read as extensions of the existing street and downtown public transit elements and contain small-scaled design elements (seating, limited signage, and poles) that would not substantially block views. Again, as in KOP 2, the degree of contrast introduced by the proposed Project's visual elements as seen from KOPs 3, 4, and 5 would be relatively low.

Figure 3.1-11. (KOP 3) Existing View along Figueroa Street at Olympic Boulevard, Looking North

Figure 3.1-11A. Simulated View, North along Figueroa Street at Olympic Boulevard

Figure 3.1-12. (KOP 4) Existing View along 7th Street at Flower Street, Looking East

Figure 3.1-12A. Simulated View, 7th Street at Flower Street, Looking East

Figure 3.1-13. (KOP 5) View along Hill Street at 6th Street, Looking North

Figure 3.1-13A. Simulated View, Hill Street at 6th Street, Looking North

As depicted in Figures 3.1-14 and 3.1-14A below, the Herald-Examiner Building is a key architectural-historical resource in the viewshed, and the Ritz Carlton serves as a visual landmark and focal point in the backdrop of the view. As such, it serves as the primary visual resource as seen from KOP 6. Independent of the proposed Project, a reduction in the number of vehicle lanes would occur within this viewshed as part of the Figueroa Corridor Streetscape Project, which would be constructed and completed prior to construction of Alternative 2.

As in KOPs 1–5, visible project features that would be constructed under Alternative 2 would read as extensions of the street and of extant downtown public transit elements at KOP 6. The OCS wires at this location would be more noticeable than at other locations along the project alignment; however, the degree of contrast would still be low. In addition, Figueroa Corridor Streetscape Project landscape features (e.g., supplemental street trees and parkway groundcover plantings) would add a degree of visual cohesiveness to the view and help offset any contrast introduced by the proposed Project.

Figure 3.1-14. (KOP 6) Existing View along 11th Street at Broadway, Looking West

Figure 3.1-14A. Simulated View along 11th Street at Broadway, Looking West

As shown in Figures 3.1-15 and 3.1-15A below, the installation of tracks and new paving along the track path, accompanied by street restriping to demarcate the shared streetcar-motor vehicle lane and reconfigured drive lanes, would read as extensions of current public street infrastructure that is within the existing public right-of-way. Accordingly, the degree of contrast introduced by the visible, built elements of the proposed streetcar under Alternative 2 would be fairly low at KOP 7. Informal views[3] across the viewshed of primary visual resources (e.g., Desmond's Warehouse and Ritz Carlton) would not be impaired because all streetcar infrastructure, with the exception of the OCS system and poles, would be at street level, and would not affect views of these resources. Additionally, Figueroa Corridor Streetscape Project landscape features (e.g., supplemental street trees and parkway groundcover plantings) would add a small degree of visual cohesiveness to the view and help offset any contrast introduced by the proposed Project.

[3] These include ordinary views that do not have status as official or eligible scenic vistas. Visual resources, such as local foothills, mature trees, parkscapes, and architectural resources, may or may not be present in such views.

Figure 3.1-15. (KOP 7) Existing View along 11th Street at Grand Avenue, Looking West

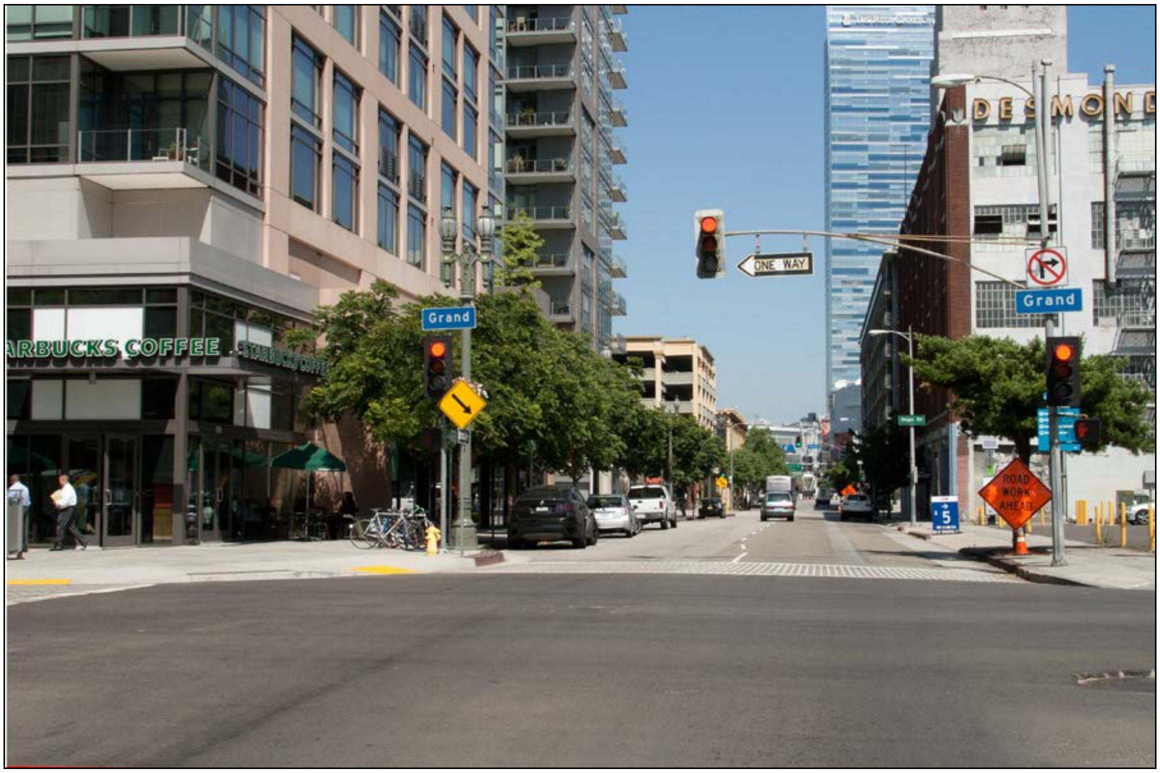
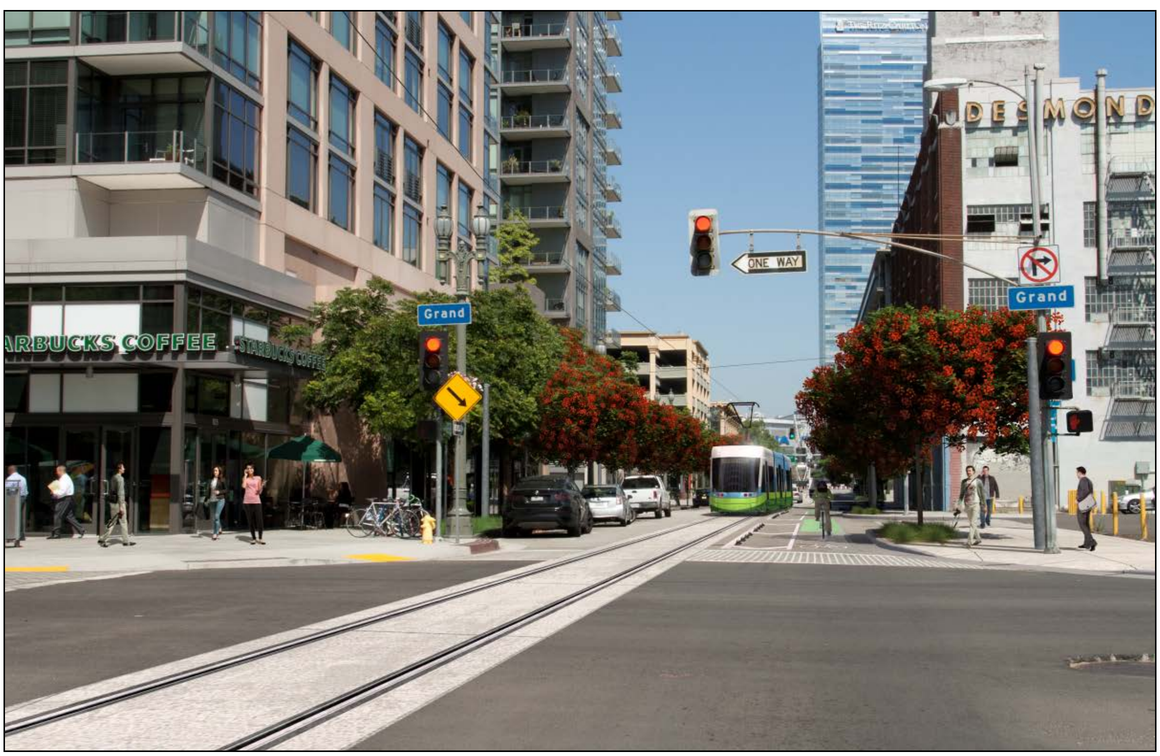


Figure 3.1-15A. Simulated View along 11th Street at Grand Avenue, Looking West



Therefore, based on the discussion of KOPs 1 through 7 above, and as shown in Figures 3.1-9A through 3.1-15A, visual changes associated with the built elements of the proposed streetcar under Alternative 2 would not introduce a significant degree of contrast. Moreover, implementation of Mitigation Measure **MM-AES-O3** would ensure that the OCS poles would be designed and installed in compliance with all applicable design guidelines, policies, and development standards. As a result, OCS poles would be subject to approval and would be consistent with the surrounding design context. Therefore, operational impacts under Alternative 2 would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

The degree to which a proposed zone change would result in buildings that would detract from the existing style or image of the area due to density, height, bulk, setbacks, signage, or other physical elements.

No impact. The proposed streetcar would not propose a zone change to accommodate greater or taller structures than surrounding development or otherwise detract from the existing style or image of the area due to density, height, bulk, setback, signage, or other physical elements. The vertical elements proposed as part of the Project are consistent with surrounding land uses, and implementation of Mitigation Measure **MM-AES-O3** would ensure compliance with the applicable City regulations and standards to ensure that appropriate density, height, bulk, etc. is observed. As a result, no impacts would occur.

The degree to which the project would contribute to the area's aesthetic value.

Less-than-significant impact. Built elements of the proposed Project include the streetcar vehicles, platforms, shelters, catenary poles, and OCS wires. As depicted in Figures 3.1-9A through 3.1-15A, though visible, proposed project elements would be fairly unobtrusive and would not substantially alter the visual quality and/or character of the Project's visual setting. Views throughout the immediate project vicinity would still be of Medium Quality, and maintain their variety in vegetation and color. Similarly, viewsheds throughout the immediate project vicinity would retain their intactness through a combination of well-kept urban features and natural settings, which would continue to be somewhat free of encroaching, manmade elements. The project area would also retain its vividness, as the proposed Project's built elements would preserve the juxtaposition of landscaped features with surrounding elements, such as high rises and multi-story residential buildings. Overall, the project area would remain fairly unified, and the proposed Project would not substantially compromise the visual coherence, line patterns, and overall scenery.

Though viewer exposure and sensitivity would be higher for more accustomed viewer groups (i.e., residences and frequent visitors), given the nature and quality of existing viewsheds and generally constrained sightlines to the visual resources therein, the proposed streetcar would not substantially diminish or alter the aesthetic value throughout the project area. Furthermore, implementation of Mitigation Measure **MM-AES-O3** would ensure that the OCS poles would be approved, designed, and installed in compliance with all applicable design guidelines, policies, and development standards. As a result, operational impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Applicable guidelines and regulations.

Less-than-significant impact. The proposed Project would be completed in conformance with applicable City regulations and standards. Implementation of Mitigation Measure **MM-AES-O3** would help ensure compliance with applicable guidelines and regulations (as described in Section 3.1.1) and minimize visual impacts associated with the OCS. Impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Obstruction of Views

The nature and quality of recognized or valued views (e.g., natural topography, settings, human-made or natural features of visual interest, resources such as mountains or the ocean).

Less-than-significant impact. As discussed in Section 3.1.5.2, primary visual resources throughout the project area include, but are not limited to, the Disney Concert Hall, MOCA, Pershing Square, historic buildings within and around the Broadway Theater and Commercial Historic District, and mature street trees. As depicted in Figures 3.1-9A through 3.1-15A, built features associated with the proposed streetcar would not substantially compromise the nature and/or quality of recognized or valued views and a less than significant impact would occur. In adherence to Mitigation Measure **MM-AES-O3**, project elements would be built in accordance with the applicable standards and guidelines, and would be designed to be minimally apparent and in keeping with the surrounding visual environment. Thus, valued views and views to/from the primary visual resources therein, as represented in KOPs 1 through 7, would be more or less preserved. Impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Whether the project affects views from a designated scenic highway, corridor, or parkway.

No impact. No scenic vistas or designated scenic highways, corridors, or parkways have been identified within the project viewshed(s). Therefore, the Project would not affect views from a designated scenic highway, corridor, or parkway, and no impact would occur.

The extent of obstruction (e.g., total blockage, partial interruption, or minor diminishment).

Less-than-significant impact. As shown in Figures 3.1-9A through 3.1-15A, the proposed streetcar, relative to the existing environment, would generally be minimally apparent and fairly visually unobtrusive. The Project's general degree of view obstruction would be very low given that most of its features would be at, or slightly above, street level. Minor diminishment and/or partial interruption would occur at KOPs 2, 3, 5, 6, and 7. Due to the relative size and position of the OCS wires and poles and the low sensitivity of the primarily affected viewer groups (i.e., street-level viewers such as commuting motorists, pedestrians, sightseers, business employees and patrons with intermittent/incomplete views). The presence of OCS wires and poles would not substantially interfere with informal views to/from the primary visual resources therein, and thus a less than significant impact would result. With regard to residential viewers groups, residents throughout the area mostly reside in multi-story buildings in which the OCS elements would be difficult to detect. Implementation of Mitigation Measure **MM-AES-O3** would ensure that the OCS poles would be approved, designed, and installed in compliance with all applicable design guidelines, policies, and development standards to minimize visual impacts. Therefore, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

The extent to which the project affects recognized views available from a length of a public roadway, bike path, or trail, as opposed to a single, fixed vantage point.

Less-than-significant impact. As previously mentioned, KOPs are selected in order to best represent the area' s overall visual quality, character, and aesthetic image as seen by its key viewers and viewer groups, including recognized views available from a length of a public roadway, bike path, or trail. As discussed in Section 3.1.5.2, primary visual resources throughout the project area include, but are not limited to, the Disney Concert Hall, MOCA, Pershing Square, historic buildings within and around the Broadway Theater and Commercial Historic District, and mature street trees. As depicted in Figures 3.1-9A through 3.1-15A, built features associated with the proposed streetcar would not substantially compromise the nature and/or quality of recognized or valued views from a length of a public roadway, bike path, or trail, as opposed to a single, fixed vantage point, and a less-than-significant impact would result. In adherence to Mitigation Measure **MM-AES-O3**, project elements would be built in accordance with the applicable standards and guidelines, and would be designed to be minimally apparent and in keeping with the surrounding visual environment. Thus, valued views and views to/from the primary visual resources therein, as represented in KOPs 1 through 7, would be more or less preserved. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

The change in ambient illumination levels as a result of project sources.

Less-than-significant impact. The proposed streetcar would not significantly alter ambient light levels. At present, light is emitted from high-rise buildings; security lighting; illuminated signage; architectural lighting on building façades, in landscaped areas, along pedestrian walkways and plaza areas; and from vehicle headlights. Due to the relatively high volume of existing nighttime light, the light introduced by streetcar headlights would not represent a significant change in ambient illumination levels. Streetcar-associated OCS poles, platforms, and shelters would not significantly alter ambient light levels because all lighting other than vehicle headlights would be installed in accordance with the Los Angeles Municipal Code. As such, it would be directed downward and on site. Therefore, impacts would be less than significant during operation of Alternative 2.

The extent to which project lighting would spill off the project site and affect adjacent light-sensitive areas.

Less-than-significant impact. The streetcar vehicles would be lighted in a manner that would minimize the potential for spill light effects and would not generate more nighttime light on the streets than would existing downtown buses. Streetcar-associated OCS poles, platforms, and shelters would not result in spillover light impacts on surrounding land uses because all lighting would be installed in accordance with the Los Angeles Municipal Code. As such, it would be directed downward and on site. Therefore, impacts would be less than significant under this alternative.

Shading

Whether shadow-sensitive uses would be shaded by project-related structures for more than 3 hours between 9 a.m. and 3 p.m. Pacific Standard Time (between late October and early April), or for more than 4 hours between 9 a.m. and 5 p.m. Pacific Daylight Time (between early April and late October).

Less-than-significant impact. Most of the proposed streetcar features would be at, or slightly above, street level. Streetcar-related platforms, platform shelters, and other visual elements associated with the proposed Project, including OCS poles and wires, would not be of scale or bulk to cast shadows of sufficient size to significantly affect shade-sensitive uses. The potential for the streetcar and its facilities to cast new shadow/shade would be limited and similar to that of existing transportation uses/facilities within the Project's viewshed(s). Thus, impacts related to shadow and shade-sensitive uses would be less than significant under this alternative.

Alternative 3: 7th Street Alternative without the Grand Avenue Extension

Construction Impacts

Less-than-significant impact. Under Alternative 3, project-related impacts associated with construction would be similar to those outlined above under Alternative 2, with one exception. Because Alternative 3 does not include the proposed Grand Avenue Extension, disruptions to visual resources or character would be reduced slightly as this alternative does not include construction activities west of Hill Street (between Hill Street and Grand Avenue) and along Grand Avenue (between 1st and 2nd Streets). Similar to Alternative 2, construction would result in temporary impacts on the visual quality and character throughout the proposed alignment due to general construction activities and the presence of construction equipment/materials. No major construction-related equipment or structures would cast large shadows, and lighting for nighttime construction would be directed downward and on site to minimize spill light. Implementation of Mitigation Measures **MM-AES-C1** through **MM-AES-C3** would help minimize construction-related visual impacts. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Operational Impacts

Less-than-significant impact. Under Alternative 3, project-related impacts associated with operation would be the same as those outlined above under Alternative 2, with one exception. Because Alternative 3 does not include the proposed Grand Avenue Extension, disruptions to visual resources or character would be reduced slightly as this alternative does not include construction activities west of Hill Street (between Hill Street and Grand Avenue) and along Grand Avenue (between 1st and 2nd Streets). Therefore, operational impacts discussed above would not include impacts on the viewsheds depicted by KOP 1, as a station platform and associated streetcar elements would not be constructed adjacent to the Disney Concert Hall. Again, implementation of Mitigation Measure **MM-AES-O3** would help minimize visual impacts introduced by the OCS poles and wires. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Alternative 4: 9th Street Alternative with the Grand Avenue Extension

Potential impacts associated with this alternative would be the same as Alternative 2 except that impacts associated with the proposed 7th Street alignment would not occur as Alternative 4 proposes the streetcar run along 9th Street.

Construction Impacts

Less-than-significant impact. Under Alternative 4, the same construction-period activities would occur as in Alternative 2. However, as mentioned, this alternative would include a 9th Street route segment in lieu of a route along 7th Street. Due to the presence of fewer early twentieth-century buildings along the 9th Street alignment, the porous streetwall (which refers to one of the boundaries of a street as formed by its buildings), and the presence of large surface parking lots, the potential for temporary, minor impacts on the existing visual quality and character of the corridor would be reduced slightly compared to Alternatives 2 and 3. Within the project viewshed along 9th Street, primary scenic resources include historically and architecturally significant buildings located east of Hope Street, such as the Fashion Institute of Design and Merchandising (FIDM) and its park space, and also early twentieth-century commercial buildings (located between Olive and Broadway). The majority of the buildings are newer and are not considered visual landmarks. Secondary visual resources consist of mature street trees (including the FIDM park space).

Again, construction would result in temporary impacts on the visual quality and character throughout the proposed alignment due to general construction activities and the presence of construction equipment/materials. No major construction-related equipment or structures would cast large shadows, and lighting for nighttime construction would be directed downward and on site to minimize spill light. Alternative 4 would include the same mitigation measures as are proposed under Alternatives 2 and 3. Implementation of Mitigation Measures **MM-AES-C1** through **MM-AES-C3** would help minimize construction-related visual impacts. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Operational Impacts

Less-than-significant impact. Operational impacts related to aesthetics are similar to those described above for Alternative 2. Due to the presence of fewer early twentieth-century buildings along the 9th Street alignment, the porous streetwall, and the presence of large surface parking lots, the potential for disruptions of sightlines to visual resources would be reduced slightly compared to Alternatives 2 or 3. Generally, the same impacts would occur under Alternative 4 and Alternative 2, though, the presence of fewer visual resources along 9th Street reduces the overall viewer sensitivity and, therefore, lessens the visual impacts associated with the visual elements introduced by the proposed Project under this alternative. As such, Alternative 2 represents that maximum extent of visual impacts that would occur under the proposed Project's alternatives. As a result, a detailed threshold analysis for this alternative has been omitted for the purposes of this EIR.

As mentioned, Alternative 4 would result in impacts similar to those outlined above under Alternative 2; however, it would not include impacts on the viewsheds depicted by KOP 4, which is located at West 7th Street and Flower Street, looking east. Alternative 4 would still include the same mitigation measures as are proposed under Alternatives 2 and 3. Implementation of Mitigation Measure **MM-AES-O3** would help minimize visual impacts introduced by the OCS poles and wires. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Alternative 5: 9th Street Alternative without the Grand Avenue Extension

Construction Impacts

Less-than-significant impact. Under Alternative 5, project-related impacts would be similar to those outlined above under Alternative 4, with one exception. As Alternative 5 does not include the proposed Grand Avenue Extension, construction-related disruptions to visual resources or character would be reduced slightly, similar to the change between Alternatives 2 and 3. Construction would result in temporary impacts on the visual quality and character throughout the proposed alignment due to general construction activities and the presence of construction equipment/materials. No major construction-related equipment or structures would cast large shadows, and lighting for nighttime construction would be directed downward and on site to minimize spill light.

Implementation of Mitigation Measures **MM-AES-C1** through **MM-AES-C3** would help minimize construction-related visual impacts. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Operational Impacts

Less-than-significant impact. Under Alternative 5, project-related impacts would be similar to those occurring under Alternative 4. However, as Alternative 5 does not include the proposed Grand Avenue Extension, disruptions to visual resources or character would be reduced slightly compared to Alternative 4. Operational activities west of Hill Street (between Hill Street and Grand Avenue) and along Grand Avenue (between 1st and 2nd Streets) would not occur, and operational impacts would not include impacts on the viewsheds depicted by KOP 1, as a station platform and associated streetcar elements would not be constructed adjacent to the Disney Concert Hall. Implementation of Mitigation Measure **MM-AES-O3** would help minimize visual impacts introduced by the OCS poles and wires. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Traction Power Substations

The following sections described the potential construction and operational impacts associated with the TPSS units.

Construction Impacts

Less-than-significant impact. The proposed streetcar system would be powered by an estimated five TPSS units spaced relatively evenly throughout the alignment and would measure approximately 17 feet long by 11 feet wide by 11 feet high, or of sufficient size to house the TPSS equipment. Each would be placed at a parking lot or on private property outside the public right-of-way (except for the proposed TPSS location at 2nd Street and Grand Avenue, which may need to occupy space in the public right-of-way). Construction impacts would be essentially the same as discussed above for Alternatives 2 through 5, except that most of the construction activity would occur outside the street right-of-way.

Implementation of Mitigation Measure **MM-AES-O1** would ensure that TPSS facilities be designed in a manner that is appropriate to the design context in which they are proposed and given an architectural treatment that would be consistent with the applicable guidelines and regulations (such as the DDG) regarding size, height, bulk, density, and setback, which is discussed in more detail under *Operational Impacts*. TPSS facilities proposed within the Broadway Theatre and Commercial Historic District would be located in parking lots or behind buildings that are not architectural/historical resources, and, thus, their visibility would be greatly diminished because they would be a minor addition to the existing visual environment. No adverse impacts on historic buildings would occur during construction of the TPSS. Construction would result in temporary impacts on the visual quality and character at the potential site locations due to general construction activities and the presence of construction equipment/materials. No major construction-related equipment or structures would cast large shadows, and lighting for nighttime construction would be directed downward and on site to minimize spill light. Implementation of Mitigation Measures **MM-AES-C1** through **MM-AES-C3** would help minimize construction-related visual impacts. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Operational Impacts

Aesthetics

The amount or relative proportion of existing features or elements that substantially contribute to the valued visual character or image of a neighborhood, community, or localized area, which would be removed, altered, or demolished.

No impact. The visible built element of the TPSS consists of the approximately 17 feet long by 11 feet wide by 11 feet high equipment housing. As mentioned above, each would be placed at a parking lot or on private property outside the public right-of-way (except for the proposed TPSS location at 2nd Street and Grand Avenue, which may need to occupy space in the public right-of-way). At present, the proposed sites on which the TPSS would be located do not house visual features or elements that substantially contribute to the valued visual character throughout the project alignment. Therefore, introduction of the TPSS would not remove, alter, or demolish existing features or elements that contribute to the visual character throughout the project area. No impacts would occur.

The amount of natural open space to be graded or developed.

No impact. The proposed TPSS site(s) contains no natural open space that would be graded or developed. No impacts would occur.

The degree to which proposed structures in natural open space areas would be effectively integrated into the aesthetics of the site, through appropriate design, etc.

No impact. As mentioned, the proposed TPSS site(s) would not be located in a natural open space area(s). No impacts would occur.

The degree of contrast between proposed features and existing features that represent the area's valued aesthetic image.

No impact. Generally, due to their relative size and proposed location(s), the TPSS would introduce a very low degree of contrast. Because the proposed sites do not house extant features that represent the area's valued aesthetic image, the degree of contrast introduced by the housing would be negligible because they would be a minor addition to the existing visual environment. No impacts would occur.

The degree to which a proposed zone change would result in buildings that would detract from the existing style or image of the area due to density, height, bulk, setbacks, signage, or other physical elements.

No impact. The proposed TPSS would not propose a zone change to accommodate greater or taller structures than surrounding development or otherwise detract from the existing style or image of the area due to density, height, bulk, setback, signage, or other physical elements. The vertical elements proposed as part of the Project are consistent with surrounding land uses, and implementation of **MM-AES-O1** would ensure compliance with the applicable City regulations and standards to ensure that appropriate density, height, bulk, etc. is observed. As a result, no impacts would occur.

The degree to which the project would contribute to the area's aesthetic value.

Less-than-significant impact. As mentioned, the visible built element of the TPSS consists of the approximately 17 feet long by 11 feet wide by 11 feet high equipment housing. Implementation of Mitigation Measure **MM-AES-O1** would ensure that the TPSS structure would be approved, designed, and installed in compliance with all applicable design guidelines, policies, and development standards. As such, the TPSS would be minimally apparent, unobtrusive, and would not substantially alter the visual quality and/or character of the Project's visual setting. Views throughout the immediate project vicinity would still be of Medium Quality and maintain their vividness, intactness, and unity. Viewer sensitivity for this type of structure for all viewer groups would be low. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Applicable guidelines and regulations.

Less-than-significant impact. The TPSS would be completed in conformance with applicable City regulations and standards. Implementation of Mitigation Measure **MM-AES-O1** would help ensure compliance with applicable guidelines and regulations (as described in Section 3.1.1) and minimize visual impacts associated with TPSS housings. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Obstruction of Views

The nature and quality of recognized or valued views (e.g., natural topography, settings, human-made or natural features of visual interest, resources such as mountains or the ocean).

Less-than-significant impact. The TPSS would not substantially compromise the nature and/or quality of recognized or valued views due to their relatively small size and proposed location(s). In adherence to Mitigation Measure **MM-AES-O1**, the TPSS would be built in accordance with the applicable standards and guidelines, and would be designed to be minimally apparent and in keeping with the surrounding visual environment. Thus, valued views and views to/from the primary visual resources therein, as represented in KOPs 1 through 7, would be preserved. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Whether the project affects views from a designated scenic highway, corridor, or parkway.

No impact. No scenic vistas or designated scenic highways, corridors, or parkways have been identified within the project viewshed(s).Therefore, the project would not affect views from a designated scenic highway, corridor, or parkway, and no impact would occur.

The extent of obstruction (e.g., total blockage, partial interruption, or minor diminishment).

Less-than-significant impact. As mentioned, the TPSS would be minimally apparent and unobtrusive. The general degree of obstruction would be very low, due to their relative size and location(s). Viewer sensitivity to this type of installment would be low, and the presence of the TPSS would not would not interfere with informal views to/from the primary visual resources therein. Implementation of Mitigation Measure **MM-AES-O1** would ensure that the TPSS would be approved, designed, and installed in compliance with all applicable design guidelines, policies, and development standards to minimize visual impacts. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

The extent to which the project affects recognized views available from a length of a public roadway, bike path, or trail, as opposed to a single, fixed vantage point.

Less-than-significant impact. Built features associated with the proposed TPSS would not substantially compromise the nature and/or quality of recognized or valued views from a length of a public roadway, bike path, or trail, as opposed to a single, fixed vantage point due to their relatively small size and proposed location(s). In adherence to Mitigation Measure **MM-AES-O1**, the TPSS would be built in accordance with the applicable standards and guidelines, and would be designed to be minimally apparent and in keeping with the surrounding visual environment. Thus, valued views and views to/from the primary visual resources therein, as represented in KOPs 1 through 7, would be preserved. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Nighttime Illumination

The change in ambient illumination levels as a result of project sources.

No impact. The proposed TPSS would not alter ambient light levels. At present, light is emitted from high-rise buildings; security lighting; illuminated signage; architectural lighting on building façades, in landscaped areas, along pedestrian walkways and plaza areas; and from vehicle headlights. Due to the relatively high volume of existing nighttime light, and because lighting would not be incorporated into the TPSS housings, it would not represent a change in ambient illumination levels. Therefore, no impacts would occur.

The extent to which project lighting would spill off the project site and affect adjacent light-sensitive areas.

No impact. No lighting is proposed as a part of the TPSS housings. Therefore, no impacts would occur under this alternative.

Shading

Whether shadow-sensitive uses would be shaded by project-related structures for more than 3 hours between 9 a.m. and 3 p.m. Pacific Standard Time (between late October and early April), or for more than 4 hours between 9 a.m. and 5 p.m. Pacific Daylight Time (between early April and late October).

No impact. TPSS housings would not be of scale or bulk to cast shadows of sufficient size to significantly affect shade-sensitive uses. No impacts would occur.

Maintenance and Storage Facilities

This section discusses the potential construction and operational impacts associated with each of the four candidate MSF sites currently being considered. Generally, unless otherwise noted, impacts on *Aesthetics*, *Obstruction of Views*, *Nighttime Illumination* and *Shading* associated with the MSFs at Hill Street and 5th Street, 11th Street and Olive Street (West), and 11th Street and Olive Street (East) would be similar to those described below for the MSF at Broadway and 2nd Street.

Broadway and 2nd Street

Construction Impacts

Less-than-significant impact. Construction of the MSF would consist of an enclosed building and an outdoor area. The facility would have sufficient storage capacity with paved maintenance aisles, a pit track, overhead crane, paved truck access, staff offices, parts storage areas, and a machine shop. An employee parking area would also be provided. A maintenance building for a system of the size of the proposed Project would generally be 12,000 to 18,000 square feet, approximately two to three stories tall, contain tracks inside a garage enclosure for maintenance of the vehicles, and be constructed to comply with the City's Green Building Code and also meet minimum Leadership in Energy and Environmental Design (LEED) certification requirements. Streetcars would access the facility from a short segment of track that would be connected to the mainline. A storage area outside of the maintenance facility would provide an area for overnight cleaning and secure storage of streetcar vehicles (see Section 2.6.3.3 in Chapter 2, *Project Description*).

Acquisition of property for a MSF would probably not require full acquisition of all affected parcels; however, because a site design and configuration has not yet been completed, this analysis assumes full acquisition would be needed.

Implementation of Mitigation Measure **MM-AES-O2** would ensure that MSFs be designed in a manner that is appropriate to the design context in which they are proposed; be given an architectural treatment that would be consistent with the applicable guidelines and regulations (such as the DDG) regarding size, height, bulk, density, and setback; and direct lighting necessary for overnight cleaning and other facility operations on site so as to reduce spill effects, which is discussed in more detail under *Operational Impacts*.

As with the other proposed project elements, project-related construction of the MSFs would result in temporary impacts on the visual quality and character within the immediate vicinity of Broadway and 2nd Streets due to general construction activities and the presence of construction equipment/materials. No major construction-related equipment or structures would cast large shadows, and lighting for nighttime construction would be directed downward and on site to minimize spill light. Construction of the MSF may involve a greater level of disruption on a temporary basis than the tracks or platforms for streetcar stops due to greater excavation depths (up to 10 feet) than other proposed project elements. Implementation of Mitigation Measures **MM-AES-C1** through **MM-AES-C3** would help reduce construction-related visual impacts and establish a staging area designed to minimize potential impacts on adjacent sensitive uses, including residences. These mitigation measures would minimize views of stockpiled materials and idle construction equipment in staging areas; reduce visual clutter and disorder; and require appropriate screening materials, daily visual inspections, and the removal of debris and graffiti. These measures would also require that nighttime construction lighting be directed downward and on site to minimize spill impacts. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Operational Impacts

Aesthetics

The amount or relative proportion of existing features or elements that substantially contribute to the valued visual character or image of a neighborhood, community, or localized area, which would be removed altered, or demolished.

Less-than-significant impact. The MSF at Broadway and 2nd Street would replace an existing parking lot and building. Through implementation of Mitigation Measure **MM-AES-O2**, its design would be approved and installed in compliance with all applicable design guidelines, policies, and development standards. Because it would replace an existing parking lot, the proposed MSF site under this option would not materially alter the visual features or elements that define the visual character of the site. Similarly, removal of the existing business structure on the site would also not alter the visual character of the area. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

The amount of natural open space to be graded or developed.

No impact. The proposed MSF site contains no natural open space that would be graded or developed. No impacts would occur.

The degree to which proposed structures in natural open space areas would be effectively integrated into the aesthetics of the site, through appropriate design, etc.

No impact. The proposed MSF site would not be located in a natural open space area(s). No impacts would occur.

The degree of contrast between proposed features and existing features that represent the area's valued aesthetic image.

Less-than-significant impact. Because the proposed project site does not contain features that represent the area's valued aesthetic image and neighboring buildings (as described in more detail below) are not considered to be visual resources, the degree of contrast introduced by the MSF would be moderately low, and the impact would be less than significant. Implementation of Mitigation Measure **MM-AES-O2** would ensure that the MSF would be built in accordance with the applicable standards and guidelines, and would be designed to be compatible with the surrounding visual environment. Therefore, the proposed MSF would not introduce a substantial degree of contrast between proposed features and existing features that represent the area's valued aesthetic image. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

The degree to which a proposed zone change would result in buildings that would detract from the existing style or image of the area due to density, height, bulk, setbacks, signage, or other physical elements.

Less-than-significant impact. Installation of the MSF would not propose a zone change to accommodate greater or taller structures than surrounding development or otherwise detract from the existing style or image of the area due to density, height, bulk, setback, signage, or other physical elements. The vertical elements proposed as a part of the MSF (the MSF would be two or three stories high) are consistent with surrounding land uses, and a less-than-significant impact would result. Implementation of Mitigation Measure **MM-AES-O2** would ensure compliance with the applicable City regulations and standards to ensure that appropriate density, height, bulk, etc. is observed. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

The degree to which the project would contribute to the area's aesthetic value.

Less-than-significant impact. Under this option, the MSF would be located in an existing parking lot between 2nd and 3rd Streets and Broadway and Hill Streets. The site would abut La Catedral De Los Angeles Wedding Chapel, the Office of Child Care, and several other institutional and retail-oriented establishments such as the Max Electronics Center, the Learning Rights Law Center, and Civic Center Studios, among others. The area around the site is a built-up urban environment and contains a variety of land uses, including residential. South of 3rd Street are popular attractions such the Grand Central Market and the Bradbury Building. Within the vicinity of the proposed site, the buildings are rectilinear in form and there is a variety of architectural cladding materials and coloration (e.g., tan, gray, off-white) that create visual interest. There is also a large quantity of business signs with various sign treatments, placements, colors, and patterns as well as street and traffic signal lighting. The gray roadway and sidewalk paving are dominant in terms of line, color, and texture.

The visible, built elements of the MSF would include an enclosed building approximately two to three stories tall with an outdoor area for maintenance, storage, and overnight cleaning of streetcar vehicles. Implementation of Mitigation Measure **MM-AES-O2** would ensure that MSFs are designed in a manner that is appropriate to the design context in which they are proposed and are given an architectural treatment that would be consistent with the applicable guidelines and regulations (such as the DDG). It would be situated in a built up urban environment with limited views to/from significant visual resources, as discussed in Section 3.1.5.2. Therefore, views throughout the immediate vicinity would still be of Low to Medium Quality, and maintain their vividness, intactness, and unity. Viewer sensitivity for this type of structure for all viewer groups would be low. Nearby residents are accustomed to the dynamic, urban environment in downtown Los Angeles and generally reside in multi-story buildings with viewsheds that would not be impacted by visual changes at or near street-level. Therefore, although the introduction of an MSF at this site would alter the existing viewsheds within the immediate vicinity, it would not substantially degrade the overall quality and character throughout the area. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Applicable guidelines and regulations.

Less-than-significant impact. The MSF would be completed in conformance with applicable City regulations and standards, and the impact would be less than significant. Implementation of Mitigation Measure **MM-AES-O2** would help ensure compliance with applicable guidelines and regulations (as described in Section 3.1.1) and minimize visual impacts associated with the facility. Impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Obstruction of Views

The nature and quality of recognized or valued views (e.g., natural topography, settings, human-made or natural features of visual interest, resources such as mountains or the ocean).

Less-than-significant impact. As discussed above regarding the MSF's overall contribution to the area's aesthetic value, the MSF at this site would be introduced into a built up urban environment with limited views to/from significant visual resources. Implementation of Mitigation Measure **MM-AES-O2** would ensure that MSFs are approved and designed in a manner that is appropriate to the design context in which they are proposed, and consistent with the applicable guidelines and regulations. Again, although the introduction of an MSF at this site would alter the nature and quality of existing views, it would not substantially degrade the overall visual quality and character in the immediate vicinity. Impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Whether the project affects views from a designated scenic highway, corridor, or parkway.

No impact. No scenic vistas or designated scenic highways, corridors, or parkways have been identified within the project viewshed(s).Therefore, the Project would not affect views from a designated scenic highway, corridor, or parkway, and no impact would occur.

The extent of obstruction (e.g., total blockage, partial interruption, or minor diminishment).

Less-than-significant impact. As mentioned, through implementation of **MM-AES-O2**, the MSF would be designed to be in keeping with the existing visual environment. Though introduction of the MSF would alter the existing viewshed, it would be installed in a built up urban environment with limited views to/from significant visual resources, depending on the position, distance, and angle of the viewer. As such, obstruction of street-level views near the proposed MSF site would not be considered a significant impact as it would not create blockage of sightlines to visual resources in the area. Viewer sensitivity for this type of structure for all viewer groups would be low. Nearby residents are accustomed to the dynamic, urban environment in downtown Los Angeles and generally reside in multi-story buildings with viewsheds that would not be impacted by visual changes at or near street-level. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

The extent to which the project affects recognized views available from a length of a public roadway, bike path, or trail, as opposed to a single, fixed vantage point.

Less-than-significant impact. Built features associated with the proposed MSF would not substantially compromise the nature and/or quality of recognized or valued views from a length of a public roadway, bike path, or trail, as opposed to a single, fixed vantage point. As the MSF proposes to replace an existing parking lot and building in a built up urban environment with limited views to/from significant visual resources, a less-than-significant impact would result. In adherence to Mitigation Measure **MM-AES-O2**, the MSF would be built in accordance with the applicable standards and guidelines, and would be designed to be in keeping with the surrounding visual environment in such a way that views from nearby public roadways would be more or less maintained. Thus, valued views and views to/from the primary visual resources therein, as represented in KOPs 1 through 7, would be preserved. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Nighttime Illumination

The change in ambient illumination levels as a result of project sources.

Less-than-significant impact. At present, light in the immediate vicinity of the proposed MSF site is emitted from neighboring multi-story buildings, security lighting, illuminated signage, along pedestrian walkways/sidewalks, and from vehicle headlights. The addition of nighttime lighting to the two- or three-story facility, which would replace an existing parking lot, would introduce new light into the project area. However, due to the relatively high volume of existing nighttime light in the immediate vicinity, the current existence of nighttime illumination at the proposed site, and highly urbanized nature of the proposed site, onsite lighting at the MSF for overnight vehicle cleaning and security purposes would not represent a significant change in ambient illumination levels, and a less-than-significant impact would result. Implementation of Mitigation Measure **MM-AES-O2** would ensure that the MSF would be installed in accordance with the Los Angeles Municipal Code and that lighting would be directed downward and on site. Therefore, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

The extent to which project lighting would spill off the project site and affect adjacent light-sensitive areas.

Less-than-significant impact. Nighttime light cast from the proposed MSF would be primarily for security purposes and vehicle cleaning. The addition of nighttime lighting to the two- or three-story facility, which would replace an existing parking lot, would introduce new light into the project area. However, as mentioned, due to the existing nighttime illumination levels in the immediate vicinity, the current existence of nighttime illumination at the proposed site, and highly urbanized nature of the proposed site, the introduction of new light as a result of the MSF would not be considered substantial and viewer sensitivity would be low. In addition, the headlights from the streetcars would not affect the surrounding residences when turning into the MSF because the closest residences to the MSF sites would be either above the first floor or at a substantial distance from the MSF site; therefore, a less-than-significant impact would result. In adherence to Mitigation Measure **MM-AES-O2**, nighttime lighting necessary for the operation of the MSF would be directed on site to minimize spill effects and reduce potential visual impacts related to nighttime illumination. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Shading

Whether shadow-sensitive uses would be shaded by project-related structures for more than 3 hours between 9 a.m. and 3 p.m. Pacific Standard Time (between late October and early April), or for more than 4 hours between 9 a.m. and 5 p.m. Pacific Daylight Time (between early April and late October).

No impact. The MSF buildings would not exceed 30 feet in height and, therefore, would not have the potential to produce shadows that could significantly affect shade-sensitive viewers. No impacts would occur.

Hill Street and 5th Street

Construction Impacts

Less-than-significant impact. Under the MSF at Hill and 5th Street, construction impacts would be similar to those described above for the MSF at Broadway and 2nd Street. As with the other proposed project elements, project-related construction of the MSFs would result in temporary impacts on the visual quality and character within the immediate vicinity of Hill and 5th Streets due to general construction activities and the presence of construction equipment/materials. No major construction-related equipment or structures would cast large shadows, and lighting for nighttime construction would be directed downward and on site to minimize spill light. Although construction activities associated with the MSF would result in a temporary change and minor impacts on the visual quality and character in the immediate vicinity because construction equipment, staging areas, and exposed excavation areas would be visible to nearby viewers, including residents, these activities would not have a long-term impact on the overall aesthetics throughout the immediate vicinity. Residential viewer groups and regular visitors would be more sensitive to this type of temporary visual intrusion than recreationists or local commuters.

Implementation of Mitigation Measures **MM-AES-C1** through **MM-AES-C3** would help reduce construction-related visual impacts and establishment of a staging area designed to minimize potential impacts on adjacent sensitive uses, including residences. These mitigation measures would minimize views of stockpiled materials and idle construction equipment in staging areas; reduce visual clutter and disorder; and require appropriate screening materials, daily visual inspections, and the removal of debris and graffiti. These measures would also require that nighttime construction lighting be directed downward and on site to minimize spill impacts. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Operational Impacts

Less-than-significant impact. Generally, unless otherwise noted, operational impacts associated with the MSF at Hill and 5th Street would be similar to those described above for the MSF at Broadway and 2nd Street. Under this option, however, the MSF would be located in an existing parking lot between 4th and 5th Streets and Hill and Olive Streets. The site would abut Metro 417 Apartments and the Title Guarantee and Trust Company Building. The area around the site is a built-up urban environment and contains a variety of land uses, including residences, restaurants, retail outlets, offices, and hotels. Being situated closer to Los Angeles's Central Business District, the proposed site is in proximity to various skyscrapers and high-rise buildings that are afforded views of the lot, such as the Southern California Gas Company building and the Millennium Biltmore Hotel, among others. However, from these views, the proposed site comprises a negligible portion of the existing viewsheds as sightlines from high-rise buildings downtown offer more panoramic views of the downtown area and its buildings, as well as to the foothills of the Santa Monica Mountains and beyond. Pershing Square is one block southwest, between 5th and 6th Streets and Hill and Olive Streets.

Within the vicinity of the proposed site at Hill and 5th Street, the visual elements are highly varied in terms of building architectural design, height, and exterior cladding materials (e.g., glass skin, brick, concrete, terra cotta). There is a moderately dense clustering of trees and understory landscaping along the west side of Hill Street, and Pershing Square, with its curvilinear form, evergreen color, and texture, provides a significant and vibrant contrasting component to the strongly individualized building forms. The rectilinear forms, architectural cladding materials, and coloration (e.g., tan, brown, gray, green-blue, off-white) create moderate visual interest and provide Medium to High Quality views, depending on the position and angle of the viewer.

As mentioned, under this option, the proposed changes associated with operation of the MSF would be similar to those described above for the Broadway and 2nd Street location. In this case, the MSF would replace an existing parking lot in a built-up urban environment with a variety of land uses. The visible, built elements of the MSF would include an enclosed building approximately two to three stories tall with an outdoor area for maintenance, storage, and overnight cleaning of streetcar vehicles. Implementation of Mitigation Measure **MM-AES-O2** would ensure that MSFs be approved and designed in a manner that is appropriate to the design context in which they are proposed, and given an architectural treatment that would be consistent with the applicable guidelines and regulations and their surrounding environment. Therefore, although the introduction of an MSF at this site would alter the existing viewsheds within the immediate vicinity, it would not substantially degrade the overall quality and character throughout the area. Views throughout the immediate vicinity would still be of Medium to High Quality, and maintain their vividness, intactness, and unity. Obstruction of street-level views near the proposed MSF site would not be considered a significant impact as the MSF would not create blockage of sightlines to visual resources in the area, which are widely available in the immediate vicinity were the viewer to adjust their position and angle.

Viewer sensitivity for this type of structure for all viewer groups would be low. Nearby residents are accustomed to the dynamic, urban environment in downtown Los Angeles and generally reside in multi-story buildings with viewsheds that would not be impacted by visual changes at or near street-level. Therefore, operational impacts associated with the proposed MSF for *Aesthetics* and *Obstruction of Views* are considered to be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Operational impacts related to *Nighttime Illumination* and *Shading* would be the same under this MSF option as they would at Broadway and 2nd Street. Due to the existing nighttime illumination levels in the immediate vicinity, the current existence of nighttime illumination at the proposed site, and highly urbanized nature of the proposed site, the introduction of new light as a result of the MSF would not be considered substantial and viewer sensitivity would be low. In adherence to Mitigation Measure **MM-AES-O2**, nighttime lighting necessary for the operation of the MSF would be directed on site to minimize spill effects and reduce potential visual impacts related to nighttime illumination. As such, MSF lighting would be installed in accordance with the applicable guidelines and regulations, and impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation. Additionally, the MSF buildings would not exceed 30 feet in height and, therefore, would not have the potential to produce shadows that could significantly affect shade-sensitive viewers. No *Shading* impacts would occur.

11th Street and Olive Street (West)

Construction Impacts

Less-than-significant impact. Under the MSF at 11th Street and Olive Street (West), construction impacts would be similar to those described above for the MSF at Broadway and 2nd Street. As with the other proposed project elements, project-related construction of the MSFs would result in temporary impacts on the visual quality and character within the immediate vicinity of 11th and Olive Streets due to general construction activities and the presence of construction equipment/materials. No major construction-related equipment or structures would cast large shadows, and lighting for nighttime construction would be directed downward and on site to minimize spill light. Although construction activities associated with the MSF would result in a temporary change and minor impacts on the visual quality and character in the immediate vicinity because construction equipment, staging areas, and exposed excavation areas would be visible to nearby viewers, including residents, these activities would not have a long-term impact on the overall aesthetics throughout the immediate vicinity. Residential viewer groups and regular visitors would be more sensitive to this type of temporary visual intrusion than recreationists or local commuters.

Implementation of Mitigation Measures **MM-AES-C1** through **MM-AES-C3** would help reduce construction-related visual impacts and establish a staging area designed to minimize potential impacts on adjacent sensitive uses, including residences. These mitigation measures would minimize views of stockpiled materials and idle construction equipment in staging areas; reduce visual clutter and disorder; and require appropriate screening materials, daily visual inspections, and the removal of debris and graffiti. These measures would also require that nighttime construction lighting be directed downward and on site to minimize spill impacts. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Operational Impacts

Less-than-significant impact. Generally, unless otherwise noted, operational impacts associated with the MSF at 11th Street and Olive Street (West) would be similar to those described above for the MSF at Broadway and 2nd Street. Under this option, the MSF would be located in an existing parking lot between 11th and 12th Streets and Olive and Grand Streets. The site would abut two parcels, which contain various entities, including a restaurant (facing Olive Street, away from the proposed MSF site) and an insurance broker. The area around the site is a built up urban environment and contains a variety of land uses. The *Herald-Examiner* building is an architectural/historical landmark and an important visual resource along both Broadway and 11th Streets.

Within the vicinity of the proposed site, the streetscape is characterized by highly varied architectural forms, with divergent building heights, architectural cladding, textures, and coloration. Large high-rise buildings, such as the Ritz Carlton and Elleven Lofts can be seen in the area due to the presence of many low- and mid-rise buildings. The curvilinear form of the yew street trees and their evergreen color and texture provide contrast to the architectural forms. A range of colors and patterns can be seen in this area and provide partially constrained Medium to High Quality views, depending on the position and angle of the viewer.

As mentioned, under this option, the proposed changes associated with operation of the MSF would be similar to those described above for the Broadway and 2nd Street location. In this case, the MSF would also replace an existing parking lot in a built-up urban environment with a variety of land uses. The visible, built elements of the MSF would include an enclosed building approximately two to three stories tall with an outdoor area for maintenance, storage, and overnight cleaning of streetcar vehicles. Implementation of Mitigation Measure **MM-AES-O2** would ensure that MSFs be approved and designed in a manner that is appropriate to the design context in which they are proposed, and given an architectural treatment that would be consistent with the applicable guidelines and regulations and their surrounding environment. Therefore, although the introduction of an MSF at this site would alter the existing viewsheds within the immediate vicinity, it would not substantially degrade the overall quality and character throughout the area. Views throughout the immediate vicinity would still be of Medium to High Quality, and maintain their vividness, intactness, and unity. Obstruction of street-level views near the proposed MSF site would not be considered a significant impact as the MSF would not create blockage of sightlines to visual resources in the area, which are widely available in the immediate vicinity were the viewer to adjust their position and angle.

Viewer sensitivity for this type of structure for all viewer groups would be low. Nearby residents are accustomed to the dynamic, urban environment in downtown Los Angeles and generally reside in multi-story buildings with viewsheds that would not be impacted by visual changes at or near street-level. Therefore, operational impacts associated with the proposed MSF for *Aesthetics* and *Obstruction of Views* are considered to be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Operational impacts related to *Nighttime Illumination* and *Shading* would be the same under this MSF option as they would at Broadway and 2nd Street. Due to the existing nighttime illumination levels in the immediate vicinity, the current existence of nighttime illumination at the proposed site, and highly urbanized nature of the proposed site, the introduction of new light as a result of the MSF would not be considered substantial and viewer sensitivity would be low. In adherence to Mitigation Measure **MM-AES-O2**, nighttime lighting necessary for the operation of the MSF would be directed on site to minimize spill effects and reduce potential visual impacts related to nighttime illumination. As such, MSF lighting would be installed in accordance with the applicable guidelines and regulations, and impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation. Additionally, the MSF buildings would not exceed 30 feet in height and, therefore, would not have the potential to produce shadows that could significantly affect shade-sensitive viewers. No *Shading* impacts would occur.

11th Street and Olive Street (East)

Construction Impacts

Less-than-significant impact. Under the MSF at 11th Street and Olive Street (East), construction impacts would be similar to those described above for the MSF at Broadway and 2nd Street. As with the other proposed project elements, project-related construction of the MSFs would result in temporary impacts on the visual quality and character within the immediate vicinity of 11th and Olive Streets due to general construction activities and the presence of construction equipment/materials. No major construction-related equipment or structures would cast large shadows, and lighting for nighttime construction would be directed downward and on site to minimize spill light. Although construction activities associated with the MSF would result in a temporary change and minor impacts on the visual quality and character in the immediate vicinity because construction equipment, staging areas, and exposed excavation areas would be visible to nearby viewers, including residents, these activities would not have a long-term impact on the overall aesthetics throughout the immediate vicinity. Residential viewer groups and regular visitors would be more sensitive to this type of temporary visual intrusion than recreationists or local commuters.

Implementation of Mitigation Measures **MM-AES-C1** through **MM-AES-C3** would help reduce construction-related visual impacts and establish a staging area designed to minimize potential impacts on adjacent sensitive uses, including residences. These mitigation measures would minimize views of stockpiled materials and idle construction equipment in staging areas, reduce visual clutter and disorder, and require appropriate screening materials, daily visual inspections, and the removal of debris and graffiti. These measures would also require that nighttime construction lighting be directed downward and on site to minimize spill impacts. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Operational Impacts

Less-than-significant impact. Generally, unless otherwise noted, operational impacts associated with the MSF at 11th Street and Olive Street (East) would be similar to those described above for the MSF at Broadway and 2nd Street. Under this option, the MSF would be located in an existing parking lot south of 11th Street between Olive Street and Midway Place. The site would abut the 32-story AT&T Center, a building for lease on the southwest corner of the intersection of 11th Street and Hill Street, and various entities that are adjacent to the southeast corner of the existing parking lot, such as Bank of America and the west building of the City of Los Angeles Department of Public Works facility at 1149 S. Broadway. The area around the site is a built up urban environment and contains a variety of land uses. The *Herald-Examiner* building is an architectural/historical landmark and an important visual resource along both Broadway and 11th Streets.

Within the vicinity of the proposed site, the streetscape is characterized by highly varied architectural forms, with divergent building heights, architectural cladding, textures, and coloration. Large high-rise buildings, such as the AT&T Center, Ritz Carlton, and Elleven Lofts can be seen in the area due to the presence of many low- and mid-rise buildings. The curvilinear form of the yew street trees and their evergreen color and texture provide contrast to the architectural forms. A range of colors and patterns can be seen in this area and provide partially constrained Medium to High Quality views, depending on the position and angle of the viewer.

As mentioned, under this option, the proposed changes associated with operation of the MSF would be similar to those described above for the Broadway and 2nd Street location. In this case, the MSF would also replace an existing parking lot in a built-up urban environment with a variety of land uses. The visible, built elements of the MSF would include an enclosed building approximately two- to three-stories tall with an outdoor area for maintenance, storage, and overnight cleaning of streetcar vehicles. Implementation of Mitigation Measure **MM-AES-O2** would ensure that MSFs be approved and designed in a manner that is appropriate to the design context in which they are proposed, and given an architectural treatment that would be consistent with the applicable guidelines and regulations and their surrounding environment. Therefore, although the introduction of an MSF at this site would alter the existing viewsheds within the immediate vicinity, it would not substantially degrade the overall quality and character throughout the area. Views throughout the immediate vicinity would still be of Medium to High Quality, and maintain their vividness, intactness, and unity. Obstruction of street-level views near the proposed MSF site would not be considered a significant impact as the MSF would not create blockage of sightlines to visual resources in the area, which are widely available in the immediate vicinity were the viewer to adjust their position and angle.

Viewer sensitivity for this type of structure for all viewer groups would be low. Nearby residents are accustomed to the dynamic, urban environment in downtown Los Angeles and generally reside in multi-story buildings with viewsheds that would not be impacted by visual changes at or near street-level. Therefore, operational impacts associated with the proposed MSF for *Aesthetics* and *Obstruction of Views* are considered to be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Operational impacts related to *Nighttime Illumination* and *Shading* would be the same under this MSF option as they would at Broadway and 2nd Street. Due to the existing nighttime illumination levels in the immediate vicinity, the current existence of nighttime illumination at the proposed site, and highly urbanized nature of the proposed site, the introduction of new light as a result of the MSF would not be considered substantial and viewer sensitivity would be low. In adherence to Mitigation Measure **MM-AES-O2**, nighttime lighting necessary for the operation of the MSF would be directed on site to minimize spill effects and reduce potential visual impacts related to nighttime illumination. As such, MSF lighting would be installed in accordance with the applicable guidelines and regulations, and impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation. Additionally, the MSF buildings would not exceed 30 feet in height and, therefore, would not have the potential to produce shadows that could significantly affect shade-sensitive viewers. No *Shading* impacts would occur.

3.1.7 Mitigation Measures

No significant aesthetics or visual construction or operation impacts are anticipated for any of the build alternatives. However, in an effort to reduce impacts as much as practicable, several mitigation measures have been proposed for incorporation into the Project to ensure that it is built with sensitivity to the visual environment. These measures are described below.

3.1.7.1 Construction Period

MM-AES-C1: Construction Staging/Stockpiled Materials and Equipment. Under the direction of the LABOE, the construction contractor shall be the responsible party for providing temporary construction fencing along the periphery of active construction areas to screen as much of the construction activity as possible from view at the street level.

To minimize views of stockpiled materials and idled construction equipment in staging areas and to reduce visual clutter and disorder, consistent with Bureau of Engineering Master Specification Environmental Control Measures, project construction staging areas shall be enclosed or screened from view at the street level with appropriate screening materials. The contractor shall provide daily visual inspections to ensure that the immediate surroundings of construction staging areas are free from construction-related clutter and graffiti and maintain the areas in a clean and orderly manner throughout the construction period. Graffiti shall be promptly painted over, masked out, or cleaned off. Routine sidewalk and window washing to remove dust generated by construction shall be scheduled weekly. LABOE, through the construction contractor per bid specifications, shall be the responsible party. Enforcement shall be achieved through the DPW Contract Administration Bureau Construction Inspector.

MM-AES-C2: Nighttime Construction Activities. Should construction activities with associated lighting occur during nighttime, the City shall ensure that lighting will be directed away from surrounding sensitive land uses and toward the specific location intended for illumination. Lighting associated with construction activities and security purposes shall be shielded to minimize the production of glare and spill light around sensitive land uses in the surrounding area. LABOE, through the construction contractor per bid specifications, shall be the responsible party. Enforcement shall be achieved through the DPW Contracts Administration Bureau Construction Inspector.

MM-AES-C3: **Tree Removal/Relocation**. Should mature trees, as well as younger trees (with trunk diameters of 5 inches or less) be trimmed or removed, the proposed Project would comply with the *City of Los Angeles Tree Preservation Ordinance* and *Tree Preservation Policy*. City policy requires all tree removals be replaced on a 2:1 basis for street trees and 4:1 basis for protected private property trees. No protected trees were identified throughout the proposed alignment and at the potential MSF siting locations. Replacement trees would be placed as near their original locations as possible. Alternative methods and options to removal, such as trimming, would be explored prior to considering potential tree removal. The Project's compliance with the *City of Los Angeles Tree Preservation Ordinance* and *Tree Preservation Policy* would ensure that any street trees slated for removal would be planted at or near their original locations at 2:1 ratios. Removal or relocation of protected trees, under the City's *Tree Preservation Ordinance*, requires a permit from the Board of Public Works. A protected tree report must be submitted to the Board of Public Works to apply for a tree removal permit. Before a Special Habitat Value tree, as defined by the City's Tree *Preservation Policy*, is pruned, damaged, relocated, or removed, recommendations from Department of Recreation Parks staff arborists must be obtained. The Forestry Arborist makes a recommendation to the General Manager for removal. The General Manager or designee must make the final approval before the tree(s) can be removed.

3.1.7.2 Operational Period

MM-AES-O1: Design of Traction Power Substation Structures. The City of Los Angeles shall ensure that all TPSS structures would be designed to minimize their visual presence. Where site and design allow, the TPSS structures shall incorporate design and location features, such as the minimization of the size of the structures, setbacks from adjoining street frontages, screening, and/or architectural treatments that are appropriate to the design setting where visible from the public right-of-way at street level. All TPSS structures shall be designed and built to satisfy the established final design requirements and in compliance with all applicable design guidelines, policies, and development standards, including required Public Benefit performance measures, if necessary. Should a TPSS be located within the public right-of-way, it shall be designed in conformance with the Los Angeles Above-Ground Facility regulations contained in Section 62.08 of the LAMC. LABOE shall be the responsible party. Enforcement shall be achieved through the DPW Contracts Administration Bureau Construction Inspector.

MM-AES-O2: Maintenance Storage Facility Design and Operational Lighting. The City of Los Angeles shall ensure that the MSF site plan, building treatments and architecture would be appropriate in scale, proportion, and detail with appropriate use of material, texture, articulation, and color in consideration of the surrounding design context. The aesthetic treatment shall be designed and built in compliance with all applicable design guidelines, policies, and development standards. Light associated with the MSF shall be properly controlled and directed on site in a manner that would minimize the potential for spill light. The Project would adhere to the requirements of LAMC Section 14.00 in all respects and will follow all applicable procedures. All applicable performance standards or alternative compliance measures will be addressed and all procedures for review and approval will be followed. LABOE shall ensure the carrying out of the mitigation measure.

MM-AES-O3: Overhead Contact System Poles. The City of Los Angeles shall ensure that design and installation of the OCS poles will be consistent with the surrounding design context. OCS poles shall be designed and installed in compliance with all applicable design guidelines, policies, and development standards. LABOE shall be the responsible party. Enforcement shall be achieved through the DPW Contracts Administration Bureau Construction Inspector.

3.1.8 Significant Unavoidable Adverse Impacts

No significant and unavoidable impacts would occur under any of the build alternatives.

3.1.9 Cumulative Impacts

As shown in Section 2.10 of Chapter 2, *Project Description*, there are many projects currently underway or planned in the vicinity of the Project; however, projects that could contribute to a cumulative visual impact are limited to those within the sightlines of the project alignment under the build alternatives. Within the densely developed context of downtown, the area for cumulative impacts would consist of a viewshed along the streets that comprise the 3.8-mile project alignment. The area for consideration of cumulative visual impacts would also extend out laterally from the alignment to the limits of sightlines, typically a maximum distance of 0.5 mile, often much shorter, where topographic features, freeway configurations, or building placements do not further reduce sightline distances.

Development proposed as part of the related projects calls for the rehabilitation of existing buildings and development of vacant land (e.g., typically land that is presently improved as surface parking lots). Such development would be subject to design regulations and policies intended to protect visual resources and promote high-quality, aesthetically attractive new development. Among the related projects, almost half call for the construction of new buildings (e.g., the Olympic and Hill mixed-use project, the Wilshire Grand hotel/office/retail project, the Metropolis mixed-use project, etc.), generally on existing surface parking lots. As stated above, such projects would conform to the design policies governing downtown development, which are aimed at promoting aesthetically pleasing architectural design and streetscape features (e.g., the *Citywide Design Guidelines, Downtown Design Guide,* HDLADG). In addition to the various sets of applicable design policies, all such new development would also be subject to a formal City Planning Department design review process.

Several related projects call for the rehabilitation of existing buildings (e.g., the Hall of Justice, *Herald Examiner* offices and the related printing plant property at 1115 S. Hill Street, the Embassy Towers, etc.) and would refurbish buildings by preserving key architectural design elements and replacing obsolete, non-operational building infrastructure. As such, the rehabilitation projects are expected to have positive effects on aesthetics within the project viewshed.

Of the remaining related projects, two are streetscape improvement projects that have been referenced previously in this section (the Broadway Streetscape Master Plan and the Figueroa Corridor Streetscape Project); the other is the Regional Connector Project—a public transit improvement project that calls for the construction of a 1.9-mile underground light rail system, featuring at least three new stations that would connect the Blue, Gold, and Exposition Lines. The Regional Connector Project is a tunneling project with a very small number of aboveground associated train station facilities. Because the majority of Regional Connector construction work would take place within the street right-of-way, similar to other public works projects that have occurred on a routine basis within the public right-of-way downtown, and because nearly all project features, with the exception of train station entrances, would be underground, views of architectural/historic resources would not be adversely affected. Neither construction equipment nor screened construction areas, where present, would preclude views of visual resources when looking across or around the perimeters of the barriers. In addition, such construction areas would be screened and maintained in clean, graffiti-free condition to further minimize the effect of project construction on nearby scenic resources.

The two streetscape projects call for improved pedestrian, bicycle, and public transit circulation; enhanced sidewalk and crosswalk treatments; design-coordinated and setting-appropriate wayfinding signage; and the installation of trees and ground-level plantings as well as the preservation of existing character-identifying design features. The primary effect of these projects would be to create more unified streetscapes along Figueroa Street, 11th Street, and Broadway. The effect is expected to be positive.

None of the build alternatives would result in effects that would be cumulatively significant when combined with other related projects in downtown Los Angeles. Similarly, visual changes associated with the build alternatives would not result in a cumulatively considerable contribution to a significant cumulative impact. No scenic vistas or scenic corridors have been identified within the project viewshed, views within the viewshed are of medium visual quality, and views of architecturally or historically significant individual buildings— the primary visual resource type within the viewshed—would be preserved. Building placements, and in some instances, topography (as in locations on and adjoining Bunker Hill) block many views across downtown and serve to isolate views acquired in one portion of downtown from other portions of downtown, and views in one portion of a design district from one another. In addition, outside the Historic Core—where there is a significant concentration of architecturally and historically significant buildings and other objects (e.g., certain special sidewalk treatments along Broadway, historic streetlight bases)—the diversity in architectural treatments within most portions of downtown makes it a fairly forgiving and flexible urban design context in which to incorporate new public transit infrastructure and streetscape design elements.

Within the Historic Core, specific design guidelines, including the *Broadway Streetscape Master Plan* and *Historic Downtown Los Angeles Design Guidelines*, would ensure that all improvements are designed in a manner that would be consistent with the design setting. The majority of the design features proposed would occur slightly above, at, or below street level and incorporate features (benches, poles, and limited signage) that would not block views of visual resources or cast significant shadows that would have the potential to affect shade sensitive viewers. Other informal views that can be acquired would typically be acquired by less-sensitive viewing groups (e.g., office workers, pedestrians who are shoppers or downtown on business, and commuters), who constitute a majority of the viewers present within the project viewshed. Such viewers are considered to be relatively tolerant of design changes within the viewshed.

Visual and scenic resources are limited to groupings of architecturally and historically significant buildings within the Historic Core, other individual buildings outside the Historic Core, and other design elements of secondary importance, such as landscape features, including formally designed landscapes (e.g., Pershing Square, Civic Center) and mature street trees. As previously stated, no formal scenic vistas or scenic corridors have been identified or designated within the viewshed. Compliance with the *City of Los Angeles Tree Preservation Ordinance* and *Tree Preservation Policy* would ensure that trees slated for removal would be planted at or near their original locations at a 2:1 ratio. Therefore, the Project, in conjunction with related projects, would not have a detrimental effect on scenic or visual resources, nor substantially degrade existing visual character or quality.

Project components under the 7th Street or 9th Street Alternatives would not have the potential to result in significant shade/shadow impacts on shade-sensitive viewers because they do not have shade/shadow-casting characteristics (height, bulk) that would adversely affect shade/shadow-sensitive viewers. The MSF, for example, would not have an envelope exceeding 30 feet in height and would not have the potential to affect shade-sensitive viewers.

With respect to light, as previously discussed, existing ambient light levels in the Project's viewshed include numerous sources of light, including, but not limited to, architectural lighting on building facades, in landscaped areas, along pedestrian walkways and plazas, vehicle headlights, illuminated signs, streetlights. Major sources of ambient light include LA Live and Staples Center, Disney Concert Hall, and others. Operation of the Project would not significantly alter ambient light levels or result in spill light impacts on surrounding land uses. It is possible that the related projects in close proximity to the Project could add nighttime light to the ambient light levels to the area. However, the Project's contribution to the cumulative impact on ambient light would be less than significant because its lighting would be designed in accordance with the Los Angeles Municipal Code.

Power for the streetcar system would be provided by a traction power system featuring TPSS and an OCS. As discussed in Chapter 2, there are two potential configurations for the OCS wires. The first configuration would be to support the contact wire with a span wire between two poles perpendicular to the streetcar track. The second configuration would support the contact wire from cantilever arms connected to a single pole. Both of these configurations would use decorative poles consistent with the streetscape along the project alignment, with the possibility of integrating poles used for street lighting, traffic signals, or traffic signs. Poles would be approximately 25 to 30 feet tall and are typically installed at intervals of about 80 to 120 feet. Wire heights typically range between approximately 18 and 19 feet. Catenary poles could be designed to incorporate elements of decorative streetlights or to meet design standards for designated streetscapes. Historically, streetcars operated along many of the streets within the viewshed, utilizing a system of poles and overhead wires that was far more extensive than what is proposed. Also, because the proposed features would be consistent with all design policies governing downtown design districts and would confirm to Public Benefit project requirements, the Project is not expected to result in cumulatively significant incremental impacts on visual resources, or on existing visual character and quality.

Project features proposed consist of elements at or near street level and, accordingly, do not have the potential to substantially alter views of visual resources. Proposed buildings features, such as the MSF and TPSS buildings, would be designed to be compatible with their design settings and would not possess either the massing or height required to cast shade/shadow on shade-sensitive viewing groups. Therefore, when considered along with other related projects, the Project is not expected to contribute to a cumulatively significant incremental effect on shade/shadow-sensitive receptors.

For the reasons stated above, the Project would not have a considerable contribution to cumulative visual or aesthetic impacts.

3.2 Air Quality

This section addresses the potential for the Project to result in impacts on air quality. The information presented in this section is based on the Project's *Air Quality and Climate Change Assessment Report*, which is included as Appendix E to this Draft EIR.

3.2.1 Regulatory Setting

Air quality in the United States is governed by the federal *Clean Air Act* (CAA). In addition to being subject to requirements of the CAA, air quality in California is also governed by more stringent regulations under the *California Clean Air Act* (CCAA). At the federal level, the CAA is administered by the U.S. Environmental Protection Agency (EPA). In California, the CCAA is administered by the California Air Resources Board (ARB) at the state level and by air districts at regional and local levels. The CAA and CCAA set overall air quality standards that are achieved through a multitude of rules and regulations at the regional and local level.

3.2.1.1 Federal

Federal *Clean Air Act*

The first air pollution control statute was enacted in 1955, and amended in 1965 and 1967. The subsequent federal CAA was enacted in 1970, and then amended in subsequent years (1977 and 1990). The CAA establishes federal air quality standards, known as National Ambient Air Quality Standards (NAAQS), and specifies future dates for achieving compliance. The CAA also mandates that the state submit and implement a *State Implementation Plan* (SIP) for local areas not meeting those standards. The plans must include pollution control measures that demonstrate how the standards will be met. The City of Los Angeles is within the South Coast Air Basin (Basin) and, as such, is in an area designated a nonattainment area for certain pollutants that are regulated under the CAA.

The 1990 amendments to the CAA identify specific emission-reduction goals for areas not meeting the NAAQS. These amendments require both a demonstration of reasonable further progress toward attainment and incorporation of additional sanctions for failure to attain or meet interim milestones. The sections of the CAA that would most substantially affect the development of the Project include Title I (Nonattainment Provisions) and Title II (Mobile-Source Provisions).

Title I provisions were established with the goal of attaining the NAAQS for criteria pollutants. Table 3.2-1 shows the NAAQS currently in effect for each criteria pollutant. The Basin fails to meet national standards for ozone (O_3), inhalable particulate matter (PM10 and PM2.5), nitrogen dioxide (NO_2), and lead and is, therefore, designated a federal nonattainment area for those pollutants.[1] The Basin is a maintenance area for carbon monoxide (CO) (EPA 2015a), as a former nonattainment area that has achieved attainment with the CO NAAQS. Table 3.2-1 also provides the attainment status for each pollutant. Pollutants are described below in Section 3.2.2.

[1] In United States environmental law, an **nonattainment** area is an area considered to have air quality worse than the National Ambient Air Quality Standards, as defined in the Clean Air Act Amendments of 1970 (P.L. 91-604, Section 109).

Table 3.2-1. Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time[a]	State Standard[b]	Federal Standard[b]	Project Area Attainment Status
Ozone (O_3)[c]	1 hour 8 hours	0.09 ppm 0.070 ppm	-- [d] 0.070 ppm (fourth highest measurement in 3 years)	Federal: Nonattainment State: Nonattainment
Carbon Monoxide (CO)	1 hour 8 hours 8 hours (Lake Tahoe)	20 ppm 9.0 ppm[e] 6 ppm	35 ppm 9 ppm --	Federal: Attainment/ Maintenance State: Nonattainment
Respirable Particulate Matter (PM10)[c]	24 hours Annual	50 μg/m^3 20 μg/m^3	150 μg/m^3 -- [c] (expected number of days above standard ≤ 1)	Federal: Nonattainment State: Nonattainment
Fine Particulate Matter (PM2.5)[c]	24 hours Annual 24 hours (conformity process[f]) Secondary Standard (annual; also for conformity process[e])	-- 12 μg/m^3 -- --	35 μg/m^3 12.0 μg/m^3 65 μg/m^3 15 μg/m^3 (98th percentile over 3 years)	Federal: Nonattainment State: Nonattainment
Nitrogen Dioxide (NO_2)	1 hour Annual	0.18 ppm 0.030 ppm	0.100 ppm[g] (98th percentile over 3 years) 0.053 ppm	Federal: Attainment/ Maintenance State: Nonattainment
Sulfur Dioxide (SO_2)	1 hour 3 hours 24 hours	0.25 ppm -- 0.04 ppm	0.075 ppm[h] (99th percentile over 3 years) 0.5 ppm[i]	Federal: Attainment State: Attainment
Lead (Pb)[j]	Monthly Rolling 3-month average	1.5 μg/m^3 --	-- 0.15 μg/m^3 [k]	Federal: Nonattainment State: Nonattainment
Sulfate	24 hours	25 μg/m^3	--	Federal: NA State: Attainment
Hydrogen Sulfide (H_2S)	1 hour	0.03 ppm	--	Federal: NA State: Unclassified
Visibility Reducing Particles (VRP)	8 hours	Visibility of 10 miles or more (Tahoe: 30 miles) at relative humidity less than 70%	--	Federal: NA State: Unclassified
Vinyl Chloride[j]	24 hours	0.01 ppm	--	Federal: NA State: Unclassified

Pollutant	Averaging Time[a]	State Standard[b]	Federal Standard[b]	Project Area Attainment Status

Sources: California Ambient Air Quality Standards (CAAQS) = *California Code of Regulations* (CCR), Title 17, Section 70200, NAAQS = *Code of Federal Regulations* (CFR), Title 40, Section 50; ARB 2015, EPA 2015b

ppm = parts per million; μg/m^3 = micrograms per cubic meter; ppb=parts per billion (thousand million); NA = not available.

Greenhouse gases do not have concentration standards.

[a] "Averaging Time" is the time period established for specific ambient air quality standards, which must also be used when interpreting air quality monitoring data. National and California ambient air quality standards have different maximum levels for different averaging times.

[b] State standards are "not to exceed" or "not to be equaled or exceeded" unless stated otherwise. Federal standards are "not to exceed more than once a year" or as described above.

[c] Annual PM10 NAAQS revoked October 2006; was 50 μg/m^3. The 24-hour PM2.5 NAAQS tightened October 2006; was 65 μg/m^3. Annual PM2.5 NAAQS tightened from 15 μg/m^3 to 12 μg/m^3 December 2012 and secondary annual standard set.

[d] Prior to June 2005, the 1-hour ozone NAAQS was 0.12 ppm. Emission budgets for 1-hour ozone are still in use in some areas where 8-hour ozone emission budgets have not been developed, such as the San Francisco Bay Area.

[e] Rounding to an integer value is not allowed for the state 8-hour CO standard. A violation occurs at or above 9.05 ppm.

[f] The 65 μg/m^3 PM2.5 (24-hour) NAAQS was not revoked when the 35 μg/m^3 NAAQS was promulgated in 2006. The 15 μg/m^3 annual PM2.5 standard was not revoked when the 12 μg/m^3 standard was promulgated in 2012. The 0.08 ppm 1997 ozone standard is revoked FOR CONFORMITY PURPOSES ONLY when area designations for the 2008 0.75 ppm standard become effective for conformity use (July 20, 2013). Conformity requirements apply for all NAAQS, including revoked NAAQS, until emission budgets for newer NAAQS are found adequate, *State Implementation Plan* (SIP) amendments for the newer NAAQS are approved with a emission budget, EPA specifically revokes conformity requirements for an older standard, or the area becomes attainment/unclassified. SIP-approved emission budgets remain in force indefinitely unless explicitly replaced or eliminated by a subsequent approved SIP amendment. During the "Interim" period prior to availability of emission budgets, conformity tests may include some combination of build vs. no build, build vs. baseline, or compliance with prior emission budgets for the same pollutant.

[g] Final 1-hour NO_2 NAAQS were published in the *Federal Register* on February 9, 2010, effective March 9, 2010. Initial area designation for California (2012) was attainment/unclassifiable throughout. Project-level hot spot analysis requirements do not currently exist. Near-road monitoring starting in 2013 may cause redesignation to nonattainment in some areas after 2016.

[h] EPA finalized a 1-hour SO_2 standard of 75 ppb in June 2010. Nonattainment areas had not yet been designated as of September 2012.

[i] Secondary standard, set to protect public welfare rather than health. Transportation Conformity and environmental analysis address both primary and secondary NAAQS.

[j] ARB has identified vinyl chloride and the particulate matter fraction of diesel exhaust as toxic air contaminants. Diesel exhaust particulate matter is part of PM10 and, in larger proportion, PM2.5. Both ARB and EPA have identified lead and various organic compounds that are precursors to ozone and PM2.5 as toxic air contaminants. There are no exposure criteria for adverse health effects due to toxic air contaminants, and control requirements may apply at ambient concentrations below any criteria levels specified above for these pollutants or the general categories of pollutants to which they belong.

[k] Lead NAAQS are not considered in Transportation Conformity analysis.

Transportation Conformity

The Project may seek federal funding from the Federal Transit Administration (FTA); therefore, if federal funding is sought, federal air quality requirements, including a transportation conformity finding, would need to be satisfied. This section provides documentation in support of that finding. Under the 1990 CAA, the U.S. Department of Transportation (USDOT) cannot fund, authorize, or approve federal actions to support programs or projects that are not first found to conform to the SIP for achieving the goals of the CAA requirements. Conformity with the CAA takes place on two levels—first at the regional level, and second at the project level. The Project must conform at both levels to be approved.

EPA's transportation conformity rule (40 CFR Parts 51 and 93) establishes the criteria for conformity. At the regional level, EPA transportation conformity regulations require that a project be included in a currently conforming *Regional Transportation Plan* (RTP) and *Transportation Improvement Program* (TIP) at the time of project approval. Using the projects included in the RTP, an air quality model is run to determine whether the implementation of those projects would conform to emission budgets or other tests showing that federal CAA attainment requirements are met. If the conformity analysis is successful, Metropolitan Planning Organizations (MPOs), such as the Southern California Association of Governments (SCAG), and the appropriate federal agencies, such as the Federal Highway Administration (FHWA) and FTA, make the determination that the RTP and TIP are in conformity with the SIP for achieving NAAQS goals. Otherwise, the projects in the RTP and TIP must be modified until conformity is attained. If the design and scope of the proposed transportation project are the same as those described in the RTP and TIP, the project is deemed to meet regional conformity requirements for purposes of project-level analysis.

Conformity at the project level requires hot-spot analysis if a region is designated nonattainment or maintenance for CO and/or PM. In general, projects must not cause the CO or PM standards to be violated, and in nonattainment regions the project must not cause any increase in the number and severity of violations. If known CO or PM violations are located in the project vicinity, a project must include measures to reduce or eliminate the existing violations as well.

With respect to NAAQS, the Project is located in an area that has been designated as a nonattainment area for ozone, PM10, PM2.5, and lead and a maintenance area for CO and NO_2 (see Table 3.2-1). Therefore, the requirement to demonstrate regional and project-level conformity applies to the Project.

Federal Hazardous Air Pollutant Regulations

The CAA identified 188 pollutants as being air toxics, which are also known as hazardous air pollutants (HAPs). From this list, the EPA identified a group of 21 toxics as mobile source air toxics (MSATs) in its final rule, Control of Emissions of Hazardous Air Pollutants from Mobile Sources (66 *Federal Register* [FR] 17235) in March 2001. From this list of 21 MSATs, EPA in its 2007 rule on the control of hazardous air pollutants from mobile sources identified seven (acrolein, benzene, 1,3-butadiene, diesel particulate matter plus diesel exhaust organic gases [diesel PM], formaldehyde, naphthalene, and polycyclic organic matter) as being priority MSATs. To address emissions of MSATs, the EPA has issued a number of regulations that have and will continue to dramatically decrease MSATs through cleaner fuels and cleaner engines.

3.2.1.2 State

California Clean Air Act

The CCAA, signed into law in 1988, requires all areas of the state to achieve and maintain the California Ambient Air Quality Standards (CAAQS) by the earliest practical date. The CAAQS incorporate additional standards for most of the criteria pollutants and set standards for other pollutants recognized by the state. In general, the California standards are more health protective than the corresponding NAAQS. California has also set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. Table 3.2-1 shows the NAAQS and CAAQS currently in effect for each criteria pollutant and its state and federal attainment status. The Basin fails to meet state standards for O_3, PM10, PM2.5, NO_2, and lead and is, therefore, considered a state nonattainment area for those pollutants. The Basin is in attainment (compliance) with state standards for CO, SO_2, sulfates, hydrogen sulfide, visibility-reducing particles, and vinyl chloride.

California Toxic Air Contaminants Regulations

California regulates toxic air contaminants (TACs) primarily through the *Toxic Air Contaminant Identification and Control Act* (Tanner Act) (Assembly Bill [AB] 1807) and the *Air Toxics "Hot Spots" Information and Assessment Act of 1987* ("Hot Spots" Act) (AB 2588). In the early 1980s, ARB established a statewide comprehensive air toxics program to reduce exposure to air toxics. The Tanner Act (AB 1807) created California's program to reduce exposure to air toxics. The "Hot Spots" Act supplements the Tanner Act program by requiring a statewide air toxics inventory, notification of people exposed to a significant health risk, and facility plans to reduce these risks.

The Tanner Act sets forth a formal procedure for ARB to designate substances as TACs. This includes research, public participation, and scientific peer review before ARB designates a substance as a TAC. To date, ARB has identified 21 TACs, and has also adopted the EPA's list of HAPs as TACs. In August 1998, diesel particulate matter (DPM) was added to the ARB list of TACs (ARB 1998).

State CEQA Guidelines

The State CEQA Guidelines require lead agencies to describe, calculate, or estimate the amount of greenhouse gas (GHG) emissions that would result from a project. The State CEQA Guidelines confirm the discretion of lead agencies to determine appropriate significance thresholds but require the preparation of an EIR if "there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with adopted regulations or requirements" (Section 15064.4).

3.2.1.3 Local

South Coast Air Quality Management District

At the local level, responsibilities of air quality districts include overseeing stationary-source emissions, approving permits, maintaining emissions inventories, maintaining air quality monitoring stations, overseeing agricultural burning permits, and reviewing air quality–related sections of environmental documents required by CEQA. The air quality districts are also responsible for establishing and enforcing local air quality rules and regulations that address the requirements of federal and state air quality laws and for ensuring that NAAQS and CAAQS are met.

The South Coast Air Quality Management District (SCAQMD) has jurisdiction over an area of approximately 10,743 square miles. This area includes all of Orange County, all of Los Angeles County except for the Antelope Valley, the non-desert portion of western San Bernardino County, and the western and Coachella Valley portions of Riverside County. The Basin is a subregion of the SCAQMD jurisdiction. Although air quality in this area has improved, the Basin requires continued diligence to meet air quality standards.

The most recently approved air quality management plan (AQMP) is the 2012 update, which was adopted by the SCAQMD Governing Board on December 7, 2012 (SCAQMD 2012). The Final 2012 AQMP addresses several federal planning requirements and incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools.

The most recent AQMP is the 2016 update, which is under development. The upcoming 2016 AQMP will include strategies to meet the following NAAQS: 8-hour Ozone (70 ppb) by 2032; annual PM2.5 (12 μg/m^3) by 2021–2025; 8-hour Ozone (80 ppb) by 2024; 1-hour Ozone (120 ppb) by 2023; and 24-hour PM2.5 (35 μg/m^3) by 2019. The SCAQMD governing board is expected during summer/fall of 2016 to consider adoption of the 2016 AQMP and would submit the plan to EPA by July 2016 (SCAQMD 2016).

SCAQMD has published the *CEQA Air Quality Handbook* (SCAQMD 1993) to help local governments analyze and mitigate project-specific air quality impacts. The handbook provides standards, methodologies, and procedures for conducting air quality analyses and was used extensively in the preparation of this report. In addition, SCAQMD has published additional documents (*Localized Significance Threshold Methodology for CEQA Evaluations* [SCAQMD 2003], *Particulate Matter (PM) 2.5 Significance Thresholds and Calculation Methodology* [SCAQMD 2006], and *Supplemental Guidelines for Preparing Risk Assessment for the Air Toxics "Hot Spots"* [SCAQMD 2015a]) that provide guidance in evaluating localized effects from mass emissions during construction and operations. These documents were used in the preparation of this report.

SCAQMD Rules and Regulations

Through the attainment planning process, the SCAQMD develops the SCAQMD Rules and Regulations to regulate sources of air pollution in the Basin. The SCAQMD rules most pertinent to construction and operation of the Project are listed below. In addition, to the extent that maintenance and storage facility (MSF) or traction power substation (TPSS) equipment would require SCAQMD permits, the Project would be subject to additional SCAQMD rules that apply to stationary sources, such as Regulation XIII (New Source Review), Rule 1401 (New Source Review of Toxic Air Contaminants), or Rule 431.2 (Sulfur Content of Liquid Fuels), among other rules.

SCAQMD Rule 402—Nuisance. This rule prohibits discharge of air contaminants or other material that:

- Cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public;
- Endanger the comfort, repose, health, or safety of any such persons or the public; and
- Cause, or have a natural tendency to cause, injury, or damage to business or property.

SCAQMD Rule 403—Fugitive Dust. This rule prohibits emissions of fugitive dust from any active operation, open storage pile, or disturbed surface area that remains visible beyond the emission source property line. During construction of the Project, best available control measures identified in the rule would be required to minimize fugitive dust emissions from proposed earth-moving and grading activities. These measures would include site prewatering and rewatering as necessary to maintain sufficient soil moisture content. Additional requirements apply to construction projects on property with 50 or more acres of disturbed surface area, or for any earth-moving operation with a daily earthmoving or throughput volume of 5,000 cubic yards or more three times during the most recent 365-day period. These requirements include submittal of a dust control plan, maintaining dust control records, and designating a SCAQMD-certified dust control supervisor.

SCAQMD Rule 1403—Asbestos Emissions from Demolition/Renovation Activities. The purpose of this rule is to limit emissions of asbestos, a TAC, from structural demolition/renovation activities. The rule requires people to notify the SCAQMD of proposed demolition/renovation activities and to survey these structures for the presence of asbestos-containing materials (ACMs). The rule also includes: notification requirements for any intent to disturb ACM; emission control measures; and ACM removal, handling, and disposal techniques. All proposed structural demolition activities associated with proposed construction would need to comply with the requirements of Rule 1403.

Southern California Association of Governments

SCAG is the MPO for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial Counties. It addresses regional issues relating to transportation, economy, community development, and environment. SCAG is the largest MPO in the nation. With respect to air quality planning, SCAG has prepared the *Regional Comprehensive Plan* (RCP) for the SCAG region, which includes Growth Management and Regional Mobility chapters, which form the basis for the land use and transportation components of the AQMP. These chapters are utilized in the preparation of air quality forecasts and the consistency analysis that is included in the AQMP.

With respect to air quality planning, SCAG prepares the RTP for the SCAG region every 3 years, which, along with the RCP, forms the basis for the land use and transportation components of the AQMP, and is used to prepare the air quality forecasts and the consistency analysis that are included in the AQMP.

3.2.2 Environmental Setting/Affected Environment

Air pollutants regulated by federal and state law include criteria air pollutants and toxic air contaminants. A description of each is provided below, followed by a discussion of the environmental setting/affected environment.

Criteria Air Pollutants

Criteria air pollutants are defined as those pollutants for which the federal and state governments have established air quality standards for outdoor or ambient concentrations to protect public health. Criteria air pollutants are categorized as primary and secondary pollutants. Primary air pollutants are those that are emitted directly and include CO, NO_2, SO_2, lead, and PM10 and PM2.5. Reactive organic gases (ROG) and NO_X are precursor pollutants that form ozone. A description of each of the primary and precursor pollutants and their known health effects follows.

Carbon Monoxide (CO) is a colorless, odorless, toxic gas produced by incomplete combustion of carbon based fuels, such as gasoline or diesel fuel. The primary adverse health effect associated with CO is that it replaces oxygen in the blood, which results in deprivation of oxygen to body cells and tissues, and ultimately leads to death (SCAQMD 2005).

Reactive Organic Gases (ROG), or Volatile Organic Compounds (VOC), are compounds made up of carbon with attached hydrogen atoms, as well as oxygen, chlorine, or nitrogen atoms. Internal combustion engines are a major source of hydrocarbon emissions. Other sources of ROG are emissions associated with the use of paints and solvents, the application of asphalt paving, and the use of household consumer products such as aerosols. Adverse effects on human health are not caused directly by ROG but rather by reactions of ROG to form secondary pollutants such as ozone (O_3) (SCAQMD 2005).

Nitrogen Oxides (NO_X) serve as integral participants in the process of photochemical smog production. The two major forms of NO_X are nitric oxide (NO) and NO_2. NO is a colorless, odorless gas formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure. NO_2 is a reddish-brown irritating gas formed by the combination of NO and oxygen. NO_X acts as an acute respiratory irritant and increases susceptibility to respiratory pathogens (SCAQMD 2005).

Nitrogen Dioxide (NO_2) is a by-product of fuel combustion. The principal form of NO_x produced by combustion is NO, but NO reacts with oxygen to form NO_2. NO_2 acts as an acute irritant and, in equal concentrations, is more injurious than NO. At atmospheric concentrations, however, NO_2 is only potentially irritating. There is some indication of a relationship between NO_2 and chronic pulmonary fibrosis. Some increase in bronchitis in children (2 and 3 years old) has also been observed at concentrations below 0.3 parts per million (ppm). NO_2 absorbs light in the blue wavelength; the result is a brownish-red cast to the atmosphere and reduced visibility. NO_2 also contributes to the formation of PM10. NO_X are also precursors to the formation of both O_3 and PM2.5 (SCAQMD 2005, SCAQMD 2007).

Sulfur Dioxide (SO_2) is a colorless, pungent, irritating gas formed by the combustion of sulfurous fossil fuels. Fuel combustion is the primary source of SO_2. At high concentrations SO_2 may irritate the upper respiratory tract. At lower concentrations and when combined with particulates, SO_2 may do greater harm by injuring lung tissue. A primary source of SO_2 emissions is from the combustion of high sulfur-content coal. Gasoline and natural gas have very low sulfur content and hence do not release significant quantities of SO_2 (SCAQMD 2005).

Particulate Matter (PM) consists of suspended finely divided solids or liquids such as soot, dust, aerosols, fumes, and mists. Two forms of fine particulates are now recognized. Inhalable course particles, or PM10, include the particulate matter with a diameter of 10 microns (10 millionths of a meter or 0.0004 inch) or less. Inhalable fine particles, or PM2.5, have a diameter of 2.5 microns (i.e., 2.5 millionths of a meter or 0.0001 inch) or less. Particulate discharge into the atmosphere results primarily from industrial, agricultural, construction, and transportation activities. However, wind on arid landscapes also contributes substantially to local particulate loading. Both PM10 and PM2.5 may adversely affect the human respiratory system, especially in those people who are naturally sensitive or susceptible to breathing problems (SCAQMD 2005).

Fugitive dust primarily poses two public health and safety concerns. The first concern is that of respiratory problems attributable to the particulates suspended in the air. The second concern is that of motor vehicle accidents caused by reduced visibility during severe wind conditions.[2] Fugitive dust may also cause significant property damage during strong windstorms by acting as an abrasive material agent (much like sandblasting) (SCAQMD 2005).

Ozone (O_3), or smog, is one of a number of substances called photochemical oxidants that are formed when ROG and NO_X (both by-products of the internal combustion engine) react with sunlight. O_3 is present in relatively high concentrations in the Basin, and the damaging effects of photochemical smog are generally related to the concentrations of O_3. O_3 poses a health threat to those who already suffer from respiratory diseases as well as to healthy people. Additionally, O_3 has been tied to crop damage, typically in the form of stunted growth and premature death. O_3 can also act as a corrosive, resulting in property damage such as the degradation of rubber products (SCAQMD 2005).

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[2] Wind-blown dust is typically more of a concern in rural areas, not in urban areas such as downtown Los Angeles.

Lead (Pb), a metal, and its compounds, negatively affect human health. Fetuses, infants, and children are more sensitive than others to the adverse effects of Pb exposure. Exposure to low levels of Pb can adversely affect the development and function of the central nervous system, leading to learning disorders, distractibility, inability to follow simple commands, and a lower intelligence quotient. In adults, increased Pb levels are associated with increased blood pressure. Pb poisoning can cause anemia, lethargy, seizures, and death. It appears that there are no direct effects of Pb on the respiratory system. Pb accumulates in bone from an early-age from environmental exposure, and elevated blood Pb levels can occur because of the breakdown of bone tissue during pregnancy, hyperthyroidism (increased secretion of hormones from the thyroid gland), and osteoporosis (loss of bone density and breakdown of bony tissue). Fetuses and breast-fed babies can be exposed to higher levels of Pb through previous environmental Pb exposure of their mothers (SCAQMD 2005).

Toxic Air Contaminants/Mobile-Source Air Toxics

Although Ambient Air Quality Standards (AAQS) exist for criteria pollutants, no ambient standards exist for TACs. Unlike criteria pollutants, TACs are considered to have no safe exposure level (i.e., a safe concentration standard). The complete absence of TAC emissions exposure is the ultimate goal. Many pollutants are identified as TACs because of their potential to increase the risk of developing cancer or because of their acute or chronic health risks. For TACs that are known or suspected carcinogens, ARB has consistently found that there are no levels or thresholds below which exposure is risk-free. Individual TACs vary greatly in the risks they present. At a given level of exposure, one TAC may pose a hazard that is many times greater than another. TACs are identified and their toxicity is studied by the California Office of Environmental Health Hazard Assessment (OEHHA).

As noted above, the Federal CAA mandated that the EPA regulate 188 air toxics EPA has identified seven HAPs as priority MSATs:

- Acrolein
- Benzene
- 1,3-Butadiene
- Diesel particulate matter/diesel exhaust organic gases
- Formaldehyde
- Naphthalene
- Polycyclic organic matter

The 2007 EPA rule mentioned above requires controls that will dramatically decrease MSAT emissions through cleaner fuels and cleaner engines. According to an FHWA analysis using EPA's MOVES2010b model, even if vehicle activity (VMT) increases by 102 percent, as assumed from 2010 to 2050, a combined reduction of 83 percent in the total annual emission rate for the priority MSAT is projected for the same time period (FHWA 2012).

Existing Air Quality Conditions

Ambient air quality is affected by climatological conditions, topography, and the types and amounts of pollutants emitted. The area potentially affected by the Project is located within the City of Los Angeles, within Los Angeles County, and within the Basin. The following discussion describes relevant characteristics of the Basin and an overview of conditions affecting ambient air pollutant concentrations.

Regional Context

The project site is located within the Basin, an area covering approximately 6,745 square miles and bounded by the Pacific Ocean to the west and south and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. The Basin includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties, in addition to the San Gorgonio Pass area in Riverside County. The terrain and geographical location drive the semi-arid, Mediterranean climate of the Basin, which is a coastal plain with connecting broad valleys and low hills.

The southern California region is influenced by a semi-permanent high-pressure zone over the eastern Pacific. As a result, the Mediterranean climate is mild and temperate. The usually mild climatological pattern is interrupted by infrequent periods of extremely hot weather, or intense winter storms, or strong Santa Ana winds. The extent and severity of the air pollution problem in the Basin is a function of the area's natural physical characteristics (weather and topography) as well as human-made influences (development patterns and lifestyle). Factors such as wind, insolation, air temperature, humidity, precipitation, along with topography all affect the accumulation and dispersion of pollutants throughout the Basin, making it an area of high pollution potential.

The greatest air pollution impacts in the Basin occur from June through September. These are generally attributed to the large amount of pollutant emissions, light winds, and shallow vertical atmospheric mixing through temperature inversions. This condition frequently reduces pollutant dispersion, thereby causing elevated air pollution levels. Pollutant concentrations in the Basin vary with location, season, and time of day. O_3 concentrations, for example, tend to be lower along the coast, higher in the near inland valleys, and lower in the far inland areas of the Basin and adjacent desert.

SCAQMD completed an ambient air monitoring and evaluation study in the Basin (the Multiple Air Toxics Exposure Study IV [MATES IV] study). MATES IV was a follow up to previous air toxics studies in the Basin and part of the SCAQMD Governing Board's Environmental Justice Initiative. The MATES IV study concluded that the average carcinogenic risk throughout the Basin, which was attributed to TACs, is approximately 418 in one million. Mobile sources (e.g., cars, trucks, trains, ships, aircraft, etc.) are the greatest contributors. About 83.6 percent of all risk is attributed to DPM emissions (SCAQMD 2008). The MATES IV study also concluded that air toxic exposure within the Basin has decreased when compared against previous studies and monitoring location data. MATES IV estimated that the carcinogenic risk from air toxics in the Basin was 65 percent lower than the monitored average in MATES III with the greatest risk around ports and major transportation corridors (SCAQMD 2015b).

Local Air Conditions

Local Meteorology

Data from the closest climate monitoring station—Western Regional Climate Center's (WRCC's) Los Angeles Civic Center Station (COOPID 045115), located in downtown Los Angeles—was used to characterize project vicinity climate conditions. Over the period of record (1906–2012), the average study area summer (August) high and low temperatures were 83.1 degrees Fahrenheit (°F) and

63.8°F, respectively, while temperatures exceed 90°F an average of 8.5 times per year. The average winter (January) high and low temperatures were 66.4°F and 48.3°F, respectively, while temperatures rarely drop below 32°F. Rainfall varies widely from year to year, with an annual average of 14.77 inches with an average of 36 days with measureable rainfall (greater than or equal to 0.01 inches) (WRCC 2013).

The closest wind monitoring station, located approximately 1.5 miles northeast of the study area, is the Central Los Angeles wind monitoring station (1630 Main Street). Wind patterns in the project vicinity arise primarily from the west-southwest, with seasonal and diurnal variations resulting in northeast (during Santa Ana events) and southerly winds (before and during winter storms) (National Oceanic and Atmospheric Administration [NOAA] n.d.). Over the period of record (January 1, 2006 to December 31, 2009), winds at the Central Los Angeles station averaged a speed of 5 miles per hour, while calm wind conditions (i.e., no discernible speed) were present only 0.32 percent of the time (SCAQMD 2011).

Existing Pollutant Levels at Nearby Monitoring Station

SCAQMD has divided the Basin into air monitoring areas and maintains a network of air quality monitoring stations located throughout the Basin. The project alignment is located in the Central Los Angeles County Monitoring Area (Source Receptor Area [SRA] 1). The nearest monitoring station is the Los Angeles – North Main Street station (ARB 70087, 1630 North Main Street), located approximately 1.5 miles northeast of the Project. Criteria pollutants monitored at the Los Angeles – North Main Street station include O_3, CO, NO_2, PM10, PM2.5, SO_2, and lead.

Concentrations of pollutants over the last 3 years for which complete data are available (2013–2015) have been compiled from the stations' data (see Table 3.2-2) (EPA 2016; ARB 2016). Monitoring data show the following pollutant concentration violations:

- 1-hour O_3 CAAQS was exceeded multiple times in 2014 and 2015.
- 8-hour O_3 CAAQS and NAAQS were exceeded multiple times in 2014.
- 24-hour PM10 CAAQS was exceeded several times each year.
- 24-hour PM10 NAAQS was not exceeded in 2013–2015.
- 24-hour PM2.5 NAAQS was exceeded once in 2013 and several times in 2014 and 2015.
- 1-hour NO_2 NAAQS and CAAQS were not exceeded in 2013–2015.
- No exceedances of the CO CAAQS or NAAQS were recorded.
- The annual standard for PM2.5 has been exceeded in 2013–2015, but not for PM10.

Table 3.2-2. Air Quality Data from Los Angeles – North Main Street Station (ARB 70087, EPA AQS 06-037-1103)

Pollutant and Standard	2013	2014	2015
Ozone (O_3)			
Maximum concentration 1-hour period	0.081	0.113	0.104
Maximum concentration 8-hour period	0.069	0.094	0.074
Days state 1-hour standard exceeded *(0.09 ppm)*	0	3	2
Days state 8-hour standard exceeded *(0.070 ppm)*	0	7	6

Pollutant and Standard	**2013**	**2014**	**2015**
Days national 8-hour standard exceeded *(0.070 ppm)*	0	2	0
Suspended Particulates (PM10)			
Maximum state 24-hour concentration	74.5	86.8	72.0
Maximum national 24-hour concentration	57	66	73
Annual average concentration	35.3	30.2	NA
Days state 24-hour standard exceeded *(50 µg/m³)*	21	19	NA
Days national 24-hour standard exceeded (expected) *(150 µg/m³)*	0	0	0
State annual standard exceeded *(20 µg/m³)*	Yes	Yes	NA
Suspended Particulates (PM2.5)			
Maximum 24-hour concentration	54.8	65.0	56.4
State annual average concentration	18.9	NA	12.5
National annual average concentration	12.0	12.3	12.3
Days national 24-hour standard exceeded *(35 µg/m³)*	1	6	8
State/national annual standards exceeded *(12 µg/m³)*	Yes	NA	Yes
Carbon Monoxide (CO)			
Maximum Concentration 8-hour Period	2.0	1.8	1.8
Maximum Concentration 1-hour Period	2.5	2.4	3.2
Days state 8-hour standard exceeded *(9.0 ppm)*	0	0	0
Days national 8-hour standard exceeded *(9 ppm)*	0	0	0
Days state 1-hour standard exceeded *(20 ppm)*	0	0	0
Days state 1-hour standard exceeded *(20 ppm)*	0	0	0
Nitrogen Dioxide (NO_2)			
Maximum 1-hour Concentration	0.09	0.082	0.079
Annual Average Concentration	0.022	0.022	0.022
Days state 1-hour standard exceeded (*0.18 ppm*)	0	0	0
Days national 1-hour standard exceeded (*0.100 ppm*)	0	0	0
State annual standard exceeded *(0.030 ppm)*	No	No	No
National annual standard exceeded *(0.053 ppm)*	No	No	No
Source: California Air Resources Board 2016; U.S. Environmental Protection Agency 2016. Compiled by ICF, April 2016. Notes: ppm = parts per million; µg/m³ = micrograms per cubic meter.			

Sensitive Receptors and Locations

SCAQMD defines sensitive receptor locations as residential, commercial, and industrial land use areas as well as other locations where sensitive populations may be located. Other sensitive receptor locations include schools, hospitals, convalescent homes, day care centers, and other locations where children, chronically ill individuals, or other sensitive persons could be exposed (SCAQMD 2005).

The Project would be in the heavily developed downtown Los Angeles area, and streetcars would travel through the following neighborhoods/districts: the Civic Center, Bunker Hill, the Historic Core, the Jewelry District, the Financial Core, South Park, and the Los Angeles Sports and Entertainment District. Sensitive receptor locations within 0.25 mile of the Project include multiple land use categories such as residential, medical, and child care, among other uses. Detailed below under the discussion of *Thresholds of Significance* (Section 3.2.3.2), the most conservative (i.e., lowest number) SCAQMD localized thresholds are used to evaluate local impacts throughout the project limits. This will ensure that all sensitive receptor locations are evaluated using the most conservative localized significance criteria.

3.2.3 Environmental Impact Analysis

3.2.3.1 Methodology

Construction Impacts

Construction of the Project would result in the short-term generation of criteria pollutant and TAC emissions. Mass daily combustion exhaust, fugitive dust (PM10 and PM2.5), and fugitive off-gassing paving emissions were estimated using the Sacramento Metropolitan Air Quality Management District's Road Construction Emissions Model, version 7.4.1 and the California Emissions Estimator Model (CalEEMod), version 2013.2.1. Both models estimate criteria pollutant and GHG emissions associated with construction. CalEEMod also estimates emissions associated with project operations for the MSF. Each phase of construction would result in combustion exhaust emissions from onsite construction equipment and construction workers' commutes. All emissions calculation worksheets and air quality modeling output files are provided in Appendix E.

Operation Impacts

VMT Estimation

Some streetcar riders will use the streetcar to replace trips that were formerly made by car. The tool provided by the FTA for estimating transit ridership is the Simplified Trips-On-Project Software (STOPS) model. The STOPS model also produces an estimate of person miles traveled (PMT) by automobile that would be reduced as a result of a project. For existing and future years of the Project, Metro used the STOPS model to estimate streetcar ridership and reduced PMT by auto.

To convert reduced auto PMT to reduced VMT, an average vehicle occupancy factor was applied. This factor was derived from the City of Los Angeles Travel Demand Model, and it accounts for cars that carry more than one person (Fehr & Peers 2013). Table 3.2-3 shows the STOPS model estimates of daily riders and associated auto person miles reduced, as well as the calculated estimates of vehicle miles reduced, for each of the four project alternatives.

To assess the benefit of reduced VMT on air quality, the speeds of vehicles traveling these miles was estimated using results from the City of Los Angeles Travel Demand Model (Fehr & Peers 2013). The aggregated estimate of total VMT reduction, as derived from the STOPS model, was apportioned into speed bins (0–5 mph, 6–10 mph, 11–15 mph, etc.). These VMT estimates by travel speed and CT-EMFAC2014, the emissions model developed by ARB and the California Department of Transportation (Caltrans), are then used to estimate project emissions reductions by Build Alternative. Tables 3.2-3 through 3.2-6 provide estimates of project vicinity VMT reductions anticipated to occur under the Build Alternative, when compared to the No Project Alternative, by speed bin for each of the four Build Alternatives for existing and future years.

Emissions Calculations

As discussed above, the Project is anticipated to have an effect on local VMT and travel speeds. As such, the Project would have an effect on mobile-source criteria pollutant, MSAT, and GHG emissions. Changes in mobile-source emissions associated with regional traffic were estimated using the Caltrans CT-EMFAC2014 emissions model (Version 6.0) and VMT data discussed above.

Transportation Conformity

Regional Conformity

The Project is located in an extreme nonattainment area with regard to the federal 8-hour ozone standard. Because ozone and its precursors are regional pollutants, the Project must be evaluated under the transportation conformity requirements described earlier. An affirmative regional conformity determination must be made before the Project can proceed. Such a determination is not required if the Project is described in an approved RTP and TIP and the Project has not been altered in design concept or scope described in the RTP and TIP.

Project-Level Conformity

As stated above, if a project is located in a nonattainment or maintenance area for localized pollutants, then a hot-spot analysis and possible emission reduction measures to address that pollutant are required. Project-level hot-spot analyses are only required for localized pollutants (i.e., CO, PM10, and PM2.5).

Carbon Monoxide

The Project is located in a maintenance area with regard to the federal CO standard. Consequently, assuming that federal funding is sought, the evaluation of transportation conformity for CO is required. The CO transportation conformity analysis is based on the Transportation Project-Level Carbon Monoxide Protocol (CO Protocol) developed for Caltrans by the Institute of Transportation Studies at the University of California, Davis (Garza et al. 1997, reissued 2010) and is consistent with the assumptions used in the RTP regional emissions analysis. This CO Protocol details a step-by-step procedure to determine whether project-related CO concentrations have a potential to generate new air quality violations, worsen existing violations, or delay attainment of NAAQS and CAAQS for CO.

Table 3.2-3. LA Streetcar Daily Ridership and Auto Travel Reduction Estimates

Alternative	2015			2020			2040		
	Riders	Auto Person Miles Reduced	Auto Vehicle Miles Reduced[a]	Riders	Auto Person Miles Reduced	Auto Vehicle Miles Reduced[a]	Riders	Auto Person Miles Reduced	Auto Vehicle Miles Reduced[a]
2: 7th Street with Grand Avenue Extension	5,134	8,448	6,813	5,583	8,893	7,172	7,379	10,672	8,606
3: 7th Street without Grand Avenue Extension	3,795	6,775	5,464	4,123	7,098	5,724	5,434	8,391	6,767
4: 9th Street with Grand Avenue Extension	5,301	8,301	6,694	5,773	8,748	7,055	7,660	10,539	8,499
5: 9th Street without Grand Avenue Extension	3,522	6,042	4,873	3,851	6,352	5,123	5,170	7,592	6,123

Source: Metro 2016.
[a] Auto occupancy conversion factor (1.24 persons/vehicle) taken from City of Los Angeles Travel Demand Model.

Table 3.2-4. Existing/Baseline Year 2015 Allocation of Daily Estimated VMT Reductions to 5 mph Speed Bins

Percent Allocation Proportions	Speed Bin (mph)	Alternative 2	Alternative 3	Alternative 4	Alternative 5
20.7%	0–5	1,410	1,131	1,386	1,009
10.2%	6–10	695	557	683	497
10.8%	11–15	736	590	723	526
17.7%	16–20	1,206	967	1,185	862
14.5%	21–25	988	792	971	707
7.0%	26–30	477	382	469	341
4.6%	31–35	313	251	308	224
3.2%	36–40	218	175	214	156
3.8%	41–45	259	208	254	185
3.3%	46–50	225	180	221	161
2.1%	51–55	143	115	141	102
1.3%	56–60	89	71	87	63
0.5%	61–65	34	27	33	24
0.2%	66–70	14	11	13	10
Sources: ICF International 2016; Fehr & Peers 2013.					

Table 3.2-5. Future Year 2020 Allocation of Daily Estimated VMT Reductions to 5 mph Speed Bins

Percent Allocation Proportions	Speed Bin (mph)	Alternative 2	Alternative 3	Alternative 4	Alternative 5
20.7%	0–5	1,485	1,185	1,460	1,060
10.2%	6–10	732	584	720	523
10.8%	11–15	775	618	762	553
17.7%	16–20	1,269	1,013	1,249	907
14.5%	21–25	1,040	830	1,023	743
7.0%	26–30	502	401	494	359
4.6%	31–35	330	263	325	236
3.2%	36–40	229	183	226	164
3.8%	41–45	273	218	268	195
3.3%	46–50	237	189	233	169
2.1%	51–55	151	120	148	108
1.3%	56–60	93	74	92	67
0.5%	61–65	36	29	35	26
0.2%	66–70	14	11	14	10
Sources: ICF International 2016; Fehr & Peers 2013.					

Table 3.2-6. Future Year 2040 Allocation of Daily Estimated VMT Reductions to 5 mph Speed Bins

Percent Allocation Proportions	Speed Bin (mph)	Alternative 2	Alternative 3	Alternative 4	Alternative 5
20.7%	0–5	1,782	1,401	1,759	1,267
10.2%	6–10	878	690	867	625
10.8%	11–15	929	731	918	661
17.7%	16–20	1,523	1,198	1,504	1,084
14.5%	21–25	1,248	981	1,232	888
7.0%	26–30	602	474	595	429
4.6%	31–35	396	311	391	282
3.2%	36–40	275	217	272	196
3.8%	41–45	327	257	323	233
3.3%	46–50	284	223	280	202
2.1%	51–55	181	142	178	129
1.3%	56–60	112	88	110	80
0.5%	61–65	43	34	42	31
0.2%	66–70	17	14	17	12
Sources: ICF International 2016; Fehr & Peers 2013.					

Project traffic during the operational phase of the Project would have the potential to create congestion at nearby intersections, thereby potentially leading to localized CO hot spots. Intersections were screened to capture those intersections that displayed the worst (i.e., longest) delay and highest peak hour traffic volumes. From this screening, five intersections were selected for analysis of potential localized CO hot-spot impacts. These intersections represent the worst traffic conditions in the vicinity of the Project. This screening analysis was completed for each alternative (SCAQMD 1993).

CO hot-spot impacts were evaluated through CO dispersion modeling using the EMFAC2014 web tool, the CALINE4 model, and traffic data provided by the traffic engineers. CO emissions were modeled for existing year 2015, and the opening year (2020) and horizon year (2040) No-Project and With-Project build alternatives at the five selected intersections. Each intersection was modeled under No-Project and With-Project traffic conditions to calculate the projected net change in CO concentrations. CO emission rates were based on an SCAQMD average fleet operating under winter emission rate conditions and an average speed of 5 mph. The above method provides a conservative (tending to overestimate impacts) analysis because vehicle CO emission rates are highest at both low travel speeds and in cold air temperatures.

PM10 and PM2.5

The Project is located in a nonattainment area for the federal PM10 and PM2.5 standards. Consequently, assuming that federal funding is sought, project-level conformity determinations for PM10 and PM2.5 are required. In December 2010, the EPA finalized conformity guidance for determining which transportation projects must be analyzed for local air quality impacts in PM2.5 and PM10 nonattainment and maintenance areas (FHWA 2010). The final rule requires PM10 and PM2.5 hot-spot analyses to be performed for a project of air quality concern (POAQC) or any other project identified by the PM10 or PM2.5 SIP as a localized air quality concern.

In November 2015 EPA updated the conformity guidance for quantifying local air quality impacts of transportation projects on PM2.5 and PM10 to reflect the MOVES2014 emissions model and its revisions—*Transportation Conformity Guidance for Quantitative Hot-Spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas* (EPA 2015a). This guidance requires lead agencies to conduct a quantitative hot-spot analysis for projects in PM2.5 and PM10 nonattainment and maintenance areas. The FHWA and EPA guidance identifies examples of projects that are most likely POAQCs and details a qualitative step-by-step screening procedure to determine whether project-related particulate emissions have a potential to generate new air quality violations, worsen existing violations, or delay attainment of NAAQS for PM2.5 or PM10.

POAQCs are certain highway and transit projects that involve significant levels of diesel traffic or any other project identified in the PM2.5 or PM10 SIP as a localized air quality concern. As noted in the EPA's March 2006 final rule, the following are examples of POAQCs.

- A project on a new highway or expressway that serves a significant volume of diesel truck traffic, such as facilities with greater than 125,000 annual average daily traffic (AADT) where 8 percent or more of such AADT is diesel truck traffic.
- New exit ramps and other highway facility improvements to connect a highway or expressway to a major freight, bus, or intermodal terminal.
- Expansion of an existing highway or other facility that affects a congested intersection (operating at level of service [LOS] D, E, or F) that has a significant increase in the number of diesel trucks.

- Similar highway projects that involve a significant increase in the number of diesel transit busses and/or diesel trucks.
- A major new bus or intermodal terminal that is considered to be a "regionally significant project" under 40 CFR 93.101.
- An existing bus or intermodal terminal that has a large vehicle fleet where the number of diesel buses increases by 50 percent or more as measured by bus arrivals.

As noted in the EPA's March 2006 final rule, the examples below are projects that are not of air quality concern:

- Any new or expanded highway project that primarily serves gasoline vehicle traffic (i.e., does not involve a significant number or increase in the number of diesel vehicles), including such projects involving congested intersections operating at LOS D, E, or F.
- An intersection channelization project or interchange configuration project that involves either turn lanes or slots or lanes or movements that are physically separated. These kinds of projects improve freeway operations by smoothing traffic flow and vehicle speeds by improving weave and merge operations, which would not be expected to create or worsen PM2.5 or PM10 violations.
- Intersection channelization projects; traffic circles or roundabouts; intersection signalization projects at individual intersections; and interchange reconfiguration projects that are designed to improve traffic flow and vehicle speeds, do not involve any increases in idling, and would be expected to have a neutral or positive influence on PM2.5 or PM10 emissions as a result.
- A new or expanded bus terminal that is served by non-diesel vehicles (e.g., compressed natural gas) or hybrid-electric vehicles.
- A 50 percent increase in daily arrivals at a small terminal (e.g., a facility with 10 buses in the peak hour).

For projects identified as not being a POAQC, PM2.5 and PM10 (for regions without an approved conformity SIP) hot-spot analyses are not required. For these types of projects, state and local project sponsors should briefly document in their project-level conformity determinations that federal CAA and 40 CFR 93.116 requirements were met without a hot-spot analysis, because such projects have been found to not be of air quality concern under 40 CFR 93.123(b)(1).

For areas with an approved conformity SIP, the final rule does not apply (i.e., when a state withdraws the existing provisions from its approved conformity SIP and EPA approves the withdrawal, or when a state includes the revised PM10 hot-spot requirements in a SIP revision and EPA approves that SIP revision). For these areas, the assessment should continue to follow the PM10 hot-spot procedures in their existing conformity SIPs until the SIP is updated and subsequently approved by the EPA.

Although the guidance for conducting a PM10 hot-spot analysis for conformity purposes contains separate requirements for PM10 nonattainment/maintenance areas with and without approved conformity SIPs, guidance from the EPA indicates that there are no areas within California where a conformity SIP has been approved. Consequently, all projects that are POAQCs must undergo PM10 (and PM2.5) hot-spot conformity determinations. Projects identified as not being a POAQC do not require qualitative PM2.5 and PM10 hot-spot analyses. Because the Project would be located in an area classified as a nonattainment area for the PM2.5 standard, a determination must be made as to whether it would result in a PM2.5 hot spot. This determination is made in Section 3.2.3.4, *Operational Impacts.*

3.2.3.2 Thresholds of Significance

City of Los Angeles CEQA Thresholds Guide

The City of Los Angeles has not adopted specific citywide significance thresholds for air quality impacts. However, because of the SCAQMD regulatory role in the Basin, the *L.A. CEQA Thresholds Guide* (City of Los Angeles 2006) references the significance threshold and analysis methodologies in the SCAQMD's *CEQA Air Quality Handbook* to assist in evaluating projects proposed within the City. The following are the impact significance thresholds taken from the *Handbook*.

Construction Emissions

According to criteria set forth in the SCAQMD *CEQA Air Quality Handbook, Localized Significance Threshold Methodology for CEQA Evaluations, and Particulate Matter (PM) 2.5 Significance Thresholds and Calculation Methodology* guidance documents, a project would have a significant impact on construction emissions if any of the following were to occur.

- Regional emissions from both direct and indirect sources exceed any of the following SCAQMD prescribed threshold levels: (1) 75 pounds a day for ROG, (2) 100 pounds per day for NO_X, (3) 550 pounds per day for CO, (4) 150 pounds per day for PM10 or SO_X, (5) 55 pounds per day for PM2.5, and (6) 3 pounds per day for Pb.
- Localized emissions from on-site construction equipment and site disturbance activity exceed any of the following SCAQMD-prescribed threshold levels: (1) 74 pounds per day for NO_X, (2) 562 pounds per day for CO, (3) 4 pounds per day for PM10, and (4) 2 pounds per day for PM2.5.[3]

These Los Angeles thresholds are the same as the respective SCAQMD significance thresholds for construction emissions.

Operational Emissions

According to criteria set forth in the SCAQMD *CEQA Air Quality Handbook*, a project would have a significant impact with regard to operational emissions if and of the following were to occur.

- Regional emissions from both direct and indirect sources would exceed any of the following SCAQMD prescribed threshold levels: (1) 55 pounds a day for ROG, (2) 55 pounds per day for NO_X, (3) 550 pounds per day for CO, (4) 150 pounds per day for PM10 or SO_X, (5) 55 pounds per day for PM2.5, and (6) 3 pounds per day for Pb (SCAQMD 1993, 2006).
- Localized emissions from on-site sources exceed any of the following SCAQMD prescribed threshold levels: (1) 74 pounds per day for NO_X, (2) 680 pounds per day for CO, (3) 5 pounds per day for PM10, and (4) 3 pounds per day for PM2.5.[4]
- The project would cause an exceedance of the California 1-hour or 8-hour CO standards of 20 or 9 ppm, respectively, at an intersection or roadway within 0.25 mile of a sensitive receptor.[5]

[3] Derived from SCAQMD Localized Significance Threshold Tables—SRA 1 (Central Los Angeles County) 1-acre site, 25-meter receptor distance.

[4] Derived from SCAQMD Localized Significance Threshold Tables – SRA 1 (Central Los Angeles County) and SRA 2 (Northwest Los Angeles County Coastal), 1-acre site, 25-meter receptor distance.

[5] Where the CO standard is exceeded at the intersection, a project would result in a significant impact if the

These Los Angeles thresholds are the same as the respective SCAQMD significance thresholds for construction emissions.

Toxic Air Contaminants

According to guidelines provided in the SCAQMD *CEQA Air Quality Handbook*, a project would have a significant impact from TACs if any of the following were to occur.

- Onsite stationary sources emit carcinogens or TACs that individually or cumulatively exceed the maximum individual cancer risk of ten in one million (1.0×10^{-5}) or an acute or chronic hazard index of 1.0 (SCAQMD 1998).
- Hazardous materials associated with on-site stationary sources result in an accidental release of air toxic emissions or acutely hazardous materials, posing a threat to public health and safety.
- The project would be occupied primarily by sensitive individuals within 0.25 mile of any existing facility that emits TACs, which could result in a health risk from pollutants identified in District Rule 1401 (SCAQMD 1993).

These Los Angeles thresholds are the same as the respective SCAQMD significance thresholds for TAC emissions.

Odors

In addition to the above, the State CEQA Guidelines (Appendix G) recommends that the following impact be considered, which is not addressed in the 2006 *L.A. CEQA Thresholds Guide*.

- Create objectionable odors affecting a substantial number of people.

3.2.3.3 Construction Impacts

Project construction includes construction of the streetcar line and associated infrastructure, the TPSS locations, and the MSF.

Alternative 1: No Project Alternative

No impact. Under the No Project Alternative, the improvements and facilities associated with the Project would not be constructed. As no construction would occur under this alternative, the No Project Alternative would have no construction impacts. The No Project Alternative also serves as the baseline for comparison and assessment of the project alternatives.

incremental increase due to the project is equal to or greater than 1.0 ppm for the California 1-hour CO standard or 0.45 ppm for the 8-hour CO standard.

Alternative 2: 7th Street with Grand Avenue Extension

Regional Construction Impacts

Less-than-significant impact. Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation, and, for dust, the prevailing weather conditions. The assessment of construction air quality impacts considers each of these potential sources. The equipment mix and duration for each construction stage is detailed in the Road Construction Model and CalEEMod printout sheets provided in Appendix E.

The total amount of construction, the duration of construction, and the intensity of construction activity could affect the amount of construction emissions, the concentrations, and the resulting impacts occurring at any one time. As such, the emission forecasts provided herein reflect a specific set of conservative assumptions based on the expected construction scenario wherein a relatively large amount of construction is occurring in a relatively intensive manner. Because of this conservative assumption, actual emissions could be less than those forecasted. If construction is delayed or occurs over a longer time period, emissions could be reduced because of (1) a more modern and cleaner burning construction equipment fleet mix, and/or (2) a less intensive build-out schedule (i.e., fewer daily emissions occurring over a longer time interval).

Table 3.2-7 shows the regional construction emissions calculated for the Project. As shown therein, criteria pollutant emissions would be less than the applicable SCAQMD significance thresholds, and, as such, impacts on regional air quality during construction would be less than significant.

Table 3.2-7. Worst-Case Regional Construction Emissions (pounds per day)

Construction Phase	Pb	ROG	NO_X	CO	SO_X	PM10	PM2.5
Road Demolition and Excavation	< 1	11	92	70	< 1	16	7
Drainage/Utilities/Subgrade Work	< 1	7	71	37	< 1	9	5
Track and TPSS Installation, Paving	< 1	3	27	17	< 1	2	2
Maintenance Facility Construction	< 1	70	35	21	< 1	2	2
Concurrent Track Installation and Maintenance Facility Construction	< 1	73	62	38	< 1	4	4
SCAQMD Significance Threshold	3	75	100	550	150	150	55
Threshold exceeded for any phase?	**No**	**No**	**No**	**No**	**No**	**No**	**No**

Source: ICF International 2016.
Note: Road Construction Emissions Model and CalEEMod modeling output sheets are provided in Appendix E.

Local Construction Impacts

Less-than-significant impact. In addition to regional emissions thresholds, SCAQMD has developed a set of mass emissions rate look-up tables that can be used to evaluate localized impacts that may result from construction-period emissions. If the onsite emissions from proposed construction activities are below the Localized Significance Threshold (LST) emission levels found in the LST mass rate look-up tables for the project vicinity SRA, then project emissions would not have the potential to cause a significant localized air quality impact.

When quantifying mass emissions for LST analysis, only emissions that occur on site are considered. Consistent with SCAQMD LST guidelines, emissions related to offsite delivery/haul truck activity and employee trips are not considered in the evaluation of localized impacts. A conservative estimate of the Project's construction-period mass emissions is presented in Table 3.2-8. As shown therein, the worst-case maximum emissions for NO_X, PM10, and PM2.5 would exceed their respective SCAQMD localized significance thresholds. As such, localized impacts could be significant. However, Mitigation Measure **MM-AQ-C1** in Section 3.2.4 would ensure this local construction impact would be less than significant level. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Table 3.2-8. Worst-Case Localized Construction Emissions (pounds per day)

Construction Phase	NO_X	CO	PM10[1]	PM2.5[a]
Road Demolition and Excavation	94	52	6	5
Drainage/Utilities/Subgrade Work	70	45	5	5
Track and TPSS Installation, Paving	26	13	2	2
Maintenance Facility Construction	20	11	2	1
SCAQMD Localized Significance Thresholds[b]	74	680	5	4
Threshold exceeded for any phase?	**Yes**	**No**	**Yes**	**Yes**

Source: ICF International 2016.

Note: Construction Road Emissions Model and CalEEMod output sheets are provided in Appendix E.

[a] PM10 and PM2.5 emissions estimates assume compliance with SCAQMD Rule 403 requirements for fugitive dust suppression, which require that no visible dust be present beyond the site boundaries.

[b] The project site is located in SCAQMD SRA Number 1. These LSTs are based on the site location SRA, distance to nearest sensitive receptor location from the project site (25 meters), and the project area that could be under construction on any given day (1 acre) that is within 25 meters of an individual sensitive receptor location.

Toxic Air Contaminants

Less-than-significant impact. The greatest potential for TAC emissions would be related to diesel particulate emissions associated with heavy equipment operations during site grading activities. Construction activities associated with the Project would be sporadic, transitory, and short term in nature. The assessment of cancer risk is typically based on a 70-year exposure period. As exposure to diesel exhaust would be well below the 70-year exposure period, construction of the Project is not anticipated to result in an elevated cancer risk to exposed persons due to the short-term nature of construction. As such, project-related toxic emission impacts during construction would be less than significant.

Odors

Less-than-significant impact. Although offensive odors rarely cause any physical harm, they can be unpleasant and lead to considerable distress among the public. This distress may often generate citizen complaints to local governments and air districts. Any project with the potential to frequently expose the public to objectionable odors would be deemed as one having a significant impact.

Potential odor sources during construction activities include diesel exhaust from heavy-duty equipment and the application of architectural coatings. Construction-related operations near existing receptors would be temporary in nature, and construction activities would not be likely to result in objectionable odors affecting a substantial number of people. As such, impacts during construction would be less than significant.

Alternative 3: 7th Street without Grand Avenue Extension

There would be no material difference in the affected environment (i.e., air basin, local setting) or in construction techniques, or intensity under the 7th Street Alternative without Grand Avenue Extension when compared to the 7th Street Alternative with Grand Avenue Extension. As such, construction impacts of Alternative 3, in terms of pollutant emissions pounds per day, would be similar to those of Alternative 2. Because Alternative 3 does not include construction of the Grand Avenue Extension, the duration of impacts occurring under Alternative 3 would likely be less than under Alternative 2.

Alternative 4: 9th Street with Grand Avenue Extension

There would be no material difference in the affected environment (i.e., air basin, local setting) or in construction techniques, duration, or intensity under the 9th Street Alternative with Grand Avenue Extension when compared to the 7th Street Alternative with Grand Avenue Extension. As such, construction impacts of Alternative 4 would be similar to those of Alternative 2.

Alternative 5: 9th Street without Grand Avenue Extension

There would be no material difference in the affected environment (i.e., air basin, local setting) or in construction techniques, or intensity under the 9th Street Alternative without Grand Avenue Extension when compared to the 7th Street Alternative with Grand Avenue Extension. As such, construction impacts of Alternative 5, in terms of pollutant emissions in pounds per day, would be similar to those of Alternative 2. Because Alternative 5 does not include construction of the Grand Avenue Extension, the duration of impacts occurring under Alternative 5 would likely be less than under Alternative 2.

3.2.3.4 Operational Impacts

Project operation includes operation of the streetcar line and associated infrastructure, TPSS, and MSF.

Alternative 1: No Project Alternative

No impact. Under the No Project Alternative, the improvements and facilities associated with the Project would not be constructed. The No Project Alternative represents conditions in the project study area that would remain if the proposed Project did not occur. It includes those improvements projected to be funded under the current RTP. The No Project Alternative also serves as the baseline for comparison and assessment of the project alternatives and against which the VMT reductions associated with the project alternatives can be measured.

Alternative 2: 7th Street with Grand Avenue Extension

Regional Operations Impacts

Less-than-significant impact. Regional air pollutant emissions associated with project operations would result from (1) the net change in passenger VMT that would occur within the study area under the project alternatives compared to the No Project Alternative; (2) employee trips (mobile source) and energy demand (area and stationary-source) emissions related to MSF lighting, water heating, and temperature control; and (3) the emissions from electricity generation needed to power streetcar operations.

Based on the VMT estimates derived above under Section 3.2.3.1, *Methodology*, *VMT Estimation*, the Project is anticipated to result in a daily reduction of project vicinity VMT due primarily to diversion of private automobile trips that would occur under each project build alternative when compared to the No Project Alternative. Table 3.2-9 lists the emission reductions that were estimated to occur for each year and project build alternative.

Table 3.2-9. Estimated Change in Passenger Vehicle Emissions due to VMT Reduction during Operations (pounds per day)

Year	Alternative	Daily VMT Reduction	Pb[a]	ROG	NO_X	CO	SO_X	PM10	PM2.5
Alternative 1									
2015 2020 2040	Existing No Project No Project	0	NA	NA	NA	NA	NA	NA	NA
2015 Existing plus Project[a]									
	Alternative 2	6,813	0	(7)	(12)	(38)	(<1)	(1)	(1)
	Alternative 3	5,464	0	(6)	(9)	(31)	(<1)	(1)	(<1)
	Alternative 4	6,694	0	(7)	(12)	(37)	(<1)	(1)	(1)
	Alternative 5	4,873	0	(5)	(8)	(27)	(<1)	(1)	(<1)
2020 Future Year									
	Alternative 2	7,172	0	(5)	(9)	(24)	(<1)	(1)	(<1)
	Alternative 3	5,724	0	(7)	(7)	(19)	(<1)	(1)	(<1)
	Alternative 4	7,055	0	(5)	(9)	(23)	(<1)	(1)	(<1)
	Alternative 5	5,123	0	(4)	(7)	(17)	(<1)	(1)	(<1)
2040 Future Year									
	Alternative 2	8,606	0	(3)	(9)	(13)	(<1)	(1)	(<1)
	Alternative 3	6,767	0	(2)	(7)	(10)	(<1)	(1)	(<1)
	Alternative 4	8,499	0	(3)	(9)	(13)	(<1)	(1)	(<1)
	Alternative 5	6,123	0	(2)	(6)	(9)	(<1)	(1)	(<1)

Source: ICF International 2016.

[a] In 1996 the EPA phased out the use of lead (Pb) as a fuel additive for on-road vehicles. As such, current fuel blends for on-road vehicles contains no lead. Therefore, on-road motor vehicle exhaust contains no lead emissions.

NA = Not applicable.

Note: CT-EMFAC2014 modeling output sheets are provided in Appendix E.

The CT-EMFAC2014 model was used to estimate the emission reductions shown above in Table 3.2-9 that would result from the reduction of daily VMT under each build alternative. The CalEEMod model was used to estimate emissions related to maintenance and storage facility operations. Emissions related to streetcar operations were based on the estimates of system energy demand, which include emissions related to energy demand and employee trips. Table 3.2-10 summarizes the emissions from all of these sources. To be conservative, passenger vehicle emissions shown below in Table 3.2-10 are for the 2015 Existing plus Project Build Alternative 5, which results in the least emission reduction. Table 3.2-10 shows that regional mass emissions would be less than significant.

Table 3.2-10. Estimate of Operations-Period Mass Emissions (pounds per day)

	Pb[a]	ROG	NO_X	CO	SO_X	PM10	PM2.5
Net Passenger Vehicle Emissions 2015 Existing plus Project Build Alternative 5	0	(5)	(8)	(27)	(<1)	(1)	(<1)
Maintenance Facility Emissions	0	1	2	7	<1	1	<1
Streetcar Operations Emissions	0	<1	3	2	<1	<1	<1
Total Project Emissions	0	(4)	(3)	(18)	<1	<1	<1
SCAQMD Significance Threshold	3	55	55	550	150	150	55
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**	**No**

Source: ICF International 2016.

[a] EPA in 1996 phased out the use of lead (Pb) as a fuel additive for on-road vehicles. As such, current fuel blends for on-road vehicles contains no lead. Therefore, on-road motor vehicle exhaust contains no lead emissions.

Note: CT-EMFAC and CalEEMod modeling output sheets are provided in Appendix E.

Local Operational Impacts

Less-than-significant impact. Emissions associated with maintenance facility operations were estimated using the SCAQMD CalEEMod model. With respect to local mass emissions, Table 3.2-11 shows that onsite operations-period emissions associated with maintenance facility operations would be below SCAQMD's localized significance thresholds. Impacts from emissions of these criteria pollutants would be less than significant.

Table 3.2-11. Operation-Period Localized Emissions (pounds per day)

Emissions Source	CO	NO_X	PM10	PM2.5
Onsite Area Source [a] (MSF)	<1	<1	<1	<1
SCAQMD Daily Significance Threshold (LST)[b]	680	74	2	1
Threshold Exceeded?	**No**	**No**	**No**	**No**

Source: ICF International 2016.

[a] Onsite emissions calculated using the CalEEMod emissions model (area-source emissions). Model output sheets are provided in Appendix E.

[b] The project site is located in SCAQMD SRA 1. LSTs are based on the site location SRA, distance to the nearest sensitive-receptor location from the project site (25 meters), and the project area (1 acre).

Particulate Matter Hot-Spot Analysis

The Project is within a nonattainment area for federal PM2.5 and PM10 standards. Therefore, per 40 CFR 93, project-level analyses are required for conformity purposes. However, EPA does not require hot-spot analyses for projects that are not listed in Section 93.123(b)(1) as a POAQC. The Project does not qualify as a POAQC for the following reasons.

- The Project is not a new or expanded highway project that would have a significant increase in the number of diesel vehicles.
- The Project would not affect intersections that operate at poor LOS with a significant number of diesel vehicles.
- The Project would not include the construction of a new bus or rail terminal that would significantly increase the number of diesel-powered vehicles congregating in a single location.

- The Project would not expand an existing bus or rail terminal that would significantly increase the number of diesel-powered vehicles congregating in a single location.
- The Project would not be located in nor affect any location, area, or categories of sites that are identified in the PM2.5 and PM10 applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation.

Therefore, the Project meets the CAA requirements and 40 CFR 93.116 without any explicit hot-spot analysis. The Project would not create a new, or worsen an existing, PM10 or PM2.5 violation.

California CO standards

Less-than-significant impact. Within an urban setting, vehicle exhaust is the primary source of CO. Consequently, the highest CO concentrations are generally found close to congested intersections. Under typical meteorological conditions, CO concentrations tend to decrease as the distance from the emissions source (i.e., congested intersection) increases. For purposes of providing a conservative worst-case impact analysis, CO concentrations are typically analyzed at congested intersection locations. If impacts are less than significant close to congested intersections, impacts will also be less than significant at more distant sensitive-receptor locations.

Project traffic during project operation would have the potential to create local area CO impacts. To ascertain the Project's potential to generate localized air quality impacts, the project-specific traffic impact analysis (Intueor 2015) was reviewed to determine the potential for the creation of localized CO hot spots at congested intersection locations. The SCAQMD recommends a hot spot evaluation of potential localized CO impacts when vehicle to capacity (V/C) ratios are increased by 2 percent or more at intersections with LOS D or worse. The traffic impact analysis identified 65 key intersection locations along routes that accommodate much of the traffic traveling within the project alignment. Of the 65 key intersection locations, the traffic analysis concluded that for opening year (2020) and horizon year (2040), five intersections could potentially create a localized CO hot spot with the Project under any of the build alternatives.[6]

For these five intersections, local area CO concentrations were predicted using the CALINE4 traffic pollutant dispersion model with EMFAC2014 emissions factors. Traffic data for the PM peak hour were used, as volumes are generally higher and LOS lower during the PM peak hour than during the AM peak hour. The analysis of CO impacts followed the protocol recommended by Caltrans, published as *Transportation Project-Level Carbon Monoxide Protocol* (Garza 1997, reissued 2010). It is also consistent with procedures identified through the SCAQMD's CO modeling protocol, with all four corners of each intersection analyzed to determine whether project development would result in a CO concentration that exceeds federal or state CO standards.

Table 3.2-11 presents the estimated 1- and 8-hour CO concentrations for the existing conditions, the project opening year 2020 and horizon year 2040. Table 3.2-12 shows that the Project would not have a significant impact on 1-hour or 8-hour local CO concentrations due to mobile source emissions.

Because significant impacts would not occur at the intersections with the highest traffic volumes or lowest LOS located adjacent to sensitive receptors under any alternative, no significant impacts are anticipated to occur at any other locations in the study area because the conditions yielding CO hot spots would not be worse than those occurring at the analyzed intersections. Consequently, the

[6] Based on SCAQMD-recommended screening criteria, any intersection that (1) operates at LOS D or worse and (2) would experience an increase in peak-hour volume to capacity ratio of 2 percent or more as a result of project-related traffic should be evaluated for potential to create a localized CO hot spot.

sensitive receptors that are included in this analysis would not be significantly affected by CO emissions generated by increases in traffic that could occur with the Project. Because no project alternative would cause an exceedance or exacerbate an existing exceedance of an AAQS, localized operational air quality impacts would be less than significant.

Toxic Air Contaminants/Mobile-Source Air Toxics

The purpose of the Project is to enhance mobility and transit circulation in downtown Los Angeles. The Project has been determined to generate minimal air quality impacts related to CAA criteria pollutants and has been shown not to result in MSAT concerns. While the Project would not result in substantial changes in traffic volumes or vehicle fleet mix, VMT would be reduced under each build alternative when compared to the No Project Alternative. As MSAT emissions are a function of VMT, reductions in VMT would lead to reductions in project vicinity MSAT emissions. As such, potential impacts would be less than significant.

Moreover, EPA regulations for vehicle engines and fuels will cause overall MSAT emissions to decline significantly over the next several decades. Based on regulations now in effect, an analysis of national trends with EPA's MOVES model forecasts a combined reduction of over 80 percent in the total annual emission rate for the priority MSAT from 2010 to 2050 while during this same time vehicle-miles of travel are projected to increase by over 100 percent (FHWA 2012). This will further reduce the background level of MSAT.

Onsite Stationary Sources

Less-than-significant impact. Onsite stationary sources would be associated with the MSF. These sources would have negligible emissions of TACs, as MSF activities would be limited to storage, light maintenance, and cleaning tasks that do not require use of toxic substances in large quantities. Impacts from emissions of TACs would be less than significant.

Onsite Hazardous Materials

Less-than-significant impact. Storage of hazardous materials at the MSF would be required to meet all applicable codes and regulations. The likelihood of an accidental release would be low, and accordingly this impact would be less than significant.

Occupancy of Sensitive Individuals

Less-than-significant impact. The Project is a transportation facility and the time each passenger spends waiting for or aboard the streetcar would be relatively brief. Time spent waiting or aboard the streetcar is not occupancy within the meaning of this significance threshold. This impact would be less than significant.

Table 3.2-12. Modeled Maximum Carbon Monoxide Concentrations (ppm) at Receptors in the Vicinity of Affected Intersections during the PM Peak Hour

Intersection	Existing Year 2016[a]								Opening Year 2020								Horizon Year 2040							
	1-hour				8-hour				1-hour				8-hour				1-hour				8-hour			
	Exist.	7th St Alt.	9th St Alt.	Significant Impact?	Exist.	7th St Alt.	9th St Alt.	Significant Impact?	No Project	7th St Alt.	9th St Alt.	Significant Impact?	No Project	7th St Alt.	9th St Alt.	Significant Impact?	No Project	7th St Alt.	9th St Alt.	Significant Impact?	No Project	7th St Alt.	9th St Alt.	Significant Impact?
Olive St./ 5th St.	6.4	6.4	6.4	No	5.6	5.6	5.6	No	6.0	6.0	6.0	No	5.3	5.3	5.3	No	5.7	5.7	5.7	No	5.1	5.1	5.1	No
Figueroa St./ 7th St.	6.4	6.4	6.3	No	5.6	5.6	5.6	No	5.9	5.9	5.9	No	5.2	5.2	5.2	No	5.7	5.7	5.7	No	5.2	5.1	5.1	No
Figueroa St./ 8th St.	6.8	6.9	6.8	No	6.0	6.0	6.0	No	6.2	6.3	6.3	No	5.5	5.6	5.6	No	5.9	5.9	5.9	No	5.2	5.2	5.2	No
Olive St./ 9th St.	7.3	7.3	7.5	No	6.3	6.4	6.5	No	7.3	6.6	6.6	No	6.4	5.7	5.7	No	6.2	6.2	6.2	No	5.5	5.5	5.5	No
Figueroa St,/ Olympic Blvd.	6.8	6.8	6.9	No	6.0	6.0	6.0	No	6.2	6.2	6.2	No	5.5	5.5	5.5	No	5.9	5.9	5.9	No	5.2	5.2	5.2	No

Sources: EMFAC2014 and CALINE4 modeling by ICF (2016); Intueor 2015.

[a] Traffic data for 2014–2015.

NA = Not applicable.

Background concentrations of 5.1 and 4.6 ppm were added to the modeling for 1- and 8-hour results, respectively, based on SCAQMD projected future-year concentrations for Central Los Angeles (SCAQMD 2014a, 2014b).

The federal and state 1-hour standards are 35 and 20 ppm, respectively.

The federal and state 8-hour standards are 9 and 9.0 ppm, respectively. The difference lies in the rounding convention.

Odors

Less-than-significant impact. Potential odor sources during operation could include use of solvents, cleaners, lubricants, and similar substances at the MSF. However, MSF activities would adhere to applicable standards and regulations pertaining to the management of odor producing materials kept on site and therefore would not be likely to result in objectionable odors affecting a substantial number of people.

Alternative 3: 7th Street without Grand Avenue Extension

There would be no material difference in project operations under the 7th Street Alternative without Grand Avenue Extension when compared to the 7th Street Alternative with Grand Avenue Extension. As such, operation impacts of Alternative 3 would be similar to those of Alternative 2.

Alternative 4: 9th Street with Grand Avenue Extension

There would be no material difference in project operations under the 9th Street Alternative with Grand Avenue Extension when compared to the 7th Street Alternative with Grand Avenue Extension. As such, operation impacts of Alternative 4 would be similar to those of Alternative 2.

Alternative 5: 9th Street without Grand Avenue Extension

There would be no material difference in project operations under the 9th Street Alternative without Grand Avenue Extension when compared to the 7th Street Alternative with Grand Avenue Extension. As such, construction impacts of Alternative 5 would be similar to those of Alternative 3.

3.2.4 Mitigation Measures

As shown above in Table 3.2-7, localized emissions of NO_X, PM10, and PM2.5 during construction are predicted to exceed SCAQMD significance thresholds without incorporation of mitigation measures. The following mitigation measure would reduce impacts that may result from local construction emissions associated with the Project. This mitigation measure would be required for all of the project build alternatives.

> **MM-AQ-C1: Use cleaner-burning off-road construction equipment per the following schedule:** The contractor shall ensure that all off-road diesel-powered construction equipment greater than 50 horsepower (hp) shall meet the Tier 4 emission standards. In addition, all construction equipment shall be outfitted with best available control technology (BACT) devices certified by ARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by ARB regulations. The City of Los Angeles Department of Public Works, Bureau of Engineering, through the construction contractor per bid specifications, shall be the responsible party. Enforcement shall be achieved through the Department of Public Works Contracts Administration Bureau Construction Inspector.

As shown in Table 3.2-13, prescribed Mitigation Measure **MM-AQ-C1** would reduce off-road NO_X, PM10, and PM2.5 exhaust emissions by approximately 36, 53, and 51 percent, respectively. With mitigation, worst-case localized NO_X emissions would be reduced from 94 pounds per day (ppd) to 61 ppd, which would be below the SCAQMD LST of 74 ppd. Worst-case emissions of PM10 and PM2.5 would be reduced to approximately 3 ppd and 2 ppd, respectively, which would be below the

SCAQMD LSTs of 5 ppd and 4 ppd, respectively. As such, localized emissions during construction would be less than significant with implementation of the mitigation measure.

Table 3.2-13. Worst-Case Localized Construction Emissions with Mitigation (pounds per day)

Description	NO_X	PM10[a]	PM2.5[a]
Worst-case Emissions Prior to Mitigation	94	6	5
Emissions Reduction with Mitigation	(33)	(3)	(2)
Maximum Emissions with Mitigation	61	3	3
Localized Significance Thresholds[b]	74	5	4
Threshold Exceeded?	**No**	**No**	**No**

Source: ICF International 2016.
Note: Construction Road Emissions Model and CalEEMod output sheets are provided in Appendix E.
[a] PM10 and PM2.5 emissions estimates assume compliance with SCAQMD Rule 403 requirements for fugitive dust suppression, which require that no visible dust be present beyond the site boundaries.
[b] The project site is located in SCAQMD SRA Number 1. These LSTs are based on the site location SRA, distance to nearest sensitive receptor location from the project site (25 meters), and the project area that could be under construction on any given day (1 acre) that is within 25 meters of any individual sensitive receptor location.

3.2.5 Cumulative Impacts

The SCAQMD's approach for assessing cumulative impacts is based on their AQMP forecasts of attainment of ambient air quality standards in accordance with the requirements of the federal and state CAAs. The AQMP contains a comprehensive list of pollution control strategies directed at reducing emissions and achieving ambient air quality standards. These strategies are developed, in part, based on regional population, housing, and employment projections prepared by SCAG.

SCAG is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial Counties. It also addresses regional issues related to transportation, the economy, community development, and the environment. With regard to air quality planning, SCAG has prepared the RCP, which includes Growth Management and Regional Mobility chapters that form the basis for the Land Use and Transportation Control portions of the AQMP. These documents are utilized in the preparation of the air quality forecasts and consistency analyses included in the AQMP. Both the RCP and AQMP are based, in part, on projections originating with county and city general plans.

As detailed in Section 3.8, *Land Use and Planning*, the Project would be consistent with the *City of Los Angeles General Plan*. Because the Project would be consistent with the general plan, pursuant to SCAQMD guidelines, the Project would be considered to be consistent with the region's AQMP. As such, project-related emissions are accounted for in the AQMP, which is crafted to bring the Basin into attainment for all criteria pollutants.[7]

[7] State CEQA Guidelines Section 15064(h)(3) states "A lead agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program which provides specific requirements that will avoid or substantially lessen the cumulative problem (e.g. water quality control plan, air quality plan, integrated waste management plan) within the geographic area in which the project is located. Such plans or programs must

In addition, the mass regional emissions calculated for the Project would not exceed applicable SCAQMD daily significance thresholds, which are designed to assist the region in attaining the applicable state and national ambient air quality standards. Projects that exceed project-specific significance thresholds are considered by the SCAQMD to be cumulatively considerable. This is the reason project-specific and cumulative significance thresholds are the same. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant.

The Project would comply with the SCAQMD's Rule 403 (fugitive dust control) during construction, as well as all other adopted AQMP emissions control measures. Per SCAQMD rules and mandates, as well as the CEQA requirement that significant impacts be mitigated by feasible mitigation, these same requirements (i.e., Rule 403 compliance, the implementation of all feasible mitigation measures, and compliance with adopted AQMP emissions control measures) would also be imposed on all projects Basin-wide, which would include all related projects. As such, the Project would not have a cumulatively considerable contribution to cumulative impacts with respect to criteria pollutant emissions.

be specified in law or adopted by the public agency with jurisdiction over the affected resources through a public review process to implement, interpret, or make specific the law enforced or administered by the public agency."

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3.3 Cultural Resources

This section identifies cultural resources present within the project area, evaluates the potential project-related impacts on those resources, and provides mitigation measures, as applicable. The information provided herein is based on the survey results and recommendations contained in the *Historic Resources Technical Report for the Restoration of Historic Streetcar Service in Downtown Los Angeles Project* and the *Archaeological Resources Technical Report for the Restoration of Historic Streetcar Service in Downtown Los Angeles Projec*t, both of which were prepared in February 2016 by ICF International. The ICF International reports are included in their entirety in Appendix G and Appendix H, respectively, of this document. The survey of cultural resources was conducted under the provisions of Section 15064.5 of the State CEQA Guidelines.

3.3.1 Regulatory Setting

Cultural resources fall within the jurisdiction of several levels of government. States and local jurisdictions provide the framework for the identification, documentation, and protection of such resources. The CEQA, *Public Resources Code* (PRC) Section 5024, the *City of Los Angeles Cultural Heritage Ordinance* (Los Angeles Administrative Code Section 22.130), and *California Health and Safety Code* Section 7050.5/California PRC Section 5097.9 are the primary laws that govern and affect the preservation of cultural resources of national, state, regional, and local significance.

3.3.1.1 Federal

National Register of Historic Places

The National Park Service's National Register of Historic Places (NRHP) is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect America's historic and archeological resources. To determine whether an undertaking could affect NRHP-listed or -eligible properties, cultural resources (including archaeological, historical, and architectural properties) must be inventoried and evaluated for listing in the NRHP. For projects involving a federal agency, cultural resource significance is evaluated in terms of eligibility for listing in the NRHP. For a property to be considered for inclusion in the NRHP, it must meet the criteria for evaluation set forth in *Code of Federal Regulations* (CFR), Title 36, Part 60.4, as follows.

> The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of design, setting, materials, workmanship, feeling, and association and
>
> (a) that are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> (b) that are associated with the lives of persons significant in our past; or
>
> (c) that embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master or that possess high artistic values or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> (d) that have yielded, or may be likely to yield, information important in prehistory or history.

Among other criteria considerations, a property that has achieved significance within the last 50 years is not considered eligible for inclusion in the NRHP unless certain exceptional conditions are met.

3.3.1.2 State

California Environmental Quality Act

In accordance with Section 21084.1 of CEQA,[1] the proposed Project would have a significant adverse environmental impact if it "causes a substantial or potentially substantial adverse change in the significance of an historical resource."

According to CEQA (PRC Section 21084.1), *historical resources* include any resource listed or determined eligible for listing in the California Register of Historical Resources (CRHR). Properties listed or determined eligible for listing in the NRHP, such as those identified in the Section 106 process, are automatically listed in the CRHR, pursuant to 14 CCR Section 4851 (a)(1). Therefore, all *historic properties* under federal preservation law are automatically *historical resources* under state preservation law. Historical resources are also presumed to be significant if they are included in a local register of historical resources or identified as significant in a qualified historical resource survey.

State law in Title 14, *California Code of Regulations* (CCR) Section 4850, defines historical resource as follows:

> Any object, building, structure, site, area, place, record, or manuscript that is historically or archaeologically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural history of California.

For the purposes of CEQA, historical resource is further defined under PRC Section 15064.5 as a "resource listed, or determined eligible for listing, in the California Register."

Section 15064.5 of the CEQA Guidelines sets forth the criteria and procedures for determining significant historical resources and the potential effects of a project on such resources. Generally, the lead state agency shall consider a historical resource to be *historically significant* if the resource meets any of the criteria for listing in the CRHR.

The City statutes and guidelines specify how historical resources are to be managed in the context of projects such as the proposed Project. Briefly, archival and field surveys must be conducted, and identified historical resources must be inventoried and evaluated in prescribed ways.

Paleontological Resources

In the State of California, fossil remains are considered to be limited, nonrenewable, and sensitive scientific resources. These resources are afforded protection under CEQA. Paleontological resources are provided protection as historical resources, as discussed in State CEQA Guidelines Section 15064.5(a) (3). The State CEQA Guidelines define historical resources broadly to include any object, site, area, or place that a lead agency determines to be historically significant.

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[1] Section 21084.2 of CEQA, regarding effects on tribal cultural resources, does not apply to the Project because the notice of preparation was filed before July 1, 2015.

California Register of Historical Resources

The California State Historic Preservation Officer (SHPO) is tasked, among other duties, with maintaining an inventory of historic properties and the CRHR. Established by California PRC Section 5024.1(a) in 1992, the CRHR serves as "an authoritative guide in California to be used by state and local agencies, private groups, and citizens to identify the state's historical resources and to indicate what properties are to be protected, to the extent feasible, from substantial adverse change." According to California PRC Section 5024.1(c), the CRHR criteria broadly mirror those of the NRHP. The CRHR criteria are found at California PRC Section 5024.1(c) as follows:

> An historical resource must be significant at the local, state, or national level, under one or more of the following four criteria:
>
> 1) It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States; or
> 2) It is associated with the live of persons important to local, California, or national history; or
> 3) It embodies the distinctive characteristics of a type, period, region, or method or construction, or represents the work of a master, or possesses high artistic values; or
> 4) It has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

The minimum age criterion for the CRHR, as with the NRHP, is 50 years. Properties less than 50 years of age may be eligible for listing in the CRHR if it can be demonstrated that sufficient time has passed to understand its historical importance. In addition to meeting one or more of the historical significance criteria, the resource must possess integrity. Integrity is defined as "the authenticity of an historical resource's physical identity evidenced by the survival of characteristics that existed during the resource's period of significance."

There are several ways for resources to be included in the CRHR. A resource can be *listed* in the CRHR based upon a nomination and public consideration process. Additionally, a resource that is subject to a discretionary action by a governmental entity will be evaluated for *eligibility* for the CRHR. As previously stated, properties listed in or formally determined eligible for listing in the NRHP are *automatically* listed in the CRHR.

California Health and Safety Code, Section 7050.5/*California Public Resources Code*, Section 5097.9

Archaeological sites containing human remains shall be treated in accordance with the provisions of *California Health and Safety Code* (HSC) Section 7050.5 and California PRC Section 5097.9. Under HSC Section 7050.5, if human remains are discovered during any project activity, the county coroner must be notified immediately. If human remains are exposed, HSC Section 7050.5 states that no further disturbance shall occur until the county coroner has made the necessary findings as to origin and disposition pursuant to PRC Section 5097.98. Construction must halt in the area of the discovery of human remains, the area of the discovery shall be protected, and consultation and treatment shall occur as prescribed by law. If the remains are determined by the coroner to be Native American, the coroner is responsible for contacting the Native American Heritage Commission (NAHC) within 24 hours. The NAHC, pursuant to Section 5097.98, will immediately notify those persons it believes to be most likely descended from the deceased person so they can inspect the burial site and make recommendations for treatment or disposal.

3.3.1.3 Local

City of Los Angeles Cultural Heritage Ordinance

The City of Los Angeles maintains a list of all sites, buildings and structures, which have been designated through the *Cultural Heritage Ordinance* as Historic-Cultural Monuments.

Historic-Cultural Monument

Section 22.171.7 of the *Cultural Heritage Ordinance* states that a Historic-Cultural Monument is any site (including significant trees or other plant life located on the site), building, or structure of particular historic of cultural significance to the City of Los Angeles, including historic structures or sites in which the broad cultural, economic, or social historic of the nation, state, or community is reflected or exemplified; or which is identified with historic personages or with important events in the main currents of national, state, or local historic; or which embodies the distinguishing characteristics of an architectural type specimen, inherently valuable for a study of a period, style, or method of construction; or a notable work of a master builder, designer, or architect whose individual genius influenced his or her age.

Any person may apply for the proposed designation of a Historic-Cultural Monuments (HCMs) and the Cultural Heritage Commission determines whether or not the proposed designation merits consideration. If the Commission recommends approval of the application and it is included in the list of HCMs, no permit for the demolition, substantial alteration or relocation of an HCM may be issued (Section 22.171.14) unless:

1. The Superintendent of Building or City Engineer determines that demolition, relocation or substantial alteration is necessary in the interest of public health, safety, or general welfare;
2. The substantial alteration complies with the Secretary of the Interior's Standards for Rehabilitation;
3. The substantial alteration protects and preserves the historic and architectural qualities and the physical characteristics that make the site, building, or structure a designated HCMs; and
4. The proposed action is in compliance with CEQA PRC Section 21000 et seq.

Historic Downtown Los Angeles Design Guidelines

The 2002 *Historic Downtown Los Angeles Design Guidelines* (HDLADG) were developed to aid in implementing effective preservation and adaptive reuse projects that protect, highlight, and promote downtown's historic character. Based on the Secretary of the Interior's Standards for the Treatment of Historic Properties, the HDLADG apply to properties located along portions of Main, Spring, Broadway, and Hill Streets, between approximately 3rd Street on the north and 9th Street on the south. This district contains a significant concentration of historic office buildings, department store buildings, and the largest and most architecturally impressive collection of early twentieth-century movie theaters found anywhere in the United States.

Although focused almost entirely on building design, retrofit, maintenance, appropriate building addition design and integration, and signage design, HDLADG guidance is premised on the eventual reintroduction of streetcars and/or trolley lines in the Historic Downtown neighborhood. The HDLADG states that new construction should be planned so that it results in minimal impacts on primary historic building façades.

Broadway Streetscape Master Plan

The *Broadway Streetscape Master Plan* (BSMP) provides a vision for design improvements along Broadway, a menu of design tools and streetscapes, and other design criteria germane to design within individual street blocks. It presents eight overarching design principles. Among these principles are keeping the new streetscape elements simple, with clean lines and materials, preserving views to historic key buildings, and promoting environmentally responsible design.

Under the provisions of the BSMP, street curb extensions, crosswalk and street paving, transit stop locations, and all signage (including wayfinding and informational signage) require review by the City Planning Department. Also under the BSMP, the Los Angeles Department of Transportation (LADOT) reviews all street right-of-way changes to median strips, crosswalks, bus stop locations, directional and informational signage, bicycle facilities, and any changes to the standard LADOT menu of hardware, colors, and materials.

Although there are numerous non-historic replacement streetlight poles along Broadway, the surviving so-called "Broadway Rose" streetlight bases are considered worthy of retention as part of the streetscape proposed under the BSMP (even though they are not considered historic elements). These bases, as well as historic terrazzo sidewalk installations, historic sidewalk vault lights, basement vault hatch doors, flagpole holders, and utility and ventilation covers, are itemized in the BSMP and are considered character-defining historic fabric.

Los Angeles CEQA Thresholds

The City of Los Angeles has developed thresholds for determining impact significance pursuant to CEQA (Section 21068; 2015 State CEQA Guidelines, Section15064) and has published those thresholds in the *L.A. CEQA Thresholds Guide* (2006). These thresholds (City Thresholds) are to be used to determine the significance of potential impacts resulting from or associated with the Restoration of Historic Streetcar Service in downtown Los Angeles. The *L.A. CEQA Thresholds Guide* (2006) states that the following impact significance factors shall apply to archaeological resources.

Archaeological Resources

A project would normally have a significant impact on archaeological resources if it could disturb, damage, or degrade an archaeological resource or its setting that is found to be important under the criteria of CEQA because it:

- Is associated with an event or person of recognized importance in California or American prehistory or of recognized scientific importance in prehistory;
- Can provide information that is both of demonstrable public interest and useful in addressing scientifically consequential and reasonable archaeological research questions;
- Has a special or particular quality, such as the oldest, best, largest, or last surviving example of its kind;
- Is at least 100 years old and possesses substantial stratigraphic integrity; or
- Involves important research questions that historical research has shown can be answered only with archaeological methods.

Paleontological Resources

The *Conservation Element* of the *City of Los Angeles General Plan* (adopted September 2001) specifically addresses paleontological resources in Section 3 of Chapter 2. The *Conservation Element's* paleontological objective is to "protect the city's archaeological and paleontological resources for historical, cultural, research and/or educational purposes." Moreover, its policy is to "continue to identify and protect significant archaeological and paleontological sites and/or resources known to exist or that are identified during land development, demolition or property modification activities."

Additionally, the City of Los Angeles has adopted as the City's CEQA Guidelines (2002) "all of the State CEQA Guidelines, contained in title 15, *California Code of Regulations*, Sections 15000 et seq., and incorporates all future amendments and additions to those guidelines as may from time to time be adopted by the State."

The following sections provide the historic archaeological and ethnographic, and paleontological context for the project alignment, a discussion of the methodology for identifying and evaluating properties in the project alignment for NRHP and CRHR eligibility, and the application of the criteria of adverse effects.

3.3.2 Environmental Setting/Affected Environment

The project alignment is in downtown Los Angeles. This is an urban setting, with multi-story civic, commercial, entertainment, and residential buildings interspersed with at-grade parking lots, multi-story parking garages, and parks. The project alignment includes portions of several neighborhoods and districts that illustrate the typical uses.

Most of the geography of the project alignment is flat, with a few exceptions. The north-south Broadway, Hill, and Figueroa Streets are relatively level boulevards in the project alignment, although Hill Street is slightly elevated in comparison to Broadway, and there is a slight rise at the north end of Broadway. Bunker Hill rises up from the west side of Hill Street, north of 6th Street. As a result, 1st Street has a gradual climb from South Broadway to Grand Avenue.

The section of 1st Street between South Broadway and Grand Avenue provides for traffic in both the eastbound and westbound directions using five lanes, except near the intersection with Grand Avenue, where the road widens to eight lanes. Grand Avenue is geographically elevated above most of downtown Los Angeles. It is generally two lanes across, with some widening for turn lanes at intersections, and carries northbound and southbound traffic between 1st and 2nd Streets.

Currently, Hill Street is a two-way street with four traffic lanes. Hill Street also includes a center turning lane. Broadway has three lanes: one southbound and two northbound. Between Olympic and 11th Streets, South Figueroa Street has traffic lanes for both northbound and southbound traffic and is seven lanes across. North of Olympic Boulevard, South Figueroa Street becomes a one-way street, with only northbound traffic using four to five lanes. Ninth Street is a one-way street, with only eastbound traffic using four lanes between South Figueroa Street and Grand Avenue and three lanes from Grand Avenue to Broadway in the project alignment. From South Broadway to South Flower Street, 11th Street is a two-lane, one-way western route. At South Flower Street, this road widens to six lanes and includes eastbound traffic. Between South Figueroa Street and South Broadway, 7th Street carries eastbound traffic in one lane and westbound traffic in one to two lanes, with a parking/turn lane on either side and a center turn lane at most intersections.

The corridors in the project alignment are heavily used city streets with both vehicular and bus traffic. There are a few remnants related to the streetcar era, such as Angel's Flight and the Subway Terminal Building (now an apartment building known as Metro 417), as well as the metal anchor hooks on buildings that held cables for the streetcars.

The setting includes sidewalks of various widths, mature and newly planted street trees, various styles of light poles, parking meters, bike racks, trashcans, and other related street furniture. Additionally, traffic lights include signal heads on one-story high poles at corners, as well as two-story elevated arms that hang over the intersections and pedestrian crosswalks. Most buildings have been built out to the public right-of-way/sidewalk.

3.3.2.1 Paleontological Setting

The project site is located in the Los Angeles Basin, a roughly north-south trending depositional trough located in the northwestern portion of the Peninsular Ranges geomorphic province. The Los Angeles Basin has been the site of discontinuous marine deposition since the Late Cretaceous (99.6 millions of years ago [Ma]); the Los Angeles Basin began to fill with alluvium about five Ma and eventually was exposed above sea level and terrestrial deposition began.

Surface deposits in the project area are mapped (Dibblee 1989) as younger Quaternary alluvium, consisting of floodplain deposits of silt, sand, and gravel of Holocene age (10,000 years Before Present [B.P.] to Recent). Geotechnical information for various area of downtown Los Angeles indicates that disturbed sediments and previously placed fill materials, consisting primarily of brown to dark brown, loose to dense, silty sand with some gravel, brick and asphalt fragments, are a typical profile of sediment under the street portions of the project alternatives. Fill ranges in depth up to approximately 10 feet below the ground surface in downtown Los Angles, except in areas more deeply disturbed by basement or subterranean parking excavations. Alluvial sediments, apparently undisturbed, underlie the fill and extend to depths ranging between 25 to 60 feet below the ground surface. Deposits at these depths in the Los Angeles Basin are often considered to be older Quaternary alluvium of Pleistocene age (2.6 MA to 10,000 BP). This alluvium generally consists of light brown to dark brown, dense to very dense, poorly graded sand and silty sand. Underlying this alluvium is Fernando Formation bedrock of early Pliocene age (3.4 Ma to 5.5 Ma)

3.3.2.2 Prehistoric Setting

The prehistoric occupation of Southern California is divided chronologically into four temporal phases or horizons (Moratto 1984). Horizon I, or the Early Man Horizon, began at the first appearance of people in the region, approximately 12,000 years ago, and continued until about 7,000 years B.P. Although little is known about these people, it is assumed that they were semi-nomadic and subsisted primarily on game.

Horizon II, also known as the Millingstone Horizon or Encinitas Tradition, began around 7,000 B.P. and continued until about 3,500 B.P. The Millingstone Horizon is characterized by widespread use of milling stones (manos and metates), core tools, and few projectile points or bone and shell artifacts. This horizon appears to represent a diversification of subsistence activities and a more sedentary settlement pattern. Archaeological evidence suggests that hunting became less important and that reliance on collecting shellfish and vegetal resources increased (Moratto 1984).

Horizon III, the Intermediate Horizon or Campbell Tradition, began around 3,500 B.P. and continued until about 1000 B.P. Horizon III is defined by a shift from the use of milling stones to increased use of mortar and pestle, indicating a greater reliance on acorns as a food source. Projectile points become more abundant and, together with faunal remains, indicate increased use of both land and sea mammals (Moratto 1984).

Horizon IV, the Late Horizon, which began around 1000 B.P. and terminated with the arrival of Europeans, is characterized by: dense populations; diversified hunting and gathering subsistence strategies, including intensive fishing and sea mammal hunting; extensive trade networks; use of the bow and arrow; and a general cultural elaboration (Moratto 1984).

3.3.2.3 Native American Ethnographic Setting

The Project's Area of Potential Effects (APE) lies within Gabrielino/Tongva ethnographic territory. The term *Gabrielino* refers to Native American groups historically associated with the San Gabriel Mission. Gabrielino territory is not well defined, but is generally believed to incorporate the watersheds of the Los Angeles, San Gabriel, and Santa Ana Rivers. It includes the entire Los Angeles Basin, the coast between Aliso Creek and Topanga Creek, and the islands of San Clemente, San Nicholas, and Santa Catalina. The ancestors of the Gabrielinos likely arrived in the Los Angeles Basin around 2500 years B.P. as part of what Kroeber (1925) referred to as the "Shoshonean Wedge." By 1500 B.P., permanent villages were built in the lowlands along rivers and streams. Over 50 villages may have been occupied simultaneously with populations of between 50 and 200 people per village (Bean and Smith 1978).

Gabrielino houses were primarily domed, semi-subterranean, thatched structures of locally accessible materials including tule, fern, and carrizo. Principal game included deer, rabbit, fish, sea mammals, jackrabbit, woodrat, mice, ground squirrels, antelope, quail, and other birds. Acorns were the most important single food source and villages seem to have been located near water resources necessary for the leaching of acorns. Grass seeds were the next most abundant food source. Seeds were parched, ground, and cooked as a mush in various combinations. Additional food sources included various greens, cactus pods, yucca buds, bulbs, roots, and tubers (Bean and Smith 1978). Tools for food acquisition, storage, and preparation included an inventory made from widely available materials. Hunting tools included shoulder-height bows with fire-hardened wood or stone-tipped arrows, curved throwing sticks, rabbit nets, slings, and traps. Seeds were ground with handstones on shallow basin metates. The same granites were made into mortars and pestles for pounding acorns or small game. Coiled and twined baskets and steatite bowls were used in food gathering, preparation, storage, and serving. Other utensils for food preparation included wooden food paddles, brushes, tongs, tweezers, and wooden digging sticks (Bean and Smith 1978).

One major ethnographic Gabrielino village close to the project site was the village of Yaanga, one of the largest Gabrielino villages in the region. Its precise location is uncertain because the original community was abandoned sometime prior to 1836 (Robinson 1952:16). Yaanga was likely located slightly to the south of the old Spanish Plaza of Pueblo de Los Angeles, near where the former Bella Union Hotel was later built (Dillon 1994:30) on Main Street above Commercial Street (Newmark 1916:25–26). The reference to this well-known nineteenth-century Los Angeles hotel places this village location about two city blocks northwest of the project site. The village of Yaanga was later instrumental in the founding of Pueblo de Los Angeles because the Spanish Colonial governor wanted a Native American village population to support the new civil community with labor and materials.

3.3.2.4 Historic Context

A detailed Historic Context of downtown Los Angeles can be found in Appendix H. This abbreviated context focuses on the streetcar lines in the study area only.

Downtown Development and the Streetcar

The development of downtown and Greater Los Angeles was inexorably linked to the early transportation systems in the City. Although the historic core of downtown (streets like Temple, Main, Spring, Broadway, and Hill) was not as dependent on streetcar lines for residential growth as outlying areas, the streetcar played an important role in transporting the necessary workers and retail consumers from distant areas to downtown. Early subdivision activity adjacent to the pueblo and Main Street expanded outward along horse car, cable car, and electrified streetcars in the 1870s and 1880s. Cable cars and electric streetcars had the greatest impact on neighborhoods just outside the historic core. (Los Angeles Conservancy 1990: II-11–II-12).

Figure 3.3-1. Looking south down Broadway at the intersection of 5th Street in 1926. Streetcars proceed down the center of Broadway.

Source: Los Angeles Public Library

By the mid-1890s, electrified interurban streetcars connected downtown to cities as far as Pasadena and Santa Monica. With a downtown now conveniently accessible to outlying areas, department stores on 7th Street and theaters on Broadway could draw enough people to create a major hub of business, retail, and entertainment activity. By 1911, the region had a streamlined system that focused on downtown, making it the single most accessible point in Southern California. The completion of the Subway Terminal Building at 417 South Hill Street in 1925 would help shift the center of downtown activity farther to the west from the traditional Main Street corridor. The terminal's completion coincided with the growth of retail stores on 7th Street that were west of Broadway (Roseman 2004: 7–11).

Downtown Neighborhoods

Bunker Hill and Angels Flight

Of the neighborhoods directly adjacent to the historic core of downtown Los Angeles, Bunker Hill (originally called "Olive Hill") was among the first to have its initial development tied directly to the expansion of the streetcar system in Los Angeles. The modern boundaries of Bunker Hill consist of Temple Street to the north, 5th Street to the south, Olive Street to the east, and the Harbor Freeway to the west (Comer 1996:16–18).

Although some residences dotted the landscape of Bunker Hill prior to the 1880s, the development of the area was hindered by steep topography. The hill proved especially inaccessible to early horse-drawn streetcars, which were prevalent in downtown during the 1870s and 1880s. When cable car technology was introduced to Los Angeles by the late 1880s, streetcars could finally travel the steep terrain of Bunker Hill. The Temple Street Cable Railway ran three miles from Main Street to the Dayton Heights neighborhood along Temple Street, while the 2nd Street Cable Railroad ran along 2nd Street from Spring Street to Texas Street. Streetscapes, water systems, and other infrastructure improvements also made the area more attractive to investment. Bunker Hill would soon experience an intensive residential building boom, which resulted in a number of fashionable Queen Anne and Eastlake style dwellings at the crown of the hill (Post 1989:49–52).

Figure 3.3-2. A View of 3rd Street, 3rd Street Tunnel, and Angels Flight (to the left) in 1901.

Source: Los Angeles Public Library

The construction of the Angels Flight Railway in 1901 provided a method for traveling the steepest portion of Bunker Hill, near 3rd Street, which had no streetcar access at the time. Although the 3rd Street tunnel was constructed under Bunker Hill in 1901, it did not provide access to the top of the hill. Increased housing density in Bunker Hill, along with development of the commercial core to the east and south of the line, helped ensure strong patronage. After opening in December 1901, the railway became an important connection between the residential hillside and the commercial core to the east. Development of Bunker Hill would continue to intensify as stately hotels and apartment buildings would be added to the existing fabric of single-family dwellings (Comer 1996:35–42).

Broadway Theatre and Commercial District

The Broadway Theatre and Commercial District was listed on the NRHP on May 9, 1979. The original NRHP district, which encompassed 300 to 939 South Broadway, was expanded on April 12, 2002, to now encompass 242 to 947 South Broadway. A list of the contributors and non-contributors to the Broadway Theatre and Commercial District can be found in Appendix H.

The Broadway District is highly representative of a commercial and entertainment center in downtown Los Angeles that emerged principally in the first quarter of the twentieth century. The area consists of a collection of large office buildings, department stores, and theaters designed in traditional architectural styles, such as Beaux Arts. Construction of the new city hall on Broadway during the 1890s was a primary impetus for changing the neighborhood from a residential to a commercial district. Large business structures, such as the Bradbury Building, the Grand Central Market, the Nelson Building, and the Jacoby Brothers Store began to change the Broadway skyline and pulled the downtown business center farther to the south from 3rd Street. (Roseman 2004:61–63).

Figure 3.3-3. Crowds crossing the intersection of 7th Street and Broadway, looking north on Broadway in 1928. A Yellow Car is seen in the foreground on Broadway while a Red Car (on the right side) is about to cross Broadway along 7th Street.

Source: Los Angeles Public Library

During the first half of the twentieth century, the Los Angeles streetcar system made the district accessible to patrons throughout Los Angeles. By the early 1900s, the Los Angeles Railway Yellow Cars became a familiar sight along Broadway as they carried shoppers, theatergoers, and workers to their desired destinations with regular stops along the route. The interurban Red Cars also played a role by transporting people to Broadway from outlying suburban locations in Southern California. Before the widespread use of automobiles and the development of the freeway system, the streetcars provided an important link between downtown commerce and the greater Los Angeles region (Los Angeles Conservancy 1990:II-25–II-28).

The theaters on Broadway are of particular historical importance because they provided a center for drama, comedy, and vaudeville presentations in Los Angeles before the advent of motion pictures. A number of Broadway's theaters from this period continue to convey cultural and architectural significance. Among the earliest theaters built on Broadway are the Cameo at 528 South Broadway, the Arcade at 534 South Broadway, and the Palace at 630 South Broadway.

Figure 3.3-4. Looking north on Broadway from 7th Street during the Armistice Day parade in 1944. Yellow Cars are seen in the center of the street.

Source: Los Angeles Public Library

Movie palaces in the district reached an even more elevated level of grandeur with the construction of the Million Dollar Theater at 307 Broadway in 1918. Albert C. Martin designed the richly detailed Churrigueresque style building for the legendary showman Sid Grauman. The theater also helped usher in an era of increasingly grand theaters along Broadway in the 1920s. The 2,190-seat Orpheum (842 South Broadway) was constructed in 1926 in the Beaux Arts style and would play host to many of the biggest names in show business. A year after the construction of the Orpheum, the Gothic-themed United Artist Theatre opened. The building was the product of the prolific Los Angeles-based architects Walker and Eisen, who designed other noteworthy buildings downtown.

Theater construction in the district reached its apex in 1931 when the last of the great movie palaces, the Los Angeles Theatre, was opened at 615 South Broadway. Designed by Charles Lee, the lavish French Baroque-inspired building is distinguished by its huge accented columns on the primary façade. Other theaters from the period include the Roxie at 518 South Broadway, the Globe at 744 South Broadway, the Tower at 802 South Broadway, and the Rialto at 812 South Broadway (Gebhard and Winter 2003:249–251).

Spring Street Financial District

The Spring Street Financial District was listed on the NRHP on September 12, 1978, and is located from 354 to 704 South Spring Street. For most of the twentieth century, Spring Street served as the business center of Los Angeles. Once known as the "Wall Street of the West" for its concentration of banks and other financial institutions, the district consists of an architecturally homogeneous collection of buildings along Spring Street, from 7th Street north to 4th Street. Architecturally, Neo-Classical, Commercial, and Art Deco buildings with grand terra cotta façades define this neighborhood.

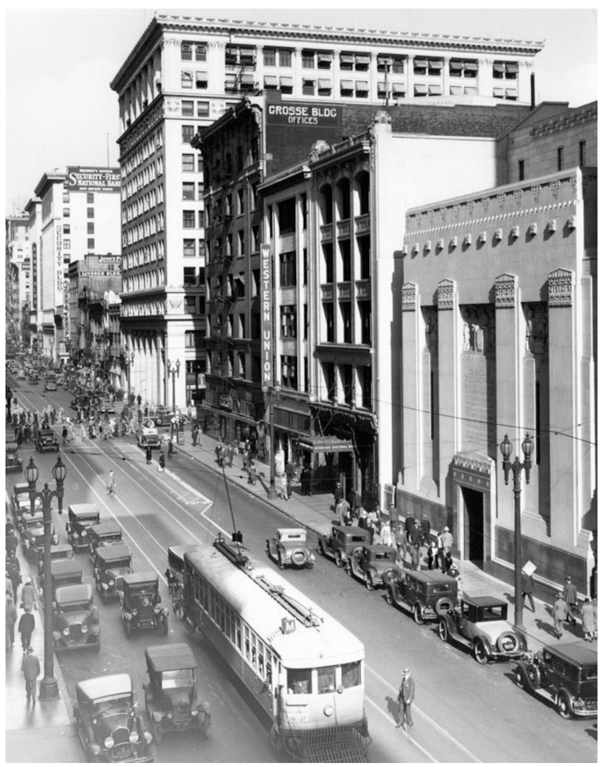

Figure 3.3-5. View of Spring Street looking north between 6th and 7th Streets in 1932. On the right is the Los Angeles Stock Exchange building (later the Pacific Coast Stock Exchange). A Yellow Car is traveling south down Spring Street.

Source: Los Angeles Public Library

Although the Spring Street Financial District is east of the study area for the Project, it is discussed as part of the historic context because the Spring Arcade Building, which is listed as a contributor to both the Spring Street Financial District and the Broadway Theatre and Commercial District, is in the study area. The address for the Spring Arcade Building is 538–544 Broadway and 531–545 Spring Street.

7th Street

During the 1910s and 1920s, 7th Street developed as a commercial district noted for its upscale retail and distinctive office architecture, which continues to define its modern built environment. The area is roughly a mile south of the original pueblo and had been agricultural land until the first residences began to appear in the late 1870s. Due to the commercial expansion of downtown in the early 1900s, the street evolved farther from residential to commercial uses. The growth of the area by the 1910s represented a transition in downtown commercial retailing from turn of the century, mixed-use buildings to the larger, single-use, specialized buildings. By 1920, 7th Street featured a number of major retailers and attracted thousands of shoppers, many of which arrived on streetcars. The Yellow Cars provided many stops along the street and became a popular mode of transportation for downtown visitors. The corner of 7th and Broadway would soon become one of the most bustling intersections in the City due to a plethora of nearby retail and entertainment establishments. The 7th Street corridor continued to grow throughout the 1920s with the addition of several large-scale office buildings. The architectural character of the street was typified by Beaux Arts style buildings constructed in the early twentieth century. Several of these buildings had undergone façade makeovers in the Art Deco style by the 1930s (Los Angeles Conservancy 1990:II-26–II-28).

Both the Bullock's Department Store and the J. W. Robinson Company served as two of the early catalysts for retail growth along the 7th Street corridor. John Bullock set the tone for the area's specialized, upscale department store theme when he opened his flagship Bullock's store at the corner of Broadway and 7th (319 West 7th Street) in 1906. The store would experience continued expansion at the location and eventually occupy six adjoining structures. In 1915, J. W. Bullocks Company opened the first major department store on 7th Street to the west of Broadway. Located at 600 West 7th Street, the store became an immediate success and spurred a westward expansion of commercial business along the street in an area that had been previously been considered the outskirts of the downtown retail core. Additional retail buildings from the period include the Coulter Dry Goods Company Building at 518 West 7th Street, Ville de Paris at 420 West 7th Street, and later the Barker Bros. Building at 818 West 7th. The Renaissance Revival styled Barker Bros. Building is of particular significance because it was among the largest furniture stores in the country and features a remarkable exterior façade that remains in nearly original condition (Los Angeles Conservancy 2010:1–6).

Figure 3.3-6. A view of the intersection of Broadway and 7th Street, looking west on 7th Street in 1926. On the corner is the Loew's State Theatre. Streetcars are seen at the center of the street.

Source: Los Angeles Public Library

The construction of single-use office buildings added another component to the architectural fabric of 7th Street. Between 1920 and 1928, 13 large office buildings were constructed on 7th Street alone. Built in 1911, the Union Oil Building at 215 West 7th Street represents one of the earliest examples of this large, spacious type of office construction. Office buildings from the 1920s include the Romanesque style Fine Arts Building at 811 West 7th Street, the Bank of Italy at 505 West 7th Street, the Financial Center Building at 140 West 7th Street, the Transportation Building at 122 East 7th Street, and the Roosevelt Building at 727 West 7th Street. The massive Renaissance Revival style Roosevelt Building was said to have been the largest office building in Southern California upon its opening. The Financial Center Building stands as yet another example of Beaux Arts style along the street and is listed on the NRHP. Both the Fine Arts Building and the Transportation Building display the stylish and artistic work of architects Walker and Eisen (Gebhard and Winter 2003:238, 252).

Figure 3.3-7. Northeast corner of Flower and 7th Streets looking at the east elevation of the Roosevelt Building circa 1940. A streetcar is traveling east on 7th Street.

Source: Los Angeles Public Library

In addition to retail and office buildings, 7th Street was also home to theater venues near Broadway and the Los Angeles Athletic Club. Two theaters of particular note are the Pantages Theatre at 401 West 7th Street and the Loew's State Theatre at 300 West 7th Street. The Los Angeles Athletic Club, a local institution, moved to its current location at 431 West 7th Street in 1912 with a layout that included a clubhouse, athletic facility, and hotel. It also featured an Olympic-size pool on the sixth floor, which still remains today, and was an engineering feat in its time (Los Angeles Conservancy 2010:4). The club is also credited with introducing organized track and field competition to California, which would later be adopted into prep and collegiate sports programs in the twentieth century (Starr 2005:299).

As a result of this study, a historic district designated as the W 7th Street District is being recommended eligible for the NRHP. The associated DPR forms for the proposed district are located in Appendix H.

South Park

The neighborhood commonly referred to as South Park encompasses an area roughly bounded by 8th Street to the north, the Santa Monica Freeway to the south, Main Street to the east, and the Harbor Freeway to the west. The name "South Park" is a fairly recent moniker created for the marketing and redevelopment of the neighborhood; historically, it was not referred to by this name. The neighborhood was first developed as a middle-class residential area during the 1880s and evolved into an area characterized by medical, commercial (especially automotive related), and retail businesses intermixed with residential flats, apartments, and rooming houses during the twentieth century (City of Los Angeles:2, 7).

South Park was traditionally recognized as the home to two important institutions during the first half of the twentieth century: William Randolph Hearst's *Examiner* newspaper (later the *Herald-Examiner*) and the California Hospital. The building formerly occupied by the *Herald-Examiner* at 1111 South Broadway was constructed in 1914 and designed by renowned architect Julia Morgan in association with William Dodd and William Richards. The striking Mission Revival style building with Italian Revival and Moorish influences stands as one of Morgan's few works in Los Angeles.

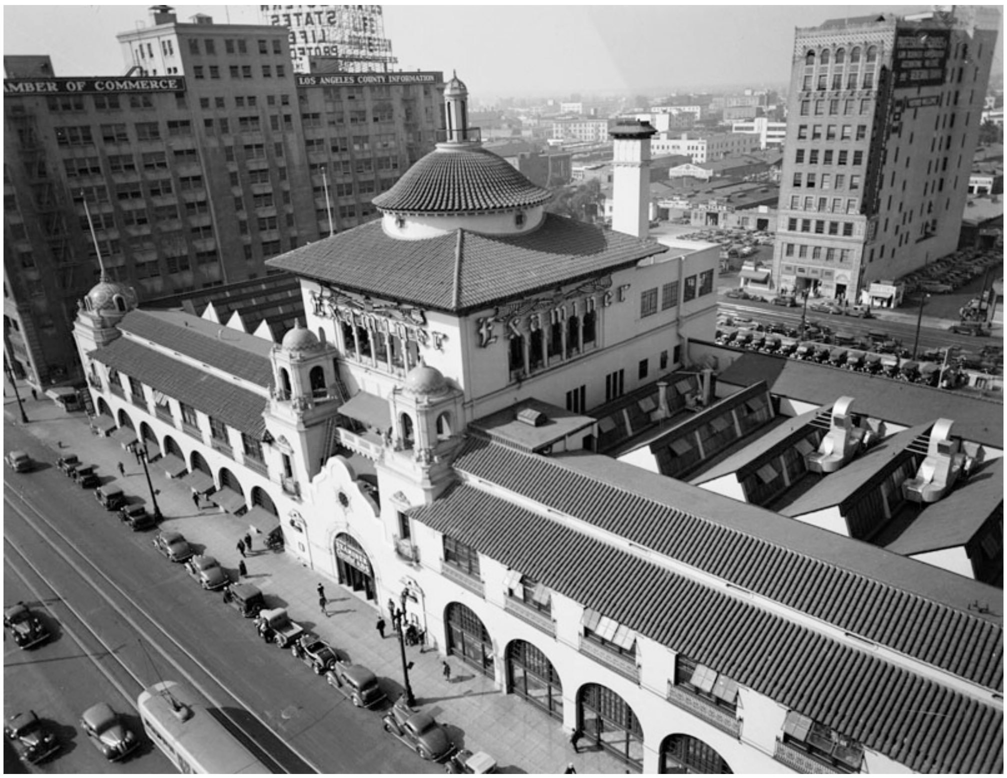

Figure 3.3-8. Exterior of the *Examiner* newspaper building at 1111 South Broadway in 1937. A Yellow Car can be seen at the bottom of the photo on Broadway.

Source: Los Angeles Public Library

California Hospital represents one of the early hospitals in Los Angeles. First opened at 1414 South Hope in 1898, the hospital rapidly expanded into neighboring buildings to accommodate additional patients. In 1921, the Lutheran Hospital Society of Southern California purchased the hospital and would operate it for several decades. After the original hospital building proved inadequate by the 1920s, the Society built a nine-story hospital in 1926 at the original Hope Street location. The brick hospital would serve Los Angeles until it was severely damaged by the Northridge Earthquake of 1994. The building was demolished in 2000, although California Hospital continues to operate a hospital tower at 1401 South Grand Avenue, which was built in 1987.

The Streetcar in Los Angeles

Electric Streetcars and Interurbans (1885–1963)

While there had been talk of a street railway line in Los Angeles since the 1860s, it was not until the 1870s that there was the necessary economic boom and critical mass of population for its development. Judge Robert M. Widney incorporated the Spring & 6th Street Horse Railroad Co. in February of 1874 and brought the first car line into fruition in the downtown. In 1885, Los Angeles became one of only a handful of American cities with a cable car system thanks to the construction of the 2nd Street Cable Railroad, which ran west from Spring Street. The previous horse car lines simply could not operate on the steep grades that hemmed in downtown. Now neighborhoods with hilly terrain could be accessed by cable cars.

By the late 1880s, the cable car lines would lose patronage to the fledgling electric streetcars. During this period, electric streetcar technology, and specifically the electric motor, had been refined and successfully introduced in major East Coast cities. While cable cars continued to function in Los Angeles under the Pacific Railway Company, the line would face new competition from an emerging electric streetcar company named the Los Angeles Consolidated Electric Railway (LACE). Under the leadership of land developer Moses Sherman, LACE would rapidly expand throughout the downtown core. While the cable cars of Pacific Railway continued to maintain the largest ridership of the City's streetcar lines in the early 1890s, its finances were precarious and its technology became increasingly antiquated. Pacific Railway struggled to remain solvent and was acquired by LACE by fall of 1893, bringing a precipitous end to horse and cable car lines previously run by Pacific Railway. With a virtual monopoly over streetcars in Los Angeles, LACE electrified all of its remaining horse and cable car lines by the summer of 1896, officially ushering in the era of the electric streetcar (Post 1989:101–111).

Even with near complete control of streetcar lines in Los Angeles, LACE would soon face financial difficulties of its own due in part to a national depression in the 1890s as well as mismanagement of the company. To avoid foreclosure, Moses Sherman relinquished control to company bondholders who formed a new railway corporation called the Los Angeles Railway Corporation (LARy), which would assume control of the electric streetcar system. By 1900, the yellow and brown cars of the Los Angeles Railway had extensive lines running throughout downtown Los Angeles and into neighborhoods such as Angelino Heights, East Los Angeles, and Boyle Heights. Real estate mogul and railroad baron Henry E. Huntington gained control of LARy, in 1898. In 1901 Huntington would also begin to assemble the expansive interurban Pacific Electric (PE) Red Cars system, which would span multiple counties in Southern California. The entirely separate LARy system would continue to be prevalent in the downtown core (Post 1989:105–109).

Through intermediaries, the Southern Pacific Railroad purchased an ever-increasing amount of the Pacific Electric Company's stock as part of a quiet expansion effort into Southern California. By the 1910s, Huntington proceeded to further loosen his hold on his streetcar empire as he turned his attention to his public utility companies and pursued his passion for collecting rare books and art. In 1911, the Southern Pacific Railway forced Huntington out of Pacific Electric completely. The companies purchased by Southern Pacific would be combined under the Pacific Electric name. Huntington would still maintain control of the one streetcar system, the Los Angeles Railway, which would remain in the Huntington trust until 1945. This would leave only three streetcar companies operating in Los Angeles after 1911: the Pacific Electric, the Los Angeles Railway, and the small

Glendale & Montrose Electric Railway, which consisted of only five cars and two lines operating largely in Glendale and La Canada (Walker 1977:45).

By the time of the 1911 merger, Pacific Electric Red Cars had become the largest interurban electric railway in the world in terms of miles of tracks (1,200 route miles) throughout Southern California. Nevertheless, Huntington's Yellow Cars, which provided quick, local service in Los Angeles and operated 90 percent of its lines within the City limits, would become the true workhorse of the regional transit system. By 1924, LARy carried about twice as many passengers as the Pacific Electric, serving 255.6 million passengers compared to the Red Cars 100.9 million (Masters 2013).

Both the LARy Yellow Cars and Pacific Electric Red Cars reached the peak of their expansion and usage by the 1920s and 1930s, when they were commonly used to take people to popular shopping and entertainment districts in downtown Los Angeles from outlying suburbs that were not as well served by commercial retail. Despite the widespread use of both streetcar systems, the first indication of their decline began to appear as early as the 1920s. A vibrant automobile culture had entrenched itself in Southern California by the 1920s as car ownership rapidly grew from year to year and became increasingly affordable to a growing middle-class. Where the streetcars had previously been the only connection of outlying areas to central Los Angeles in the pre-automobile era, auto travel provided a desirable alternative and was supported by an expanding publicly funded road network. In the case of the Pacific Electric, real estate development had driven interurban expansion, and passenger operation was typically a loss leader. When most of the real estate holdings had been developed by the 1920s, this primary source of profit began to be depleted, and the least-used Pacific Electric car lines converted to buses as early as 1925 (Crump 1965:203–209). The real reason Southern Pacific Railway had been so keen to acquire the Pacific Electric routes was that far more profitable freight operation was possible compared to the Pacific Electric's standard gauge long-distance tracks. The Los Angeles Railway, with its tight inner city curves and narrow gauge street operations, never carried more than a token amount of perishable freight. When the Great Depression came in 1930, the management of the Glendale & Montrose begged the Pacific Electric to buy out their operations. When the Pacific Electric refused, the Glendale & Montrose folded, and its tracks were sold to the Union Pacific Railway for freight operations only.

Both remaining rail transit companies experienced a boom in ridership during World War II due to gasoline, oil, and rubber rationing; too many forces were working against the sustainability of streetcars and interurbans. Due to high operational costs and anemic ridership, more and more of the underutilized lines to outlying communities were replaced by less costly bus lines during the 1930s and 1940s (Crump 1965:206–210).

Figure 3.3-9. A retired Los Angeles Transit Lines streamliner wearing government Los Angeles Metropolitan Transit Authority's green and white color scheme in 1963.

Source: Los Angeles Public Library

Beyond the growing dominance of automobile culture, the streetcar's downfall in Los Angeles was further hastened by a reputation for aging infrastructure, frequent delays, and uncomfortable trains. At the same time, growing affluence during the post-World War II era allowed for an even greater expansion of automobile ownership. Public officials failed to integrate streetcar lines into proposed freeway projects, citing cost as the main impediment. A new government agency, the Los Angeles Metropolitan Transit Authority, took over the successors to the Yellow and Red Car systems in 1958 and soon dismantled the last vestiges of the old streetcar lines. The last former Pacific Electric interurban operated from downtown to Long Beach April 8, 1961, and the last five former Los Angeles Railway lines completed service in the early morning hours of April 1, 1963 (Masters 2013).

3.3.3 Environmental Impact Analysis

This section expresses the methodology, evaluation, and impacts for archaeological, historical, and paleontological resources.

3.3.3.1 Methodology

Archaeological Resources

The study area is composed of the area circumscribed by all four build alternatives and an additional 0.25-mile buffer. The study area includes the maintenance and storage facilities (MSFs) and traction power substations (TPSS) described in the Project Description. The vertical study area includes the depth of all ground-disturbing activities. These ground-disturbing activities would extend to a depth up to approximately 10 feet below the ground's surface.

A records search was conducted at the South Central Coastal Information Center in August 2012 in order to identify any archaeological resources that have been previously identified in the vicinity of the project area. A review of aerial maps indicates that the Project's study area has been heavily altered by the construction and urbanization of downtown Los Angeles. A team of archaeologists drove the alignments and inspected the streets for any evidence of older curbs, pavers, or abandoned rail segments, which is standard procedure in this type of situation. Because the natural ground surface is not visible, a pedestrian archaeological field survey was not conducted.

Historical Resources

The study area was preliminarily defined as those parcels adjacent to the project corridor described in the definitions of the 7th Street and 9th Street Alternatives (both with and without the Grand Avenue Extension) and would encompasses all project components, including proposed MSF sites and TPSS sites.

In order to identify and evaluate historical resources, a multi-step methodology was utilized. Record searches for previous documentation of identified historic resources were conducted, including listings in the NRHP, determinations of eligibility for NRHP listings, the California Historical Resources Inventory database, and the City of Los Angeles's historic resource inventories. An intensive survey, including photography and background research, was then made of the study area. Additional background and site-specific research was conducted in order to evaluate the properties within their historic context. NRHP, CRHR, and City of Los Angeles criteria were employed to assess the significance of the properties.

Paleontological Resources

The paleontological study area is defined to be the same as the archaeological study area, referenced above.

As part of the Archaeological Resources Technical Report (Appendix G), a paleontological assessment report and a Los Angeles County Museum of Natural History records search were completed for the project corridor and vicinity. Research indicates that the uppermost five feet of sediment in the project alternatives are unlikely to encompass paleontological resources.

Below five feet, deposits of older Quaternary alluvium of Pleistocene age (2.6 Ma to 10,000 BP) may occur. This alluvium generally consists of light brown to dark brown, dense to very dense, poorly graded sand and silty sand. Underlying this alluvium is Fernando Formation bedrock of early Pliocene age (3.4 Ma to 5.5 Ma)

The paleontological sensitivity of these sediments ranges from none to very sensitive. Fill has been disturbed, and is unlikely to contain intact fossils. Quaternary younger alluvial deposits of Holocene-age deposits contain the remains of modern organisms and are too young to contain fossils. Younger alluvial deposits have been determined to have a low potential for paleontological resources. Typically, Quaternary older alluvial deposits throughout Southern California are considered to be highly sensitive for vertebrate fossils. Sixty Pleistocene localities from this type of sediment, exclusive of Rancho La Brea, were reviewed by Miller (1971), and many localities have since been discovered. Therefore, there is the potential for buried cultural and paleontological deposits to exist beneath previously disturbed and developed land surfaces.

Identification and Evaluation

The records search included a review of all available archaeological and historical resources reports and site records concerning properties directly bordering the entire project route on both sides of the street. A total of 19 studies were previously conducted within portions of the study area. A total of 132 properties and one historic district have been previously recorded within the boundaries of the study area.

Archaeological Resources. The South Central Coastal Information Center records search identified only one previously recorded archaeological site, 19-003129, in the study area. No new archaeological resources were recorded through the proposed Project.

Historical Resources. Within the study area, nine buildings and one historic district are listed in the NRHP, 42 buildings and one historic district were previously determined eligible for the NRHP, and three buildings are only listed as HCMs. As previously stated, properties listed in or formally determined eligible for listing in the NRHP are *automatically* listed in the CRHR.

These properties are identified in the following figures and tables:

Figure 3.3-10, Index. National Register Properties and Local Landmarks Restoration of Historic Streetcar Service in Downtown Los Angeles

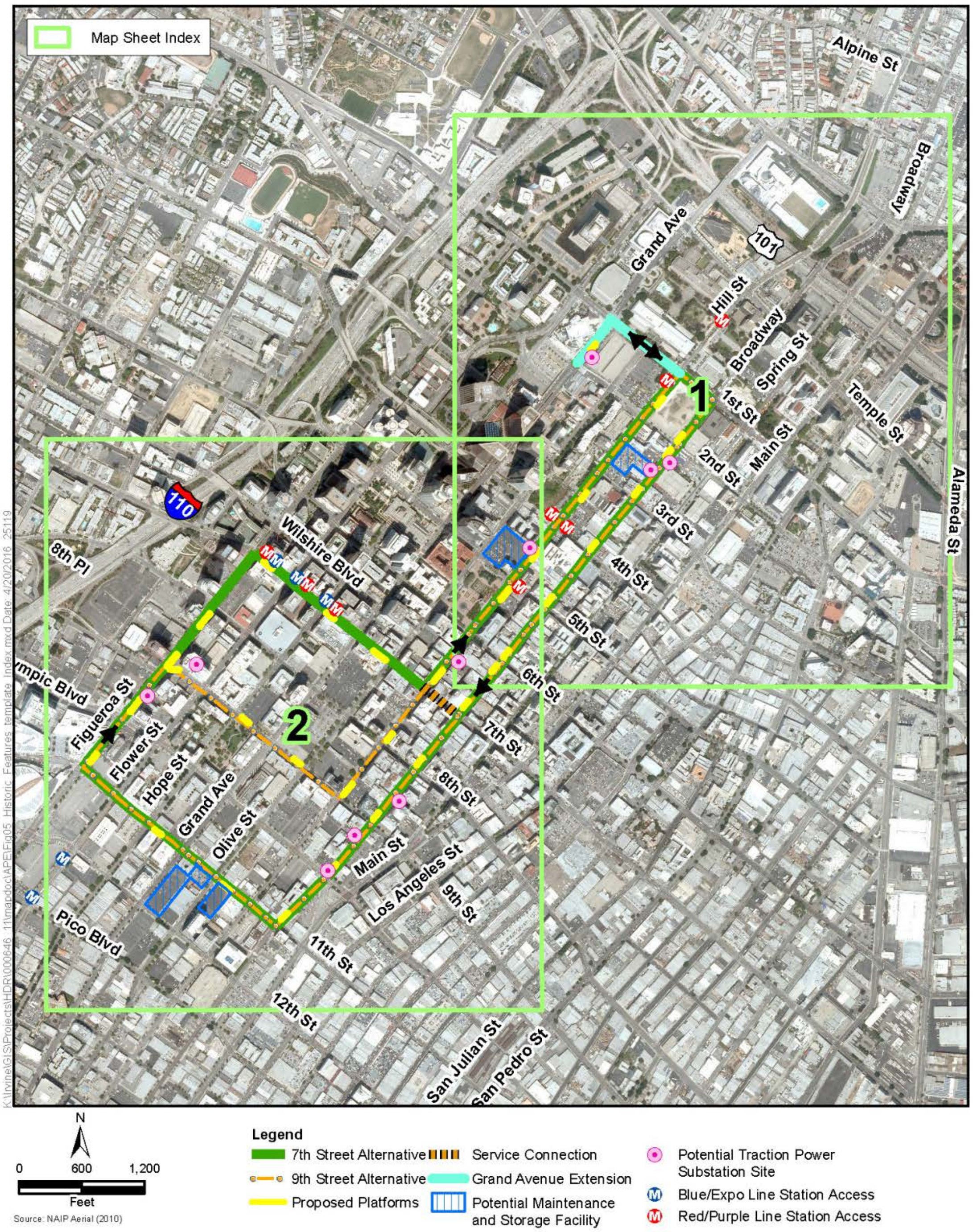

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Figure 3.3-10, Sheet 1 of 2. National Register Properties and Local Landmarks Restoration of Historic Streetcar Service in Downtown Los Angeles

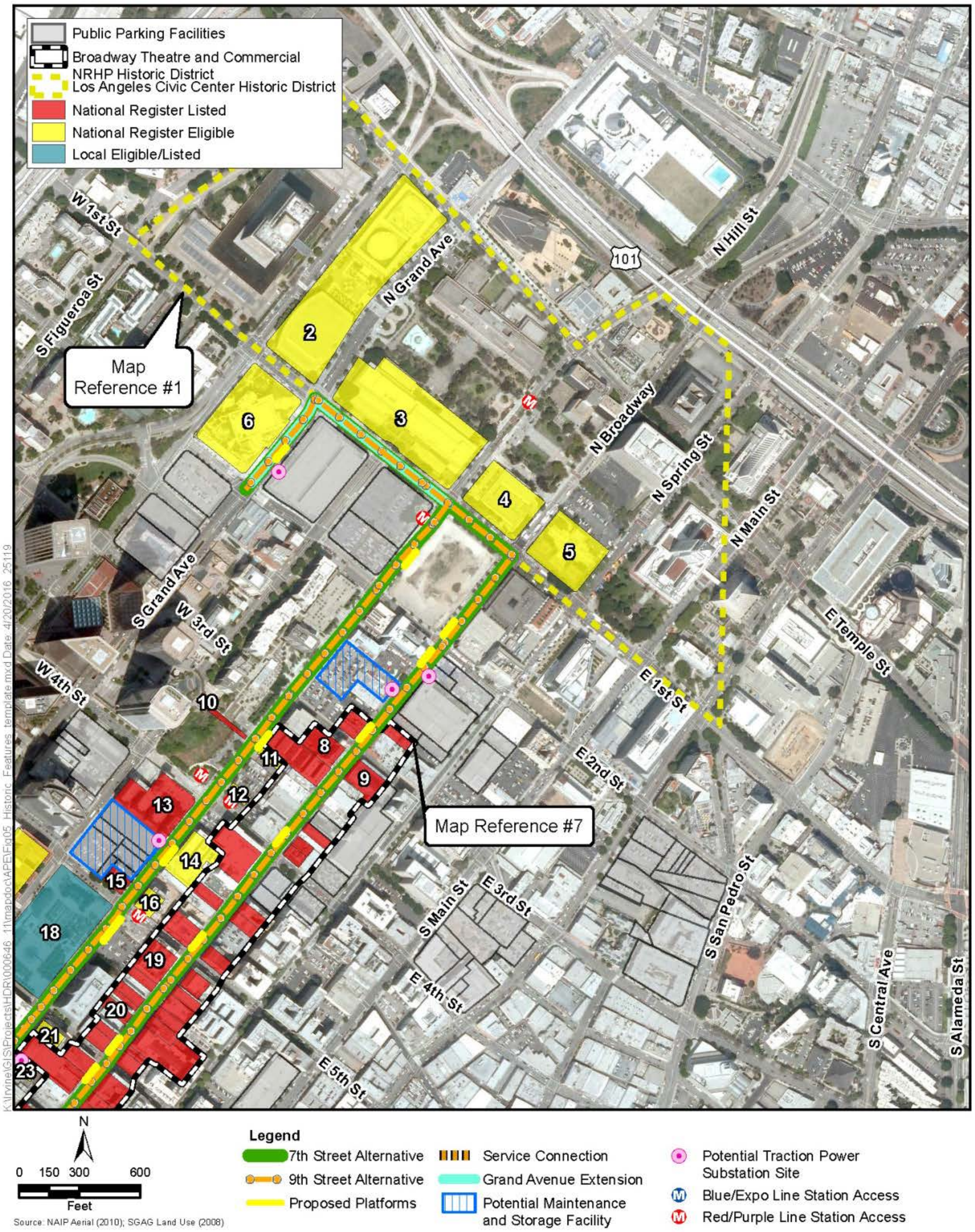

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Figure 3.3-10, Sheet 2 of 2. National Register Properties and Local Landmarks Restoration of Historic Streetcar Service in Downtown Los Angeles

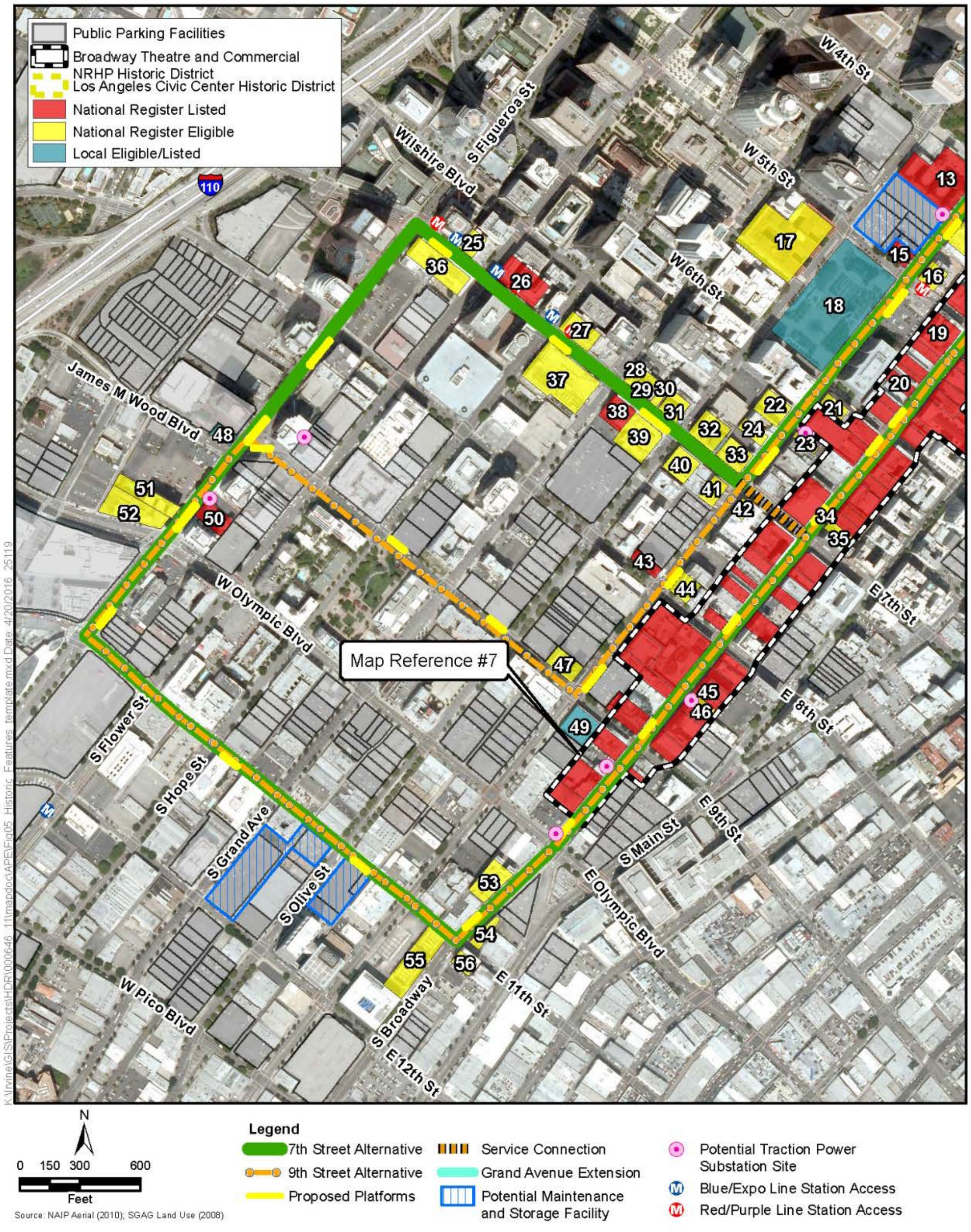

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Table 3.3-1. Historical Resources Included in the NRHP and Listed in the CRHR[a]

Name	Address/ Location	Map Reference Number	Status
Broadway Theatre and Commercial District Boundary increase[b]	242–947 S. Broadway	7	Increased the boundary of the district and revised contributors/non-contributors.
Bradbury Building	300 S. Broadway	9	Listed as an NHL, and included on the NRHP under Criteria A and C, for architecture/engineering. Period of significance is 1893. This property was declared HCM #6.
Broadway Theatre and Commercial District	300–939 S. Broadway	7	Listed on the NRHP under Criteria A and C for architecture, commerce, and entertainment/recreation. Period of significance is 1894–1931. There are 60 contributing buildings, 38 non-contributing buildings, and three vacant lots within this district.[c] This district was declared HCM #2306.
Million Dollar Theater/ Edison Building	301 S. Broadway	8	Listed on the NRHP under Criteria A and C, for an event and architecture/engineering. Period of significance is 1916.
Friday Morning Club	940 S. Figueroa Street	50	Listed on the NRHP under Criterion C for associations with social/humanitarian activities, theater, and radio. Period of significance from 1923–1924. This property was declared HCM #196.
NY Cloak & Suit House, Brockman Building	708 S. Grand Avenue & 520 W. 7th Street	38	Listed on the NRHP under Criteria A and C, for community planning/development, architecture, and commerce. Period of significance from 1912–1925.
Angels Flight Railway/ Angels Flight Railway Station House	S. Hill Street, north of W. 4th Street	10	Listed on the NRHP under Criteria A and C, for an event and architecture/engineering. _Period of significance is 1905—circa 1950. This property was declared HCM #4.
Subway Terminal Building, 417 Metro	417 S. Hill Street	13	Listed on the NRHP under Criteria A and C for transportation and architecture. Period of significance from 1925–1955. This property was declared HCM # 177.
Title Guarantee and Trust Company Building	401–411 W. 5th Street/ 425–457 S. Hill Street	15	Listed on the NRHP under Criterion C for architecture. Period of significance is 1930–1931. This property was declared HCM # 278.
Roosevelt Building	727 W. 7th Street	26	Listed on the NRHP under Criteria A and C for architecture. Period of significance is 1926. This property was declared HCM # 355.
Garfield Building	403 W. 8th Street	43	Listed on the NRHP under Criterion C for architecture/engineering. Period of significance is 1929.

Name	Address/ Location	Map Reference Number	Status

Source: ICF 2013.

[a] California State Historic Preservation Office. *California Historic Resources Inventory System*. Last updated on April 4, 2012.

[b] There was no change in the net number of contributors. Six buildings originally considered to be contributing had their status changed to non-contributing, while six different buildings within the district were determined to be contributors. Two new non-contributing resources were identified within the district. Addresses identifying the current contributors and non-contributors to the historic district can be found in Appendix H. Accessed from http://www.NRHP.com/CA/Los+Angeles/state.html.

[c] See Table G-1 in Appendix H for a list of character-defining features of the district.

Table 3.3-2. Historical Resources Previously Determined Eligible for the NRHP and Listed in the CRHR[a]

Name	Address/Location	Map Reference Number	Status
Los Angeles Civic Center Historic District	Various addresses, downtown Los Angeles	1	Determined eligible for the NRHP under Criteria A and C for association and architecture. Period of significance is 1925–1972. It is listed in the CRHR.
Barry's	543–545 S. Broadway	20	Determined eligible for the NRHP (Criterion N/A). Period of significance is 1901. It is listed in the CRHR.
Clifton's Cafeteria	648 S. Broadway	35	Determined eligible for the NRHP under Criteria A and C for association and architecture. Period of significance is 1935. It is listed in the CRHR.
Clifton's Cafeteria Terrazzo Sidewalk	648 S. Broadway	34	Determined eligible for the NRHP under Criterion C for its high artistic qualities. Period of significance is 1935-1939. It is listed in the CRHR.
Wurlitzer Building	818-820 S. Broadway	45	Determined eligible for the NRHP under Criteria A and C for association and architecture. Period of significance is 1913–1923. It is listed in the CRHR.
Burgers	828 S. Broadway	46	Determined eligible for the NRHP under Criteria A and C for association and architecture. Period of significance is 1927. It is listed in the CRHR.
Western Pacific Building	1023 S. Broadway	53	Determined eligible for the NRHP (Criterion N/A). Period of significance is 1925.
LA Transit Building	1050–1070 S. Broadway	54	Determined eligible for the NRHP (Criterion N/A). Period of significance is 1920.
Commercial Club, Hotel Case	1100 S. Broadway	56	Determined eligible for the NRHP (Criterion N/A). Period of significance

Name	Address/Location	Map Reference Number	Status
			is 1925.
Examiner Building/*Herald Examiner*	1111 S. Broadway	55	Determined eligible for the NRHP under Criteria B and C for a significant person and architecture. Period of significance is 1914. It is listed in the CRHR. This property was declared HCM # 178.
Hotel Figueroa	939 S. Figueroa Street	51	Determined eligible for the NRHP under Criterion C for architecture. Period of significance is 1925. It is listed in the CRHR.
Blow-Up Boutique	947 S. Figueroa Street	52	Determined eligible for the NRHP under Criterion C for architecture. Period of significance is 1939. It is listed in the CRHR.
Dorothy Chandler Pavilion	135 N. Grand Avenue	2	Determined eligible for the NRHP under Criteria A and C for association and architecture. Period of significance is 1925–1971. It is listed in the CRHR.
Walt Disney Concert Hall	111 S. Grand Avenue	6	Determined eligible for the NRHP under Criterion C for architecture. Period of significance is 2003. It is listed in the CRHR.
Los Angeles County Courthouse/Stanley Mosk Los Angeles County Courthouse	111 N. Hill Street	3	Determined eligible for the NRHP under Criteria A and C for association and architecture. Period of significance is 1925–1971. It is listed in the CRHR.
The Aldine, The Whipple, Myrick Hotel	324–326 S. Hill Street	11	Determined eligible for the NRHP under Criterion C for architecture. Period of significance is 1893–1897. It is listed in the CRHR.
The Aldine, Myrick Hotel	342 S. Hill Street	12	Determined eligible for the NRHP (Criterion N/A). Period of significance is 1897. It is listed in the CRHR.
Clark Hotel & Beauty School	426 S. Hill Street	14	Determined eligible for the NRHP under Criterion C for architecture. Period of significance is 1912. It is listed in the CRHR.
Pershing Square Building	448 S. Hill Street	16	Determined eligible for the NRHP under Criterion C for architecture. Period of significance is 1923. It is listed in the CRHR.
William Fox Building	608 S. Hill Street	21	Determined eligible for the NRHP (Criterion N/A). Period of significance is 1930.
Sun Reality, Banker's Building	629 S. Hill Street	22	Determined eligible for the NRHP (Criterion N/A). Period of significance

Name	Address/Location	Map Reference Number	Status
			is 1930.
Bullocks Downtown Department Store	632 S. Hill Street	23	Determined eligible for the NRHP (Criterion N/A). Period of significance is 1906. It is listed in the CRHR.
Los Angeles Fur Mart Building	635 S. Hill Street	24	Determined eligible for the NRHP (Criterion N/A). Period of significance is 1925.
Great Western Savings Bank	700 S. Hill Street	42	Determined eligible for the NRHP (Criterion N/A). Period of significance is 1922.
Foreman & Clark Building	701 S. Hill Street	41	Determined eligible for the NRHP under Criterion C for architecture. Period of significance is 1928. It is listed in the CRHR.
Union Bank and Trust Company	760 S. Hill Street	44	Determined eligible for the NRHP (Criterion N/A). Period of significance is 1921. It is listed in the CRHR.
Biltmore Hotel	515 S. Olive Street	17	Determined eligible for the NRHP under Criteria A and C for association and architecture. Period of significance is 1923. It is listed in the CRHR. This property was declared HCM # 60.
Bank of Italy/ A.P. Giannini Building	649 S. Olive Street	31	Determined eligible for the NRHP (Criterion N/A). Period of significance is 1922. This property was declared HCM # 354.
Ville De Paris Store, La Merchandise	700–712 S. Olive Street	40	Determined eligible for the NRHP (Criterion N/A). Period of significance is 1917.
None	275 W. 1st Street	5	Determined eligible for the NRHP (Criterion N/A). Period of significance is 1942. It is listed in the CRHR.
Los Angeles County Law Library/Mildred L. Lillie Building	301 W. 1st Street	4	Determined eligible for the NRHP under Criteria A and C for association and architecture. Period of significance is 1925–1971. It is listed in the CRHR.
None	326 W. 5th Street	19	Determined eligible for the NRHP (Criterion N/A). Period of significance is 1897. It is listed in the CRHR.
Pantages/Warner Brothers Theatre	401 W. 7th Street	33	Determined eligible for the NRHP (Criterion N/A). Period of significance is 1919.
LA Athletic Club	431 W. 7th Street	32	Determined eligible for the NRHP (Criterion N/A). Period of significance is 1912. This property is also listed as HCM # 69.
Coulter Dry Goods Co	500 W. 7th Street	39	Determined eligible for the NRHP

Name	Address/Location	Map Reference Number	Status
			(Criterion N/A). Period of significance is 1917.
Brock & Company Jewelry Store	513-515 W. 7th Street	30	Determined eligible for the NRHP (Criterion N/A). Period of significance is 1922. This property was declared LAHCM # 358.
Brack Shops	527 W. 7th Street	29	Determined eligible for the NRHP (Criterion N/A). Period of significance is 1913.
Quinby Building, Japan Airlines	529 W. 7th Street	28	Determined eligible for the NRHP (Criterion N/A). Period of significance is 1926.
Boston Store, J. W. Robinson Company	600 W. 7th Street	37	Determined eligible for the NRHP (Criterion N/A). Period of significance is 1914. It is listed in the CRHR. This property was declared HCM # 357.
Union Oil Building, Kyowa Bank	617 W. 7th Street	27	Determined eligible for the NRHP (Criterion N/A). Period of significance is 1922.
Barker Bros.	800 W. 7th Street	36	Determined eligible for the NRHP under Criterion C for architecture. Period of significance is 1925. It is listed in the CRHR. This property was declared HCM # 135.
Fine Arts Building, Global Marine Building	807 W. 7th Street	25	Determined eligible for the NRHP under Criteria A and C for association and architecture. Period of significance is 1926. It is listed in the CRHR. This property was declared HCM # 125.
Insurance Exchange, Pacific Bell	855 S. Hill Street	47	Determined eligible for the NRHP (Criterion N/A). Period of significance is 1924.

Source: ICF 2013.

[a] California State Historic Preservation Office. *California Historic Resources Inventory System*. Last updated on April 4, 2012.

Table 3.3-3 provides a list of additional historical resources declared by the City of Los Angeles to be HCMs that were not individually identified in Table 3.3-1 or Table 3.3-2.

Table 3.3-3. Additional Historical Resources Declared by the City of Los Angeles to Be Historic-Cultural Monuments

Name	Address/ Location	Map Reference Number[2]	Status

[2] Properties that have been demolished do not have a corresponding Map Reference Number.

Name	Address/ Location	Map Reference Number[2]	Status
Pershing Square, Spanish-American War Memorial	Northeast corner of W. 5th Street and S. Olive Street	18	Declared on 3/23/1980 as HCM #480.
May Company Garage	9th and Hill Streets	49	Declared on 6/1/2011 as HCM #1001.
Original Pantry	809-817 W. 9th Street and 873–877 S. Figueroa Street	48	Declared on 10/5/1982 as HCM #255.
Contributors to the Broadway Theatre and Commercial Historic District			
Irvine-Byrne Building	249 S. Broadway	7	Declared on 8/2/1991 as HCM #544
Judson Rives Building	424 S. Broadway	7	Declared on 7/17/2007 as HCM #881
Roxie Theater	512-525 S. Broadway	7	Declared on 3/20/1991 as HCM #526
Cameo Theater (formerly Clune's Broadway)	526-530 S. Broadway	7	Declared on 3/20/1991 as HCM #524
Arcade Theater (formerly Pantages Theater)	532-536 S. Broadway	7	Declared on 3/20/1991 as HCM #525
Los Angeles Theatre	615 S. Broadway	7	Declared on 8/15/1979 as HCM #225
Palace Theater	630 S. Broadway	7	Declared on 8/16/1989 as HCM #449
State Theater Building	701–713 S. Broadway and 300–314 W 7th Street	7	Declared on 3/20/1991 as HCM #522
Charles C. Chapman Building	756 S. Broadway	7	Declared on 12/5/2007 as HCM #899
Tower Theater	800 S. Broadway	7	Declared on 8/16/1989 as HCM #450
Hamburger's Department Store (May Company-Downtown)	801-829 S. Broadway	7	Declared on 10/17/1989 as LAHCM #459

Name	Address/ Location	Map Reference Number[2]	Status
Rialto Theater (Marquee, Box Office and Original Marble Entry Floor)	812 S. Broadway	7	Declared on 12/20/1989 as HCM #472
Eastern Columbia Building	849 S. Broadway	7	Declared on 6/28/1985 as HCM #294
Blackstone's Department Store	901 S. Broadway	7	Declared on 11/7/1991 as HCM #765
United Artists Theater Building	927-939 S. Broadway	7	Declared on 3/20/1991 as HCM #523
Source: ICF 2016. Office of Historic Resources. *Los Angeles Historic Cultural Monuments*. Last updated on April 15, 2015.			

In addition to those mentioned above, ICF International staff identified six more historical resources that appear eligible for listing in the NRHP. Further, these six resources were found to be listed or eligible for listing in the CRHR and are, therefore, historical resources for the purposes of CEQA.

Table 3.3-4. Historical Resources Eligible for the NRHP, Pending SHPO Concurrence

Name	Address/Location	Date Constructed	Status
Downtown Hill Street District	S. Hill Street between W. 6th and 8th Streets	1903–1931	Determined eligible for the NRHP under Criterion C for architecture. Period of significance is 1903–1931.
Air Raid Siren Discontiguous District: Air Raid Sirens #00, and 011	West side of Hill Street, south of 7th Street; south side of Olympic Boulevard, west of Broadway	c. 1950	Determined eligible for the NRHP under Criterion A for its association with World War II Safety in Los Angeles as a contributor to a district. Period of significance is circa 1950.
W 7th Street District	W. 7th Street between S. Figueroa Street and S. Main Street	1903–1936	Determined eligible for the NRHP under Criteria A and C. Period of significance is 1903–1936.
Insurance Exchange Building Company	318 W. 9th Street	1924	Determined eligible for the NRHP under Criterion C for architecture. Period of significance is 1924.
Original Pantry	809-817 W. 9th Street and 873-877 S. Figueroa Street	1917	Determined eligible for the NRHP under Criterion A for its association with downtown Los Angeles as an early diner still in existence. Period of significance is 1924.
Source: ICF 2013.			

Paleontological Resources

Numerous paleontological resources have been found in downtown Los Angeles; however, no new paleontological resources were recorded through the proposed Project. A previous check of the vertebrate paleontology records of the Natural History Museum of Los Angeles County indicated that the younger Quaternary alluvium in the downtown area is likely to be quite thin (McLeod 2012). Based on the setting of the project area, the paleontological sensitivity of the project area is likely similar to that for the building site of the Caltrans District 7 building, which is located near the northern end of the project site, at First and Main. This project included excavation of three to five levels of subterranean parking. Fernando Formation bedrock was encountered at depths of 20 to 35 feet below ground surface during these excavations. Paleontological monitors recovered more than 4,025 fossil specimens during the course of monitoring on this city block (Springer 2006). All of these fossils were recovered from the Fernando Formation; none were found in the older Quaternary alluvium (E. Scott, SBCM, Personal Comm. 2012).

Based on this information, it is likely that excavations for most of the Streetcar Project would not be deep enough to encounter paleontological resources, with the possible exception of the four MSF sites. However, as a precaution, the County recently authorized a project-specific review of the vertebrate paleontology records of the Natural History Museum of Los Angeles County. This review indicates that two fossil localities have been found within the area of the Project. The first, Los Angeles County Museum (LACM) 5961 at 1st and Hill, resulted in recovery of a fossil bristlemouth fish, *Cyclothone.* This fossil was recovered from the Puente Formation during subway station excavation at a depth of greater than 11 feet. The second locality, LACM 4726, at 4th and Hill, produced a fossil fish specimen recovered from the Fernando Formation. Both of these fossils are from a depth below ground surface unlikely to be reached by the great majority of project construction actions.

3.3.3.2 Thresholds of Significance

City of Los Angeles CEQA Thresholds Guide

The 2006 *L.A. CEQA Thresholds Guide* states that the following impact significance factors shall apply to archaeological, historical, and paleontological resources.

Archaeological Resources

A project would normally have a significant impact on archaeological resources if it could disturb, damage, or degrade an archaeological resource or its setting that is found to be important under the criteria of CEQA because it:

- Is associated with an event or person of recognized importance in California or American prehistory or of recognized scientific importance in prehistory;
- Can provide information that is both of demonstrable public interest and useful in addressing scientifically consequential and reasonable archaeological research questions;
- Has a special or particular quality, such as the oldest, best, largest, or last surviving example of its kind;
- Is at least 100 years old and possesses substantial stratigraphic integrity; or

- Involves important research questions that historical research has shown can be answered only with archaeological methods.

Historical Resources

A project would normally have a significant impact on historical resources if it would result in a substantial adverse change in the significance of a historical resource. A substantial adverse change in significance occurs if the project involves:

- Demolition of a significant resource;
- Relocation that does not maintain the integrity and significance of a significant resource;
- Conversion, rehabilitation, or alteration of a significant resource that does not conform to the *Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings*; or
- Construction that reduces the integrity or significance of important resources on the site or in the vicinity.

Paleontological Resources

- Whether, or to the degree which, the project might result in the permanent loss of, or loss of access to, a paleontological resource; and
- Whether the paleontological resource is of regional or statewide significance.

3.3.3.3 Environmental Impacts[3]

Alternative 1: No Project Alternative

Construction Impacts

Archaeological Resources

No impact.

The No Project Alternative would result in no ground disturbance and would not disturb, damage, or degrade an archaeological resource or its setting; therefore, no impacts would occur.

Historical Resources

No impact.

The No Project Alternative would not involve any construction activities, would have no change from existing conditions and has no potential to affect historical resources as a result of the Project. The No Project Alternative would have no impact on historical resources because:

- There would be no demolition of a significant resource;
- There would be no relocation of a significant resource;
- There would be no conversion, rehabilitation, or alteration of a significant resource; and

[3] MSF and TPSS sites are not identified under each alternative; they are listed after the alternatives with their own respective heading.

- There would be no construction that reduces the integrity or significance of important resources on the site or in the vicinity.

Paleontological Resources

No impact.

The No Project Alternative would result in no ground disturbance and there would be no loss of, or loss of access to, a paleontological resource; therefore, no impacts would occur.

Operational Impacts

Archaeological Resources

No impact.

Operation of the No Project Alternative would result in no ground disturbance, and there would be no potential to disturb, damage, or degrade an archaeological resource or its setting; therefore, no impacts on archaeological resources would occur.

Historical Resources

No impact.

Implementation and operation of the No Project Alternative would not involve any change from the existing conditions and therefore has no potential to affect historical resources. The No Project Alternative would have no impact on historical resources because:

- There would be no demolition of a significant resource;
- There would be no relocation of a significant resource;
- There would be no conversion, rehabilitation, or alteration of a significant resource; and
- There would be no construction or operational activities that reduce the integrity or significance of important resources on the site or in the vicinity.

Paleontological Resources

No impact.

No earth-moving activities would occur during operations of the Project under the No Project Alternative. Operation of the proposed Project is not anticipated to result in impacts related to the disturbance of paleontological resources.

Alternative 2: 7th Street Alternative with Grand Avenue Extension

Construction Impacts

Archaeological Resources

A less-than-significant impact.

During the archaeological field survey, it was observed that the area is paved and developed, with a few open spaces for landscape vegetation. No surficial archaeological resources were observed during the survey. The lack of archaeological resources identified within the project study area does not preclude the possibility of identifying subsurface archaeological material during construction activities. Excavation in City streets often uncovers evidence of previous American-era street development, such as utility conduits, old pavement or curbs, and rails and ties from older street rail systems that have been buried in fill and covered with asphalt. However, these items are now usually fragmentary and no longer associated with their original context, and therefore lack integrity; such historical cultural materials are not important resources under CEQA criterion D. In terms of prehistoric resources, the study area has been heavily disturbed by past construction activities, including the construction and installation of utilities, roads, and skyscrapers. Therefore, the likelihood of encountering intact, subsurface prehistoric archaeological material within the study area is low. The ICF survey and research did not result in the identification of any surficial prehistoric or historic archaeological sites or features. Therefore, construction of the alternative has a very low potential to disturb, damage, or degrade an archaeological resource or its setting. Discoveries of human remains would be treated as required by State law.

Archaeological discoveries during the Project would be addressed as specified in the City of Los Angeles Department of Public Works, Bureau of Engineering's (LABOE's) *Standard Specifications for Public Works Construction* (2009), or "*Greenbook*." The *Greenbook* specifies that if archaeological resources are discovered, the contractor will immediately cease excavation in the area of discovery and not proceed until ordered by the project engineer. This allows for the legally required evaluation and, if necessary, treatment of archaeological resources. This can include as-needed development of avoidance strategies, capping with fill material, evaluation excavations, or mitigation of impacts through data recovery programs such as excavation or detailed documentation. A report of findings is prepared, and recovered materials curated, if needed, in an approved facility. Therefore, less-than-significant impacts would occur, and no mitigation measures are required.

Historical Resources

A less-than-significant impact.

With the possible exception of installations within the sidewalk areas, there would be no demolition of a significant resource. All project components, except one MSF site, would be constructed within the street right-of-way, on non-historic sidewalks, in vacant lots, or in non-historic parking garages. No historic streetlights or "Broadway Rose" streetlight bases would be demolished for the Project. The construction laydown area would be selected by the contractor and will be a parking lot or other type of undeveloped lot with no structures. Mitigation Measure **MM-AES-C1** would minimize the temporary effects associated with construction laydown areas.

There would be no conversion, rehabilitation, or alteration of a significant resource that does not conform to the Secretary of the Interior's *Standards for Rehabilitation and Guidelines for Rehabilitating Historic Building* (Secretary's Standards; 36 CFR 67). Construction of streetcar stops, OCS poles, sidewalk ramps, and curb bump-outs would most likely occur in non-historic sidewalks but have the potential to alter or cause physical damage to historic sidewalk features, including terrazzo installations, vault lights, basement vault hatch doors, flagpole holders, and utility and ventilation covers. It is not known definitively if construction activities would cause any damage. Such historic sidewalk features are considered character-defining features of the Broadway Theater and Commercial District. Individually significant historical resources may include these historic sidewalk features, along with brass or ceramic inserts that are unique to that resource. There is also a possibility that historic sidewalk features may be discovered during construction because they have been obscured over time by a layer of asphalt or concrete. Conditions to prioritize avoidance of historic sidewalk features during final design, and to protect and preserve them in place during construction, would be required. These measures (**MM-CUL-C1**) would reduce the potential to cause physical damage to the terrazzo installations, vault lights, basement vault hatch doors, flagpole holders, and utility and ventilation covers that are considered character-defining features of the Broadway Theater and Commercial District, and therefore ensure no substantial adverse change to the significance of the historic district would occur. Mitigation Measure **MM-CUL-C1** would also ensure that if sidewalk features adjacent to an individually significant historical resource would need to be altered for the Project, such alterations would conform to the Secretary's Standards, and ensure no substantial adverse change to the significance of the historical resource would occur. Should incidental damage occur during construction, the historic sidewalk feature would be repaired or replaced in kind by a qualified contractor in a manner consistent with the Secretary's Standards. In the unlikely event that the sidewalk feature cannot be treated in accordance with the Secretary's Standards, there would still be a less-than-significant impact on the historic building that fronts the sidewalk, and there would be no substantial adverse change in the overall significance of the historical resource because enough contributing features would remain that the historical resource would retain its designation.

There would be no construction that reduces the integrity or significance of important resources on the site or in the vicinity. Some construction activities associated with the Project could result in an increase in groundborne vibration. The *Noise and Vibration Technical Report* (ATS Consulting 2013) provides measures which would avoid the potential for damage, such as previous preconstruction surveys to identify at-risk historical resources, vibration limits, vibration monitoring, and alternative procedures that would lower vibration levels. The contractor would be required to abide by the measures. These measures would mitigate the potential impacts to a less-than-significant level.

Historically, streetcars operated along the streets in the study area, and a system of poles and overhead wires existed for many decades, including during the period of significance for many of the NRHP-listed and -eligible properties previously identified or identified during the intensive survey. Streetcar equipment was part of the historic-era setting; therefore, construction of modern equipment that re-introduces the historic function would not cause a substantial adverse change to the significance of historical resources along the 7th Street Alternative with Grand Avenue Extension.

Mitigation Measures **MM-AES-C1** and **MM-CUL-C1** would reduce the impact associated with the Project to a less-than-significant level. Impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation

Paleontological Resources

A less-than-significant impact.

The study area has been heavily disturbed by past construction activities, including the construction and installation of utilities, roads, and skyscrapers. Surface grading or shallow excavations in the younger Quaternary Alluvium or disturbed fill up to depths of five feet is unlikely to encounter significant vertebrate fossils. However, excavation for the Project for utilities relocation or other deep trenching or excavations that may extend to a depth of five feet or more may encounter older Quaternary deposits or the Fernando Formation, and may result in the permanent loss of, or loss of access to, a paleontological resource. Disturbance of a significant paleontological resource of regional or statewide significance, if encountered, would result in a significant impact. Mitigation

Measure **MM-CUL-C2** would reduce the impact associated with the Project to a less-than-significant level. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Operational Impacts

Archaeological Resources

No impact.

Operations of the Project would require no earth moving activities except disturbance of already disturbed areas for maintenance and replacement activities. Therefore, operations of the Project under this alternative would not disturb, damage, or degrade an archaeological resource or its setting, and no impacts on archaeological resources would occur.

Historical Resources

A less-than-significant impact.

The7th Street Alternative with Grand Avenue Extension would have a less-than-significant impact on historical resources because:

- There would be no demolition of a significant resource.
- There would be no relocation of a significant resource.
- There would be no conversion, rehabilitation, or alteration of a significant resource.

Furthermore, there would be no construction or operational activities that reduce the integrity or significance of important resources on the site or in the vicinity. Streetcars operated along the streets in the study area historically, and a system of poles and overhead wires existed for many decades, including during the period of significance for many of the NRHP-listed and -eligible properties previously identified or identified during the intensive survey. Overhead cables were part of the historic setting and their reintroduction would not be incongruous. The integrity of the setting or the character of the properties would not be altered in such a manner as to diminish the relationship of those properties to their historic setting. The visual impacts analysis did not identify the OCS as a potentially adverse visual impact on the settings of any historic property.

As applicable, design and installation of any project-related facilities would have to conform to the *Historic Downtown Los Angeles Design Guidelines, Above Ground Facility Ordinance*, and the *Broadway Streetscape Master Plan*. Design effects would be mitigated by Mitigation Measures **MM-AES-O3** for OCS poles and **MM-CUL-O1** for all other project-related elements.

Mitigation Measures **MM-AES-O3** and **MM-CUL-O1** would reduce the operational impact associated with the Project to a less-than-significant level. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Paleontological Resources

No impact.

Operations of the Project would require no earth moving activities except disturbance of already disturbed areas for maintenance and replacement activities. Therefore, operations of the Project under this alternative would not result in the permanent loss of, or loss of access to, a paleontological resource; therefore, no impacts on paleontological resources would occur.

Alternative 3: 7th Street Alternative without Grand Avenue Extension

Construction Impacts

Archaeological Resources

A less-than-significant impact.

The potential impacts on archaeological resources for this alternative would be slightly less than those for the 7th Street Alternative with Grand Avenue Extension, due to a slightly smaller project footprint. To summarize, no superficial archaeological resources were observed during the project survey. Subsurface historical archaeological material that may be found during construction activities likely is not intact and therefore not significant, while the likelihood of encountering intact, subsurface prehistoric archaeological material is low. For these reasons, construction of the alternative has a very low potential to disturb, damage, or degrade an archaeological resource or its setting; therefore, no impacts would occur, and no mitigation measures are required. (Possible archaeological discoveries during the Project would be addressed as specified in the LABOE's *Greenbook* (2009.)

Historical Resources

A less-than-significant impact.

The potential impacts on historical resources for this alternative would be identical to the discussion of the 7th Street Alternative with Grand Avenue Extension, and are summarized as follows:

- There would be no demolition of a significant resource because all project components would be constructed within the street right-of-way, on non-historic sidewalks, in vacant lots, or in non-historic parking garages. No historic streetlights or "Broadway Rose" streetlight bases would be removed for the Project. Temporary effects from construction laydown areas would be minimized (MM-AES-1).
- There would be no relocation of a significant resource to accommodate construction activities.
- There would be no conversion, rehabilitation, or alteration of a significant resource that does not conform to the Secretary's Standards. Historic sidewalk features that contribute to the Broadway Theater and Commercial District or individually significant historical resources, would be avoided, protected and preserved in place, or if any alterations are necessary, would be altered to conform to the Secretary's Standards (MM-CUL-C1).
- There would be no construction that reduces the integrity or significance of important resources on the site or in the vicinity, including groundborne vibration.

Mitigation Measures **MM-AES-C1** and **MM-CUL-C1** would reduce the construction impacts associated with the Project to a less-than-significant level. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Paleontological Resources

A less-than-significant impact.

The potential impacts on paleontological resources for this alternative would be identical to those for the 7th Street Alternative with Grand Avenue Extension. To summarize, surface grading or shallow excavations in surficial younger Quaternary Alluvium or disturbed fill to depths of five feet is unlikely to encounter significant vertebrate fossils. However, excavations that may extend to a depth of five feet or more may encounter older Quaternary deposits or the Fernando Formation, and may result in the permanent loss of, or loss of access to, a paleontological resource. Mitigation Measure **MM-CUL-C2** would reduce the impact associated with construction to a less-than-significant level. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Operational Impacts

Archeological Resources

No impact.

Operations of the Project would require no earth moving activities except disturbance of already disturbed areas for maintenance and replacement activities. Therefore, operations of the Project under this alternative would not disturb, damage, or degrade an archaeological resource or its setting, and no impacts on archaeological resources would occur.

Historical Resources

A less-than-significant impact.

The 7th Street Alternative without Grand Avenue Extension would have a less-than-significant impact on historical resources because:

- There would be no demolition of a significant resource.
- There would be no relocation of a significant resource.
- There would be no conversion, rehabilitation, or alteration of a significant resource.

Furthermore, there would be no operational activities that reduce the integrity or significance of important resources on the site or in the vicinity. Streetcars operated along the streets in the study area historically, and a system of poles and overhead wires existed for many decades, including during the period of significance for many of the NRHP-listed and -eligible properties previously identified or identified during the intensive survey. Overhead cables were part of the historic setting and their reintroduction would not be incongruous. The integrity of the setting or the character of the properties would not be altered in such a manner as to diminish the relationship of those properties to their historic setting. The visual impacts analysis did not identify the OCS as a potentially adverse visual impact on the settings of any historic property.

As applicable, design and installation of any project-related facilities would have to conform to the *Historic Downtown Los Angeles Design Guidelines, Above Ground Facility Ordinance*, and the *Broadway Streetscape Master Plan*. Design effects would be mitigated by Mitigation Measures **MM-AES-O3** for OCS poles and **MM-CUL-O1** for all other project-related elements. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Paleontological Resources

No impact.

Operations of the Project would require no earth moving activities except disturbance of already disturbed areas for maintenance and replacement activities. Therefore, operations of the Project under this alternative would not result in the permanent loss of, or loss of access to, a paleontological resource; therefore, no impacts on paleontological resources would occur.

Alternative 4: 9th Street Alternative with Grand Avenue Extension

Construction Impacts

Archaeological Resources

A less-than-significant impact.

The potential impacts on archaeological resources for this alternative would be similar to those for the 7th Street Alternative with Grand Avenue Extension. To summarize, no surficial archaeological resources were observed during the project survey. Subsurface historical archaeological material that may be found during construction activities likely is not intact and therefore not significant, while the likelihood of encountering intact, subsurface prehistoric archaeological material is low. For these reasons, construction of the alternative has a very low potential to disturb, damage, or degrade an archaeological resource or its setting. Discoveries of human remains would be treated as required by State law. Archaeological discoveries during the Project would be addressed as specified in the LABOE's *Greenbook* (2009), which requires that if archaeological resources are discovered, the contractor will immediately cease excavation in the area of discovery and not proceed until ordered by the project engineer. This allows for the legally required evaluation and, if necessary, treatment of archaeological resources. This can include as-needed development of avoidance strategies, capping with fill material, evaluation excavations, or mitigation of impacts through data recovery programs such as excavation or detailed documentation. A report of findings is prepared, and recovered materials curated, if needed, in an approved facility. Therefore, less-than-significant impacts would occur, and no mitigation measures are required.

Historical Resources

A less-than-significant impact.

The potential impacts on historical resources for this alternative would be identical to the discussion of the 7th Street Alternative with Grand Avenue Extension, and are summarized as follows:

- There would be no demolition of a significant resource because all project components would be constructed within the street right-of-way, on non-historic sidewalks, in vacant lots or in non-historic parking garages. No historic streetlights or "Broadway Rose" streetlight bases would be removed for the Project. Temporary effects from construction laydown areas would be minimized (**MM-AES-1**).
- There would be no relocation of a significant resource to accommodate construction activities.

- There would be no conversion, rehabilitation, or alteration of a significant resource that does not conform to the Secretary's Standards. Historic sidewalk features that contribute to the Broadway Theater and Commercial District or individually significant historical resources, would be avoided, protected, and preserved in place, or if any alterations are necessary, would be altered to conform to the Secretary's Standards (**MM-CUL-C1**).
- There would be no construction that reduces the integrity or significance of important resources on the site or in the vicinity, including groundborne vibration.

Mitigation Measures **MM-AES-C1** and **MM-CUL-C1** would reduce the construction impact associated with the Project to a less-than-significant level. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Paleontological Resources

A less-than-significant impact.

The potential impacts on paleontological resources for this alternative would be identical to those for the 7th Street Alternative with Grand Avenue Extension. To summarize, surface grading or shallow excavations in surficial younger Quaternary Alluvium or disturbed fill to depths of five feet is unlikely to encounter significant vertebrate fossils. However, excavations that may extend to a depth of five feet or more may encounter older Quaternary deposits or the Fernando Formation, and may result in the permanent loss of, or loss of access to, a paleontological resource. Mitigation Measure **MM-CUL-C2** would reduce the impact associated with construction to a less-than-significant level. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Operational Impacts

Archaeological Resources

No impact.

Operations of the Project would require no earth moving activities except disturbance of already disturbed areas for maintenance and replacement activities. Therefore, operations of the Project under this alternative would not disturb, damage, or degrade an archaeological resource or its setting, and no impacts on archaeological resources would occur.

Historical Resources

A less-than-significant impact.

The 9th Street Alternative with Grand Avenue Extension would have a less-than-significant impact on historical resources because:

- There would be no demolition of a significant resource.
- There would be no relocation of a significant resource.
- There would be no conversion, rehabilitation, or alteration of a significant resource.

Furthermore, there would be no construction or operational activities that reduce the integrity or significance of important resources on the site or in the vicinity. Streetcars operated along the streets in the study area historically, and a system of poles and overhead wires existed for many decades, including during the period of significance for many of the NRHP-listed and -eligible properties previously identified or identified during the intensive survey. Overhead cables were part of the historic setting, and their reintroduction would not be incongruous. The integrity of the setting or the character of the properties would not be altered in such a manner as to diminish the relationship of those properties to their historic setting. The visual impacts analysis did not identify the OCS as a potentially adverse visual impact on the settings of any historic property.

As applicable, design and installation of any project-related facilities would have to conform to the *Historic Downtown Los Angeles Design Guidelines, Above Ground Facility Ordinance*, and the *Broadway Streetscape Master Plan*. Design effects would be mitigated by Mitigation Measures **MM-AES-O3** for OCS poles and **MM-CUL-O1** for all other project-related elements. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Paleontological Resources

No impact.

Operations of the Project would require no earth moving activities except disturbance of already disturbed areas for maintenance and replacement activities. Therefore, operations of the Project under this alternative would not result in the permanent loss of, or loss of access to, a paleontological resource; therefore, no impacts on paleontological resources would occur.

Alternative 5: 9th Street Alternative without Grand Avenue Extension

Construction Impacts

Archaeological Resources

A less-than-significant impact.

The potential impacts on archaeological resources for this alternative would be slightly less than those for the 7th Street Alternative with Grand Avenue Extension, due to a slightly smaller overall footprint.

To summarize, no surficial archaeological resources were observed during the project survey. Subsurface historical archaeological material that may be found during construction activities likely is not intact and therefore not significant, while the likelihood of encountering intact, subsurface prehistoric archaeological material is low. For these reasons, construction of the alternative has a very low potential to disturb, damage, or degrade an archaeological resource or its setting; therefore, no impacts would occur, and no mitigation measures are required. (Possible archaeological discoveries during the Project would be addressed as specified in the LABOE's *Greenbook* [2009].)

Historical Resources

A less-than-significant impact.

The potential impacts on historical resources for this alternative would be identical to the discussion of the 7th Street Alternative with Grand Avenue Extension, and are summarized as follows:

- There would be no demolition of a significant resource because all project components would be constructed within the street right-of-way, on non-historic sidewalks, in vacant lots, or in non-historic parking garages. No historic streetlights or "Broadway Rose" streetlight bases would be removed for the Project. Temporary effects from construction laydown areas would be minimized (MM-AES-1).
- There would be no relocation of a significant resource to accommodate construction activities.
- There would be no conversion, rehabilitation, or alteration of a significant resource that does not conform to the Secretary's Standards. Historic sidewalk features that contribute to the Broadway Theater and Commercial District or individually significant historical resources, would be avoided, protected, and preserved in place, or if any alterations are necessary, would be altered to conform to the Secretary's Standards (MM-CUL-C1).
- There would be no construction that reduces the integrity or significance of important resources on the site or in the vicinity, including groundborne vibration.

Mitigation Measures **MM-AES-C1** and **MM-CUL-C1** would reduce the construction impact associated with the Project to a less-than-significant level. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Paleontological Resources

A less-than-significant impact.

The potential impacts on paleontological resources for this alternative would be identical to those for the 7th Street Alternative with Grand Avenue Extension. To summarize, surface grading or shallow excavations in surficial younger Quaternary Alluvium or disturbed fill to depths of five feet is unlikely to encounter significant vertebrate fossils. However, excavations that may extend to a depth of five feet or more may encounter older Quaternary deposits or the Fernando Formation, and may result in the permanent loss of, or loss of access to, a paleontological resource. Mitigation Measure **MM-CUL-C2** would reduce the impact associated with construction to a less-than-significant level. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Operational Impacts

Archaeological Resources

No impact.

Operations of the Project would require no earth moving activities except disturbance of already disturbed areas for maintenance and replacement activities. Therefore, operations of the Project under this alternative would not disturb, damage, or degrade an archaeological resource or its setting, and no impacts on archaeological resources would occur.

Historical Resources

A less-than-significant impact.

The 7th Street Alternative without Grand Avenue Extension would have a less-than-significant impact on historical resources because:

- There would be no demolition of a significant resource.
- There would be no relocation of a significant resource.
- There would be no conversion, rehabilitation, or alteration of a significant resource.

Furthermore, there would be no construction or operational activities that reduce the integrity or significance of important resources on the site or in the vicinity. Streetcars operated along the streets in the study area historically, and a system of poles and overhead wires existed for many decades, including during the period of significance for many of the NRHP-listed and -eligible properties previously identified or identified during the intensive survey. Overhead cables were part of the historic setting, and their reintroduction would not be incongruous. The integrity of the setting or the character of the properties would not be altered in such a manner as to diminish the relationship of those properties to their historic setting. Overhead cables would be installed to enhance and replicate the character of the historic district. The visual impacts analysis did not identify the OCS as a potentially adverse visual impact on the settings of any historic property.

As applicable, design and installation of any project-related facilities would have to conform to the *Historic Downtown Los Angeles Design Guidelines, Above Ground Facility Ordinance*, and the *Broadway Streetscape Master Plan*. Design effects would be mitigated by Mitigation Measures **MM-AES-O3** for OCS poles **and MM-CUL-O1** for all other project-related elements. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Paleontological Resources

No impact.

Operations of the Project would require no earth moving activities except disturbance of already disturbed areas for maintenance and replacement activities. Therefore, operations of the Project under this alternative would not result in the permanent loss of, or loss of access to, a paleontological resource; therefore, no impacts on paleontological resources would occur.

Traction Power Substations

Construction Impacts

The proposed streetcar system would be powered by an estimated five TPSS units spaced relatively evenly throughout the alignment and would measure approximately 17 feet long by 11 feet wide by 11 feet high, or of sufficient size to house the TPSS equipment. Each would be placed at a parking lot or on private property outside the public right-of-way (except for the proposed TPSS location at 2nd Street and Grand Avenue, which may need to occupy space in the public right-of-way). Construction impacts would be essentially the same as discussed above for Alternatives 2 through 5, except that most of the construction activity would occur outside the street right-of-way.

Archaeological Resources

A less-than-significant impact.

TPSS facilities would require only modest amounts of earth moving during construction. No surficial archaeological resources were observed during the project survey. Subsurface historical archaeological material that may be found during construction activities likely is not intact and therefore not significant, while the likelihood of encountering intact, subsurface prehistoric archaeological material is low. For these reasons, the potential for impacts on archaeological resources is low. Construction of the TPSS facilities has a very low potential to disturb, damage, or degrade an archaeological resource or its setting. Discoveries of human remains would be treated as required by State law. Archaeological discoveries during the Project would be addressed as specified in the LABOE's *Greenbook* (2009), which requires that if archaeological resources are discovered, the contractor will immediately cease excavation in the area of discovery and not proceed until ordered by the project engineer. This allows for the legally required evaluation and, if necessary, treatment of archaeological resources. This can include as-needed development of avoidance strategies, capping with fill material, evaluation excavations, or mitigation of impacts through data recovery programs such as excavation or detailed documentation. A report of findings is prepared, and recovered materials curated, if needed, in an approved facility. Therefore, less-than-significant impacts would occur, and no mitigation measures are required.

Historical Resources

A less-than-significant impact.

TPSS facilities would be designed in a manner that is appropriate to the design context in which they are proposed. Each TPSS facility would be given an architectural treatment that would be compatible with adjoining buildings; those proposed within the Broadway Theatre and Commercial Historic District would be located in parking lots or behind buildings that are not architectural/historical resources, and, thus, their visibility would be greatly diminished. No adverse impacts on historic buildings would occur during construction of the TPSS. Temporary changes that would occur during the construction period would not substantially degrade the visual character or quality of the area within the project viewshed. A less-than-significant impact would occur during construction because:

- There would be no demolition of a significant resource to accommodate construction of TPSS units.
- There would be no relocation of a significant resource to accommodate construction of TPSS units.
- There would be no conversion, rehabilitation, or alteration of a significant resource that would result from construction of a TPSS unit.
- There would be no construction of a TPSS unit that reduces the integrity or significance of important resources on the site or in the vicinity due to the small size of the TPSS unit.

Therefore, construction of TPSS facilities would have a less-than-significant impact on historical resources.

Paleontological Resources

A less-than-significant impact.

TPSS facilities would require only modest amounts of earth moving during construction, and surface grading or shallow excavations in surficial younger Quaternary Alluvium or disturbed fill to depths of five feet is unlikely to encounter significant vertebrate fossils. However, excavations that may extend to a depth of five feet or more may encounter older Quaternary deposits or the Fernando Formation, and may result in the permanent loss of, or loss of access to, a paleontological resource. Mitigation Measure **MM-CUL-C2** would reduce the impact associated with construction to a less-than-significant level. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Operational Impacts

Archaeological Resources

No impact.

Operations of the TPSS facilities would require no earth moving activities except disturbance of already disturbed areas for maintenance and replacement activities. Therefore, operations of the Project under this alternative would not disturb, damage, or degrade an archaeological resource or its setting, and no impacts on archaeological resources would occur.

Historical Resources

A less-than-significant impact.

TPSS facilities would be designed in a manner that is appropriate to the design context in which they are proposed. TPSS facilities would be given an architectural treatment that would be compatible with adjoining buildings. TPSS facilities are proposed to be adjacent to the Friday Morning Club at 940 S. Figueroa Street, Bullock's Downtown Department Store at 632 S. Hill Street, and the Subway Terminal Building at 417 S. Hill. Two TPSS facilities are proposed within the Broadway Theatre and Commercial Historic District, but they would be located in parking lots or behind buildings that are not architectural/historical resources, and, thus, their visibility would be greatly diminished.

There would be no construction of a TPSS unit that reduces the integrity or significance of important resources on the site or in the vicinity. TPSS units would not be located on the site of the Friday Morning Club, Bullock's Downtown Department Store, or the Subway Terminal Building. The TPSS facilities proposed adjacent to these three buildings would be designed with a compatible architectural treatment, and would not reduce the integrity or significance of the historical resources. The two TPSS facilities proposed within the historic district would be located in parking lots or behind buildings that are not historical resources and, therefore, would not reduce the integrity or significance of the district. With mitigation, there would be a less-than significant impact on the three individual historical resources and the historic district.

As applicable, design and installation of any project-related facilities would have to conform to the *Historic Downtown Los Angeles Design Guidelines, the Above Ground Facility Ordinance*, and the *Broadway Streetscape Master Plan*. Design effects would be mitigated by Mitigation Measures **MM-AES-O1** for TPSS facilities, **MM-AES-O3** for OCS poles, and **MM-CUL-O1** for all other project-related elements. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Paleontological Resources

No impact.

Operations of the TPSS facilities would require no earth moving activities except disturbance of already disturbed areas for maintenance and replacement activities. Therefore, operations of the Project under this alternative would not result in the permanent loss of, or loss of access to, a paleontological resource, and no impacts on paleontological resources would occur.

MSF Site at Broadway and 2nd Street

Construction Impacts

Archaeological Resources

A less-than-significant impact.

The potential impacts on archaeological resources during construction at this MSF Site would be similar to those for TPSS site construction, except that it would include excavation to more than six feet deep for construction of inspection pits under the streetcars. To summarize, no surficial archaeological resources were observed during the project survey. Subsurface historical archaeological material that may be found during construction activities likely is not intact and therefore not significant, while the likelihood of encountering intact, subsurface prehistoric archaeological material is low. For these reasons, construction of the MSF has a very low potential to disturb, damage, or degrade an archaeological resource or its setting. Discoveries of human remains would be treated as required by State law. Archaeological discoveries during the Project would be addressed as specified in the LABOE's *Greenbook* (2009), which requires that if archaeological resources are discovered, the contractor will immediately cease excavation in the area of discovery and not proceed until ordered by the project engineer. This allows for the legally required evaluation and, if necessary, treatment of archaeological resources. This can include as-needed development of avoidance strategies, capping with fill material, evaluation excavations, or mitigation of impacts through data recovery programs such as excavation or detailed documentation. A report of findings is prepared, and recovered materials curated, if needed, in an approved facility. Therefore, less-than-significant impacts would occur, and no mitigation measures are required.

Historical Resources

No impact.

The MSF site located at Broadway and 2nd Street would be constructed on a parking lot that currently has two commercial buildings that would be demolished for the proposed MSF. These two buildings are not historical resources; in addition, no historical resources are located adjacent to the MSF site. No impact would occur during construction because:

- There would be no demolition of a significant resource to accommodate construction of the MSF.
- There would be no relocation of a significant resource to accommodate construction of the MSF.
- There would be no conversion, rehabilitation, or alteration of a significant resource that would result from construction of the MSF.
- There would be no construction of the MSF that reduces the integrity or significance of important resources on the site or in the vicinity.

Therefore, construction of the MSF at Broadway and 2nd Street would have no impact on historical resources.

Paleontological Resources

A less-than-significant impact.

The potential impacts on paleontological resources for this MSF Site would be similar to those for the TPSS facilities, except that it would include excavation to more than six feet depth for construction of inspection pits under the streetcars. Surface grading or shallow excavations in surficial younger Quaternary Alluvium or disturbed fill to depths of five feet is unlikely to encounter significant vertebrate fossils. However, excavations that may extend to a depth of five feet or more may encounter older Quaternary deposits or the Fernando Formation, and may result in the permanent loss of, or loss of access to, a paleontological resource. Mitigation Measure **MM-CUL-C2** would reduce the impact associated with construction to a less-than-significant level. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Operational Impacts

Archaeological Resources

No impact.

Operations of the MSF would require no earth moving activities except disturbance of already disturbed areas for maintenance and replacement activities. Therefore, operations of an MSF at this site would not disturb, damage, or degrade an archaeological resource or its setting, and no impacts on archaeological resources would occur.

Historical Resources

No impact.

The MSF site located at Broadway and 2nd Street would be constructed on a parking lot that currently has two commercial buildings that would be demolished for the proposed MSF. These two buildings are not historical resources; in addition, no historical resources are located adjacent to the MSF site. No impact would occur during construction because:

- There would be no demolition of a significant resource to accommodate construction of the MSF.
- There would be no relocation of a significant resource to accommodate construction of the MSF.
- There would be no conversion, rehabilitation, or alteration of a significant resource that would result from construction of the MSF.
- There would be no construction related to the MSF that reduces the integrity or significance of important resources on the site or in the vicinity.

Therefore, operation of the MSF at Broadway and 2nd Street would have no impact on historical resources.

Paleontological Resources

No impact.

Operations of this MSF would require no earth moving activities except disturbance of already disturbed areas for maintenance and replacement activities. Therefore, operations of an MSF at this site would not result in the permanent loss of, or loss of access to, a paleontological resource, and no impacts on paleontological resources would occur.

MSF Site at Hill and 5th Streets

Construction Impacts

Archaeological Resources

A less-than-significant impact.

The potential impacts on archaeological resources during construction at this MSF Site would be similar to those for TPSS construction, except that it would include excavation to more than six feet depth for construction of inspection pits of the Project as a whole. To summarize, no surficial archaeological resources were observed during the project survey. Subsurface historical archaeological material that may be found during construction activities likely is not intact and therefore not significant, while the likelihood of encountering intact, subsurface prehistoric archaeological material is low. For these reasons, construction of the MSF has a very low potential to disturb, damage, or degrade an archaeological resource or its setting. Discoveries of human remains would be treated as required by State law. Archaeological discoveries during the Project would be addressed as specified in the LABOE's *Greenbook* (2009), which requires that if archaeological resources are discovered, the contractor will immediately cease excavation in the area of discovery and not proceed until ordered by the project engineer. This allows for the legally required evaluation and, if necessary, treatment of archaeological resources. This can include as-needed development of avoidance strategies, capping with fill material, evaluation excavations, or mitigation of impacts through data recovery programs such as excavation or detailed documentation. A report of findings is prepared, and recovered materials curated, if needed, in an approved facility. Therefore, less-than-significant impacts would occur, and no mitigation measures are required.

Historical Resources

A less-than-significant impact.

The Hill and 5th Streets MSF site includes seven parcels used for surface parking that surround two sides of the Title Guarantee and Trust Building, located at 401–411 W. 5th Street (425–457 S. Hill Street), which is listed in the NRHP. The period of significance for this building is 1930–1931, and the setting of the building has been altered since that time; historically, W. 5th Street to the west of the building contained numerous buildings. Currently, this building is surrounded on the west and north by surface parking lots. The east and south façade, the primary elevations that convey its significance under Criterion C as one of the two best examples of a commercial building designed in the Art Deco style in Los Angeles, face Hill and 5th Streets, respectively. The Title Guarantee and Trust Building was declared HCM #278.

On the north side of the Hill and 5th Streets MSF site is the Subway Terminal Building (417 Metro) at 415–425 S. Hill Street/416–424 S. Olive Street. This Italian Renaissance building is eligible for the NRHP under Criterion A for its association with the Pacific Electric interurban railway system and under Criterion C at the local level as an excellent example of the work of the architectural firm Schultze & Weaver. The period of significance is 1925–1955. The primary elevation faces east toward S. Hill Street. The south elevation, a secondary façade, faces the proposed MSF site. Previously, the old Hill Street Terminal, which was a Pacific Electric facility, was located at this location, and it was later occupied by a grocery store when the Subway Terminal opened. Although the setting of this building has been altered over time, it still conveys its significance under both Criterion A and Criterion C. The Subway Terminal Building was declared HCM #177.

The current setting for both buildings is urban and vehicle-related, and the parking lots abut secondary, and less significant, elevations. Although the proposed MSF site is now occupied by surface parking lots, historically there were streetcar-related structures and tracks, as well as other commercial buildings, on these parcels. The placement of an MSF on these parcels would not change the character of the Title Guarantee and Trust Building or Subway Terminal Building's use and would not alter the setting such that they could no longer convey their historic significance. The current setting of the Title Guarantee and Trust Building is not its historic setting because of its previous alteration by the demolition of surrounding buildings and their replacement with parking lots. The current setting of the Subway Terminal Building is not its historic setting because of its previous alteration by the removal of historic streetcar tracks and facilities and their replacement with a parking deck and surface parking lots. The Hill and 5th Streets MSF site would not demolish or materially alter in an adverse manner those physical characteristics of the Title Guarantee and Trust Building and the Subway Terminal Building that convey their historical significance and justify their inclusion, or eligibility for inclusion, in the CRHR; therefore, construction of a maintenance and storage facility would not cause substantial adverse change in the significance of a historical resource.

A less-than-significant impact would occur during construction because:

- There would be no demolition of a significant resource to accommodate construction of the MSF.
- There would be no relocation of a significant resource to accommodate construction of the MSF.
- There would be no conversion, rehabilitation, or alteration of a significant resource that would result from construction of the MSF.
- There would be no construction of the MSF that reduces the integrity or significance of important resources on the site or in the vicinity.

Therefore, construction of the MSF at Hill and 5th Streets would have a less-than-significant impact on historical resources.

Paleontological Resources

A less-than-significant impact.

The potential impacts on paleontological resources for this MSF Site would be similar to those for the TPSS facilities, except that excavations to depths greater than six feet are required for construction of inspection pits under the streetcars. Surface grading or shallow excavations in surficial younger Quaternary Alluvium or disturbed fill to depths of five feet is unlikely to encounter significant vertebrate fossils. However, excavations that may extend to a depth of five feet or more may encounter older Quaternary deposits or the Fernando Formation, and may result in the permanent loss of, or loss of access to, a paleontological resource. Mitigation Measure **MM-CUL-C2** would reduce the impact associated with construction to a less-than-significant level. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation

Operational Impacts

Archaeological Resources

No impact.

Operations of the MSF would require no earth moving activities except disturbance of already disturbed areas for maintenance and replacement activities. Therefore, operations of an MSF at this site would not disturb, damage, or degrade an archaeological resource or its setting, and no impacts on archaeological resources would occur.

Historical Resources

A less-than-significant impact.

The Hill and 5th Streets MSF site includes seven parcels used for surface parking that surround two sides of the Title Guarantee and Trust Building, located at 401–411 W. 5th Street (425–457 S. Hill Street), which is listed in the NRHP. The period of significance for this building is 1930–1931, and the setting of the building has been altered since that time; historically, W. 5th Street to the west of the building contained numerous buildings. Currently, this building is surrounded on the west and north by surface parking lots. The east and south façade, the primary elevations that convey its significance under Criterion C as one of the two best examples of a commercial building designed in the Art Deco style in Los Angeles, face Hill and 5th Streets, respectively. The Title Guarantee and Trust Building was declared HCM #278.

On the north side of the Hill and 5th Streets MSF site is the Subway Terminal Building (417 Metro) at 415-425 S. Hill Street/416-424 S. Olive Street. This Italian Renaissance building is eligible for the NRHP under Criterion A for its association with the Pacific Electric interurban railway system and under Criterion C at the local level as an excellent example of the work of the architectural firm Schultze & Weaver. The period of significance is 1925–1955. The primary elevation faces east toward S. Hill Street. The south elevation, a secondary façade, faces the proposed MSF site. Previously, the old Hill Street Terminal, which was a Pacific Electric facility, was located here, and it was later occupied by a grocery store when the Subway Terminal opened. Although the setting of this building has been altered over time, it still conveys its significance under both Criteria A and C. The Subway Terminal Building was declared HCM #177.

A less-than-significant impact would occur during operations because:

- There would be no demolition of a significant resource to accommodate construction of the MSF.
- There would be no relocation of a significant resource to accommodate construction of the MSF.
- There would be no conversion, rehabilitation, or alteration of a significant resource that would result from construction of the MSF.

Furthermore, after mitigation, there would be no operations of the MSF that reduce the integrity or significance of important resources on the site or in the vicinity. The current setting for both buildings is urban and vehicle-related, and the parking lots abut secondary, and less significant, elevations because the primary entrance and elevation is on Hill Street. Although the proposed MSF site is now occupied by surface parking lots, historically there were streetcar-related structures and tracks, as well as other commercial buildings, on these parcels. Furthermore, the setting during the historic era included streetcar tracks, streetcar sheds, and other facilities on the current parking lot between these two historical resources. After mitigation, the design and placement of an MSF on these parcels would not change the character of the properties' use and would not alter the setting such that they could no longer convey their historic significance. The Hill and 5th Streets MSF would not demolish or materially alter in an adverse manner those physical characteristics of the Title Guarantee and Trust Building and the Subway Terminal Building that convey their historical significance and justify their inclusion, or eligibility for inclusion, in the CRHR; therefore, operation of a maintenance and storage facility would not cause substantial adverse change in the significance of a historical resource.

As applicable, design and installation of any project-related facilities would have to conform to the *Historic Downtown Los Angeles Design Guidelines*. Design effects would be mitigated by Mitigation Measures **MM-AES-O2** for MSFs, **MM-AES-O3** for OCS poles, and **MM-CUL-O1** for all other project-related elements. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Paleontological Resources

No impact.

Operations of this MSF would require no earth moving activities except disturbance of already disturbed areas for maintenance and replacement activities. Therefore, operations of an MSF at this site would not result in the permanent loss of, or loss of access to, a paleontological resource; therefore, no impacts on paleontological resources would occur.

MSF Site at 11th and Olive Streets (East)

Construction Impacts

Archaeological Resources

A less-than-significant impact.

The potential impacts on archaeological resources during construction at this MSF Site would be similar to those for the TPSS facilities except that excavations to depths greater than six feet are required for construction of inspection pits under the streetcars. To summarize, no surficial archaeological resources were observed during the project survey. Subsurface historical archaeological material that may be found during construction activities likely is not intact and therefore not significant, while the likelihood of encountering intact, subsurface prehistoric archaeological material is low. For these reasons, construction of the MSF has a very low potential to disturb, damage, or degrade an archaeological resource or its setting; therefore, less-than-significant impacts would occur, and no mitigation measures are required, as possible archaeological discoveries during the Project would be addressed as specified in the LABOE's *Greenbook* (2009).

Historical Resources

No impact.

The MSF located at 11th and Olive Street (East) would be constructed on a parking lot that currently does not have structures; in addition, no historical resources are located adjacent to the MSF. No impact would occur during construction because:

- There would be no demolition of a significant resource to accommodate construction of the MSF.
- There would be no relocation of a significant resource to accommodate construction of the MSF.

- There would be no conversion, rehabilitation, or alteration of a significant resource that would result from construction of the MSF.
- There would be no construction of the MSF that reduces the integrity or significance of important resources on the site or in the vicinity.

Therefore, construction of the MSF at 11th and Olive Street (East) would have no impact on historical resources.

Paleontological Resources

A less-than-significant impact.

The potential impacts on paleontological resources for this MSF Site would be similar to those for the TPSS facilities, except that excavations to depths greater than six feet are required for construction of inspection pits under the streetcars. Surface grading or shallow excavations in surficial younger Quaternary Alluvium or disturbed fill to depths of five feet is unlikely to encounter significant vertebrate fossils. However, excavations that may extend to a depth of five feet or more may encounter older Quaternary deposits or the Fernando Formation, and may result in the permanent loss of, or loss of access to, a paleontological resource. Mitigation Measure **MM-CUL-C2** would reduce the impact associated with construction to a less-than-significant level. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Operational Impacts

Archaeological Resources

No impact.

Operations of the MSF would require no earth moving activities except disturbance of already disturbed areas for maintenance and replacement activities. Therefore, operations of an MSF at this site would not disturb, damage, or degrade an archaeological resource or its setting, and no impacts on archaeological resources would occur.

Historical Resources

No impact.

The MSF located at 11th and Olive Streets (East) would be constructed on a parking lot that currently does not have structures; in addition, no historical resources are located adjacent to the MSF. No impact would occur during construction because:

- There would be no demolition of a significant resource to accommodate construction of the MSF.
- There would be no relocation of a significant resource to accommodate construction of the MSF.
- There would be no conversion, rehabilitation, or alteration of a significant resource that would result from construction of the MSF.
- There would be no construction related to the MSF that reduces the integrity or significance of important resources on the site or in the vicinity.

Therefore, operation of the MSF at 11th and Olive Streets (East) would have no impact on historical resources.

Paleontological Resources

No impact.

Operations of this MSF would require no earth moving activities except disturbance of already disturbed areas for maintenance and replacement activities. Therefore, operations of an MSF at this site would not result in the permanent loss of, or loss of access to, a paleontological resource; therefore, no impacts on paleontological resources would occur.

MSF Site at 11th and Olive Streets (West)

Construction Impacts

Archaeological Resources

A less-than-significant impact.

The potential impacts on archaeological resources during construction at this MSF Site would be identical to those for MSF site at 11th and Olive streets (East) construction, except that deeper excavations are required for construction of inspection pits under the streetcars. To summarize, no surficial archaeological resources were observed during the project survey. Subsurface historical archaeological material that may be found during construction activities likely is not intact and therefore not significant, while the likelihood of encountering intact, subsurface prehistoric archaeological material is low. For these reasons, construction of the MSF has a very low potential to disturb, damage, or degrade an archaeological resource or its setting; therefore, less-than-significant impacts would occur, and no mitigation measures are required, as any archaeological discoveries during the Project would be addressed as specified in the LABOE's *Greenbook* (2009).

Historical Resources

No impact.

The MSF located at 11th and Olive Street (West) would be constructed on a parking lot that currently does not have structures; in addition, no historical resources are located adjacent to the MSF. No impact would occur during construction because:

- There would be no demolition of a significant resource to accommodate construction of the MSF.
- There would be no relocation of a significant resource to accommodate construction of the MSF.
- There would be no conversion, rehabilitation, or alteration of a significant resource that would result from construction of the MSF.
- There would be no construction of the MSF that reduces the integrity or significance of important resources on the site or in the vicinity.

Therefore, construction of the MSF at 11th and Olive Street (West) would have no impact on historical resources.

Paleontological Resources

A less-than-significant impact.

The potential impacts on paleontological resources for this MSF Site would be identical to those for the MSF Site at 11th and Olive Streets (East) construction, except that deeper excavations are required for construction of inspection pits under the streetcars. Surface grading or shallow excavations in surficial younger Quaternary Alluvium or disturbed fill to depths of five feet is unlikely to encounter significant vertebrate fossils. However, excavations that may extend to a depth of five feet or more may encounter older Quaternary deposits or the Fernando Formation, and may result in the permanent loss of, or loss of access to, a paleontological resource. Mitigation Measure **MM-CUL-C2** would reduce the impact associated with construction to a less-than-significant level. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation

Operational Impacts

Archaeological Resources

No impact.

Operations of the MSF Site would require no earth moving activities except disturbance of already disturbed areas for maintenance and replacement activities. Therefore, operations of an MSF at this site would not disturb, damage, or degrade an archaeological resource or its setting, and no impacts on archaeological resources would occur.

Historical Resources

No impact.

The MSF located at 11th and Olive Streets (West) would be constructed on a parking lot that currently does not have structures; in addition, no historical resources are located adjacent to the MSF. No impact would occur during construction because:

- There would be no demolition of a significant resource to accommodate construction of the MSF.
- There would be no relocation of a significant resource to accommodate construction of the MSF.
- There would be no conversion, rehabilitation, or alteration of a significant resource that would result from construction of the MSF.
- There would be no construction related to the MSF that reduces the integrity or significance of important resources on the site or in the vicinity.

Therefore, operation of the MSF at 11th and Olive Streets (West) would have no impact on historical resources.

Paleontological Resources

No impact.

Operations of this MSF would require no earth moving activities except disturbance of already disturbed areas for maintenance and replacement activities. Therefore, operations of an MSF at this site would not result in the permanent loss of, or loss of access to, a paleontological resource; therefore, no impacts on paleontological resources would occur.

3.3.4 Mitigation Measures

3.3.4.1 Archaeological Resources

The ICF survey and research did not result in the identification of any surficial prehistoric or historic archaeological sites or features. Unintended discoveries of archaeological resources during construction have the potential to result in impacts. Discoveries of human remains would be treated as required by State law. Archaeological discoveries during the Project would be addressed as specified in the LABOE's *Greenbook* (2009), which requires that if archaeological resources are discovered, the contractor will immediately cease excavation in the area of discovery and not proceed until ordered by the project engineer. This allows for the legally required evaluation and, if necessary, treatment of archaeological resources. This can include as-needed development of avoidance strategies, capping with fill material, evaluation excavations, or mitigation of impacts through data recovery programs such as excavation or detailed documentation. A report of findings is prepared, and recovered materials curated, if needed, in an approved facility. Therefore, less-than-significant impacts would occur, and no mitigation measures are required.

3.3.4.2 Historical Resources

Construction Period

Construction of streetcar stops, sidewalk ramps. OCS poles, and curb bump-outs have the potential to cause physical damage to historic sidewalk features, although it is not known definitively if construction activities would cause any damage. Historic sidewalk features, including terrazzo installations, vault lights, basement vault hatch doors, flagpole holders, and utility and ventilation covers are considered character-defining features of the Broadway Theater and Commercial District. Individually significant historical resources may include these historic sidewalk features, along with brass or ceramic inserts that are unique to that resource. There is also a possibility that historic sidewalk features may be discovered during construction because they have been obscured over time by a layer of asphalt or concrete. Implementation of Mitigation Measure MM-CUL-C1 would reduce the impact associated with the Project to a less-than-significant level.

MM-CUL-C1: As part of final design, a detailed field survey shall be conducted to identify historic sidewalk features that need to be avoided, protected during construction, or altered in conformance with the Secretary's Standards. Conditions to protect the historic sidewalk features and preserve the material in place during construction will be required. Historic sidewalk features should be covered with a protective material to avoid scratches and staining from adjacent construction work. OCS poles will not be installed in terrazzo installations or vault lights. Sidewalk ramps will be designed or located to avoid physical damage or alteration of historic sidewalk features. The existing concrete curb will not be removed at bump out areas in order to protect the historic sidewalk feature from being saw cut or from cracking. These measures will reduce the potential to alter or cause physical damage to the historic sidewalk features, and therefore ensure no substantial adverse change to the historic district or individually significant resources. Should incidental damage occur during construction occur, the historic sidewalk feature will be repaired or replaced in kind by a qualified contractor in a manner consistent with the Secretary's Standards. In the unlikely event that the sidewalk feature cannot be treated in accordance with the Secretary's Standards, there would still be a less-than-significant impact on the historic building that fronts the sidewalk, and there would be no substantial adverse change in the overall significance of the historical resource because enough contributing features would remain that the historical resource would retain its designation.

Operational Period

MM-CUL-O1: The City of Los Angeles shall ensure that design and installation of all project facilities and elements that are adjacent to or abutting historical resources or within a historic district will be consistent with the surrounding design context. The appropriateness of the design will be achieved through consultation with and approval by the City of Los Angeles Office of Historic Resources, applying the Secretary's Standards. Project facilities and elements shall be designed for consistency and installed to the satisfaction of the City Engineer/City Architect and will be in compliance with the *Historic Downtown Los Angeles Design Guidelines* and the *Broadway Streetscape Master Plan*, as applicable. LABOE shall be the responsible party. LABOE shall consult on the design with the City of Los Angeles Office of Historic Resources. Enforcement shall be achieved through the DPW Contracts Administration Bureau Construction Inspector.

3.3.4.3 Paleontological Resources

Deeper excavations for the Project may encounter significant paleontological resources. Implementation of Mitigation Measure MM-CUL-C2 would reduce the impact associated with the Project to a less-than-significant level.

MM-CUL-C2: If excavations for the Project take place at depths greater than five feet, these excavations shall be monitored on a fulltime basis by a qualified paleontological monitor. Monitoring may be reduced if excavations below a depth of five feet are determined to be in artificial fill materials, or if some of the potentially fossiliferous units described herein are determined upon exposure and examination by qualified paleontologic personnel to have low potential to contain fossil resources.

The paleontologic monitors shall be equipped to salvage fossils if they are unearthed to avoid construction delays and to remove samples of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates. The monitor shall have authority to temporarily divert excavation or grading away from exposed fossils in order to professionally and efficiently recover the fossil specimens and collect associated data. All efforts to avoid delays in project schedules shall be made. At each fossil locality, field data forms shall be used to record pertinent geologic data, stratigraphic sections shall be measured, and appropriate sediment samples shall be collected and submitted for analysis.

Fossils collected, if any, shall be transported to a paleontological laboratory for processing where they shall be prepared to the point of curation, identified by qualified experts, listed in a database to facilitate analysis, and deposited in a designated paleontological curation facility (such as the Natural History Museum of Los Angeles County).

Following analysis, a Report of Findings with an appended itemized inventory of specimens shall be prepared. The report and inventory, when submitted to the appropriate lead agency along with confirmation of the curation of recovered specimens into an established, accredited museum repository, shall signify completion of the program to mitigate impacts on paleontological resources.

3.3.5 Significant Unavoidable Impacts

No significant and unavoidable impacts would occur under any of the build alternatives.

3.3.6 Cumulative Impacts

3.3.6.1 Archaeological Resources

There are an estimated 74 projects currently underway or planned in the vicinity of the Project, which could contribute to a cumulative archaeological resources impact. The majority of these projects are building rehabilitations and development of vacant land (e.g., typically land that is presently improved as surface parking lots), with associated ground disturbance. Cumulative growth and development could have impacts if it disturbed, damaged, or degraded an archaeological resource or the setting of a significant prehistoric or historical archaeological resource. However, it is unknown if significant resources exist in these areas. The potential for an individual project to affect significant cultural resources is unknown, but given the number of projects, it is possible that cumulative growth and development in downtown Los Angeles could have impacts on significant prehistoric or historical archaeological resources.

The proposed Project's build alternatives would not contribute to a cumulative impact related to cultural resources. Treatment of any discovered archaeological resources as specified in the LABOE's *Greenbook* (2009) would reduce project-related impacts to a less-than-significant level; therefore, the build alternatives' contribution to significant cumulative impacts would be rendered less than cumulatively considerable.

For the reasons stated above, the Project would not have a considerable contribution to significant cumulative impacts on archaeological resources

3.3.6.2 Historical Resources

There are an estimated 74 projects currently underway or planned in the vicinity of the Project; however, projects that could contribute to a cumulative historical resources impact are limited to those within the sightlines of the project alignment under the build alternatives. By that definition, approximately 50 of the 74 related projects are within the area for cumulative impacts related to historical resources.

Within the densely developed context of downtown, the area for cumulative impacts would consist of a viewshed along the streets that comprise the 3.8-mile project alignments for the 7th Street and 9th Street alternatives with the Grand Avenue extension. The area for consideration of cumulative historical resources impacts would also extend out laterally from the alignment to the limits of sightlines, typically a maximum distance of 0.5 mile, often much shorter, where topographic features, freeway configurations, or building placements do not further reduce sightline distances. Within this definition, those 50 projects with potentially cumulative effects define portions of the northern, southern, and eastern segments of the cumulative viewshed.

Development proposed as part of the related projects calls for the rehabilitation of existing buildings and development of vacant land (e.g., typically land that is presently improved as surface parking lots). Such development would be subject to design regulations and policies intended to protect historical resources and promote high-quality, aesthetically attractive new development.

Several related projects call for the rehabilitation of existing buildings (e.g., the Hall of Justice, *Herald Examiner* offices, and the related printing plant property at 1115 S. Hill Street, the Embassy Towers, etc.) would refurbish buildings by preserving key architectural design elements and replacing obsolete, non-operational building infrastructure. As such, the rehabilitation projects are expected to have positive effects on historical resources within the project viewshed.

Of the remaining related projects, two are streetscape improvement projects that have been referenced previously in this section (the *Broadway Streetscape Master Plan* and the Figueroa Corridor Streetscape Project); the other is the Regional Connector Project—a public transit improvement project that calls for the construction of a 1.9-mile underground light rail system, featuring at least three new stations that would connect the Blue, Gold, and Exposition Lines. The Regional Connector Project is a tunneling project with a very small number of above-ground associated train station facilities. Because the majority of the construction work would take place within the street right-of-way, similar to other public works projects that have occurred on a routine basis within the public right-of-way downtown, and because nearly all project features, with the exception of train station entrances, would be underground, views of historical resources would not be adversely affected.

The two streetscape projects call for improved pedestrian, bicycle, and public transit circulation; enhanced sidewalk and crosswalk treatments; design-coordinated and setting-appropriate wayfinding signage; and the installation of trees and ground-level plantings as well as the preservation of existing character-identifying design features. The primary effect of these projects would be to create more unified streetscapes along Figueroa Street, 11th Street, and Broadway. The effect is expected to be positive.

None of the build alternatives would result in effects that would be cumulatively significant when combined with other related projects in downtown Los Angeles. Similarly, visual changes associated with the build alternatives would not result in a cumulatively considerable contribution to a significant cumulative impact. Views of architecturally or historically significant individual buildings would be preserved. In addition, outside the Historic Core—where there is a significant concentration of architecturally and historically significant buildings and other objects (e.g., certain special sidewalk treatments along Broadway, historic streetlight bases)—the diversity in architectural treatments within most portions of downtown makes it a fairly forgiving and flexible urban design context in which to incorporate new public transit infrastructure and streetscape design elements.

Within the Historic Core, specific design guidelines, including the *Broadway Streetscape Master Plan* and *Historic Downtown Los Angeles Design Guidelines*, would ensure that all improvements are designed in a manner that would be consistent with the design setting. The majority of the design features proposed would occur slightly above, at, or below street level and incorporate features (benches, poles, and limited signage) that would not block views of historical resources or cast significant shadows that would have the potential to affect shade-sensitive viewers.

Power for the streetcar system would be provided by a traction power system featuring TPSS and an OCS. As discussed in Chapter 2, *Project Description*, there are two potential configurations for the OCS wires. The first configuration would be to support the contact wire with a span wire between two poles perpendicular to the streetcar track. The second configuration would support the contact wire from cantilever arms connected to a single pole. Both of these configurations would use decorative poles consistent with the streetscape along the project alignment, with the possibility of integrating poles used for street lighting, traffic signals, or traffic signs. Poles would be approximately 25 to 30 feet tall and are typically installed at intervals of about 80 to 120 feet. Wire heights typically range between approximately 18 and 19 feet. Catenary poles could be designed to incorporate elements of decorative streetlights or to meet design standards for designated streetscapes. Historically, streetcars operated along many of the streets within the viewshed, utilizing a system of poles and overhead wires that was far more extensive than what is proposed. Also, because the proposed features would be consistent with all design policies governing downtown design districts and with new streetscape elements (e.g., landscaping, street furniture proposed as part of other related projects, as along both Figueroa Street and Broadway), the Project is not expected to result in cumulatively significant incremental impacts on historical resources.

Project features proposed consist of elements at or near street level and, accordingly, do not have the potential to substantially alter views of historical resources. Therefore, when considered along with other related projects, the Project is not expected to contribute to a cumulatively significant incremental effect on shade/shadow-sensitive receptors. Because the setting during the historic era included streetcar tracks, streetcar sheds and other facilities on the current parking lot between the Title Guarantee and Trust Building and the Subway Terminal Building, the design and placement of an MSF on these parcels would not change the character of the properties' use and would not alter the setting such that they could no longer convey their historic significance. The Hill and 5th Streets MSF would not demolish or materially alter in an adverse manner those physical characteristics of the Title Guarantee and Trust Building and the Subway Terminal Building that convey their historical significance and justify their inclusion, or eligibility for inclusion, in the CRHR; therefore, operation of a maintenance and storage facility would not cause substantial adverse change in the significance of a historical resource. The current setting of the Title Guarantee and Trust Building is not its historic setting because of its previous alteration by the demolition of surrounding buildings and their replacement with parking lots. The current setting of the Subway Terminal Building is not its historic setting because of its previous alteration by the removal of historic streetcar tracks and facilities and their replacement with a parking deck and surface parking lots. The Hill and 5th Streets MSF site would not demolish or materially alter in an adverse manner those physical characteristics of the Title Guarantee and Trust Building and the Subway Terminal Building that convey their historical significance and justify their inclusion, or eligibility for inclusion, in the CRHR. Furthermore, TPSS units would not be located on the site of the Friday Morning Club, Bullock's Downtown Department Store, or the Subway Terminal Building. The two TPSS facilities proposed within the historic district would be located in parking lots or behind buildings that are not historical resources, and therefore would not reduce the integrity or significance of the district. The TPSS facilities proposed adjacent to these resources would be designed with a compatible architectural treatment, following the *Broadway Streetscape Master Plan* and *Historic Downtown Los Angeles Design Guidelines* as applicable, and would not reduce the integrity or significance of the historical resources.

As described above, proposed buildings features, such as the MSF and TPSS facilities, would be designed to be compatible with their design settings, following the *Broadway Streetscape Master Plan* and *Historic Downtown Los Angeles Design Guidelines* as applicable, and would not possess either the massing or height required to cast shade/shadow on shade-sensitive viewing groups.

For the reasons stated above, the Project would not have a considerable contribution to significant cumulative impacts on historical resources.

3.3.1.1 Paleontological Resources

There are an estimated 74 projects currently underway or planned in the vicinity of the Project, which could contribute to a cumulative paleontological resources impact. The majority of these projects are building rehabilitations and development of vacant land, with associated ground disturbance. Cumulative growth and development could have impacts resulting in the permanent loss of, or loss of access to, a paleontological resource.

However, the proposed project alternatives would not contribute to a cumulative impact related to permanent loss of, or loss of access to, a paleontological resource. Mitigation Measure **MM-CUL-C2** would reduce potential project-related impacts. This mitigation measure includes monitoring, recovery, treatment, and deposit of fossil remains in a recognized repository. The incremental effects of the proposed Project, after mitigation, would not contribute to a significant adverse cumulative impact on paleontological resources. With mitigation, all project-related impacts would be reduced to a less-than-significant level, and the build alternatives would not contribute to significant cumulative impacts.

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3.4 Energy

This section describes the regulatory setting and affected environment related to energy consumption in the project area, and identifies the potential for impacts related to energy pursuant to CEQA.

3.4.1 Regulatory Setting

3.4.1.1 Federal

Moving Ahead for Progress in the 21st Century Act

Signed by President Obama in July 2012, the *Moving Ahead for Progress in the 21st Century Act* (MAP-21) represents the first multi-year transportation authorization act since 2005, funding surface transportation programs with more than $105 billion for fiscal years 2013 and 2014. The funding was extended through September 30, 2015 (FHWA 2015). Among the provisions within MAP-21 that relate to energy is the scope of state and metropolitan planning processes, which aim to "protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and state and local planned growth and economic development patterns." MAP-21 also authorized $70 million for a public transportation research program that focuses on energy efficiency and system capacity, among other items. With the exception of these provisions of MAP-21, there is no federal legislation related specifically to energy efficiency in public transportation project development and operation.

3.4.1.2 State

California Energy Commission

The California Energy Commission (CEC) is responsible for, among other things, forecasting future energy needs for the state and developing renewable energy resources and alternative renewable energy technologies for buildings, industry, and transportation. Senate Bill (SB) 1389 (Chapter 568, Statutes of 2002) requires the commission to prepare a biennial integrated energy policy report that assesses major energy trends and issues facing the state's electricity, natural gas, and transportation fuel sectors. The report provides policy recommendations to conserve resources, protect the environment, and ensure reliable, secure, and diverse energy supplies. The *2015 Integrated Energy Policy Report*, required under SB 1389, was released to the public in February 2016 (California Energy Commission 2016).

Executive Order S-3-05

Executive Order (EO) S-3-05, issued in June 2005, sets specific greenhouse gas (GHG) emission reduction targets for the state and gives the California Transportation and Housing Agency responsibility to help meet the targets. EO S-3-05 sets 2050 GHG reduction targets at 80 percent below 1990 levels and envisions reduced vehicle miles traveled (VMT) and increased vehicle fuel efficiency as major factors in achieving GHG reductions.

Executive Order B-30-15

EO B-30-15, issued in April 2015, sets specific GHG emission reduction targets for the state and requires all state agencies with jurisdiction over sources of GHG emissions to implement measures to help meet the targets. EO S-3-05 sets 2030 GHG reduction targets at 40 percent below 1990 levels and is envisioned to help make it possible to reach the ultimate goal of reaching the emission reduction targets established in S-03-05 stated above (Office of the Governor 2015).

Assembly Bill 32: *Global Warming Solutions Act*

Governor Arnold Schwarzenegger signed Assembly Bill (AB) 32 (the *Global Warming Solutions Act*) into law on September 27, 2006, requiring the California Air Resources Board (ARB) to reduce GHG emissions to 1990 levels by 2020 and maintain and continue reductions beyond 2020. ARB prepared the AB 32 scoping plan, which has been approved and contains a range of GHG reduction actions, such as direct regulations; alternative compliance mechanisms; monetary and non-monetary incentives; voluntary actions; market-based mechanisms, such as a cap-and-trade system; and an AB 32 program implementation regulation to fund the program. A reduction in energy use, whether achieved through energy-efficient products, reduced VMT, or other means, is one of the primary ways that California expects to meet its AB 32 goals.

Assembly Bill 2076, Reducing Dependence on Petroleum

AB 2076 (passed in 2000 [Shelley, Chapter 936, Statutes of 2000]) directed CEC and ARB to develop and adopt recommendations for reducing the state's dependence on petroleum. The bill sets a performance-based goal to reduce petroleum demand to 15 percent below 2003 demand by 2020.

3.4.1.3 Local

Southern California Association of Governments

With more than 18 million people as of 2010, the Southern California Association of Governments (SCAG) region is the second-most populated metropolitan area in the United States. Growth in population is expected to result in greater demands on the region's transportation system. State and federal mandates require SCAG to prepare a regional transportation plan (RTP) every 3 years. The current 2012–2035 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) provides a long-range vision for regional transportation goals and policies and predicts transportation challenges and the region's future transportation strategy. The RTP/SCS establishes the following goals relevant to the Project:

- Preserve and ensure a sustainable transportation system.
- Actively encourage and create incentives for energy efficiency, where possible.

The Draft 2016–2040 RTP/SCS was released in December 2015. The revised RTP/SCS includes $556.5 billion in transportation investments, and the strategies outlined in the 2016 RTP/SCS will help reduce GHG emissions to meet California's targets (SCAG 2015).

South Coast Air Quality Management District

As described in the *Air Quality and Climate Change Assessment Report* (see Appendix E), the South Coast Air Quality Management District (SCAQMD) has primary responsibility for developing plans and regulations to improve air quality in the South Coast Air Basin. The most recently approved air quality management plan (AQMP) is the 2012 update, which was adopted by the SCAQMD Governing Board on December 7, 2012 (SCAQMD 2012). The Final 2012 AQMP addresses several federal planning requirements and incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools. Among other strategies, the AQMP promotes reductions in VMT through the development of alternative transportation options.

The most recent AQMP is the 2016 update, which is under development. The upcoming 2016 AQMP is anticipated to include strategies to meet the following National Ambient Air Quality Standards: 8-hour ozone (70 parts per billion [ppb]) by 2032; annual particulate matter 2.5 microns or less in diameter ($PM_{2.5}$) (12 micrograms per cubic meter [$\mu g/m^3$]) by 2025; and 24-hour $PM_{2.5}$ (35 $\mu g/m^3$) by 2019. The SCAQMD governing board is expected during summer/fall of 2016 to consider adoption of the 2016 AQMP and would submit the plan to the U.S. Environmental Protection Agency (EPA) by July 2016 (SCAQMD 2016).

City of Los Angeles General Plan

Elements of the *City of Los Angeles General Plan* include *Air Quality, Conservation, Housing, Noise, Open Space, Service Systems/Public Recreation, Framework, Safety*, and *Mobility*. The following elements are relevant to energy use.

Mobility Plan 2035

Mobility Plan 2035, which serves as the City's transportation element, updates and replaces the original *Transportation Element*, was adopted by the City in January 2016 and is a guide for future development of a citywide transportation system. *Mobility Plan 2035's* goals include: safety first; world class infrastructure; access for all Angelenos; collaboration, communication, and informed choices; and clean environments and healthy communities. Each goal is composed of objectives that have measurable targets to monitor progress and policies that guide the City's achievement of these goals (City of Los Angeles 2016a).

Air Quality Element

An optional element of the General Plan, the *Air Quality Element*, was adopted by the City Council in November 1992. The following provisions of the *Air Quality Element* are related to transportation energy use:

- Goal 2: Less reliance on single-occupant vehicles with fewer commute and non-work trips.
    - Objective 2.2: It is the objective of the City of Los Angeles to increase vehicle occupancy for non-work trips by creating disincentives for single-passenger vehicles and incentives for high-occupancy vehicles.

Conservation Element

Adopted in 2001, the *Conservation Element* surveys the various laws, requirements, and procedures that have been established for the protection of natural resources. Primarily an informational document, the *Conservation Element* is designed to help users understand the context, history, and opportunities for the protection and improvement of the City's natural resources. The *Conservation*

Element incorporates the energy provisions of the *Infrastructure Systems Element* by reference (see *Framework Element* below).

Framework Element

When the *City of Los Angeles General Plan Framework Element* was adopted in 1996, the City identified a revised plan structure that proposed to condense the five plans into a new element called *Infrastructure Systems*. The most recent version of the *Framework Element* includes Infrastructure and Public Services in Chapter 9. This chapter includes goals, objectives, and policies to address 13 infrastructure and public service systems (e.g., wastewater, telecommunications) that were identified to help support the City's growing population and economy into the 21st century (City of Los Angeles 2016b).

Power Integrated Resource Plan: Los Angeles Department of Water and Power

Released to the public in December 2015, the most recent iteration of the *Power Integrated Resource Plan* identified a portfolio of power generation resources and power system assets that would meet the City's future energy needs, with the lowest cost and risk possible, consistent with the Los Angeles Department of Water and Power's (LADWP's) environmental priorities and reliability standards. Previous versions of the *Power Integrated Resource Plan* are also cited in this section, where applicable.

Building Construction Standards

Title 24 of the *California Code of Regulations* establishes energy conservation standards for new construction. These standards are related to insulation requirements, glazing, lighting, shading, and water and space heating systems. The *Los Angeles Municipal Code* incorporates these state requirements (Section 91.1300).

The *Los Angeles Green Building Code* is based on the 2013 *California Green Building Standards Code*, commonly known as "CALGreen," which was developed and mandated by the state to attain consistency among the various jurisdictions within the state and reduce energy and water use, waste, and the overall carbon footprint in buildings. As of January 2013, all state-owned buildings; residential buildings constructed throughout the state; public elementary and secondary schools and community colleges; qualified historical buildings, structures, and associated sites; general acute care hospitals, clinics, psychiatric hospitals, and skilled nursing facilities; and graywater systems are subject to the *Green Building Code* (Title 24, *California Code of Regulations* part 11).

3.4.2 Environmental Setting/Affected Environment

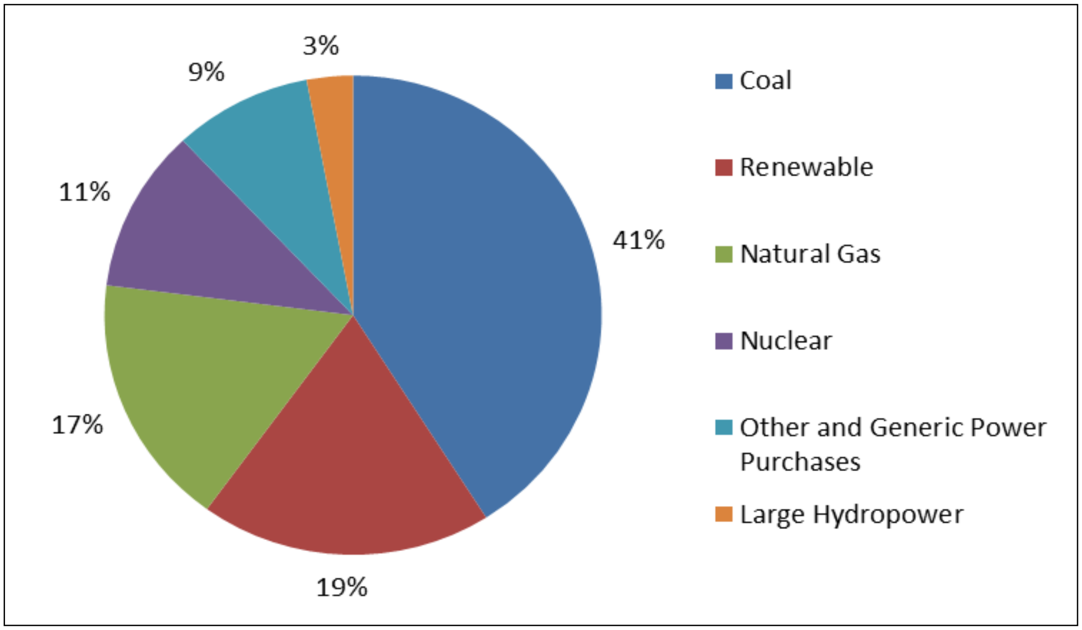
3.4.2.1 Electricity

LADWP provides electricity to residential and business customers in its service area, including areas along the alignments for the build alternatives. With a net dependable generation capacity of 7,628 megawatts, LADWP maintains a distribution system of more than 6,800 miles of overhead distribution lines and 3,600 miles of underground distribution lines (LADWP 2015). It is estimated that business and industry consume approximately 70 percent of the electricity in the City (LADWP 2012).

Figure 3.4-1 shows the sources of LADWP's electricity, with coal representing 41 percent of the energy mix as of 2011. By 2027, LADWP will no longer accept electricity from coal-fired generation sources, which it will replace with a combination of natural gas, renewable energy, and increased energy efficiency (LADWP 2015).

At present, the only electricity consumed along the public right-of-way of the alignments for the build alternatives is for street lighting and traffic signals. Commercial, residential, and other off-street land uses adjacent to the alignments for the build alternatives are tied to LADWP's electrical grid.

Figure 3.4-1. LADWP Energy Mix, 2011



Source: LADWP 2012 *Power Integrated Resource Plan*.

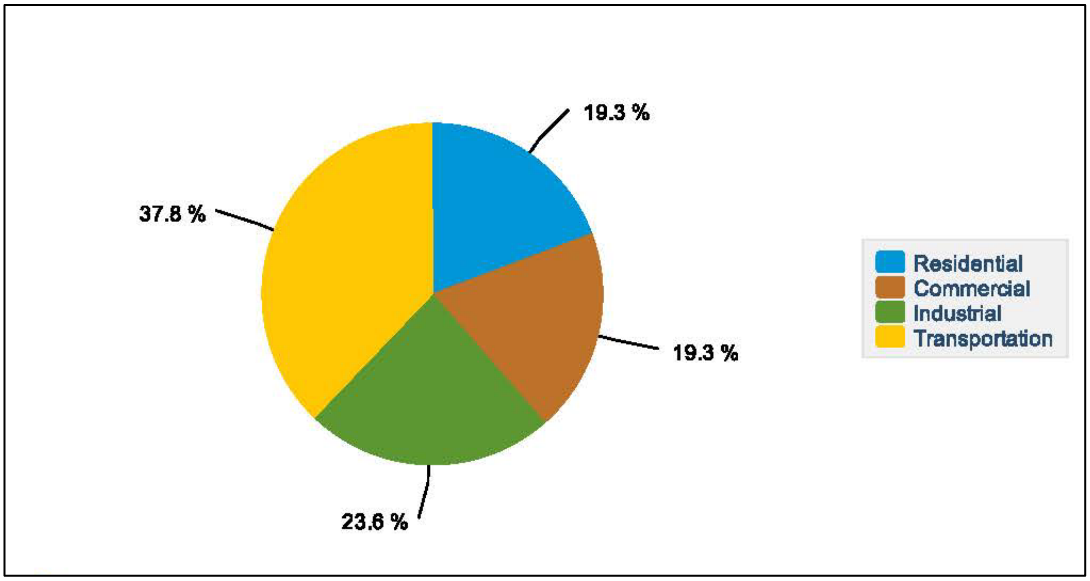
3.4.2.2 Transportation Energy

As shown in Figure 3.4-2, nearly 38 percent of the energy consumed in California is for transportation purposes. The vast majority of this energy is from nonrenewable sources, with 96 percent of the state's transportation needs being met by petroleum-based fuels (Cal/EPA 2007).

During the day, 115,000 internal trips occur in the study area[1] (all modes of transportation). This represents approximately 80 percent of study area trips. With respect to travel modes, automobile travel accounts for 60 percent of the trips (approximately 70,000 daily trips), while alternative modes (walk, transit, and bike) account for the remaining 40 percent. The average length of an internal trip is 0.7 mile (Fehr and Peers 2013).

[1] The study area, for the purposes of the VMT analysis conducted by Fehr and Peers, is the area bounded by Interstate 110 on the west, US-101 on the north, Los Angeles Street on the east, and Pico Boulevard on the south.

Figure 3.4-2. California Energy Consumption by End-Use Sector (2013)



Source: U.S. Energy Information Administration 2013.

External trips, which begin or end outside of the study area, account for 20 percent of daily trips in the study area. Currently, much of this external travel is by automobile, with an average length for an external trip of 8.8 miles (Fehr and Peers 2013)

In addition to study area automobile trips, downtown Los Angeles has the highest concentration of public transit services in the region, with 10 regional and local transit operators providing services. With the exception of services offered by regional bus lines, transit operators in the study area provide service mainly during peak commute hours and in the peak direction. Los Angeles County Metropolitan Transportation Authority (Metro), the study area's largest transit provider, operates 50 bus lines in the area, with each line providing anywhere from five to more than 100 daily trips in each direction. Metro also operates the Red, Purple, Blue, and Expo rail lines within the study area.

3.4.3 Environmental Impact Analysis

3.4.3.1 Methodology

This energy analysis considers energy consumption from construction and operation of the Project, including the following elements:

- Construction-related energy (expressed in British thermal units [BTUs], converted from the number of gallons of gasoline or diesel consumed).
- Direct energy consumption from electricity consumption during streetcar operations and operations at the maintenance and storage facility (MSF) (expressed in BTUs).
- Indirect energy consumption resulting from changes in overall traffic operations.
- Net change in Project-related energy consumption.

Table 3.4-1 provides the energy intensity of the modes of transportation used in the study area. Although rail modes require a large amount of energy to move rail vehicles relative to cars, the high number of passengers they are capable of transporting makes their per-person energy requirements the lowest of the major modes of transportation.

Table 3.4-1. Transportation Energy Intensity

Transport Mode	Typical Energy Intensity (BTUs per vehicle-mile)	Typical Energy Intensity (BTUs per passenger-mile)
Passenger Vehicles (Cars)	4,873	3,144
Light Trucks	6,446	3,503
Buses (Transit – Natural Gas or Diesel)	37,442	4,071
Transit Rail (Light and Heavy)	63,265	2,404
Source: Oak Ridge National Laboratory 2015		

Anecdotal evidence suggests that streetcars may be more energy efficient per passenger mile than other transit modes. For example, Tucson's Sun Link streetcar vehicle was designed to have an energy intensity of 37,192 BTUs per vehicle-mile and 1,283 BTUs per passenger-mile with all seats occupied. Assuming higher ridership, with all seats occupied and passengers standing in aisles, Sun Link was designed to have an energy intensity of 40,945 BTUs per vehicle mile and 358 BTUs per passenger mile (Hecht pers. comm.).

The estimate of construction-related energy use (i.e., fuel consumption) was calculated by applying the EPA-derived data regarding carbon dioxide (CO_2) emissions per gallon of gasoline (19.4 pounds/gallon) and diesel (22.2 pounds/gallon) to total CO_2 emissions (separated by fuel source) predicted by the California Emissions Estimator Model™ (CalEEMod) in the air quality emissions analysis. The *Air Quality and Climate Change Assessment Report* (Appendix E) includes details regarding the construction equipment and activity assumptions that were used to estimate CO_2 emissions.

The operational energy impact analysis uses VMT data for existing conditions and Project-specific VMT data to compare energy consumption under Existing-Year (2016), Opening-Year (2020), and Horizon-Year (2040) conditions. In addition, issues related to construction-related fuel consumption are addressed.

To quantify the reduction in VMT, average vehicle trip lengths were calculated using the City's travel model. Two different types of passenger vehicle (car) trips would be diverted to the streetcar. The first type is the internal trip, and the second type is the external trip. In addition, the City's travel model is used to stratify changes in VMT by speed and calculate the average vehicle occupancy in the study area.

3.4.3.2 Thresholds of Significance

California Environmental Quality Act

The State CEQA Guidelines require an EIR to consider the potentially significant energy implications of a project, if relevant. Appendix F to the State CEQA Guidelines identifies the potential environmental impacts related to energy that may be included in an EIR.

L.A. CEQA Thresholds Guide

The *L.A. CEQA Thresholds Guide* (2006) provides further guidance for determining the significance of impacts on utilities and service systems. With respect to energy, a determination of impacts would be made on a case-by-case basis.

Based on Appendix F of the State CEQA Guidelines and the *L.A. CEQA Thresholds Guide*, the analysis of potential energy resource impacts included consideration of the following elements:

- Energy consumption and conservation standards
  - The degree to which the project complies with existing energy standards.
  - Whether and when the needed infrastructure was anticipated by adopted plans.
  - The degree to which the project design and/or operations incorporate energy conservation measures, particularly those that go beyond City requirements.
- Energy distribution
  - The effects of the project on local and regional energy supplies and on requirements for additional capacity.
  - The effects of the project on peak- and base-period demands for electricity and other forms of energy.
- Total energy consumption
  - The project's energy requirements and its energy use efficiencies by amount and fuel type for each stage of the project, including construction, operation, maintenance, and/or removal. If appropriate, the energy intensiveness of materials may be discussed.
  - The extent to which the project would require new (offsite) energy supply facilities and distribution infrastructure or capacity-enhancing alterations to existing facilities.
- Energy demand
  - The effects of the project on energy resources.
  - The project's projected transportation energy use requirements and its overall use of efficient transportation alternatives.

In addition, according to the State CEQA Guidelines,[2] a significant adverse impact would occur if a project results in the "inefficient and unnecessary consumption of energy."

3.4.3.3 Alternative 1: No Project Alternative

Under the No Project Alternative, the improvements and facilities associated with the Project would not be constructed. The No Project Alternative represents conditions in the project study area that would remain if the proposed Project did not occur. It includes those improvements projected to be funded under the current RTP. The No Project Alternative also serves as the baseline for comparison and assessment of the project alternatives. The No Project Alternative would result in increased diesel fuel and electric power consumption when compared to the current conditions because of

[2] *California Public Resources Code*, Title 14, Division 6, Chapter 3, *California Environmental Quality Act* Guidelines, Section 15126.4(a)(1).

growth in travel demand. Without the proposed Project, more automobile trips would occur, which would result in increased energy consumption under the No Project Alternative.

3.4.3.4 Alternative 2: 7th Street With Grand Avenue Extension

Construction Impacts

Project construction includes construction of the streetcar line itself and associated infrastructure, traction power substation (TPSS), and MSF.

Energy Consumption and Conservation Standards

Less-than-significant impact. As detailed in the *Construction Methods Technical Memorandum* (Appendix C), construction, startup, and testing of the build alternatives would occur over a 24-month period (18 months of active construction and 6 months of testing). The energy consumption for each major construction activity described in the *Construction Methods Technical Memorandum*. The results of the calculations are discussed below.

Energy Distribution and Roadway Infrastructure and Traction Power Substations

Data derived from the *Air Quality and Climate Change Assessment Report* (Appendix E) indicate that activities related to construction of energy distribution infrastructure, roadway infrastructure, and the TPSS would result in 1,440 tons of CO_2 being emitted during construction of the build alternatives. Assuming that the fuel source for construction vehicles and equipment would be primarily diesel, infrastructure and TPSS construction activities would consume, on average, approximately 48 million BTUs per day and nearly 240 million BTUs over a 5-day workweek.

Maintenance and Storage Facility

Construction activities associated with the MSF would result in the emission of just under 100 tons of CO_2 over the 12-month MSF construction period. Assuming that the fuel source for construction vehicles and equipment would be primarily diesel, MSF construction activities would consume, on average, approximately 5 million BTUs per day and nearly 25 million BTUs over a 5-day workweek.

Total Energy Consumption

Together, construction of the MSF, TPSS, and energy distribution infrastructure would require the consumption of approximately 265 million BTUs per 5-day workweek. However, energy use during construction would be temporary and would be controlled and managed so as to not be wasteful, inefficient, or unnecessary. Construction contractors would comply with Section 11000, Part 1, of the Bureau of Engineering Master Specifications, which requires all equipment and products to be operated in accordance with manufacturer's published recommendations as well as commercial standards established by professional organizations including, but not limited to, the American Society for Testing and Materials, the American National Standards Institute, and the American Society of Mechanical Engineers. No applicable energy standards would be violated. Additionally, construction debris and waste would be recycled, resulting in life-cycle energy savings. Although no additional energy conservation measures have been identified to further reduce energy consumption during construction, impacts related to construction-period energy consumption, conservation, and standards would be less than significant.

Demand for New Energy Supplies and Infrastructure

Less-than-significant impact. Diesel fuel would be the source of the vast majority of energy that would be consumed during the construction period. Given the extensive network of fueling stations and the fact that, on average, less than 400 gallons of diesel fuel would be required per day, construction of the build alternatives would result in a negligible reduction in regional diesel fuel supplies and no new or expanded sources of energy or infrastructure would be required to meet construction energy demands. Therefore, impacts related to regional energy supplies and demand would be less than significant.

Operational Impacts

The following discussion identifies energy impacts related to operation of Alternative 2.

Energy Consumption and Conservation Standards

Direct

Less-than-significant impact. Under Alternative 2, there would be several streetcar vehicles in service concurrently at any given time during operating hours. Six streetcar vehicles would be in service only during commuting periods on weekdays (6 a.m.–9 a.m. and 3 p.m.–6 p.m.), with headways of approximately 7 minutes. Three or four vehicles would be in service during all other operating hours, with headways of 15 minutes and 10 minutes, respectively. Weekday operation would result in the consumption of nearly 31 million BTUs, and weekend operation would consume in excess of 25 million BTUs. Overall weekly energy consumption would be 205 million BTUs.

Energy consumption associated with operation of the MSF would involve the use of electricity as well as fuel used by employee vehicles when traveling to and from the site. As specified in the *Air Quality and Climate Change Assessment Report*, electricity consumption would result in approximately 110 pounds of CO_2, the equivalent of 2.15 million BTUs, being emitted over the course of a 7-day week (see Appendix E).

Total direct energy associated with operation of the build alternatives would be just over 207 million BTUs per week. Although energy would be consumed during operation of the build alternatives, energy use would not be wasteful, inefficient, or unnecessary because facility operations would be conducted in adherence to applicable regulations (e.g., *Los Angeles Green Building Code*). It would be consumed to provide a new transportation service and meet the project objectives identified in Chapter 2, *Project Description*. Furthermore, it is anticipated that the MSF sites would be illuminated with low-level lighting used for 24-hour operations, and transportation fuel use associated with the employees would result in a negligible difference in energy consumption.

Aside from complying with the general policies identified in Section 3.4.1, *Regulatory Setting*, above, such as the *Los Angeles Green Building Code* and Title 24, *California Code of Regulations*, there are no applicable quantitative operations-related energy conservation measures with which the Project would be required to comply. Moreover, as noted in the discussion of indirect impacts below, the VMT reduction due to the Project would result in energy savings, which would partially offset the increase in energy use associated with operation of the streetcar vehicles and the MSF. Therefore, impacts related to direct operational energy consumption would be less than significant.

Indirect

No impact. In addition to direct energy consumption associated with streetcar vehicle and MSF operation, Alternative 2 is anticipated to displace trips that otherwise would have occurred with different modes of transportation. Although changes in energy consumption as a result of pedestrians, cyclists, and transit users taking the streetcar would be negligible, the alternative is projected to reduce the number of miles traveled by automobiles within and outside of the study area. Table 3.4-2 shows the reduction in daily VMT related to the streetcar operation, which is anticipated to be 6,807 vehicle-miles per day in the Opening Year (2020) and 8,597 in the Horizon Year (2040) (Metro 2016).

Table 3.4-2. Reduction in Daily Vehicle Miles Traveled by Speed under the Build Alternatives

Speed Bin (mph)[a]	Alternative 2		Alternative 3		Alternative 4		Alternative 5	
	Opening Year (2020)	Horizon Year (2040)	Opening Year (2020)	Horizon Year (2040)	Opening Year (2020)	Horizon Year (2040)	Opening Year (2020)	Horizon Year (2040)
0–5	1,410	1,782	1,131	1,401	1,386	1,759	1,009	1,267
5–10	695	878	557	690	683	867	497	625
10–15	736	929	590	731	723	918	526	661
15–20	1,206	1,523	967	1,198	1,185	1,504	862	1,084
20–25	988	1,248	792	981	971	1,232	707	888
25–30	477	602	382	474	469	595	341	429
30–35	313	396	251	311	308	391	224	282
35–40	218	275	175	217	214	272	156	196
40–45	259	327	208	257	254	323	185	233
45–50	225	284	180	223	221	280	161	202
50–55	143	181	115	142	141	178	102	129
55–60	89	112	71	88	87	110	63	80
60–65	34	43	27	34	33	42	24	31
65–70	14	17	11	14	13	17	10	12
TOTAL	**6,807**	**8,597**	**5,457**	**6,761**	**6,688**	**8,488**	**4,867**	**6,119**

[a] *Speed Bin* is a travel speed interval. For example, VMT occurring at 6 mph would fall within the 5–10 Speed Bin; VMT occurring at 50 mph would fall within the 50–55 Speed Bin.
Source: Metro 2016.

The VMT reduction represents an energy savings from the build alternatives, which would partially offset the increase in energy use associated with operation of the streetcar vehicles and the MSF. The streetcar is a non-polluting, electric-powered vehicle that lessens reliance on fossil fuels. If the proposed Project were in operation, an additional amount of annual energy usage would be required. However, this is not considered a substantial increase in energy consumption and represents a very small percentage of generated electric power. In addition, trips made on buses and cars in downtown Los Angeles that may be diverted to the streetcar would balance the additional electrical power required for streetcar operation. Therefore, the reduction in indirect operational energy consumption would be a benefit of the build alternatives.

Table 3.4-3 summarizes the operational energy usage under each Alternative.

Table 3.4-3. Operational Energy Usage under each Alternative

Component	Fuel Quantity Used	Energy Usage (MMBtu/yr)	
Maintenance and Storage Facility			
Electricity	LADWP generation mix	740	
Natural Gas	342,220 scf/yr natural gas	339	
Worker Commuting	19,737 gal/yr gasoline	2,379	
Subtotal		3,458	
Streetcar Operation			
Electricity	LADWP generation mix	10,666[a]	
Subtotal MSF +Streetcar Operations		14,124	
Energy Savings from VMT Reduction (MMBtu/yr)[b]			
	2015	**2020**	**2040**
Alternative 2	-14,101	-12,961	-10,634
Alternative 3	-11,309	-10,344	-8,362
Alternative 4	-13,855	-12,749	-10,502
Alternative 5	-10,086	-9,258	-7,566
Net Energy Usage During Operation (sum of all components) MMBtu/yr			
	2015	**2020**	**2040**
Alternative 2	23	1,163	3,490
Alternative 3	2,207	3,172	5,154
Alternative 4	269	1,375	3,622
Alternative 5	3,430	4,258	5,950

[a] Streetcar energy consumption estimate under Build Alternatives 2 and 4. Estimate is 5.7% lower (10,058) under Build Alternatives 3 and 5 due to shorter facility length.

[b] Negative number indicates energy use reduction due to VMT reduction.

gal/yr = gallons per year

MMBtu = million British thermal units

scf/yr = standard cubic feet per year

Source: Calculations by ICF International 2016 (Appendix M)

Energy Distribution and Roadway Infrastructure and Traction Power Substations

Roadway infrastructure and the TPSS support streetcar operation and would use negligible energy themselves. Their energy usage is included in the estimates above for streetcar operation.

Maintenance and Storage Facility

Energy usage associated with operation of the MSF was estimated using CalEEMod as described in Section 3.4.3.1. The energy usage of the MSF is included in Table 3.4-3 above.

Demand for New Energy Supplies and Infrastructure

Less-than-significant impact. Operation of the build alternatives would result in a new user (i.e., the streetcar system) drawing energy from the power grid and a net increase in electricity consumption within the study area. The LADWP 2015 *Power Integrated Resource Plan* projected future demand increases for electricity in its service area of less than 1 percent per year from 2015 until 2032 (after energy efficiency and distributed generation efforts are accounted for, the load growth is expected to amount to 0.8 percent per year) (LADWP 2015:15). The *Power Integrated Resource Plan*, which accounts for future development in its forecasts, would not require new or expanded sources of energy or infrastructure to meet the energy demands of operation of the build alternatives. Furthermore, LADWP has confirmed that the "project is part of the total load growth forecast for the City of Los Angeles and has been taken into account in the planned growth of the City's power system" (Garrity pers. comm.). Operation would result in a negligible increase in overall demand for electricity within the LADWP service area.

Energy distribution infrastructure (e.g., TPSS, poles, overhead wires) would be required to operate the streetcars, but would be constructed as a part of the Project and would be located along the project alignment. No new offsite energy supply facilities or infrastructure would be required and project operation would not affect the reliability of the existing electrical grid. Impacts related to demand for new regional energy supplies and infrastructure would be less than significant.

3.4.3.5 Alternative 3: 7th Street Without Grand Avenue Extension

Construction Impacts

Less-than-significant impact. There would be a negligible difference in construction techniques, duration, and intensity under the 7th Street Alternative without Grand Avenue Extension when compared to the 7th Street Alternative with Grand Avenue Extension. Because Alternative 3 does not include construction of the Grand Avenue Extension, the construction energy impacts of Alternative 3 would be slightly less than under Alternative 2, by approximately 5.7 percent.

Operational Impacts

Less-than-significant impact. There would be a negligible difference in operations under the 7th Street Alternative without Grand Avenue Extension when compared to the 7th Street Alternative with Grand Avenue Extension. Based on the information provided in Table 3.4-2, there would be less of a reduction in VMT resulting from operation of Alternative 3, as compared to Alternative 2 and Alternative 4. While lower ridership projections would result in a reduced VMT reduction benefit, because Alternative 3 does not include the Grand Avenue Extension, which would occur over a two-block area, the operational energy impacts of Alternative 3 could be slightly less (approximately 5.7 percent) than under Alternative 2 or 4, thus resulting in some offsetting reduction in energy consumption. In general, operational energy impacts of Alternative 3 would be similar to those of Alternative 2.

3.4.3.6 Alternative 4: 9th Street With Grand Avenue Extension

Construction Impacts

Less-than-significant impact. There would be no material difference in construction techniques, duration, or intensity under the 9th Street Alternative with Grand Avenue Extension when compared to the 7th Street Alternative with Grand Avenue Extension. As such, construction energy impacts of Alternative 4 would be similar to those of Alternative 2.

Operational Impacts

Less-than-significant impact. There would be a negligible difference in operations under the 9th Street Alternative with Grand Avenue Extension when compared to the 7th Street Alternative with Grand Avenue Extension. Based on the information provided in Table 3.4-2, there would be less of a reduction in VMT resulting from operation of Alternative 4, as compared to Alternative 2. However, operational energy impacts of Alternative 4 would be similar to those of Alternative 2 because the Grand Avenue extension is included as part of this Alternative, thus providing increased ridership and indirect VMT reductions when compared to either Alternative 3 or Alternative 5.

3.4.3.7 Alternative 5: 9th Street Without Grand Avenue Extension

Construction Impacts

Less-than-significant impact. There would be no material difference in construction techniques, duration, or intensity under the 9th Street Alternative without Grand Avenue Extension when compared to the 7th Street Alternative without Grand Avenue Extension, which would occur over a two-block area. As such, construction energy impacts of Alternative 5 would be similar to those of Alternative 3.

Operational Impacts

Less-than-significant impact. There would be a negligible difference in operations under the 9th Street Alternative without Grand Avenue Extension when compared to the 7th Street Alternative without Grand Avenue Extension. Based on the information provided in Table 3.4-2, there would be less of a reduction in VMT resulting from operation of Alternative 5, as compared to Alternative 2 and Alternative 4. While lower ridership projections would result in a reduced VMT reduction benefit, because Alternative 5 does not include the Grand Avenue Extension, the operational energy impacts of Alternative 5 could be slightly less (approximately 5.7 percent) than under Alternative 2 or 4, thus resulting in some offsetting reduction in energy consumption. Accordingly, operational energy impacts of Alternative 5 would be similar to those of Alternative 3.

3.4.4 Mitigation Measures

No mitigation measures would be required.

There would be no significant unavoidable impacts related to energy consumption.

3.4.5 Cumulative Impacts

Section 15130 of the State CEQA Guidelines states that the requirements of a cumulative impact analysis may be adequately met by providing "a summary of projections contained in an adopted local, regional, or statewide plan, or related planning document, that describes or evaluates conditions contributing to the cumulative effect."

The LADWP 2015 *Power Integrated Resource Plan* was used for this cumulative impact analysis related to energy. The resource study area is the LADWP service area covered by the plan, which includes the City of Los Angeles and surrounding areas.[3] The LADWP 2015 *Power Integrated Resource Plan* projects future energy demand in the LADWP service area. LADWP sales, net energy for load forecasting, peak demand forecast, and hourly allocation are based on:

- An economic forecast of Los Angeles County from the Los Angeles Modeling Group of the University of California, Los Angeles (Anderson Forecast Project).
- Demographic information from the California Department of Finance, Demographic Research Unit.
- A construction forecast from McGraw-Hill construction services.

The proposed Project, in conjunction with other reasonably foreseeable new construction and transportation projects in the vicinity of the proposed Project, would comply with federal, state, and local regulations to conserve and reduce energy usage. This Project, and other potential projects in the area, would comply with applicable energy efficiency guidance set by LADWP. Potential cumulative impacts related to construction would be less than significant.

LADWP predicts increases in electricity demand over the next decade. LADWP has increased its ability to serve the area by adding new facilities and increasing and diversifying its energy supplies. LADWP is committed to increasing electricity generation from renewable energy sources and ensuring a reliable flow of electricity to users in its service area. LADWP has confirmed that the "project is part of the total load growth forecast for the City of Los Angeles and has been taken into account in the planned growth of the City's power system" (Garrity pers. comm.). Because the model considers new development and demographic changes in the service area, it is reasonable to assume that the related projects have been accounted for in the 2015 *Power Integrated Resource Plan*. Nonetheless, LADWP will be required to construct new electrical infrastructure to accommodate future cumulative growth and meet the state-mandated 33 percent Renewables Portfolio Standard by 2020 and the state's emissions reduction requirement by replacing coal power with sustainable energy resources. The construction of that infrastructure could result in impacts on the environment; however, it is speculative to assume the potential new future infrastructure changes to achieve the IRP's goals, as well as the impacts of future unknown infrastructure changes, would result in significant and unavoidable impacts. Assuming there were a future cumulative energy impact, the proposed Project would not have a cumulatively considerable effect on overall energy supplies, conservation, and the demand for new energy infrastructure because the Project would be within the total load forecast for the City. Potential cumulative impacts related to operation would be less than significant.

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[3] LADWP's overall service area includes parts of the Owens Valley, but because of the limited developable land and slow rates of growth, energy forecasts are not considered in the 2015 Power Integrated Resource Plan (LADWP 2015:A-3).

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3.5 Geology, Soils, and Seismicity

This section describes the regulatory setting and affected environment related to geologic, soil, and seismic conditions in the Project's study area. It also identifies the potential project impacts related to geology, soils, and seismicity pursuant to CEQA.

3.5.1 Regulatory Setting

3.5.1.1 Alquist-Priolo Earthquake Fault Zoning Act

The *Alquist-Priolo Earthquake Fault Zoning Act* (Alquist-Priolo) was passed into law in California to reduce hazards associated with surface faulting for structures meant for human occupancy. The law was a direct result of the 1971 San Fernando earthquake, which was caused by extensive surface fault ruptures. The earthquake damaged numerous homes, commercial buildings, and other structures. Surface rupture is the most easily avoided seismic hazard, and Alquist-Priolo provides a mechanism for reducing surface fault rupture losses statewide. The intent of the act is to ensure public safety by prohibiting the siting of most structures meant for human occupancy across traces of active faults that constitute a potential hazard to structures from surface faulting or fault creep (California Department of Conservation, California Geological Survey 2007).

3.5.1.2 Seismic Hazards Mapping Act

The *Seismic Hazards Mapping Act* (1990), addresses issues related to earthquake hazards from nonsurface fault rupture, including hazards related to liquefaction and seismically induced landslides. The purpose of the *Seismic Hazards Mapping Act*, which went into effect in 1991, is to identify and map seismic hazard zones. Such information can be used by cities and counties when preparing the safety elements of their general plans and encourages land use management policies and regulations that reduce seismic hazards. The act has resulted in the preparation of maps that delineate Liquefaction Zones and Earthquake-Induced Landslide Zones of Required Investigation (California Department of Conservation, California Geological Survey 2007).

3.5.1.3 California Building Standards Code

The California Building Standards Commission (Commission) is responsible for coordinating, managing, adopting, and approving building codes in California. The 2013 version of the *California Building Standards Code* (CBSC), which was reviewed and approved by the Commission at meetings in December 2012 and January 2013, went into effect on January 1, 2014.

The State of California provides minimum standards for building design through the 2013 *California Building Code* (CBC), a component of the 2013 CBSC (codified under California Code of Regulations Title 24). Chapters 16 through 18 of the 2013 CBC regulate structural design, structural tests and inspections, and soils and foundations. The CBC applies to building design and construction in the state and is based on the federal *Uniform Building Code* (UBC), which is used widely throughout the country (generally adopted on a state-by-state or district-by-district basis). The CBC has been modified for California conditions and contains numerous provisions that are more stringent than those in the UBC because of California's seismic and environmental conditions. According to Section 1613 of the CBC, "[e]very structure, and portion thereof, including nonstructural components that are permanently attached to structures and their supports and attachments, shall be designed and constructed to resist the effects of earthquake motions in accordance with ASCE 7."[1]

A jurisdiction may establish more restrictive building standards because of local climatic, geological, or topographical conditions. The City of Los Angeles has chosen to adopt the CBC by reference, with minor amendments to address local characteristics.

3.5.2 Environmental Setting/Affected Environment

3.5.2.1 Regional Geology

The study area for geology is the region south of the Santa Monica Mountains and west of the Los Angeles River in the northeastern portion of the Los Angeles Basin. The Los Angeles Basin is a roughly north/south-trending depositional trough located in the northwestern portion of the Peninsular Ranges geomorphic province. Geologic structures in this region reflect the resolution of tectonic forces as the northwest/southeast-trending structures of the northern Peninsular Range Province, exemplified by the Whittier-Elsinore fault, meeting the Santa Monica-Hollywood-Raymond fault of the Transverse Range Province. A segment of the boundary between the Peninsular Range and the Transverse Range provinces is characterized by the Elysian Park anticline—a large fold associated with the uplift of the Elysian and Repetto Hills, which are located north and east of downtown Los Angeles. The Elysian and Repetto Hills are underlain by sedimentary bedrock of both marine and nonmarine origin, which has become folded into a series of low-relief, east/west-trending hills (City of Los Angeles, Department of Public Works, Bureau of Engineering 2004). Figure 3.5-1 shows the locations of known faults and Alquist-Priolo zones in the region.

3.5.2.2 Local Topography

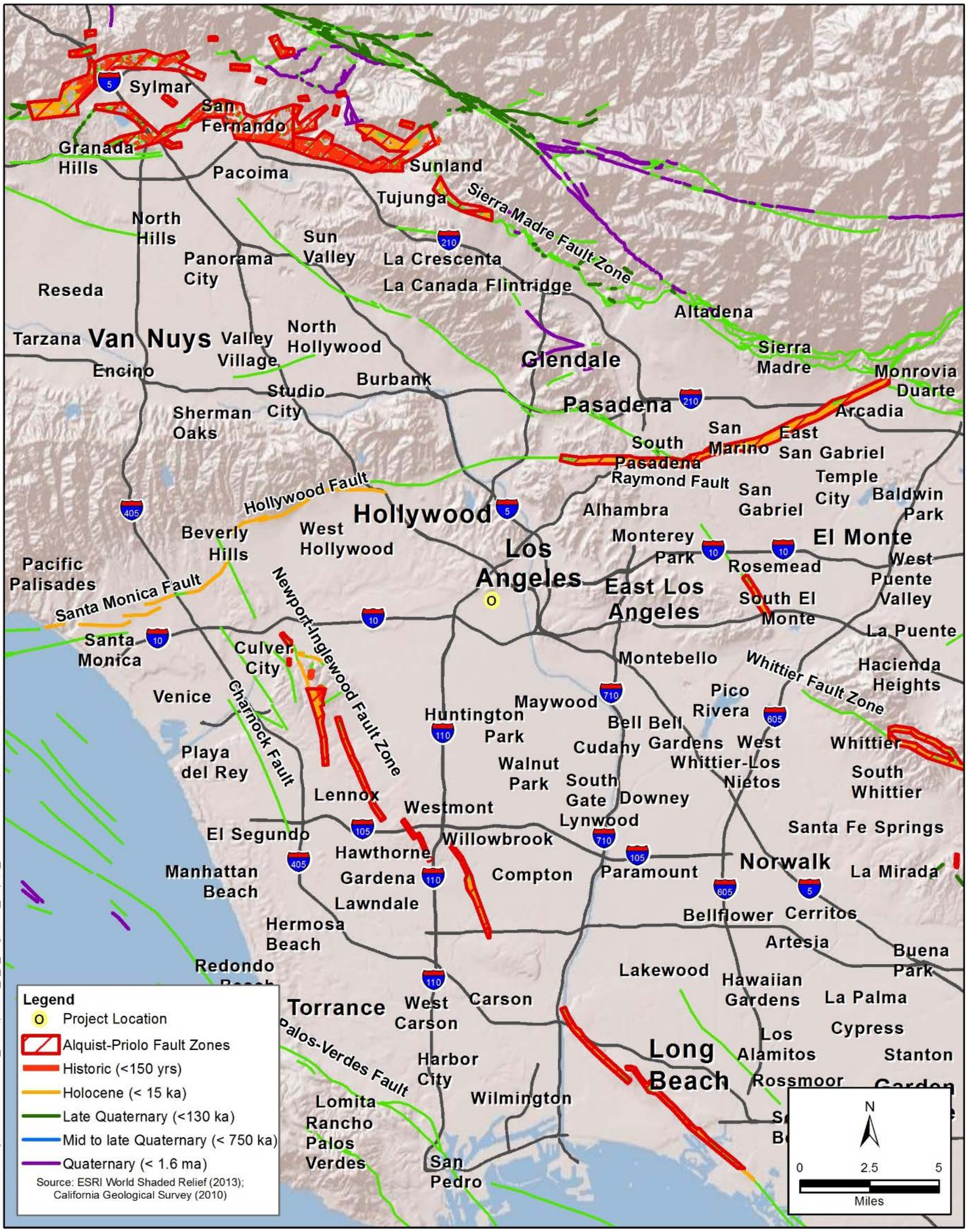
Ground surface elevations generally vary from approximately 243 feet along the southern portion of the project alignments to 387 feet along the northwestern portion. Slopes along the project alignments are generally gradual, with the exception of the 9 percent grade along 1st Street between Grand Avenue and Broadway (Los Angeles Streetcar, Inc. 2013).

3.5.2.3 Stratigraphy and Subsurface Materials

The downtown Los Angeles area has diverse stratigraphy, which includes many informal geologic units and geologic formations. According to maps prepared by the U.S. Geological Survey, the northern portion of the project alignment between 1st and 4th Streets is underlain by Quaternary alluvium and marine deposits, which are composed primarily of sedimentary rock types but may also include terrace rock types and lake or marine deposits. The southern portion of the project alignment is underlain by Holocene and late Pleistocene-era unconsolidated gravel, sand, and silt. Although these geologic deposit types are present beneath the project alignments, the downtown Los Angeles area has undergone extensive development and urbanization. As a result, engineered aggregate base materials and fill have been added to the area's subsurface, especially beneath those areas that serve as roadways (Metro 2010a).

[1] ASCE 7 is a document published by the American Society of Civil Engineers (ASCE) that specifies minimum design loads for buildings and other structures.

Figure 3.5-1. Regional Faults and Alquist-Priolo Fault Zones



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3.5.2.4 Faulting and Seismicity

No portion of the project alignments lie within an area identified as an Alquist-Priolo Special Study Zone Area or Fault Rupture Study Area (City of Los Angeles, Department of City Planning 1996), but the Project would be located in a seismically active area, as discussed below.

Potentially Active Faults

The California Department of Conservation's Division of Mines and Geology delineates earthquake fault zones for the purposes of Alquist-Priolo. An active fault (or fault zone) is defined as a fault that has moved within Holocene time (about the last 11,000 years). Faults with no known displacement within Holocene time that show evidence of movement during Quaternary time (the last 1.6 million years) have been defined as potentially active. The project alignments are not within an Alquist-Priolo Special Study Zone, nor are they located within a Fault Rupture Study Area (City of Los Angeles, Department of City Planning 1996). Thus, the potential for ground surface rupture at the site is considered to be low.

Known regional faults that could produce ground shaking in the project study area include the Hollywood, Raymond, Newport-Inglewood, Verdugo, Santa Monica, Sierra Madre, and East Montebello faults (see Table 3.5-1).

Table 3.5-1. Proximity of the Alignments to Potentially Active Faults

Fault	Fault Type	Distance from Alignments (miles)	Direction from Alignments	Probable Maximum Magnitude
Elysian Park Thrust	Blind Thrust	2.5	North	Not provided
Elysian Park Fault	Blind Thrust	2.5	North	Not provided
Hollywood Fault	Left-Reverse	4.2	Northwest	5.8–6.5
Raymond Fault	Left-Lateral	4.4	North	6.0–7.0
Newport-Inglewood-Rose Canyon Fault Zone, north Los Angeles Basin section	Right-Lateral	5.3	Southwest	6.0–7.4
Verdugo Fault	Reverse	6.6	North	6.0–6.8
Eagle Rock Fault	Thrust	7.0	Northeast	Not provided
Overland Avenue Fault	Right-Lateral/ Strike-Slip	8.5	West	Not provided
Santa Monica Fault	Left-Reverse	9.0	West	6.0–7.0
Charnock Fault	Right-Lateral/ Strike-Slip	9.2	Southwest	Not provided
East Montebello Fault	Right-Lateral	9.6	East	Not provided
Whittier-Elsinore Fault	Right-Lateral/ Strike-Slip	11.7	East	6.5-7.5
Sierra Madre Fault	Reverse	12.0	Northeast	6.0–7.0
Palos Verdes Hills Fault	Right-Reverse	17.9	South	6.0–7.0
Cabrillo Fault	Right-Normal	20.2	South	6.0–6.8
Sources: Southern California Earthquake Data Center 2013; Metro 2010a.				

Elysian Park Thrust and Fault

In addition to known potentially active surficial (surface) faults in the region, there are several buried thrust faults, commonly referred to as blind thrusts. These underlie the Los Angeles Basin at depths of 3 kilometers (1.9 miles) or more. Thrust faults do not present a potential surface fault rupture hazard; however, they are considered to be active and potential sources of future earthquakes. The nearest thrust is the Elysian Park thrust. Previously defined as the Elysian Park Fold and Thrust Belt, the Elysian Park thrust was thought to extend northwesterly from the Santa Ana Mountains to the Santa Monica Mountains and westerly to parallel the Santa Monica-Hollywood and Malibu Coast faults. The Elysian Park thrust is now believed to be smaller, only underlying the central Los Angeles Basin (Metro 2010a).

The Elysian Park thrust, located approximately 2.5 miles north of the project alignments, is 6 to 9 miles below the ground surface. Like other blind thrust faults in the Los Angeles area, the Elysian Park thrust is not exposed at the surface and does not present a potential surface rupture hazard. However, the Elysian Park thrust should be considered an active feature and capable of generating future earthquakes, with associated significant ground shaking and possible deformation of near-surface materials (Metro 2010a).

In addition to the Elysian Park thrust, the Elysian Park fault, a blind thrust fault, is located northeast of the Elysian Park thrust at a shallower depth. The up-dip edge of the blind thrust fault tip is about 0.6 mile north of downtown Los Angeles. The estimated average recurrence interval for events on the Elysian Park fault ranges from 500 to 1,300 years, with an estimated moment magnitude of up to 6.7. There is little historical evidence of activity associated with the Elysian Park fault; however, given the history of seismic events on blind thrust faults in the greater Los Angeles area (i.e., the Whittier Narrows and Northridge earthquakes) and its proximity to the project area, the Elysian Park fault is considered to be active for the purpose of planning and designing the Project (Metro 2010a).

Coyote Pass Escarpment

The Coyote Pass escarpment is a gentle south-facing, east/west-trending topographic lineament that forms the southern flank of the Repetto Hills, from the Los Angeles River channel eastward to the Monterey Park area. The escarpment is an area of young, near-surface monoclinal folding,[2] which is believed to be a result of fault rupture on the Elysian Park thrust and/or the shallower Elysian Park fault. Although the trend of the escarpment beneath the floodplain west of the Los Angeles River has not been well defined, it has been inferred that the escarpment may align in the subsurface with the MacArthur Park escarpment, located west of Interstate 110. Recent investigations of the Coyote Pass escarpment indicate that the Elysian Park fault is active. Future fault rupture at depth along the Elysian Park fault and/or the Elysian Park thrust could result in near-surface folding of the alluvial sediments and underlying bedrock in the area of the escarpment. Thus, no ground rupture is anticipated along the Coyote Pass escarpment; however, the potential exists for ground deformation (active folding) of the bedrock and the overlying alluvial sediments along the mapped location of the escarpment (Metro 2010a).

[2] Monoclinal folding refers to an S-shaped bending of multiple strata of rock.

3.5.2.5 Liquefaction

The northern portion of the project alignments is in an area identified by the California Department of Conservation's Division of Mines and Geology (1999) as being susceptible to liquefaction. The liquefaction area overlaps the project limits from north of 4th Street to north of 1st Street between Hill Street and Broadway. With this exception, no other areas along the project alignment have been identified as being susceptible to seismic hazards related to liquefaction.

3.5.2.6 Other Seismic Hazards

Landslides

Los Angeles was one of the first municipalities in the nation to adopt hillside grading ordinances—largely because of landslides and slope failures. The rapid uplift of Los Angeles' mountainous areas from past and ongoing tectonic movements has created a geologic setting that is conducive to mass wasting. Also, the variable nature of steep slopes, exposed sediments and loose rocks, combined with poor slope conditions resulting from uncontrolled grading, have led to frequent landslides. The hillside areas of Los Angeles, especially in the central and eastern Santa Monica Mountains, have geologic and topographic conditions that are conducive to surficial and gross landslides.

Although parcels adjacent to the project alignments on the west side of Hill Street, north of 5th Street, are located in areas designated as Hillside Area per the City's Zone Information and Map Access System (ZIMAS), the Project would not be subject to the *Baseline Hillside Ordinance* because the Project would have no residential component. In addition, an area north and south of the 3rd Street tunnel, between Olive and Hill streets, has been identified as an area "where previous occurrences of landslide movement, or local topographic, geological, geotechnical, and subsurface water conditions, indicate a potential for permanent ground displacements" by the Division of Mines and Geology (1999). Previous occurrences of landslide movements have not been specified, and the identified area has been developed with a high-rise senior housing complex (Angelus Plaza) since the late 1970s without any landslide events.

The southern portion of the project alignments would be located on gradual grades within an existing transportation right-of-way. In the absence of substantial ground slopes, the potential for seismically induced landslides to affect the southern portion of the project area would be negligible.

Lateral Spreading

Lateral spreading occurs in conjunction with liquefaction and loss of soil strength in near-level topography. It differs from slope failure because complete ground failure involving large movement does not occur given the relatively smaller gradient of the initial ground surface. Lateral spreading is demonstrated by near-vertical cracks, with predominantly horizontal movement of the soil mass involved. Lateral spreading in conjunction with liquefaction was observed in the Northridge area during the Northridge earthquake and in the Sylmar area during the San Fernando earthquake. Such phenomena can occur throughout the Los Angeles area.

Earthquake-Induced Flooding

Earthquake-induced flooding is caused by the failure of dams or other water-retaining structures as a result of earthquakes. The potential for earthquake-induced flooding along the project alignments is low because the project area is not identified as an inundation area in Exhibit G of the *Safety*

Element of the *City of Los Angeles General Plan* (City of Los Angeles, Department of City Planning 1996). Although the southern portion of the project alignments is adjacent to an inundation area, the chances of inundation are remote given that no area within downtown Los Angeles is within a 100- or 500-year floodplain, as shown in Exhibit F of the General Plan's *Safety Element* (City of Los Angeles, Department of City Planning 1996). Echo Park Lake and the Elysian Park Reservoir are located 1.2 miles northwest and 1.9 miles north of the project alignments, respectively. However, both of these bodies of water pose minimal risk of inundating the project area because their flood courses would proceed in a southwesterly direction and away from the project area.

Seiches/Tsunamis

Seiches are standing waves that occur in enclosed bodies of water as a result of seismic activities, sometimes resulting in large quantities of water spilling out of the water's enclosure. As noted above, Echo Park Lake and the Elysian Park Reservoir are both located within 2 miles of the Project; however, the risk of seiches in the project area is minimal because the basins' flood courses would proceed in a southwesterly direction and away from the project area.

The project alignments are located in downtown Los Angeles, approximately 16 miles from the Pacific Ocean and at an elevation of about 285 feet above Mean Sea Level. The area has not been identified as a tsunami inundation area (California Geological Survey 2007). Tsunami inundation risks would be negligible.

3.5.3 Environmental Impact Analysis

3.5.3.1 Methodology

Potential significant impacts were identified from a review of project plans and geotechnical data from the *Safety Element* of the *City of Los Angeles General Plan* and other sources. The following discussion identifies impacts and the measures required to mitigate impacts found to be significant.

3.5.3.2 Thresholds of Significance

California Environmental Quality Act

For the purposes of the analysis in this EIR, the *L.A. CEQA Thresholds Guide* (2006) established the criteria for impact significance as follows.

- A project would normally have a significant geologic hazard impact if it would cause or accelerate geologic hazards that would result in substantial damage to structures or infrastructure or expose people to substantial risk of injury;
- A project would normally have significant sedimentation or erosion impacts if it would:
  - Constitute a geologic hazard to other properties by causing or accelerating instability from erosion; or
  - Accelerate natural processes of wind and water erosion and sedimentation, resulting in sediment runoff or deposition that would not be contained or controlled on-site; or
- A project would normally have a significant impact on landform alteration if one or more distinct and prominent geologic or topographic features would be destroyed, permanently covered, or materially and adversely modified. Such features may include, but are not

limited to, hilltops, ridges, hillslopes, canyons, ravines, rock outcrops, water bodies, streambeds, and wetlands.

3.5.3.3 Impacts

Alternative 1: No Project Alternative

Construction Impacts

No impact. No construction activities would occur under Alternative 1. Therefore, no construction impacts on geology, soils, and seismicity would occur.

Operational Impacts

No impact. The proposed Project would not be implemented under Alternative 1. Therefore, no operational impacts on geology, soils, and seismicity would occur.

Alternative 2: 7th Street Alternative with Grand Avenue Extension

Construction Impacts

Geologic Hazards

As discussed in the *Construction Methods Technical Memorandum* (see Appendix C), the estimated 24-month construction period would include, but not be limited to, the following activities that would temporarily affect subsurface conditions:

- Relocation, modification, or protection-in-place of utilities in conflict with streetcar facilities;
- Construction of the vehicle MSF;
- Construction of surface and subsurface drainage systems, including track drains, and the modifications to existing systems;
- Excavation of the roadway along the alignment to prepare it for track work installation;
- Installation of track work, complete with preparation of the track bed, track slab, rails, fasteners, and concrete; and
- Installation of TPSS units.

Seismicity

Less-than-significant impact. Construction activities associated with Alternative 2 would not occur within or adjacent to an Alquist-Priolo Special Study Zone Area or Fault Rupture Study Area. Although its precise location is unknown because of its position deep below the surface, the closest fault to the Alternative 2 alignment is the Elysian Park thrust, which is approximately 2.5 miles to the north. Numerous additional faults are located within 10 miles and in the region at large (see Table 3.5-1). All modifications of roadways would be consistent with the *Bureau of Engineering Street Design Manual*. Compliance with building seismic codes and occupational safety and health laws and regulations would also reduce risks to project structures, workers, and the public. Removing all risk associated with building in an earthquake-prone region is not possible, but with adherence to applicable codes and standards, risks would be substantially reduced. Impacts would be less than significant.

Given the distance of Alternative 2 from identified faults, there is a negligible risk of disturbing faults or changing regional or local seismic and geologic conditions in a way that would result in property damage or risk of injury or death. Construction of Alternative 2 would not exacerbate existing seismic hazards or create new hazards.

Liquefaction and Lateral Spreading

Less-than-significant impact. As discussed in Section 3.5.2, *Environmental Setting/Affected Environment*, the northern portion of the Alternative 2 alignment would be susceptible to liquefaction and lateral spreading, a potentially significant hazard. However, the risks to the Project that could be posed by these hazards would be mitigated with the implementation of regulatory compliance measure **RCM-GEO-C1**. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Although portions of the Alternative 2 alignment would be constructed in potential liquefaction zones, construction activities would not substantially increase the amount of water runoff into subsurface liquefiable soils or introduce new liquefiable soils. Therefore, it is not expected that construction activities would result in new significant liquefaction/lateral spreading hazards or substantially exacerbate existing hazards in the project area.

Landslides

Less-than-significant impact. Although the area adjacent to the 3rd Street tunnel between Olive and Hill Streets is identified as an earthquake-induced landslide zone by the Division of Mines and Geology, soil stabilization incorporated as part of hillside development on the adjacent slopes has reduced the risk of landslides in the area. Therefore, the impacts of landslide hazards on project construction activities would be less than significant.

Although components of Alternative 2 may involve construction activities on or adjacent to hillside areas, construction is not anticipated to increase the risk of landslides, as these areas are currently developed and have been stabilized with structures or plantings such that the risk of landslides is remote. Furthermore, construction activities would occur primarily within existing roadway rights-of-way, which have been previously graded and are underlain by engineered fill. Additionally, construction activities would generally occur close to the surface (a depth of up to approximately 10 feet below the ground surface is expected) and, therefore, would not substantially change the geological conditions in the area. Where depths of excavation would exceed 5 feet, pursuant to Section 306 of the City of Los Angeles Department of Public Works *Brown Book*, shoring and bracing would be required. As a consequence, construction activities would not substantially exacerbate existing hazards and impacts would be less than significant.

Expansive Soils

Less-than-significant impact. The project area is underlain by soil types that are not known to have expansive properties, and, therefore, the construction of Alternative 2 is not anticipated to result in significant impacts.

Construction activities would not introduce new expansive soils or otherwise adversely modify soil types underlying the project footprint that could increase the expansive soil impacts in the project area. Therefore, construction activities would not exacerbate this potential hazard.

Erosion

Less-than-significant impact. During the construction period, utility relocation activities and roadway modifications to allow for the installation of tracks would temporarily denude areas that are currently paved. Workers would remove the roadway surface and underlying soil (to a depth of approximately 10 feet for utility relocation). As a result, some erosion and a temporary reduction in soil stability may occur, particularly on the steeper grades along 1st Street; a potentially significant impact could result. However, any project involving grading of an area greater than one acre is required to apply for a National Pollutant Discharge Elimination System (NPDES) permit from the Los Angeles Regional Water Quality Control Board. This permit requires preparation and implementation of a *Stormwater Pollution Prevention Plan* (SWPPP) that incorporates best management practices (BMPs) for erosion control. Specifically, construction activity resulting in a land disturbance of one acre or more, or less than one acre but part of a larger common plan of development or sale must obtain the Construction Activities Stormwater General Permit. Construction activity includes clearing, grading, excavation, stockpiling, and reconstruction of existing facilities involving removal and replacement. Implementation of BMPs would ensure that sediment would be confined to the construction area and not transported off site. Additionally, per Section 306 of the City of Los Angeles Department of Public Works *Brown Book*, shoring and bracing would be required, as the depth of open trenches would be greater than 5 feet (2011). As a result, soil erosion impacts during construction would be less than significant.

Landform Alteration

No impact. Alternative 2 would be constructed within street rights-of-way or on graded off-street land parcels, and would not alter a distinct or prominent geologic or topographic feature and would therefore have no impact.

Operational Impacts

Geologic Hazards

Seismicity

Less-than-significant impact. Because the Alternative 2 alignment would be within a seismically active region, there is the potential for both seismic ground shaking and seismically related ground failure to occur within the project area. Removing all risk associated with operating in an earthquake-prone region is not possible, but with adherence to applicable building seismic codes and standards, risks can be reduced.

Because the Project would operate at-grade within the transportation right-of-way or on adjacent parcels in a developed urban area and would not involve any modifications to geologic/seismic features or landforms, operation of Alternative 2 would not exacerbate seismic hazards.

Liquefaction and Lateral Spreading

Less-than-significant impact. The northeastern portion of the Alternative 2 alignment is in an area that is susceptible to liquefaction and lateral spreading. These potentially significant hazards on project facilities, however, would be mitigated to a less-than-significant level with implementation of the regulatory compliance measure (see **RCM-GEO-C1**). As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Operation of the Project would involve streetcars operating within existing street rights-of-way. For that reason and because operation of the Project would not generate additional water runoff that could percolate into subsurface soils, the proposed Project would not exacerbate liquefaction and lateral spreading hazards in the project area.

Landslides

Less-than-significant impact. Although the State Division of Mines and Geology identifies the area north and south of the 3rd Street tunnel as an area with previous landslide occurrences or the potential for future landslide movement, the area has been developed since the 1970s as a high-rise senior housing complex. There are no records of landslide occurrences since that time. Because the hillside was graded in compliance with local regulations during construction of Angelus Plaza, the risk of landslides resulting in loss, injury, or death would be minimal. In addition, the location of the slope setback from Hill Street would further reduce the risk to the Project. Based on the previous grading of hillside areas within the project vicinity, landslides would not pose a significant hazard on project facilities.

Operation of Alternative 2 would not result in additional excavation, increase surface runoff, or result in other activities that could destabilize existing hillsides. Therefore, operation of the Project would not create new, or exacerbate existing, landslide hazards.

Expansive Soils

Less-than-significant impact. The project area is underlain by soil types that are not known to have expansive properties. Therefore, operation of Alternative 2 would not increase hazards related to expansive soils. Drainage from the Project would be managed in existing and modified stormwater facilities so as not to increase the amount of water that could percolate into soils within the project area. Operational impacts related to expansive soils would be less than significant.

Erosion

No impact. Following the construction period, streetcar vehicles would operate on properly reconstructed street roadways. All areas that would be temporarily denuded during the construction period for track installation would be resurfaced or landscaped. Because existing paved areas would be repaved prior to operation, soil erosion would not occur, and no operational impacts related to soil loss would occur.

Landform Alteration

No impact. Operation of Alternative 2 would not involve any further construction or modifications that could have an effect on landforms. No impact would occur.

Alternative 3: 7th Street Alternative without Grand Avenue Extension

Construction Impacts

Geologic Hazards

Less-than-significant impact. Construction impacts associated with this alternative would be similar to those described for Alternative 2. Specifically, impacts related to liquefaction and lateral spreading would be considered less than significant before and after mitigation. Impacts related to expansive soils and landslides would be less than significant.

Erosion

Less-than-significant. Construction impacts associated with this alternative would be similar to those described for Alternative 2**.**

Landform Alteration

No impact. Alternative 3 would be constructed within street rights-of-way or on graded off-street land parcels, and would not alter a distinct or prominent geologic or topographic feature and would therefore have no impact.

Operational Impacts

Geologic Hazards

Less-than-significant impact. Operational impacts associated with this alternative would be similar to those described for Alternative 2. Specifically, impacts associated with liquefaction and lateral spreading would be less than significant before and after mitigation. Impacts related to landslides would be less than significant.

Erosion

No impact. Operational impacts associated with this alternative would be similar to those described for Alternative 2**.**

Landform Alteration

No impact. Operation of Alternative 3 would not involve any further construction or modifications that could have an effect on landforms. No impact would occur.

Alternative 4: 9th Street Alternative with Grand Avenue Extension

Construction Impacts

Geologic Hazards

Less-than-significant impact. Construction impacts associated with this alternative would be similar to those described for Alternative 2. Specifically, impacts related to liquefaction and lateral spreading would be considered less than significant before and after mitigation. Impacts related to landslides would be less than significant.

Erosion

Less-than-significant impact. Construction impacts associated with this alternative would be similar to those described for Alternative 2**.**

Landform Alteration

No impact. Alternative 4 would be constructed within street rights-of-way or on graded off-street land parcels, and would not alter a distinct or prominent geologic or topographic feature and would therefore have no impact.

Operational Impacts

Geologic Hazards

Less-than-significant impact. Operational impacts associated with this alternative would be similar to those described for Alternative 2. Specifically, impacts associated with liquefaction and lateral spreading would be less than significant before and after mitigation. Impacts related to expansive soils and landslides would be less than significant.

Erosion

No impact. Operational impacts associated with this alternative would be similar to those described for Alternative 2**.**

Landform Alteration

No impact. Operation of Alternative 4 would not involve any further construction or modifications that could have an effect on landforms. No impact would occur.

Alternative 5: 9th Street Alternative without Grand Avenue Extension

Construction Impacts

Geologic Hazards

Less-than-significant impact with mitigation. Construction impacts associated with this alternative would be similar to those described for Alternative 2. Specifically, impacts related to liquefaction and lateral spreading would be considered less than significant before and after mitigation. Impacts related to expansive soils and landslides would be less than significant.

Erosion

Less-than-significant impact. Construction impacts associated with this alternative would be similar to those described for Alternative 2**.**

Landform Alteration

No impact. Alternative 4 would be constructed within street rights-of-way or on graded off-street land parcels, and would not alter a distinct or prominent geologic or topographic feature and would therefore have no impact.

Operational Impacts

Geologic Hazards

Less-than-significant impact. Operational impacts associated with this alternative would be similar to those described for Alternative 2. Specifically, impacts associated with liquefaction and lateral spreading would be less than significant before and after mitigation. Impacts related to expansive soils and landslides would be less than significant.

Erosion

No impact. Operational impacts associated with this alternative would be similar to those described for Alternative 2**.**

Landform Alteration

No impact. Operation of Alternative 5 would not involve any further construction or modifications that could have an effect on landforms. No impact would occur.

Traction Power Substations and Laydown and Storage Areas

Construction Impacts

Less-than-significant impact. Laydown and storage areas would all be located at grade within existing roadways or on off-street parcels. The traction power substation (TPSS) units would be relatively small in size (approximately 17 feet long by 11 feet wide by 11 feet high) and minimal excavation would be required for the foundation of the TPSS structures. Construction of the TPSS units would follow all applicable City of Los Angeles regulations and guidelines pertaining to construction, which would minimize the potential for adverse impacts to occur as a result of construction activities. Therefore, the construction impacts associated with the laydown and storage areas and the TPSS units would be similar to or less than those described for Alternative 2. Specifically, impacts related to liquefaction and lateral spreading would be considered less than significant before and after mitigation. Impacts related to expansive soils and landslides would be less than significant.

Operational Impacts

Less-than-significant impact. The TPSS units would be designed and constructed in accordance with building seismic codes and would be capable of withstanding seismic events. Impacts would be similar or less than those described above for Alternative 2. Specifically, impacts associated with liquefaction and lateral spreading would be less than significant with mitigation. Impacts related to expansive soils and landslides would be less than significant. No operational erosion impacts would occur.

Maintenance and Storage Facility Sites

Construction Impacts

Broadway and 2nd Street

Less-than-significant impact. As discussed above, the northern portion of the project alignments would be susceptible to liquefaction and lateral spreading. The Broadway and 2nd Street maintenance and storage facility (MSF) site would comply with UBC Chapter 18, Division 1, Section 1804.5, Liquefaction Potential and Soil Strength Loss*,* which requires the preparation of a geotechnical report. The geotechnical report would assess the potential consequences of any liquefaction and soil strength loss and estimate the level of settlement, lateral movement, or reduction in soil-bearing capacity. It would also identify mitigation measures, which could include design requirements, including, but not limited to, requirements related to ground stabilization, the selection of appropriate foundation types and depths, the selection of appropriate structural systems to accommodate anticipated displacements, in situ ground modification, removal of liquefiable layers and replacement with compacted fill, or any combination of these measures. In addition, the MSF would be built in conformity with the seismic provisions and all applicable provisions of the CBSC. Therefore, impacts would be less than significant with the implementation of **RCM-GEO-C1**. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

The Broadway and 2nd Street MSF would comply with existing requirements and would not exacerbate risks related to seismic hazards and erosion, as it would be located on relatively flat site and would not involve excavation to a depth that would affect the underlying geology of the site. Any landscaping that would be installed would be small in size and is not expected to result in substantial impacts related to erosion or subsurface conditions. In addition, no alteration of landforms would occur.

Hill Street and 5th Street

Less-than-significant impact. Construction impacts would be similar to impacts described for the Broadway and 2nd Street MSF, with the exception that the Hill Street and 5th Street MSF site would not be located close to an area identified as being susceptible to liquefaction and lateral spreading. The Hill Street and 5th Street MSF would comply with existing requirements and would not exacerbate risks related to seismic hazards and erosion due to its location on relatively flat site and that it would not involve excavation to a depth that would affect the underlying geology of the site. In addition, no alteration of landforms would occur. With the preparation of a geotechnical report and the implementation of its recommendations for MSF construction, impacts would be less than significant with the implementation of **RCM-GEO-C1**. Recommendations would include considerations related to the proximity of this MSF site to the Title Guarantee Building and the Subway Terminal Building. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

The Hill Street and 5th Street MSF would comply with existing requirements and would not exacerbate risks related to seismic hazards and erosion, as it would be located on relatively flat site and would not involve excavation to a depth that would affect the underlying geology of the site. Any landscaping that would be installed would be small in size and is not expected to result in substantial impacts related to erosion or subsurface conditions. In addition, no alteration of landforms would occur.

11th Street and Olive Street (East)

Less-than-significant impact. With the exception that the 11th Street and Olive Street (East) MSF site would not be located close to an area identified as being susceptible to liquefaction and lateral spreading, construction impacts would be similar to impacts described for the Broadway and 2nd Street MSF site. With the preparation of a geotechnical report and the implementation of its recommendations for MSF construction, impacts would be less than significant with the implementation of **RCM-GEO-C1**. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

The 11th Street and Olive Street (East) MSF would comply with existing requirements and would not exacerbate risks related to seismic hazards and erosion, as it would be located on relatively flat site and would not involve excavation to a depth that would affect the underlying geology of the site. Any landscaping that would be installed would be small in size and is not expected to result in substantial impacts related to erosion or subsurface conditions. In addition, no alteration of landforms would occur.

11th Street and Olive Street (West)

Less-than-significant impact. With the exception that the 11th Street and Olive Street (West) MSF site would not be located close to an area identified as being susceptible to liquefaction and lateral spreading, construction impacts would be similar to impacts described for the Broadway and 2nd Street MSF site. With the preparation of a geotechnical report and the implementation of its recommendations for MSF construction, impacts would be less than significant with the implementation of **RCM-GEO-C1**. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

The 11th Street and Olive Street (West) MSF would comply with existing requirements and would not exacerbate risks related to seismic hazards and erosion, as it would be located on relatively flat site and would not involve excavation to a depth that would affect the underlying geology of the site. Any landscaping that would be installed would be small in size and is not expected to result in substantial impacts related to erosion or subsurface conditions. In addition, no alteration of landforms would occur.

Operational Impacts

Broadway and 2nd Street

Less-than-significant impact. With respect to the potential for geologic hazards to result in effects on the Project, despite the construction of the MSF within a seismically active region, the MSF would be stabilized on its own foundations and would be capable of withstanding seismic events, per the seismic provisions of the CBSC. A regulatory compliance measure (**RCM-GEO-C1**) would be implemented to reduce the potentially significant risks posed by liquefaction and lateral spreading hazards. The potential risks posed by expansive soil and landslide hazards in this area are considered low. Consequently, the effects of the geologic environment on project operation would be less than significant with mitigation. As a result, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

With respect to the Project's potential to contribute to geologic hazards, operation of the Broadway and 2nd Street MSF would follow all applicable CBSC regulations as well as guidelines pertaining to operation. Furthermore, the MSF would be stabilized on its own foundations so that they would not result in an elevated risk of geologic hazards. Operation of the MSF would not result in erosion impacts or landform alteration. Therefore, no impacts would result.

Hill Street and 5th Street

Less-than-significant impact. With the exception that the Hill Street and 5th Street MSF would not be located within an area identified as being susceptible to liquefaction, operational impacts would be similar to impacts described for the Broadway and 2nd Street MSF site.

11th Street and Olive Street (East)

Less-than-significant impact. With the exception that the 11th Street and Olive Street (East) MSF would not be located within an area identified as being susceptible to liquefaction, operational impacts would be similar to impacts described for the Broadway and 2nd Street MSF site.

11th Street and Olive Street (West)

Less-than-significant impact. With the exception that the 11th Street and Olive Street (West) MSF would not be located within an area identified as being susceptible to liquefaction, operational impacts would be similar to impacts described for the Broadway and 2nd Street MSF site.

3.5.4 Mitigation Measures

Implementation of the following regulatory compliance measure would ensure soil stability and liquefaction impacts are minimized and would be less than significant:

RCM-GEO-C1: In order to ensure that utility relocation, track-laying activities, and MSF construction do not result in a substantially increased risk of soil instability, temporary shoring shall be used for lateral support, and properly compacted fill soils or cement slurry shall be used for excavation backfill. A geotechnical report shall be prepared during the design phase, subject to approval by the City, that will address the following topics, and will also recommend specific design specifications, which may include, but are not limited to:

- *Liquefaction and Lateral Spreading:* Methods for construction in areas with a potential liquefaction hazard may include in situ ground modification, removal of liquefiable layers and replacement with compacted fill, or support of project improvements on piles at depths designed specifically for liquefaction. Pile foundations can be designed for a liquefaction hazard by supporting the piles on dense soil or bedrock located below the liquefiable zone or employing other appropriate methods, as evaluated during the site-specific evaluation. Additional recommendations for mitigation pertaining to liquefaction may include densification by installation of stone columns, vibration, deep dynamic compaction, and/or compaction grouting.
- *Structural Support:* Recommendations will be made related to the methods of construction of the MSF in proximity to existing buildings, such as buffer distances to maintain from existing buildings or structural supports for these buildings during the construction period.

The construction contractor shall implement all recommendations from this report into the work plan. The City of Los Angeles Department of Public Works, Bureau of Engineering, through the construction contractor per bid specifications, shall be the responsible party. Enforcement shall be achieved through the Department of Public Works Contracts Administration Bureau Construction Inspector.

No significant unavoidable impacts would occur as a result of implementation of the Project.

3.5.5 Cumulative Impacts

3.5.5.1 Construction Impacts

The only major projects expected to be implemented in or below the transportation right-of-way within the physical limits and general timeframe of the Project are the Regional Connector, the *Broadway Streetscape Master Plan*, and the Figueroa Corridor Streetscape Project. In addition, one or more of the following buildings, which are adjacent to the project alignments, would be under construction while the Project is under construction:

- Federal Courthouse at 1st Street and Broadway.

- Park Fifth Project at 450 S. Olive Street.
- Mixed-use Project at 928 S. Broadway.
- Mixed-use Project at 1115 S. Hill Street.
- Glass Tower Project at 1050 S. Grand Avenue.
- Mixed-use project at 1150 S. Grand Avenue.
- Department of Water and Power Elysian Park-Downtown Water Recycling Projects.
- Wilshire Grand Redevelopment Project at Figueroa Avenue and 7th Street (Alternatives 2 and 3 only).
- Embassy Tower at 848 S. Grand (Alternatives 4 and 5 only).
- Onni Group Tower at 825 S. Hill Street (Alternatives 4 and 5 only).
- Alexan South Broadway Residential Project at 850 Hill Street (Alternatives 4 and 5 only).

Construction of any of the above transportation or building projects, or others that have not yet been proposed, would be required to adhere to all applicable design and construction standards and requirements. Additionally, because the proposed Project would not exacerbate existing geologic or seismic hazards during construction, it would not contribute to any cumulative geologic or seismic hazards. During construction of the proposed and related projects, the potential does exist for grading and excavation to expose soils in the area to wind or water erosion and result in a cumulative loss of soil. However, as noted in the impacts discussion above, any project involving grading of an area greater than one acre is required to apply for a NPDES permit, which necessitates implementation of BMPs for erosion control. Additionally, the *City of Los Angeles Stormwater Low Impact Development (LID) Ordinance*, which applies to all development and redevelopment projects that create, add, or replace 500 square feet or more of impervious surface, requires the use of LID standards and practices for the purposes of reducing offsite runoff and erosion. Compliance with NPDES permit requirements and the City's *Stormwater LID Ordinance* would minimize potential soil erosion impacts, and, therefore, it is not expected that the proposed and related projects would result in significant cumulative soil erosion impacts.

3.5.5.2 Operational Impacts

With respect to the cumulative effects of the geologic and seismic hazards, implementation of the proposed Project in combination with the projects above would result in additional facilities and buildings in a seismically active area such that additional people and property would be exposed to hazards posed by seismic events. However, the risks to life and property posed by operation of the Project would be minimized through compliance with the *City of Los Angeles Building Code*, applicable provisions City of Los Angeles Department of Public Works *Brown Book*, and the implementation of project-specific measures outlined in **RCM-GEO-C1**. Thus, the Project would not make a cumulatively considerable contribution to a significant cumulative impact related to the geologic hazards posed on the project area.

Following the completion of construction and implementation of mitigation measures, project operation would have no effect on the geologic properties of the area, as discussed above. Consequently, the Project would make no contribution to cumulative impacts on geologic hazards, erosion, and landforms.

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3.6 Greenhouse Gas Emissions

This section addresses the potential for the Project to result in impacts on climate change. The information presented in this section is based on the Project's *Air Quality and Climate Change Assessment Report*, which is included as Appendix E to this Draft EIR.

3.6.1 Regulatory Setting

The U.S. Environmental Protection Agency (EPA) has the primary responsibility at the federal level for regulation of greenhouse gases (GHGs) that contribute to climate change. In California, primary responsibility rests with the California Air Resources Board (ARB) at the state level and with air quality management districts at regional and local levels.

3.6.1.1 Federal

Federal Greenhouse Gas and Climate Change Policy

Although there is currently no federal overarching law specifically related to climate change or the reduction of GHGs, the EPA is developing regulations that may be adopted pursuant to the EPA's authority under the *Clean Air Act* (CAA). In *Coalition for Responsible Regulation, Inc., et al. v. EPA*, the United States Court of Appeals upheld the EPA's authority to regulate GHG emissions under the CAA. Foremost among recent developments have been the settlement agreements between the EPA, several states, and Non-Governmental Organizations (NGOs) to address GHG emissions from electric generating units and refineries; the U.S. Supreme Court's decision in *Massachusetts v. EPA*; and the EPA's "Endangerment Finding," "Cause or Contribute Finding," Mandatory Reporting Rule, and EPA's *Clean Power Plan* Final Rule. Under the *Clean Power Plan*, the EPA in 2015 issued regulations to control carbon dioxide (CO_2) emissions from new and existing coal-fired power plants. On February 9, 2016, the Supreme Court issued a stay of these regulations pending litigation.

Massachusetts, et al. vs. U.S. Environmental Protection Agency (2007)

Twelve U.S. states and cities, including California, in conjunction with several environmental organizations sued to force the EPA to regulate GHGs as a pollutant emitted by motor vehicles pursuant to the CAA in *Massachusetts, et al. v. Environmental Protection Agency* 549 US 497 (2007). The court ruled that the plaintiffs had standing to sue, GHGs fit within the CAA's definition of a pollutant, and the EPA's reasons for not regulating GHGs were insufficiently grounded in the CAA.

U.S. Environmental Protection Agency Mandatory Reporting Rule for GHGs (2009)

On September 22, 2009, EPA released its final Greenhouse Gas Reporting Rule (Reporting Rule). The Reporting Rule was a response to the fiscal year (FY) 2008 *Consolidated Appropriations Act* (H.R. 2764; *Public Law* 110-161), which required EPA to develop "mandatory reporting of greenhouse gasses above appropriate thresholds in all sectors of the economy…" The Reporting Rule applies to most entities that emit 25,000 metric tons of CO_2 equivalent (CO_2e) or more per year. Starting in 2010, facility owners from 41 industrial categories were required to submit an annual GHG emissions report with detailed calculations of facility GHG emissions. An additional 12 categories began reporting for calendar year 2011 emissions. The Reporting Rule mandates recordkeeping and administrative requirements in order for EPA to verify annual GHG emissions reports.

U.S. Environmental Protection Agency Endangerment Finding and Cause or Contribute Finding (2009)

On December 7, 2009, the EPA Administrator signed two distinct findings regarding greenhouse gases under section 202(a) of the CAA.

1. Endangerment Finding: that that the current and projected concentrations of the greenhouse gases in the atmosphere threaten the public health and welfare of current and future generations.
2. Cause or Contribute Finding: that the combined emissions of greenhouse gases from new motor vehicles and new motor vehicle engines contribute to greenhouse gas pollution, which threatens public health and welfare.

These findings did not themselves impose any requirements on industry or other entities. However, this action was a prerequisite to EPA's GHG emission standards for motor vehicles, which EPA subsequently proposed in joint rulemakings with the National Highway Traffic Safety Administration (NHTSA) to revise the Corporate Average Fuel Economy (CAFE) standards for light-duty vehicles and establish medium- and heavy-duty vehicle fuel economy standards.

Update to Corporate Average Fuel Economy Standards (2009)

The revised CAFE standards of 2009 for autos and light-duty trucks incorporated stricter fuel economy standards promulgated by the state of California into one uniform standard covering model years 2011–2016. Automakers were required by 2016 to cut GHG emissions from new vehicles by roughly 25 percent compared with the previously existing standard.

EPA, NHTSA, and ARB worked together on a joint EPA-NHTSA rulemaking to establish fuel economy and GHG emissions standards for 2017 to 2025 model year passenger vehicles, which required an industry-wide average of 54.5 miles per gallon. On August 28, 2012, NHTSA issued the Final Rule for CAFE Standards for Model Years 2017 and Beyond (EPA and NHTSA 2012).

Update to Medium- and Heavy-Duty Vehicle Fuel Economy Standards (2015)

In a process similar to the revision of the CAFE standards, on September 15, 2011, EPA and NHTSA issued the first-ever national fuel economy standards for medium- and heavy-duty vehicle (MDHD) standards. These Phase 1 standards applied to model year 2014–2018 MDHD vehicles. NHTSA currently is proposing fuel efficiency standards for heavy duty (HD) engines, vehicles, and trailers as part of a joint rulemaking with EPA to establish the Phase 2 HD National Program for model years 2018–2027. The proposed rule was released by both EPA and NHTSA on June 19, 2015. The final rule and EIS for the Phase 2 MDHD standards are expected to be published in the summer of 2016 (EPA and NHTSA 2015).

Council on Environmental Quality Draft NEPA Guidance (2010, 2014)

On February 18, 2010, the Council on Environmental Quality (CEQ) issued draft *National Environmental Policy Act* (NEPA) guidance on the consideration of the effects of climate change and GHG emissions. This guidance advises federal agencies that they should consider opportunities to reduce GHG emissions caused by federal actions, adapt their actions to climate change effects throughout the NEPA process, and address these issues in their agency NEPA procedures. Where applicable, the scope of the NEPA analysis should cover the GHG emissions effects of a proposed action and alternative actions, as well as the relationship of climate change effects on a proposed action or alternatives. The guidance identified a reference point of 25,000 metric tons per year (MTY) for direct CO_2e GHG emissions as an indicator that further NEPA review may be warranted. This reference point, however, is not intended to be used as a threshold for determining a significant impact or effect on the environment due to GHG emissions. The guidance also does not propose a reference point for indirect GHG emissions. (CEQ 2010).

In December 2014, the CEQ issued revised draft guidance to provide federal agencies with direction on when and how to consider the potential impacts of GHG emissions and climate change in accordance with NEPA. The draft guidance states that agencies should consider the potential impacts of a proposed action on climate change by evaluating potential GHG emissions and considering the implications of climate change for the environmental effects of the proposed action. The 2014 guidance retained the reference point of 25,000 MTY CO_2e (CEQ 2014).

3.6.1.2 State

California Greenhouse Gas and Climate Change Policy

California has adopted statewide legislation addressing various aspects of climate change and GHG emissions mitigation. Much of this establishes a broad framework for the state's long-term GHG reduction and climate change adaptation program. The Governor of California has also issued several executive orders (EOs) related to the state's evolving climate change policy. Of particular importance to local governments is the direction provided by the Assembly Bill (AB) 32 *Scoping Plan*, which recommends local governments reduce their GHG emissions by a level consistent with state goals.

In the absence of federal regulations, control of GHGs is generally regulated at the state level and is typically approached by setting emission reduction targets for existing sources of GHGs, setting policies to promote renewable energy and increase energy efficiency, and developing statewide action plans. Summaries of key statewide GHG regulations, policies, legal cases, and legislation at the state level that are relevant to the Project are provided below.

Assembly Bill 32, the *Global Warming Solutions Act of 2006/2011 Update*

AB 32 codified the state's GHG emissions target by requiring that the state's global warming emissions be reduced to 1990 levels by 2020. Since being adopted, ARB, the California Energy Commission, the California Public Utilities Commission (CPUC), and the Building Standards Commission have been developing regulations that would help meet the goals of AB 32 and EO S-03-05. The *Scoping Plan* for AB 32 identifies specific measures to reduce GHG emissions to 1990 levels by 2020, and requires ARB and other state agencies to develop and enforce regulations and other initiatives for reducing GHGs. Specifically, the *Scoping Plan* articulates a key role for local governments, recommending they establish GHG reduction goals for both their municipal operations and the community consistent with those of the state.

In March 2011, a San Francisco Superior Court enjoined the implementation of ARB's *Scoping Plan*, finding the alternatives analysis and public review process violated both CEQA and ARB's certified regulatory program (*Association of Irritated Residents, et al. v. California Air Resources Board*, Case No. CPF-09-509562, March 18, 2011). In response to this litigation, ARB adopted the new CEQA document (*Final Supplement to the AB 32 Scoping Plan Functional Equivalent Document*) on August 24, 2011. ARB staff re-evaluated the baseline in light of the economic downturn and updated the projected 2020 emissions to 545 million metric tons (MMT) of CO_2e. Two reduction measures (Pavley I and the Renewables Portfolio Standard [12–20 percent]) not previously included in the 2008 *Scoping Plan* baseline were incorporated into the updated baseline, further reducing the 2020 statewide emissions projection to 507 $MMTCO_2e$. The updated forecast of 507 $MMTCO_2e$ is referred to as the AB 32 2020 baseline. Reduction of an estimated 80 $MMTCO_2e$ are necessary to reduce statewide emissions to the AB 32 Target of 427 $MMTCO_2e$ by 2020 (ARB 2011).

California Executive Order S-3-05

Executive Order S-3-05 is designed to reduce California's GHG emissions to 2000 levels by 2010, 1990 levels by the 2020, and 80 percent below the 1990 levels by the year 2050.[1]

Executive orders are binding only on state agencies. Accordingly, EO S-03-05 will guide state agencies' efforts to control and regulate GHG emissions but will have no direct binding effect on local government or private actions. The Secretary of the California Environmental Protection Agency (Cal/EPA) is required to report to the Governor and state legislature biannually on the impacts of global warming on California, mitigation and adaptation plans, and progress made toward reducing GHG emissions to meet the targets established in this executive order.

Assembly Bill 1493—Pavley Rules (2002, amendments 2009)/Advanced Clean Cars (2011)

Known as "Pavley I," AB 1493 standards were the nation's first GHG standards for automobiles. AB 1493 required ARB to adopt vehicle standards that will lower GHG emissions from new light duty vehicles to the maximum extent feasible beginning in 2009. Additional strengthening of the Pavley standards (referred to previously as "Pavley II," now referred to as the "Advanced Clean Cars" measure) has been proposed for vehicle model years 2017–2020. Together, the two standards are expected to increase average fuel economy to roughly 43 miles per gallon by 2020 and reduce GHG emissions from the transportation sector in California by approximately 14 percent. In June 2009, the EPA granted California's waiver request enabling the state to enforce its GHG emissions standards for new motor vehicles beginning with the then-current model year.

Also, as noted above, EPA and ARB worked together on a joint rulemaking to establish national GHG emissions standards for 2017–2025 model year passenger vehicles.

Executive Order S-01-07, Low Carbon Fuel Standard (2007)

Executive Order S-01-07 mandates: (1) that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020, and (2) that a low carbon fuel standard (LCFS) for transportation fuels be established in California. The executive order initiated a research and regulatory process at ARB. Based on an implementation plan developed by CEC, ARB will be responsible for implementing the LCFS. On December 29, 2011, a federal judge issued a preliminary injunction blocking enforcement of the LCFS, ruling that the LCFS violates the interstate commerce clause (Georgetown Climate Center 2012). On April 23, 2012, the U.S. Court of Appeals for the Ninth Circuit granted ARB's motion to stay the injunction that had prevented ARB from enforcing California's LCFS. Thus, ARB was permitted to continue its implementation and enforcement of the

[1] Statewide GHG emissions were estimated to be 449.59 $MMTCO_2e$ for year 2010 compared to 462.9 $MMTCO_2e$ for year 2000 (ARB 2013).

LCFS pending the outcome of the appeal. On November 16, 2015, the Office of Administrative Law in the State of California approved the re-adoption of the Low Carbon Fuel Regulation.

Executive Order B-30-15, Greenhouse Gas Reduction Target (2015)

Executive Order B-30-15 was announced by Governor Brown on April 29, 2015, and establishes a greenhouse gas reduction target of 40 percent below 1990 levels by 2030 in the State of California. California is currently on track to meet or exceed the target of reducing greenhouse gas emissions to 1990 levels by 2020, which was previously established in the *California Global Warming Solutions Act of 2006* (AB 32, discussed above). The state's new emission reduction target will make it possible to reach the state's overall goal of reducing emissions 80 percent under 1990 levels by 2050 (Office of Governor 2015).

Senate Bill 375 (Steinberg), Statutes of 2008

California State Senate Bill (SB) 375 requires regional transportation plans, developed by Metropolitan Planning Organizations (MPOs), to incorporate a "sustainable communities strategy" (SCS) in their regional transportation plans that will achieve GHG emission reduction targets set by ARB, which finalized the regional targets in February 2011. SB 375 also includes provisions for streamlined CEQA review for some infill projects such as transit-oriented development. However, those provisions will not become effective until an SCS is adopted. The final targets require the Southern California Association of Governments (SCAG) to identify strategies that will reduce per capita GHG emissions from passenger vehicles by approximately 8 percent by 2020 and 13 percent by 2035 over base year 2005. SCAG adopted the *Final 2012 Regional Transportation Plan* (RTP), which incorporates the SCS, on April 4, 2012 (SCAG 2012a). The Draft 2016–2040 RTP/SCS was released in December 2015. The revised RTP/SCS includes $556.5 billion in transportation investments and the strategies outlined in the 2016 RTP/SCS will help reduce GHG emissions to meet California's targets, as mentioned above (SCAG 2015).

Other Vehicle Efficiency Measures from ARB

ARB has adopted or is pursuing additional measures to promote vehicle efficiency in order to reduce GHG emissions. In 2008, ARB adopted a measure concerning heavy-duty vehicle aerodynamics. In 2009, ARB adopted regulations for tire pressure. ARB also evaluated hybridization of medium-heavy vehicles and cool car design (i.e., a clear, reflective glaze on car windows designed to cut emissions by virtue of blocking excessive sunlight and heat). In November 2015, ARB released the Draft Technology Assessment for Heavy-Duty Hybrid Vehicles, which analyzed the current and future development of heavy-duty hybrid vehicle technologies. The use of these technologies would help to reduce fuel consumption and GHG emissions within the vehicle fleet; however, these technologies are currently cost prohibitive and would increase vehicle weights (ARB 2015).

ARB GHG Mandatory Reporting Rule Title 17 (2009)

In December of 2007, ARB approved a rule requiring mandatory reporting of GHG emissions from certain sources, pursuant to AB 32. Facilities subject to the mandatory reporting rule must have reported their emissions from the calendar year 2009 and have had those emissions verified by a third party in 2010. In general the rule applies to facilities emitting more than 25,000 metric tons (MT) CO_2e in any given calendar year or electricity generating facilities with a nameplate generating capacity greater than 1 megawatt (MW) or emitting more than 2,500

$MTCO_2e$ per year. Additional requirements also apply to cement plants and entities that buy and sell electricity in the state.

Western Climate Initiative/California Cap and Trade (2010/2011)

The Western Climate Initiative (WCI) is a collaboration of seven western states (Washington, Oregon, California, Arizona, New Mexico, Utah, and Montana) and four Canadian provinces (British Columbia, Manitoba, Ontario, and Quebec) that are working together to identify, evaluate, and implement policies to tackle climate change at a regional level. On July 27, 2010, the Partner jurisdictions of the WCI released a comprehensive strategy designed to reduce climate-warming GHG emissions, stimulate development of clean-energy technologies, create green jobs, increase energy security and independence, and protect public health. The objective of the WCI Partner jurisdictions' plan is to reduce regional GHG emissions to 15 percent below 2005 levels by 2020 (similar to AB 32). The regional goal will be reached by creating a market-based system that caps GHG emissions and uses tradable permits to incentivize development of renewable and lower-polluting energy sources; encouraging GHG emissions reductions in industries not covered by the emissions cap, thus reducing energy costs region wide; and advancing policies that expand energy efficiency programs, reduce vehicle emissions, encourage energy innovation in high-emitting industries, and help individuals transition to new jobs in the clean-energy economy. The central component of the WCI Partner jurisdictions' comprehensive strategy is a flexible, market-based, regional cap-and-trade program that encourages the most cost-effective, reliable alternatives to reduce GHG emissions (WCI 2010).[2] ARB is working closely with the other members of the WCI to design a regional cap-and-trade program that can deliver GHG emission reductions within the region at costs lower than could be realized through a California-only program.

To that end, pursuant to the directives of AB 32, ARB approved measures on December 16, 2010, to enact a GHG cap-and-trade program for the state of California. The California cap-and-trade program created a CO_2 market system with a GHG emissions cap that will be decreased over time. Building on the data required by the 2007 California Mandatory GHG Reporting rule, only stationary sources that emit more than 25,000 $MTCO_2e$ per year are affected by the cap-and-trade program. These sources include mostly large operations, such as power plants, refineries, cement plants, hydrogen production facilities, and other large, stationary sources. Official rulemaking associated with achieving this emissions cap was adopted by January 1, 2011, and adopted the final cap-and-trade regulation and adaptive management plan on October 20, 2011. The program commenced in January 2012, and compliance began in January 2013.

State CEQA Guidelines

The State CEQA Guidelines require lead agencies to describe, calculate, or estimate the amount of GHG emissions that would result from a project. Moreover, the State CEQA Guidelines emphasize the necessity to determine potential climate change effects of a project and propose mitigation as necessary. The State CEQA Guidelines confirm the discretion of lead agencies to determine appropriate significance thresholds but require the preparation of an EIR if "there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with adopted regulations or requirements" (Section 15064.4).

[2] In February 2010, per EO 2010-06, Arizona withdrew from the cap-and-trade proposal, citing potential economic impacts. However, Arizona remains a member of the WCI.

State CEQA Guidelines Section 15126.4 includes considerations for lead agencies related to feasible mitigation measures to reduce GHG emissions, which may include, among others:

- Measures in an existing plan or mitigation program for the reduction of emissions that are required as part of the lead agency's decision.
- Implementation of project features, project design, or other measures which are incorporated into the project to substantially reduce energy consumption or GHG emissions.
- Offsite measures, including offsets that are not otherwise required, to mitigate a project's emissions.
- Measures that sequester carbon or carbon-equivalent emissions.

3.6.1.3 Local

South Coast Air Quality Management District

SCAQMD develops the rules and regulations to regulate sources of air pollution and GHGs in the Basin. With respect to GHGs, ARB's *Climate Change Scoping Plan* states that local governments and air quality management districts such as SCAQMD are "essential partners" in the effort to reduce GHG emissions. The *Climate Change Scoping Plan* also acknowledges that local governments have "broad influence and, in some cases, exclusive jurisdiction" over activities that contribute to significant direct and indirect GHG emissions through their planning and permitting processes, local ordinances, outreach and education efforts, and municipal operations. Many of the proposed measures to reduce GHG emissions rely on local government actions. The *Climate Change Scoping Plan* encourages local governments to reduce GHG emissions by approximately 30 percent from business-as-usual emissions levels projected for 2020.

SCAQMD has published the *CEQA Air Quality Handbook* (SCAQMD 1993) to help local governments analyze and mitigate project-specific air quality impacts. The handbook provides standards, methodologies, and procedures for conducting air quality analyses and was used extensively in the preparation of this report.

To provide guidance to local lead agencies on determining significance for GHG emissions in their CEQA documents, the SCAQMD staff established an ongoing GHG CEQA Significance Threshold Working Group. Members of the working group include government agencies implementing CEQA and representatives from various stakeholder groups that provide input to the SCAQMD staff on developing GHG CEQA significance thresholds. To date, SCAQMD has formally adopted 10,000 $MTCO_2e$ as a threshold only for industrial facilities (i.e., industrial facilities that require issuance of a SCAQMD Title V or RECLAIM permit). Because the Project would not require such a permit, the 10,000 $MTCO_2e$ threshold is not applicable. SCAQMD also has drafted a 3,000 $MTCO_2e$ screening significance threshold level for commercial/residential projects. This draft threshold also is not applicable because it is only a draft proposed screening threshold, and the Project is a transportation project that does not fit into the industrial, commercial, or residential project categories. SCAQMD has not proposed or adopted a threshold level for transportation projects.

Southern California Association of Governments

SCAG is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial Counties. It addresses regional issues relating to transportation, economy, community development, and environment. SCAG is the federally designated MPO for the majority of the southern California region and is the largest MPO in the nation. With respect to air quality and GHG planning, SCAG has prepared the *Regional Comprehensive Plan* (RCP) for the SCAG region, which includes Growth Management and Regional Mobility chapters. SCAG also prepares the RTP for the SCAG region every 3 years, which, along with the RCP, forms the basis for the land use and transportation components of the SCAQMD *Air Quality Management Plan* (AQMP). These chapters are utilized in the preparation of air quality forecasts and the consistency analysis that is included in the AQMP.

City of Los Angeles

The City of Los Angeles has published a climate action plan titled *GreenLA* (City of Los Angeles 2007). In order to provide detailed information on action items discussed in *GreenLA*, the City in 2008 published an implementation document titled *ClimateLA,* which presents the existing GHG inventory for the City, includes enforceable GHG reduction requirements, provides mechanisms to monitor and evaluate progress, and includes mechanisms that allow the plan to be revised in order to meet targets. By 2030, the plan aims to reduce GHG emissions by 35 percent from 1990 levels, which were estimated to be approximately 54.1 million metric tons.

Therefore, the City would need to lower annual GHG emissions to approximately 35.1 MMT per year by 2030. To achieve these reductions, the City has developed strategies that focus on energy, water use, transportation, land use, waste, open space and greening, and economic factors. To reduce emissions from energy usage, *ClimateLA* proposes the following goals: increase the amount of renewable energy provided by the Los Angeles Department of Water and Power (LADWP), present a comprehensive set of green building policies to guide and support private sector development, reduce energy consumed by City facilities and utilize solar heating where applicable, and help citizens to use less energy. With regard to waste, *ClimateLA* set the goal of reducing or recycling 70 percent of refuse. With regard to open space and greening, *ClimateLA* includes the following goals: create 35 new parks, revitalize the Los Angeles River to create open space opportunities, plant one million trees throughout the City, identify opportunities to "daylight" streams, identify promising locations for stormwater infiltration to recharge groundwater aquifers, and collaborate with schools to create more parks in neighborhoods. The 2007 *GreenLA*/2008 *ClimateLA* documents remain current as of February 2016.

3.6.2 Environmental Setting/Affected Environment

A description of each GHG is provided below, followed by a discussion of the environmental setting/affected environment.

Description of Greenhouse Gases

The principal anthropogenic GHGs contributing to global warming are CO_2, methane (CH_4), nitrous oxide (N_2O), and fluorinated compounds, including sulfur hexafluoride (SF_6), hydrofluorocarbons (HFCs), and perfluorocarbons (PFCs), as codified in state law and the State CEQA Guidelines (*Health and Safety Code* 38505(g), 14 *California Code of Regulations* [CCR] 15364.5). Water vapor, the most abundant GHG, is not included in this list because its natural concentrations and fluctuations far outweigh the contribution from anthropogenic (human-made) sources.[3]

Carbon Dioxide (CO_2) enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, respiration, and also as a result of other chemical reactions (e.g., manufacture of cement). Carbon dioxide is also removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle, or dissolved into the oceans, or incorporated into the shells of animals.

Methane (CH_4) is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from the organismic digestion process, from livestock and from other agricultural practices and by the decay of organic waste in municipal solid waste landfills.

Nitrous Oxide (N_2O) is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.

Fluorinated Gases are synthetic, strong greenhouse gases that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone-depleting substances. These gases are typically emitted in smaller quantities, but because they are potent greenhouse gases, they are sometimes referred to as High Global Warming Potential gases.

- **Chlorofluorocarbons (CFCs)** are greenhouse gases covered under the *1987 Montreal Protocol* and used for refrigeration, air conditioning, packaging, insulation, solvents, or aerosol propellants. Since they are not destroyed in the lower atmosphere (troposphere, stratosphere), CFCs drift into the upper atmosphere where, given suitable conditions, they break down ozone. These gases are being replaced by other compounds that are greenhouse gases covered under the *1997 Kyoto Protocol*.
- **Perfluorocarbons (PFCs)** are a group of human-made chemicals composed of carbon and fluorine only. These chemicals (predominantly perfluoromethane [CF_4] and perfluoroethane [C_2F_6]) were introduced as alternatives, along with HFCs, to the ozone-depleting substances. In addition, PFCs are emitted as by-products of industrial processes and are also used in manufacturing. PFCs do not harm the stratospheric ozone layer, but they are strong greenhouse gases.
- **Sulfur Hexafluoride (SF_6)** is a colorless gas soluble in alcohol and ether, slightly soluble in water. SF_6 is a strong greenhouse gas used primarily in electrical transmission and distribution systems as a dielectric agent.[4]
- **Hydrochlorofluorocarbons (HCFCs)** contain hydrogen, fluorine, chlorine, and carbon atoms. Although they are ozone-depleting substances, they are less potent than CFCs. They have been introduced as temporary replacements for CFCs and are also greenhouse gases.
- **Hydrofluorocarbons (HFCs)** contain only hydrogen, fluorine, and carbon atoms. They were introduced as alternatives to ozone-depleting substances in serving many industrial, commercial, and personal needs. HFCs are emitted as by-products of industrial processes

[3] Although water vapor plays a substantive role in the natural greenhouse effect, the change in GHGs in the atmosphere due to anthropogenic emissions of GHGs other than water is enough to upset the radiative balance of the atmosphere and result in global warming.

[4] A dielectric agent is an electrical insulator that is highly resistant to the flow of an electric current.

and are also used in manufacturing. They do not significantly deplete the stratospheric ozone layer, but they are strong greenhouse gases.

State Greenhouse Gas Emissions

More than 97 percent of U.S. GHG emissions are the result of burning fossil fuels. Of these GHGs, 83 percent are in the form of CO_2, 10 percent are CH_4, and 4.5 percent are N_2O. Fossil fuels are burned to power vehicles, create electricity, and generate heat. Vehicle emissions are the largest source of CO_2 emissions in California, representing 38 percent of statewide emissions in 2011. Electrical generation is the second-largest source of GHG emissions in California, at 19 percent; commercial and residential land uses are the third-largest, at 10 percent (ARB 2013). On a national level, electrical generation is the largest GHG emissions sector, and transportation is the second largest. Other sources of GHG emissions generated within the U.S. and California include agriculture, land clearing, the landfilling of waste, refrigerants, and certain industrial processes.

Greenhouse Gas Inventories

A GHG inventory is a quantification of all GHG emissions and carbon sinks within a selected physical and/or economic boundary.[5] GHG inventories can be performed on a large scale (e.g., for global and national entities) or on a small scale (e.g., for a particular building or person). Although many processes are difficult to evaluate, several agencies have developed tools to quantify emissions from certain sources.

U.S. Greenhouse Gas Emissions Inventory

EPA estimates that total U.S. GHG emissions for 2014 amounted to 6,870 $MMTCO_2e$, which is 7.4 percent greater than 1990 levels, and a 1.0 increase over 2013 levels (EPA 2016). U.S. GHG emissions were responsible for approximately 16 percent of global GHG emissions in 2011 (Boden et al. 2015). The largest contributors to U.S. GHG emissions in 2014 were electricity generation (30 percent), transportation (26 percent), and the industrial sector (21 percent). Emissions in the electricity generation, transportation, residential, commercial, and industrial sectors consisted primarily of CO_2. GHG emissions related to agriculture consisted predominantly of CH_4 and N_2O. Since 1990, industrial emissions in the U.S. have generally declined, while emissions in other sectors, such as transportation, have generally grown (EPA 2016).

California Greenhouse Gas Emissions Inventory

In 2013, total California GHG emissions were 459.3 $MMTCO_2e$. Annual GHG emissions for 2013 were 6.2 percent above 1990 levels, and emissions have decreased by 0.3 percent from 2012 to 2013 (460.8 to 459.3 $MMTCO_2e$). The transportation sector accounted for approximately 37 percent of the total emissions, the industrial sector accounted for approximately 23 percent, and electricity generation accounted for approximately 11 percent, with a roughly 55 percent/45 percent contributions from in-state and imported electricity.

[5] A carbon sink is a natural or artificial reservoir that accumulates and stores some carbon-containing chemical compounds, such as carbonates, for an indefinite period. The process by which carbon sinks remove carbon dioxide (CO_2) from the atmosphere is known as *carbon sequestration*.

City of Los Angeles Greenhouse Gas Emissions Inventory

In 2004, total citywide GHG emissions were greater than 50 $MMTCO_2e$, roughly the same amount as the country of Sweden. The transportation sector accounted for approximately 47 percent of the total emissions, electricity generation accounted for approximately 32 percent, natural gas use generated 9 percent of emissions, and the balance of 12 percent was from burning other industrial fuels. The City's *Green LA: An Action Plan to Lead the Nation in Fighting Global Warming* includes more than 50 actions to reduce citywide GHG emissions, as well as measures to adapt to the effects of climate change. The City's goal is to reduce GHG emissions to 35 percent below 1990 levels by 2030 (City of Los Angeles 2007).

3.6.3 Environmental Impact Analysis

3.6.3.1 Methodology

Construction Impacts

Construction of the Project would result in the short-term generation of GHG emissions from combustion exhaust. Mass daily GHG emissions were estimated using the Sacramento Metropolitan Air Quality Management District's Road Construction Emissions Model, version 7.4.1 and the California Emissions Estimator Model (CalEEMod), version 2013.2.1. Construction equipment and scheduling assumptions are detailed in the Project's Air Quality and Climate Change Assessment Report, which is included as Appendix E to this Draft EIR.

Operational Impacts

The CalEEMod emissions estimation model was also used to quantify GHG emissions related to ongoing operation of the Project's Vehicle Maintenance and Storage Facility, based on a facility size estimate of 18,000 square feet. CalEEMod estimates project direct and indirect GHG emissions related to employee and vendor trips, facility energy demands (lighting, temperature control, etc.), refuse disposal, water use, and wastewater generation.

Project GHG emissions related to streetcar operations were calculated based on the project engineer estimate of system energy demand in kilowatt hours and Los Angeles Department of Water and Power default CO_2, CH_4 and N_2O pounds/megawatt-hour intensity factors provided by CalEEMod.

VMT Estimation and Emissions Calculation

Some streetcar riders will use the streetcar to replace trips that were formerly made by car. The tool provided by the Federal Transit Administration (FTA) for estimating transit ridership is the Simplified Trips-On-Project Software (STOPS) model. The STOPS model also produces an estimate of person miles traveled (PMT) by automobile that would be reduced as a result of a project. For existing and future years of the Project, Metro used the STOPS model to estimate streetcar ridership and reduced PMT by auto.

To convert reduced auto PMT to reduced vehicle miles traveled (VMT), an average vehicle occupancy (AVO) factor was applied. This factor was derived from the City of Los Angeles Travel Demand Model, and it accounts for cars that carry more than one person (Fehr & Peers, 2013). Table 3.6-1 shows the STOPS model estimates of daily riders and associated auto person miles reduced, as well as the calculated estimates of vehicle miles reduced, for each of the four project alternatives.

To assess the effect of reduced VMT on GHG emissions, the speeds of vehicles traveling these miles was estimated using results from the City of Los Angeles Travel Demand Model (Fehr & Peers, 2013). The aggregated estimate of total reduced VMT, as derived from the STOPS model, was divided into speed bins (0–5 mph, 6–10 mph, 11–15 mph, etc.), as required by CT-EMFAC2014, the emissions model provided by ARB and the California Department of Transportation (Caltrans). Tables 3.6-2, 3.6-3, and 3.6-4 provide estimates of VMT by speed bin for each of the four build alternatives, for existing and future years.

As discussed above, the Project is anticipated to have an effect on local VMT and travel speeds. As such, the Project would have an effect on mobile-source criteria pollutant, MSAT, and GHG emissions. Changes in mobile-source emissions associated with regional traffic were estimated using the Caltrans' CT-EMFAC2014 emissions model (Version 6.0) and VMT data discussed above.

3.6.3.2 Thresholds of Significance

City of Los Angeles CEQA Thresholds Guide

The City of Los Angeles has not adopted specific citywide significance thresholds for GHG emissions. The *L.A. CEQA Thresholds Guide* (City of Los Angeles 2006) does not address climate change or greenhouse gases. However, the State CEQA Guidelines (Appendix G) do address this topic and therefore these thresholds are used. The Project would be considered to have a significant impact if it would result in either of the following.

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
- Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

3.6.3.3 Construction and Operational Impacts

Alternative 1: No Project Alternative

No Impact. Under the No Project Alternative, the improvements and facilities associated with the Project would not be constructed or operated. The No Project Alternative represents conditions in the project study area that would remain if the proposed Project did not occur. It includes those improvements projected to be funded under the current RTP. The No Project Alternative also serves as the baseline for comparison and assessment of the project alternatives.

Table 3.6-1. LA Streetcar Daily Ridership and Auto Travel Reduction Estimates

Alternative	2015			2020			2040		
	Riders	Auto Person Miles Reduced	Auto Vehicle Miles Reduced[a]	Riders	Auto Person Miles Reduced	Auto Vehicle Miles Reduced[a]	Riders	Auto Person Miles Reduced	Auto Vehicle Miles Reduced[a]
2: 7th Street with Grand Avenue Extension	5,134	8,448	6,813	5,583	8,893	7,172	7,379	10,672	8,606
3: 7th Street without Grand Avenue Extension	3,795	6,775	5,464	4,123	7,098	5,724	5,434	8,391	6,767
4: 9th Street with Grand Avenue Extension	5,301	8,301	6,694	5,773	8,748	7,055	7,660	10,539	8,499
5: 9th Street without Grand Avenue Extension	3,522	6,042	4,873	3,851	6,352	5,123	5,170	7,592	6,123

Source: Metro 2016.
[a] Auto occupancy conversion factor (1.24 persons/vehicle) taken from City of Los Angeles Travel Demand Model.

Table 3.6-2. Existing/Baseline Year 2015 Allocation of Daily Estimated VMT Reductions to 5 mph Speed Bins

Percent Allocation Proportions	Speed Bin (mph)	Alternative 2	Alternative 3	Alternative 4	Alternative 5
20.7%	0–5	1,410	1,131	1,386	1,009
10.2%	6–10	695	557	683	497
10.8%	11–15	736	590	723	526
17.7%	16–20	1,206	967	1,185	862
14.5%	21–25	988	792	971	707
7.0%	26–30	477	382	469	341
4.6%	31–35	313	251	308	224
3.2%	36–40	218	175	214	156
3.8%	41–45	259	208	254	185
3.3%	46–50	225	180	221	161
2.1%	51–55	143	115	141	102
1.3%	56–60	89	71	87	63
0.5%	61–65	34	27	33	24
0.2%	66–70	14	11	13	10
Sources: ICF International 2016; Fehr & Peers 2013.					

Table 3.6-3. Future Year 2020 Allocation of Daily Estimated VMT Reductions to 5 mph Speed Bins

Percent Allocation Proportions	Speed Bin (mph)	Alternative 2	Alternative 3	Alternative 4	Alternative 5
20.7%	0–5	1,485	1,185	1,460	1,060
10.2%	6–10	732	584	720	523
10.8%	11–15	775	618	762	553
17.7%	16–20	1,269	1,013	1,249	907
14.5%	21–25	1,040	830	1,023	743
7.0%	26–30	502	401	494	359
4.6%	31–35	330	263	325	236
3.2%	36–40	229	183	226	164
3.8%	41–45	273	218	268	195
3.3%	46–50	237	189	233	169
2.1%	51–55	151	120	148	108
1.3%	56–60	93	74	92	67
0.5%	61–65	36	29	35	26
0.2%	66–70	14	11	14	10
Sources: ICF International 2016; Fehr & Peers 2013.					

Table 3.6-4. Future Year 2040 Allocation of Daily Estimated VMT Reductions to 5 mph Speed Bins

Percent Allocation Proportions	Speed Bin (mph)	Alternative 2	Alternative 3	Alternative 4	Alternative 5
20.7%	0–5	1,782	1,401	1,759	1,267
10.2%	6–10	878	690	867	625
10.8%	11–15	929	731	918	661
17.7%	16–20	1,523	1,198	1,504	1,084
14.5%	21–25	1,248	981	1,232	888
7.0%	26–30	602	474	595	429
4.6%	31–35	396	311	391	282
3.2%	36–40	275	217	272	196
3.8%	41–45	327	257	323	233
3.3%	46–50	284	223	280	202
2.1%	51–55	181	142	178	129
1.3%	56–60	112	88	110	80
0.5%	61–65	43	34	42	31
0.2%	66–70	17	14	17	12
Sources: ICF International 2016; Fehr & Peers 2013.					

Alternatives 2 through 5: 7th Street Alternative and 9th Street Alternative, with and without Grand Avenue Extension

For each of the four build alternatives, GHG emissions during construction would result from activities related to the following: (1) construction worker, vendor, and haul truck trips; (2) MSF, TPSS sites, and station platform sites construction; and (3) track and catenary installation. GHG emissions related to each of these activities have been quantified for each of the four build alternatives. It is SCAQMD suggested guidance to amortize construction-period GHG emissions over the "typical project" useful life span of 30 years, then assess project construction-period GHG emissions together with project operations-period GHG emissions. As such, project emissions presented below in Table 3.6-5 account for project construction- and operations-period GHG emissions.

Once the Project becomes operational it is anticipated that a daily reduction in VMT would occur, due primarily to diversion of private automobile trips that would occur under the project alternatives when compared to the No Project Alternative. Net GHG emissions associated with project operations would result from the following: (1) net changes in passenger VMT that would occur within the study area under the project build alternatives, as compared to the No Project Alternative; (2) MSF operations; and (3) electricity generation needed to power streetcar operations. Project GHG emissions associated with each of these activities, along with project construction GHG emissions, are presented below in Table 3.6-5.

Greenhouse Gas Emissions

Less-than-significant impact. Climate change is a global problem, and GHGs are global pollutants, unlike criteria air pollutants (such as O_3 precursors) and toxic air contaminants (TACs), which are pollutants of regional and local concern. One of the main strategies to reduce California GHG emissions is to make California's transportation system more efficient. Projects that reduce VMT or relieve congestion would lead to an overall reduction in GHG emissions. Also, during construction, existing ARB regulations (Title 13 of the *California Code of Regulations* [CCR], Sections 2480 and 2485), which limit idling of diesel-fueled commercial motor vehicles, would help to limit GHG emissions associated with project-related construction vehicles.

Table 3.6-5 presents an estimate of project-related GHG emissions. The net change in GHG emissions due to the Project depends on the level of ridership (and consequent reduction in VMT) that the Project attracts. Under the lowest ridership forecast of Alternative 5, the Project is estimated to result in a net decrease in GHG emissions of 335 MTY. Net GHG emissions reductions under all other build alternatives would be greater than 335 MTY. As such, project GHG emissions under all build alternatives would remain below the significance threshold of 10,000 MTY CO_2e that SCAQMD applies to industrial emissions sources (SCAQMD 2008b). In addition, project GHG emissions under all build alternatives would remain below the SCAQMD draft screening significance threshold of 3,000 MTY for commercial/residential projects. Thus, project impacts related to GHG emissions would be less than significant under all build alternatives, and no mitigation measures necessary.

Table 3.6-5. Project-related Greenhouse Gas Emissions under the 2015 plus Project Condition (metric tons CO_2e per year)

Source Description	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Net Passenger Vehicle Emissions	(1,865)	(1,496)	(1,833)	(1,334)
Maintenance Facility Emissions[a]	375	375	375	375
Streetcar Operations Emissions[b]	573	540	573	540
Amortized Construction Emissions[a]	51	48	51	48
Total Project Emissions	(866)	(533)	(834)	(371)

Source: ICF International 2016.
[a] Road Construction Emissions Model and CalEEMod output sheets are provided in Appendix E.
[b] Alternatives 2 and 4 predicted to have electricity demand of 60,115 kilowatts (kWh) per week (see calculations in Appendix E); Alternatives 3 and 5 cover 5.7% less distance than Alternatives 2 and 4, and are therefore assumed to consume 5.7% less energy.

Consistency with GHG Reduction Plans

Less than significant impact. Senate Bill 375 (SB 375) was enacted to reduce GHG emissions from automobiles and light trucks through integrated transportation, land use, housing and environmental planning. Under the law, SCAG is tasked with developing an SCS, a newly required element of the 2012 RTP that provides a plan for meeting emissions reduction targets set forth by the ARB.

On September 23, 2010, ARB issued a regional 8 percent per capita reduction target for the planning year 2020, and a conditional target of 13 percent for 2035 for the SCAG region. The currently conforming SCAG 2012–2035 RTP/SCS successfully achieves and exceeds these GHG emission-reduction targets set by ARB by achieving a 9 percent reduction by 2020 and 16 percent reduction by 2035 compared to the 2005 level on a per capita basis. The project is also identified in the recently adopted (April 2016), but not yet approved by EPA, SCAG 2016-2040 RTP/SCS, which also meets SB 375 GHG per capita reduction targets.

Because the proposed Project is identified in the currently conforming SCAG 2012 RTP/SCS (project number LA0G901) and recently adopted SCAG 2016–2040 RTP/SCS, project emissions would not conflict with any plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

Additionally, as shown in Table 3.6-5, the Project is estimated to result in a net decrease in GHG emissions under all build alternatives. Project GHG emissions would be less than significant. No mitigation measures are necessary.

3.6.4 Cumulative Impacts

The net change in GHG emissions due to the Project depends on the level of ridership (and consequent reduction in VMT) that the Project attracts, as discussed above. Under the lowest ridership forecast of Alternative 5, the Project is estimated to result in a net decrease in GHG emissions of 335 MTY. Net GHG emissions reductions under all other build alternatives would be greater than 335 MTY. As such, project GHG emissions under all build alternatives would remain below the SCAQMD significance threshold of 10,000 MTY CO_2e and the SCAQMD draft screening significance threshold of 3,000 MTY. The City does not have stated thresholds, and those of the SCAQMD are therefore being used to provide guidance until such time as other guidance becomes available. Finally, as the proposed Project is identified in the SCAG 2012 RTP/SCS (project number LA0G901), project GHG emissions would not conflict with any plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. For these reasons, the Project's contribution to global GHG emissions and climate change would be less than significant.

While cumulative GHG emissions would continue to be significant on a global basis, the Project contribution under any of the build alternatives would not be considered cumulatively considerable.

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3.7 Hazards and Hazardous Materials

This section addresses the potential for the Project to expose people and the environment to hazards and hazardous materials. Hazardous materials information in this section is based primarily on the Phase I Environmental Site Assessment (ESA) (July 2013) and the Phase I ESA for the South Park East MSF Site (May 2015), both conducted by HDR Engineering, Inc. (HDR). Both of the Phase I ESAs are included in Appendix F to this Draft Environmental Impact Report (EIR) and incorporated by reference herein.

3.7.1 Regulatory Setting

Hazardous substances are typically toxic, corrosive, ignitable, explosive, or chemically reactive. They may occur at a given location naturally, as a result of recent industrial or construction activities, or as a result of historical uses. Hazardous substances are defined in the federal *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA), Section 101(14), and Title 22 of the *California Code of Regulations* (CCR), Chapter 11, Article 2, Section 66261. Federal, state, and local laws regulate the use and management of hazardous or potentially hazardous or explosive substances.

For this analysis, soil that is excavated from a site that contains hazardous materials would be considered a hazardous waste if specific CCR Title 22 criteria are exceeded. Remediation (i.e., cleanup and safe removal/disposal) of hazardous wastes found at a site is required if such materials are excavated; it may also be required if certain other activities are proposed. Even if the soil or groundwater at a contaminated site lacks the characteristics that require it to be defined as hazardous waste, remediation of the site may still be required by regulatory agencies, subject to jurisdictional authority.

3.7.1.1 Federal

Federal Toxic Substances Control Act (1976) and *Resource Conservation and Recovery Act of 1976*

The *Federal Toxic Substances Control Act* (1976) and the *Resource Conservation and Recovery Act of 1976* (RCRA) established a program, administered by the U.S. Environmental Protection Agency (EPA), to regulate the generation, transportation, treatment, storage, and disposal of hazardous waste. Hazardous waste in California is regulated primarily under the authority of RCRA (*United States Code* [USC] Title 42, Section 6901 et seq.). RCRA was established in 1976 to protect human health and the environment, reduce waste, conserve energy and natural resources, and eliminate the generation of hazardous waste. Under the authority of RCRA, the regulatory framework for managing hazardous waste, including requirements for entities that generate, store, transport, treat, or dispose of hazardous waste, is found in *Code of Federal Regulations* (CFR) Title 40, Sections 260–299. Other applicable federal laws and regulations include the following:

- 49 CFR Sections 172 and 173: These regulations establish standards for the transport of hazardous materials and hazardous wastes. The standards include requirements for labeling, packaging, and shipping hazardous materials and hazardous wastes as well as training requirements for personnel who complete shipping papers and manifests.

- 40 CFR Subchapter I—Solid Wastes: These regulations implement the provisions of the *Solid Waste Act* and RCRA. They also establish criteria for the classification of solid waste disposal facilities (landfills), hazardous waste characteristic criteria and regulatory thresholds, and hazardous waste generator requirements as well as requirements for the management of used oil and universal wastes.

3.7.1.2 State

California Environmental Protection Agency

The California Environmental Protection Agency (Cal/EPA), created in 1991, unified California's environmental authority in a single cabinet-level agency and placed the California Air Resources Board (ARB), State Water Resources Control Board (SWRCB), Regional Water Quality Control Board (RWQCB), CalRecycle, Department of Toxic Substances Control (DTSC), the Office of Environmental Health Hazard Assessment (OEHHA), and the Department of Pesticide Regulation (DPR) under one agency.

California Hazardous Waste Control Law (*California Health and Safety Code* Section 25100, et seq.) (1972)

The *California Hazardous Waste Control Law* (HWCL) is administered by CAL/EPA to regulate hazardous wastes. The HWCL lists 791 chemicals and about 300 common materials that may be hazardous. The HWCL establishes criteria for identifying, packaging, and labeling hazardous wastes; prescribes management controls; and establishes permit requirements for treatment, storage, disposal, and transportation. It also identifies some wastes that cannot be disposed of in landfills. According to CCR Title 22, Chapter 11, Article 3, substances with toxicity, ignitability, corrosivity, or reactivity are considered to be hazardous.

Hazardous Waste Control Act (Section 25100 et seq.)

DTSC is responsible for enforcement of the *Hazardous Waste Control Act* (*California Health and Safety Code* Section 25100 et seq.), which creates the framework for managing hazardous wastes in California. The law provides for the development of a hazardous waste program that administers and implements the provisions of the federal RCRA cradle-to-grave waste management system in California. It also provides for the designation of California-only hazardous waste and the development of standards that are equal to or, in some cases, more stringent than federal requirements.

California Code of Regulations, Title 8—Industrial Relations

Occupational safety standards exist in federal and state laws to minimize worker safety risks from both physical and chemical hazards in the workplace. The federal Occupational Safety and Health Administration (OSHA) and the California Division of Occupational Safety and Health (known as Cal/OSHA) are the agencies with responsibility for ensuring employee safety in the workplace. Cal/OSHA assumes primary responsibility for developing and enforcing standards for safe workplaces and work practices. These standards would apply to the Project's construction activities.

California Labor Code (Division 5, Parts 1, 6, 7, and 7.5)

The *California Labor Code* is a collection of regulations that include workplace regulations to ensure appropriate training regarding the use and handling of hazardous materials and the operation of equipment and machines that use, store, transport, or dispose of hazardous materials. Division 5, Part 1, Chapter 2.5, ensures that employees who handle hazardous materials are appropriately trained and informed about the materials. Division 5, Part 6, governs operation and care of hazardous material storage tanks and boilers. Division 5, Part 7, ensures that employees who work with volatile flammable liquids are outfitted with appropriate safety gear and clothing. Division 5, Part 7.5, otherwise referred to as the *California Refinery and Chemical Plant Worker Safety Act of 1990*, was enacted to prevent or minimize the consequences of catastrophic releases of toxic, flammable, or explosive chemicals.

Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program) (*California Health and Safety Code*, Chapter 6.11, Sections 25404–25404.9)

This program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities of the environmental and emergency response programs and provides authority to the Certified Unified Program Agency (CUPA). The CUPA for the City of Los Angeles and unincorporated areas of the county is the City of Los Angeles Fire Department's Bureau of Fire Prevention and Public Safety, which has the authority to implement and enforce CUPA program requirements, including the following:

- **California Accidental Release Prevention (Cal ARP) Program.** This program requires any business that handles more than threshold quantities of an extremely hazardous substance to develop a Risk Management Plan (RMP).
- **Hazardous Materials Management Plan (HMMP)/Hazardous Materials Inventory Statements.** HMMPs contain basic information regarding the location, type, quantity, and health risks of hazardous materials and/or waste. Each business must prepare an HMMP if that business uses, handles, or stores a hazardous material and/or waste or an extremely hazardous material in quantities greater than or equal to the following:
    - 55 gallons for a liquid,
    - 500 pounds for a solid,
    - 200 cubic feet for any compressed gas, and
    - Threshold planning quantities of an extremely hazardous substance.
- **Hazardous Waste Generator Program**. This program regulates businesses that generate any amount of a hazardous waste. Proper handling, recycling, treating, storing, and disposing of hazardous waste are key elements of this program.
- **Tiered Permitting Program**. This program regulates the on-site treatment of hazardous waste.
- **Underground Storage Tank (UST) Program.** This program regulates the construction, operation, repair, and removal of USTs that store hazardous materials and/or waste.

3.7.1.3 Regional and Local

South Coast Air Quality Management District Rule 1403

Rule 1403, as amended, specifies work practice requirements to limit asbestos emissions from building demolition and renovation activities, including the removal and associated disturbance of asbestos-containing materials (ACMs). The requirements for demolition and renovation activities include asbestos surveying, notification, ACM removal procedures and time schedules, ACM handling and cleanup procedures, and storage, disposal, and landfilling requirements for asbestos-containing waste materials (ACWMs). All operators are required to maintain records, including waste shipment records, and use appropriate warning labels, signs, and markings.

Los Angeles County

The Los Angeles County Department of Public Works (DPW), Environmental Programs Division (EPD), prepares and administers the *Los Angeles County Integrated Waste Management Plan* and *Hazardous Waste Management Plan*, which provide direction for proper management of all waste generated within the county. As the county's lead agency, it advises the Los Angeles County Board of Supervisors regarding all waste management issues. EPD implements numerous programs to meet state-mandated solid waste reduction goals, including recycling, composting, source-reduction, household hazardous waste management, and public education programs. These programs regulate USTs in the county's unincorporated areas and more than 76 cities to protect groundwater resources.

City of Los Angeles

The City of Los Angeles Bureau of Sanitation is charged with collecting, cleaning, and recycling solid and liquid waste (including hazardous waste) generated by residential, commercial, and industrial users in the City of Los Angeles and surrounding communities.

City of Los Angeles Fire Code

The *City of Los Angeles Fire Code* prescribes laws pertaining to storing and handling hazardous material as well as safeguarding life and property from fire, explosion, panic, or other hazardous conditions that may arise in the use of buildings, structures, or other premises (*City of Los Angeles Municipal Code* Chapter 5, Article 7).

City of Los Angeles Fire Department Hazardous Materials Section

The City of Los Angeles Fire Department Hazardous Materials Section is the administrative agent for the *California Health and Safety Code*, CCR sections related to emergency planning and community right-to-know laws, and the federal *Superfund Amendments and Reauthorization Act*, Title III. Three units within this department process information related to hazardous materials. The Disclosure Unit is responsible for enforcing the disclosure law, which requires all establishments that store, produce, or use hazardous substances to inventory the materials on site; this includes new and existing businesses. The Business Plan Unit ensures that businesses take the right measures to mitigate any dangers. The Risk Management and Prevention Unit is responsible for evaluating Risk Management Prevention Plans that businesses must submit according to state law.

City of Los Angeles Fire Department Bureau of Fire Prevention and Public Safety (Underground Storage Tanks)

The Bureau of Fire Prevention and Public Safety maintains an Underground Storage Tank Unit, which implements and enforces the Underground Storage Tank Program. All USTs that are used to store fuel, solvents, or other liquids must be monitored for leakage. The law requires UST installations, removals, or alterations to be regulated under permit from the City of Los Angeles Fire Department.

City of Los Angeles Building Code

Division 71 of the *City of Los Angeles Building Code* sets forth regulations for the control of methane intrusion emanating from geologic formations. The methane seepage regulations specify site testing requirements and methane mitigation standards for all new buildings and paved areas (i.e., 5,000 square feet of paved area within 15 feet of an exterior wall of a commercial, industrial, institutional, or residential building) within designated methane zones or within methane buffer zones.

3.7.2 Environmental Setting/Affected Environment

The alignments for each of the project alternatives, as well as potential maintenance and storage facility (MSF) and traction power substation (TPSS) locations, make up the study area for this analysis. All land in the study area was included for analysis, including public rights-of-way and private properties. In addition, a one-eighth-mile buffer surrounding the alignments was evaluated for potential hazards and hazardous materials.

Existing buildings within the study area consist largely of multi-story office, commercial, residential, and retail buildings. Commercial warehouses are also present. Building construction dates back to the late 1920s. Given the mixed land uses in the area, the configurations, construction types, and sizes of the buildings vary, depending on the type of development (e.g., residential, commercial, retail) and the date of construction. In addition to the buildings, numerous paved parking lots are located within the study area. Subsurface utilities that are typical of urban development are also located within the study area as well as subsurface petroleum exploration, production, and distribution facilities.

A site reconnaissance survey of the study area was conducted on August 15 and 16, 2012; the survey did not identify other sites of concern. No indications of large-scale spills or hazardous material usage or disposal were identified within the study area. No pits, ponds, lagoons, or other indications of buried or large-scale hazardous material deposits were identified during the reconnaissance.

3.7.2.1 Records Review

Environmental Records Review

An environmental records search of federal, state, local, and proprietary databases was conducted as part of the July 2013 Phase I ESA. The database report contains a map and information regarding pertinent environmental records for the study area. The database search report identified 494 environmental listings within the study area or the one-eighth-mile surrounding vicinity. According to the evaluation, 68 records correspond to 37 sites that are considered to be of concern to the Project.

A one-quarter-mile buffer zone surrounding the project area was evaluated for purposes of the Environmental Data Resources (EDR) search radius for the South Park East MSF Site Phase I ESA (May 2015). The EDR database search identified 507 regulatory listings within the one-quarter-mile buffer zone of the project area. A total of 120 regulatory listings were located within one-eighth of a mile of the project area boundary. A total of 40 regulatory listings associated with 27 sites were identified adjacent to, previously adjacent to, or in the general vicinity (i.e., one-tenth of a mile) of the MSF site.

The data obtained from the listings are summarized in Appendix F. Table 3.7-1 contains information related to sites listed in various hazardous materials databases. Table 3.7-2 contains information specific to leaking underground storage tank (LUST) sites. The locations of recognized environmental conditions (RECs) with a risk rating of moderate or high are shown in Figure 3.7-1.

Table 3.7-1. Hazardous Materials Release Cases

Map ID	Site Name	Address	Associated Database(s)[a]	Risk Ranking/REC or HREC[b]
-	Jewelry Design Center/ Kirk-Rick Dials	404 W. 7th Street	CERCLIS, EnviroStor, ICIS	Low/HREC
AE	Staples Center	1111 S. Figueroa Street	CERCLIS, SLIC, UST	High/REC
O	Unique Premium Metals	640 S. Hill Street	RCRA Large-Quantity Generator (with violations)	Moderate/No REC
-	West Sixth and Broadway Partnership	314 W. 6th Street	EnviroStor	Indeterminate/REC
-	Los Angeles United Investment Co.	650 S. Hill Street	EnviroStor	Indeterminate/REC
-	M&M Holding, LLC	629 S. Hill Street	EnviroStor	Indeterminate/REC
-	United Building Associates	707 S. Broadway	EnviroStor	Indeterminate/REC
-	Park Central Building	412 W. 6th Street	EnviroStor	Indeterminate/REC
-	Arco-Lyondell Petrochemical	911 Wilshire Boulevard	TSCA	Indeterminate/REC
AP	Biltmore Cleaners	342 W. 9th Street	Drycleaners	Moderate/REC
-	Los Angeles Job Core	221 W. 11th Street	HAZNET	Low/No REC
-	AT&T Center	1150 S. Olive Street	HAZNET	Low/No REC
-	LBA Realty	1149 S. Olive Street	FINDS	Low/No REC
X	Wilson, L.C.	208 W. 11th Street	US Hist Cleaners	Moderate/REC
-	Associated Press	1111. S Hill Street	FINDS, RCRA-SQG	Low/No REC
-	Brickley Environmental	1049 S. Hill Street	HAZNET	Low/No REC
W	F. C. Broadway and Hill	1108 S. Hill Street	EnviroStor, VCP	Moderate/REC
-	C. I. Printing	1035 S. Olive Street	HAZNET	Low/No REC
-	YWCA, Greater LA	1020 S. Olive Street	NPDES	Low/No REC

Source: HDR Engineering, Inc. 2013, 2015.
[a] CERCLIS = Comprehensive Environmental Response, Compensation and Liability Information System; ICIS = Integrated Compliance Information System; SLIC = spills, leaks, investigation and cleanup;
TSCA = *Toxic Substance Control Act*; SQG = Small-Quantity Generator; VCP = Voluntary Cleanup Program; NPDES = National Pollutant Discharge Elimination System
[b] HREC = Historical Recognized Environmental Conditions; REC = Recognized Environmental Conditions
Shaded rows indicate high-risk cases. Cases with a high or moderate risk rating have been mapped in Figure 3.7-1.

Table 3.7-2. Leaking Underground Storage Tank Cases

Map ID	Site Name	Address	LUST Listing	Hist Cortese Listing	LUST Case Open	LUST Case Closed	Soil Contamination	Groundwater Contamination	Contaminants of Concern[a]	Other Details and/or File Review Notes (when available)[b]	Risk Ranking/ REC or HREC[c]
K	Times Mirror	240 S. Hill Street	X	X	12/91	08/97	X	X	Solvents, non-petroleum hydrocarbon	Site located adjacent to Alternatives 2–5.	High (based on location and groundwater impact)/HREC
L	Bradbury Building	304 S. Broadway	X		06/05	03/08	X		Gasoline	Site located adjacent to Alternatives 2–5.	High (based on location)/HREC
V	Carrier Center LA	600 W. 7th Street	X		07/94	06/95	X		Diesel	Site located adjacent to Alternatives 2 and 3.	High (based on location)/HREC
M	Twin Springs	433 S. Spring Street	X	X	02/02	09/11	X		Gasoline	Release located approximately 400 feet east of Alternatives 2–5 Case closed with residual contamination present on-site.	Moderate/HREC
B	**County of LA**	**145 N. Grand Avenue**	**X**		**05/95**	**Open**	**X**		**Gasoline**	**LUST case remains open. Site is located approximately 200 feet north of Alternatives 2 and 4.**	**High (based on open LUST case)/REC**
C	Times Mirror Corp	145 S. Spring Street	X	X	04/88	03/89	X		Gasoline	No additional information available. Site located adjacent to Alternatives 2–5.	Moderate/HREC
A	LA Co Hall of Admin	500 W. Temple Street	X	X	10/86	09/90	X		Diesel	No additional information available. Site located approximately 600 feet north of Alternatives 2–5.	Moderate/HREC
AD	No site name listed	1050–1070 S. Flower Street	X		12/03	03/07	X		Heating/fuel oil	Affected soil excavated from site in 2003. Site located adjacent to Alternatives 2–5.	Moderate/HREC
AB	Unocal # 1300	730 W. Olympic Boulevard	X	X	03/94	06/94	X		Other solvents, non-petroleum hydrocarbon	Site located adjacent to Alternatives 2–5.	High (based on location)/HREC
AA	**Shell**	**504 W. Olympic Boulevard**	**X**		**02/05**	**7/13**	**X**	**X**	**Gasoline, diesel, MTBE, TBA, other fuel oxygenates**	**Extent of contamination not yet fully defined, per regulatory agency.** Site located approximately 500 feet north of the 11th Street alignment in Alternatives 2–5.	**High /REC**
Z	801 Tower Building	845 S. Figueroa Street	X	X	10/93	03/96	X	X	Gasoline	Site located adjacent to Alternatives 2–5. According to regulatory agency, extent of contamination is limited.	High (based on location and groundwater impact)/HREC
AG	**Arco #5033**	**1151 S. Flower Street**	**X**		**08/95**	**4/13**	**X**		**Gasoline**	**Site located approximately 250 feet south of Alternatives 2–5. No additional information regarding LUST case was available.**	**High (based on location)/REC**
-	Morllin Mgmt/ Former Union Oil Co	617 W. 7th Street		X	Unknown	Unknown	Unknown	Unknown	Unknown	Site located adjacent to Alternatives 2 and 3. No additional information available from HDR report or County RWQCB.	Indeterminate/ REC
AC	**Chevron/Former Car Wash**	**811 W. Olympic Boulevard**	**X**		**03/03**	**7/13**	**X**	**X**	**Gasoline**	**Site located adjacent to Alternatives 2–5. Non-actionable levels of TPH-gasoline, benzene, ethylbenzene, toluene, and xylenes detected in soil samples collected in January 2012. Case closure letter submitted.**	**High (based on location)/REC**

Source: HDR Engineering, Inc. 2013, 2015. The cases have at 504 W. Olympic Boulevard and 1151 S. Flower Street have been updated according to data collected from GeoTracker.
[a] MTBE = methyl tertiary butyl ether, TBA = tertiary butyl alcohol, TPH = total petroleum hydrocarbon
[b] Regulatory files reviewed at the Los Angeles County Regional Water Quality Control Board and/or associated GeoTracker website.
[c] REC = Recognized Environmental Condition, HREC = Historical REC
Bold text indicates open or active regulatory case.
Shaded rows indicate high-risk cases. Cases with a high or moderate risk rating have been mapped in Figure 3.7-1.

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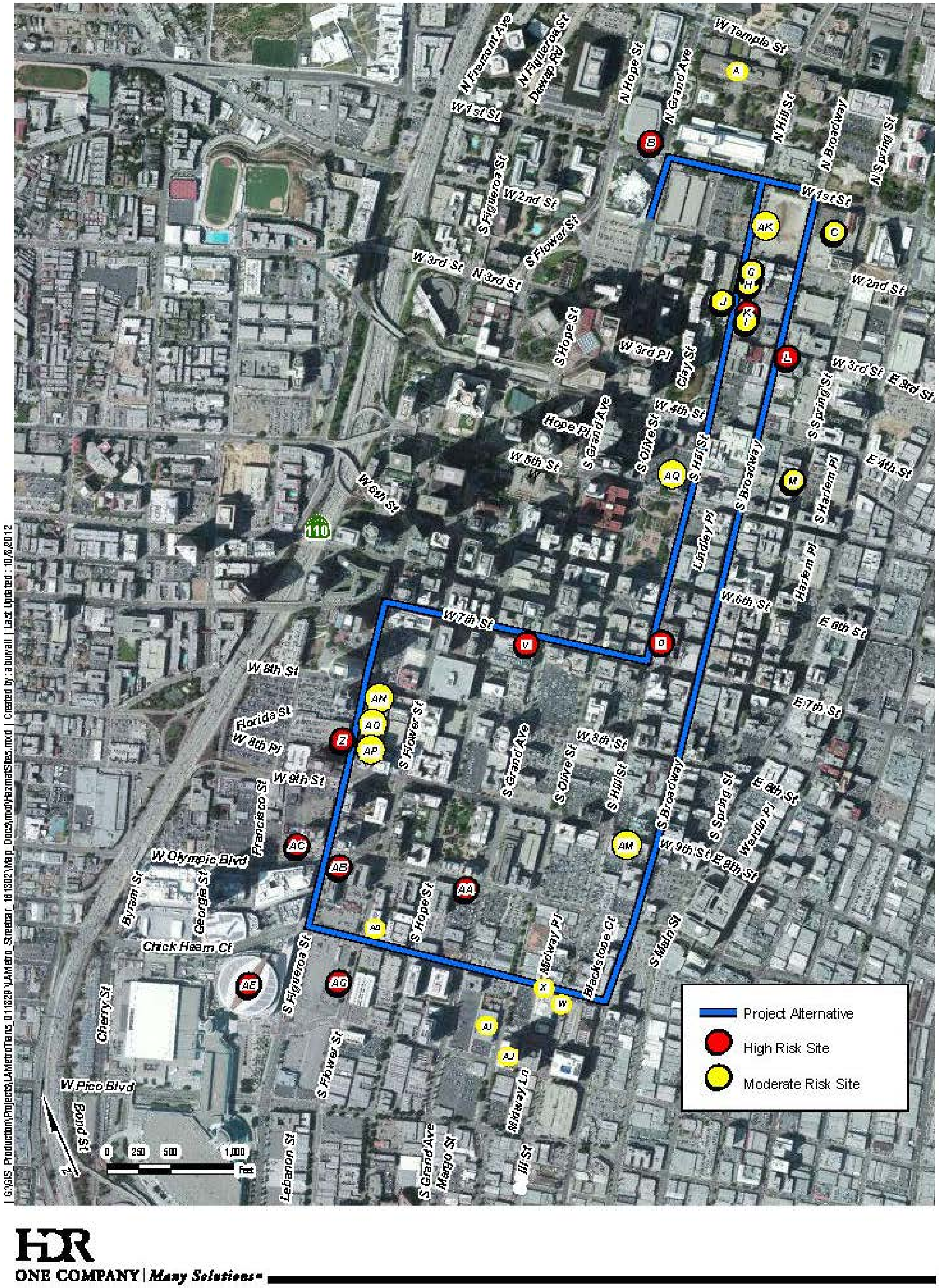
Figure 3.7-1. High or Moderate Risk Recognized Environmental Conditions



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Given the potential for grading/excavation at the MSF/TPSS sites, as well as the potential for soil contamination in the vicinity of USTs (even if not classified as a LUST), the UST sites listed in Table 3.7-3 are considered to be a moderate risk and a REC.

Table 3.7-3. Underground Storage Tank Sites

Map ID	Site Name	Address	Associated Database(s)[a]	Project Component Potentially Affected
G	Current Occupant (Cherry Pick Cafe)	208 S. Hill Street	SWEEPS, CA FID	MSF Broadway and 2nd
H	Webster Career College	222 S. Hill Street	SWEEPS, CA FID	MSF Broadway and 2nd
I	Current Occupant (Parking Lot)	240 S. Hill Street	SWEEPS, CA FID	MSF Broadway and 2nd
J	Angelus Plaza	245 S. Hill Street	State UST, SWEEPS, CA FID	MSF Broadway and 2nd
AI	AT&T Center Parking Garage	1133 S. Olive Street	State UST, SWEEPS, CA FID, HIST UST	MSF 11th and Olive (East and West)
AJ	AT&T Center	1150 S. Olive Street	SWEEPS, CA FID	MSF 11th and Olive (East and West)
AK	Office of Fleet Management	122 S. Hill Street	State UST, SWEEPS, CA FID, HIST UST	TPSS
C	*Los Angeles Times*	130 S. Broadway	SWEEPS	TPSS
C	Los Angeles Times Parking Structure	150 S. Broadway	SWEEPS	TPSS
AM	9th and Hill Partnership	220 W. 9th Street	SWEEPS	TPSS
AN	800 Figueroa Building	800 S. Figueroa Street	State UST, SWEEPS, CA FID, HIST UST	TPSS
AO	Service Station	860 S. Figueroa Street	HIST UST	TPSS
AP	888 International Tower	888 S. Figueroa Street	SWEEPS	TPSS
AQ-	Title Guarantee Building	411 W. 5th Street	SWEEPS, CA FID	MSF Hill and 5th

Source: HDR Engineering, Inc. 2013, 2015.
[a] SWEEPS = Statewide Environmental Evaluation and Planning System UST database; CA FID = California Facility Inventory UST database; HIST UST = Historical UST registered database

Ten additional sites of concern were identified from reviews of historical resources (e.g., Sanborn fire insurance maps, historical aerial imagery, and City directories). The sites are considered to be of concern given the likelihood for USTs or other historic hazards to have been on the sites previously (see Table 3.7-4).

Table 3.7-4. Sites of Concern Identified from Sanborn Insurance Maps

Site Name	Location	Year(s) Depicted	Notes
Gas & Oil	Southwest corner of 1st Street and Hill Street	1906, 1923, 1950	Site located adjacent all alternatives
Gas & Oil	Southeast corner of 1st Street and Hill Street	1906, 1923, 1950	Site located adjacent all alternatives
Gas & Oil	Southeast corner of 2nd Street and Grand Avenue	1906, 1923, 1950	Site located adjacent to Alternatives 2 and 4
Gas & Oil	South of 11th Street, between Grand Avenue and Olive Street	1888	Historic gas station was located in the location of MSF 11th and Olive (East and West)
Gas Station	Southeast corner of Figueroa Street and Olympic Boulevard	1906, 1923, 1950	Site is at the location of the Unocal Station identified from the HDR review. Risk ranking elevated to high risk based on regulatory listing.
Gas & Oil	Southwest corner of 8th Street and Figueroa Street	1906, 1923, 1950	Site located adjacent to Alternatives 2 and 3.
Gas & Oil	Southwest corner of Flower Street and 11th Street	1906, 1923, 1950	Site located adjacent to all alternatives.
Gas & Oil	Northwest corner of 9th Street and Flower Street	1906, 1923, 1950	Site located adjacent to Alternatives 4 and 5.
Gas & Oil	Southwest corner of 9th Street and Hope Street	1906, 1923, 1950	Site located adjacent to Alternatives 4 and 5.
Auto Service/ Gas & Oil	Southeast corner of S. Olive Street and W. 11th Street	1953	Site located adjacent to the location of MSF 11th and Olive (East and West)
Source: HDR Engineering, Inc. 2013, 2015.			

3.7.3 Environmental Impact Analysis

3.7.3.1 Methodology

The following analysis evaluates potential effects related to hazards and hazardous materials resulting from implementation of the Project. The impact analysis assesses direct and indirect impacts related to hazards and hazardous materials, given the existing conditions described above, and determines whether they would exceed any of the thresholds listed below.

3.7.3.2 Thresholds of Significance

According to the *L.A. CEQA Thresholds Guide* (2006), the following factors are to be considered on a case-by-case basis when determining the significance of impacts related to hazards and hazardous materials:

Risk of Upset/Emergency Preparedness

- The regulatory framework.

- The probable frequency and severity of consequences to people or property as a result of a potential accidental release or explosion of a hazardous substance.
- The degree to which the project may require a new, or interfere with an existing, emergency response or evacuation plan and the severity of the consequences.
- The degree to which project design would reduce the frequency or severity of a potential accidental release or explosion of a hazardous substance.

Human Health Hazards

- The regulatory framework for the health hazard.
- The probable frequency and severity of consequences to people from exposure to the health hazard.
- The degree to which project design would reduce the frequency of exposure or severity of consequences of exposure to the health hazard.

3.7.3.3 Impacts

Alternative 1: No Project Alternative

Construction Impacts

Risk of Upset/Emergency Preparedness

No impact. Under the No Project Alternative, no construction activities would be undertaken. Consequently, there would be no change with respect to the frequency or severity of a potential accidental release or explosion of a hazardous substance. In addition, there would be no change with respect to emergency response or evacuation plans.

Human Health Hazards

No impact. Under the No Project Alternative, no construction activities would be undertaken. Consequently, there would be no change with respect to the probability, frequency, or severity of human exposure to health hazards.

Operational Impacts

Risk of Upset/Emergency Preparedness

No impact. Under the No Project Alternative, the Project would not be implemented. Consequently, there would be no change with respect to the frequency or severity of a potential accidental release or explosion of a hazardous substance. In addition, there would be no change with respect to emergency response or evacuation plans.

Human Health Hazards

No impact. Under the No Project Alternative, the Project would not be implemented, but ongoing improvements to the transportation system in downtown Los Angeles would occur. Consequently, there would be no change with respect to the probability, frequency, or severity of human exposure to health hazards.

Alternative 2: 7th Street Alternative With Grand Avenue Extension

Construction Impacts

Risk of Upset/Emergency Preparedness

Less-than-significant impact. Given the historic industrial uses in the study area, there is potential for contaminated soils to be uncovered during construction of Alternative 2. It is possible that workers could encounter buried tracks from the past operation of streetcars, a possible source of soil contamination from creosote-contaminated railroad ballast. The removal of contaminated soil and other hazardous wastes may pose a hazard to construction workers and the surrounding population if improperly managed. Construction of the Project could result in significant impacts related to the excavation and disposal of hazardous materials prior to mitigation. Mitigation Measures **MM-HM-C1 through MM-HM-C6**, related to the treatment and disposal of soils, would reduce this potential impact to a less-than-significant level.

The July 2013 Phase I ESA conducted for the Project revealed evidence of 27 RECs and 10 HRECs, some of which are now closed cases. As previously indicated, the site reconnaissance of the study area conducted on August 15 and 16, 2012, did not identify other sites of concern. No indications of large-scale spills or hazardous material usage or disposal were identified within the study area. No pits, ponds, lagoons, or other indications of buried or large-scale hazardous material deposits were identified during the reconnaissance.

Given that groundwater is found at depths of 30 to 50 feet below ground surface in the project vicinity (HDR 2013), it is unlikely that groundwater would be encountered during construction. However, if groundwater is encountered, there is potential for it to be contaminated given the past industrial uses in the area, and impacts could be significant prior to the implementation of mitigation measures. Implementation of Mitigation Measures **MM-HM-C7 and MM-HM-C8** would reduce this impact to a less-than-significant level.

Although unlikely, construction activities have the potential to result in the release of hazardous materials (e.g., fuel leaking from equipment or contaminated soil spilling during transport). With implementation of Mitigation Measures **MM-HM-C1 through MM-HM-C8**, impacts associated with the potential accidental release of hazardous materials during construction would be less than significant.

As identified in Tables 3.7-1 through 3.7-4, Alternative 2 would be located close to RECs and HRECs. Excavation in such areas could encounter contaminated soils. Although the proposed alignment for Alternative 2 is within a transportation right-of-way, contaminant migration from adjacent sites to the path of the Project may have occurred. Excavation at the MSF and TPSS sites also has the potential to uncover contaminated soils. However, with implementation of Mitigation Measures **MM-HM-C1 through MM-HM-C8**, construction-related impacts associated with the proximity of Alternative 2 to sites containing hazardous materials would be less than significant.

No full road closures are anticipated during the construction period. Track construction along the route would occupy two lanes of traffic—one for the track and one for a work zone. The remaining lanes would be open to traffic, and the sidewalks would remain open to pedestrians. Construction vehicles may enter and exit the general traffic lanes, with flaggers, in the areas of construction. Short-duration lane closures, predominantly on one side or the other of the work zone, would be required for delivery of materials and during concrete pours. Because the work zone would be confined within the track area, lane closures are anticipated only for short segments and would be limited primarily to non-peak hours. None of the roadways that would be used are designated as emergency response routes, but emergency responders could continue to travel along these roadways as the location of the emergency dictates. A Traffic Management Plan (TMP) would be implemented, which will include consultation with emergency service providers (Los Angeles Police Department and Los Angeles Fire Department), and is discussed in **MM-TRAF-C1** in Section 3.10. The grid layout of the downtown Los Angeles area provides emergency responders with the flexibility to travel to an emergency scene by multiple routes, affording responders the ability to bypass known congested intersections. Construction would not require a new or revised emergency response plan. Close coordination with applicable emergency responders would occur. Therefore, impacts related to emergency services would be less than significant with mitigation.

Impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Human Health Hazards

Less-than-significant impact. As discussed previously, construction activities for Alternative 2 may require the transport of contaminated soils from the project site to disposal locations. The transport of such materials would involve potential exposure risks to construction workers and to the general public along roadways. However, with implementation of measures **MM-HM-C1** through **MM-HM-C6**, impacts would be less than significant.

Several schools are located within 0.25 mile of the project alignment:

- School for Integrated Academics and Technologies (SIATech) High School, 0.006 mile (30 feet).
- Fashion Institute of Design and Merchandising, 0.15 mile.
- California Academy for Liberal Studies Early College High School, 0.06 mile (307 feet).
- Green Dot Public School, 0.14 mile.
- Colburn School, 0.12 mile.

Other nearby schools include:

- Animo Inglewood Charter High, 0.54 mile from the project alignment.
- Abram Friedman Occupational School, 0.51 mile from the project alignment.
- Jardin de la Infancia School, 0.31 mile from the project alignment.

Given the site-specific nature of excavation and construction activities and the distance between the Alternative 2 alignment and schools, risks from contaminated soils or hazardous materials are considered to be low. The only school site located adjacent to the Alternative 2 alignment is SIATech High School. As recommended by the July 2013 Phase I ESA, a focused Preliminary Site Investigation (PSI) shall be conducted at this location, as prescribed by Mitigation Measure **MM-HM-C1**, to identify and mitigate the effects of any potential hazardous materials. Furthermore, haul route trucks would comply with the City's Notification of Hazardous Substances General Conditions. Therefore, impacts on schools could be significant prior to mitigation but less than significant with implementation of Mitigation Measure **MM-HM-C1**.

Impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Operational Impacts

Risk of Upset/Emergency Preparedness

Less-than-significant impact. Operation of Alternative 2 would involve the use of common chemicals for cleaning and maintenance of the streetcar vehicles, tracks, and other components. Past and current rail transit operations indicate that active streetcar track beds accumulate petroleum hydrocarbons from the use of lubricants as well as some shavings from the turning of steel wheels on steel rails. The degree of hazard and the magnitude of accumulation would not represent a public health concern because the Project's rail lubricants would be specified to be biodegradable. Steel shavings would be non-hazardous and produced in small quantities similar to those that occur along light rail lines. Impacts related to the routine transport, use, and disposal of hazardous materials during operation of Alternative 2 would be less than significant.

Following the completion of construction, no ground-disturbing activities would be associated with operation of the Project. Therefore, the risk of encountering contaminated soils and other hazardous materials on sites that are known to contain them would be minimal. The operational impacts would be less than significant.

Operation of Alternative 2 would not require a new or revised emergency response plan, nor would it interfere with adopted plans. As previously discussed, emergency responders would continue to travel along the roadways as the location of the emergency dictates. The Project would be served by Los Angeles Fire Department Division 1, Battalion 1, at Station No. 3 and the Los Angeles Police Department Central Division, Central Community Police Station. The Los Angeles County Sheriff's Department's Transit Services Bureau would provide contract police service and would be capable of responding to security-related emergencies along the project alignment. The Project would comply with all applicable emergency service requirements. Although significant impacts would occur at three intersections (Grand Avenue and 1st Street, Hill Street and 1st Street, and Hill Street and 7th Street) during the peak hours, as discussed in the traffic section, the grid layout of the downtown Los Angeles area provides emergency responders with the flexibility to travel to an emergency scene by multiple routes and affords responders the ability to bypass known congested intersections. Therefore, impacts occurring as a result of project implementation would be less than significant with the implementation of the TMP, as discussed in MM-TRAF-C1 in Section 3.10.

Human Health Hazards

Less-than-significant impact. The use and transport of any hazardous materials, such as lubricants and cleaning solvents, required for the operation of Alternative 2 would be minimal and would not pose a danger to children at nearby schools and childcare facilities. Any hazardous materials would be used and disposed of in compliance with existing regulations. Therefore, impacts would be less than significant.

Alternative 3: 7th Street Alternative Without Grand Avenue Extension

Construction Impacts

Risk of Upset/Emergency Preparedness

Less-than-significant impact. Construction impacts related to risk of upset and emergency preparedness under Alternative 3 would be similar to those described under Alternative 2, except that the Alternative 3 alignment and construction footprint would not include roadway modifications along Grand Avenue and a portion of 1st Street. Impacts would be less than significant with implementation of Mitigation Measures **MM-HM-C1 through MM-HM-C6**. Similar to Alternative 2, impacts related to groundwater would be less than significant with implementation of Mitigation Measures **MM-HM-C7 and MM-HM-C8**.

As specified under Alternative 2, no full road closures are anticipated during the construction period, and impacts related to emergency services would be less than significant with implementation of the TMP, as discussed in **MM-TRAF-C1** in Section 3.10.

Impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Human Health Hazards

Less-than-significant impact. Construction impacts related to human health hazards under Alternative 3 would be similar to those described under Alternative 2, except that the Alternative 3 alignment and construction footprint would not include roadway modifications along Grand Avenue and a portion of 1st Street. As identified under Alternative 2, construction-period impacts on schools could be significant prior to mitigation and less than significant with implementation of Mitigation Measure **MM-HM-C1**.

Overall, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Operational Impacts

Risk of Upset/Emergency Preparedness

Less-than-significant impact. As discussed for operation of Alternative 2, Alternative 3 would involve the use of common chemicals for cleaning and maintenance of the streetcar vehicles, tracks, and other components. However, such use would be as directed per manufacturer specifications and in non-hazardous quantities so that significant impacts would not result.

Emergency response impacts resulting from operation of Alternative 3 would be less than significant for the same reasons identified under Alternative 2.

Human Health Hazards

Less-than-significant impact. The use and transport of any hazardous materials would be similar to that described under Alternative 2. Impacts would be less than significant under Alternative 3.

Alternative 4: 9th Street Alternative With Grand Avenue Extension

Construction Impacts

Risk of Upset/Emergency Preparedness

Less-than-significant impact. Construction impacts related to risk of upset and emergency preparedness under Alternative 4 would be similar to those described under Alternative 2, except that the Alternative 4 alignment and construction footprint would include segments on 9th Street and Hill Street that would not be included under Alternative 2, and would not include segments on 7th Street and Figueroa Street that would be included under Alternative 2. Impacts would be mitigated to less-than-significant levels with implementation of Mitigation Measures **MM-HM-C1 through MM-HM-C6**. As under Alternative 2, impacts related to groundwater would be less than significant with implementation of Mitigation Measures **MM-HM-C7 and MM-HM-C8**.

As specified under Alternative 2, no full road closures are anticipated during the construction period, and impacts related to emergency services would be less than significant with implementation of the TMP, as discussed in **MM-TRAF-C1** in Section 3.10.

Overall, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Human Health Hazards

Less-than-significant impact. Construction impacts related to human health hazards under Alternative 4 would be similar to those described under Alternative 2, but the proximity to specific sites that potentially contain hazardous materials would differ somewhat. Construction-period impacts on schools could be significant prior to mitigation but less than significant with implementation of Mitigation Measure **MM-HM-C1**. Overall, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Operational Impacts

Risk of Upset/Emergency Preparedness

Less-than-significant impact. As discussed for the operation of Alternative 2, Alternative 4 would involve the use of common chemicals for cleaning and maintenance, and impacts would be less than significant. Emergency response impacts resulting from operation of Alternative 4 would be less than significant for the same reasons identified under Alternative 2.

Human Health Hazards

Less-than-significant impact. Risks related to human health hazards would be similar to those described for Alternative 2, and impacts would be less than significant.

Alternative 5: 9th Street Alternative Without Grand Avenue Extension

Construction Impacts

Risk of Upset/Emergency Preparedness

Less-than-significant impact. Construction impacts related to risk of upset and emergency preparedness under Alternative 5 would be similar to those described under Alternative 2 with the exceptions that the proximity to specific sites that potentially contain hazardous materials would differ somewhat and that the alignment and construction footprint would not include roadway modifications along Grand Avenue and a portion of 1st Street. Impacts would be less than significant with implementation of Mitigation Measures **MM-HM-C1 through MM-HM-C6**. Impacts related to groundwater would be less than significant with implementation of Mitigation Measures **MM-HM-C7 and MM-HM-C8**. Also, as detailed under Alternative 2, impacts related to emergency services would be less than significant with implementation of the TMP, as discussed in **MM-TRAF-C1** in Section 3.10.

Overall, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Human Health Hazards

Less-than-significant impact. Construction impacts related to human health hazards under Alternative 5 would be similar to those described under Alternative 2 with the exceptions that the proximity to specific sites that potentially contain hazardous materials would differ somewhat and that the alignment and construction footprint would not include roadway modifications along Grand Avenue and a portion of 1st Street. However, impacts would be less than significant with implementation of Mitigation Measure **MM-HM-C1**. Overall, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Operational Impacts

Risk of Upset/Emergency Preparedness

Less-than-significant impact. As discussed for operation of Alternative 2, Alternative 5 would involve the use of common chemicals and risk of upset, and impacts would be less than significant. Emergency response impacts resulting from operation of Alternative 5 would be less than significant for the same reasons identified under Alternative 2.

Human Health Hazards

Less-than-significant impact. The use and transport of any hazardous materials, such as lubricants and cleaning solvents, required for the operation of Alternative 5 would be minimal and would not pose a danger to children at nearby schools or childcare facilities. Any hazardous materials would be used and disposed of in compliance with existing regulations. Therefore, impacts would be less than significant.

Traction Power Substations (TPSS)

Construction Impacts

Risk of Upset/Emergency Preparedness

Less-than-significant impact. As shown in Table 3.7-3, USTs are located in proximity to potential TPSS locations. Given that the TPSS installation process would involve utility work below grade, any USTs located in proximity to the proposed TPSS locations may require removal, which could result in significant impacts stemming from risks related to the removal process and any potentially contaminated soil. However, with implementation of Mitigation Measure **MM-HM-C1**, a PSI will be prepared. The PSI will specify the procedures for dealing with USTs located in proximity to the TPSS locations, which would involve testing and stockpiling soils with readings exceeding 50 parts per million (ppm) for volatile organic compounds (VOCs). Mitigation Measures **MM-HM-C1 through MM-HM-C6** would also be implemented to mitigate impacts related to any contaminated soils encountered during the TPSS installation period.

With the exception the TPSS site near the 2nd Street/Grand Avenue intersection, all TPSS sites would be at off-street locations and would not impair or otherwise physically interfere with emergency response vehicles during the installation process. For the 2nd Street/Grand Avenue TPSS location, temporary lane closure may be required during the installation process, which could delay traffic flow in the immediate vicinity. Impacts at this location would be less than significant with implementation of the TMP, as discussed in **MM-TRAF-C1** in Section 3.10.

Overall, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Human Health Hazards

Less-than-significant impact. Construction impacts for the TPSS sites related to human health hazards would involve the removal and transport of soil, some of which may be contaminated, in proximity to school sites. However, with implementation of Mitigation Measures **MM-HM-C1 through MM-HM-C6**, impacts would be less than significant. Overall, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

Operational Impacts

Risk of Upset/Emergency Preparedness

Less-than-significant impact. During operation of the Project, an accidental release of hazardous substances could occur should there be an equipment failure at TPSS locations. However, the TPSS equipment would undergo substantial testing and routine maintenance once the Project is operational. Therefore, the risk of TPSS unit failure and accidents would be low. Furthermore, the TPSS unit would be enclosed within a structure and would be physically separated from passersby. Therefore, impacts would be less than significant.

All TPSS sites would be off-street locations and would not impair or otherwise physically interfere with emergency response vehicles during normal project operation. Maintenance activities could involve temporary lane closures, but these activities would be infrequent and would be limited to non-peak hours to the extent feasible.

Human Health Hazards

Less-than-significant impact. Following installation of the TPSS units, project operation would not generate or use hazardous materials in quantities that could result in substantial hazards to human health.

Maintenance and Storage Facility (MSF)

Broadway and 2nd Street

Construction Impacts

Risk of Upset/Emergency Preparedness

Less-than-significant impact. As documented in the July 2013 Phase I ESA, there are several RECs with either moderate or high risks located in proximity to the Broadway and 2nd Street MSF site. Construction would involve excavation and grading activities, which may result in workers encountering soil that has been contaminated from past industrial uses in the area. Potential impacts associated with contaminated soil would be mitigated to less-than-significant levels with implementation of Mitigation Measures **MM-HM-C1 through MM-HM-C6**. In the event that groundwater is encountered, there is also potential for it to be contaminated given the past industrial uses in the area, and impacts would be significant prior to implementation of mitigation measures. Implementation of Mitigation Measures **MM-HM-C7 and MM-HM-C8** would reduce this impact to a less-than-significant level. Overall, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

This site would be an off-street location and would not impair or otherwise physically interfere with emergency response vehicles.

Human Health Hazards

Less-than-significant impact. Construction of this site would involve the use of fuels (e.g., to power equipment) and other industrial chemicals. Such chemicals would be used in compliance with the manufacturers' specifications and in quantities that would not be considered hazardous. Access to the site would be controlled, and any chemicals temporarily stored at the site would be secured to prevent human health hazard impacts. Impacts would be less than significant.

Operational Impacts

Risk of Upset/Emergency Preparedness

Less-than-significant impact. Activities at the MSF, which would not be constructed or operated within the public right-of-way, would require handling and using volatile and hazardous substances, such as lubricants, oils, greases, and solvents, on a daily basis. Accidental releases are possible but would not present a substantial risk because these substances would be stored in compliance with existing regulations and industrywide safety standards. As discussed in Chapter 5, implementation of the Standard Urban Stormwater Mitigation Plan would prevent hazardous substances from leaving the MSF site as stormwater runoff.

Chemicals used for MSF operation would be stored, handled, and disposed of in compliance with existing regulations and manufacturers' specifications. Because these regulations and specifications detail the procedures related to the handling of substances at the MSF, the risks of an accidental release of hazardous materials into the environment would be minimized. Based on the remote likelihood of an accidental release, MSF operation would not pose a significant hazard to the public or the environment. The Project is not expected to require the routine use or transport of hazardous materials in addition to those typically associated with maintenance activities.

This MSF site would be an off-street location and would not impair or otherwise physically interfere with emergency response vehicles. Impacts would be less than significant.

Human Health Hazards

Less-than-significant impact. Potential human health hazards related to the operation of this MSF site would be limited to those that may occur as a result of the daily use of lubricants, oils, greases, and solvents. Such chemicals would be stored and disposed of in compliance with existing regulations and manufacturers' specifications so that they would not pose a substantial risk to human health in the vicinity. Impacts would be less than significant.

Hill Street and 5th Street

Construction Impacts

Risk of Upset/Emergency Preparedness

Less-than-significant impact. As documented in the July 2013 Phase I ESA, there are no RECs with either moderate or high risks located in the immediate vicinity of the Hill Street and 5th Street MSF site. Impacts associated with contaminated soil would be similar to those at the Broadway and 2nd Street site with the exception that the proximity to specific sites that potentially contain hazardous materials would differ somewhat. However, impacts would be less than significant with implementation of Mitigation Measures **MM-HM-C1 through MM-HM-C6**. Potential groundwater impacts would be less than significant with implementation of Mitigation Measures **MM-HM-C7 and MM-HM-C8**. Overall, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

This MSF site would be an off-street location and would not impair or otherwise physically interfere with emergency response vehicles.

Human Health Hazards

Less-than-significant impact. As with the Broadway and 2nd Street MSF site, construction of the Hill Street and 5th Street MSF site would involve the use of fuels to power equipment and other industrial chemicals in non-hazardous quantities, which would be stored in a secure manner to prevent hazards to human health. Impacts would be less than significant.

Operational Impacts

Risk of Upset/Emergency Preparedness

Less-than-significant impact. Activities at the Hill Street and 5th Street MSF site would be similar to those discussed for the Broadway and 2nd Street location, and impacts related to risk of upset and emergency preparedness would be less than significant.

Human Health Hazards

Less-than-significant impact. Potential human health hazards related to the operation of this MSF site would be limited to those that may occur as a result of the daily use of lubricants, oils, greases, and solvents. Such chemicals would be stored and disposed of in compliance with existing regulations and manufacturers' specifications so that they would not pose a substantial risk to human health in the vicinity. Impacts would be less than significant.

11th Street and Olive Street (East)

Construction Impacts

Risk of Upset/Emergency Preparedness

Less-than-significant impact. As documented in the July 2013 Phase I ESA, there are several RECs with either moderate or high risks located in the immediate vicinity of the 11th Street and Olive Street (East) MSF site. As with the Broadway and 2nd Street MSF site, potential impacts related to contaminated soil would be less than significant with implementation of Mitigation Measures

MM-HM-C1 through MM-HM-C6. In addition, potential groundwater impacts would be less than significant with implementation of Mitigation Measures **MM-HM-C7 and MM-HM-C8**. Overall, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

In addition to being located in proximity to RECs, the 11th Street and Olive Street (East) MSF site is located within a methane zone, according to the City's Zone Information and Map Access System (ZIMAS) (Version 3.0.1263 (d105)). Construction of this MSF site would comply with all applicable local regulations, including those related to methane, as specified in the Division 71 of the *City of Los Angeles Building Code*. Impacts would be less than significant.

The 11th Street and Olive Street (East) MSF site would be an off-street location and would not impair or otherwise physically interfere with emergency response vehicles.

Human Health Hazards

Less-than-significant impact. As with the Broadway and 2nd Street MSF site, construction of the 11th Street and Olive Street (East) MSF site would involve the use of fuels to power equipment and other industrial chemicals in non-hazardous quantities, which would be stored in a secure manner to prevent hazards to human health. Impacts would be less than significant.

Operational Impacts

Risk of Upset/Emergency Preparedness

Less-than-significant impact. Activities at the 11th Street and Olive Street (East) MSF site would be similar to those discussed for the Broadway and 2nd Street location, and impacts related to risk of upset and emergency preparedness would be less than significant.

Human Health Hazards

Less-than-significant impact. Potential human health hazards related to operation of the 11th Street and Olive Street (East) MSF site would be limited to those that may occur as a result of the daily use of lubricants, oils, greases, and solvents. Such chemicals would be stored and disposed of in compliance with existing regulations and manufacturers' specifications so that they would not pose a substantial risk to human health in the vicinity.

11th Street and Olive Street (West)

Construction Impacts

Risk of Upset/Emergency Preparedness

Less-than-significant impact. As documented in the July 2013 Phase I ESA, there are several RECs with either moderate or high risks located in the immediate vicinity of the 11th Street and Olive Street (West) MSF site. As with the Broadway and 2nd Street MSF site, potential impacts related to contaminated soil would be less than significant with implementation of Mitigation Measures **MM-HM-C1 through MM-HM-C6**. In addition, potential groundwater impacts would be less than significant with implementation of Mitigation Measures **MM-HM-C7 and MM-HM-C8**. Overall, impacts would be less than significant prior to mitigation being incorporated, and would remain less than significant following implementation of mitigation.

As with the 11th Street and Olive Street (East) MSF site, the 11th Street and Olive Street (West) MSF site is located within a methane zone, according to the City's ZIMAS (Version 3.0.1263 (d105)). With compliance with Division 71 of the *City of Los Angeles Building Code*, impacts would be less than significant.

The 11th Street and Olive Street (West) MSF site would be an off-street location and would not impair or otherwise physically interfere with emergency response vehicles.

Human Health Hazards

Less-than-significant impact. As with the Broadway and 2nd Street MSF site, construction of the 11th Street and Olive Street (West) MSF site would involve the use of fuels to power equipment and other industrial chemicals in non-hazardous quantities, which would be stored in a secure manner to prevent hazards to human health. Impacts would be less than significant.

Operational Impacts

Risk of Upset/Emergency Preparedness

Less-than-significant impact. Activities at the 11th Street and Olive Street (West) MSF site would be similar to those discussed for the Broadway and 2nd Street location, and impacts related to risk of upset and emergency preparedness would be less than significant.

Human Health Hazards

Less-than-significant impact. Potential human health hazards related to operation of the 11th Street and Olive Street (West) MSF site would be limited to those that may occur as a result of the daily use of lubricants, oils, greases, and solvents. Such chemicals would be stored and disposed of in compliance with existing regulations and manufacturers' specifications so that they would not pose a substantial risk to human health in the vicinity.

3.7.4 Mitigation Measures

The following mitigation measures are recommended to lessen the impacts of hazardous materials that otherwise could result.

Soil Contamination

MM-HM-C1: During construction, a focused PSI shall be conducted at specified locations adjacent to the identified sites of concern with moderate, high, and indeterminate risks as well as the proposed locations for the MSF and TPSSs. A PSI in these areas shall include a soil boring and laboratory analytical program to address contaminants of concern specific to each site. Soils that have visible staining or an odor shall first be tested in the field by the contractor or qualified environmental subcontractor with an organic vapor analyzer (OVA) or other field equipment for volatile components, which require additional considerations in their handling. Soil with OVA readings exceeding 50 ppm for VOCs (probe held 3 inches from the excavated soil face), or that is visibly stained or has a detectable petrochemical odor, shall be stockpiled by the contractor separately from non-contaminated soils. The stockpiles shall be barricaded near the excavation area, away from drainage areas or catch basins, on an impermeable plastic liner (6-millimeter nominal thickness and tested at 100 pounds per square inch). Caution must be taken to separate any contaminated soil from the remainder of the excavated material. If only a small amount of contaminated soil is encountered, it may be drummed in 55-gallon steel drums with sealing lids. The DPW Bureau of Engineering (BOE), through the construction contractor per bid specifications, shall be the responsible party. Enforcement shall be achieved through the DPW Contracts Administration Bureau Construction Inspector.

MM-HM-C2: Soil shall be sampled in a random and representative manner. To establish waste classification, samples shall be analyzed for total recoverable petroleum hydrocarbons (TRPH), VOCs, and total petroleum hydrocarbons (TPH) as gasoline or diesel if these fuels are found in the area, Title 22 heavy metals, reactivity (pH), corrosivity, and toxicity. The number of samples shall depend on the volume of material removed, with one sample for approximately every ton of soil. Storage space available at the site and neighborhood sensitivity shall determine the amount of soil that can be stockpiled. The DPW BOE, through the construction contractor per bid specifications, shall be the responsible party. Enforcement shall be achieved through the DPW Contracts Administration Bureau Construction Inspector.

MM-HM-C3: If VOCs are present at concentrations exceeding 50 ppm, a permit from the South Coast Air Quality Management District shall be required, which most likely shall require control of vapor, such as covering the stockpiles with plastic sheeting or wetting with water or a soap solution. The contractor shall obtain all necessary permits. The DPW BOE, through the construction contractor per bid specifications, shall be the responsible party. Enforcement shall be achieved through the DPW Contracts Administration Bureau Construction Inspector.

MM-HM-C4: During construction, suspected contaminated soil samples shall be taken to a state-certified environmental laboratory or tested in the field with a mobile lab and technician using infrared spectrometry in accordance with appropriate testing methods. Materials with elevated levels of TRPH, metals, or other regulated contaminants shall require handling by workers who have been adequately trained for health and safety aspects of hazardous material handling. The DPW BOE, through the construction contractor per bid specifications, shall be the responsible party. Enforcement shall be achieved through the DPW Contracts Administration Bureau Construction Inspector.

MM-HM-C5: Any contaminated material (soil, asphalt, railroad ballast, concrete, or debris) that is to be hauled off-site and is considered a "waste product" shall be classified as hazardous or nonhazardous waste under all criteria by both state and federal codes prior to disposal. If the waste soil or other material is determined hazardous, a hazardous waste manifest shall be prepared by the contractor or its qualified representative and the material transported to an appropriate class of facility for recycling or landfill disposal by a registered hazardous material transporter. If the soil is nonhazardous but still exceeds levels that preclude its return to the excavation, a less-costly nonhazardous transporter and soil recycling facility shall be used if no hazardous constituents are present above their respective action levels. The DPW BOE, through the construction contractor per bid specifications, shall be the responsible party. Enforcement shall be achieved through the DPW Contracts Administration Bureau Construction Inspector.

MM-HM-C6: At the start of construction, all construction contractors shall be instructed to immediately stop all subsurface activities in the event that potentially hazardous materials are encountered, an odor is identified, or significantly stained soil is visible. Contractors shall be instructed to follow all applicable regulations regarding discovery and response for hazardous materials encountered during the construction process. Furthermore, hazardous waste generated by the contractor at the site shall be disposed of in accordance with the City's

Notification of Hazardous Substances General Conditions in the construction contract. The DPW BOE, through the construction contractor per bid specifications, shall be the responsible party. Enforcement shall be achieved through the DPW Contracts Administration Bureau Construction Inspector.

Groundwater Contamination

MM-HM-C7: In the event groundwater is encountered during construction, dewatering shall be minimized to that required for removing interior or nuisance water from structures. Sampling ports shall be provided in the dewatering system. The produced water shall be required to be temporarily stored in large Baker-type tanks and analyzed by a state-certified environmental laboratory selected by the contractor. If the groundwater quality falls within guidelines established by the DPW, Bureau of Sanitation, a permit shall be obtained to discharge the water into a nearby sewer. The DPW BOE, through the construction contractor per bid specifications, shall be the responsible party. Enforcement shall be achieved through the DPW Contracts Administration Bureau Construction Inspector.

MM-HM-C8: During construction, if hydrocarbon or other water contamination precludes the measures in MM-HM-C7, the contaminated groundwater shall be treated on site (such as in an oil-water separator) or hauled off site for treatment and disposal in accordance with applicable regulations by a licensed professional. The DPW BOE, through the construction contractor per bid specifications, shall be the responsible party. Enforcement shall be achieved through the DPW Contracts Administration Bureau Construction Inspector.

3.7.4.1 Level of Significance after Mitigation

Construction

All significant impacts related to hazards and hazardous materials during construction would be reduced to less-than-significant levels with implementation of the mitigation measures detailed above. In addition, a TMP would be implemented to ensure that significant impacts related to the provision of emergency services would not occur, as detailed in MM-TRAF-C1 in Section 3.10.

Operation

No significant operational impacts were identified and, therefore, mitigation is not required.

There would be no significant unavoidable impacts related to hazards and hazardous materials.

3.7.5 Cumulative Impacts

Within the study area, several related projects (see Table 2-5 in Chapter 2, *Project Description*) are in proximity to the Project and could have an overlapping construction schedule with the Project. These projects include the Convention Center Modernization, the Regional Connector, the Wilshire Grand Project, the *Broadway Streetscape Master Plan*, and the Figueroa Corridor Streetscape Project.

3.7.5.1 Risk of Upset/Emergency Preparedness

Generally, impacts related to hazards and hazardous materials are considered to be site specific. Construction associated with ongoing and future projects in the project area could result in cumulative impacts on human health or the environment through the release of hazardous materials encountered in soil and/or groundwater or during building demolition. Compliance with applicable hazardous waste laws and regulations, along with the mitigation measures described above in Section 3.7.4, would ensure that the Project's contribution to these potential cumulative impacts would not be considerable.

Apart from the use of chemicals for the routine cleaning and maintenance associated with operation of the MSF, any hazardous materials that would be used would comply with all applicable regulations and would not endanger inhabitants at or near the MSF.

As discussed in Section 3.10, in conjunction with other projects in the area under construction and in operation, construction of the Project would involve temporary lane closures that would reduce roadway capacity such that delay could occur. Such delays could also temporarily affect emergency service providers in the project vicinity. With the implementation of the TMP, which is discussed in Section 3.10, project construction would not have a cumulatively considerable effect on the provision of emergency services. With respect to project operation, although delays would occur as a result of implementation of the Project, the low number of substantially affected intersections (3 of 65 analyzed) and the grid layout of downtown roadways would allow emergency service providers to reach emergency sites from alternative routes and avoid intersections with long delays. Therefore, the Project would not result in a cumulatively considerable contribution to cumulative effects related to emergency services.

3.7.5.2 Human Health Hazards

The potential for related projects in the study area to result in the accidental upset or release of hazardous materials would be confined to each individual project. Furthermore, the Project would adhere to mitigation measures aimed at reducing the risk of upset or an accidental release of hazardous materials, thereby minimizing the potential for significant impacts.

None of the related projects appear to include the routine handling of substantial quantities of hazardous materials, be located on a hazardous materials site that would create a significant hazard to the public or the environment, or have a significant impact on adopted emergency response or evacuation plans; therefore, impacts from these projects related to hazardous materials would not be anticipated. Accordingly, the Project's contribution to a potentially significant cumulative effect would not be considerable because the alternatives would be constructed and operated in compliance with existing regulations and Mitigation Measures **MM-HM-C1 through MM-HM-C8**, which would reduce any potential project impacts to a less-than-significant level.

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3.8 Land Use and Planning

This section provides an overview of existing land uses, land use designations, and applicable plans and policies. It also evaluates the potential for impacts on land use and planning.

3.8.1 Regulatory Setting

3.8.1.1 State Plans

California Relocation Assistance Law

The *California Relocation Assistance Law* (*California Government Code* Section 7260 et seq.) was passed by the state legislature to govern relocation activities. The California Department of Housing and Community Development (HCD) has the legal authority to administer state relocation laws and regulations. Since 1990, the state legislature has passed several amendments to the *California Relocation Assistance Law*. With these amendments, the state statutes now closely parallel federal law.

3.8.1.2 Regional Plans

Southern California Association of Governments *Regional Comprehensive Plan*

The Southern California Association of Governments (SCAG) is designated by the federal government as the Southern California region's metropolitan planning organization and transportation planning agency. SCAG's jurisdiction includes Los Angeles, Orange, Riverside, San Bernardino, Imperial, and Ventura Counties.

SCAG addresses regional planning issues through various plans and programs, including the 2008 *Regional Comprehensive Plan* (RCP). The RCP addresses regional issues, such as those related to housing, traffic/transportation, water, and air quality, and serves as an advisory document for local agencies in the Southern California region to use when preparing local plans and handling local issues of regional significance.

The RCP contains the following land use and housing, transportation, and air quality goals, which are relevant to the Restoration of Historic Streetcar Service in Downtown Los Angeles Project (Project):

- Land Use and Housing
  - Successfully integrate land and transportation planning and achieve land use and housing sustainability.
- Transportation
  - Provide a more efficient transportation system that reduces and better manages vehicle activity.
  - Provide a cleaner transportation system that minimizes air quality impacts and is energy efficient.

- Air Quality
  - Reduce emissions of criteria pollutants to attain federal air quality standards by prescribed dates and state ambient air quality standards as soon as practicable.
  - Reverse current trends in greenhouse gas (GHG) emissions to support sustainability goals for energy, water supply, agriculture, and other resource areas.
  - Expand green building practices to reduce energy-related emissions from developments and increase economic benefits to businesses and residents.

SCAG 2012–2035 *Regional Transportation Plan/Sustainable Communities Strategy*

The SCAG *Regional Transportation Plan/Sustainable Communities Strategy* (RTP/SCS) presents the transportation vision for Los Angeles, Orange, San Bernardino, Imperial, Riverside, and Ventura Counties (SCAG 2012a). The RTP/SCS identifies priorities for transportation planning within the Southern California region, sets goals and policies, and identifies performance measures for transportation improvements to ensure that future projects are consistent with other planning goals for the area.

The 2012 RTP/SCS goals are as follows (SCAG 2012a):

- Align plan investments and policies with improving regional economic development and competitiveness.
- Maximize mobility and accessibility for all people and goods in the region.
- Ensure travel safety and reliability for all people and goods in the region.
- Preserve and ensure a sustainable regional transportation system.
- Maximize the productivity of the transportation system.
- Protect the environment and health of residents by improving air quality and encouraging active transportation (i.e., non-motorized transportation, such as bicycling and walking).
- Actively encourage and create incentives for energy efficiency, where possible.
- Encourage land use and growth patterns that facilitate transit and non-motorized transportation.
- Maximize the security of the regional transportation system through improved system monitoring, rapid recovery planning, and coordination with other security agencies.

The 2016–2040 RTP/SCS was adopted on April 8, 2016.

3.8.1.3 Local Plans and Regulations

City of Los Angeles Zoning Code

The *City of Los Angeles Planning and Zoning Code* (Zoning Code) includes standards for different land uses and identifies which land uses are allowed in various zoning districts. Specifically, the Zoning Code consolidates and coordinates all existing zoning regulations and provisions to designate, regulate, and restrict locations and land uses.

City of Los Angeles General Plan

The *City of Los Angeles General Plan* is a comprehensive, long-term declaration of purposes, policies, and programs for the development of the City (Los Angeles Department of City Planning 2013c). It sets forth goals, objectives, and programs to provide a guideline for day-to-day land use policies and meet the existing and future needs and desires of the community while integrating a range of state-mandated elements (e.g., Transportation [Mobility], Noise, Safety, Housing, Conservation). In place of a Land Use Element, the City of Los Angeles includes community plans that establish policies and standards for each of the 35 geographic areas in the City. The community plans are focused on specific geographic areas of the City, locally defining the General Plan's more general citywide policies and programs. The Project is located with the *Central City Community Plan* area.

Plan for Healthy Los Angeles

The *Plan for a Healthy Los Angeles* is a new *Health and Wellness Element* of the City's General Plan (City of Los Angeles, Department of City Planning 2015). The General Plan is the blueprint for how and where the City will grow and develop, commonly known the City's planning constitution. The Plan for a Healthy Los Angeles elevates health as a priority in the City's future growth and development, establishing a policy framework to make Los Angeles a healthier place to live, work, and play.

Relevant policies are identified below.

- **Policy 5.1** (Air Pollution and Respiratory Health): Reduce air pollution from stationary and mobile sources, protect human health and welfare, and promote improved respiratory health.
- **Policy 5.7** (Land Use Planning for Public Health and GHG Emissions Reductions): Promote land use policies that reduce per capita GHG emissions, improve air quality, and decrease air pollution, especially for children, seniors, and others who are susceptible to respiratory diseases.

Mobility Plan 2035

The Los Angeles City Council adopted *Mobility Plan 2035* on January 20, 2016. *Mobility Plan 2035* updates the General Plan's Transportation Element (last updated in 1999), incorporates "Complete Streets" principles, and lays the policy foundation for how future City of Los Angeles generations will interact with streets. The "Complete Streets" concept takes into account the many community needs that streets fulfill. The plan identifies goals, objectives, policies, and action items (programs and projects that serve as guiding tools for making sound transportation decisions).

The downtown Los Angeles area currently has several bicycle facilities in the form of Class II bike lanes and Class III bike routes. In addition, future development of a network of bicycle facilities in the area is planned, as specified in *Mobility Plan 2035.* Table 3.10-3, included in Section 3.10, *Transportation and Traffic*, identifies existing and proposed bicycle facilities in the study area.

City of Los Angeles 2010 Bicycle Plan

The City of Los Angeles adopted the *2010 Bicycle Plan* (Bicycle Plan or 2010 Plan) on March 1, 2011. The purpose of the Bicycle Plan is to increase, improve, and enhance bicycling in the City, making it a safe, healthy, and enjoyable means of transportation and recreation. The Bicycle Plan, a part of the

Mobility Element, establishes policies and programs to increase the number and types of bicyclists in the City and make every street in the City a safe place to ride a bicycle. The Bicycle Plan intends to implement a network of interconnected bikeways within the downtown area to link bicyclists to employment, retail, residential, civic, cultural, and recreational destinations. According to the Bicycle Plan, downtown bikeways should be integrated with the existing Downtown Street Standards.

The following policies and objectives of the Bicycle Plan would be applicable to the Project:

- **Policy 1.1.6:** Increase the number of bicycle lanes and/or improve the quality of the street right-of-way for bicyclists.
- **Policy 1.1.7:** Increase the number of bicycle lanes.
- **Policy 1.1.8:** Require a public hearing for the proposed removal of an existing or designated bicycle lane or path.
- **Objective 1.3:** Expand bicyclists' range and mobility options through the integration of bicycling into the region's transit system.
- **Policy 1.3.2:** Maximize bicycle amenities at transit stops and stations.
- **Policy 1.3.4:** Accommodate bicycles on transit vehicles and taxis.

Citywide General Plan Framework

The General Plan *Framework Element* (2001) is a strategy for long-term growth, which sets forth a citywide context to guide the update of community plan and citywide elements. It defines citywide policies that will be implemented through subsequent amendments of the City's community plans, zoning ordinances, and other pertinent programs.

The Framework Element designates the entire *Central City Community Plan* area as Downtown Center.

The following objectives and policies would be applicable to the Project:

- **Land Use Policy 3.1.2:** Allow for the provision of sufficient public infrastructure and services to support the projected needs of the city's population and businesses within the patterns of use established in the community plans, as guided by the Framework Citywide Long-Range Land Use Diagram.
- **Land Use Objective 3.2:** Provide for the spatial distribution of development that promotes an improved quality of life by facilitating a reduction of vehicular trips, vehicle miles traveled, and air pollution.
- **Land Use Policy 3.2.1:** Provide a pattern of development consisting of distinct districts, centers, boulevards, and neighborhoods that are differentiated by their functional role, scale, and character. This shall be accomplished by considering factors such as the existing concentrations of use, community-oriented activity centers that currently or potentially service adjacent neighborhoods, and existing or potential public transit corridors and stations.
- **Land Use Objective 3.3:** Accommodate projected population and employment growth within the city and each community plan area and plan for the provision of adequate supporting transportation and utility infrastructure and public services.

- **Land Use Objective 3.11:** Provide for the continuation and expansion of government, business, cultural, entertainment, visitor-serving, housing, industrial, transportation, and supporting uses and similar functions at a scale and intensity that distinguishes and uniquely identifies the Downtown Center.

Central City Community Plan

The *Central City Community Plan* (2003) area is bounded by Sunset Boulevard/Cesar Chavez Avenue on the north, the Santa Monica Freeway (Interstate 10) on the south, the Harbor Freeway (Interstate 110) on the west, and Alameda Street on the east. It is bordered by the communities of Central City North, Silver Lake-Echo Park, Westlake, Southeast, and South Central Los Angeles. Because the project area is the governmental, financial, and the industrial hub of Los Angeles, land is dedicated primarily to these uses, though there has been an increasing amount of residential development in the downtown area in recent years.

The *Central City Community Plan* promotes an arrangement of land use, infrastructure, and services to enhance the economic, social, and physical health, safety, welfare, and convenience of the people who live, work, and invest in the community (City of Los Angeles 2009b). Chapter V of the *Central City Community Plan* outlines urban design policies and guidance for the *Central City Community Plan* area. The plan states that a primary objective is the development of a street hierarchy to serve transit, traffic, pedestrian, open space, and truck access needs in a coordinated manner (*Street Hierarchy/Standards Element* of Chapter V). Under the *Pedestrian Linkages Element* of Chapter V, one of the objectives is to link transit and pedestrian districts in historic downtown Los Angeles. Angels Walk, a self-guided walking trail developed by Angels Walk LA, has been implemented as a result of community plan policies regarding pedestrian linkages.

The *Citywide General Plan Framework*, an element of the General Plan, designates the entire *Central City Community Plan* area as a Downtown Center. Policies and strategies aimed at enhancing and revitalizing this area have produced two complementary visions: (1) The *Downtown Strategic Plan*, adopted as the guiding vision, direction, and framework for the future of downtown (Central City), and (2) the *Los Angeles Civic Center Shared Facilities and Enhancement Plan* (Ten-Minute Diamond), which focuses specifically on the enhancement of civic functions.

Applicable policies and objectives from the *Central City Community Plan* are the following:

- **Policy 4-2.1:** To foster physical and visual links between a variety of open spaces and public spaces downtown.
- **Policy 4-4.1:** Improve downtown's pedestrian environment in recognition of its important role in the efficiency of downtown's transportation and circulation systems and the quality of life for its residents, workers, and visitors.
- **Objective 10-1:** To ensure that the arts, culture, and architecturally significant buildings remain central to the further development of downtown and clearly discernible and accessible to all citizens in and visitors to Los Angeles.
    - **Policy 10-1.4:** Ensure that the downtown circulation system serves the existing arts and cultural facilities with ease of accessibility and connections.
    - **Objective 11-1:** To keep downtown as the focal point of the regional mobility system, accommodating internal access and mobility needs as well.

- **Objective 11-3:** To provide an internal circulation system with a focus of connecting specific pairs of activity centers to a system that provides greater geographic coverage of downtown, thus giving the downtown traveler more choices and more flexibility.
- **Program:** Support plans for a downtown circulator or trolley that connects downtown districts and activity centers, improving internal circulation and enhancing the character and identity of the downtown by harkening to the hallmarks of the city's mass transit history, such as the "Red Car."
- **Urban Design:** Support and implement the Bringing Back Broadway Initiative to revitalize Broadway as a vibrant entertainment and cultural destination for businesses, pedestrians, transit users, shoppers, visitors, residents.
- **Urban Design:** Support implementation of a streetcar system to serve and connect Broadway and the Historic Core with downtown destinations.

City of Los Angeles Downtown Design Guide

The *Downtown Design Guide: Design for a Livable Downtown* is an appendix to the *Central City Community Plan*. The *Downtown Design Guide* is an interdepartmental document developed by the Department of City Planning, Community Redevelopment Agency of Los Angeles (CRA/LA), Department of Transportation, and Department of Public Works. Together with urban design, transportation, and environmental consultants, the Urban Design Studio and City Team is advancing new context-sensitive street standards that emphasize walkability, sustainability, and transit options and simple but critical urban design standards to reinforce the community character of downtown Los Angeles' many neighborhoods and districts (City of Los Angeles 2009b). Also, within the context of the *Central City Community Plan* and the *Downtown Design Guide*, several district-oriented plans and guides have been developed for several subareas within downtown. These are described below.

Bunker Hill Specific Plan

The *Bunker Hill Specific Plan* is a part of the *Central City Community Plan*. The *Bunker Hill Specific Plan* area is bounded generally by Interstate 110 on the west, 5th Street on the south, Hill Street on the east, and 1st Street on the north. The purposes and intentions of the *Bunker Hill Specific Plan* are as follows:

- Implement the *Central City Community Plan*.
- Create a mixed-use district with expanded housing opportunities and commercial retail to create a 24-hour downtown environment.
- Retain and expand the area as the primary office center for the region.
- Reinforce and enhance the district's identity as the cultural center of the region.
- Expand the economic base of the city by providing additional employment opportunities and additional revenues to the region.
- Implement design regulations that maintain a high-quality built form and encourage compatible infill development that enlivens the streets and public spaces.
- Expand, integrate, and activate a linked network of public open spaces and pedestrian pathways.

- Support the expansion of the regional transit network through an urban form and mix of land uses that support high levels of transit use.
- Create a transit-friendly environment by requiring conformance to pedestrian-oriented design guidelines that promote consistent street walls and active ground-floor uses.
- Ensure that private development implements special street standards developed for the area.
- Support the improvement of the business environment by providing an attractive public realm.
- Promote increased flexibility in the regulation of the height and bulk of buildings as well as the design of sites and public streets in order to ensure a well-planned mix of commercial and residential uses with adequate public space.

Broadway Streetscape Master Plan

The *Broadway Streetscape Master Plan* (BSMP) (City of Los Angeles 2013a) provides a vision for design improvements along Broadway, a menu of design tools, and other design criteria to aid design within individual street blocks. It presents eight overarching design principles to:

- Keep new streetscape elements simple, with clean lines and materials.
- Avoid historic recreations.
- Preserve views to key historic buildings.
- Promote clear pedestrian connections.
- Enhance the perception of public safety.
- Promote environmentally responsible design.
- Stimulate private investment.
- Create a sense of timelessness through the use of flexible and/or modular construction premised on serving current and future needs.

The BSMP also prioritizes pedestrian and public transit circulation over the private auto. Under its provisions, street curb extensions, crosswalk and street paving, transit stop locations, and all signage (including wayfinding and informational signage) require review by the Los Angeles Department of City Planning. Under the BSMP, the Los Angeles Department of Transportation (LADOT) reviews all street right-of-way changes to median strips, crosswalks, bus stop locations, directional and informational signage, bicycle facilities, and any changes to the standard LADOT menu of hardware, colors, and materials.

Broadway Theater and Entertainment District Design Guide

The Broadway Theater and Entertainment District Design Guide (Broadway Design Guide or Design Guide) provides guidelines and standards for development projects along Broadway between 2nd Street and Olympic Boulevard in downtown Los Angeles to promote and enhance the identity of the district. The relevant goals of the Broadway Design Guide are:

- Create a recognizable and attractive entertainment district on Broadway that enlivens the corridor, serves as a regional entertainment draw, and encourages the reuse of its numerous historic theaters.

- Promote land uses in Central City that will address the needs of all visitors to downtown for business, conventions, trade shows, and tourism.
- Encourage pedestrian-oriented and visitor-serving uses during the evening hours to expand activity centers within downtown and create better, safer linkages among downtown districts.
- Encourage development patterns and a mix of uses that contribute to a pedestrian-friendly environment on Broadway and promote an active street life 24 hours a day, with an emphasis on nighttime and entertainment uses for residents, workers, visitors, and tourists.
- Encourage development that contributes to the safety and comfort of downtown residents and visitors.
- Promote projects that are designed to ensure compatibility among the wide range of uses encouraged in the district and incorporate measures that help diminish noise, improve energy efficiency, and mitigate other potential impacts.

Los Angeles Civic Center Shared Facilities Enhancement Plan

The Los Angeles Civic Center Authority re-convened in 1995 under leadership of the representatives of the local City Council and County Board of Supervisors to consider and discuss the appropriate role and future development of the Los Angeles Civic Center (American Society of Landscape Architects 2003). One of the first actions of the authority was to charge a public/private planning team with the creation of the *Los Angeles Civic Center Shared Facilities and Enhancement Plan* to guide urban development in the heart of the City for the next 20 years. The focus of the plan was on sharing government facilities (at the city, county, state, and federal levels), reducing costs, and restoring the heart of the City as a full and active "civic" center, not just a government center.

Redevelopment Plan for the City Center Redevelopment Plan

The *Redevelopment Plan for the City Center Redevelopment Plan* was adopted by CRA/LA in May 2002 (CRA/LA 2002). Relevant objectives are:

- To further the development of downtown as the major center of the Los Angeles metropolitan region, within the context of the Los Angeles General Plan, as envisioned by the General Plan Framework, Concept Plan, portions of the City-wide Plan, the Central City Community Plan, and the Downtown Strategic Plan.
- To create a modern, efficient, and balanced urban environment for people, including a full range of around-the-clock activities and uses, such as recreation, sports, entertainment, and housing.
- To create a symbol of pride and identity that gives the Central City a strong image as the major center of the Los Angeles region.
- To facilitate the development of an integrated transportation system that will allow for the efficient movement of people and goods into, through, and out of the Central City.
- To provide the public and social services and facilities necessary to address the needs of the various social, medical, and economic problems of Central City residents and minimize the overconcentration or exclusive concentration of such services within the project area.
- To establish an atmosphere of cooperation among residents, workers, developers, businesses, special interest groups, and public agencies in the implementation of this plan.

Feasibility Study for the Resurrection of the Red Car Trolley Services in the Los Angeles Downtown Area

CRA/LA studied the feasibility of bringing back Los Angeles streetcar services as part of the overall redevelopment strategy for the downtown area (CRA/LA 2006). The report, *Feasibility Study for the Resurrection of the Red Car Trolley Services in the Los Angeles Downtown Area*, summarized the analyses conducted on various alignment concepts and the outreach efforts involved in determining the feasibility of resurrecting the historic downtown Los Angeles streetcar.

Based on discussions with community stakeholders, agencies, and elected officials, several initial goals and objectives were identified:

- Develop a system to support both visitors and residents.
- Develop a cost-effective system.
- Support local plans.
- Allow for service integration.
- Involve local citizens and policy-makers.
- Pay homage to the Red and Yellow Car systems.

Downtown Street Standards

The Los Angeles City Council adopted the City of Los Angeles Downtown Street Standards in April 2009. The Downtown Street Standards update the *Central City Community Plan* street designations by basing the standards on a more comprehensive street hierarchy that balances traffic flow with other equally important functions of the street, including pedestrian needs and environments, public transit routes and stops, bicycle routes, historic districts with fixed building street walls, the public face and transitional "front yard" of businesses, and linear open space considerations. The Downtown Street Standards establish future curb lines and property lines for all downtown streets and, in some locations, additional required average sidewalk easements. The Downtown Street Standards consist of a series of street cross sections, which are specific to each street or street segment.

Los Angeles Conservancy Historic Downtown Los Angeles Design Guidelines

In addition to the design guidelines adopted by the Los Angeles City Council, the independent Los Angeles Conservancy, in partnership with the Downtown Center, Historic Core, and Fashion District Business Improvement Districts (BIDs), prepared the *Historic Downtown Los Angeles Design Guidelines* in July 2002. These guidelines describe how alterations and enhancements to buildings within historic downtown can and should be designed so that they reinforce the area's historic environment. The design guidelines are tools to enhance the physical and visual quality of the district and reinforce its historic and urban character. They provide guidance about compatible storefront and signage design, repair and maintenance of older buildings, renovation that highlights historic features, and sensitivity to these considerations that should be observed by new construction.

Los Angeles Sports and Entertainment District Specific Plan

The City Council established the *Los Angeles Sports and Entertainment District (LASED) Specific Plan* in 2001, and subsequently amended it in 2010, for the areas bounded generally by Olympic Boulevard on the north, Flower Street on the east, Pico Boulevard on the south, and Interstate 110 on the west. The district also includes the area north of Olympic Boulevard between Georgia and Francisco Streets. The LASED specifies general plan regulatory controls for this area, which are in addition to those set forth in the planning and zoning provisions of the *Los Angeles Municipal Code* (LAMC). Wherever the specific plan contains provisions that establish regulations different from the LAMC, the specific plan prevails and supersedes the provisions of the LAMC and those of relevant ordinances. The purpose of the plan is to provide continued and expanded improvements to the plan area as a major entertainment/mixed-use development and ensure orderly infill of public facilities consistent with the intensity and design of the existing district.

Convention and Event Center Specific Plan

The *Convention and Event Center Specific Plan* is also a part of the *Central City Community Plan*. The plan area is generally bounded by Chick Hearn Court on the north, Figueroa Street on the east, Venice Boulevard on the south, and Interstate 110 on the west. The purpose of the plan is to enhance the area, which is a major convention and event center; ensure orderly infill of public facilities, consistent with the intensity and design of the existing district; and provide public gathering places and lively, pedestrian-friendly environment through the establishment of unique streetscape and open space plans.

3.8.2 Environmental Setting/Affected Environment

3.8.2.1 Project Study Area

The project study area generally encompasses the area bounded by Cesar Chavez Avenue on the north, Interstate 10 on the south, Interstate 110 on the west, and Alameda Street on the east. This area is an urban environment where major transportation facilities and dense development exists.

Downtown Districts

The project study area is located within the *Central City Community Plan* area. The *Central City Community Plan* identifies nine districts: Civic Center, Bunker Hill, Financial Core, South Park, Convention Center/Arena, Center City/Historic Core, Central City East, South Markets, and Little Tokyo. As indicated in the *Central City Community Plan* and described below, district boundaries have become blurred. They overlap as land uses change over time.

Civic Center

This district is located in the northern portion of the *Central City Community Plan* area. It includes several federal, state, county, and local government offices along the Civic Center Mall, north of 1st Street, and generally from the Harbor Freeway to Alameda Street. The district is home to the historic City Hall and the Cathedral of Our Lady of the Angels. Under the Grand Avenue Extension, the proposed streetcar would run along the southern Civic Center boundary on 1st Street.

Bunker Hill

This district is located in the northwestern portion of the *Central City Community Plan* area, adjacent to the Civic Center District. Adopted in 1959, the Bunker Hill Redevelopment Project was conceived as a new mixed-use development. This district includes the Museum of Contemporary Art (MOCA), Colburn School of Performing Arts, Disney Concert Hall, and the recently-opened Broad Museum. Under the Grand Avenue Extension, the proposed streetcar would run along Grand Avenue in northeastern Bunker Hill.

Financial Core

This district is located south of the Bunker Hill District, in the western portion of the *Central City Community Plan* area. The streets of this district have a varying character. This district includes high-rise office developments, including the Gas Company Tower and the Citicorp Center. The Central Library, constructed in 1926, is also located in this district. Under the two 7th Street alternatives, the proposed streetcar would run through the central Financial Core along 7th Street and Figueroa Street. Five stations are proposed along the alignment in the Financial Core: three stations along 7th Street and two stations along Figueroa Street.

South Park

This district is located east of the Convention Center/Arena District. Specifically, this district, which is generally bounded by 8th Street, Main Street, the Santa Monica Freeway, and the Harbor Freeway, includes a variety of land uses. Land uses include Grand Hope Park and multi-family residential, commercial, retail, and office uses. The district also includes hotels, restaurants, and entertainment venues. This district borders the Convention Center/Arena District. Under all four build alternatives, the proposed streetcar would run through northern South Park along 11th Street and Figueroa Street. One station would be on Figueroa Street, and two stations would be on 11th Street. Under both 9th Street alternatives, a small portion of the alignment would pass through northern South Park along 9th Street. One station would be located on 9th Street.

Convention Center/Arena

This district, which includes the Los Angeles Convention Center and Staples Center, is strategically located in the southwestern edge of the *Central City Community Plan* area, at the hub of the Harbor and Santa Monica Freeways. According to the *Central City Community Plan*, the sphere of influence of this district includes portions of the Financial Core and South Park. Under all four build alternatives, the proposed streetcar would run along Figueroa Street in the northeastern corner of the Convention Center/Arena district. One station would be located on Figueroa Street.

Center City/Historic Core

Generally, this district extends from 1st Street to approximately 11th Street between Los Angeles Street and Hill Street. This district contains some of the most historically significant buildings in the region, including nationally recognized historic theater buildings. Additionally, the southern portion of this district houses the garment district. The California Mart, located on Main Street, between 9th Street and Olympic Boulevard, is a 3-million-square-foot complex that serves the garment industry. Under all four build alternatives, the proposed streetcar would run along Broadway and along Hill Street through the Center City/Historic Core district. Nine stations are proposed along Broadway, and five along Hill Street. Under the two 9th Street alternatives, two additional stations are proposed along Hill Street.

Central City East

This district, located in the eastern portion of the *Central City Community Plan* area, contains wholesale and warehousing uses, including uses related to produce, fish, and dairy products. This district also includes social service uses and state and federal governmental agencies. The proposed streetcar would not run through the Central City East district.

South Markets

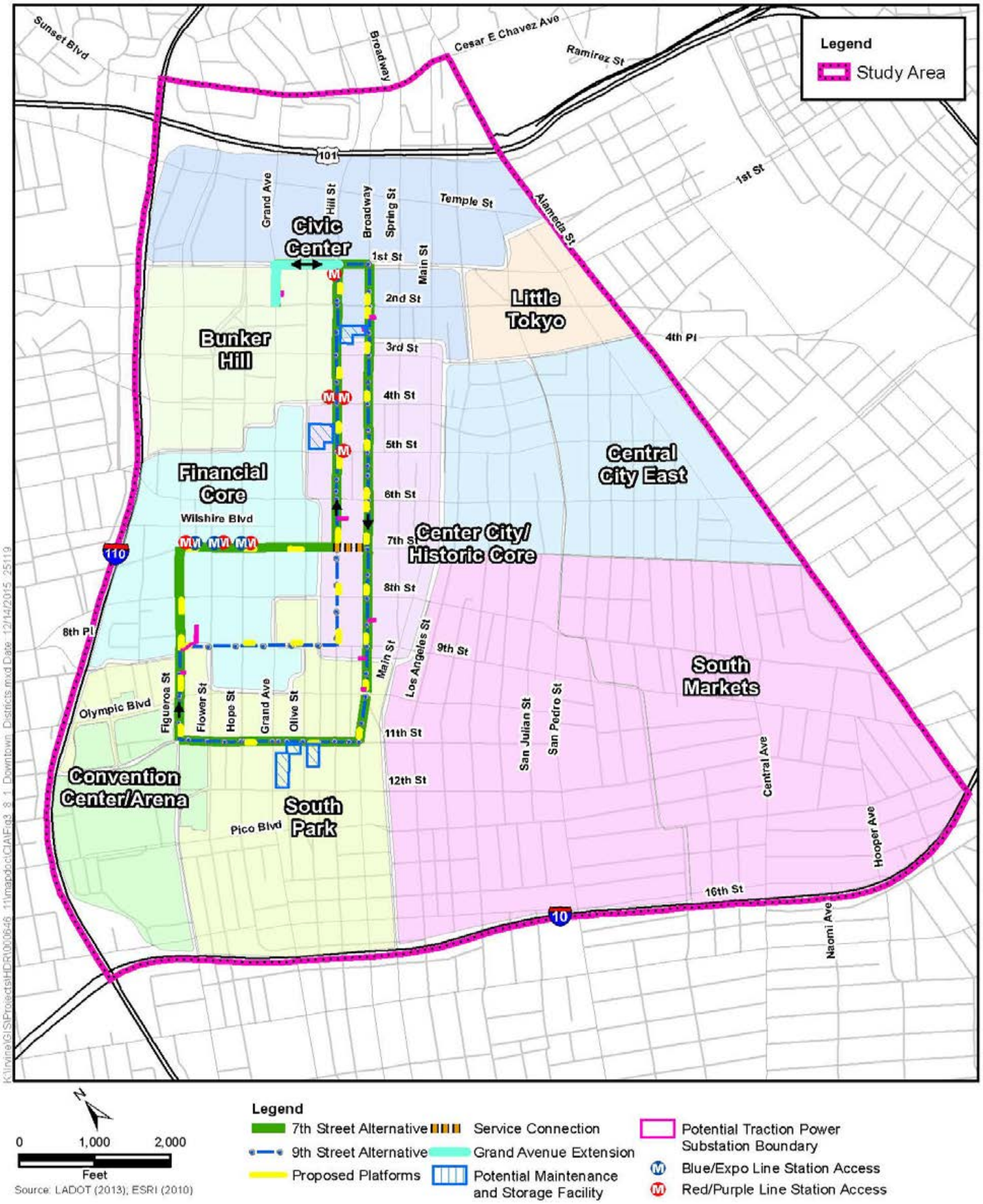
This district is located in the southern portion of the *Central City Community Plan* area. This district contains a variety of garment, retail, manufacturing, industry, and flower warehouse uses, which are located in generally low-rise buildings. The proposed streetcar would not run through the South Markets district.

Little Tokyo

This district is considered the spiritual, cultural, and symbolic center of the largest Japanese-American community in the continental United States. References to Japanese culture exist throughout the district in the form of decorative roofs, signs, garden designs, and other architectural and cultural elements. This district includes the Japanese-American National Museum, Union Center of the Arts, Hongwanji Buddhist Temple, and various multi-family residential uses. The proposed streetcar would not run through the Little Tokyo district.

Figure 3.8-1 shows the general locations of these districts in relation to the project alternatives.

Figure 3.8-1. Downtown Los Angeles Districts



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3.8.2.2 Surrounding Land Uses

As shown in Figure 3.8-2, the study area contains the following general plan–designated land uses: industrial, commercial, multi-family residential, public facilities, and open space. In general, industrial land uses are located in the southeastern portion of the study area, in the South Markets District. Commercial land uses are located primarily in the central, southern, and eastern portions of the study area. In recent years, areas along the project alignment have seen a marked increase in residential and mixed-use land uses, with approximately 9,400 housing units built in downtown between 2000 and 2012. The *Adaptive Reuse Ordinance*, which was approved in 1999, has had a significant positive impact on development of residential uses because it has made it possible to provide housing units in many of downtown's existing commercial buildings. As a result, general plan land use designations for the downtown area, as depicted in Figure 3.8-2, do not always accurately reflect the actual mix of land uses within a given property. Many, if not most, of the commercial properties along the project alignment are best described as mixed use, containing both commercial and residential uses, despite their general plan single-use designation.

Within the Civic Center, many land uses are government-owned buildings that employ city, state, and federal workers. The multi-family residential areas range from the single-resident occupancy (SRO) hotels in the Central City East area to the high-rise condominiums and apartments in the South Park neighborhood. There are multi-family residential areas on Bunker Hill, adjacent to Broadway on Spring Street, and on 9th Street. Public facilities are clustered primarily in the northern part of the study area, in the Civic Center, and the southern area, which surrounds the Convention Center. The largest open spaces in the study area are Grand Park in the Civic Center, Pershing Square in the Financial District, and Spring Street Park.

Figure 3.8-3 provides a map of the zoning designations in the study area.

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Figure 3.8-2. Land Uses

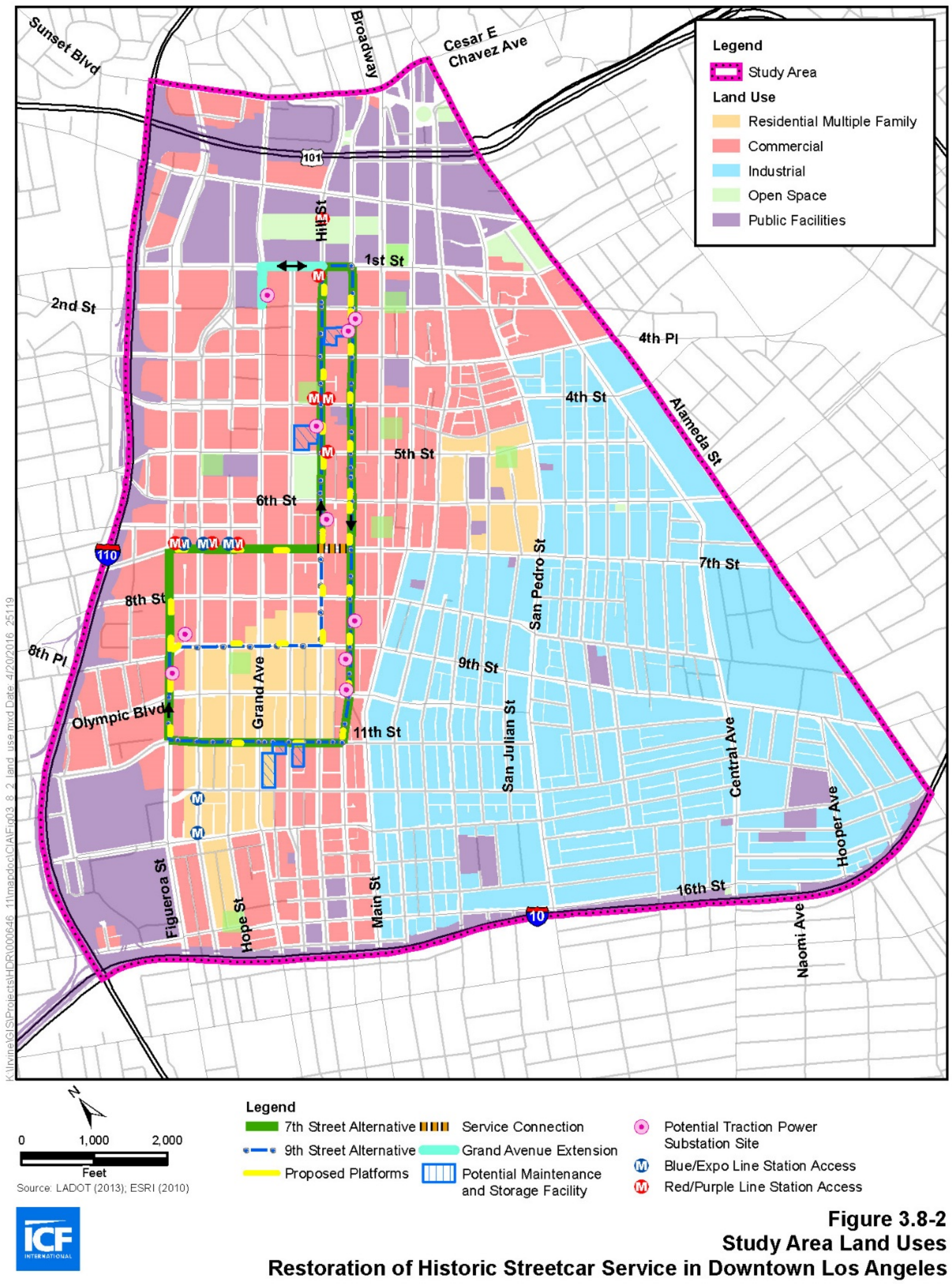

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Figure 3.8-3. Zoning Designations

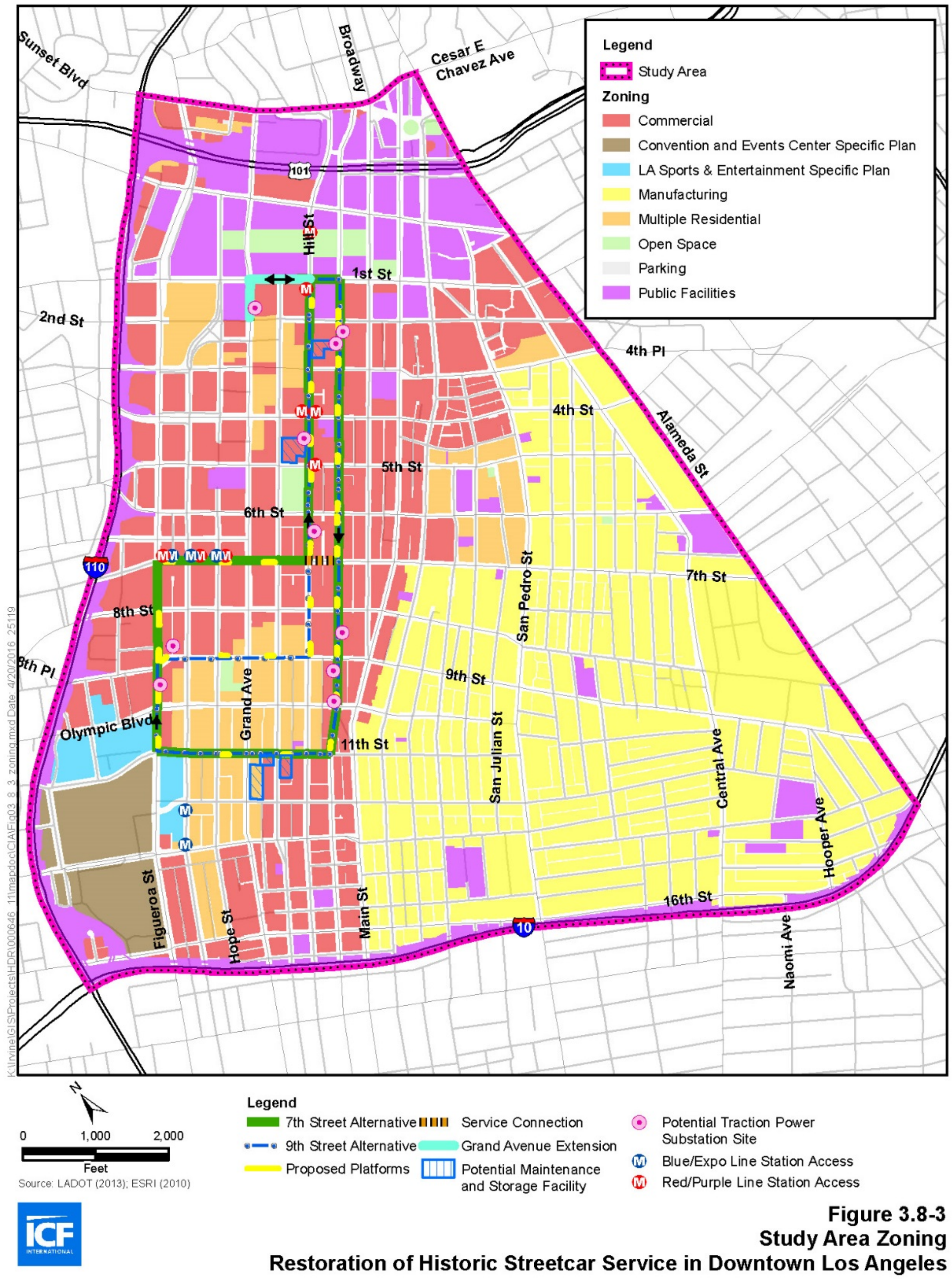

Figure 3.8-3
Study Area Zoning
Restoration of Historic Streetcar Service in Downtown Los Angeles

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3.8.3 Environmental Impact Analysis

3.8.3.1 Methodology

Potential impacts associated with the Project were identified by analyzing the relationship between the Project and both existing and planned land uses. Consistency with applicable regional and local plans and policies, including the *City of Los Angeles General Plan*, is also addressed. A variety of sources, including applicable general plans and zoning maps, were used to evaluate potential land use impacts. In the impact analysis presented below, each of the project alignment alternatives is addressed separately. Impacts associated with traction power substation (TPSS) units are addressed together because they would occur under all alternatives. Also, each of the maintenance and storage facility (MSF) sites is addressed individually.

3.8.3.2 Thresholds of Significance

For the purposes of determining the significance of potential impacts evaluated in this environmental impact report (EIR), Appendix G of the 2016 *California Environmental Quality Act* (CEQA) Statute and Guidelines and the *L.A. CEQA Thresholds Guide* (2006) are being followed. Appendix G of the 2016 CEQA Statute and Guidelines state that a project could have a significant impact if it would:

- Physically divide an established community.
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.

The *L.A. CEQA Thresholds Guide* states that the determination of significance shall be made on a case-by-case basis, considering the following factors:

- Whether the proposal is inconsistent with the adopted land use/density designation in the community plan, redevelopment plan, or specific plan for the site.
- Whether the proposal is inconsistent with the general plan or adopted environmental goals or policies contained in other applicable plans.
- The extent of the area that would be affected, the nature and degree of impacts, and the type of land uses within that area.
- The extent to which existing neighborhoods, communities, or land uses would be disrupted, divided, or isolated and the duration of the disruptions.
- The number, degree, and type of secondary impacts on surrounding land uses that could result from implementation of the project.

For the purposes of this analysis, the Appendix G and *L.A. CEQA Thresholds Guide* thresholds have been organized in the land use impacts discussion as follows:

Land Use Consistency with Applicable Plans and Policies

- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect. (Appendix G)

- Whether the proposal is inconsistent with the adopted land use/density designation in the community plan, redevelopment plan, or specific plan for the site. (*L.A. CEQA Thresholds Guide*)
- Whether the proposal is inconsistent with the general plan or adopted environmental goals or policies contained in other applicable plans. (*L.A. CEQA Thresholds Guide*)

Land Use Compatibility

- Physically divide an established community. (Appendix G)
- The extent of the area that would be affected, the nature and degree of impacts, and the type of land uses within that area. (*L.A. CEQA Thresholds Guide*)
- The extent to which existing neighborhoods, communities, or land uses would be disrupted, divided, or isolated and the duration of the disruptions. (*L.A. CEQA Thresholds Guide*)
- The number, degree, and type of secondary impacts on surrounding land uses that could result from implementation of the project. (*L.A. CEQA Thresholds Guide*)

3.8.3.3 Alternative 1: No Project Alternative

Construction Impacts

Land Use Plan Consistency

No impact. No construction would occur under this alternative. Specifically, the No Project Alternative would not produce construction-period impacts that would conflict with a land use/density designation or environmental goals or policies in an adopted plan having jurisdiction over the project area.

Land Use Compatibility

No impact. Because no streetcar construction activities would occur under the No Project Alternative, no temporary impacts, such as loss of parking, access disruption to adjacent land uses, or increased noise levels, would occur that could adversely affect adjacent land uses or impair their ability to function. Similarly, because the No Project Alternative would not produce construction-period impacts, it would not physically divide an established community.

Operational Impacts

Land Use Plan Consistency

No impact. Proposed streetcar service would not be introduced under this alternative. Specifically, the No Project Alternative would not produce operational impacts that could conflict with a land use/density designation or environmental goals or policies in an adopted plan having jurisdiction over the project area.

Land Use Compatibility

No impact. Because there would be no streetcar improvements operating on a daily basis under the No Project Alternative (e.g., streetcar operations, TPSS units functioning, or MSF site functioning), there would be no permanent effects (e.g., noise, traffic, etc.) occurring that could adversely affect adjacent land uses or impair their ability to function. Similarly, the No Project Alternative would not produce operational impacts that would physically divide an established community.

3.8.3.4 Alternative 2: 7th Street with Grand Avenue Extension

Construction Impacts

Land Use Plan Consistency

Less-than-significant impact. Proposed construction activities would include pavement removal, utility relocation, excavation, construction of track drains, installation of concrete track slab and rails, construction of station platforms, installation of special track work, reconstruction of ramps and sidewalks, paving, and striping. Temporary laydown and storage areas for construction would be established near the project alignment for storage of equipment and materials. Construction activities would generally occur with the public street rights-of-way (with the exception of the TPSSs, MSF, and laydown/storage areas) and would follow all applicable City of Los Angeles regulations and guidelines pertaining to construction, which would minimize the potential for adverse impacts and conflicts with land use plan policies. Construction impacts would be temporary and short term; they would occur in a sequential manner along the project alignment. Because the impacts would be temporary, they would not affect permanent changes that would alter or compromise the plans, policies, or regulations governing the project area. Some portions of existing and planned bicycle lanes would be closed while construction is occurring; those locations would be restored to service as construction moves on to the next location. Construction contractors will be required to coordinate with LADOT to provide detour routes (to the extent practicable) and notify bicyclists of the construction schedule. Bicycle travel would be maintained during the construction period to the extent practicable, consistent with maintaining public safety. Consequently, conflicts with applicable land use policies are not expected to occur during the construction period.

Land Use Compatibility

Less-than-significant impact. The 3.8-mile project alignment would be located within an area dominated by commercial land uses. With the exception of the MSF and the TPSS sites, construction of the build alternatives would not require the acquisition of additional rights-of-way for the streetcar route, and no residential uses would be removed under this alternative. Therefore, proposed construction would not divide, isolate, or substantially disrupt a community or neighborhood. Additionally, most construction would take place within the existing public right-of-way, and access to surrounding land uses would be maintained throughout the construction period. Although construction activities could result in air quality, visual, noise, and traffic impacts and displace on-street parking, which could adversely affect adjacent land uses, proposed construction work would be temporary, affecting specific locations for limited periods of time. It would not be so severe that the ongoing functioning of adjacent land uses could not be maintained. As discussed, bicycle travel would be maintained during the construction period in open traffic lanes or, in some cases, through the use of temporary detours, where practicable. Because bicycle and pedestrian facilities in the vicinity of the Alternative 2 site would remain generally usable during the construction period, impacts would be less than significant. During final design, site- and street-specific Worksite Traffic Control Plans would be developed in cooperation with LADOT to accommodate required pedestrian, bicycle, and traffic movements.

A loss of on-street parking would occur during construction; however, the loss would be temporary. Parking spaces not required for the permanent Project would be restored once construction activities move out of the affected block. Temporary impairment of access to businesses located along the alignment could occur but would also be temporary. Access would be restored as construction proceeds. For those reasons, construction of the Project would not divide, isolate, or substantially disrupt existing land uses. Additionally, Regulatory Compliance Measure (RCM) **RCM-LU-C1** is proposed to address site-specific effects on businesses located along the alignment. Impacts would be less than significant.

Operational Impacts

Land Use Plan Consistency

Less-than-significant impact. Alternative 2 would, in most cases, be directly supportive of regional or local plans, policies, or regulations. The Project would, at a minimum, not be in conflict with such plans, policies, and regulations for the reasons stated below.

SCAG Regional Comprehensive Plan: Alternative 2 would assist the RCP in achieving its objective to integrate land and transportation planning by restoring a transportation mode to downtown that formerly provided a direct linkage between areas and that would again provide an alternative mode of travel within downtown and directly link residential areas with employment and other opportunities within downtown. Alternative 2 would provide a mode of travel within downtown that would make it possible to avoid using the automobile for short trips. Because the streetcar would be electrically powered, it would also contribute to reducing air quality impacts and energy use. As a result, Alternative 2 would assist in reducing criteria pollutants and GHGs and meeting other sustainability objectives. Also, the MSF would be designed to be in conformance with current green building standards and practices, which would further contribute to the achievement of RCP objectives (see also Section 3.8.1.2, *Regional Plans*).

SCAG 2012–2035 Regional Transportation Plan/Sustainable Communities Strategy: Alternative 2 would contribute to the goal of maximizing regional mobility and accessibility insofar as the downtown component of that goal is concerned by providing an alternative travel mode that otherwise would not be available. Operation of the streetcar route would be managed to ensure safe interaction among streetcar operations, use of the local street system by autos and buses, and shared use of street rights-of-way with pedestrians and bicycles. By adding another travel mode, Alternative 2 would contribute to maximizing the productivity of the downtown transportation system.

City of Los Angeles Zoning Code: The MSF sites are evaluated in the context of the City's Zoning Code in Section 3.8.1.3, *Local Plans and Regulations*.

Citywide General Plan Framework: Alternative 2 would support objectives related to downtown circulation needs and provide an alternative mode of transportation. Alternative 2 would provide additional transportation infrastructure and services to support the projected needs of downtown populations and businesses. Specifically, Alternative 2 would support downtown circulation needs for existing and future residents, businesses, and visitors and would provide an alternative mode of transportation that would reduce the number of vehicle miles traveled in the study area.

Central City Community Plan: Alternative 2 would not conflict with objectives related to the downtown circulation system. Alternative 2 would make downtown more accessible to residents and visitors alike. It would provide additional transit accessibility to the arts and cultural venues along Grand Avenue and the theaters along Broadway. Alternative 2 would augment downtown circulator service by connecting downtown districts and activity centers, improving internal circulation, and enhancing the character and identity of the downtown by restoring a component of the City's mass transit history. One of the primary objectives of the plan is to develop a street hierarchy to serve transit, traffic, pedestrian, open space, and truck access needs. The Project would directly contribute to this objective because it would offer a new transit mode to downtown and help to define the street hierarchy.

Mobility Plan 2035: Alternative 2 would not conflict with the purpose and goals of *Mobility Plan 2035* because the introduction of streetcar service would support the multi-modal objectives of *Mobility Plan 2035*. Implementation of Alternative 2 would provide downtown residents and visitors with an alternative to the automobile while supporting the repurposing of streets. The Project would be developed and designed to be fully integrated with all modes addressed in the plan, including mixed traffic flow, pedestrian movement and safety, and bicycle flow and safety.

City of Los Angeles Downtown Design Guide: Alternative 2 would not conflict with the *City of Los Angeles Downtown Design Guide* because it would comply with all applicable requirements and specifications. Specifically, implementation of Alternative 2 would be done so as to be integrated into the comprehensive context-sensitive street standards (i.e., where stations are placed, how pedestrian access will be provided, how safety of movement would be maintained among the various modes operating on the street system). Regulatory Compliance Measure **RCM-LU-O1** would ensure that the project design would not conflict with applicable design guidelines.

Bunker Hill Specific Plan: Alternative 2 would not conflict with the *Bunker Hill Specific Plan* because it would be required to comply with all applicable requirements and specifications. Specifically, implementation of Alternative 2 would help create a transit-friendly environment and would comply with land use regulations and design specifications included in the *Bunker Hill Specific Plan*. The Project would respond to the stated purposes and intentions of the plan. In particular, the Project would contribute to the expansion of the transit network in a manner that would take into consideration the urban form and mix of land uses that it serves, one of the stated purposes of the *Bunker Hill Specific Plan*.

Broadway Streetscape Master Plan: Alternative 2 would not conflict with the BSMP in that the plan supports bringing streetcar service back to the downtown area and Broadway in particular. The BSMP's focus is to create a multi-modal, pedestrian-focused street that would support the historic theater district. In this respect, implementation of Alternative 2 would help achieve this focus of the plan by restoring an historic transportation mode that was an integral part of the area's overall context. The Project would coordinate its streetscape components to be consistent with the simple, clean-lines objective that the plan proposes. It would not recreate an historic feature but rather restore the function that has been missing for many years. No views of key historic buildings would be impaired. Clear, understandable pedestrian connections would be apparent with the streetcar signage. Because the streetcar would be electrically powered, it would promote environmental responsibility. The Project would also be operated within the Broadway street cross section as it is currently delineated. Maintaining turn lanes at those intersections on Broadway within the BSMP is consistent with the current definition of the master plan, which allows for site-specific interpretation of the plan's objectives. Alternative 2 would not conflict with the BSMP but, rather, would support it in many respects.

Broadway Theater and Entertainment District Design Guide: Alternative 2 would not conflict with the design guidelines and standards that are intended to enhance the identity of the district. One of the objectives of the Project is to assist in recreating a recognizable and attractive entertainment district on Broadway that enlivens the corridor. Alternative 2 would offer increased opportunities for using the streetcar to gain access to multiple destinations and would be consistent with the goal of encouraging pedestrian-oriented and visitor-serving uses. The Project would encourage pedestrian-oriented and visitor-serving uses during the evening hours to expand activity centers within downtown and create better, safer linkages among downtown districts.

Downtown Street Standards: Implementation of Alternative 2 would provide another travel mode within downtown and therefore would not conflict with the purpose of the Downtown Street Standards, specifically the concept of updating street designations based on a more comprehensive street hierarchy that balances traffic flow with other equally important functions of the street, including pedestrian needs and public transit. Development of the Project is being managed in close consultation with LADOT staff, and therefore, adherence to and recognition of established street standards would be maintained as the design of the Project moves forward.

City of Los Angeles 2010 Bicycle Plan: Alternative 2 could interfere with the implementation of planned bike facilities or lanes in the study area. The Project could also result in temporary accessibility interruptions during the construction period, as previously described. Proposed operation of the streetcar could conflict, therefore, with the Bicycle Plan. Streetcar vehicles would be equipped with audible warning devices, a train-to-wayside communication (TWC) system, and safety and wayfinding signs. Furthermore, operators would undergo extensive training and continuing evaluation to ensure safety. The City would also develop transit safety programs, with the goal of raising streetcar safety awareness in the community. In locations where travel lanes would be shared among motor vehicles, streetcars, and bicycles, special signage would be provided to make bicyclist aware of how to travel safely, and additional measures would be in place to provide a safe riding environment (see also Section 3.10, *Transportation and Traffic*).

Historic Downtown Design Guidelines: Alternative 2 would not conflict with *the Los Angeles Conservancy Historic Downtown Design Guidelines* because the portion of the Project within the boundaries of the guidelines would be required to adhere to design requirements that would apply to the placement, design, and functioning of the various elements of the streetcar, including the design and relationship of overhead contact system (OCS) poles to adjacent buildings and street furniture such as streetcar platforms and other components of the system. Where project improvements could result in alterations to historic features, such alterations would be avoided or conducted so as to be in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties. Because the alternatives would adhere to the requirements of the *Historic Downtown Design Guidelines*, where applicable, and the guidelines are premised on the eventual reintroduction of streetcar service, Alternative 2 would therefore not conflict with design guidelines for the Historic Core area.

Los Angeles Sports and Entertainment District Specific Plan: Alternative 2 would not conflict with the LASED Specific Plan because it would be subject to applicable requirements of the specific plan. The Project would provide several stops within the Specific Plan area and connect the area to other parts of downtown. The Project would provide an alternative mode of transportation within the downtown area for visitors and residents and would encourage gathering in public places, including the attractions in the specific plan area.

Convention and Event Center Specific Plan: For the same reasons stated above for the LASED Specific Plan, Alternative 2 would not conflict with the *Convention and Event Center Specific Plan*. Alternative 2 would also be subject to applicable requirements of the specific plan and would provide an alternative mode of transportation within the downtown area for visitors and residents.

Table 3.8-1 identifies additional detail regarding the applicable goals, policies, and objectives of the above stated plans and whether the Project would conflict with their respective goals, policies, and objectives. As shown in Table 3.8-1, the Project would not conflict with most of the applicable goals, policies, and objectives included in the *City of Los Angeles General Plan* and applicable specific plans and design guidelines. The Project would provide additional transportation infrastructure and services to support the projected needs of downtown populations and businesses and would make downtown more accessible to residents and visitors alike. It would provide additional transit accessibility to the arts and cultural venues along Grand Avenue and the theaters along Broadway. The Project would be developed and designed to be fully integrated with all modes addressed in the *Mobility Plan 2035*, including mixed traffic flow, pedestrian movement and safety, and bicycle flow and safety. Most potentially significant impacts would be reduced to less-than-significant levels with the implementation of mitigation measures.

Land Use Compatibility

Less-than-significant impact. Alternative 2 would improve circulation within and among the different districts located in the Central City Community Planning area, including the Civic Center, Bunker Hill, Financial Core, South Park, and the Center City/Historic Core districts of downtown Los Angeles. Additionally, the streetcar route that would be constructed under Alternative 2 would operate within existing street rights-of-way that would be shared with motor vehicles and pedestrians. Therefore, operation of the streetcar system under Alternative 2 would not create a physical barrier that would physically divide or isolate a community or neighborhood.

It should be noted that streetcars historically operated along the streets in the study area, and the restoration of streetcar service that would occur under this alternative would not visually diminish the cohesive nature of the districts, as conveyed by architectural style, materials, setbacks, and storefronts, because overhead wires, poles, street lamps, and traffic signals have been and are part of the historic and current setting. Proposed restoration of streetcar service would be consistent with the development that occurred during the period when streetcars once operated on the streets in downtown Los Angeles and that still exists today. This alternative would be compatible with existing land uses along the alignment, given proposed streetcar services would be introduced along existing streets. Operation of the streetcar, however, could result in some operational impacts that could affect adjacent or nearby land uses. These impacts would be related to aesthetics, noise, traffic and parking. However, as demonstrated in Sections 3.1, *Aesthetics*, 3.3, *Cultural Resources*, 3.9, *Noise and Vibration,* and 3.10, *Transportation and Traffic*, less-than-significant impacts, with mitigation required in some cases, have been determined for each of these topics.

Table 3.8-1. Project Land Use Plan Conflicts

Plan/Element/ Goal/Objective/ Policy/Guiding Principle	*Description*	Conflict?*	Justification*
Plan for a Healthy Los Angeles			
Policy 5.1 (Air pollution and Respiratory Health)	*Reduce air pollution from stationary and mobile sources; protect human health and welfare and promote improved respiratory health.*	No	Implementation of Mitigation Measure **MM-AQ-C1** would reduce impacts that may result from local construction emissions associated with the Project to less-than-significant levels. No significant operational air quality impacts would occur under the Project. See Section 3.2, *Air Quality*, for further discussion of this topic.
Policy 5.7 (Land use planning for public health and GHG emissions reduction)	*Promote land use policies that reduce per capita greenhouse gas emissions, result in improved air quality and decreased air pollution, especially for children, seniors and others susceptible to respiratory diseases.*	No	The Project is anticipated to result in a daily reduction of project vicinity vehicle miles traveled (VMT) that would be due to diversion of private automobile trips that would occur under the Project. The Project is anticipated to result in a net decrease in GHG emissions under the build alternatives compared to the No Project Alternative. Under these ridership conditions, the net Project's GHG emissions would be well below the SCAQMD significance threshold of 10,000 MTY CO_2e for industrial uses and the proposed SCAQMD draft screening significance threshold of 3,000 MTY. Thus, the potential GHG impacts of the Project would be less than significant. See justification discussed under Policy 5.1 regarding air quality.
Framework Element			
Policy 3.9.4	*Promote the development of para-transit or other local shuttle system and bicycle amenities that provide access for residents of adjacent neighborhoods, where appropriate and feasible.*	No	Proposed streetcar service would provide a circulator system for residents, workers, and visitors in downtown Los Angeles. The proposed configuration of track and roadway lanes under the Project would permit a mixed flow of vehicles and a fleet of electrically powered streetcars while also accounting for pedestrians and cyclists using the roadway. Table 3.10-3 in Section 3.10, *Transportation and Traffic,* shows the existing and proposed bicycle facilities that would interface with the Project, either by sharing or crossing its alignment.

Plan/Element/ Goal/Objective/ Policy/Guiding Principle	*Description*	Conflict?*	Justification*
Policy 9.3.1	*Reduce the amount of hazardous substances and the total amount of flow entering the wastewater system.*	No	Implementation of Mitigation Measures **MM-HM-C1** through **MM-HM-C8** would lessen the impacts of hazardous materials that otherwise could result under the Project. With implementation of these mitigation measures, impacts would be less than significant. See Section 3.7, *Hazards and Hazardous Materials*, for further discussion. Additionally, as described in Chapter 5, *Other Environmental Considerations,* a Standard Urban Stormwater Mitigation Plan (SUSMP) would be implemented and would ensure that potential impacts associated with water quality, such as runoff resulting from vehicle cleaning and maintenance, would be less than significant because site-specific requirements would be imposed governing the handling and treatment of runoff from activities occurring within the MSF. The MSF is the only component of the Project that would require water and wastewater service for bathroom facilities and cleaning activities. All wastewater would be controlled and managed on-site before being conveyed to the sewer system.
Policy 9.40.4	*Establish regulations and standards which eliminate the adverse impacts due to light pollution, light trespass, and glare for the area lighting of rail yards, transit yards, trucking facilities, and similar facilities.*	No	Construction and operation of the Project would not result in significant light and glare impacts. Nonetheless, Section 3.1, *Aesthetics*, includes several mitigation measures to ensure that the Project is built with sensitivity to the visual environment. See Section 3.1 for Mitigation Measures **MM-AES-C1** through **MM-AES-C3** and **MM-AES-O1 through MM-AES-O3** and for further discussion of light and glare.
Air Quality Element			
Goal 1	*Good air quality and mobility in an environment of continued population growth and healthy economic structure.*	No	As stated in Chapter 2, *Project Description*, the primary objectives of the Project are to enhance mobility through expanded transit circulation service and support the growth and revitalization of downtown Los Angeles. Additionally, as described in Section 3.2, *Air Quality*, implementation of Mitigation Measure **MM-AQ-C1** would reduce impacts that may result from local construction emissions associated with the Project to less-than-significant levels. No

Plan/Element/ Goal/Objective/ Policy/Guiding Principle	***Description***	**Conflict?***	**Justification***
			operational air quality impacts would occur.
Objective 1.1	*It is the objective of the City of Los Angeles to reduce air pollutants consistent with the Regional Air Quality Management Plan (AQMP), increase traffic mobility, and sustain economic growth citywide.*	No	As stated in Section 3.10, *Transportation and Traffic*, the Project would be consistent with the *City of Los Angeles General Plan*. Because the Project would be consistent with the General Plan, pursuant to SCAQMD guidelines, the Project would be considered to be consistent with the region's AQMP. As such, project-related emissions are accounted for in the AQMP, which is crafted to bring the Basin into attainment for all criteria pollutants.[1] The primary objectives of the Project are to enhance mobility through expanded transit circulation service and support the growth and revitalization of downtown Los Angeles.
Objective 1.3	*It is the objective of the City of Los Angeles to reduce particulate air pollutants emanating from unpaved areas, parking lots, and construction sites.*	No	Localized emissions of NO_X, PM10, and PM2.5 during construction are predicted to exceed SCAQMD significance thresholds without incorporation of mitigation measures. However, as described in Section 3.2, *Air Quality*, Mitigation Measure **MM-AQ-C1** would reduce these impacts to less-than-significant levels.
Policy 1.3.1	*Minimize particulate emissions from construction sites.*	No	See Justification for Objective 1.3 of the Air Quality Element.
Goal 2	*Less reliance on single-occupant vehicles with fewer commute and non-work trips.*	No	Operation of the Project would provide an additional public transit option in the study area, with an emphasis on short-distance trips between the various districts of downtown Los Angeles. Project operation would supplement existing services transit services. Underground and grade-separated services, such as the existing Red, Purple, Blue, and Expo lines would not be affected. Bus service along the project alignment would continue to operate.

[1] State CEQA Guidelines Section 15064(h)(3) states that "A lead agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program which provides specific requirements that will avoid or substantially lessen the cumulative problem (e.g., water quality control plan, air quality plan, integrated waste management plan) within the geographic area in which the project is located. Such plans or programs must be specified in law or adopted by the public agency with jurisdiction over the affected resources through a public review process to implement, interpret, or make specific the law enforced or administered by the public agency."

Plan/Element/ Goal/Objective/ Policy/Guiding Principle	*Description*	Conflict?*	Justification*
Objective 2.1	*It is the objective of the City of Los Angeles to reduce work trips as a step towards attaining trip reduction objectives necessary to achieve regional air quality goals.*	No	The Project would provide transit service for internal downtown trips. Work trips associated with the MSF would minimally increase as a result of the Project. See Section 3.2, *Air Quality*, and Section 3.10, *Transportation and Traffic*, for further discussion of air quality and traffic impacts anticipated to occur under the Project.
Policy 2.1.1	*Utilize compressed work weeks and flextime, telecommuting, carpooling, vanpooling, public transit, and improve walking/ bicycling related facilities in order to reduce Vehicle Trips and/or Vehicle Miles Traveled (VMT) as an employer and encourage the private sector to do the same to reduce work trips and traffic congestion.*	No	See Justification to Objective 2.1 above.
Objective 3.1	*It is the objective of the City of Los Angeles to increase the portion of work trips made by transit to levels that are consistent with the goals of the Air Quality Management Plan and the Congestion Management Plan.*	No	See Justification to Objective 2.1 above. See Section 3.2, *Air Quality*, and Section 3.10, *Transportation and Traffic*, for further discussion of the Project's consistency with the *Air Quality Management Plan* and the *Congestion Management Plan*.
Policy 3.1.2	*Address public safety concerns as part of transit improvement programs, such as guarded and/or well lit transit facilities, emergency equipment and safe-driving training for operators, in order to increase transit ridership.*	No	As described in Section 3.1, *Aesthetics*, light and glare impacts anticipated under the Project would be less than significant. Additionally, mitigation measures to ensure that the Project is built with sensitivity to the visual environment. See Section 3.1 for Mitigation Measures **MM-AES-C1 through MM-AES-C3** and **MM-AES-O1 through MM-AES-O3**, which will ensure that the Project is built with sensitivity to the visual environment. As discussed in Section 3.10, *Transportation and Traffic*, with respect to rail safety, the California Public Utilities Commission's (CPUC's) Rail Transit Safety Section

Plan/Element/ Goal/Objective/ Policy/Guiding Principle	*Description*	Conflict?*	Justification*
			prescribes requirements for the design, construction, operation, and maintenance of heavy rail transit, light rail transit, trolleys, and funicular systems. The CPUC ensures that all rail transit system extensions and new construction projects undergo a safety certification review and receive approval. Additionally, implementation of **MM-TRAF-O1** will reduce impacts related to bicycle safety. Specifically **MM-TRAF-O1** will require signage or markings that would clearly identify the presence of the flangeway to cyclists traveling parallel to the fixed guideway.
Policy 3.1.3	*Cooperate with regional transportation agencies in expediting the development and implementation of regional transit systems.*	No	The lead agency for the Project under CEQA is the City of Los Angeles. Development of the Project and its environmental review process are being managed through the joint cooperation of the Los Angeles County Metropolitan Transportation Authority (Metro) and the City's Department of Transportation and Bureau of Engineering.
Objective 3.2	*It is the objective of the City of Los Angeles to reduce vehicular traffic during peak periods.*	No	By creating a new mode of travel, the streetcar would reduce automobile trips during the peak hour, as demonstrated in Section 3.10, *Transportation and Traffic*.
Policy 3.2.1	*Manage traffic congestion during peak hours.*	No	The Project would implement a number of measures to manage traffic congestion during peak hours. These measures include a construction management plan (**MM-TRAF-C1**) and traffic mitigation (**MM-TRAF-C2, MM-TRAF-O1)** that would establish a construction monitoring program, and install safety signage.
Goal 4	*Minimal impact of existing land use patterns and future land use development on air quality by addressing the relationship between land use, transportation, and air quality.*	No	As stated in Chapter 2, *Project Description*, the primary objectives of the Project are to enhance mobility through expanded transit circulation service and support the growth and revitalization of downtown Los Angeles. Air quality impacts anticipated to occur under the Project would be reduced to less-than-significant levels with implementation of mitigation measures. All transportation impacts, with the exception of impacts at three intersections, would also be reduced to less-than-significant levels with implementation of mitigation

Plan/Element/ Goal/Objective/ Policy/Guiding Principle	*Description*	Conflict?*	Justification*
			measures.
Objective 4.1	*It is the objective of the City of Los Angeles to include the regional attainment of ambient air quality standards as a primary consideration in land use planning.*	No	See justification to Objective 1.1 of the Air Quality Element
Policy 4.1.1	*Coordinate with all appropriate regional agencies the implementation of strategies for the integration of land use, transportation, and air quality policies.*	No	See justification to Policy 3.1.3.
Objective 4.2	*It is the objective of the City of Los Angeles to reduce vehicle trips and vehicle miles traveled associated with land use patterns.*	No	See justification of Goal 2 of the Air Quality Element.
4.2.2	*Improve accessibility for the City's residents to places of employment, shopping centers, and other establishments.*	No	Proposed streetcar service would provide a circulator system for residents, workers, and visitors in downtown Los Angeles. The primary objectives of the Project are to enhance mobility through expanded transit circulation service and support the growth and revitalization of downtown Los Angeles.
4.2.3	*Ensure that new development is compatible with pedestrians, bicycles, transit, and alternative fuel vehicles.*	No	Proposed streetcar service would provide a circulator system for residents, workers, and visitors in downtown Los Angeles. The proposed configuration of track and roadway lanes under the Project would permit a mixed flow of vehicles and a fleet of electrically powered streetcars, while also accounting for pedestrians and cyclists.
4.2.4	*Require that air quality impacts be a consideration in the review and approval of all discretionary projects.*	No	This Draft EIR is a project EIR, as defined by Section 15161 of the State CEQA Guidelines and, as such, serves as an informational document for the general public and the Project's decision-makers. Section 3.2, *Air Quality*, includes an analysis of air quality impacts and mitigation measures to reduce construction and operation air quality impacts. As described in Section 3.2, no

Plan/Element/ Goal/Objective/ Policy/Guiding Principle	*Description*	Conflict?*	Justification*
			significant air quality impacts would occur under the Project. See Section 3.2 for further discussion.
4.2.5	*Emphasize trip reduction, alternative transit, and congestion management measures for discretionary projects.*	No	Based on the ridership model, the Project would result in trip reduction by providing a new alternative transportation option to the downtown community. See also the Justification to Objective 2.1 above. See Section 3.2, *Air Quality*, and Section 3.10, *Transportation and Traffic*, for further discussion of the Project's consistency with the *Air Quality Management Plan* and the *Congestion Management Plan*. Chapter 2, *Project Description*, identifies all discretionary approvals required under the Project.
Conservation Element			
Archaeological and paleontological objective and policy	*Objective: protect the city's archaeological and paleontological resources for historical, cultural, research, and/or educational purposes.* *Policy: continue to identify and protect significant archaeological and paleontological sites and/or resources known to exist or that are identified during land development, demolition, or property modification activities.*	No	The *Historic Resources Technical Report for the Restoration of Historic Streetcar Service in Downtown Los Angeles Project* and the *Archaeological Resources Technical Report for the Restoration of Historic Streetcar Service in Downtown Los Angeles Project* were prepared in February 2016 by ICF (see Appendices G and H, respectively). The reports did not result in the identification of any surficial prehistoric or historic archaeological sites or features. Deeper excavations for the Project may encounter significant paleontological resources. Implementation of Mitigation Measure **MM-CUL-C2** would reduce the impact associated with the Project to a less-than-significant level. See Section 3.3, *Cultural Resources*, for further discussion of impacts.
Cultural and historical objective and policy	*Objective: protect important cultural and historical sites and resources for historical, cultural, research, and community educational purposes.* *Policy: continue to protect historic and cultural sites and/or resources potentially affected by proposed land development,*	No	Construction of streetcar stops, sidewalk ramps. OCS poles, and curb bump-outs have the potential to cause physical damage to historic sidewalk features, although it is not known definitively if construction activities would cause any damage. Implementation of Mitigation Measures **MM-CUL-C1 and MM-CUL-O1** would reduce impacts to less-than-significant levels.

Plan/Element/ Goal/Objective/ Policy/Guiding Principle	*Description*	Conflict?*	Justification*
	demolition or property modification activities.		
Land form and scenic vistas objective and policy	*Objective: protect and reinforce natural and scenic vistas as irreplaceable resources and for the aesthetic enjoyment of present and future generations.* *Policy: continue to encourage and/or require property owners to develop their properties in a manner that will, to the greatest extent practical, retain significant existing land forms (e.g., ridge lines, bluffs, unique geologic features) and unique scenic features (historic, ocean, mountains, unique natural features) and/or make possible public view or other access to unique features or scenic views.*	No	No scenic vistas or designated scenic highways, corridors, or parkways have been identified within the Project's viewshed(s). Therefore, the Project would not affect views from a designated scenic highway, corridor, or parkway and no impact would occur. See Section 3.1, *Aesthetics*, for further discussion.
Housing Element			
Objective 2.2	*Promote sustainable neighborhoods that have mixed-income housing, jobs, amenities, services and transit.*	No	The Project would link several neighborhoods or districts within the *Central City Community Plan* area of the City of Los Angeles: Civic Center, Bunker Hill, Historic Core, Jewelry District, Financial Core, South Park, Fashion District, and LA Live/Convention Center. This dense urban area is the region's largest employment center and one of the region's largest tourist destinations. The Project would provide streetcar service for internal trips in downtown Los Angeles while maintaining bus, vehicle, bicycle, and pedestrian access in the project area.

Plan/Element/ Goal/Objective/ Policy/Guiding Principle	*Description*	Conflict?*	Justification*
Noise Element			
Goal	*A city where noise does not reduce the quality of urban life.*	No	Construction noise, is inevitable in a growing and healthy city. As construction of the Project has the potential to result in substantial, but temporary increases in local noise levels along the project alignments, mitigation measures **MM-NV-C1** through **MM-NV-C11** would reduce these impacts. Nonetheless, after implementation of mitigation measures, construction impacts would be significant and unavoidable. See Section 3.9, *Noise and Vibration*, for further discussion of noise impacts. With these proposed construction noise mitigation measures, while the impact would remain significant, there would be a minimization of effects on the quality of urban life. With regard to operations, the Project would enhance the quality of urban life in the City by providing a new mode of transit linking disparate neighborhoods within downtown Los Angeles. While there would be sound generating components of the Project, the Project as a whole would increase mobility options in the downtown area and restore historic streetcar service that would enhance the quality of urban life. Further, the Project would not cause any operational significant noise impacts. Taken together, the Project is consistent with this goal and there is no conflict.
Objective 2 (Non-airport)	*Reduce or eliminate non-airport related intrusive noise, especially relative to noise sensitive uses.*	No	See justification for Noise Element Goal above.
Policy 2.2	*Enforce and/or implement applicable city, state and federal regulations intended to mitigate proposed noise producing activities, reduce intrusive noise and alleviate noise that is deemed a public nuisance.*	No	See justification for Noise Element Goal above. Additionally, all applicable city, state, and federal regulations with regard to noise mitigation would be followed. As such, the Project is consistent with this goal and there is no conflict.

Plan/Element/ Goal/Objective/ Policy/Guiding Principle	*Description*	Conflict?*	Justification*
Objective 3 (Land Use Development)	*Reduce or eliminate noise impacts associated with proposed development of land and changes in land use.*	No	See justification for Noise Element Goal above.
Open Space Element			
Goal	*To conserve unique natural features, scenic areas, cultural and appropriate historical monuments for the benefit and enjoyment of the public.*	No	See justification for "Land form and scenic vistas objective and policy" included in the Conservation Element.
Service Systems Element/Public Recreation Plan	*The plan sets forth recreation standards intended to provide a basis for satisfying the needs for neighborhood and community recreational sites.* *Objective: To provide a guide for the orderly development of the City's public recreational facilities.*	No	The Project would result in the implementation of streetcar service in downtown Los Angeles. Proposed streetcar service would provide a circulator system for residents, workers, and visitors in downtown Los Angeles. The proposed configuration of track and roadway lanes under the Project would permit a mixed flow of vehicles and a fleet of electrically powered streetcars, while also accounting for pedestrians and cyclists. Implementation of the Project would not conflict with the development of the City's public recreational facilities.
Safety Element			
Policy 1.1.6	*State and federal regulations. Assure compliance with applicable state and federal planning and development regulations, e.g., Alquist-Priolo Earthquake Fault Zoning Act, State Mapping Act and Cobey-Alquist Flood Plain Management Act. [All EOO natural hazard enforcement and implementation programs relative to non-City regulations implement this policy.]*	No	The Project would be subject to several state and federal planning and development regulations including the *Alquist-Priolo Act* and the *Seismic Hazards Mapping Act* and would comply with applicable requirements of these regulations. See Section 3.5, *Geology and Soils*, and Section 3.7, *Hazards and Hazardous Materials*, for further discussion of these regulations.
Mobility Element			
Safety First Objective	*Vision Zero: Decrease transportation related*	No	The Project would be implemented with adherence to all available safety measures.

Plan/Element/ Goal/Objective/ Policy/Guiding Principle	*Description*	Conflict?*	Justification*
	fatality rate to zero by 2035.		As discussed in Section 3.10, T*ransportation and Traffic*, the Project could result in potential safety conflicts affecting bicyclists in proximity to streetcar tracks. Implementation of **MM-TRAF-O1** would reduce impacts related to bicycle safety. Specifically **MM-TRAF-O1** would require signage or markings that would clearly identify the presence of the flangeway to cyclists traveling parallel to the fixed guideway.
Policy 1.1 (Roadway User Vulnerability)	*Design, plan, and operate streets to prioritize the safety of the most vulnerable roadway user.*	No	See justification for Safety First Objective under the Mobility Element.
Policy 1.2 (Complete Streets)	*Implement a balanced transportation system on all streets, tunnels, and bridges using complete streets principles to ensure the safety and mobility of all users.*	No	The primary objectives of the Project are to enhance mobility through expanded transit circulation service and support the growth and revitalization of downtown Los Angeles. Additionally, implementation of **MM-TRAF-O1** will reduce impacts related to bicycle safety. Specifically **MM-TRAF-O1** will require signage or markings that would clearly identify the presence of the flangeway to cyclists traveling parallel to the fixed guideway. As stated in Chapter 2, *Project Description*, pedestrian activity would be encouraged under the Project.
1.6 (Multi-Modal Detour Facilities)	*Design detour facilities to provide safe passage for all modes of travel during times of construction.*	No	The Project would result in construction traffic impacts, as described in Section 3.10, *Transportation and Traffic*. Mitigation measures requiring a Traffic Management Plan (**MM-TRAF-C1**) and Construction Mitigation Monitoring (**MM-TRAF-C2**) would reduce impacts to less than significant. See Section 3.10 for further discussion.
Policy 2.3 (Pedestrian Infrastructure)	*Recognize walking as a component of every trip, and ensure high-quality pedestrian access in all site planning and public right-of-way modifications to provide a safe and comfortable walking environment.*	No	The Project would encourage pedestrian activity as described in Chapter 2, *Project Description*. Specifically, the Project would augment the current local transit services in the downtown core, provide yet another opportunity for transit use rather than the automobile, and facilitate increased pedestrian access.
Policy 2.5 (Transit Network)	*Improve the performance and reliability of existing and future bus service.*	No	The proposed streetcar service would function similar to bus service. Although there may be temporary delays to buses

Plan/Element/ Goal/Objective/ Policy/Guiding Principle	*Description*	Conflict?*	Justification*
			associated with lane closures along the project alignment throughout the construction period, such impacts are not anticipated to result in additional passengers on the transit system such that capacity would be exceeded. The traffic management plan identified in Mitigation Measure **MM-TRAF-C1** (Section 3.10, *Transportation and Traffic*) would keep the community informed of all construction activities affecting bus routes in the downtown Los Angeles area. Bus services along the project alignment would remain unchanged and would operate alongside the streetcars. Some of the streetcar platforms would be shared by Metro buses, and LADOT DASH buses.
Policy 3.1 (Access for All)	*Recognize all modes of travel, including pedestrian, bicycle, transit, and vehicular modes—including goods movement—as integral components of the City's transportation system.*	No	See justification for Policy 3.9.4 of the Framework Element.
Policy 3.2 (People with Disabilities)	*Accommodate the needs of the people with disabilities when modifying or installing infrastructure in the public right-of-way.*	No	The streetcars would be designed to be compliant with the *Americans with Disabilities Act* (ADA).
Policy 3.4 (Transit Services)	*Provide all residents, workers and visitors with affordable, efficient, convenient, and attractive transit services.*	No	See justification for Policy 3.9.4 of the Framework Element. Additionally, by connecting residential and employment areas, shopping districts, civic resources, cultural institutions, historic districts and landmarks, and entertainment venues, and by providing connectivity to other transit services, the Project would improve mobility and accessibility with a new transportation mode for people who live and work in the downtown area, as well as for visitors.
Policy 3.5 (Multi-Modal Features)	*Support "first-mile, last-mile solutions" such as multi-modal transportation services, organizations, and activities in the areas*	No	See justification for Policy 3.9.4 of the Framework Element. Bus services along the project alignment would remain unchanged and would operate alongside the streetcars. Some of the streetcar platforms would be shared by Metro buses,

Plan/Element/ Goal/Objective/ Policy/Guiding Principle	*Description*	Conflict?*	Justification*
	around transit stations and major bus stops (transit stops) to maximize multi-modal connectivity and access for transit riders.		and LADOT DASH buses. The Project would encourage pedestrian activity and would facilitate increased pedestrian access, as described in Chapter 2, *Project Description*.
Policy 3.7 (Regional Transit Connections)	*Improve transit access and service to major regional destinations, job centers, and inter-modal facilities.*	No	The Project would provide transit service to residents, visitors, and workers in downtown Los Angeles. By connecting residential and employment areas, shopping districts, civic resources, cultural institutions, historic districts and landmarks, and entertainment venues, and by providing connectivity to other transit services, the Project would improve mobility and accessibility with a new transportation mode for people who live and work in the downtown area, as well as for visitors.
Policy 4.15 (Public Hearing Process)	*Require a public hearing for the proposed removal of an existing class II or IV bicycle facility.*	No	Preparation of this EIR is subject to CEQA requirements pertaining to public participation. In 2013, the City published the Notice of Preparation (NOP) for the EIR on January 3. The NOP provided formal notice of the opportunity to comment in writing and/or in person at the public scoping meeting. The CEQA scoping period started on January 3, 2013, and ended on February 1, 2013. Additionally, this Draft EIR is being publicly circulated for 45 days. Although temporary disruptions may occur during construction activities, no removal of existing Class II or IV bicycle facilities would occur under the Project.
Policy 5.1 (Sustainable Transportation)	*Encourage the development of a sustainable transportation system that promote environmental and public health.*	No	See justification for Policy 3.5 (Multi-Modal Features) of *Mobility Plan 2035*. By connecting residential and employment areas, shopping districts, civic resources, cultural institutions, historic districts and landmarks, and entertainment venues, and by providing connectivity to other transit services, the Project would improve mobility and accessibility with a new transportation mode for people who live and work in the downtown area, as well as for visitors.
Policy 5.2 (Vehicle Miles Traveled (VMT)	*Support ways to reduce vehicle miles traveled (VMT) per capita.*	No	The Project would introduce a fleet of electrically powered streetcars for internal Downtown Los Angeles trips. VMT would

Plan/Element/ Goal/Objective/ Policy/Guiding Principle	*Description*	Conflict?*	Justification*
			decrease as a result of implementation of the Project. Additionally, the Project would support bicycle and pedestrian activity in the project area.
5.4 (Clean Fuels and Vehicles)	*Continue to encourage the adoption of low and zero emission fuel sources, new mobility technologies, and supporting infrastructure.*	No	See justification for Policy 5.2 of the Mobility Element.
Central City Community Plan			
Objective 4-4	*To encourage traditional and non-traditional sources of open space by recognizing and capitalizing on linkages with transit, parking, historic resources, cultural facilities, and social services programs.*	No	The Project would introduce streetcar service and ancillary facilities (MSFs) in the project area. Construction of streetcar stops, sidewalk ramps, and curb bump-outs would occur, thereby providing non-traditional types of open space.
Policy 4-4.1	*Improve Downtown's pedestrian environment in recognition of its important role in the efficiency of Downtown's transportation and circulation systems and in the quality of life for its residents, workers, and visitors.*	No	By providing a new mode of transportation, the Project is designed to improve the pedestrian environment and pedestrian mobility. Due to the large number of transit options in downtown Los Angeles, the Project would further connect pedestrians to the various multimodal transportation options currently available.
Objective 11-1	*To keep downtown as the focal point of the regional mobility system accommodating internal access and mobility needs as well.*	No	The primary objectives of the Project are to enhance mobility through expanded transit circulation service and support the growth and revitalization of downtown Los Angeles. The Project would introduce streetcar service to downtown Los Angeles, resulting in internal transit trips for visitors, residents, and workers.
Policy 11-1.1	*Encourage rail connections and High Occupancy Vehicle lanes that will serve the downtown traveler.*	No	By connecting residential and employment areas, shopping districts, civic resources, cultural institutions, historic districts and landmarks, and entertainment venues, and by providing connectivity to other transit services, the Project would improve mobility and accessibility with a new transportation mode for people who live

Plan/Element/ Goal/Objective/ Policy/Guiding Principle	*Description*	Conflict?*	Justification*
			and work in the downtown area, as well as for visitors.
Policy 11-2.12	*Encourage use of the existing and planned bus and rail service within downtown from internal circulation through a uniform, reduced or free fare system.*	No	The Project would provide transit services for visitors, workers and residents in the downtown Los Angeles area as well as provide connectivity to other transit uses. Additionally, see Chapter 2, *Project Description*, for further discussion of connectivity to other transit uses.
Policy 11-7.1	*Encourage transportation strategies that include parking and TDM policies and actions that increase ridesharing and give priority to visitor/shopper parking.*	No	The Project would provide transit services for visitors, workers, and residents in the downtown Los Angeles area as well as provide connectivity to other transit uses.
Policy 11-7.11	*Transit system capacity must be increased to match increases in future demand for transit usage.*	No	The Project would provide connectivity to other transit services and would improve mobility and accessibility with a new transportation mode for people who live and work in the downtown area, as well as for visitors.
Street Hierarchy/ Standards Policies	*Provide the essential connections and interchanges necessary for a comprehensive transportation system.* *Transit Priority Streets: Figueroa Street, Flower Street, Broadway, Olympic Boulevard and Pico Boulevard.*	No	See justification for Policy 11.7-11 of *Mobility Plan 2035*. Additionally, see Chapter 2, *Project Description*, for a detailed description of the Project alignments.
Pedestrian Linkages Objective	*To link transit and pedestrian districts of historic Downtown Los Angeles.*	No	The Project would traverse through historic downtown Los Angeles. See Chapter 2, *Project Description*, for a detailed description and location of the project alignments.
Bunker Hill Specific Plan			
Purpose	*Support the expansion of the regional transit network through an urban form and mix of land uses that support high levels of transit use*	No	See justification for Policy 11-7.11 of *Mobility Plan 2035*.
Purpose	*Create a transit-friendly environment by requiring conformance to pedestrian oriented*	No	See justification for Policy 11-7.11 and Pedestrian Linkages Objective of *Mobility Plan 2035*.

Plan/Element/ Goal/Objective/ Policy/Guiding Principle	*Description*	Conflict?*	Justification*
	design guidelines that promote consistent street walls and active ground floor uses.		
Section B. Supplemental Urban Design Standards	*On retail streets and on other streets adjacent to ground floor space designed for retail, the building wall shall be located at or within 5 feet of the back of the minimum average sidewalk width required by the Downtown Street Standards.*	No	Two MSF sites would be located adjacent to the boundaries of the *Bunker Hill Specific Plan* area; their design and operation would be implemented in adherence to applicable design standards.
Section 9; B. Maintenance of Existing Easements for Pedestrian Walkways	*Existing public easements for Pedestrian Walkways must be maintained unless an equivalent pedestrian easement is provided, subject to the Director's approval.*	No	The Project would adhere to all requirements related to pedestrian walkways.
Los Angeles Civic Center Shared Facilities Enhancement Plan	*Sharing government facilities (at the City, County, State, and Federal levels), reducing costs and restoring the heart of the City as a full and active "civic" center, not just a government center.*	No	The Project would provide a new mode of transportation to link the disparate communities in downtown Los Angeles together. By providing a well-designed and attractive streetcar, with drivers on every vehicle, the Project would contribute to the safety and comfort of downtown residents and visitors.
City Center Redevelopment Plan	*To further the development of Downtown as the major center of the Los Angeles metropolitan region, within the context of the Los Angeles General Plan as envisioned by the General Plan Framework, Concept Plan, City-wide Plan portions, the Central City Community Plan, and the Downtown Strategic Plan.*	No	This chapter of the EIR contains a land use consistency analysis with applicable plans and policies. As described in the land use consistency analysis, no significant impacts related to consistency with applicable land use plans and policies would occur.
	To create a modern, efficient and balanced urban environment for people, including a full	No	The Project would provide a new mode of transportation to link the disparate communities in downtown Los Angeles together. By providing a well-designed and

Plan/Element/ Goal/Objective/ Policy/Guiding Principle	***Description***	**Conflict?***	**Justification***
	range of around-the-clock activities and uses, such as recreation, sports, entertainment and housing.		attractive streetcar, with drivers on every vehicle, the Project would contribute to the safety and comfort of downtown residents and visitors.
	To create a symbol of pride and identity which gives the Central City a strong image as the major center of the Los Angeles region.	No	The Project as a whole would increase mobility options in the downtown area and restore historic streetcar service that would enhance the quality of urban life.
	To facilitate the development of an integrated transportation system which will allow for the efficient movement of people and goods into, through and out of the Central City.	No	The Project would provide a new mode of transportation to link the disparate communities in downtown Los Angeles together. By providing a well-designed and attractive streetcar, with drivers on every vehicle, the Project would contribute to the safety and comfort of downtown residents and visitors.
	To establish an atmosphere of cooperation among residents, workers, developers, business, special interest groups and public agencies in the implementation of this Plan.	No	The Project would provide a new mode of transportation to link the disparate communities in downtown Los Angeles together. By providing a well-designed and attractive streetcar, with drivers on every vehicle, the Project would contribute to the safety and comfort of downtown residents and visitors.
Feasibility Study for the Resurrection of the Red Car Trolley Services in the Los Angeles Downtown Area			
	Develop a System to Support Both Visitors and Residents.	No	The Project would provide a new mode of transportation to link the disparate communities in downtown Los Angeles together. By providing a well-designed and attractive streetcar, with drivers on every vehicle, the Project would contribute to the safety and comfort of downtown residents and visitors.
	Support Local Plans.	No	This chapter of the EIR contains a land use consistency analysis with applicable plans and policies. As described in the land use consistency analysis, no significant impacts related to consistency with applicable land use plans and policies would occur.
	Involve Local Citizens and Policy-Makers.	No	Preparation of this EIR is subject to CEQA requirements pertaining to public participation. In 2013, the City published the NOP for the EIR on January 3. The NOP provided formal notice of the opportunity

Plan/Element/ Goal/Objective/ Policy/Guiding Principle	*Description*	Conflict?*	Justification*
			to comment in writing and/or in person at the public scoping meeting. The CEQA scoping period started on January 3, 2013, and ended on February 1, 2013. Additionally, this Draft EIR is being publicly circulated for 45 days.
	Pay homage to the Red and Yellow Car systems.	No	The Project as a whole would increase mobility options in the downtown area and restore historic streetcar service that would enhance the quality of urban life.
Broadway Streetscape Master Plan			
Focus	*Create a multi-modal, pedestrian-focused street that will support the historic theater district.*	No	The Project would help achieve this focus of the master plan by restoring an historic transportation mode that was an integral part of the area's overall context.
Principle	*Keep new streetscape elements simple, with clean lines and materials.*	No	The Project would coordinate its streetscape components to be consistent with the simple, clean lines objective that the plan proposes. It would not recreate an historic feature, but rather restore the function that has been missing for many years.
Broadway Theater and Entertainment District Design Guide			
Goal	*Create a recognizable and attractive entertainment district on Broadway that enlivens the corridor, serves as a regional entertainment draw and encourages the reuse of its numerous historic theaters.*	No	The Project would not conflict with the design guidelines and standards that are intended to enhance the identity of the District. The Project would assist in furthering a recognizable and attractive entertainment district on Broadway that enlivens the corridor. Additionally, the Project would include increased opportunities for using the streetcar to gain access to multiple destinations and would be consistent with the goal of encouraging pedestrian-oriented and visitor-serving uses. The Project would encourage pedestrian-oriented and visitor-serving uses during the evening hours to expand activity centers within downtown and create better, safer linkages among downtown districts.
Goal	*Encourage development patterns and a mix of uses that contribute to a pedestrian-friendly environment on Broadway and promote an active street life 24*	No	The Project would enhance mobility through expanded transit circulation service and support the growth and revitalization of downtown Los Angeles. By connecting residential and employment areas, shopping districts, civic resources, cultural institutions, historic districts and

Plan/Element/ Goal/Objective/ Policy/Guiding Principle	*Description*	Conflict?*	Justification*
	hours a day, with an emphasis on night-time and entertainment uses for residents, workers, visitors and tourists.		landmarks, and entertainment venues, and by providing connectivity to other transit services, the Project would improve mobility and accessibility with a new transportation mode for people who live and work in the downtown area, as well as for visitors.
Goal	*Encourage development that contributes to the safety and comfort of Downtown residents and visitors.*	No	The Project would provide a new mode of transportation to link the disparate communities in downtown Los Angeles together. By providing a well-designed and attractive streetcar, with drivers on every vehicle, the Project would contribute to the safety and comfort of downtown residents and visitors.
Goal	*Promote projects that are designed to ensure compatibility among wide range of uses encouraged in the district and which incorporate measures that help diminish noise, improve energy efficiency and mitigate other potential impacts.*	No	Chapter 3, *CEQA Environmental Impact Analysis*, of this EIR identifies potential construction and operation environmental impacts and mitigation measures for the Project. Mitigation measures have been included for all potentially significant impacts. As described in Section 3.9, *Noise and Vibration*, and Section 3.10, *Transportation and Traffic*, significant and unavoidable construction noise and operational traffic impacts would result under the Project. All other environmental impacts would be reduced to less-than-significant levels.
New Construction; Site Planning; 1. Respecting the Historic Context, 3 Setbacks, 6. Building Scale and Massing, 12. Lighting, 15. Utilities, Mechanical Equipment, Trash Containers, and Loading, 1Signage Simplicity and Quality	*Guideline 1: Pursue creative and innovative contemporary designs for new buildings that will complement Broadway's designated National Register Historic District* *Guideline 3: Encourage an inviting pedestrian environment and provide for streetwall continuity by locating new buildings at the property line or the prevailing setback, as applicable. Where permitted, additional setback areas should encourage active public uses through additional*	No	The Project would not conflict with the *Broadway Streetscape Master Plan*. The Project would bring streetcar service back to the downtown area and Broadway in particular. The *Broadway Streetscape Master Plan's* focus is to create a multi-modal, pedestrian-focused street that would support the historic theater district. In this respect, the Project would help achieve this focus of the plan by restoring an historic transportation mode that was an integral part of the area's overall context. The Project would coordinate its streetscape components to be consistent with the simple, clean lines objective that the plan proposes. It would not recreate an historic feature, but rather restore the function that has been missing for many years. No views of key historic buildings would be impaired. Clear, understandable

Plan/Element/ Goal/Objective/ Policy/Guiding Principle	*Description*	Conflict?*	Justification*
	street trees, outdoor seating areas, kiosks, forecourts and arcades.		pedestrian connections would be apparent via the streetcar signage. Because the streetcar would be electrically powered, it would promote environmental responsibility. For these reasons, the Project will also be operated within the Broadway street cross-section as it is currently delineated.
Downtown Street Standards	*The Downtown Street Standards establish definitive future curb lines and property lines for all Downtown streets, and, in some locations, additional required average sidewalk easements.*	No	The Project would provide another travel mode within downtown and therefore would not conflict with the purpose of the *Downtown Street Standards*, specifically with the concept of updating street designations based on a more comprehensive street hierarchy that balances traffic flow with other equally important functions of the street, including pedestrian needs, and public transit. Development of the Project is being managed in close consultation with LADOT staff, and therefore adherence to and recognition of established street standards will be maintained as the design of the Project moves forward.
***City* of Los Angeles 2010 Bicycle Master Plan**			
Policy 1.3.1	*Incorporate bikeways into transit projects that include an exclusive right-of-way.*	No	The Project does not include an exclusive right-of-way.
Policy 2.3.2	*Mitigate obstacles or obstructions that impede safe and convenient bicycle passage.*	No	The Project includes a number of mitigation measures to improve bicyclist safety, including signage and pavement markings where needed. These measures include **MM-TRAF-CI** (development of a traffic management plan), **MM-TRAF-C2** (construction mitigation monitoring) and **MM-TRAF-O1** (signage). See Section 3.10, *Transportation and Traffic,* for further details.
Los Angeles Conservancy Historic Downtown Los Angeles Design Guidelines	*The guidelines describe how alterations and enhancements to buildings within historic downtown can and should be designed so that they reinforce the area's historic environment. They provide guidance about*	No	The Project would be designed and sited so as to be consistent with applicable design or street standards.

Plan/Element/ Goal/Objective/ Policy/Guiding Principle	***Description***	**Conflict?***	**Justification***
	compatible storefront and signage design, repair and maintenance of older buildings, renovation that highlights historic features, and sensitivity to these considerations that should be observed by new construction.		
Goal	*Promote the sensitive use and placement of well-designed and crafted signage to complement the unique historic character of commercial Los Angeles.*	No	Clear, understandable pedestrian connections will be apparent via the streetcar signage. See Chapter 2, *Project Description*, and Section 3.10, *Transportation and Traffic*, for further discussion of signage.
Way-Finding Signage Guidelines	*Create seamless components of an overall signage system using directional maps, transportation schedules, place name indicators, etc.*	No	The Project would be designed and sited so as to be consistent with applicable design or street standards.
Los Angeles Sports and Entertainment District Specific Plan	*The purpose of the Specific Plan is to provide continued and expanded improvements to the plan area as a major entertainment/mixed-use development and assure orderly infill of public facilities consistent with the intensity and design of the existing district.*	No	The Project would provide several stops within the Specific Plan area and it would connect the area to other parts of downtown. The Project would provide an alternative mode of transportation within the downtown area for visitors and residents and would encourage gathering in public places, including the attractions in the Specific Plan area.
Convention and Event Center Specific Plan	*The purpose of the Specific Plan is to enhance the area as a major convention and event center, assure orderly infill of public facilities consistent with the intensity and design of the existing district, and to provide public gathering places and a lively pedestrian-friendly environment through the establishment of unique*	No	The Project would not conflict with the *Convention and Event Center Specific Plan*. The Project would also be subject to applicable requirements of the Specific Plan and would provide an alternative mode of transportation within the downtown area for visitors and residents.

Plan/Element/ Goal/Objective/ Policy/Guiding Principle	*Description*	Conflict?*	Justification*
	streetscape and open space plans.		
* Plan conflict and justification refers to all build alternatives.			

3.8.3.5 Alternative 3: 7th Street without Grand Avenue Extension

Construction Impacts

Land Use Plan Consistency

Less-than-significant impact. Construction land use impacts due to inconsistencies with existing zoning and land use plan policies or goals would be similar to the impacts described above for Alternative 2, except no construction would occur on Grand Avenue. Therefore, a less-than-significant impact is anticipated.

Land Use Compatibility

Less-than-significant impact. Construction land use impacts associated with land use compatibility (division of neighborhood, disruption impacts, secondary impacts, etc.) would be similar to those described for the 7th Street with Grand Avenue Extension Alternative (Alternative 2). However, under Alternative 3, there would be no construction activities on Grand Avenue and on the portion of 1st Street between Hill Street and Grand Avenue. Similar to Alternative 2, construction activities could temporarily impair access to businesses located along the alignment could occur. Implementation of Regulatory Compliance Measure **RCM-LU-C1** is proposed to minimize access impacts on local businesses. Impacts would be considered less than significant.

Operational Impacts

Land Use Plan Consistency

Less-than-significant impact. Operational land use impacts related to land use plan and zoning consistency would be similar to impacts described for the 7th Street with Grand Avenue Extension Alternative (Alternative 2). However, under Alternative 3, the Project would not operate on Grand Avenue and on the portion of 1st Street between Hill Street and Grand Avenue.

Land Use Compatibility

Less-than-significant impact. Operational land use impacts associated with land use compatibility (division of neighborhood, disruption impacts, secondary impacts, etc.) would be similar to those described for the 7th Street with Grand Avenue Extension Alternative (Alternative 2). However, under Alternative 3, the Project would not operate on Grand Avenue and on the portion of 1st Street between Hill Street and Grand Avenue.

3.8.3.6 Alternative 4: 9th Street with Grand Avenue Extension

Construction Impacts

Land Use Plan Consistency

Less-than-significant impact. Construction land use impacts associated with plan/zoning consistency would be similar to those described for the 7th Street with Grand Avenue Extension Alternative (Alternative 2). However, under Alternative 4, construction activities would be on 9th Street instead of 7th Street between Figueroa and Hill Streets. A less-than-significant impact would occur.

Land Use Compatibility

Less-than-significant impact. The extent of land use impacts during construction activities would be similar to those anticipated to occur under Alternative 2. Additionally, construction land use impacts would be similar to those described for Alternative 2, with the exception that land uses along 9th Street, rather than 7th Street would be involved. Access disruptions during project construction would be temporary and would end once construction is completed. Temporary access improvement to businesses located along the alignment could occur (see Alternative 2's *Land Use Compatibility* discussion) but Regulatory Compliance Measure **RCM-LU-C1** would minimize potential impacts. Impacts would be less than significant.

Operational Impacts

Land Use Plan Consistency

Less-than-significant impact. Operational land use impacts related to land use plan/zoning consistency would be similar to impacts described for Alternative 2. However, under Alternative 4, the Project would operate on 9th Street instead of 7th Street between Figueroa and Hill Streets. A less-than-significant impact would occur.

Land Use Compatibility

Less-than-significant impact. Operational land use impacts associated with land use compatibility (division of neighborhood, disruption impacts, secondary impacts, etc.) would be similar to those described for Alternative 2. A less-than-significant impact would occur.

3.8.3.7 Alternative 5: 9th Street without Grand Avenue Extension

Construction Impacts

Land Use Plan Consistency

Less-than-significant impact. Construction land use impacts associated with land use plan/zoning consistency would be similar to those described for Alternative 3, except that construction would occur on 9th Street, rather than 7th Street. A less-than-significant impact would occur.

Land Use Compatibility

Less-than-significant impact. Construction land use impacts related to the division of an established community resulting from the construction of the alignment would be similar to those described for Alternative 3, except that construction would occur on 9th Street rather than 7th Street. Similarly, any access disruptions during project construction would be temporary and would end once construction is completed. Proposed construction activities would not divide an established community. Temporary access impacts on businesses located along the alignment could occur; however, Regulatory Compliance Measure **RCM-LU-C1** would minimize potential impacts. Impacts would be less than significant.

Operational Impacts

Land Use Plan Consistency

Less-than-significant impact. Operational land use impacts related to land use plan/zoning consistency would be similar to the impacts described for the 7th Street with Grand Avenue Extension, Alternative. However, under Alternative 5, the Project would operate on 9th Street instead of 7th Street between Figueroa and Hill Streets.

Land Use Compatibility

Less-than-significant impact. Operational land use impacts associated with land use compatibility (division of neighborhood, disruption impacts, secondary impacts, etc.) would be similar to those described above for Alternative 3, with the exception that the Project would operate on 9th Street rather than 7th Street.

3.8.3.8 Traction Power Substations and Laydown and Storage Areas

Construction

Land Use Plan Consistency

Less-than-significant impact. Construction of the TPSS units would follow all applicable City of Los Angeles regulations and guidelines pertaining to construction, which would minimize the potential for adverse impacts and conflicts with land use plan policies that are intended to protect the environment. See Table 3.8-1 for discussion of consistency with applicable plans and policies.

Land Use Compatibility

Less-than-significant impact. Construction areas would be limited in size (approximately 250 square feet), and impacts would be temporary and short-term. Construction activities associated with the TPPS units would not displace any residential units and would not create a physical barrier that would divide or isolate residential communities or neighborhoods.

The laydown and storage area(s) could be located within the right-of-way, in parking lots, or on vacant land, and they would be used to store equipment and materials. Three potential laydown and storage areas have been identified for evaluation: the southeast corner of 3rd Street and Main Street; Grand Avenue to Olive Street, between 8th Street and 9th Street; and, Grand Avenue to Olive Street, between 12th Street and Pico Boulevard. However, other locations within the study area may be suitable if they have similar characteristics to these three locations, and they could be selected if they become available. Because no residences or businesses would be displaced and because activities at the laydown and storage areas would be temporary and would comply with all applicable City regulations and guidelines pertaining to construction, less-than-significant construction land use impacts would occur.

Operation

Land Use Plan Consistency

Less-than-significant impact. Potential locations for the TPSS units consist of vacant lots and parking areas and are zoned either C2 or R5. Within the commercially zoned parcels, installations of utility service facilities are specifically permitted as a use; they therefore would also be permitted as an ancillary occupancy of those parcels. While the zoning requirements pertaining to residentially zoned parcels do not specifically identify utility facilities as a permitted use, the degree to which the TPSS units would occupy space on the affected parcel would be incidental to the primary use, and careful placement and buffering (if necessary) would be provided to ensure that the installations would be compatible.

The proposed units would be designed and sited so as to be consistent with applicable design or street standards including the *Downtown Street Standards* and the *Historic Downtown Los Angeles Design Guidelines*; approval of the applicable City agency would be secured as part of the design process. Additionally, the build alternatives would not conflict with applicable goals and objectives of the *Central City Community Plan*. The alternatives would be consistent with objectives that encourage alternative modes of transportation to the automobile and support pedestrian activity. Additionally, the Project would include all necessary discretionary approvals to ensure that the proposed facilities would be consistent with City of Los Angeles zoning requirements. Operational activities would comply with all applicable local regulations and requirements.

Land Use Compatibility

Less-than-significant impact. As stated in Chapter 2, *Project Description*, each TPPS unit would be a durable structure containing electrical and electronic equipment. All TPSS units would be located out of the public right-of-way with the exception of the TPSS unit at 2nd Street and Grand Avenue, which may occupy a portion of the sidewalk. The unit would be installed in a manner that would not obstruct pedestrian access. Operational activities associated with the TPPS units would not result in land use impacts. No residential communities or neighborhoods would be divided or isolated and disruptions to businesses or other land uses would not occur.

3.8.3.9 Maintenance and Storage Facility Sites

As described in Chapter 2, *Project Description*, the following four sites are being evaluated as a potential location for an MSF:

- MSF Site: Broadway and 2nd Street.
- MSF Site: Hill Street and 5th Street.
- MSF Site: 11th Street and Olive Street (East).
- MSF Site: 11th Street and Olive Street (West).

The four potential locations for the MSF sites consist of vacant lots or parking areas and are zoned either C2 or R5.

Construction Impacts

MSF Site: Broadway and 2nd Street

Land Use Plan Consistency

Less-than-significant impact. The MSF would be located on a site zoned for commercial uses. Surrounding land uses to the north, east, and south are also zoned Commercial. Portions of the west side of Hill Street are zoned Commercial in this area. Portions of the west side of Hill Street are zoned for high density Residential. MSF construction activities would be temporary and would adhere to applicable City of Los Angeles regulations and requirements, including Article 4, Section 12.14. Consequently, this would not result in significant conflicts with existing land use plan policies or zoning or significant land use incompatibility impacts. Mitigation Measure **MM-TRAF-C1** included in Section 3.10, *Transportation and Traffic*, describes the development of a traffic management plan (TMP), which will reduce construction-related traffic impacts on public services, community facilities, utilities, bicycle circulation, and pedestrian circulation. The TMP will be prepared during final design for implementation during construction to mitigate the traffic impacts caused by construction of the Project. Additionally, as stated in Section 3.1, *Aesthetics*, Mitigation Measures **MM-AES-O1 and MM-AES-O2** will ensure that design of TPPS structures will be designed to minimize their visual presence, and MSFs will be appropriate in scale and proportion. Impacts would be less than significant.

Also located on this parcel is a Wedding Chapel business that may need to be displaced in order to provide adequate space for the MSF. Should this be determined necessary, the property owner would be compensated in accordance with applicable state and local laws and regulations, including the *Relocation Assistance Law*. Similarly, the business owner, if a tenant, would separately receive relocation assistance with the same laws and regulations.

Land Use Compatibility

Less-than-significant. The site is being used as a commercial parking lot. Land uses in the immediate area include commercial buildings and surface parking uses. The historic Bradbury Building and Million Dollar Theater are located just south of Third Street along Broadway, in the vicinity of the proposed MSF site. A residential tower is located across the street at 245 South Hill Street. See discussion above under *Land Use Plan Consistency* regarding Mitigation Measures **MM-TRAF-C1** and **MM-AES-O1 and MM-AES-O2**.

MSF construction activities would not displace any residential uses and would not create a barrier that would divide or isolate residential communities or neighborhoods.

MSF Site: Hill Street and 5th Street

Land Use Plan Consistency

Less-than-significant impact. This MSF option would be located on a site zoned for commercial uses. The surrounding area to the north, east, and west is zoned for commercial uses, but contains residential uses. Land uses located immediately to the south are zoned for open space uses.

Construction impacts associated with this option would be similar to the impacts described for the Broadway and 2nd Street MSF Option. Impacts would be less than significant.

Land Use Compatibility

Less-than-significant impact. Surrounding land uses are varied, consisting of high rise office buildings, open space (Pershing Square), hotel (Biltmore Hotel), and surface parking uses. The Pershing Square Metro Station is also located in the surrounding area southeast of the proposed MSF site. No residential uses are located at the proposed MSF site. The site is being used as a commercial parking lot. The Metro 417 Apartments are located north of the proposed MSF site along Hill Street, and the Title Guarantee Building is located to the south and east of the MSF site, at the northwest corner of Hill and 5th Street. No residential uses would be removed or disrupted as a result of proposed construction activities anticipated to occur under the MSF option. Construction impacts associated with this option would be similar to the impacts described for the Broadway and 2nd Street MSF Option. Mitigation Measure **MM-TRAF-C1** included in Section 3.10, *Transportation and Traffic*, describes the development of a TMP. The TMP will reduce construction-related traffic impacts on public services, community facilities, utilities, bicycle circulation, and pedestrian circulation. The TMP will be prepared during final design for implementation during construction to mitigate the traffic impacts caused by construction of the Project. Additionally, as described in Section 3.1, *Aesthetics*, Mitigation Measures **MM-AES-O1 and MM-AES-O2** will ensure that design of TPPS structures a will be designed to minimize their visual presence and MSFs will be appropriate in scale and proportion. Impacts would be less than significant.

MSF Site: 11th Street and Olive Street (East)

Land Use Plan Consistency

Less-than-significant impact. This MSF would be located on a site zoned for commercial uses. Land uses to the north and west are zoned Multiple Residential. Land uses to the west, east, and south are zoned Commercial. Additionally, construction activities would be temporary and would adhere to all applicable local regulations and requirements. A less-than-significant impact would occur.

Land Use Compatibility

Less-than-significant impact. The proposed MSF site is occupied by surface parking and does not contain any residential uses. The site is being used as a commercial parking lot. Surrounding land uses include a mix of uses including parking, commercial buildings, and multi-family residential uses. No residential uses would be displaced or disrupted, and proposed MSF construction activities would not create a physical barrier that would divide or isolate a residential community or neighborhood. As described above, Mitigation Measures **MM-TRAF-C1** and **MM-AES-O1 and MM-AES-O2** will reduce transportation and aesthetics impacts. Impacts on land use would be less than significant.

MSF Site: 11th Street and Olive Street (West)

Land Use Plan Consistency

Less-than-significant impact. This MSF would be located on parcels zoned for both residential and commercial uses, as well as an alley connecting the parcels. However, the proposed MSF site does not contain any residential uses. The surrounding area is zoned for both residential and commercial uses. The Project would include all necessary discretionary approvals to ensure that the proposed facilities would be consistent within City of Los Angeles zoning requirements.

Land Use Compatibility

Less-than-significant impact. The surrounding area is currently occupied by a mix of land uses including commercial buildings, multi-family residential, surface parking and restaurant uses. Similar to the other MSF sites, construction activities would be temporary and would adhere to all applicable local regulations and requirements. No residential uses would be displaced or disrupted. As described above, Mitigation Measures **MM-TRAF-C1** and **MM-AES-O1 and MM-AES-O2** will reduce transportation and aesthetics impacts. Impacts on land use would be less than significant.

Operational Impacts

Development of the MSF on any of the four candidate sites would occur under the authority of Section 14.00 of the LAMC, Article 4, Public Benefit Projects. Section 14.00 of the LAMC provides that "Where not permitted by right or by Conditional Use Permit . . . . public benefit uses are permitted in any zone, unless restricted to certain zones or locations." Several itemized land use categories are listed in the LAMC, including cemeteries, density increases for housing development projects, libraries, museums, fire or police stations, mobile homes parks, and other itemized uses. The category under which an MSF would be permitted is "Public Utilities and Public Services Uses and Structures."

Section 14.00 of the LAMC further requires that certain performance standards, or alternative compliance measures, must be met for the public benefit uses allowed under Section 14.00 of the LAMC. For Public Utilities and Public Services Uses and Structures, the following performance standards are listed:

1. Security night lighting is shielded so that the light source cannot be seen from adjacent residential properties.
2. The use is conducted in conformance with the City's noise regulations pursuant to Chapter 11 of the LAMC.
3. There are no outdoor public telephones on the site.
4. No buildings are higher than any buildings on adjoining property.
5. No guard dogs are used to patrol at night.
6. There is no use of barbed, razor or concertina wire.
7. Security lighting is provided in parking areas.
8. The property is improved with a ten foot landscaped buffer along the periphery of the property which is maintained and is equipped with an automatic irrigation system.
9. Parking areas are landscaped pursuant to the requirements of LAMC Section 12.21A6.
10. Only one identification sign is displayed on the site and it is on the building face. The sign does not exceed 20 square feet and does not extend more than two feet beyond the wall of the building and does not project above the roof ridge or parapet wall (whichever is higher) of the building.
11. All graffiti on the site is removed or painted over in the same color as the surface to which it is applied within 24 hours of its occurrence.

12. The use meets the parking requirements of LAMC Section 12.21 A (i.e., one space per 1,000 square feet of building area).
13. The site is a corner site.
14. Yards, at a minimum, should meet Code requirements or those prevalent on adjoining properties, whichever is the most restrictive.
15. The majority of frontage is on a major or secondary highway.
16. All streets, alleys or sidewalks adjoining the property meet standard street dimensions.

Should one or more of the above performance standards not be met, alternative compliance measures must be specified and an established procedure for their consideration and approval must be followed. The City of Los Angeles Director of Planning must find that the Project substantially meets the purposes of the performance standards and impose conditions to secure compliance. An appeal process is also provided for, which can be initiated by an applicant or any other aggrieved person. Subsequent to completion of the CEQA process and selection of an MSF site, final design activities must follow the above provisions of LAMC Section 14.00.

MSF Site: Broadway and 2nd Street

Land Use Plan Consistency

Less-than-significant impact. The optional MSF location at Broadway and 2nd Street has a zoning designation [Q]C2-4D-CDO (Commercial with Qualified Conditions, Height District 4, Community Design Overlay). The development of an MSF on this site would be conducted to be consistent with Section 14.00 of the LAMC, Article 4, Public Benefit Projects.

Land Use Compatibility

Less-than-significant impact. The MSF would be compatible with surrounding land uses, consisting of commercial and residential buildings and surface parking, because it would satisfy the performance standards prescribed under the LAMC Section 14.00. Additionally, operational activities would comply with all applicable land use plans and policies. A less-than-significant impact would occur.

MSF Site: Hill Street and 5th Street

Land Use Plan Consistency

Less-than-significant impact. This site has a zoning designation of C2-4D (Commercial, Height District 4). The surrounding area is zoned for either commercial or open space uses and currently contains high rise office buildings, open space (Pershing Square), hotel (Biltmore Hotel), residential, and surface parking uses. Land uses closest to the site are residential. The proposed development of this MSF would be conducted to be consistent with Section 14.00 of the LAMC, Article 4, Public Benefit Projects.

Land Use Compatibility

Less-than-significant impact. Operational land use impacts would be similar to those described above for MSF sites. The MSF would be compatible with surrounding land uses. Additionally, operational activities would comply with all applicable land use plans and policies. A less-than-significant impact would occur.

MSF Site: 11th Street and Olive Street (East)

Land Use Plan Consistency

Less-than-significant impact. This MSF would be located on a site zoned for commercial uses. Generally, land uses to the north and west are zoned Multiple Residential. Land uses to the east and south and immediate west are zoned Commercial. Additionally, construction activities would be temporary and would adhere to all applicable local regulations and requirements. A less-than-significant impact would occur.

Land Use Compatibility

Less-than-significant impact. The proposed MSF site is occupied by surface parking and does not contain any residential uses. The site is being used as a commercial parking lot. Surrounding land uses include a mix of uses including parking, low rise commercial buildings, and multi-family residential uses. As described in this EIR, impacts related to noise and aesthetics would be less than significant after mitigation. Therefore, no residential uses would be displaced or disrupted, and proposed MSF construction activities would not create a physical barrier that would divide or isolate a residential community or neighborhood. As described above, Mitigation Measures **MM-TRAF-C1** and **MM-AES-O1 and MM-AES-O**2 will reduce impacts. A less-than-significant impact would occur.

MSF Site: 11th Street and Olive Street (West)

Land Use Plan Consistency

Less-than-significant impact. Two of the three properties at this MSF site (at 1120 South Grand Avenue and 1114 South Grand Avenue) have a zoning designation of [Q]R5-4D-O (Multiple Dwelling with Qualified Conditions, Height District 4, Oil Drilling District). The third has a zoning designation of C2-4D-O (Commercial, Height District 4, Oil Drilling District). The proposed development of this MSF would be conducted to be consistent with Section 14.00 of the LAMC, Article 4, Public Benefit Projects.

Land Use Compatibility

Less-than-significant impact. As previously described, the surrounding area has a mix of land uses typical to urban areas, including commercial, restaurant, multi-family residential, and surface parking uses. Mid- to high-rise office buildings are also located in the surrounding area. The MSF would be compatible with surrounding land uses because it would satisfy the performance standards prescribed under the LAMC Section 14.00. Therefore, land use compatibility impacts would be considered less than significant.

3.8.4 Regulatory Compliance Measures

The following Regulatory Compliance Measures are proposed to reduce impacts affecting businesses located along the alignment:

> **RCM-LU-C1: Business Access and Signage.** The construction contractor shall provide signs for businesses whose frontage is obstructed by construction work indicating that the business is open during construction, and provide information regarding access to the business. The City of Los Angeles Department of Public Works (DPW), Bureau of Engineering (BOE), through the

construction contractor per bid specifications, shall be the responsible party. Enforcement shall be achieved through the DPW Contracts Administration Bureau Construction Inspector.

RCM-LU-C2: Business Displacement. Proposed displacement of the Guadalupe Wedding Chapel and any other business subject to displacement as a result of the Project would occur in accordance with applicable laws and regulations, including the *Uniform Business Relocation Assistance and Real Property Acquisition Policies Act of 1920*, as mentioned. If MSF1 were to be chosen, the business would also be displaced. Compensation to the property owner and business operator(s), and relocation assistance would be provided.

RCM-LU-O1: *Downtown Design Guidelines*. Design of the Project would comply with all applicable guidelines and requirements included in the *Downtown Design Guidelines* and Public Benefit projects performance measures, if necessary.

3.8.5 Mitigation Measures

3.8.5.1 Construction

No construction mitigation measures are required.

3.8.5.2 Operation

Operation would not result in significant land use impacts related to the division or disruption of existing neighborhoods or result in significant secondary impacts. Therefore, no operational mitigation measures are required. See Section 3.8.3.9 for regulatory requirements pursuant to LAMC Section 14.00. The following mitigation measure would be followed to ensure the appropriate siting and operation of the selected MSF location.

MM-LU-O1: LAMC Public Benefits Projects Conformity. The Project shall adhere to the requirements of LAMC Section 14.00 in all respects and shall follow all applicable procedures. All applicable performance standards or alternative compliance measures shall be addressed and all procedures for review and approval shall be followed. The City of Los Angeles BOE shall ensure the carrying out of the mitigation measure.

3.8.6 Significant and Unavoidable Impacts

No significant and unavoidable adverse construction or operational land use impacts would occur. Additionally, there would not be a conflict with any underlying land use plans addressing bicycle use; see Section 3.10, *Transportation and Traffic*, for further information.

3.8.7 Cumulative Impacts

The study area for the cumulative impacts analysis consists of the Bunker Hill, Civic Center, Center City/Historic Core, Central City East, Convention Center/Arena, Financial Core, Little Tokyo, South Markets, and South Park neighborhoods. Within the study area, several related projects (see Table 2-4 in Chapter 2, *Project Description*) would be in proximity to the Project and would have construction schedules that would overlap the Project's construction schedule. Such projects include the Regional Connector, the Wilshire Grand Project, the BSMP, and the Figueroa Corridor Streetscape Project.

3.8.7.1 Construction

Land Use Plan Consistency

Given that construction of the build alternatives, with the exception of the MSF and TPPS sites, would occur within public rights-of-way, the Project would not conflict with construction of any of the adjacent building or streetscape projects listed in Chapter 2, *Project Description*, Table 2-4. In addition, related projects, such as the Bicycle Plan, the BSMP, and the Figueroa Corridor Streetscape Project, would be constructed along Figueroa Street, 11th Street, Broadway, and 7th Street within the project study area. These projects include enhancement features, such as lane reconfiguration, landscaping, sidewalk and curb reconfiguration, street lighting, street furniture, and new paving. The BSMP and the Figueroa Corridor Streetscape Project are not part of the Project; however, the Project has been designed in coordination with these projects. The Project has also been designed in coordination with Metro to consider other transportation projects in downtown Los Angeles, such as the Regional Connector Project. Therefore, the Project would be consistent with planned roadway and curb reconfigurations, including those along 7th Street, 11th Street, Figueroa Street, and Broadway.

The potential locations for both the MSF and the TPSS units are currently vacant lots, buildings, rights-of-way, or parking areas. The construction of these project elements would not affect the viability of future planned projects. The Project would also coordinate with Metro with regard to the potential TPSS site at 2nd Street and Broadway. That site is currently undergoing planning and design to be an underground station for the Regional Connector Project. Should this site be selected as the TPSS location for the Project, the City would coordinate with Metro and the property owner regarding feasibility and the design of the site.

Land Use Compatibility

Cumulative construction land use impacts could occur if proposed and related projects cumulatively disrupt or diminish access to local businesses or other land uses. This could occur if minor access impacts due to two or more projects occur simultaneously, and would be dependent on scheduling of related projects and the Project. Access disruptions would cease when construction is completed. The Project would be located within an urban setting where there are existing major transportation facilities and development. Because the build alternatives would construct a transit option within an already-developed area rather than provide connections to a less-developed area, the development opportunities are limited by space constraints. Therefore, the Project would not result in or contribute to a significant cumulative impact during construction activities.

3.8.7.2 Operation

Land Use Plan Consistency

Operation of the Project would not conflict with the adjacent building or streetscape projects listed in Chapter 2, *Project Description*, Table 2-4. In addition, related projects, such as the Bicycle Plan, the BSMP, and the Figueroa Corridor Streetscape Project, would be constructed along Figueroa Street, 11th Street, Broadway, and 7th Street within the project study area. These projects include enhancement features, such as lane reconfiguration, landscaping, sidewalk and curb reconfiguration, street lighting, street furniture, and new paving. The BSMP and the Figueroa Corridor Streetscape Project are not part of the Project; however, the Project has been designed in coordination with these projects. The Project has also been designed in coordination with Metro to consider other transportation projects in downtown Los Angeles, such as the Regional Connector Project.

Land Use Compatibility

Cumulative operational impacts could occur if project components (i.e., streetcar and MSF and TPSS operations), in combination with ongoing operational effects of related projects, would result in impacts on nearby land uses. As described above, operational land use impacts associated with the streetcar service and the MSF and TPPS sites would be considered less than significant. Operation of the build alternatives, with the exception of the MSF and TPPS sites, would occur within public rights-of-way, and the Project would not conflict with the construction and/or operation of any of the adjacent building or streetscape projects listed in Table 2-4. Operation of the Project would also be designed in coordination with Metro to consider other transportation projects in downtown Los Angeles, such as the Regional Connector Project. Therefore, operation would be consistent with planned roadway and curb reconfigurations, including those along 7th Street, 11th Street, Figueroa Street, and Broadway. The related projects are generally commercial or residential developments that would not generate impacts similar to those associated with the Project. Therefore, the Project, in conjunction with the related projects, would not result in a considerable contribution to a significant cumulative land use impact related to physical division or disruption of land uses.

3.9 Noise and Vibration

The information in this section is based on the *Noise and Vibration Technical Report* found in Appendix I of this Draft EIR. The technical report is incorporated by reference.

3.9.1 Regulatory Setting

3.9.1.1 Federal Regulations

Federal Transit Administration Noise Impact Criteria

The noise and vibration impact criteria for use on federally financed transit projects are defined in the Federal Transit Administration's (FTA's) *Transit Noise and Vibration Impact Assessment*, which is commonly referred to as the *FTA Guidance Manual.* The FTA guidelines, analysis methods, and criteria reflect the best available research on the topic.

The basic concept of the FTA noise impact criteria is that more project noise is allowed in areas where existing noise levels are high. For example, noise levels are higher in downtown areas than they are in suburban neighborhoods that are farther from loud noise sources, such as freeways. Therefore, FTA allows more project noise in noisier downtown areas than the relatively quieter suburban areas.

FTA Impact Criteria for Groundborne Vibration

The potential adverse effects of groundborne vibration from rail transit include perceptible building vibration, rattling, reradiated noise (groundborne noise), and cosmetic or structural damage to buildings. Vibration caused by the operation of typical modern streetcar vehicles is well below what is considered necessary to cause even minor cosmetic damage to buildings. Therefore, the impact criteria for building vibration caused by transit operations consider only the potential annoyance of building occupants.

Historic buildings, some of which may be fragile, are a particular concern, because they could be susceptible to damage from ground motions caused by construction vibration. A number of historic buildings are present in the study area. However, none of them are known to be or have been identified as fragile. Therefore, the vibration assessment for these structures is based on the lesser potential effects of perceptible building vibration. In order to ensure adequate protection for buildings subsequently found to be potentially susceptible to physical damage, mitigation measures are prescribed (see Section 3.9.4.2) to be followed during the construction process.

The FTA vibration impact criteria, as applied to the Project, are based on the maximum indoor vibration level from a passing streetcar. There are no impact criteria for outdoor spaces, such as parks. The *FTA Guidance Manual* provides two sets of criteria. One is based on the overall vibration velocity level, for use in a "General Vibration Impact Assessment," and the other is based on the maximum vibration level in any $^1/_3$ octave band (the band maximum level), for use with a "Detailed Vibration Assessment," which was performed for the Project.

3.9.1.2 State Regulations

California requires each local government entity to perform noise studies and implement a noise element as part of its general plan. State land use guidelines for evaluating the compatibility of various land uses as a function of community noise exposure are presented below.

3.9.1.3 Local Regulations and Standards

The Project is within the jurisdiction of the City of Los Angeles, which has established policies and regulations concerning the generation of noise that could adversely affect its citizens and noise-sensitive land uses.

Los Angeles Noise Ordinance (Municipal Code)

Chapter IV, Article 1, Section 41.40, of the *Los Angeles Municipal Code* specifies the hours allowed for construction activities. The *Los Angeles Noise Ordinance* states:

> No person shall, between the hours of 9 p.m. and 7 a.m. of the following day, perform any construction or repair work of any kind upon, or any excavating for, any building or structure, where any of the foregoing entails the use of any power driven drill, riveting machine, excavator, or any other machine, tool, device, or equipment that makes loud noises to the disturbance of persons occupying sleeping quarters in any dwelling hotel or apartment or other place of residence. In addition, the operation, repair, or servicing of construction equipment and the job-site delivering of construction materials in such areas shall be prohibited during the hours herein specified. Any person who knowingly and willfully violates the foregoing provision shall be deemed guilty of a misdemeanor punishable as elsewhere provided in this code (*Los Angeles Municipal Code*).

The *Noise Ordinance* also specifies the maximum noise level for powered equipment or powered hand tools. Any powered equipment or powered hand tool that produces a maximum noise level that exceeds 75 A-weighted decibels (dBA) at a distance of 50 feet from construction and industrial machinery is prohibited. However, the above noise limitation does not apply where compliance is technically infeasible (*Los Angeles Municipal Code*).

City of Los Angeles Noise Element

The *City of Los Angeles General Plan Noise Element* establishes standards for exterior sound levels based on land use categories. The *Noise Element* states that the maximum acceptable outdoor noise exposure level for residential, hospital, and school zones is 65 dBA Community Noise Equivalent Level (CNEL), and that silencers and mufflers on intake and exhaust openings of all construction equipment are required.

3.9.2 Environmental Setting/Affected Environment

3.9.2.1 Noise Fundamentals

Noise may be loud, unpleasant, unexpected, or undesired sound, typically associated with human activity that interferes with or disrupts the normal ongoing noise-sensitive activities of others. The objectionable nature of noise can be caused by its pitch or its loudness. *Pitch* is the height or depth of a tone or sound, depending on the relative rapidity (*frequency*) of the vibrations by which it is produced. Higher pitched signals sound louder to humans than sounds with a lower pitch. *Loudness* is the amplitude of sound waves combined with the reception characteristics of the ear. Amplitude may be compared with the height of an ocean wave. Technical acoustical terms commonly used in this section are defined in Table 3.9-1.

Decibels and Frequency

In addition to the concepts of pitch and loudness, several noise measurement scales are used to describe noise. The decibel (dB) is a unit of measurement that indicates the relative amplitude of sound. Zero on the decibel scale is based on the lowest sound pressure that a healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic basis. An increase of 10 dB represents a 10-fold increase in acoustical energy, while 20 dB is 100 times more intense, 30 dB is 1,000 times more intense, etc. There is a relationship between the subjective noisiness or loudness of a sound and its level. Each 10 dB increase in sound level is perceived as approximately a doubling of loudness over a wide range of amplitudes. Since decibels are logarithmic units, sound pressure levels are not added arithmetically. When two sounds of equal sound pressure level are added, the result is a sound pressure level that is 3 dB higher. For example, if the sound level were 70 dB when 100 cars pass an observer, then it would be 73 dB when 200 cars pass. Doubling the amount of energy would result in a 3 dB increase to the sound level. Overall noise levels do not change appreciably when a noise source is added to a relatively louder noise source. For example, if a 60 dB noise source is added to a 70 dB noise source, a noise level of 70.4 dB would result. Frequency relates to the number of pressure wave oscillations per second, or Hertz (Hz). The range of sound frequencies that can be heard by healthy human ears is from about 20 Hz at the low frequency end to 20,000 Hz (20 kilohertz [kHz]) at the high frequency end.

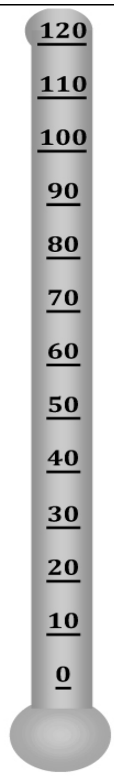
Table 3.9-1. Definitions of Acoustical Terms

Term	Definition
Decibel (dB)	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20 micropascals.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micropascals (or micronewtons per square meter), where 1 pascal is the pressure resulting from a force of 1 newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 micropascals in air). Sound pressure level is the quantity that is measured directly by a sound level meter.
Frequency (Hertz [Hz])	The number of complete pressure wave fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 and 20,000 Hz. Infrasonic sounds are below 20 Hz, and ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level (dBA)	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low- and very high-frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Noise Level (L_{eq})	The average A-weighted noise level during the measurement period. The hourly L_{eq} used for this report is denoted as dBA L_{eq}[h].
Community Noise Equivalent Level (CNEL)	The average A-weighted noise level during a 24-hour day, obtained after the addition of 5 dB to sound levels in the evening from 7 p.m. to 10 p.m. and after the addition of 10 dB to sound levels at night between 10 p.m. and 7 a.m.
Day/Night Noise Level (L_{dn})	The average A-weighted noise level during a 24-hour day, obtained after the addition of 10 dB to levels measured at night between 10 p.m. and 7 a.m.

Term	Definition
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	Noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, time of occurrence, and tonal or informational content as well as the prevailing ambient noise level.
Source: Cyril M. Harris 1991.	

There are several methods for characterizing sound. The most common is the A-weighted sound level or dBA. This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Studies have shown that the A-weighted level correlates closely with annoyance to traffic noise. Other frequency weighting networks, such as C weighting or dBC, have been devised to describe noise levels for specific types of noise (e.g., explosives). Table 3.9-2 shows the typical A-weighted noise levels that occur in human environments.

Table 3.9-2. Typical Noise Levels in the Environment

Noise Level, dBA	Extremes	Home Appliances	Speech at 3 Feet	Motor Vehicles at 50 Feet	General Type of Community Environment
	Jet aircraft at 500 feet				
		Chain saw			
		Power lawnmower		Diesel truck (not muffled)	
		Shop tools	Shout	Diesel truck (muffled)	
		Blender	Loud voice	Automobile at 70 mph	Major metropolis
		Dishwasher	Normal voice	Automobile at 40 mph	Urban (daytime)
		Air-conditioner	Normal voice (back to listener)	Automobile at 20 mph	Suburban (daytime)
		Refrigerator			Rural (daytime)
	Threshold of hearing				
Source: Harris Miller Miller & Hanson, Inc. (2003).					

Noise Descriptors

Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations is utilized. L_{eq} is the energy-mean A-weighted sound level present or predicted to occur during a specified interval. It is the equivalent constant sound level that a given source would need to produce to equal the fluctuating level of measured sound. The L_{max} value obtained for a particular monitoring location represents the loudest momentary sound during the measurement period, which is often described as the loudest 1-second period during the averaging period. The metric that describes the 24-hour average, L_{dn}, includes a penalty for noise during nighttime hours. L_{dn} is approximately equal to the L_{eq} peak hour under normal traffic conditions (Caltrans 2006).

Human Response to Noise

Noise-sensitive receptors typically include residences, hospitals, schools, guest lodging quarters, libraries, and certain types of passive recreational uses. Studies have shown that, under controlled conditions in an acoustics laboratory, a healthy human ear is able to discern changes in sound levels of 1 dBA. In the normal environment, however, changes in noise level of 3 dBA are considered just noticeable to most people. A change of 5 dBA is readily perceptible, and a change of 10 dBA is perceived as being twice as loud.

Sound Propagation

When sound propagates over a distance, it changes in both level and frequency content. In the absence of obstructions, sound from a single source (i.e., a "point" source) radiates uniformly outward as it travels away from the source in a spherical pattern. The sound level attenuates (or drops off) at a rate of 6 dBA for each doubling of distance. Streetcar noise is not a single stationary point source of sound. The movement of the streetcars makes the source of the sound appear to emanate from a line (i.e., a "line" source) rather than from a point. This results in cylindrical spreading rather than the spherical spreading. The result of this difference in manner of propagation is that the attenuation in sound level from a line source is 3 dBA per doubling of distance. A large object such as a building or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and proximity to the noise source and receiver. Buildings and walls can substantially reduce noise levels. Walls are often constructed between a source and a receiver specifically to reduce noise. A barrier that breaks the line of sight between a source and a receiver would typically result in at least 5 dB of noise reduction. A higher barrier may provide as much as 15 dB of noise reduction.

3.9.2.2 Environmental Vibration Fundamentals

The strength of groundborne vibration diminishes (or attenuates) fairly rapidly over distance. Some soil types transmit vibration quite efficiently; other types (primarily sandy soils) do not. Several basic measurement units are commonly used to describe the intensity of ground vibration. The descriptors used by FTA are root-mean square velocity level, in VdB units, relative to one micro-inch per second to describe human response to transit vibration and peak particle velocity (PPV), in units of inches per second, and VdB to describe vibration from construction activities.

The velocity parameter (rather than acceleration or displacement) correlates best to human perception of vibration. Thus, the response of humans, buildings, and sensitive equipment to vibration is described in this section in terms of the root-mean square velocity level, in VdB units, relative to one micro-inch per second. As a point of reference, the average person can barely perceive vibration velocity levels below 70 VdB (typically in the vertical direction). The calculation to determine vibration velocity level (dBV) at a given distance is the following:

$L_v(D) = L_v(25\ \text{feet}) - 30*\log(D/25)$

where

$L_v(D)$ = the vibration level at the receiver,
$L_v(25\ \text{feet})$ = the reference source vibration level, and
D = the distance from the vibration activity to the receiver.

The calculation to determine PPV at a given distance is the following:

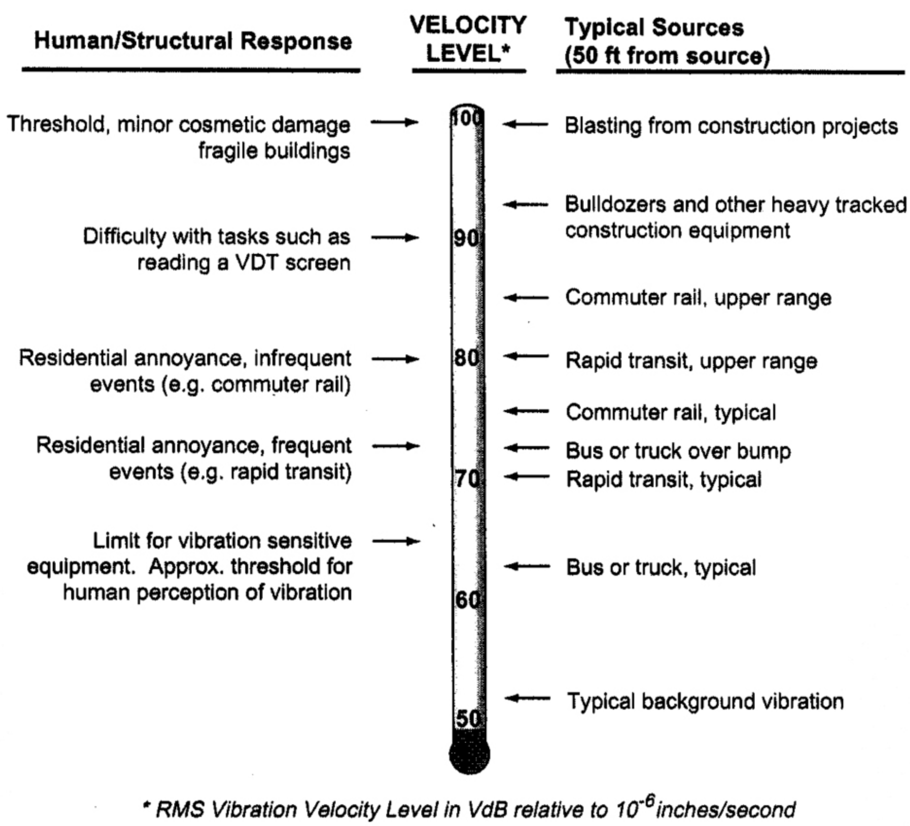
$PPV_{distance} = PPV_{ref}*(25/D)^{1.5}$

where

$PPV_{distance}$ = the peak particle velocity in inches/second of the equipment adjusted for distance,
PPV_{ref} = the reference vibration level in inches/second at 25 feet, and
D = the distance from the equipment to the receiver.

A comparison of common groundborne vibration levels is shown in Figure 3.9-1. Typical background vibration levels are between 50 and 60 VdB, whereas levels for minor cosmetic damage to fragile buildings or blasting are generally in the neighborhood of 100 VdB (FTA 2006).

Figure 3.9-1. Common Groundborne Vibration Levels



Source: FTA 2006.

3.9.2.3 Existing Noise Conditions

Existing ambient noise levels along the project corridor were documented through measurements taken at representative sensitive receivers between September 2012 and March 2013. The noise measurements were taken only during weekdays (Monday through Friday). The primary existing noise source in the project area is vehicular traffic on streets in the streetcar alignment (i.e., Broadway and Hill; Figueroa; 1st, 7th, 9th, and 11th Streets; and Grand Avenue). Long-term noise measurements were taken at six sites, and short-term noise measurements were taken at nine sites. The locations of the noise measurement sites are shown in Figure 3.9-2. Photographs from each site are included in the *Noise and Vibration Technical Report* (Appendix I).

Figure 3.9-2. Noise and Vibration Measurement Locations

Source: ATS Consulting, 2013.

The ambient noise measurement results are summarized in Table 3.9-3. The 24-hour day-night sound level exceeded 70 dBA at most locations, which is to be expected in downtown areas where receivers are very close to primary noise sources, such as vehicular and foot traffic combined with intermittent sirens, low flying helicopters, and other loud noise sources. Except for Site LT-2, measurements at long-term noise sites were taken on second- or third-floor balconies of residences or hotels. The only available location for mounting a microphone at Site LT-6 was on the ledge of a second-floor window. As the microphone was within 12 inches of the building wall, adjustments were made to the measured noise level to account for potential amplification from sound reflections off the wall.

Table 3.9-3. Ambient Noise Measurement Results

Site	Location	Type of Land Use[a]	Duration (hours)	Start Time, hh:mm[b]	Distance (feet)[c]	L_{eq} (day), dBA[d]	L_{dn}, dBA[d]
LT-1	417 Hill St	2	24	2:30 p.m.	25	63	66
LT-2	330 11th St	2	24	1:10 p.m.	25	65	66
LT-3	939 Figueroa St	2	24	11:30 a.m.	25	70	73
LT-4	711 Hope St	2	24	1:30 p.m.	25	69	72
LT-5	901 Broadway	2	24	10 a.m.	25	68	72
LT-6	756 Broadway	2	24	2:30 p.m.	25	73[e]	76[e]
ST-1	Disney Concert Hall	1	1	12:10 p.m.	15	67	67[f]
ST-2	Mosk Courthouse	3	1	1:20 p.m.	15	71	72[f]
ST-3	207 Broadway	3	1	2:35 p.m.	15	74	76[f]
ST-4	Los Angeles Theater	1	1	12:40 p.m.	10	71	74[f]
ST-5	Orpheum Theater	1	1	1:50 p.m.	15	73	77[f]
ST-6	Belasco Theater	1	1	1:15 p.m.	15	67	70[f]
ST-7	LA Live	3	1	2:30 p.m.	15	68	70[f]
ST-8	7th and Olive	3	1	1:50 p.m.	15	73	77[f]
ST-9	Pershing Square	3	1	2:00 p.m.	15	69	73[f]

Source: ATS Consulting 2013.
[a] Land use of the nearest sensitive receiver.
[b] Start time of the measurement.
[c] Distance of microphone from the centerline of the nearest traffic lane.
[d] L_{eq} for the duration of the measurement during daytime hours (7 a.m. to 10 p.m.).
[e] Because the microphone at this site was on the ledge of a second-floor window and within 1 foot of the closest wall, the level includes a -5 dB adjustment factor to account for the potential noise increase from reflections off the wall.
[f] Estimated L_{dn} based on the difference between L_{dn} and daytime L_{eq} at the closest long-term site.

For the measurements, L_{dn} was estimated at the short-term noise sites by adding an adjustment factor to the measured 1-hour L_{eq}. The adjustment factor was based on the difference between the measured L_{dn} and daytime L_{eq} at the closest long-term noise site.

The existing noise levels during the nighttime hours of 10 p.m. to 7 a.m. were measured at Sites LT-1 through LT-6 as part of the 24-hour noise measurements. The nighttime noise measurements are summarized in Table 3.9-4. These data form the baseline for characterizing the existing environment at residential receivers.

Table 3.9-4. Ambient Nighttime Noise Measurement Results – 1-hour L_{eq} (dBA)

Start Hour hh:mm	Site LT-1 417 Hill St	Site LT-2 330 11th St	Site LT-3 939 Figueroa St	Site LT-4 711 Hope St	Site LT-5 901 Broadway	Site LT-6 756 Broadway
22:00	59.7	62.9	66.1	63.9	69.0	72.7
23:00	59.1	56.0	66.8	62.9	62.9	71.7
0:00	58.0	55.7	66.4	62.1	61.3	70.2
1:00	57.9	54.0	66.8	62.6	60.6	68.9
2:00	57.3	53.5	64.2	63.6	59.1	76.3
3:00	56.9	53.2	64.2	62.1	60.4	71.1
4:00	58.4	54.3	62.2	61.9	63.2	75.8
5:00	60.9	58.1	65.8	63.9	68.1	77.9
6:00	62.5	63.0	68.3	68.6	70.2	79.7
Source: ATS Consulting 2014.						

3.9.2.4 Existing Vibration Conditions

Existing vibration sources in the project area consist primarily of vehicular traffic and intermittent construction activities. Vehicular traffic is the only permanent vibration source that was observed in the project area. When vehicular traffic causes perceptible vibration, the source is usually traced to potholes, wide expansion joints, or other “bumps” in the roadway surface. Therefore, the FTA assessment procedures for vibration from rail transit projects do not require measurements of existing vibration levels.

Localized geologic conditions, such as soil stiffness, soil layering, and depth to bedrock, have a strong effect on groundborne vibration. Unfortunately, it is difficult to obtain information regarding subsurface conditions with the level of detail necessary for computer models to predict ground vibration accurately. As a result, most detailed predictions of ground vibration are based largely on empirical methods that involve measuring vibration propagation in the soil.

Because many of the buildings with vibration-sensitive land uses are within a few feet of sidewalks, the streetcar tracks at these sensitive receivers would be relatively close to the buildings. Therefore, a Detailed Vibration Assessment, including vibration propagation tests, was performed. Vibration propagation tests were performed at three theaters that are currently in use (Sites V-1 through V-3) and one surface parking lot (Site V-4). A description of the vibration propagation test is presented in the noise and vibration technical report included in Appendix I.

3.9.3 Environmental Impact Analysis

For the purpose of assessing the Project’s construction impacts related to noise and vibration, Alternatives 2 through 5 are considered together because the impacts for these would be nearly identical. They are collectively referred to as the “build alternatives.”

For operational noise and vibration impacts, the results are nearly identical for Alternatives 2 through 5 and the results are presented in summary tables that combine the results for all build alternatives. There are some differences among the alternatives, and those are called out where appropriate.

3.9.3.1 Methodology

Noise

The basic approach used to identify potential noise impacts are the following steps:

1. **Identify Sensitive Receivers**. Noise-sensitive land uses along the corridor were identified by, first, using aerial photography, followed by field visits to confirm land uses and the presence of any features, such as intervening structures, that may provide acoustic shielding. Sensitive receivers were grouped according to their location relative to the tracks and land use.
2. **Determine Existing Conditions**. Existing noise levels were measured along the project corridor at 15 sites. The measurements are important because the FTA noise impact thresholds are presented on a sliding scale, which is a function of existing noise levels.
3. **Develop Prediction Models**. The noise prediction models use both standard formulas to characterize noise from rail transit vehicles and also noise measurements taken from existing streetcar and light rail systems. The prediction models incorporate a forecast regarding the future number of streetcar operations per day; the distribution of such operations throughout the day (e.g., early morning, daytime, nighttime); the distance from the tracks; streetcar speed; and the presence of walls, berms, or structures that provide acoustic shielding for the receivers. The predictions of noise from streetcar operations also include the additional noise from the use of the streetcar audible warning devices to alert passengers and patrons at stations that a streetcar is approaching. In addition to these, other audible warning devices (such as horns) would be used at the operators' discretion to alert pedestrians and motor vehicle drivers when a potential safety risk is present, the same way that horns are used on buses. For purposes of analysis, it was assumed that audible warning devices would produce a noise level of 80 dBA at a distance of 50 feet,[1] which is similar to the noise level produced by horns. It was further conservatively assumed that audible warning devices would be sounded at every stop, and also at approximately half of the intersection crossings. Actual experience would likely be fewer than this frequency.
4. **Estimate Future Noise Exposure at the Representative Receivers**. Prediction models were used to estimate future streetcar noise for each sensitive receiver. Predictions for each receiver were based on the distance from the Project to the closest sensitive receiver and expected streetcar and traffic parameters. The predicted levels of noise from streetcar operations and vehicular traffic were compared with the applicable FTA impact thresholds to identify potential noise impacts. It is noteworthy that the City's CEQA noise thresholds are also based on the FTA criteria.

[1] The California Public Utilities Commission General Order 143-B, Section 3.04, requires that each streetcar vehicle be equipped with an audible warning device capable of producing a warning of at least 75 dBA at a distance of 100 feet from the vehicle. Section 7.09 requires the audible warning device to be sounded at locations identified in the system's operating rules, or when the operator believes it is necessary.

5. **Evaluate Mitigation Options**. Mitigation options were evaluated for all locations where the predicted noise levels would exceed the applicable FTA threshold for moderate or severe noise impacts.

Vibration

The approach for the vibration assessment was basically the same as that of the noise assessment. The primary differences are the following:

- An assessment of the propagation of vibration through the ground must be based on measurements, while the propagation of noise through air can be characterized using standard formulas.
- Existing vibration is not a consideration when assessing vibration impacts. This is because everyone is exposed to some audible environmental noise. However, it is relatively rare for people to be exposed to perceptible groundborne vibration unless they are located near a construction site or near roadways with potholes, wide expansion joints, or other irregularities in the roadway surface.
- Outdoor spaces are not considered sensitive to groundborne vibration. In contrast, outdoor spaces where quiet is important for the intended function are considered noise sensitive. This includes spaces intended for meditation or study (e.g., cemeteries, monuments, historical spaces).

3.9.3.2 Thresholds of Significance

L.A. CEQA Thresholds Guide

The *L.A. CEQA Thresholds Guide* (2006) provides additional guidance for determining the significance of noise impacts. According to the *L.A. CEQA Thresholds Guide*, a project would normally have a significant impact on noise levels if any of the following would occur:

1. Construction activities lasting more than 1 day would exceed existing ambient exterior noise levels by 10 dBA or more at a noise-sensitive use.
2. Construction activities lasting more than 10 days in a 3-month period would exceed existing ambient exterior noise levels by 5 dBA or more at a noise-sensitive use.
3. Construction activities would exceed the ambient noise level by 5 dBA at a noise-sensitive use between the hours of 9 p.m. and 7 a.m. Monday through Friday, before 8 a.m. or after 6 p.m. on Saturday, or at any time on Sunday.
4. For operational noise, a project would normally have a significant impact on noise levels from project operations if it would cause the ambient noise level measured at the property line of affected uses to increase by 3 dBA CNEL in the “normally unacceptable” or “clearly unacceptable” category, or result in any 5 dBA or greater noise increase.

Community Noise Exposure Levels are shown in Table 3.9-5. It should be noted that: (a) for office building uses, the “normally unacceptable” noise level is above 75 dB CNEL, and (b) for multi-family homes, the “normally unacceptable” noise level is 70–75 dB CNEL. Operational noise sources associated with the Project would include streetcar operations and vehicular traffic.

Table 3.9-5. Community Noise Exposure CNEL

Land Use	Community Noise Exposure CNEL, dB			
	Normally Acceptable	**Conditionally Acceptable**	**Normally Unacceptable**	**Clearly Unacceptable**
Single Family, Duplex, Mobile Homes	50–60	55–70	70–75	above 70
Multi-Family Homes	50–65	60–70	70–75	above 70
Schools, Libraries, Churches, Hospitals, Nursing Homes	50–70	60–70	70–80	above 80
Transient Lodging – Motels, Hotels	50–65	60–70	70–80	above 80
Auditoriums, Concert Halls, Amphitheaters	--	50–70	--	above 65
Sports Arena, Outdoor Spectator Sports	--	50–70	--	above 70
Playgrounds, Neighborhood Parks	50–70	--	67–75	above 72
Gold Courses, Riding Stables, Water Recreation, Cemeteries	50–75	--	70–80	above 80
Office Buildings, Business and Professional Commercial	50–70	67–77	above 75	--
Industrial, Manufacturing, Utilities, Agriculture	50–75	70–80	above 75	--

Source: *L.A. CEQA Thresholds Guide* (2006); California Department of Health Services (DHS).

Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are normal conventional construction without any special noise insulation requirements.

Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and need nose insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

Normally Unacceptable: New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

Clearly Unacceptable: New construction or development should generally not be undertaken.

The *L.A. CEQA Thresholds Guide* states the same significance thresholds for noise produced by railroad noise as for operational noise.

FTA Noise Thresholds

The Project is seeking funding through the FTA's Capital Investment "Small Starts" Grant Program. Accordingly, at a later date, a request for entrance into this program may be made on behalf of the Project. If federal funding is sought, the FTA will require completion of a federal environmental clearance process under the *National Environmental Policy Act* (NEPA) and compliance with several FTA analysis requirements, one of which addresses noise and vibration impacts from the streetcar operations. The *L.A. CEQA Thresholds Guide* does not address vibration impacts. Therefore, in order to satisfy the FTA analysis requirement for noise and vibration and do so in conjunction with the present CEQA analyses, the FTA requirements are also documented as part of the technical analyses summarized in the EIR.

Noise and vibration impact criteria for use on federally financed transit projects are defined in FTA's *Transit Noise and Vibration Impact Assessment* (2006) guidance manual. Noise impacts are considered in relative terms and are defined as *moderate* or *severe* taking into account: (a) the land use type potentially affected, (b) the characteristics of the existing noise environment, and (c) the degree to which noise is added to that environment. A graph of these variables is used to make the impact determination (see Figure 3.9-3).

Table 3.9-6 lists the three land use categories that FTA uses for noise assessments, along with the noise metric that is used for each category. For Category 2 land uses, noise exposure is characterized using L_{dn},[2] while for Category 1 and Category 3 land uses, noise exposure is characterized using the maximum 1-hour L_{eq}.[3] It is noteworthy that Category 2 land uses include residences, motels, hotels, and any other place where people typically sleep.

Although not directly correlated, a severe impact under FTA guidance would be roughly equivalent to a significant impact under CEQA, whereas a moderate impact under FTA guidance would be closer in equivalency to a less than significant impact under CEQA. Analysis of impacts under CEQA are addressed later in this section.

Table 3.9-6. FTA Land Use Categories and Noise Metrics

Land Use Category	Noise Metric (dBA)	Description of Land Use Category
1	Outdoor $L_{eq}(h)$[a]	A tract of land where quiet is an essential element of the intended purpose of the land use. This category includes lands set aside for serenity and quiet. It also includes outdoor amphitheaters and concert pavilions as well as national historic landmarks with significant outdoor use. Also included are recording studios and concert halls.
2	Outdoor L_{dn}	Residences and buildings where people sleep. This category includes homes, hospitals, and hotels, places where nighttime sensitivity to noise is assumed to be high.
3	Outdoor $L_{eq}(h)$[a]	Institutional land uses with primarily daytime and evening use. This category includes schools, libraries, and churches, places where it is important to avoid interference with speech, meditation, and reading. Cemeteries, monuments, museums, campgrounds, and recreational facilities can be included in this category. Certain historical sites and parks are also included.

Source: *FTA Guidance Manual* 2006.
[a] L_{eq} for the noisiest hour of transit-related activity during hours of noise sensitivity.

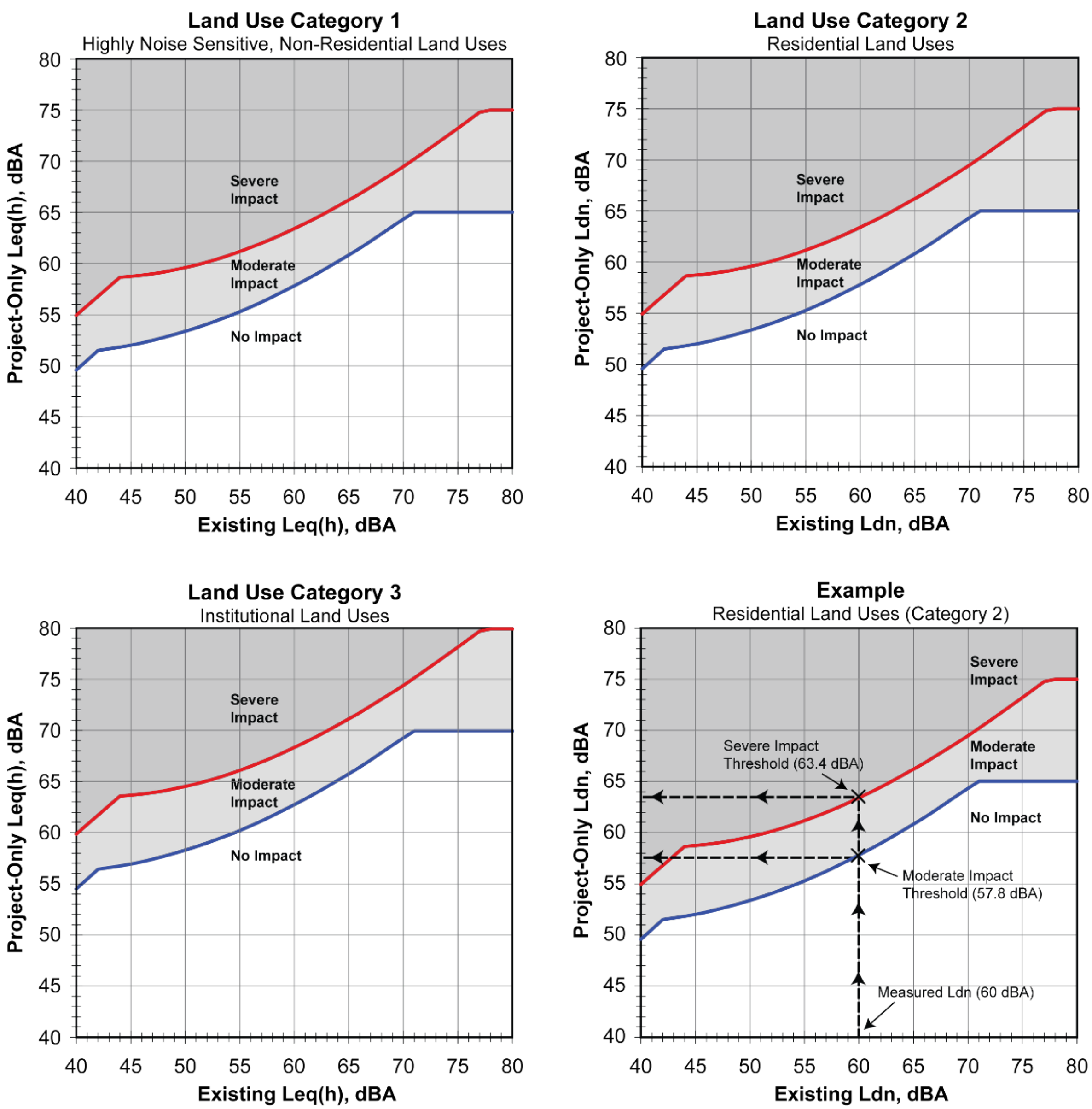
In accordance with the *FTA Guidance Manual*, mitigation to eliminate noise impacts must be investigated for both moderate and severe levels of impact. The manual also states that for severe impacts "…there is a presumption by FTA that mitigation is incorporated into the project unless

[2] L_{dn} = The average dBA level during a 24-hour day, obtained after the addition of 10 decibels to levels measured in the night between 10 p.m. and 7 a.m.

[3] L_{eq} = The average dBA level during the measurement period. The hourly L_{eq} used for this report is denoted as dBA $L_{eq}[h]$.

there are truly extenuating circumstances that prevent it." In considering mitigation for severe impacts in this study, the goal is to reduce noise levels to below the moderate impact threshold. FTA allows more discretion for mitigation of moderate impacts. Consideration is given to several factors, including cost, the number of sensitive receivers affected, community views, the amount by which the predicted levels would exceed the impact threshold, and the sensitivity of the affected receivers. The FTA noise impact criteria are shown in Figure 3.9-3.

Figure 3.9-3: FTA Noise Impact Criteria



Source: *FTA Guidance Manual* 2006

FTA Vibration Thresholds

Table 3.9-7 shows the FTA general assessment criteria for groundborne vibration from rail transit systems. Similar to the FTA noise criteria, there are three categories of sensitive land uses. However, the category definitions for vibration are different from those for noise. The primary difference is in Category 1. For a noise assessment, Category 1 applies to land uses "where quiet is an essential element of their intended purpose." For a vibration assessment, Category 1 applies to "buildings where vibration would interfere with interior operations." This applies primarily to spaces that house sensitive research and laboratory equipment, such as scanning electron microscopes. There are no buildings in the project corridor that qualify as Category 1 vibration-sensitive land uses.

Unlike the FTA noise criteria, the vibration criteria do not incorporate any factor to account for the number of vibration events per day, with one exception. For "occasional service," the FTA impact thresholds are 3 velocity decibels (VdB) higher than they are for "frequent service." For "infrequent service," the FTA impact thresholds are 8 VdB higher than they are for "frequent service."

The frequency criteria are applicable to the Project because there would be more than 70 streetcar trips per day.

The FTA vibration thresholds do not specifically account for existing vibration. Although downtown Los Angeles has substantial volumes of vehicular traffic, including buses and trucks, it is relatively rare for rubber-tired vehicles to generate perceptible ground vibration, unless irregularities in the roadway surface, such as potholes, are present.

Table 3.9-7. FTA Impact Thresholds for Groundborne Vibration, General Impact Assessment

Land Use Category	Groundborne Vibration (VdB re 1 micro-inch/second)		
	Frequent Events[a]	**Occasional Events[b]**	**Infrequent Events[c]**
1: Buildings where vibration would interfere with interior operations. Typically land uses include vibration-sensitive research and manufacturing, hospitals with vibration-sensitive equipment, and university research operations.[d]	65	65	65
2: Residences and buildings where people normally sleep.	72	75	80
3: Institutional land uses with primarily daytime use.	75	78	83

Source: *FTA Guidance Manual* 2006.
[a] Frequent events are defined as more than 70 vibration events per day.
[b] Occasional events are defined as 30 to 70 events per day.
[c] Infrequent events are defined as less than 30 events per day.
[d] Vibration-sensitive equipment is not sensitive to groundborne noise.

Some buildings, such as concert halls, recording studios, and theaters, can be very sensitive to vibration; however, they do not fit the three categories listed in Table 3.9-6. Because of the sensitivity of these buildings, they usually warrant more detailed vibration assessment during the environmental evaluation of a transit project. Table 3.9-7 lists the FTA criteria concerning acceptable levels of groundborne noise and vibration for the various categories of "special" buildings. The five theaters on Broadway as well as the Belasco Theater on 11th Street, the Colburn School, the Disney Concert Hall, and the Dorothy Chandler Pavilion are categorized as "special" buildings in the project corridor. The Dorothy Chandler Pavilion is far enough from the streetcar alignment that it would not be affected by streetcar operation. The Disney Concert Hall and the Belasco Theater were both evaluated as concert halls. The Orpheum Theater, on Broadway, was evaluated as a TV recording facility/performance space. The Colburn School is a performance space and a music conservatory with recording facilities. This school was evaluated as a recording facility. The Million Dollar Theater and the Los Angeles Theater, which are located on Broadway, are currently unoccupied but could be revived in the future. The theaters would undergo their own noise studies prior to renovation. The United Artist Theater, also located on Broadway, was recently renovated and reopened. For the purpose of this analysis, these three theaters were evaluated as concert halls. The FTA thresholds pertaining to groundborne noise and vibration impact assessments for various "special" buildings are listed in Table 3.9-8.

Table 3.9-8. Groundborne Noise and Vibration Impact Criteria for Special Buildings

Type of Building	Groundborne Vibration Impact Levels (VdB re 1 micro-inch/second)	Groundborne Noise Impact Levels (dBA)
Concert Hall	65	25
TV Studio	65	25
Recording Studio	65	25
Auditorium	72	30
Theater	72	35
Source: *FTA Guidance Manual* 2006.		

3.9.3.3 Alternative 1: No Project Alternative

No impact. The No Project Alternative represents conditions in the project study area that would remain if the proposed Project would not occur. Under this alternative, the existing noise environment would remain as it is currently and no construction would occur. Therefore, there would not be a temporary or operational increase in the ambient noise environment. Alternative 1 would also not result in vibration-related impacts as the existing vibration environment would not change.

3.9.3.4 Alternative 2: 7th Street with Grand Avenue Extension

Construction Impacts

Construction of Alternative 2 is expected to last for 24 months (18 months of active construction and 6 months of testing). Work is anticipated to be sequenced over several stages. The key steps are work zone staging, rail storage, site preparation and utility construction, track construction, station platform construction, traction power substation (TPSS) construction, overhead contact system (OCS) installation, and maintenance and storage facility (MSF) construction.

Noise

Significant and unavoidable. Construction of the Project has the potential to result in substantial, but temporary increases in local noise levels along the project alignments. The *City of Los Angeles Noise Ordinance* (*Los Angeles Municipal Code*; Chapter IV, Article 1; Section 41.40) allows construction only between 7 a.m. and 9 p.m. on weekdays and between 8 a.m. and 6 p.m. on Saturdays, unless a variance is obtained. As noted in Chapter 2, *Project Description*, nighttime construction may also be required. Construction noise levels would depend on the number of pieces of equipment and the types; their general condition; the amount of time each piece would operate per day; the presence or absence of noise-attenuating features, such as walls; and the location of construction relative to sensitive receivers.

These nighttime activities would require a variance to Section 41.40 of the *Los Angeles Municipal Code* for nighttime work scheduled after 9 p.m. or before 7 a.m. weekdays, after 6 p.m. or before 8 a.m. on Saturdays, or anytime on Sunday.

Table 3.9-9 shows the maximum noise levels that would be generated by the construction equipment at 50 feet during the various stages of construction and the estimated duration of construction. Utility relocation and track construction are anticipated to be the loudest stages of construction.

Table 3.9-9. Construction Activity and Equipment Typical Noise Levels (dBA) at 50 feet

		Typical Maximum Noise Levels from Construction Equipment at 50 feet, dBA														
Activity	Duration (months)	Dozer	Backhoe	Grader	Excavator	Crane	Paver	Roller	Generator	Compactor	Welding Machine	Pavement Breaker	Concrete Diamond Saw	Dump Truck	Utility Truck	Concrete Truck
Work Zone Staging	24	--	--	--	--	--	--	--	--	--	--	--	--	--	81	--
Rail Storage	6–12	--	--	--	--	--	--	--	--	--	74	--	--	76	--	--
Site Preparation and Utility Construction	12–18	82	78	85	81	81	80	77	81	83	74	89	90	76	81	78
Track Construction	12–18	82	--	85	81	--	--	--	81	83	--	--	--	--	--	78
Station Platform Construction	6–12	--	--	--	--	81	--	--	81	--	--	--	--	76	--	78
TPSS Installation	3–6	--	--	85	--	81	--	--	81	--	--	--	--	76	--	78
OCS Installation	3–6	--	--	--	--	81	--	--	81	--	--	--	--	--	81	78
MSF Construction	12–15	--	78	--	--	81	--	--	81	--	--	--	--	76	81	78

Comparing the noise levels associated with the various construction activities shown in Table 3.9-9 with the ambient noise levels shown in Table 3.9-3, it is clear that construction noise levels will exceed those specified in the *L.A. CEQA Thresholds Guide* (see Section 3.9.3.2, *Thresholds of Significance*), particularly when more than one construction activity is occurring simultaneously. Individual construction activity levels range from a low of 74 dBA to a high of 90 dBA, measured at 50 feet from the equipment, whereas ambient levels were measured at 63 to 74 dBA. It is likely that L.A. CEQA Thresholds 1 (greater than 10 dBA for more than one day) and 2 (greater than 10 dBA for more than 10 days) would be exceeded. L.A. CEQA Threshold 3 (greater than 5 dBA at sensitive receptors during nighttime hours) may also be exceeded. For these two reasons, the potential for noise impacts would be significant, and Mitigation Measures **MM-NV-C1 through MM-NV-C11** are recommended to address these impacts. Nonetheless, even with implementation of these mitigation measures, construction impacts would remain significant and unavoidable.

Vibration

Less-than-significant impact with mitigation. Some activities, such as compaction, pavement breaking, and the use of excavators, could result in perceptible levels of groundborne vibration. However, these activities would be limited in duration, and below the thresholds for minor cosmetic building damage.

Damage

The FTA damage risk vibration limits are shown in Table 3.9-10. Typical streetcar construction activities, such as pavement breaking, soil compaction, or the use of a hoe ram and bulldozer, would not be expected to generate vibrations that would approach the limits shown in Table 3.9-10. However, because fragile buildings, which would be potentially susceptible to vibration damage (Category IV), may be present in the project area, the use of bulldozers and hoe rams would be restricted from operating any closer than 21 feet from the building (see Section 3.9.4.1). However, with implementation of Mitigation Measures **MM-NV-C12 through MM-NV-C16,** vibration levels would remain below the 0.12 inches for buildings that are extremely susceptible to vibration damage, and below 0.50 inches for reinforced concrete, steel, or timber (no plaster) buildings. Impacts would, therefore, be less-than-significant with mitigation.

Annoyance

The use of high-vibration construction equipment, such as hoe rams, large bulldozers, jack hammers, and load trucks, within 20 feet of Category 2 land uses and 16 feet of Category 3 land uses could exceed the FTA ground-borne noise impact thresholds for annoyance for transit operations (see Tables 3.9-7 and 3.9-8) inside the sensitive receivers. However, the noise from construction equipment is more likely to be higher than the groundborne noise generated by the vibration at the interior of these land uses. As noise from these construction activities would be limited to the noise level limits of the *Los Angeles Noise Ordinance* of 75 dBA during the hours of 7 a.m. to 9 p.m. weekdays, the vibration effects would be regarded as significant.

The use of hoe rams and bulldozers within 50 feet of "special" land uses, such as theaters and concert halls, may be audible as groundborne noise in the interior of buildings. As high-vibration construction equipment would be used only intermittently, its use can be scheduled so that it does not overlap with sensitive activities inside buildings, thereby ensuring that no significant impacts occur. Implementation of Mitigation Measures **MM-NV-C12 through MM-NV-C16** would reduce vibration levels from construction activities to less-than-significant levels.

Table 3.9-10. FTA Damage Risk Vibration Criteria

Building Category	Peak Particle Velocity (inch/second)	Approximated Vibration Level, VdB
I. Reinforced concrete, steel, or timber (no plaster)	0.5	102
II. Engineered concrete and masonry (no plaster)	0.3	98
III. Non-engineered timber and masonry buildings	0.2	94
IV. Buildings that are extremely susceptible to vibration damage	0.12	90
Source: *FTA Guidance Manual* 2006.		

Operational Impacts

Operational noise impacts, taking into consideration both streetcar operations and MSF activities, were evaluated under three cases. In the first case, potential impacts only related to streetcar noise were considered. This case responds directly to the FTA criteria. In the second case, potential impacts from traffic noise were considered. L.A. CEQA Threshold 4 was used to assess these impacts. In the third case, combined streetcar and traffic noise were assessed and, again, L.A. CEQA Threshold 4 was used to determine impact significance. All three methods of impact evaluation are presented in the sections below. Detailed information supporting the impact determinations can be found in Appendix I.

Noise from Streetcar Operation

Potential noise impacts were evaluated for streetcar operations. Key assumptions for the noise impact assessment are as follows:

- The noise impact analysis of streetcar operations includes audible warning device noise at streetcar stops and stoplights but does not include warning horns. Warning horns would be used at the operators' discretion to alert pedestrians and motor vehicle drivers to potential safety risks, the same way that horns are used on buses.
- The maximum speed for the streetcars would be 30 mph on Figueroa Street and 25 mph on the rest of the alignment. The speed would be 20 mph as streetcars approach stations and stops.
- The streetcar would operate every 7 minutes during peak hours (6 a.m. to 9 a.m. and 3 p.m. to 6 p.m.), every 10 minutes between 9 a.m. and 3 p.m., and every 15 minutes from 6 p.m. to 2:30 a.m.
- Noise from streetcar operations would be similar to what has been observed at modern streetcar systems in other cities. Modeling of wayside noise for the Project was based upon actual measurements conducted on operations of both the Portland and Seattle streetcars. These two examples yielded the following reference levels (at 50 feet from the source): L_{max} = 74 dBA (at 20 mph); L_{max} = 75 dBA (at 25 mph); L_{max} = 77 dBA (at 30 mph).

Moderate impact (FTA analysis). Estimated noise impact calculations were made at 61 receptor locations. These results are presented in Appendix I and are also shown in Table 3.9-11 below. At 57 receptors, no impact was found. Four locations were identified as having a moderate impact (using FTA criteria) for Alternative 2, from streetcar operations. These impacts are discussed below.

- Moderate noise impacts are predicted outside the Disney Concert Hall (T2) associated with the Grand Avenue Extension (Alternatives 2 and 4). The higher noise levels are due to potential for wheel squeal noise on the Grand Avenue/First Street curve and a crossover. Mitigation is available to reduce the potential noise impact on Disney Hall by installing a "low impact frog" at the 1st Street and Hill Street intersection and wheel dampers, if required. See Mitigation Measure **MM-NV-O1** (Section 3.9.4.3) for additional information. As discussed in Section 3.9.1.1, *Federal Regulations*, predicted project noise level in the moderate noise impact range is considered worthy of mitigation, but FTA allows for discretion by the operator as to whether to commit such mitigation.
- Moderate noise impacts are predicted at two multi-family residential (MFR) buildings on West 11th Street between Grand Avenue and Hope Street (R23), which is associated with all four build alternatives. The building is at least 10 stories. Only the residential units on the 5th floor and lower would be affected, which includes 24 residential units with balconies. These areas are currently exposed to street traffic noise levels that are higher than the streetcar operations noise levels would be. When the predicted project noise level is in the FTA moderate noise impact range, discretion for mitigation is allowed. For moderate noise impacts, FTA guidance states that mitigation measures should be considered and other factors taken into account to determine the magnitude of the impact and the need for mitigation. Mitigation measures, such as sound walls at the edge of the trackwork, are not feasible for this receiver because they would impede the flow of traffic. As the multi-family residence is sound insulated with double pane windows, there is no other mitigation that would be feasible for this receiver. Above the 5th floor, the noise would be sufficiently attenuated by distance to be below the moderate level. This apartment building, and the Kawada Hotel discussed below, are the only residential land uses (FTA Category 2) where potential for noise impact from streetcar operations was identified.

  Moderate noise impacts are predicted at the Kawada Hotel (R35), which is also associated with all four build alternatives. This building is also at least 10 stories in height. The affected units would be 15 hotel rooms without balconies. There are no outdoor areas of human activity at this receiver that would be exposed to streetcar noise. Mitigation measures, such as sound walls at the edge of the trackwork are not feasible for this receiver because the sound walls would impede the flow of traffic. As the hotel building is sound insulated with double pane windows, there is no other mitigation that would be feasible for this receiver.
- Moderate noise impacts are predicted at the future Federal Courthouse to be located on 1st Street between Hill Street and Broadway, which is associated with all four build alternatives. The higher noise levels are due to potential for squeal noise on the Hill Street/1st Street curve and the diamond crossing. As discussed below, mitigation is available to eliminate the potential noise impact on the Federal Courthouse. Mitigation Measure **MM-NV-O1** would reduce this impact to less than significant.

  The results of the FTA noise analysis for Alternatives 2 through 5 are shown in Table 3.9-11. Because a substantial portion of the project alignment is common to all four build alternatives, the table is presented here and will be referred to in later sections. Where differences pertain to specific locations (i.e., 7th Street, 9th Street, Grand Avenue Extension) they are called out as such. The locations of the receivers are shown in Figure 3.9-4.

Table 3.9-11. Summary of FTA Noise Impacts and Mitigation

FTA Land Use Category	ID Number[a]	Alternative	Land Use	Expected FTA Impact		Number of Impacted Receptors[b]	Amount Exceeds Threshold[c] (dBA)	Mitigation Option[d]
				Moderate	Severe			
Streetcar Operations								
1	T2	2 & 4	Concert Hall	Yes	No	1	9	1, 2
2	R23	2, 3, 4 & 5	Multi-Family Residential	Yes	No	24	2	None[f]
	R35	2, 3, 4 & 5	Hotel	Yes	No	15	1	None[g]
3	I2A	2, 3, 4 & 5	Federal Courthouse	Yes	No	1	1	1 or 2
Maintenance and Storage Facility (MSF) Operations								
2	R22	M3	Multi-Family Residential	Yes	No	24	5	3, 4
2	R33	M2	Multi-Family Residential	Yes	No	10	0	3, 4
3	I3	M1	Guadalupe Wedding Chapel	Yes	No	1	5	3, 4

Source: ATS Consulting 2016.

[a] See Figure 3.9-4 for the receiver locations.

[b] Represents the number of residential units (Category 2 land uses) where the impact is predicted.

[c] The amount that predicted noise levels would exceed FTA moderate impact thresholds. At receiver R33 the predicted noise level is the same as the FTA threshold which is considered by FTA as an impact.

[d] Mitigation Option 1 is the use of a "low impact" frog at the nearest crossover.

Mitigation Option 2 is a combination of wheel damper and optimization of profiles to minimize wheel squeal.

Mitigation Option 3 is the use of wheel lubrication at tight radius track within the MSF yards.

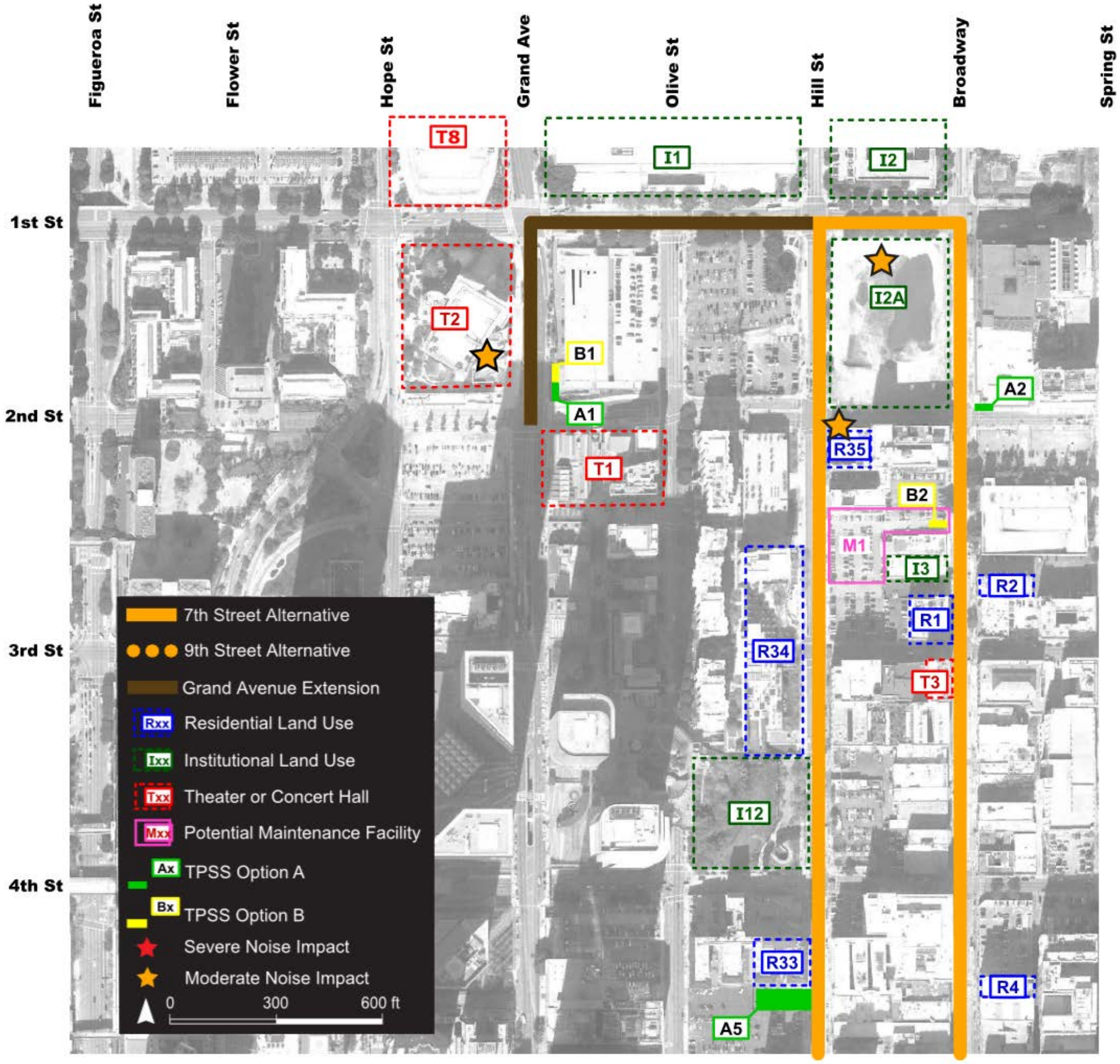
Mitigation Option 4 is the use of "low impact" frogs at all turnouts within the MSF yards.

[e] Existing noise levels would increase in the range of 3.0 to 3.1 dBA, depending on the alternative selected, for the Existing plus Project scenario.

[f] The only outdoor areas of human activity that would be exposed to streetcar noise would be the balconies of the residential units. These areas are currently exposed to street traffic noise levels that are higher than the noise levels from streetcar operations would be. Mitigation measures, such as sound walls at the edge of the trackwork, are not feasible for this receiver because they would impede the flow of traffic. As the multi-family residence is sound insulated with double pane windows, there is no other mitigation that would be feasible for this receiver.

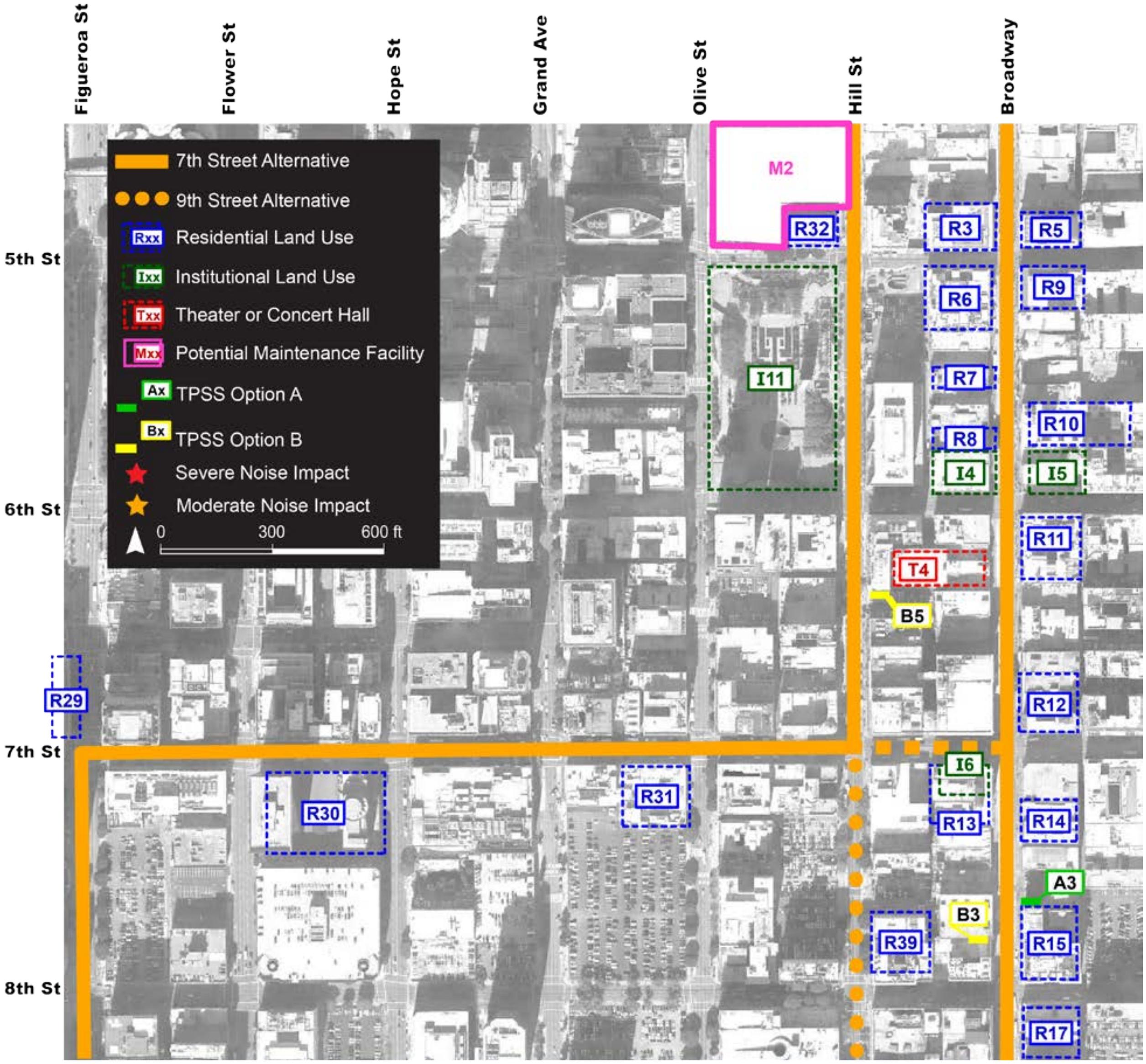
[g] There are no outdoor areas of human activity that would be exposed to streetcar noise. Mitigation measures, such as sound walls at the edge of the trackwork are not feasible for this receiver because the sound walls would impede the flow of traffic. As the hotel building is sound insulated with double pane windows, there is no other mitigation that would be feasible for this receiver

Figure 3.9-4a. Receiver Locations, Diagram 1



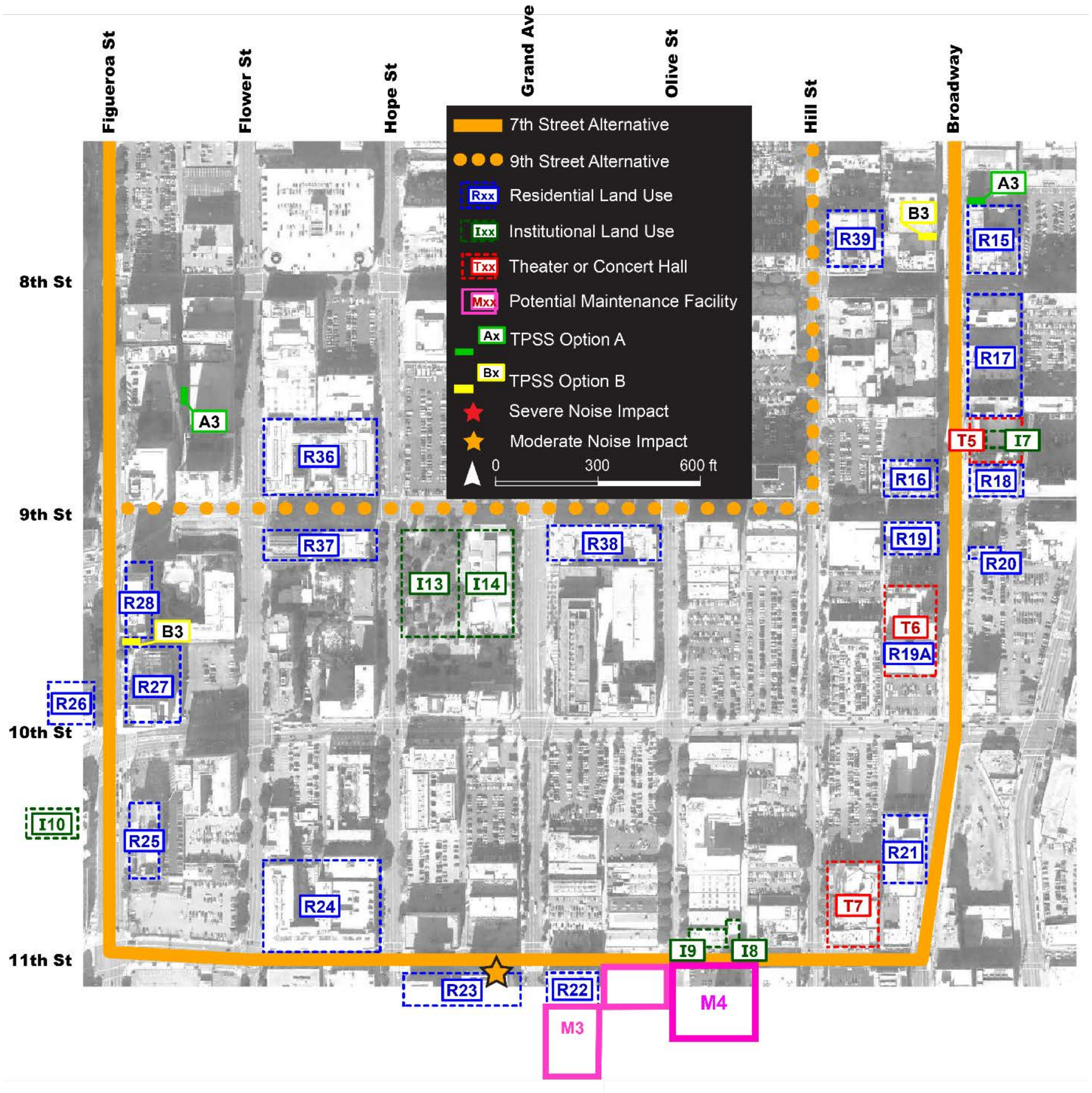
Source: ATS Consulting 2013.

Figure 3.9-4b. Receiver Locations, Diagram 2



Source: ATS Consulting 2013.

Figure 3.9-4c. Receiver Locations, Diagram 3



Source: ATS Consulting 2016.

Streetcar Noise (CEQA Analysis)

Less-than-significant impact. The CEQA determination for this Project compares the cumulative effects of the Project added to the existing conditions with to the Opening Year (2020) and the Horizon Year (2040). Detailed evaluation results are presented in Appendix I and are also shown in Tables 3.9-12, 3.9-13, and 3.9-14.

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Table 3.9-12. CEQA Noise Impact Analysis for Category 1 Land Uses – Ldn (dBA)

Receiver ID	Receiver Name	Existing Year (2014/2015)					Opening Year (2020)					Horizon Year (2040)					2014/2015 With Project Minus Existing (2014/2015) Noise[a,b]				Future (2020) Minus Existing (2014/2015) Noise[a,b]				Future (2040) Minus Existing (2014/2015) Noise[a,b]			
		Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 2	Alternative 3	Alternative 4	Alternative 5
T1	Colburn School	67.2	67.5	67.5	67.5	67.5	67.8	68.6	68.6	68.6	68.6	68.2	69.0	69.4	69.4	69.4	0.3	0.3	0.3	0.3	1.4	1.4	1.4	1.4	1.8	2.2	2.2	2.2
T2	Disney Concert Hall	67.2	70.3	70.2	70.3	70.2	67.9	71.3	71.4	71.3	71.4	68.3	71.5	71.9	72.0	71.9	**3.1**	**3.0**	**3.1**	**3.0**	**4.1**	**4.2**	**4.1**	**4.2**	**4.3**	**4.7**	**4.8**	**4.7**
T3	Million Dollar Theater	74.4	74.8	74.8	74.8	74.8	74.5	74.8	75.0	75.0	75.0	75	75.5	75.7	75.9	75.9	0.4	0.4	0.4	0.4	0.4	0.6	0.6	0.6	1.1	1.3	1.5	1.5
T4	Los Angeles Theater	74.4	74.8	74.8	74.8	74.8	74.9	75.6	75.7	75.7	75.7	75.3	76.1	76.4	76.5	76.5	0.4	0.4	0.4	0.4	1.2	1.3	1.3	1.3	1.7	2.0	2.1	2.1
T5	Orpheum Theater	76.8	77.0	77.0	77.0	77.0	77.5	78.3	78.4	78.4	78.4	77.9	78.8	79.0	79.2	79.2	0.2	0.2	0.2	0.2	1.5	1.6	1.6	1.6	2.0	2.2	2.4	2.4
T6	United Artist Theater	76.8	77.1	77.1	77.1	77.1	77.6	78.5	78.6	78.6	78.6	78	79.0	79.3	79.4	79.4	0.3	0.3	0.3	0.3	1.7	1.8	1.8	1.8	2.2	2.5	2.6	2.6
T7	Belasco Theater	70.3	71.2	71.2	71.2	71.2	71.5	72.9	73.4	73.4	73.4	71.9	73.8	73.7	74.1	74.1	0.9	0.9	0.9	0.9	2.6	**3.1**	**3.1**	**3.1**	**3.5**	**3.4**	**3.8**	**3.8**
T8	Dorothy Chandler Pavilion	67.2	68.4	68.3	68.4	68.3	67.9	69.5	69.6	69.5	69.6	68.3	69.9	70.2	70.3	70.2	1.2	1.1	1.2	1.1	2.3	2.4	2.3	2.4	2.7	**3.0**	**3.1**	**3.0**

Source: ATS Consulting, January 2016.

Notes:

[a] A positive number indicates that future noise level due to the Project would increase compared to the existing noise level (2014/2015). A negative number indicates the future noise level would decrease relative to the existing noise level.

[a] Bold fonts indicate that the predicted noise levels exceed the CEQA thresholds.

Table 3.9-13. CEQA Noise Impact Analysis for Category 2 Land Uses – Ldn (dBA)

Receiver ID	Description	Location	Existing Year (2014/2015)					Opening Year (2020)					Horizon Year (2040)					2014/2015 With Project Minus Existing (2014/2015) Noise[a,b]				Future (2020) Minus Existing (2014/2015) Noise[a,b]				Future (2040) Minus Existing (2014/2015) Noise[a,b]			
			Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 2	Alternative 3	Alternative 4	Alternative 5
All Build Alternatives																													
R1	MFR	Broadway/3rd St.	76.2	76.5	76.5	76.5	76.5	76.8	77.6	77.7	77.7	77.7	77.3	78.2	78.5	78.6	78.6	0.3	0.3	0.3	0.3	1.4	1.5	1.5	1.5	2.0	2.3	2.4	2.4
R2	MFR	Broadway/3rd St.	76.2	76.5	76.5	76.5	76.5	76.8	77.5	77.7	77.7	77.7	77.3	78.2	78.4	78.6	78.6	0.3	0.3	0.3	0.3	1.3	1.5	1.5	1.5	2.0	2.2	2.4	2.4
R3	MFR	Broadway/3rd St.	76.2	76.5	76.5	76.5	76.5	76.5	76.9	77.1	77.1	77.1	76.9	77.5	77.8	77.9	77.9	0.3	0.3	0.3	0.3	0.7	0.9	0.9	0.9	1.3	1.6	1.7	1.7
R4	MFR	Broadway/4th St.	74.4	74.7	74.7	74.7	74.7	74.7	75.1	75.2	75.2	75.2	75.1	75.6	75.9	76.0	76.0	0.3	0.3	0.3	0.3	0.7	0.8	0.8	0.8	1.2	1.5	1.6	1.6
R5	MFR	Broadway/5th St.	74.4	74.7	74.7	74.7	74.7	74.7	75.2	75.3	75.3	75.3	75.1	75.7	76.0	76.1	76.1	0.3	0.3	0.3	0.3	0.8	0.9	0.9	0.9	1.3	1.6	1.7	1.7
R6	MFR	Broadway/5th St.	74.4	74.8	74.8	74.8	74.8	74.9	75.6	75.8	75.8	75.8	75.3	76.2	76.4	76.6	76.6	0.4	0.4	0.4	0.4	1.2	1.4	1.4	1.4	1.8	2.0	2.2	2.2
R7	MFR	Broadway/5th St.	74.4	74.7	74.7	74.7	74.7	74.9	75.5	75.7	75.7	75.7	75.3	76.1	76.3	76.5	76.5	0.3	0.3	0.3	0.3	1.1	1.3	1.3	1.3	1.7	1.9	2.1	2.1
R8	MFR	Broadway/5th St.	74.4	74.8	74.8	74.8	74.8	74.9	75.6	75.8	75.8	75.8	75.3	76.2	76.4	76.6	76.6	0.4	0.4	0.4	0.4	1.2	1.4	1.4	1.4	1.8	2.0	2.2	2.2
R9	MFR	Broadway/6th St.	74.4	74.8	74.8	74.8	74.8	74.9	75.6	75.8	75.8	75.8	75.3	76.1	76.4	76.5	76.5	0.4	0.4	0.4	0.4	1.2	1.4	1.4	1.4	1.7	2.0	2.1	2.1
R10	MFR	Broadway/6th St.	74.4	74.7	74.7	74.7	74.7	74.9	75.6	75.7	75.7	75.7	75.3	76.1	76.4	76.5	76.5	0.3	0.3	0.3	0.3	1.2	1.3	1.3	1.3	1.7	2.0	2.1	2.1
R11	MFR	Broadway/6th St.	74.4	74.7	74.7	74.7	74.7	74.9	75.6	75.7	75.7	75.7	75.3	76.1	76.3	76.5	76.5	0.3	0.3	0.3	0.3	1.2	1.3	1.3	1.3	1.7	1.9	2.1	2.1
R12	MFR	Broadway/7th St.	74.4	74.7	74.7	74.7	74.7	74.9	75.6	75.7	75.7	75.7	75.3	76.1	76.3	76.5	76.5	0.3	0.3	0.3	0.3	1.2	1.3	1.3	1.3	1.7	1.9	2.1	2.1
R13	MFR	Broadway/7th St.	75.6	75.9	75.9	75.9	75.9	76.4	77.3	77.5	77.5	77.5	76.9	78.0	78.2	78.3	78.3	0.3	0.3	0.3	0.3	1.7	1.9	1.9	1.9	2.4	2.6	2.7	2.7
R14	Hotel	Broadway/7th St.	75.6	75.8	75.8	75.8	75.8	76.4	77.3	77.4	77.4	77.4	76.9	77.9	78.2	78.3	78.3	0.2	0.2	0.2	0.2	1.7	1.8	1.8	1.8	2.3	2.6	2.7	2.7
R15	MFR	Broadway/8th St.	75.6	75.9	75.9	75.9	75.9	76.4	77.3	77.5	77.5	77.5	76.9	78.0	78.2	78.4	78.4	0.3	0.3	0.3	0.3	1.7	1.9	1.9	1.9	2.4	2.6	2.8	2.8
R16	MFR	Broadway/9th St.	75.6	76.0	76.0	76.0	76.0	76.3	77.1	77.3	77.3	77.3	76.7	77.7	77.9	78.1	78.1	0.4	0.4	0.4	0.4	1.5	1.7	1.7	1.7	2.1	2.3	2.5	2.5
R17	MFR	Broadway/8th St.	75.6	75.8	75.8	75.8	75.8	76.3	77.1	77.2	77.2	77.2	76.7	77.6	77.8	78.0	78.0	0.2	0.2	0.2	0.2	1.5	1.6	1.6	1.6	2.0	2.2	2.4	2.4
R18	MFR	Broadway/9th St.	75.6	75.9	75.9	75.9	75.9	76.3	77.1	77.3	77.3	77.3	76.7	77.6	77.9	78.0	78.0	0.3	0.3	0.3	0.3	1.5	1.7	1.7	1.7	2.0	2.3	2.4	2.4
R19	MFR	Broadway/9th St.	75.6	75.8	75.8	75.8	75.8	76.4	77.3	77.4	77.4	77.4	76.8	77.8	78.1	78.2	78.2	0.2	0.2	0.2	0.2	1.7	1.8	1.8	1.8	2.2	2.5	2.6	2.6
R19A	MFR	Broadway/9th St.	75.6	75.8	75.8	75.8	75.8	76.4	77.3	77.4	77.4	77.4	76.8	77.8	78.1	78.2	78.2	0.2	0.2	0.2	0.2	1.7	1.8	1.8	1.8	2.2	2.5	2.6	2.6
R20	MFR	Broadway/9th St.	75.6	75.8	75.8	75.8	75.8	76.4	77.3	77.4	77.4	77.4	76.8	77.8	78.0	78.1	78.1	0.2	0.2	0.2	0.2	1.7	1.8	1.8	1.8	2.2	2.4	2.5	2.5
R21	MFR	Broadway/11th St.	75.6	75.8	75.8	75.8	75.8	76.7	77.8	77.9	77.9	77.9	77	78.2	78.5	78.6	78.6	0.2	0.2	0.2	0.2	2.2	2.3	2.3	2.3	2.6	2.9	**3.0**	**3.0**
R22	MFR	11th St./Grand Ave.	65.8	66.9	66.9	66.9	66.9	66.1	66.9	67.4	67.4	67.4	66.5	67.8	67.7	68.1	68.1	1.1	1.1	1.1	1.1	1.1	1.6	1.6	1.6	2.0	1.9	2.3	2.3
R23	MFR	11th St./Hope St.	65.8	68.2	68.2	68.2	68.2	66.3	68.5	68.9	68.9	68.9	66.7	69.2	69.1	69.6	69.6	2.4	2.4	2.4	2.4	2.7	**3.1**	**3.1**	**3.1**	**3.4**	**3.3**	**3.8**	**3.8**
R24	MFR	11th St./Flower St.	65.8	67.2	67.2	67.2	67.2	66.8	68.5	69.0	69.0	69.0	67.2	69.3	69.2	69.6	69.6	1.4	1.4	1.4	1.4	2.7	**3.2**	**3.2**	**3.2**	**3.5**	**3.4**	**3.8**	**3.8**
R25	Hotel	Figueroa/ 11th St.	73.3	73.6	73.6	73.6	73.6	73.5	73.9	74.0	74.0	74.0	74	74.5	74.8	74.9	74.9	0.3	0.3	0.3	0.3	0.6	0.7	0.7	0.7	1.2	1.5	1.6	1.6
R26	Hotel	Figueroa/Olympic St.	73.3	73.7	73.7	73.7	73.7	73.5	74.0	74.1	74.1	74.1	74	74.5	74.9	74.9	74.9	0.4	0.4	0.4	0.4	0.7	0.8	0.8	0.8	1.2	1.6	1.6	1.6
R27	MFR	Figueroa/Olympic St.	73.3	73.7	73.7	73.7	73.7	73.5	74.0	74.1	74.1	74.1	74	74.5	74.9	74.9	74.9	0.4	0.4	0.4	0.4	0.7	0.8	0.8	0.8	1.2	1.6	1.6	1.6
R28	MFR	Figueroa/9th St.	73.3	73.5	73.5	73.5	73.5	73.5	73.9	73.9	73.9	73.9	74	74.4	74.8	74.8	74.8	0.2	0.2	0.2	0.2	0.6	0.6	0.6	0.6	1.1	1.5	1.5	1.5
R32	MFR	Hill St./5th St.	68.1	68.6	68.6	68.6	68.6	68.5	69.3	69.3	69.3	69.3	68.9	69.7	70.0	70.1	70.1	0.5	0.5	0.5	0.5	1.2	1.2	1.2	1.2	1.6	1.9	2.0	2.0
R33	MFR	Hill St./4th St.	68.1	68.7	68.7	68.7	68.7	68.5	69.3	69.4	69.4	69.4	68.9	69.8	70.1	70.2	70.2	0.6	0.6	0.6	0.6	1.2	1.3	1.3	1.3	1.7	2.0	2.1	2.1
R34	MFR	Hill St./3rd St.	68.1	68.6	68.6	68.6	68.6	68.7	69.7	69.8	69.8	69.8	69.1	70.2	70.5	70.5	70.5	0.5	0.5	0.5	0.5	1.6	1.7	1.7	1.7	2.1	2.4	2.4	2.4
R35	Hotel	Hill St./2nd St.	68.1	69.4	69.4	69.4	69.4	68.7	70.4	70.5	70.5	70.5	69.1	70.8	71.1	71.2	71.2	1.3	1.3	1.3	1.3	2.3	2.4	2.4	2.4	2.7	**3.0**	**3.1**	**3.1**

			Existing Year (2014/2015)					Opening Year (2020)					Horizon Year (2040)					2014/2015 With Project Minus Existing (2014/2015) Noise[a,b]				Future (2020) Minus Existing (2014/2015) Noise[a,b]				Future (2040) Minus Existing (2014/2015) Noise[a,b]			
Receiver ID	Description	Location	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 2	Alternative 3	Alternative 4	Alternative 5
7th Street Alternatives 2 and 3																													
R29	Hotel	Figueroa/7th St.	71.6	71.9	71.9	71.9	71.9	71.7	72.1	72.1	72.1	72.1	72.2	72.6	73.0	73.0	73.0	0.3	0.3	0.3	0.3	0.5	0.5	0.5	0.5	1.0	1.4	1.4	1.4
R30	Hotel	7th St./Flower St.	71.6	72.2	72.2	72.0	72.0	71.7	72.2	72.4	72.4	72.2	72.2	72.7	73.1	73.3	73.3	0.6	0.6	0.4	0.4	0.6	0.8	0.8	0.6	1.1	1.5	1.7	1.7
R31	MFR	7th St./Olive St.	71.6	72.2	72.2	72.0	72.0	71.7	72.2	72.4	72.4	72.2	72.2	72.7	73.1	73.3	73.3	0.6	0.6	0.4	0.4	0.6	0.8	0.8	0.6	1.1	1.5	1.7	1.7
9th Street Alternatives 4 and 5																													
R36	MFR	Hope St./Flower St.	72.1	72.4	72.4	72.6	72.6	73.5	75.1	75.1	75.1	75.2	73.8	75.5	75.7	75.7	75.7	0.3	0.3	0.5	0.5	**3.0**	**3.0**	**3.0**	**3.1**	**3.4**	**3.6**	**3.6**	**3.6**
R37	MFR	9th St./Flower St.	72.1	72.3	72.3	72.4	72.4	73.5	75.0	75.0	75.0	75.1	73.8	75.4	75.6	75.6	75.6	0.2	0.2	0.3	0.3	2.9	2.9	2.9	**3.0**	**3.3**	**3.5**	**3.5**	**3.5**
R38	MFR	9th St./Grand Ave.	72.1	72.3	72.3	72.4	72.4	72.9	73.9	73.9	73.9	74.0	73.3	74.4	74.7	74.7	74.7	0.2	0.2	0.3	0.3	1.8	1.8	1.8	1.9	2.3	2.6	2.6	2.6
R39	MFR	Hill St./8th St.	72.1	72.7	72.7	72.7	72.7	72.5	73.4	73.4	73.4	73.4	72.9	73.8	74.1	74.2	74.2	0.6	0.6	0.6	0.6	1.3	1.3	1.3	1.3	1.7	2.0	2.1	2.1

Source: ATS Consulting, January 2016.

Notes:

[a] A positive number indicates that future noise level due to the Project would increase compared to the existing noise level (2014/2015). A negative number indicates the future noise level would decrease relative to the existing noise level.

[b] Bold fonts indicate that the predicted noise levels exceed the CEQA thresholds.

Table 3.9-14. CEQA Noise Impact Analysis for Category 3 Land Uses – Ldn (dBA)

Receiver ID	Receiver Name	Existing Year (2014/2015)					Opening Year (2020)					Horizon Year (2040)					2014/2015 With Project Minus Existing (2014/2015) Noise[a,b]				Future (2020) Minus Existing (2014/2015) Noise[a,b]				Future (2040) Minus Existing (2014/2015) Noise[a,b]			
		Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 2	Alternative 3	Alternative 4	Alternative 5
I1	Mosk Courthouse	71.6	73.6	73.5	73.6	73.5	71.9	73.9	74.0	73.9	74.0	72.3	74.2	74.6	74.7	74.6	2.0	1.9	2.0	1.9	2.3	2.4	2.3	2.4	2.6	**3.0**	**3.1**	**3.0**
I2	LA Law Library	71.6	72.9	72.8	72.9	72.8	71.8	73.2	73.2	73.2	73.2	72.3	73.5	74.0	74.0	74.0	1.3	1.2	1.3	1.2	1.6	1.6	1.6	1.6	1.9	2.4	2.4	2.4
I2A	Federal Courthouse	71.6	74.5	74.5	74.5	74.5	72.2	75.4	75.5	75.5	75.5	72.6	75.7	76.0	76.1	76.1	2.9	2.9	2.9	2.9	**3.8**	**3.9**	**3.9**	**3.9**	**4.1**	**4.4**	**4.5**	**4.5**
I3	Guadalupe Wedding Chapel	76.2	76.4	76.4	76.4	76.4	76.8	77.5	77.7	77.7	77.7	77.3	78.1	78.4	78.6	78.6	0.2	0.2	0.2	0.2	1.3	1.5	1.5	1.5	1.9	2.2	2.4	2.4
I4	Optometrist	74.4	74.7	74.7	74.7	74.7	74.9	75.6	75.7	75.7	75.7	75.3	76.1	76.3	76.5	76.5	0.3	0.3	0.3	0.3	1.2	1.3	1.3	1.3	1.7	1.9	2.1	2.1
I5	Clinic	74.4	74.7	74.7	74.7	74.7	74.9	75.5	75.7	75.7	75.7	75.3	76.1	76.3	76.5	76.5	0.3	0.3	0.3	0.3	1.1	1.3	1.3	1.3	1.7	1.9	2.1	2.1
I6	Universal Church (Formerly The State Theater)	74.4	74.7	74.7	74.7	74.7	75.2	76.1	76.3	76.3	76.3	75.7	76.8	77.0	77.1	77.1	0.3	0.3	0.3	0.3	1.7	1.9	1.9	1.9	2.4	2.6	2.7	2.7
I7	Optometrist	74.4	74.7	74.7	74.7	74.7	75.1	75.9	76.0	76.0	76.0	75.5	76.4	76.7	76.8	76.8	0.3	0.3	0.3	0.3	1.5	1.6	1.6	1.6	2.0	2.3	2.4	2.4
I8	SIA Tech School	70.3	71.4	71.4	71.4	71.4	70.8	71.6	72.1	72.1	72.1	71.2	72.5	72.4	72.9	72.9	1.1	1.1	1.1	1.1	1.3	1.8	1.8	1.8	2.2	2.1	2.6	2.6
I9	YWCA Job Corps & SIA Tech School	70.3	71.3	71.3	71.3	71.3	70.8	71.6	72.1	72.1	72.1	71.2	72.5	72.4	72.8	72.8	1.0	1.0	1.0	1.0	1.3	1.8	1.8	1.8	2.2	2.1	2.5	2.5
I10	Grammy Museum	70.4	71.0	71.0	71.0	71.0	70.6	71.3	71.4	71.4	71.4	71.1	71.8	72.2	72.3	72.3	0.6	0.6	0.6	0.6	0.9	1.0	1.0	1.0	1.4	1.8	1.9	1.9
I11	Pershing Square	73.1	73.4	73.4	73.4	73.4	73.4	73.9	73.9	73.9	73.9	73.8	74.3	74.7	74.7	74.7	0.3	0.3	0.3	0.3	0.8	0.8	0.8	0.8	1.2	1.6	1.6	1.6
I12	Angels Knoll Park	73.1	73.3	73.3	73.3	73.3	73.5	74.0	74.1	74.1	74.1	73.9	74.5	74.8	74.9	74.9	0.2	0.2	0.2	0.2	0.9	1.0	1.0	1.0	1.4	1.7	1.8	1.8
9th Street Alternatives 4 and 5																												
13	Grand Hope Park	72.1	72.2	72.4	72.4	73.3	74.6	74.6	74.6	74.7	73.7	75.1	75.4	75.4	75.4	75.3	0.1	0.1	0.3	0.3	2.5	2.5	2.5	2.6	**3.0**	**3.3**	**3.3**	**3.3**
I14	FIDM	72.1	72.2	72.4	72.4	73.3	74.6	74.6	74.6	74.7	73.7	75.1	75.4	75.4	75.4	75.3	0.1	0.1	0.3	0.3	2.5	2.5	2.5	2.6	**3.0**	**3.3**	**3.3**	**3.3**

Source: ATS Consulting, January 2016.

Notes:

[a] A positive number indicates that future noise level due to the Project would increase compared to the existing noise level (2014/2015). A negative number indicates the future noise level would decrease relative to the existing noise level.

[b] Bold fonts indicate that the predicted noise levels exceed the CEQA thresholds.

As shown in the above tables, the Project impact analyses concluded the following:

- The noise levels due to the Project were added to the existing noise levels to determine the cumulative effect of the Project for the 2014/2015 Year. The Project noise levels, without traffic, for the assessment of the Category 1 land uses presented in Table 3.9-12 range from an L_{dn} of 58 to 61 dBA with the exception of Site T2, Disney Concert Hall where the Project noise level is 67 dBA due to the streetcar passby noise, noise squeal, and turnout impact noise. The Category 1 Project noise levels at Sites T1, and T3 through T8 are less than the existing traffic noise; therefore, the Project noise would contribute to the additive noise, but, when viewed as an independent noise source, would not result in a significant impact at those receivers. At Site T2, Disney Concert Hall, the Project noise level is projected to be the same as the existing traffic noise. The Project noise levels at the Category 2 land uses presented in Table 3.9-13 range from an L_{eq} of 56 to 63 dBA, which are less than the existing traffic noise; the Project noise levels at the Category 3 land uses presented in Table 3.9-14 range from an L_{eq} of 56 to 63 dBA, which are less than the existing traffic noise. Therefore, the Project noise would contribute to the additive noise, but, when viewed as an independent noise source, would not result in a significant impact at those Category 2 and 3 receivers.
- Operational noise levels under Alternatives 2 and 4 would exceed the CEQA significance threshold of 3.0 dBA at the Disney Concert Hall (T2) for 2014/2015. However, the noise impact at this receiver can be mitigated to a less-than-significant level by a combination of "low impact" frogs at the turnout track in front of Disney Hall and wheel dampers that would reduce squeal noise at tight radii curves.
- Under all four build alternatives, future noise (2020 and 2040) would result in an increase in noise of more than 3.0 dBA at the Disney Concert Hall (T2). The use of "low impact" frogs at the turnout track in front of Disney Hall and rail lubricant or wheel dampers would reduce the wheel squeal and overall project noise to less-than-significant levels.
- Operational noise levels would not exceed the CEQA significance threshold of 3.0 dBA, for 2014/2015, at any other receiver.
- Future noise (2020 and/or 2040) would exceed the CEQA significance threshold of 3.0 dBA at the following receivers:
    - Belasco Theater (T7) – Alternatives 3, 4, and 5 (2020); all build alternatives (2040).
    - Dorothy Chandler Pavillion (T8) – Alternative 4 (2040).
    - Apartments at Hope/11th Streets (R23) – Alternatives 3, 4, and 5 (2020); all build alternatives (2040).
    - Metlofts at Flower/11th Streets (R24) – Alternatives 3, 4, and 5 (2020); all build alternatives (2040).
    - Kawada Hotel at Hill/2nd Streets (R35) – Alternatives 3, 4, and 5 (2040).
    - Apartments at Hope/Flower Streets (R36) – All build alternatives (2020 and 2040).
    - Skyline Apartments at Flower/9th Streets (R37) – Alternative 5 (2020); all build alternatives (2040).
    - Grand Hope Park (I13) – Alternatives 4 and 5 (2040).
    - FIDM (I14) – Alternatives 4 and 5 (2040).

The exceedances noted above, at receivers T7, T8, R23, R24, R35, R36, R37, I13, and I14, are all due to noise increases resulting from future traffic and not streetcar operations.

TPSS Locations

No impact. The cooling fans are the major noise source on TPSS units. However, low frequency transformer "hum" is usually inaudible except when a receptor is very close to the TPSS unit. The project specification will include a noise limit of 50 dBA at a distance of 50 feet from any part of the TPSS unit that should be met by the contractor. See Mitigation Measure **MM-NV-O3**. Based on this specified noise level limit there would be no noise impacts predicted for the TPSS.

MSF Sites

Less-than-significant impact with mitigation. The MSF would consist of an enclosed building for the maintenance shops and an open area for the storage yards. Pursuant to the City's CEQA Guidelines, consideration would be given to enclosing the yard with solid walls providing sound installation in the MSF building, and insulating sound attenuators on fans and ducts. The normal operations of vehicle repairs would occur within the maintenance shops and would not contribute to the outside noise of streetcar movements in the rail yards. Vehicle washing is expected to occur in an open ended structure with a roof and two side walls that would reduce the noise associated with this activity. Moderate impacts (following FTA methodology for rail impacts) are predicted for the MSF sites at receivers I3, R22, and R33 (see Table 3.9-11). The higher noise levels would be due to wheel squeal and turnout frog impacts in the storage yards. Rail lubrication for the tight radius tracks within the rail yards and the use of "low impact" frogs at the yard turnouts would mitigate the impact to these receivers to a less-than-significant level (Mitigation Measure **MM-NV-02**).

Vibration from Streetcar Operations

Less-than-significant impact with mitigation. The streetcar vibration impact analysis is based on the *FTA Guidance Manual.* Potential vibration impacts were assessed for streetcar operations. Key points from the impact assessment are as follows:

- It is assumed that vibration generated by operation of the streetcar vehicles in downtown Los Angeles would be similar to what was observed for the modern streetcar systems in other cities.
- It is assumed that the maximum speed for the streetcars would be 30 mph on Figueroa Street and 25 mph on the rest of the alignment. The speed would be 20 mph as the streetcars approach stations and stops.
- The ground propagation characteristics used for the predictions are based on four vibration propagation tests that were made in the project corridor. Three of the test sites were at theaters or concert halls. The fourth test site was a parking lot on 9th Street.

The streetcar operational vibration impact assessment for residential land uses is presented in Table 3.9-15 and for institutional land uses is presented in Table 3.9-16.

As shown in Table 3.9-15, there are two receivers (R22 and R35) where the predicted vibration levels at residential land uses would exceed the General Assessment impact threshold. The predicted indoor vibration levels, however, would not exceed the Detailed Assessment impact threshold at any of these receivers. Therefore, no vibration impacts from the streetcar operations are predicted at any Category 2 land uses.

The predicted vibration levels for Category 3 land uses are shown in Table 3.9-16. All of the predicted vibration levels except for the Federal Courthouse would be below the General Assessment impact threshold. The predicted indoor vibration levels would not exceed the Detailed Assessment impact threshold at the Federal Courthouse; therefore, no vibration impacts from streetcar operations are predicted at any Category 3 land uses.

No groundborne noise or groundborne vibration impacts are predicted at buildings that FTA defines as “special.” This includes the Disney Concert Hall, the Colburn School, and the historic theaters in the corridor. However, the potential exists for vibration to be transmitted into structures because of the number of underground structures in the project area, such as basements, loading docks, and parking garages. Vibration could be transmitted as a result of the proximity of the underground structures to the concrete slab that would be constructed for the streetcar track. Mitigation measures, such as a resilient mat to break the direct connection, could be required if the track would be less than 1 foot from any part of a building foundation. Mitigation Measure **MM-NV-O4** would reduce operational vibration impacts to a less-than-significant level.

Table 3.9-15. Summary of Vibration Impact Assessment for Category 2 Residential Land Uses

					General Impact Assessment			Detailed Impact Assessment		
Receiver	Desc.[a]	NT Dist.[b] (feet)	Adjacent Street	Speed (mph)	Lv (VdB)	Thresh. (VdB)	Impact (Yes/No)	Band Max[c] (VdB)	Impact Yes/No	# of Units[d]
Alternatives 2, 3, 4, and 5										
R1	MFR	35	Broadway	20	69	72	No	--	--	--
R2	MFR	55	Broadway	20	65	72	No	--	--	--
R3	MFR	35	Broadway	20	69	72	No	--	--	--
R4	MFR	50	Broadway	25	67	72	No	--	--	--
R5	MFR	50	Broadway	20	66	72	No	--	--	--
R6	MFR	35	Broadway	25	71	72	No	--	--	--
R7	MFR	35	Broadway	25	71	72	No	--	--	--
R8	MFR	35	Broadway	20	69	72	No	--	--	--
R9	MFR	50	Broadway	25	67	72	No	--	--	--
R10	MFR	50	Broadway	20	66	72	No	--	--	--
R11	MFR	50	Broadway	20	66	72	No	--	--	--
R12	MFR	50	Broadway	20	66	72	No	--	--	--
R13	MFR	35	Broadway	25	71	72	No	--	--	--
R14	Hotel	50	Broadway	25	67	72	No	--	--	--
R15	MFR	50	Broadway	20	66	72	No	--	--	--
R16	MFR	35	Broadway	25	71	72	No	--	--	--
R17	MFR	50	Broadway	20	66	72	No	--	--	--
R18	MFR	50	Broadway	20	66	72	No	--	--	--
R19	MFR	35	Broadway	25	71	72	No	--	--	--
R19A	MFR	35	Broadway	25	71	72	No	--	--	--
R20	MFR	50	Broadway	25	67	72	No	--	--	--
R21	MFR	35	Broadway	25	71	72	No	--	--	--
R22	MFR	25	11th	25	73	72	Yes	67	No	--
R23	MFR	25	11th	20	72	72	No	--	--	--
R24	MFR	30	11th	25	72	72	No	--	--	--

Receiver	Desc.[a]	NT Dist.[b] (feet)	Adjacent Street	Speed (mph)	General Impact Assessment			Detailed Impact Assessment		
					Lv (VdB)	Thresh. (VdB)	Impact (Yes/No)	Band Max[c] (VdB)	Impact Yes/No	# of Units[d]
R25	Hotel	45	Figueroa	35	71	72	No	--	--	--
R26	Hotel	45	Figueroa	35	71	72	No	--	--	--
R27	MFR	40	Figueroa	25	69	72	No	--	--	--
R28	MFR	40	Figueroa	35	72	72	No	--	--	--
R32	MFR	45	Hill	25	68	72	No	--	--	--
R33	MFR	45	Hill	25	68	72	No	--	--	--
R34	MFR	80	Hill	25	62	72	No	--	--	--
R35	Hotel	25	Hill	25	73	72	Yes	67	No	--
Alternatives 2 and 3 only										
R29	Hotel	125	7th	20	54	72	No	--	--	--
R30	Hotel	35	7th	25	71	72	No	--	--	--
R31	MFR	35	7th	25	71	72	No	--	--	--
Alternatives 4 and 5 only										
R36	MFR	40	9th	25	69	72	No	--	--	--
R37	MFR	70	9th	25	64	72	No	--	--	--
R38	MFR	60	9th	25	65	72	No	--	--	--
R39	MFR	25	9th	25	73	72	Yes	67	No	--

[a] Desc. = Type of land use, MFR = multi-family residence.
[b] Distance to the streetcar track is rounded off to the nearest 5 feet.
[c] Maximum 1/3 octave band level in 8 to 80 Hz frequency range.
[d] Number of impacted dwelling units based on Detailed Assessment vibration criteria. Note that only units that are within the impact distance and where people sleep are counted for the vibration impacts.

Table 3.9-16. Summary of Vibration Impact Assessment for Category 3 Institutional Land Uses

Receiver #	Receiver Name	NT Dist.[a] (feet)	Speed (mph)	General Impact Assessment			Detailed Impact Assessment		
				Lv (VdB)	Thresh. (VdB)	Impact (Yes/No)	Band Max[b] (VdB)	Impact Yes/No	# of Units
Alternatives 2, 3, 4, and 5									
I1	Mosk Courthouse	50	25	67[c,d]	75	No	--	--	--
I2	LA Law Library	125	20	64	75	No	--	--	--
I2A	Federal Courthouse	30	20	82	80	Yes	77	No	--
I3	Guadalupe Wedding Chapel	35	25	71	75	No	--	--	--
I4	Optometrist	35	20	69	75	No	--	--	--
I5	Clinic	50	20	66	75	No	--	--	--
I6	Universal Church (Formerly The State Theater)	35	25	71	75	No	--	--	--
I7	Optometrist	50	20	66	75	No	--	--	--
I8	SIA Tech School	30	25	72	75	No	--	--	--

Receiver #	Receiver Name	NT Dist.[a] (feet)	Speed (mph)	General Impact Assessment			Detailed Impact Assessment		
				Lv (VdB)	Thresh. (VdB)	Impact (Yes/No)	Band Max[b] (VdB)	Impact Yes/No	# of Units
I9	YWCA Job Corps & SIA Tech School	30	20	70	75	No	--	--	--
I10	Grammy Museum	90	25	60	75	No	--	--	--
I11	Pershing Square	50	25	67	75	No	--	--	--
I12	Angels Knoll Park	70	25	64	75	No	--	--	--
Alternatives 4 and 5 Only									
I13	Grand Hope Park	60	25	65	75	No	--	--	--
I14	FIDM	60	25	65	75	No	--	--	--

Source: ATS Consulting 2013.

Notes: Receivers I1 through I12 are common to all the build alternatives. There are no additional Category 3 land uses for Alternatives 2 and 3.

[a] Distance to the near track (NT) is rounded off to the nearest 5 feet.

[b] Maximum 1/3 octave band level in 8 to 80 Hz frequency range.

[c] Includes both inbound and outbound tracks.

[d] Includes +10 dB for vibration amplification due to wheel impacts at special trackwork.

3.9.3.5 Alternative 3: 7th Street without Grand Avenue Extension

Construction Impacts

Less-than-significant impact with mitigation. Noise and vibration impacts during construction for Alternative 3 would be similar to those discussed for Alternative 2, although they would be slightly less due to the fact that the Grand Avenue Extension would not be included. All other impacts associated with Alternative 2 would remain as well as the associated mitigation. See Section 3.9.3.4, *Alternative 2: 7th Street with Grand Avenue Extension*, for detailed information on construction noise and vibration impacts.

Operational Impacts

Noise

Less-than-significant impact with mitigation. Operational noise impacts for Alternative 3 would be the same as those described for Alternative 2, with the exception that the Grand Avenue Extension would not be included. See Section 3.9.3.4, *Alternative 2: 7th Street with Grand Avenue Extension*, for detailed information on operational streetcar noise, traffic noise, combined streetcar and traffic noise, and vibration impacts.

Vibration

Less-than-significant impact with mitigation. As shown in Table 3.9-11, three Category 2 land uses (R29, R30, R33) would be adjacent to Alternatives 2 and 3 only. No vibration impacts at these locations were predicted.

3.9.3.6 Alternative 4: 9th Street with Grand Avenue Extension

Construction Impacts

Less-than-significant impact with mitigation. Noise and vibration impacts during construction for Alternative 4 would be similar to those discussed for Alternative 2, with the exception that construction would occur along 9th Street rather than 7th Street. See Section 3.9.3.4, *Alternative 2: 7th Street with Grand Avenue Extension*, for detailed information on construction noise and vibration impacts.

Operational Impacts

Noise

Less-than-significant impact with mitigation. Operational noise impacts for Alternative 4 would be the same as those described for Alternative 2, with the exception of the following discussion on combined streetcar and traffic noise. See Section 3.9.3.4, *Alternative 2: 7th Street with Grand Avenue Extension*, for detailed information on streetcar noise and traffic noise impacts.

Combined Streetcar and Traffic Noise

Less-than-significant impact with mitigation. Alternative 4 contains two additional receiver sites (R36 and R37) where predicted future noise levels are predicted to exceed the CEQA thresholds. See Section 3.9.3.4, *Alternative 2: 7th Street with Grand Avenue Extension*, for detailed information on combined streetcar and traffic noise impacts. As is noted in Section 3.9.3.4, the additional noise impacts would be attributable to growth in background traffic and not the Project. Additional mitigation would not be required.

Vibration

Less-than-significant impact with mitigation. Streetcar operational vibration impacts for Alternative 4, as presented in Tables 3.9-15 and 3.9-16, would be similar to those described for Alternative 2, with exceptions as follows. The predicted vibration levels are projected to exceed the General Assessment impact threshold at one additional receiver (R39). The conclusion remains that no vibration impacts from the streetcar operations are predicted at any Category 2 land uses, however, because the interior detailed assessment does not show an impact. Also, institutional uses I13 and I14 would be included but also show no impact. See Section 3.9.3.4, *Alternative 2: 7th Street with Grand Avenue Extension*, for detailed information about vibration impacts.

3.9.3.7 Alternative 5: 9th Street without Grand Avenue Extension

Construction Impacts

Less-than-significant impact with mitigation. Noise and vibration impacts during construction for Alternative 5 would be similar to those discussed for Alternative 3, with the exception that construction would occur along 9th Street rather than 7th Street. See Section 3.9.3.4, *Alternative 2: 7th Street with Grand Avenue Extension*, for detailed information on noise and vibration impacts.

Operational Impacts

Noise

Less-than-significant impact with mitigation. Operational noise impacts for Alternative 5 would be similar to those described for Alternative 3, with the exception that streetcar operations would occur along 9th Street rather than 7th Street. See Section 3.9.3.4, *Alternative 2: 7th Street with Grand Avenue Extension*, for detailed information on streetcar noise, traffic noise, combined streetcar and traffic noise, and vibration impacts.

Vibration

Less-than-significant impact with mitigation. Streetcar operational vibration impacts for Alternative 5 would be the same as those described for Alternative 3 with the exception that streetcar operations would occur along 9th Street rather than 7th Street. See Section 3.9.3.4, *Alternative 2: 7th Street with Grand Avenue Extension*, for detailed information on operational vibration impacts.

3.9.4 Mitigation Measures

3.9.4.1 Construction Noise Mitigation

The measures listed below would reduce noise levels associated with the construction phase of the build alternatives.

MM-NV-C1: The contractor shall limit nighttime construction activities (during the hours from 10 p.m. to 7 a.m.) to generate lower noise levels, which may include, but not be limited to, concrete pouring, field welding, and underground utility work. The City of Los Angeles Department of Public Works (DPW), Bureau of Engineering (BOE), through the construction contractor per bid specifications, shall be the responsible party. Enforcement shall be achieved through the DPW Contracts Administration Bureau Construction Inspector.

MM-NV-C2: The contractor shall use specialty equipment with enclosed engines and/or high-performance mufflers. The DPW BOE, through the construction contractor per bid specifications, shall be the responsible party. Enforcement shall be achieved through the DPW Contracts Administration Bureau Construction Inspector.

MM-NV-C3: The contractor shall locate equipment and staging areas as far from noise-sensitive receivers as practicable. The DPW BOE, through the construction contractor per bid specifications, shall be the responsible party. Enforcement shall be achieved through the DPW Contracts Administration Bureau Construction Inspector.

MM-NV-C4: The contractor shall limit unnecessary idling of equipment. The DPW BOE, through the construction contractor per bid specifications, shall be the responsible party. Enforcement shall be achieved through the DPW Contracts Administration Bureau Construction Inspector.

MM-NV-C5: The contractor shall install temporary noise barriers to enclose stationary noise sources, such as compressors, generators, laydown and staging areas, and other noisy equipment. The DPW BOE, through the construction contractor per bid specifications, shall be the responsible party. Enforcement shall be achieved through the DPW Contracts Administration Bureau Construction Inspector.

MM-NV-C6: The contractor shall reroute construction-related truck traffic away from residential buildings to the extent practicable. The DPW BOE, through the construction contractor per bid specifications, shall be the responsible party. Enforcement shall be achieved through the DPW Contracts Administration Bureau Construction Inspector.

MM-NV-C7: The contractor shall sequence the use of equipment so that simultaneous use of the loudest pieces of equipment is avoided as much as practicable. The DPW BOE, through the construction contractor per bid specifications, shall be the responsible party. Enforcement shall be achieved through the DPW Contracts Administration Bureau Construction Inspector

MM-NV-C8: The contractor shall avoid the use of impact equipment and, where practicable, use non-impact equipment. Non-impact equipment could include electric or hydraulic-powered equipment rather than diesel and gasoline-powered equipment where feasible. The DPW BOE, through the construction contractor per bid specifications, shall be the responsible party. Enforcement shall be achieved through the DPW Contracts Administration Bureau Construction Inspector.

MM-NV-C9: The contractor shall use portable noise control enclosures for welding in the construction staging area. The DPW BOE, through the construction contractor per bid specifications, shall be the responsible party. Enforcement shall be achieved through the DPW Contracts Administration Bureau Construction Inspector.

MM-NV-C10: If a noise variance from Section 41.40(a) of the *Los Angeles Municipal Cod*e is sought, a noise limit shall be specified. The contractor shall employ a combination of the above-listed noise-reducing approaches to meet the noise limit. The DPW BOE, through the construction contractor per bid specifications, shall be the responsible party. Enforcement shall be achieved through the DPW Contracts Administration Bureau Construction Inspector.

MM-NV-C11: Specific measures to be employed to mitigate construction noise impacts shall be developed by the contractor and presented in the form of a Noise Control Plan. The Noise Control Plan shall be submitted for review and approval before the beginning of construction activities. The DPW BOE, through the construction contractor per bid specifications, shall be the responsible party. Enforcement shall be achieved through the DPW Contracts Administration Bureau Construction Inspector.

3.9.4.2 Construction Vibration Mitigation

Construction-related vibration activities are unlikely to exceed the impact thresholds shown in Table 3.9-6. However, the following vibration mitigation measures are recommended to minimize the potential for damage to structures in the corridor. This is because of the age of several of the buildings and the vibration-sensitive nature of "special" land uses, such as theaters and concert halls.

MM-NV-C12: A preconstruction survey shall be conducted, including an inspection of building foundations and photographs of pre-existing conditions. The survey can be limited to (1) the first row of buildings along the selected alignment and will include the locations of the glass blocks and associated subterranean vaults and (2) buildings within approximately 200 feet of the construction zone that are deemed to be extremely susceptible to vibration, as determined by local authorities. These will be included in the survey.

The DPW BOE, through the construction contractor per bid specifications, shall be the responsible party. Enforcement shall be achieved through the DPW Contracts Administration Bureau Construction Inspector

MM-NV-C13: Per the *FTA Guidance Manual*, construction vibration shall be limited to the PPV, ranging from 0.12 inch per second for "buildings identifiable as being extremely susceptible to vibration damage" to 0.5 inch per second for "reinforced concrete, steel, or timber" buildings. The contract specifications shall establish appropriate damage risk vibration limits for historic properties within 200 feet of construction. The DPW BOE, through the construction contractor per bid specifications, shall be the responsible party. Enforcement shall be achieved through the DPW Contracts Administration Bureau Construction Inspector.

MM-NV-C14: The contractor shall be required to monitor vibration at any building where the lower vibration limit is applicable and at any location where complaints about vibration are received from building occupants. This shall include "special" land uses, such as the Disney Concert Hall and the Colburn School. The DPW BOE, through the construction contractor per bid specifications, shall be the responsible party. Enforcement shall be achieved through the DPW Contracts Administration Bureau Construction Inspector.

MM-NV-C15: If the contractor's plan calls for high-vibration construction activities being performed close to structures, the contractor may be required to use alternative procedures that produce lower vibration levels. Examples of high-vibration construction activities include the use of pavement breakers, vibratory compaction, and hoe rams next to sensitive buildings. Alternative procedures shall include the use of non-vibratory compaction in limited areas and concrete saws in place of jackhammers or pavement breakers for demolition. To avoid potential interference with "special" land uses caused by construction vibration, the contractor shall be required to coordinate with building owners to limit high-vibration construction activities to times when sensitive activities are not occurring inside the buildings. For example, the contractor could avoid the use of high-vibration construction equipment during a scheduled performance or recording at the Disney Concert Hall. The DPW BOE, through the construction contractor per bid specifications, shall be the responsible party. Enforcement shall be achieved through the DPW Contracts Administration Bureau Construction Inspector.

MM-NV-C16: The Contractor shall hire a Mitigation Coordinator to provide notice to venues and sound-sensitive land uses along the corridor at least two weeks in advance of construction activities. The role of the Mitigation Coordinator will be to respond to concerns related to implementation of construction-related mitigation measures. The DPW BOE, through the construction contractor per bid specifications, shall be the responsible party. Enforcement shall be achieved through the DPW Contracts Administration Bureau Construction Inspector.

3.9.4.3 Operational Noise Mitigation

The following mitigation measure is recommended for potential impacts on the Disney Concert Hall and the Federal Courthouse association with Alternatives 2 and 4:

MM-NV-O1: The contractor shall install a "low impact" frog, such as a "well designed" flange bearing frog with a ramp angle between 1:20 and 1:100, for special trackwork as well as wheel dampers if wheel squeal occurs. The DPW BOE, through the construction contractor per bid specifications, shall be the responsible party. Enforcement shall be achieved through the DPW Contracts Administration Bureau Construction Inspector.

Maintenance and Storage Facility Noise Mitigation

Potential moderate noise impacts are predicted at the Guadalupe Wedding Chapel (I3), multi-family apartments (R33), and the Grand Lofts (R22) from MSF sites M1, M2, and M3, respectively. The following mitigation measure would reduce these impacts to less than significant.

MM-NV-O2: The contractor shall use a "low impact" frog, such as a "well designed" flange bearing frog with a ramp angle between 1:20 and 1:100, for all special trackwork within the MSF. Rail lubricators shall be installed at all tight radius curves within the MSF to reduce and control wheel squeal. The DPW BOE, through the construction contractor per bid specifications, shall be the responsible party. Enforcement shall be achieved through the DPW Contracts Administration Bureau Construction Inspector.

Traction Power Substation Mitigation

MM-NV-O3: During pre-revenue testing, noise measurements shall be taken at the TPSS units to confirm compliance with the Contract Specification noise level limit of 50 dBA at 50 feet from any side of the TPSS unit. Should exceedances of the noise level limit be found to occur, mitigation options shall be identified and considered, including housing shielding or other suitable methods.

3.9.4.4 Operational Vibration Mitigation

There are no sensitive receivers in the project corridor where predicted vibration levels would exceed FTA's Detailed Vibration Assessment impact thresholds. However, it is recommended that vibration-sensitive facilities in the project corridor, such as theaters, concert halls, or recording studios within 100 feet of the streetcar alignment that have not been evaluated in detail, should be studied during final design. This includes the currently unoccupied Million Dollar Theater, Los Angeles Theater, and the United Artist Theater (recently renovated and opened as part of the Ace Hotel). The results of the four vibration tests for the current Project, although comparable, indicate that vibration propagation paths in the downtown area are not just in soil but in the numerous underground structures, the transmission efficiencies of which are not sufficiently straightforward to predict. Performing site-specific tests at these sensitive spaces will verify whether streetcar operations could result in vibration impacts inside sensitive spaces and require suitable mitigation to be designed. The following mitigation measure is recommended:

MM-NV-O4: If the track would be less than 1 foot from any part of a building foundation, mitigation measures, such as a resilient mat installed under the trackbed or comparable design measure, would be used. The DPW BOE, through the construction contractor per bid specifications, shall be the responsible party. Enforcement shall be achieved through the DPW Contracts Administration Bureau Construction Inspector.

3.9.5 Cumulative Impacts

The study area for cumulative impacts includes the Bunker Hill, Civic Center, Center City/Historic Core, Central City East, Convention Center/Arena, Financial Core, Little Tokyo, South Markets, and South Park neighborhoods. Within the study area, several related projects (see Table 2-4 in Chapter 2, *Project Description*) would be in proximity to the Project and would have construction schedules that could overlap with that of the Project. To the extent that multiple construction projects would be simultaneously underway, significant cumulative impacts could occur. Cumulative noise impacts could also occur due to noise generated by the Project's construction activities in combination with increased noise from other activities in the vicinity. In addition to the related projects listed in Table 2-4, other activities could include construction noise generated by other noise sources such as increased traffic in the vicinity. Impacts related to increased traffic in the vicinity are discussed below. These cumulative impacts would be temporary, however, and the Project would implement the mitigation measures detailed above, which would reduce the Project's contribution to cumulative impacts. Nonetheless, the potential exists for the Project's construction to have a cumulatively considerable contribution to a significant, temporary, cumulative impact.

The Project's operational noise levels were evaluated to determine whether the Project would cause significant noise or vibration impacts on the environment. The noise levels due to the Project, when added to cumulative impacts from background traffic growth, would result in impacts at some locations exceeding thresholds. The Project would provide mitigation sufficient to reduce its contribution to noise and vibration impacts to below a level of significance for impacts directly associated with streetcar operations (see Section 3.9.4, *Mitigation Measures*). However, the noise analysis shows noise impacts exceeding CEQA significance thresholds in 2020 and 2040. These exceedances are attributable to growth in background vehicular traffic, not streetcar operations. Because the Project would act to reduce vehicular traffic, it would not have a cumulatively considerable contribution to cumulatively significant noise impacts in future years that would be primarily associated with vehicular traffic.

The Project would have less-than-significant vibration impacts during operations. It is possible that other related projects would produce vibration impacts, but whether this would occur and to what degree would be speculative. Vibrations will be attenuated as separation distance between projects occurs. For these reasons, the Project is determined to not have a cumulatively considerable contribution to a significant cumulative vibration impact.

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3.10 Transportation and Traffic

This section summarizes the potential transportation and traffic impacts related to construction and operation of the Project based on the *Transportation Technical Study* prepared by Intueor Consulting, Inc. (2016). The *Transportation Technical Study* is included as Appendix J to this Draft EIR. This section provides a review of existing conditions, a summary of policies and regulations related to transportation and traffic, and an analysis of the potential environmental impacts that could result from project implementation.

3.10.1 Regulatory Setting

There are no federal or state regulations that outline quantitative measures with which the Project must comply because such standards are set at a local or regional level for roadways that are not under the state or federal highway systems.

With respect to rail safety, the California Public Utilities Commission's (CPUC's) Rail Transit Safety Section prescribes requirements for the design, construction, operation, and maintenance of heavy rail transit, light rail transit, trolleys, and funicular systems. CPUC ensures that all rail transit system extensions and new construction projects undergo a safety certification review and receive approval.

3.10.1.1 2010 Congestion Management Program

The Los Angeles County Metropolitan Transportation Authority (Metro) is responsible for maintaining the performance and standards of major roadways in Los Angeles County through the Congestion Management Program (CMP), which comprises approximately 500 miles of freeways, 400 miles of state-maintained arterials, and 100 miles of locally maintained arterials. None of the roadways or intersections discussed herein are part of the CMP transportation network.

3.10.1.2 Mobility Plan 2035

The City of Los Angeles City Council adopted the *Mobility Plan 2035* on January 20, 2016 (Los Angeles Department of City Planning 2016). The *Mobility Plan 2035* updates and replaces the *City of Los Angeles General Plan Transportation Element*, incorporates "Complete Streets" principles, and lays the policy foundation for how future City of Los Angeles generations will interact with streets. The "Complete Streets" concept takes into account the many community needs that streets fulfill. The plan identifies goals, objectives, policies and action items (programs and projects that serve as guiding tools for making sound transportation decisions). The *2010 Bicycle Plan* is a component of the *Mobility Plan 2035*. See Section 3.8 for an evaluation of the Project's consistency with other City plans and policies.

3.10.1.3 Traffic Study Policies and Procedures

LADOT publishes the *Traffic Study Policies and Procedures*, which establishes traffic impact significance thresholds to determine a project's impacts on the operational efficiency of intersections and roadway/freeway segments (City of Los Angeles; August 2014). The

Transportation Technical Study (Appendix J) used the *Traffic Study Policies and Procedures* thresholds for determining Project-related significant impacts.

3.10.2 Environmental Setting/Affected Environment

3.10.2.1 Study Area

The study area for the purposes of this section is defined by the 65 key signalized study intersections shown in Figures 3.10-1a and 3.10-1b. Study area intersections were identified in coordination with, and approved by, LADOT. The study area intersections are located along the streetcar alignment and adjacent parallel streets that are one block away from the alignment. The intersections along these parallel streets were included to capture potential traffic diversions that may occur due to the reduction in roadway capacity along the alignment and the proposed turn restrictions along Broadway that would result from implementation of the *Broadway Streetscape Master Plan* (BSMP) and also other programmed public improvement projects.

3.10.2.2 Roadway System

Freeways

Freeways provide major regional access to and from the study area and the surrounding areas. The freeways that serve the downtown Los Angeles area include the Santa Ana (Interstate [I] 5)/Hollywood Freeway (US 101), the Pasadena (Arroyo Seco Parkway)/Harbor Freeway (State Route [SR] 110/I-110), and the Santa Monica/San Bernardino Freeway (I-10). No freeways are included within the Project study area.

Arterials

The study area includes the north–south arterials between and including 1st Street and 11th Street, and the east–west arterials between and including Figueroa Street and Spring Street. Table 3.10-1 provides information about the arterials in the study area.

Table 3.10-1. Arterials in the Study Area

Arterial	Roadway Type	Direction of Travel	Vehicles per Day
Figueroa Street	Modified Avenue I	North and South	19,300 to 32,100
Flower Street	Modified Avenue II	North and South	6,700 to 17,600
Grand Avenue	Modified Avenue II	North and South	12,300 to 22,500
Olive Street	Modified Avenue II	North and South	13,300 to 17,300
Hill Street	Modified Avenue II	North and South	18,200 to 22,100
Broadway	Modified Avenue II	North and South	15,500 to 19,800
Spring Street	Modified Avenue II	South	14,500 to 17,800
1st Street	Modified Boulevard II	East and West	14,000 to 23,300
2nd Street	Modified Avenue III	East and West	11,700 to 17,100
3rd Street	Modified Avenue III	West	17,800 to 20,800
4th Street	Modified Avenue III	East	11,500 to 12,700
5th Street	Modified Avenue III	West	21,200 to 22,200

Arterial	Roadway Type	Direction of Travel	Vehicles per Day
6th Street	Modified Avenue III	East	14,100 to 21,000
7th Street	Modified Avenue II	East and West	16,700 to 19,700
8th Street	Modified Avenue III	West	12,500 to 15,300
9th Street	Modified Avenue II	East	13,400 to 21,600
Olympic Boulevard	Modified Avenue I	East and West	20,400 to 32,400
11th Street	Modified Avenue III	West	4,600 to 10,400
Source: Appendix J.			

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Figure 3.10-1a. Study Area Intersections

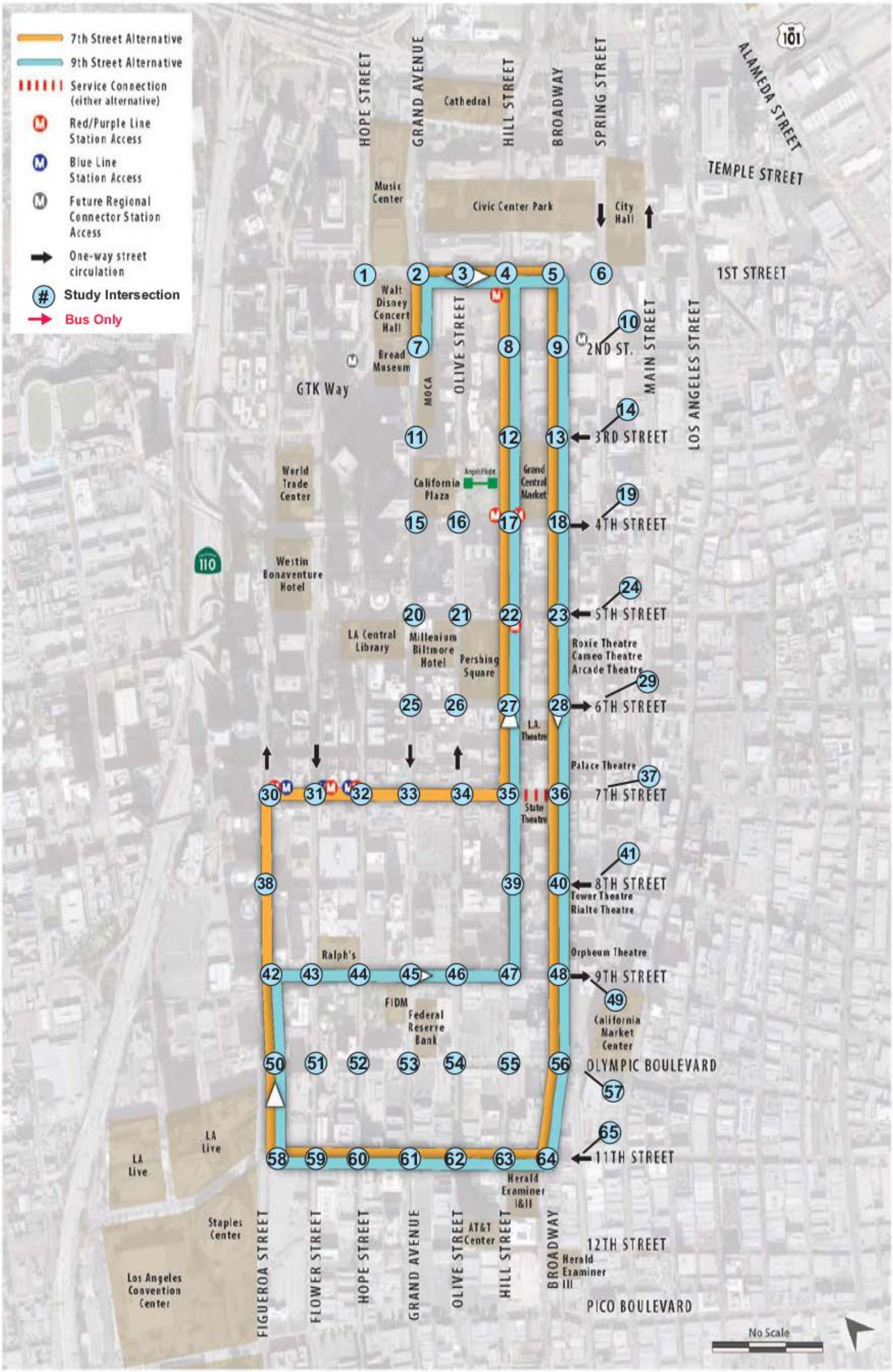

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Figure 3.10-1b. Existing Intersection Lane Configurations

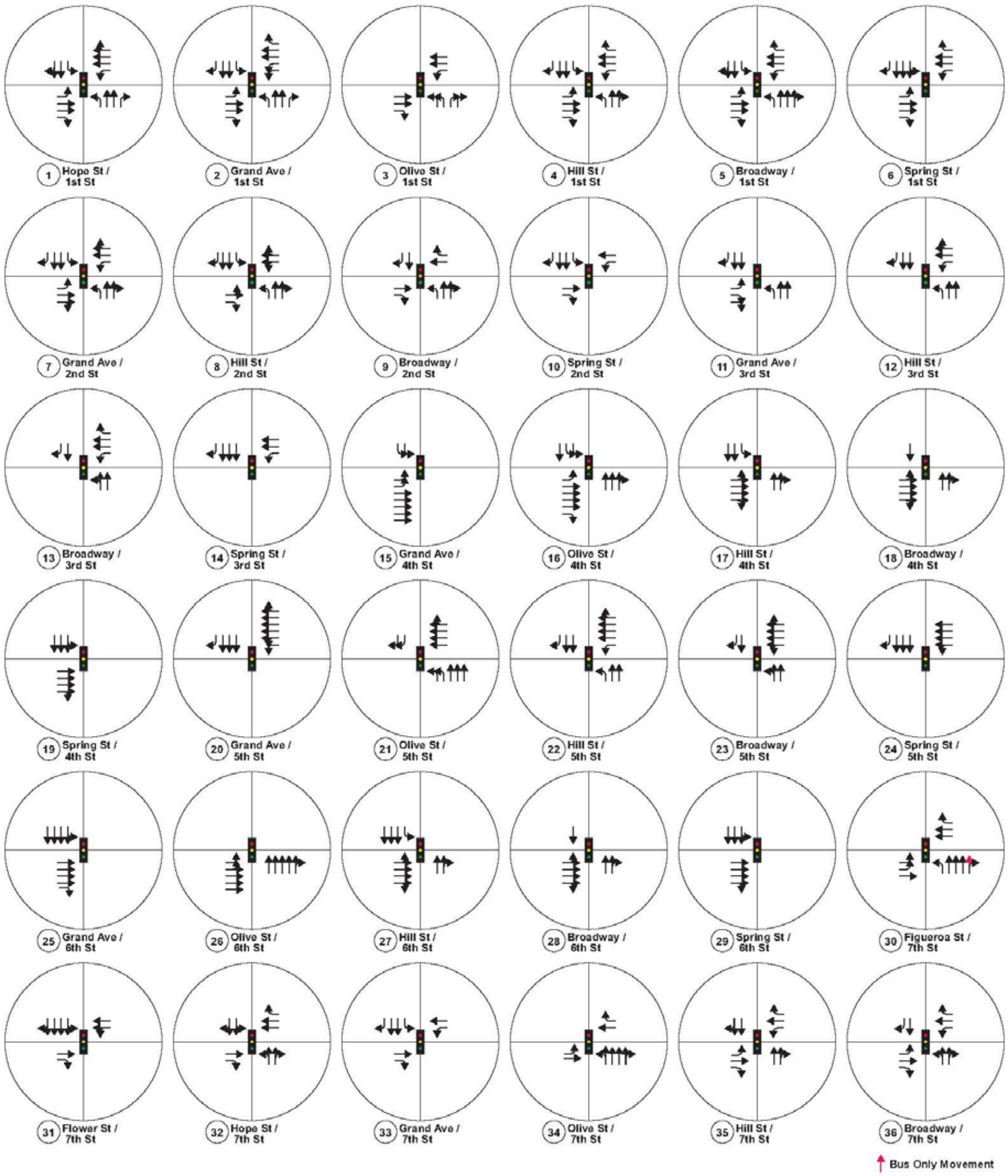

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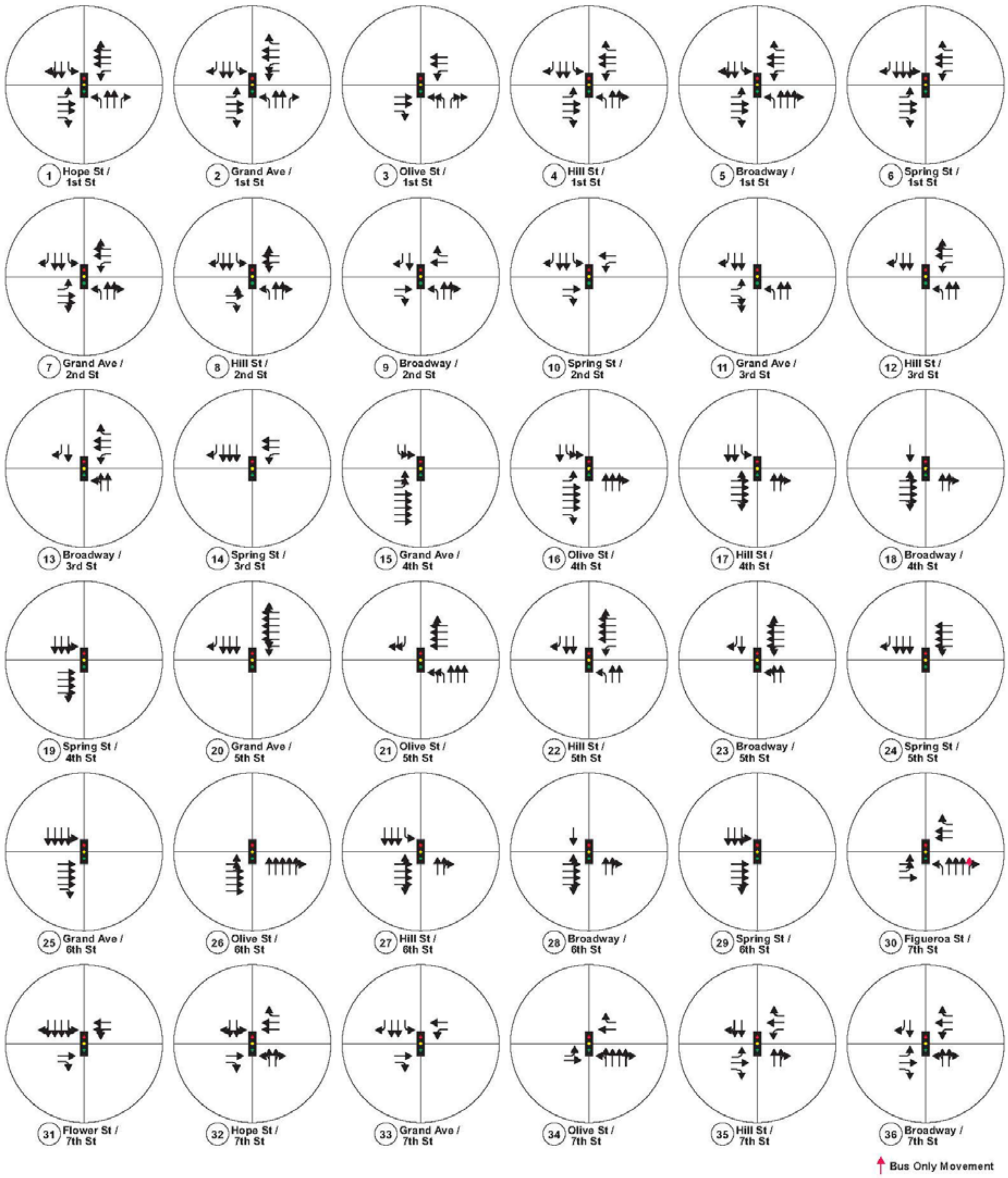
Figure 3.10-1c. Existing Intersection Lane Configurations (continued)



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3.10.2.3 Existing Traffic Conditions

Intersection Level of Service (LOS)

LOS is a scale used to determine the operational efficiency of intersections based on average delay experienced by vehicles. The levels range from A to F, with LOS A representing free-flowing traffic and LOS F representing severe traffic congestion. Intersections with LOS E are considered to have poor conditions with an average delay of 55 to 80 seconds, and may have long lines of waiting vehicles through several signal cycles. When traffic delays are greater than 80 seconds, operations are designated as LOS F and could have backups from nearby locations or on cross streets that may restrict or prevent movement of vehicles out of the intersection approaches. For more information about the LOS methodology, see Section 3.10.3.1, *Methodology*.

The vast majority (62) of the 65 study area intersections currently perform at LOS D or better during both AM and PM peak hours. However, during the AM peak hour, the Broadway/3rd Street intersection operates at LOS F and the Figueroa Street/Olympic Boulevard intersection operates at LOS E. During the PM peak hour, the Olive Street/9th Street intersection performs at LOS F and the Figueroa Street/Olympic Boulevard intersection performs at LOS E (see Table 3.10-2). Appendix J (Table 3-2) shows the LOS values and estimated delays for all 65 study area intersections.

Table 3.10-2. Existing (2014/2015) Intersection LOS Analysis

		AM		PM	
#	Intersection	LOS	Delay[a]	LOS	Delay[a]
1	Hope Street/1st Street	32.1	C	32.0	C
2	Grand Avenue/1st Street	50.4	D	30.4	C
3	Olive Street/1st Street	16.8	B	30.6	C
4	Hill Street/1st Street	23.9	C	29.3	C
5	Broadway/1st Street	22.4	C	22.8	C
6	Spring Street/1st Street	19.6	B	19.4	B
7	Grand Avenue/2nd Street	17.6	B	28.4	C
8	Hill Street/2nd Street	17.7	B	23.3	C
9	Broadway/2nd Street	26.3	C	23.6	C
10	Spring Street/2nd Street	15.2	B	20.0	B
11	Grand Avenue/3rd Street	2.9	A	18.1	B
12	Hill Street/3rd Street	46.7	D	38.3	D
13	Broadway/3rd Street	116.6	F	21.7	C
14	Spring Street/3rd Street	32.8	C	24.8	C
15	Grand Avenue/4th Street	4.0	A	5.2	A
16	Olive Street/4th Street	19.7	B	19.5	B
17	Hill Street/4th Street	18.3	B	10.8	B
18	Broadway/4th Street	22.0	C	13.0	B
19	Spring Street/4th Street	19.6	B	20.5	C
20	Grand Avenue/5th Street	15.9	B	27.0	C
21	Olive Street/5th Street	36.9	D	44.5	D

#	Intersection	AM		PM	
		LOS	Delay[a]	LOS	Delay[a]
22	Hill Street/5th Street	8.6	A	21.1	C
23	Broadway/5th Street	9.0	A	16.4	B
24	Spring Street/5th Street	16.8	B	12.0	B
25	Grand Avenue/6th Street	19.9	B	20.7	C
26	Olive Street/6th Street	13.1	B	14.1	B
27	Hill Street/6th Street	9.3	A	8.1	A
28	Broadway/6th Street	16.7	B	14.3	B
29	Spring Street/6th Street	7.7	A	10.4	B
30	Figueroa Street/7th Street	34.6	C	27.2	C
31	Flower Street/7th Street	18.7	B	16.3	B
32	Hope Street/7th Street	10.0	A	15.9	B
33	Grand Avenue/7th Street	17.0	B	37.4	D
34	Olive Street/7th Street	17.2	B	19.2	B
35	Hill Street/7th Street	17.0	B	28.6	C
36	Broadway/7th Street	14.3	B	16.9	B
37	Spring Street/7th Street	7.7	A	30.7	C
38	Figueroa Street/8th Street	19.2	B	42.3	D
39	Hill Street/8th Street	8.0	A	28.9	C
40	Broadway/8th Street	21.0	C	40.3	D
41	Spring Street/8th Street	8.6	A	22.2	C
42	Figueroa Street/9th Street	39.4	D	21.7	C
43	Flower Street/9th Street	28.7	C	24.8	C
44	Hope Street/9th Street	14.1	B	16.8	B
45	Grand Avenue/9th Street	15.5	B	16.3	B
46	Olive Street/9th Street	19.9	B	157.0	F
47	Hill Street/9th Street	21.8	C	20.4	C
48	Broadway/9th Street	6.6	A	13.8	B
49	Spring Street/9th Street	12.9	B	29.9	C
50	Figueroa Street/Olympic Boulevard	70.7	E	66.7	E
51	Flower Street/Olympic Boulevard	17.4	B	27.0	C
52	Hope Street/Olympic Boulevard	19.8	B	21.0	C
53	Grand Avenue/Olympic Boulevard	15.4	B	24.1	C
54	Olive Street/Olympic Boulevard	14.5	B	24.4	C
55	Hill Street/Olympic Boulevard	17.1	B	25.8	C
56	Broadway/Olympic Boulevard	20.7	C	19.4	B
57	Main Street/Olympic Boulevard	23.9	C	36.3	D
58	Figueroa Street/11th Street	19.7	B	26.4	C
59	Flower Street/11th Street	18.8	B	16.0	B
60	Hope Street/11th Street	14.9	B	30.4	C
61	Grand Avenue/11th Street	10.1	B	17.5	B

#	Intersection	AM		PM	
		LOS	Delay[a]	LOS	Delay[a]
62	Olive Street/11th Street	17.0	B	18.0	B
63	Hill Street/11th Street	5.5	A	25.7	C
64	Broadway/11th Street	15.8	B	21.0	C
65	Main Street/11th Street	10.9	B	15.3	B

Source: Appendix J.
[a] Average vehicle delay in seconds

Transit Service

The downtown area has the highest concentration of transit service of any area in Los Angeles County. At present, ten transit operators provide service within the downtown area, with the bulk of service provided by Metro. These operators are:

- Antelope Valley Transit Authority
- City of Gardena (Gardena Municipal Bus Lines)
- City of Santa Clarita Transit
- City of Santa Monica (Big Blue Bus)
- Foothill Transit
- City of Los Angeles Department of Transportation (LADOT)
- Los Angeles County Metropolitan Transportation Authority (Metro)
- City of Montebello (Montebello Bus Lines)
- Orange County Transportation Authority
- City of Torrance (Torrance Transit)

Many of these regional transit operators run mostly peak hour, peak direction commuter bus service in and out of the downtown area. LADOT provides frequent Downtown Area Short Hop (DASH) service along short, mostly circular, shuttle routes within the downtown area. These DASH routes provide connections to different destinations in downtown, and also to regional transit. In addition to public transit services, several high-rise office tenants within the downtown area offer private shuttle buses for their employees.

Los Angeles County Metropolitan Transportation Authority (Metro)

Metro provides rail service with the Red Line from Union Station to North Hollywood, the Purple Line from Union Station to Wilshire Center, the Blue Line from the 7th Street/Metro Center to Long Beach, the Expo Line from the 7th Street/Metro Center to Culver City, and the Gold Line from Union Station to Azusa and East Los Angeles. There are seven Metro rail stations within the downtown Los Angeles area.

The majority of bus transit service in the study area, as well as the Los Angeles region, is provided by Metro, which operates approximately 50 short- and long-distance bus lines, as well as cross-town service, express service, and even 24-hour "Owl" service on many routes. The most basic routes provide service to and from downtown along surface streets. Heavily traveled routes often have overlain limited-stop or Metro Rapid bus service.

Los Angeles Department of Transportation (LADOT)

LADOT provides Downtown Area Short Hop (DASH) and Commuter Express bus service. Downtown DASH includes five local circulation routes connecting the study area with Little Tokyo, Chinatown, the Fashion District, and the University of Southern California. Service is frequent and regular (approximately every 5–10 minutes), with service running from 6 a.m. to 7 p.m. on weekdays and some limited service on weekends.

Commuter Express buses provide commuter service from various communities in the region to high-employment centers. Nine routes connect outlying residential communities to downtown Los Angeles and seven routes connect residential communities to other high-employment areas in the region. Commuter Express operates during weekday peak periods, but does not operate outside of peak hours on weekdays or on weekends.

Bicycle and Pedestrian Facilities

The downtown Los Angeles area currently has several bicycle facilities in the form of Class II bike lanes and Class III bike routes.[1] In addition, future development of the network of bicycle facilities in the area is planned, as specified in the City of Los Angeles *2035 Mobility Plan*. Table 3.10-3 shows the existing and proposed bicycle facilities that would interface with the Project, either by sharing or crossing its alignment.

Table 3.10-3. Existing and Proposed Bicycle Facilities in the Study Area

Segment	From	To	Miles within Downtown Area	Facility Type	Existing/ Proposed
S Figueroa Street	Olympic Boulevard	I-10	0.66	Bike Route (Class III)	Existing
S Grand Avenue	7th Street	I-10	1.06	Bike Lane (Class II)	Existing
S Olive Street	7th Street	I-10	1.05	Bike Lane (Class II)	Existing
1st Street	I-110	San Pedro Street	0.91	Bike Lane (Class II)	Existing
7th Street	I-110	Main Street	0.78	Bike Lane (Class II)	Existing
Figueroa Street	US-101	Wilshire Boulevard	1.00	Bike Lane (Class II)	Existing
2nd Street	I-110	Spring Street	0.71	Bike Lane (Class II)	Existing
Spring Street	US-101	Main Street	1.30	Bike Lane (Class II)	Existing
Main Street	US-101	I-10	2.00	Bike Lane (Class II)	Existing
Flower Street	2nd Street	I-10	1.55	Bike Lane (Class II)	Proposed
Hope Street	6th Street	Pico Boulevard	0.87	Bike Friendly Street	Proposed

[1] According to the *California Streets and Highway Code* Section 890.4, a Class II Bikeway (Bike Lane) provides a restricted right-of-way designated for the exclusive or semi-exclusive use of bicycles with through travel by motor vehicles or pedestrians prohibited, but with vehicle parking and crossflows by pedestrians and motorists permitted. A Class III Bikeway (Bike Route) provides a right-of-way on-street or off-street, designated by signs or permanent markings, and is shared with pedestrians and motorists.

Segment	From	To	Miles within Downtown Area	Facility Type	Existing/ Proposed
				(Class III)	
Hill Street	4th Street	I-10	1.42	Bike Lane (Class II)	Proposed
11th Street	Broadway	Figueroa Street	0.45	Bike Lane (Class II)	Proposed
Spring Street	9th Street	Cesar E Chavez Avenue	1.44	Buffered Bike Lane	Existing
Main Street	9th Street	Cesar E Chavez Avenue	1.5	Buffered Bike Lane	Existing
Los Angeles Street	East 1st Street	North Alameda Street/Union Station Driveway	0.47	Buffered Bike Lane	Existing
Source: City of Los Angeles Active Transportation GIS map website 2016.					

According to the City's *Downtown Street Standards*, sidewalk widths vary by roadway width, proximity to traffic, and adjacent land use. In almost all cases, however, it is recommended that sidewalks be a minimum of 10 feet in width. The City's *Downtown Design Guide* also recommends a 6-foot-wide (minimum) continuous path of travel, with an 18- to 24-inch (minimum) space near the curb to provide a buffer against moving traffic.

Pedestrians circulate the study area via sidewalks, signalized crosswalks, and a small number of off-street paths, such as pedestrian bridges. The central downtown area experiences heavy pedestrian traffic on weekdays, particularly during the commute and lunch hours. Pedestrian activity is generally concentrated in areas with dense daytime employment, such as Bunker Hill, the Financial District, and the Historic Core. Some pedestrian activity occurs between the Civic Center and Little Tokyo along 1st and 2nd Streets. The Fashion District attracts many pedestrians during both weekdays and weekends, as does Broadway between 2nd Street and 7th Street. With the recent residential population growth in the downtown area, there are also large volumes of pedestrians outside of normal working hours. In general, redevelopment throughout downtown has increased the housing supply and retail services, which has increased the number of pedestrians visiting popular nighttime destinations. In addition, there are regularly scheduled monthly art walks along Gallery Row, just east of Broadway, and daily events at Staples Center and LA Live.

Parking

A total of 435 on-street parking and loading spaces have been inventoried along the combined project alignments; most of these spaces also occupy areas that are also travel lanes and do not allow parking during peak periods. The results of the parking inventory are summarized in Table 3-3 of Appendix J. Street segments along the project alignment were surveyed in 2013 to identify the existing number of on-street parking and loading spaces and associated peak period parking restriction information. The number of spaces by Alternative alignment are as follows: Alternative 2, 372 spaces; Alternative 3, 367 spaces; Alternative 4, 384 spaces; Alternative 5, 379 spaces.

With respect to the potential MSF sites (see Table 2-3 in Chapter 2, *Project Description*), there are currently the following estimated off-street parking spaces:

- 11th Street and Olive Street (West) – 350 spaces.

- 11th Street and Olive Street (East) – 140 spaces.
- Hill Street and 5th Street – 430 spaces.
- Broadway and 2nd Street – 240 spaces.

3.10.3 Environmental Impact Analysis

3.10.3.1 Methodology

A level of service traffic analysis was performed for the 65 study intersections (see Figures 3.10-1a and 3.10-1b) for the following scenarios:

- Alternative 1: Existing (2014/2015) Without Project
- Alternatives 2 & 3: Existing (2014/2015) 7th Street Alternative, With and Without Grand Avenue Extension[2]
- Alternatives 4 & 5: Existing (2014/2015) 9th Street Alternative, With and Without Grand Avenue Extension[3]
- Alternative 1: Opening Year (2020) Without Project
- Alternatives 2 & 3: Opening Year (2020) 7th Street Alternative, With and Without Grand Avenue Extension
- Alternatives 4 & 5: Opening Year (2020) 9th Street Alternative, With and Without Grand Avenue Extension
- Alternative 1: Horizon Year (2040) Without Project
- Alternatives 2 & 3: Horizon Year (2040) 7th Street Alternative, With and Without Grand Avenue Extension
- Alternatives 4 & 5: Horizon Year (2040) 9th Street Alternative, With and Without Grand Avenue Extension

Traffic Volumes

Weekday traffic volume counts were collected at the 65 study intersections during typical morning and afternoon peak commute periods pursuant to LADOT guidelines, which recommend that counts be collected on days with good weather, on days when schools are in session, and during weeks without a holiday. The traffic counts, which were collected between 2011 and 2015, were compiled from different sources, including LADOT's traffic count database and traffic impact studies for other projects. To check the validity of the older counts and assess potential changes in travel patterns resulting from the recent addition of on-street bike lanes in downtown, traffic counts were updated in 2014/2015 using a representative set of study intersections. To represent existing conditions, all traffic counts were normalized to 2014–2015.

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[2] Although the project would not be constructed until a later date, the theoretical scenario of layering the project conditions on top of existing (2014/2015) conditions is provided to address State CEQA Guidelines Section 15125, which states that "physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published…will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant."

[3] Ibid.

Intersection Level of Service

Turning movement counts were collected at the 65 study area intersections in order to assess existing peak hour traffic operating conditions. None of the selected intersections are located on a CMP route and thus a focused CMP analysis is not required. In addition, the LADOT has entered into an agreement with Caltrans that establishes a screening filter used to determine if projects would require a focused Freeway Impact Analysis, which would be beyond the CMP analysis. The Project does not require a Freeway Impact Analysis, because there are no freeways within the study area and the Project is not expected to alter any traffic that would be directed onto the state highway system; therefore the need to engage the screening thresholds would not be triggered.

All of the study intersections are signalized. Each study intersection was analyzed to determine peak-hour operations and LOS. LOS for signalized intersections is generally based on delay values using the Transportation Research Board's 2010 *Highway Capacity Manual* methodology. These values are calculated using the average delay (in seconds) per approaching vehicle. Table 3.10-4 presents the LOS definitions for signalized intersections. *Synchro* software, version 8.0, was used to analyze peak-hour intersection traffic operating conditions. This is a widely accepted tool used to calculate LOS based on the delay methodology presented in the *Highway Capacity Manual*, which is the industry standard for analyzing traffic intersection operating conditions. Furthermore, this methodology approach was reviewed and approved by LADOT prior to initiating the traffic study analysis and evaluation.

Table 3.10-4. Signalized Intersections—LOS Definitions

LOS	Average Vehicle Delay (Seconds)	Definition
A	≤ 10.0	EXCELLENT. No vehicle waits longer than one red light and none of the approach signal phases are fully used.
B	> 10.0 and ≤ 20.0	VERY GOOD. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles.
C	> 20.0 and ≤ 35.0	GOOD. Occasionally drivers may have to wait through more than one red light; backups may develop behind turning vehicles.
D	> 35.0 and ≤ 55.0	FAIR. Delays may be substantial during portions of the peak hours, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive backups.
E	> 55.0 and ≤ 80.0	POOR. Represents the most vehicles intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.
F	> 80	FAILURE. Backups from nearby locations or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches. Tremendous delays with continuously increasing queue lengths.

Source: Transportation Research Board, Circular No. 212 (January 1980) and Transportation Research Board, *Highway Capacity Manual* (2010).

Streetcar Characteristics

Streetcar vehicles would travel along the proposed alignment with vehicular traffic, predominantly in the curb lane of the roadway using a fixed rail guideway. The streetcar rails would be flush with the roadway surface so that vehicular traffic can also operate in the same lane. A literature review of streetcar studies in other parts of the country was conducted to inform how the physical and operational characteristics of a streetcar would affect roadway capacity. Included in this review were the following sources: *Kansas City Downtown Streetcar Project Transportation Technical Report*, *Portland Streetcar Loop Project Traffic Technical Memorandum*, *Seattle First Hill-Capitol Hill Streetcar Line* and *Seattle South Lake Union Streetcar Project Transportation Technical Report*. Based on this review, it was determined that a streetcar affects roadway capacity and operations in a manner similar to an articulated bus running in the travel lane. Because the streetcar operates on a fixed guideway, safe and reliable operating conditions would be maintained by complying with the applicable CPUC standards and guidelines.

In order to calculate vehicle trips, the streetcar vehicle must be converted to represent a type of vehicle in the traffic stream that operates in the same way as other vehicles, which, in the case of the Project streetcar, would be similar to that of an articulated bus. Then, a passenger car equivalency factor is used to convert the large streetcar vehicle in the traffic stream to the physical and operational characteristics that are similar to those of a passenger car. The estimated Project streetcar vehicle length (approximately 65–85 feet) would be up to 2.13 times the length of a standard 40-foot bus. Therefore, because operation of a standard bus in traffic flow is equivalent to two passenger cars, the operation of a streetcar would be equivalent to 4.26 passenger cars. This factor was then used to reflect both the physical and operational characteristics of a typical Project streetcar vehicle.

Based on the proposed seven-minute headway operation of the streetcar during the peak periods, a total of nine streetcar passbys would operate during the AM and PM peak hours. This is equivalent to approximately 39 additional vehicle trips during each AM and PM peak hour. The additional vehicle trips take into consideration the operating characteristics of a streetcar vehicle, including start-up delays.

Based on estimates from the Federal Transit Administration's STOPS model, streetcar service would result in a shift among travel modes, including auto, bus, rail, bicycle and pedestrian modes. Although revitalization of the study area may generate new trips that would utilize the streetcar during the off-peak weekday period and the weekend, it is anticipated that, during the AM and PM commute peak hours, the availability of streetcar service would result in a net mode shift of existing trips toward transit, which would attract patrons to use the streetcar. Commute trips would be generated by streetcar operators and MSF workers, but the few number of trips would not alter traffic operations in the project area due to their low volumes.

3.10.3.2 Thresholds of Significance

L.A. CEQA Thresholds Guide

The *L.A. CEQA Thresholds Guide* (2006) identifies thresholds of significance for transportation in several sub-categories. These include: intersection capacity, street segment capacity, freeway capacity, neighborhood intrusion, project access, transit system capacity, parking, and in-street construction impacts. Project access, which is intended to address development projects, is further defined as operational (i.e., level of service) and bicycle, pedestrian and vehicular safety. In addition, the State CEQA Guidelines require an analysis of consistency with adopted plans. The following sections further describe how these thresholds are addressed in this EIR.

Intersection Capacity

For intersection capacity, the thresholds of significance are based on the latest set of revised guidelines set forth by the LADOT in its *Traffic Study Policies and Procedures* (August 2014). These thresholds are defined as changes in per vehicle delay associated with intersection levels of service. Under this definition, a proposed project would have a significant impact on intersection capacity if the project traffic would result in the following delays at study area intersections, under the "with project" condition:

- If final LOS is C, an increase in average delay of ≥6.0 seconds.
- If final LOS is D, an increase in average delay of ≥4.0 seconds.
- If final LOS is E or F, an increase in average delay of ≥2.5 seconds.

Street Segment Capacity

Given the close proximity of intersections to one another in downtown Los Angeles, a street segment capacity analysis would yield similar results ass those produced by the intersection LOS analysis that was undertaken for the *Transportation Technical Study* (Appendix J). It was determined that a street segment capacity analysis would not yield additional information and therefore was not undertaken.

Freeway Capacity

No freeways or access ramps are located within the defined Project study area nor would the Project result in any changes affecting access to the nearby freeways; therefore, this threshold does not apply.

Neighborhood Intrusion Impacts

Based on the screening criteria for neighborhood intrusion impacts in the *L.A. CEQA Thresholds Guide*, a project that does not generate more than 120 daily vehicle trips on a local residential street would not normally have a significant impact. All trips generated by the Project would occur on roadways classified as a Modified Avenue I, II, or III, or a Modified Boulevard II, as specified in Table 3.10-1, none of which are considered local residential streets. Consequently, no further analysis is needed.

Project Access

As is noted above, this threshold would typically apply to development projects and includes components that address operational impacts and bicycle, pedestrian and vehicular safety. Only one component of the Project would be classified as a development project and that would be the MSF. The operational threshold is described as follows: A project would normally have a significant project access impact if the intersection(s) nearest the primary site access is/are projected to operate at LOS E or F during the AM or PM peak hour, under cumulative plus project conditions. Level of service impacts are addressed for each of the 65 downtown intersections included in the study area, some of which are in proximity to one or another MSF site.

The *L.A. CEQA Thresholds Guide* also include components that address bicycle, pedestrian and vehicular safety, as stated below.

Bicycle, Pedestrian and Vehicular Safety

The determination of significance shall be on a case-by-case basis, considering the following factors:

- The amount of pedestrian activity at project access points.
- Design features/physical configurations that affect the visibility of pedestrians and bicyclists to drivers entering and exiting the site, and the visibility of cars to pedestrians and bicyclists or that could substantially increase hazards to pedestrians or bicyclists.
- The type of bicycle facility the project driveway(s) crosses and the level of utilization.
- The physical conditions of the site and surrounding area, such as curves, slopes, walls, landscaping or other barriers, that could result in vehicle/pedestrian, vehicle/bicycle or vehicle/vehicle impacts.

Bicycle, pedestrian and vehicular safety are important considerations for the Project as a whole. They are addressed under each of the alternatives.

Transit System Capacity

The *L.A CEQA Thresholds Guide* states that the determination of significance related to transit system capacity is to be made on a case-by-case basis, considering the projected number of additional transit passengers expected with implementation of the Project and available transit capacity. The Project is, itself, a transit mode and it would provide additional capacity to the general public transit system operating in downtown Los Angeles. Since the Project would act to accommodate, rather than increase, transit demand, this threshold does not apply as stated. However, because the Project would contribute to transit services in downtown, its role in that context is described under each alternative.

Parking

Appendix G of the State CEQA Guidelines was amended in 2011 to no longer require an analysis of parking as an environmental impact. Therefore, effects related to parking are presented for informational purposes only.

In-Street Construction Impacts

The determination of significance is to be made on a case-by-case basis, considering temporary traffic impacts resulting in street or lane closures, temporary loss of access for vehicles or pedestrians, and temporary loss of bus stops or rerouting of bus lines. In-street construction impacts are discussed under the construction subsection for each alternative.

Plan Consistency

As stated in the State CEQA Guidelines, Appendix G, a project would have a significant impact if it conflicts with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all the modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system including, but not limited to, intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit. Consistency with plans, including those that address transportation, is evaluated in Section 3.8 of this EIR.

3.10.3.3 Impacts

Alternative 1: No Project Alternative

Construction Impacts

No impact. The No Project Alternative would not result in streetcar-related construction activities. Due to the ongoing development of downtown, various projects will require construction that may encroach into portions of the street system. In a similar fashion, ongoing improvements to the downtown street system may occur over time, with associated construction activities affecting portions of the street system.

Operational Impacts

Intersection Capacity

No Impact. As is noted in Section 3.10.2.3, three study area intersections currently operate at poor levels of service; these are Broadway/3rd Street, Olive Street/9th Street and Figueroa Street/Olympic Boulevard.

In 2020, without the Project, 12 study area intersections would operate at poor levels of service.. These intersections are:

- Grand Avenue/1st Street (AM LOS D; delay = 61.4 sec. / PM LOS D; delay = 34.6 sec.)
- Broadway/2nd Street (AM LOS E; delay = 60.9 sec. / PM LOS C; delay = 33.1 sec.)
- Hill Street/3rd Street (AM LOS D; delay = 53.1 sec. / PM LOS E; delay = 56.9 sec.)
- Broadway/3rd Street (AM LOS F; delay = 121.4 sec. / PM LOS C; delay = 22.4 sec.)
- Figueroa Street/7th Street (AM LOS F; delay = 145.3 sec. / PM LOS F; delay = 84.0 sec.)
- Grand Avenue/7th Street (AM LOS B; delay = 17.8 sec. / PM LOS E; delay = 56.0 sec.)
- Figueroa Street/8th Street (AM LOS C; delay = 33.8 sec. / PM LOS F; delay = 148.4 sec.)
- Figueroa Street/9th Street (AM LOS F; delay = 142.1 sec. / PM LOS D; delay = 40.7 sec.)
- Olive Street/9th Street (AM LOS C; delay = 27.4 sec. / PM LOS F; delay = 227.4 sec.)
- Figueroa Street/Olympic Boulevard (AM LOS F; delay = 108.2 sec. / PM LOS F; delay = 86.2 sec.)
- Figueroa Street/11th Street (AM LOS F; delay = 114.6 sec. / PM LOS E; delay = 71.8 sec.)
- Broadway/11th Street (AM LOS C; delay = 21.1 sec. / PM LOS E; delay = 65.0 sec.)

In the horizon year of 2040, without the Project, the 12 study area intersections identified above would continue to operate at poor levels of service. Four additional study area intersections would also have these characteristics. These are:

- Hope Street/1st Street (AM LOS; delay = 64.0 sec. / PM LOS D; delay = 47.9 sec.)
- Spring Street/3rd Street (AM LOS; delay = 59.1 sec. / PM LOS C; delay = 30.0 sec.)
- Main Street/Olympic Boulevard (AM LOS D; delay = 38.9 sec. / PM LOS E; delay = 65.3 sec.)
- Hill Street/11th Street (AM LOS A; delay = 8.3 sec. / PM LOS E; delay = 55.4 sec.)

Because the impact significance threshold (see Section 3.10.3.2) is referenced to the "with project" condition, the above-described impacts would represent baseline conditions in 2020 and 2040.

Bicycle, Pedestrian and Vehicular Safety

Less than significant impact. Table 3.10-3 shows a number of existing and planned bicycle facilities in the Project study area. There has been a growing interest by the bicycle community to have access and improved facilities in many locations throughout the region, including downtown. With the approval of the *City of Los Angeles 2010 Bicycle Plan*, various projects will be implemented throughout the city, including the downtown, over time.

As is noted in section 3.10.2.3, downtown experiences heavy pedestrian traffic, particularly on weekdays and during the commute and lunch hours, but also during the evenings and on weekends. It is expected that pedestrian activity will increase over time, owing to the renewed interest and expected growth in downtown residential development. Accompanying this is a policy focus on improving the pedestrian environment in downtown, with several projects (e.g., *Broadway Streetscape Master Plan*) modifying portions of the sidewalk system to improve the pedestrian experience. Under the No Project Alternative, pedestrian safety will continue to be controlled via the downtown intersection signals and pedestrian improvements will continue to be implemented.

Vehicular safety in downtown is controlled through the downtown traffic signal system, which is continually maintained and improved by the LADOT. It is expected that the surveillance and improvement of the signal system will continue over time.

Transit System Capacity

Less than significant impact. As is noted earlier in this section, downtown is served by a variety of transit operators and includes both regional commuter and local circulator routes. A major component of this system is the continued development of Metro heavy and light rail service. By 2020, the Metro Regional Connector project will be in place, providing a new seamless connection between the 7thStreet/Metro Center Station and Union Station. Over time, additional improvements to both rail and bus service will be made in response to growing demand.

Parking

Less than significant impact. Parking in downtown is provided by both on-street parking spaces and off-street parking lots. As is noted in section 3.10.2.3, a total of 435 on-street parking spaces were inventoried along the collective Project routes (i.e., between 367 and 384 spaces, depending upon Alternative). In the absence of the Project, downtown parking availability will both continue to diminish as a result of ongoing development pressure to convert current off-street parking lots into office and residential projects, but also off-street parking spaces associated with those development projects will be created. In addition, policies at the state and local levels will likely continue to promote fewer parking opportunities in favor of higher use of transit.

Alternative 2: 7th Street Alternative With Grand Avenue Extension

Construction Impacts

Intersection Capacity

Less-than-significant impact with mitigation. Construction of Alternative 2 could temporarily reduce intersection capacity, as temporary lane closures would be required along the alignment for utility relocation, track-laying, and catenary system installation activities.

Construction activities would typically take place between the hours of 7 a.m. and 9 p.m., in accordance with *Los Angeles Municipal Code* (LAMC) Section 41.40(a). To expedite construction activities, certain construction activities may occur during nighttime, weekend, and holiday periods with the approval of the Board of Police Commissioners pursuant to LAMC Section 41.40(j). In addition, construction within City roadways may occur during peak hours (i.e., 6 a.m. to 9 a.m. and 3:30 p.m. to 7 p.m.) in accordance with the Mayor's Executive Directive No. 2 and Bureau of Engineering Special Order No. 001-0406, which contain an exemption to the rush hour roadway construction prohibition for major public works projects with traffic management plans (see Section 3.10.4, *Mitigation Measures*). Construction would comply with applicable provisions of the LAMC, the latest *Standard Specifications for Public Works Construction*, the LABOE *BrownBook*, and the *Work Area Traffic Control Handbook.*

To the extent practicable, traffic lanes would be kept open in both directions on two-way roadways and in one direction on one-way roadways, particularly during periods of peak traffic operations. Where space is available, a minimum of one traffic lane and a left-turn pocket would be provided. Access to residences and businesses would be maintained throughout the construction period., by leaving at least one access point open to traffic. For businesses or residences with single access points, that access point would be maintained through the use of temporary detours, steel plates, and half-closures of driveways. To the extent feasible, full road closures, when and if required, would take place during the night hours.

Designated haul routes for trucks would be identified prior to construction. These routes would be selected to minimize noise, vibration, and other impacts. Because construction work would occur in the downtown area, it is anticipated that trucks would travel from the excavation site to the nearest freeway ramp and use the adjacent freeways to haul away the excavated material. During the construction period, approximately 10 to 15 trucks per day are currently estimated to be required to haul away materials or for utility relocation and MSF excavation.

The Project's *Construction Methods Technical Memorandum* (Appendix C) presents sketches of typical work zone and traffic control cross sections along the project alignment. Decreases in capacity due to temporary lane closures would result in an increase in delay and a deterioration in LOS, particularly when construction activities are close to intersections that are operating at LOS D or worse during the Project opening-year (2020). Impacts would be short term and generally limited to two to three weeks for each affected roadway, to accommodate the linear sequencing of utility relocation and track installation work. This impact would be significant prior to the implementation of Mitigation Measure **MM-TRAF-C1 and MM-TRAF-C2**. Subsequent to mitigation, a less than significant impact would be expected.

Bicycle, Pedestrian, and Vehicular Safety

Less-than-significant impact with mitigation. During construction, travel lanes would be kept open to the extent practicable, and the sidewalks would remain open to pedestrians. The work zone would be protected by pedestrian fencing on the sidewalk side. Pedestrian access would remain open along the sidewalk, and temporary ramps and walkways would be provided by the contractor to maintain *Americans with Disabilities Act* accessibility at intersections and crosswalks. Dedicated bicycle lanes that could be affected by work zones would be kept open, to the extent practicable and safe, as determined by the LADOT. Closure of such lanes, where needed, would be kept to a practical minimum and reopened when construction activity moves on to the next segment. Bicycle travel would be maintained during the construction period in the open traffic lanes, or in some cases through the use of temporary detours. This would be communicated as part of outreach efforts occurring as part of the Traffic Management Plan (TMP) prior to the initiation of construction work zones. Because bicycle and pedestrian facilities in the vicinity of the Alternative 2 alignment would remain open during the construction period and appropriate safety precautions would be followed, impacts would be less than significant.

With respect to vehicular safety, construction activities would require the use and temporary storage of equipment that would be incompatible with public roadways. Use and storage of such construction equipment would be limited to designated staging areas and the segment of the project alignment currently under construction. Equipment would occupy public roadways for brief periods and would be separated from vehicular traffic by a barrier and from pedestrian traffic by a fence. Installation of the Overhead Contact System (OCS) would include the use of small cranes, bucket trucks, and other equipment for installation of the wires along the project alignment. During the times that wires are strung at cross streets, partial street closures of a few hours duration would be anticipated. Overall, impacts related to transportation safety during the construction period would be less than significant because there would be physical buffers between construction activities and users of the transportation network.

Emergency service provider access to residences and businesses would be maintained throughout the construction period. To the extent feasible, full lane closures would take place during nighttime hours, but emergency access would be maintained by using adjacent streets. Although traffic operations at intersections adjacent to construction activities may temporarily deteriorate as a result of the reduced capacity, the TMP identified in **MM-TRAF-C1** would require prior notification of construction activities to emergency service providers, allowing first responders to access properties via alternate routes. Therefore, impacts related to emergency access during the construction of the Project would be less than significant.

Transit System Capacity

Less-than-significant impact with mitigation. Construction activities under Alternative 2 are not anticipated to result in additional passengers using transit modes in the project vicinity, because construction workers arrive and depart at irregular hours and also because they must transport equipment and tools, which is not compatible with public transit use. Although there would be temporary delays to buses associated with lane closures along the project alignment throughout the construction period, such impacts are not anticipated to result in additional passengers on the transit system such that capacity would be exceeded.

Bus lines that would be affected by lane closures due to construction activities would continue to operate, where feasible, in the remaining traffic lanes. When temporary full road closures must occur, bus lines would be rerouted to adjacent streets in a manner intended to minimize the inconvenience to bus passengers. If a block is closed that includes a bus stop, the bus stop would be temporarily relocated to the portion of the street segment that is open to bus service.

Before any major rerouting changes are made as result of the Project, fliers would be provided on buses or posted at stops at least two weeks in advance to notify riders of route modifications. In addition, hoods would be placed over bus stop signs, also notifying riders of what modifications have been made to the bus route. Delays associated with lane closures would affect public transit vehicles if services cannot be rerouted. Because the effects would be temporary, and because the TMP identified in Mitigation Measure **MM-TRAF-C1** would be used to keep the community informed of all construction activities affecting bus routes in the downtown Los Angeles area, the impact would be less than significant.

Parking

It may be necessary to prohibit on-street curb parking when traffic lanes are closed due to construction activities. Existing parking meters affected by construction would be removed or covered as directed by the LADOT. Contractors would be required to have employees park off-street at City-approved locations to minimize the temporary loss of on-street parking. There may be some inconvenience associated with a reduction of on-street parking spaces. The temporary removal of on-street parking along the project alignment would not substantially alter the overall availability of parking in downtown.

Operational Impacts

Intersection Capacity

Existing 2014/2015 Scenario

Significant impact. During the 2014/2015 AM peak hour under the Alternative 2 scenario, 26 of the 65 study area intersections would operate with greater delay than under the Alternative 1 (No Project) scenario. However, delays, as determined by City significance thresholds, would only be determined significant at the Hill Street/1st Street and Hill Street/7th Street intersections, which is due to the addition of a protected signal phase for the streetcar to turn left from northbound Hill Street to westbound 1st Street and from eastbound 7th Street to northbound Hill Street.

During the 2014/2015 PM peak hour under the Alternative 2 scenario, 20 of the study area intersections would operate with greater delay than under the Alternative 1 (No Project) scenario. However, delays, as determined by City significance thresholds, would only be significant at the Grand Avenue/1st Street intersection for the same reason as discussed above. Table 3.10-5 identifies the intersections that would experience significant delays under the 2014/2015 Alternative 2 scenario; delay and LOS for all other intersections are shown in Appendix J.

Physical traffic improvement options were evaluated for the above intersections in an attempt to identify potential mitigation for the impacts at the intersections that would experience significant delays during operation of Alternative 2; however, no feasible measures to mitigate these impacts were identified due to the constraints of the existing physical conditions. With the adoption of the *Downtown Design Guide* and new street standards, roadway widths have been set along the majority of streets in downtown. Since nearly all of downtown has been built out, any improvements involving street widening would require new right of way, which could encroach onto fully developed property, and/or would necessitate the narrowing of existing sidewalks. Therefore, street widening is not feasible and the impacts would remain significant.

Table 3.10-5. Intersection LOS Comparison (2014/2015) (No Project and Alternative 2)

#	Intersection	2014/2015 No Project		2014/2015 Alternative 2		Change in Delay	Significant Impact
		Delay[a]	LOS	Delay[a]	LOS		
AM Peak Hour							
1	Hope Street / 1st Street	32.1	C	32.1	C	0.0	NO
2	Grand Avenue / 1st Street	50.4	D	51.7	D	1.3	NO
3	Olive Street / 1st Street	16.8	B	14.8	B	-2.0	NO
4	Hill Street / 1st Street	23.9	C	35.8	D	11.9	YES
5	Broadway / 1st Street	22.4	C	22.3	C	-0.1	NO
6	Spring Street / 1st Street	19.6	B	18.6	B	-1.0	NO
7	Grand Avenue / 2nd Street	17.6	B	17.6	B	0.0	NO
8	Hill Street / 2nd Street	17.7	B	22.9	C	5.2	NO
9	Broadway / 2nd Street	26.3	C	26.1	C	-0.2	NO
10	Spring Street / 2nd Street	15.2	B	15.2	B	0.0	NO
11	Grand Avenue / 3rd Street	2.9	A	2.9	A	0.0	NO
12	Hill Street / 3rd Street	46.7	D	46.8	D	0.1	NO
13	Broadway / 3rd Street	116.6	F	115.2	F	-1.4	NO
14	Spring Street / 3rd Street	32.8	C	32.8	C	0.0	NO
15	Grand Avenue / 4th Street	4.0	A	4.0	A	0.0	NO
16	Olive Street / 4th Street	19.7	B	19.7	B	0.0	NO
17	Hill Street / 4th Street	18.3	B	18.7	B	0.4	NO
18	Broadway / 4th Street	22.0	C	22.4	C	0.4	NO
19	Spring Street / 4th Street	19.6	B	19.6	B	0.0	NO
20	Grand Avenue / 5th Street	15.9	B	15.9	B	0.0	NO
21	Olive Street / 5th Street	36.9	D	37.6	D	0.7	NO
22	Hill Street / 5th Street	8.6	A	8.7	A	0.1	NO
23	Broadway / 5th Street	9.0	A	9.7	A	0.7	NO
24	Spring Street / 5th Street	16.8	B	16.8	B	0.0	NO
25	Grand Avenue / 6th Street	19.9	B	19.9	B	0.0	NO
26	Olive Street / 6th Street	13.1	B	15.1	B	2.0	NO
27	Hill Street / 6th Street	9.3	A	8.4	A	-0.9	NO
28	Broadway / 6th Street	16.7	B	16.0	B	-0.7	NO
29	Spring Street / 6th Street	7.7	A	7.8	A	0.1	NO
30	Figueroa Street / 7th Street	34.6	C	35.7	D	1.1	NO
31	Flower Street / 7th Street	18.7	B	18.7	B	0.0	NO
32	Hope Street / 7th Street	10.0	A	10.2	B	0.2	NO
33	Grand Avenue / 7th Street	17.0	B	16.9	B	-0.1	NO
34	Olive Street / 7th Street	17.2	B	16.2	B	-1.0	NO
35	Hill Street / 7th Street	17.0	B	45.6	D	28.6	YES

#	Intersection	2014/2015 No Project		2014/2015 Alternative 2		Change in Delay	Significant Impact
		Delay[a]	LOS	Delay[a]	LOS		
36	Broadway / 7th Street	14.3	B	16.3	B	2.0	NO
37	Spring Street / 7th Street	7.7	A	7.7	A	0.0	NO
38	Figueroa Street / 8th Street	19.2	B	17.8	B	-1.4	NO
39	Hill Street / 8th Street	8.0	A	4.1	A	-3.9	NO
40	Broadway / 8th Street	21.0	C	19.8	B	-1.2	NO
41	Spring Street / 8th Street	8.6	A	8.6	A	0.0	NO
42	Figueroa Street / 9th Street	39.4	D	40.4	D	1.0	NO
43	Flower Street / 9th Street	28.7	C	29.3	C	0.6	NO
44	Hope Street / 9th Street	14.1	B	14.1	B	0.0	NO
45	Grand Avenue / 9th Street	15.5	B	15.5	B	0.0	NO
46	Olive Street / 9th Street	19.9	B	19.9	B	0.0	NO
47	Hill Street / 9th Street	21.8	C	24.5	C	2.7	NO
48	Broadway / 9th Street	6.6	A	6.3	A	-0.3	NO
49	Spring Street / 9th Street	12.9	B	12.9	B	0.0	NO
50	Figueroa Street / Olympic Boulevard	70.7	E	70.2	E	-0.5	NO
51	Flower Street / Olympic Boulevard	17.4	B	17.4	B	0.0	NO
52	Hope Street / Olympic Boulevard	19.8	B	19.8	B	0.0	NO
53	Grand Avenue / Olympic Boulevard	15.4	B	15.4	B	0.0	NO
54	Olive Street / Olympic Boulevard	14.5	B	14.6	B	0.1	NO
55	Hill Street / Olympic Boulevard	17.1	B	17.2	B	0.1	NO
56	Broadway / Olympic Boulevard	20.7	C	20.9	C	0.2	NO
57	Main Street / Olympic Boulevard	23.9	C	23.9	C	0.0	NO
58	Figueroa Street / 11th Street	19.7	B	20.0	B	0.3	NO
59	Flower Street / 11th Street	18.8	B	18.6	B	-0.2	NO
60	Hope Street / 11th Street	14.9	B	15.8	B	0.9	NO
61	Grand Avenue / 11th Street	10.1	B	9.8	A	-0.3	NO
62	Olive Street / 11th Street	17.0	B	17.4	B	0.4	NO
63	Hill Street / 11th Street	5.5	A	6.2	A	0.7	NO
64	Broadway / 11th Street	15.8	B	16.1	B	0.3	NO
65	Main Street / 11th Street	10.9	B	10.9	B	0.0	NO
PM Peak Hour							
1	Hope Street / 1st Street	32.0	C	32.4	C	0.4	NO
2	Grand Avenue / 1st Street	30.4	C	39.0	D	8.6	YES
3	Olive Street / 1st Street	30.6	C	27.0	C	-3.6	NO
4	Hill Street / 1st Street	29.3	C	34.3	C	5.0	NO
5	Broadway / 1st Street	22.8	C	21.9	C	-0.9	NO
6	Spring Street / 1st Street	19.4	B	19.6	B	0.2	NO
7	Grand Avenue / 2nd Street	28.4	C	20.0	B	-8.4	NO
8	Hill Street / 2nd Street	23.3	C	18.8	B	-4.5	NO
9	Broadway / 2nd Street	23.6	C	23.9	C	0.3	NO

#	Intersection	2014/2015 No Project		2014/2015 Alternative 2		Change in Delay	Significant Impact
		Delay[a]	LOS	Delay[a]	LOS		
10	Spring Street / 2nd Street	20.0	B	19.9	B	-0.1	NO
11	Grand Avenue / 3rd Street	18.1	B	17.2	B	-0.9	NO
12	Hill Street / 3rd Street	38.3	D	37.8	D	-0.5	NO
13	Broadway / 3rd Street	21.7	C	21.1	C	-0.6	NO
14	Spring Street / 3rd Street	24.8	C	24.8	C	0.0	NO
15	Grand Avenue / 4th Street	5.2	A	5.2	A	0.0	NO
16	Olive Street / 4th Street	19.5	B	19.5	B	0.0	NO
17	Hill Street / 4th Street	10.8	B	11.7	B	0.9	NO
18	Broadway / 4th Street	13.0	B	13.6	B	0.6	NO
19	Spring Street / 4th Street	20.5	C	20.4	C	-0.1	NO
20	Grand Avenue / 5th Street	27.0	C	26.9	C	-0.1	NO
21	Olive Street / 5th Street	44.5	D	45.0	D	0.5	NO
22	Hill Street / 5th Street	21.1	C	15.5	B	-5.6	NO
23	Broadway / 5th Street	16.4	B	17.0	B	0.6	NO
24	Spring Street / 5th Street	12.0	B	12.0	B	0.0	NO
25	Grand Avenue / 6th Street	20.7	C	20.7	C	0.0	NO
26	Olive Street / 6th Street	14.1	B	14.1	B	0.0	NO
27	Hill Street / 6th Street	8.1	A	6.1	A	-2.0	NO
28	Broadway / 6th Street	14.3	B	15.0	B	0.7	NO
29	Spring Street / 6th Street	10.4	B	10.3	B	-0.1	NO
30	Figueroa Street / 7th Street	27.2	C	25.0	C	-2.2	NO
31	Flower Street / 7th Street	16.3	B	16.4	B	0.1	NO
32	Hope Street / 7th Street	15.9	B	15.7	B	-0.2	NO
33	Grand Avenue / 7th Street	37.4	D	37.4	D	0.0	NO
34	Olive Street / 7th Street	19.2	B	19.0	B	-0.2	NO
35	Hill Street / 7th Street	28.6	C	33.9	C	5.3	NO
36	Broadway / 7th Street	16.9	B	18.9	B	2.0	NO
37	Spring Street / 7th Street	30.7	C	30.7	C	0.0	NO
38	Figueroa Street / 8th Street	42.3	D	31.6	C	-10.7	NO
39	Hill Street / 8th Street	28.9	C	27.3	C	-1.6	NO
40	Broadway / 8th Street	40.3	D	43.0	D	2.7	NO
41	Spring Street / 8th Street	22.2	C	22.2	C	0.0	NO
42	Figueroa Street / 9th Street	21.7	C	22.3	C	0.6	NO
43	Flower Street / 9th Street	24.8	C	25.2	C	0.4	NO
44	Hope Street / 9th Street	16.8	B	16.8	B	0.0	NO
45	Grand Avenue / 9th Street	16.3	B	16.3	B	0.0	NO
46	Olive Street / 9th Street	157.0	F	157.0	F	0.0	NO
47	Hill Street / 9th Street	20.4	C	20.2	C	-0.2	NO
48	Broadway / 9th Street	13.8	B	14.3	B	0.5	NO
49	Spring Street / 9th Street	29.9	C	29.9	C	0.0	NO

#	Intersection	2014/2015 No Project		2014/2015 Alternative 2		Change in Delay	Significant Impact
		Delay[a]	LOS	Delay[a]	LOS		
50	Figueroa Street / Olympic Boulevard	66.7	E	66.6	E	-0.1	NO
51	Flower Street / Olympic Boulevard	27.0	C	26.9	C	-0.1	NO
52	Hope Street / Olympic Boulevard	21.0	C	21.0	C	0.0	NO
53	Grand Avenue / Olympic Boulevard	24.1	C	24.1	C	0.0	NO
54	Olive Street / Olympic Boulevard	24.4	C	24.5	C	0.1	NO
55	Hill Street / Olympic Boulevard	25.8	C	24.8	C	-1.0	NO
56	Broadway / Olympic Boulevard	19.4	B	19.7	B	0.3	NO
57	Main Street / Olympic Boulevard	36.3	D	36.3	D	0.0	NO
58	Figueroa Street / 11th Street	26.4	C	26.4	C	0.0	NO
59	Flower Street / 11th Street	16.0	B	15.3	B	-0.7	NO
60	Hope Street / 11th Street	30.4	C	22.4	C	-8.0	NO
61	Grand Avenue / 11th Street	17.5	B	17.4	B	-0.1	NO
62	Olive Street / 11th Street	18.0	B	17.2	B	-0.8	NO
63	Hill Street / 11th Street	25.7	C	25.9	C	0.2	NO
64	Broadway / 11th Street	21.0	C	18.1	B	-2.9	NO
65	Main Street / 11th Street	15.3	B	15.3	B	0.0	NO

[a] Average vehicle delay in seconds
Source: Appendix J

Opening Year 2020 Scenario

Significant impact. During the 2020 AM peak hour under the Alternative 2 scenario, 27 of the 65 study area intersections would operate with greater delay than under the Alternative 1 (No Project) scenario. However, delays, as determined by City significance thresholds, would only be significant at the Hill Street/1st Street and Hill Street/7th Street intersections due to the addition of a protected signal phase for the streetcar to turn left from Hill Street to 1st Street and from 7th Street to Hill Street.

During the 2020 PM peak hour under the Alternative 2 scenario, 17 of the study area intersections would operate with greater delay than under the Alternative 1 (No Project) scenario. However, delays, as determined by City significance thresholds, would only be significant at the Grand Avenue/1st Street, Hill Street/1st Street, and Hill Street/7th Street intersections due to the addition of a protected signal phase for the streetcar. Table 3.10-6 identifies the intersections that would experience significant delays under the 2020 Alternative 2 scenario; delay and LOS for all other intersections are shown in Appendix J. As discussed under the 2014/2015 Alternative 2 scenario, no feasible measures to mitigate these impacts were identified.

Table 3.10-6. Intersection LOS Comparison (2020) (No Project and Alternative 2)

#	Intersection	2020 No Project		2020 Alternative 2		Change in Delay	Significant Impact
		Delay[a]	LOS	Delay[a]	LOS		
AM Peak Hour							
1	Hope Street / 1st Street	43.4	D	43.4	D	0.0	NO
2	Grand Avenue / 1st Street	61.4	E	62.0	E	0.6	NO
3	Olive Street / 1st Street	17.4	B	15.2	B	-2.2	NO
4	Hill Street / 1st Street	27.9	C	41.2	D	13.3	YES
5	Broadway / 1st Street	22.9	C	22.7	C	-0.2	NO
6	Spring Street / 1st Street	20.1	C	19.3	B	-0.8	NO
7	Grand Avenue / 2nd Street	19.7	B	19.7	B	0.0	NO
8	Hill Street / 2nd Street	20.0	B	24.8	C	4.8	NO
9	Broadway / 2nd Street	60.9	E	51.8	D	-9.1	NO
10	Spring Street / 2nd Street	15.9	B	15.7	B	-0.2	NO
11	Grand Avenue / 3rd Street	3.1	A	3.1	A	0.0	NO
12	Hill Street / 3rd Street	53.1	D	53.2	D	0.1	NO
13	Broadway / 3rd Street	121.4	F	120.1	F	-1.3	NO
14	Spring Street / 3rd Street	38.0	D	38.1	D	0.1	NO
15	Grand Avenue / 4th Street	4.0	A	4.0	A	0.0	NO
16	Olive Street / 4th Street	20.5	C	20.5	C	0.0	NO
17	Hill Street / 4th Street	18.9	B	19.2	B	0.3	NO
18	Broadway / 4th Street	22.3	C	22.8	C	0.5	NO
19	Spring Street / 4th Street	21.3	C	21.3	C	0.0	NO
20	Grand Avenue / 5th Street	16.1	B	16.1	B	0.0	NO
21	Olive Street / 5th Street	37.5	D	38.1	D	0.6	NO
22	Hill Street / 5th Street	8.8	A	8.9	A	0.1	NO
23	Broadway / 5th Street	9.0	A	9.9	A	0.9	NO
24	Spring Street / 5th Street	17.0	B	17.1	B	0.1	NO
25	Grand Avenue / 6th Street	20.3	C	20.3	C	0.0	NO
26	Olive Street / 6th Street	15.2	B	17.0	B	1.8	NO
27	Hill Street / 6th Street	9.3	A	8.4	A	-0.9	NO
28	Broadway / 6th Street	17.6	B	16.7	B	-0.9	NO
29	Spring Street / 6th Street	8.6	A	8.7	A	0.1	NO
30	Figueroa Street / 7th Street	145.3	F	143.6	F	-1.7	NO
31	Flower Street / 7th Street	19.2	B	19.3	B	0.1	NO
32	Hope Street / 7th Street	11.3	B	11.4	B	0.1	NO
33	Grand Avenue / 7th Street	17.8	B	17.8	B	0.0	NO
34	Olive Street / 7th Street	17.4	B	16.6	B	-0.8	NO
35	Hill Street / 7th Street	17.5	B	48.6	D	31.1	YES
36	Broadway / 7th Street	13.3	B	15.8	B	2.5	NO
37	Spring Street / 7th Street	7.7	A	7.7	A	0.0	NO
38	Figueroa Street / 8th Street	33.8	C	33.2	C	-0.6	NO
39	Hill Street / 8th Street	8.9	A	5.4	A	-3.5	NO
40	Broadway / 8th Street	19.8	B	18.8	B	-1.0	NO

#	Intersection	2020 No Project		2020 Alternative 2		Change in Delay	Significant Impact
		Delay[a]	LOS	Delay[a]	LOS		
41	Spring Street / 8th Street	9.3	A	9.3	A	0.0	NO
42	Figueroa Street / 9th Street	142.1	F	116.2	F	-25.9	NO
43	Flower Street / 9th Street	30.4	C	30.8	C	0.4	NO
44	Hope Street / 9th Street	14.6	B	14.6	B	0.0	NO
45	Grand Avenue / 9th Street	16.4	B	16.4	B	0.0	NO
46	Olive Street / 9th Street	27.4	C	27.4	C	0.0	NO
47	Hill Street / 9th Street	23.0	C	25.4	C	2.4	NO
48	Broadway / 9th Street	7.9	A	7.6	A	-0.3	NO
49	Spring Street / 9th Street	13.9	B	13.9	B	0.0	NO
50	Figueroa Street / Olympic Boulevard	108.2	F	108.4	F	0.2	NO
51	Flower Street / Olympic Boulevard	19.3	B	19.3	B	0.0	NO
52	Hope Street / Olympic Boulevard	23.6	C	23.6	C	0.0	NO
53	Grand Avenue / Olympic Boulevard	16.8	B	16.8	B	0.0	NO
54	Olive Street / Olympic Boulevard	17.0	B	17.1	B	0.1	NO
55	Hill Street / Olympic Boulevard	18.1	B	18.3	B	0.2	NO
56	Broadway / Olympic Boulevard	21.9	C	22.4	C	0.5	NO
57	Main Street / Olympic Boulevard	31.0	C	31.0	C	0.0	NO
58	Figueroa Street / 11th Street	114.6	F	113.4	F	-1.2	NO
59	Flower Street / 11th Street	17.4	B	17.7	B	0.3	NO
60	Hope Street / 11th Street	19.7	B	24.3	C	4.6	NO
61	Grand Avenue / 11th Street	10.4	B	10.3	B	-0.1	NO
62	Olive Street / 11th Street	18.5	B	18.9	B	0.4	NO
63	Hill Street / 11th Street	7.8	A	8.9	A	1.1	NO
64	Broadway / 11th Street	21.1	C	18.5	B	-2.6	NO
65	Main Street / 11th Street	11.8	B	11.8	B	0.0	NO
PM Peak Hour							
1	Hope Street / 1st Street	35.4	D	35.8	D	0.4	NO
2	Grand Avenue / 1st Street	34.6	C	56.8	E	22.2	YES
3	Olive Street / 1st Street	32.0	C	28.5	C	-3.5	NO
4	Hill Street / 1st Street	32.1	C	40.8	D	8.7	YES
5	Broadway / 1st Street	23.5	C	22.8	C	-0.7	NO
6	Spring Street / 1st Street	20.6	C	20.7	C	0.1	NO
7	Grand Avenue / 2nd Street	32.8	C	23.5	C	-9.3	NO
8	Hill Street / 2nd Street	32.8	C	27.9	C	-4.9	NO
9	Broadway / 2nd Street	33.1	C	30.3	C	-2.8	NO
10	Spring Street / 2nd Street	20.4	C	20.3	C	-0.1	NO
11	Grand Avenue / 3rd Street	18.8	B	17.5	B	-1.3	NO
12	Hill Street / 3rd Street	56.9	E	56.2	E	-0.7	NO
13	Broadway / 3rd Street	22.4	C	21.8	C	-0.6	NO
14	Spring Street / 3rd Street	26.3	C	26.3	C	0.0	NO
15	Grand Avenue / 4th Street	5.2	A	5.2	A	0.0	NO
16	Olive Street / 4th Street	26.6	C	26.6	C	0.0	NO

#	Intersection	2020 No Project		2020 Alternative 2		Change in Delay	Significant Impact
		Delay[a]	LOS	Delay[a]	LOS		
17	Hill Street / 4th Street	10.7	B	11.6	B	0.9	NO
18	Broadway / 4th Street	13.3	B	13.9	B	0.6	NO
19	Spring Street / 4th Street	20.8	C	20.8	C	0.0	NO
20	Grand Avenue / 5th Street	29.0	C	28.9	C	-0.1	NO
21	Olive Street / 5th Street	45.2	D	45.6	D	0.4	NO
22	Hill Street / 5th Street	21.9	C	16.1	B	-5.8	NO
23	Broadway / 5th Street	17.2	B	17.2	B	0.0	NO
24	Spring Street / 5th Street	12.8	B	12.8	B	0.0	NO
25	Grand Avenue / 6th Street	21.6	C	21.6	C	0.0	NO
26	Olive Street / 6th Street	15.1	B	15.0	B	-0.1	NO
27	Hill Street / 6th Street	8.1	A	6.1	A	-2.0	NO
28	Broadway / 6th Street	15.3	B	15.9	B	0.6	NO
29	Spring Street / 6th Street	11.6	B	11.6	B	0.0	NO
30	Figueroa Street / 7th Street	84.0	F	83.2	F	-0.8	NO
31	Flower Street / 7th Street	17.8	B	17.9	B	0.1	NO
32	Hope Street / 7th Street	16.5	B	16.3	B	-0.2	NO
33	Grand Avenue / 7th Street	56.0	E	55.6	E	-0.4	NO
34	Olive Street / 7th Street	20.3	C	20.2	C	-0.1	NO
35	Hill Street / 7th Street	35.1	D	40.3	D	5.2	YES
36	Broadway / 7th Street	19.0	B	22.8	C	3.8	NO
37	Spring Street / 7th Street	30.8	C	30.8	C	0.0	NO
38	Figueroa Street / 8th Street	148.4	F	101.5	F	-46.9	NO
39	Hill Street / 8th Street	30.3	C	27.9	C	-2.4	NO
40	Broadway / 8th Street	42.1	D	44.4	D	2.3	NO
41	Spring Street / 8th Street	23.5	C	23.5	C	0.0	NO
42	Figueroa Street / 9th Street	40.7	D	32.5	C	-8.2	NO
43	Flower Street / 9th Street	27.8	C	28.0	C	0.2	NO
44	Hope Street / 9th Street	24.4	C	24.4	C	0.0	NO
45	Grand Avenue / 9th Street	23.5	C	23.5	C	0.0	NO
46	Olive Street / 9th Street	227.4	F	227.4	F	0.0	NO
47	Hill Street / 9th Street	28.9	C	28.7	C	-0.2	NO
48	Broadway / 9th Street	16.8	B	17.1	B	0.3	NO
49	Spring Street / 9th Street	31.8	C	31.8	C	0.0	NO
50	Figueroa Street / Olympic Boulevard	86.2	F	85.6	F	-0.6	NO
51	Flower Street / Olympic Boulevard	27.5	C	27.4	C	-0.1	NO
52	Hope Street / Olympic Boulevard	25.3	C	25.3	C	0.0	NO
53	Grand Avenue / Olympic Boulevard	27.8	C	27.8	C	0.0	NO
54	Olive Street / Olympic Boulevard	36.1	D	36.0	D	-0.1	NO
55	Hill Street / Olympic Boulevard	28.1	C	26.8	C	-1.3	NO
56	Broadway / Olympic Boulevard	24.0	C	26.6	C	2.6	NO
57	Main Street / Olympic Boulevard	50.9	D	50.9	D	0.0	NO
58	Figueroa Street / 11th Street	71.8	E	71.6	E	-0.2	NO

#	Intersection	2020 No Project		2020 Alternative 2		Change in Delay	Significant Impact
		Delay[a]	LOS	Delay[a]	LOS		
59	Flower Street / 11th Street	42.6	D	40.9	D	-1.7	NO
60	Hope Street / 11th Street	38.7	D	28.1	C	-10.6	NO
61	Grand Avenue / 11th Street	18.3	B	18.5	B	0.2	NO
62	Olive Street / 11th Street	21.1	C	24.5	C	3.4	NO
63	Hill Street / 11th Street	40.3	D	37.4	D	-2.9	NO
64	Broadway / 11th Street	65.0	E	31.3	C	-33.7	NO
65	Main Street / 11th Street	14.8	B	14.8	B	0.0	NO

[a] Average vehicle delay in seconds
Source: Appendix J

Horizon Year 2040 Scenario

Significant impact. During the 2040 AM peak hour under the Alternative 2 scenario, 24 of the 65 study area intersections would operate with greater delay than under the Alternative 1 (No Project) scenario. However, delays, as determined by City significance thresholds, would only be significant at the Hill Street/1st Street and Hill Street/7th Street intersections due to the addition of a protected signal phase for the streetcar to turn left from Hill Street to 1st Street and from 7th Street to Hill Street.

During the 2040 PM peak hour under the Alternative 2 scenario, 20 of the study area intersections would operate with greater delay than under the Alternative 1 (No Project) scenario. However, delays, as determined by City significance thresholds, would only be significant at the Grand Avenue/1st Street, Hill Street/1st Street, and Hill Street/7th Street intersections due to the addition of a protected signal phase for the streetcar. Table 3.10-7 identifies the intersections that would experience significant delays under the 2040 Alternative 2 scenario; delay and LOS for all other intersections are shown in Appendix J. As discussed under the 2014/2015 Alternative 2 scenario, no feasible measures to mitigate these impacts were identified.

Table 3.10-7. Intersection LOS Comparison (2040) (No Project and Alternative 2)

#	Intersection	2040 No Project		2040 Alternative 2		Change in Delay	Significant Impact
		Delay[a]	LOS	Delay[a]	LOS		
AM Peak Hour							
1	Hope Street / 1st Street	64.0	E	64.0	E	0.0	NO
2	Grand Avenue / 1st Street	79.8	E	80.2	F	0.4	NO
3	Olive Street / 1st Street	18.0	B	15.9	B	-2.1	NO
4	Hill Street / 1st Street	38.4	D	59.1	E	20.7	YES
5	Broadway / 1st Street	25.1	C	25.0	C	-0.1	NO
6	Spring Street / 1st Street	21.4	C	20.6	C	-0.8	NO
7	Grand Avenue / 2nd Street	29.1	C	29.1	C	0.0	NO
8	Hill Street / 2nd Street	24.6	C	30.5	C	5.9	NO
9	Broadway / 2nd Street	79.3	E	74.0	E	-5.3	NO
10	Spring Street / 2nd Street	19.5	B	18.7	B	-0.8	NO

#	Intersection	2040 No Project		2040 Alternative 2		Change in Delay	Significant Impact
		Delay[a]	LOS	Delay[a]	LOS		
11	Grand Avenue / 3rd Street	3.4	A	3.4	A	0.0	NO
12	Hill Street / 3rd Street	79.1	E	78.5	E	-0.6	NO
13	Broadway / 3rd Street	157.4	F	156.3	F	-1.1	NO
14	Spring Street / 3rd Street	59.1	E	59.1	E	0.0	NO
15	Grand Avenue / 4th Street	4.3	A	4.3	A	0.0	NO
16	Olive Street / 4th Street	21.2	C	21.2	C	0.0	NO
17	Hill Street / 4th Street	20.2	C	20.6	C	0.4	NO
18	Broadway / 4th Street	23.3	C	24.6	C	1.3	NO
19	Spring Street / 4th Street	26.8	C	26.8	C	0.0	NO
20	Grand Avenue / 5th Street	17.1	B	17.2	B	0.1	NO
21	Olive Street / 5th Street	52.8	D	53.2	D	0.4	NO
22	Hill Street / 5th Street	9.8	A	9.9	A	0.1	NO
23	Broadway / 5th Street	9.7	A	10.6	B	0.9	NO
24	Spring Street / 5th Street	17.7	B	17.7	B	0.0	NO
25	Grand Avenue / 6th Street	20.9	C	21.0	C	0.1	NO
26	Olive Street / 6th Street	15.8	B	17.4	B	1.6	NO
27	Hill Street / 6th Street	9.4	A	8.5	A	-0.9	NO
28	Broadway / 6th Street	17.8	B	17.0	B	-0.8	NO
29	Spring Street / 6th Street	10.4	B	10.5	B	0.1	NO
30	Figueroa Street / 7th Street	183.9	F	181.9	F	-2.0	NO
31	Flower Street / 7th Street	20.1	C	20.2	C	0.1	NO
32	Hope Street / 7th Street	11.8	B	12.0	B	0.2	NO
33	Grand Avenue / 7th Street	19.9	B	19.9	B	0.0	NO
34	Olive Street / 7th Street	19.0	B	17.8	B	-1.2	NO
35	Hill Street / 7th Street	19.8	B	63.3	E	43.5	YES
36	Broadway / 7th Street	14.5	B	17.2	B	2.7	NO
37	Spring Street / 7th Street	8.3	A	8.3	A	0.0	NO
38	Figueroa Street / 8th Street	56.4	E	55.5	E	-0.9	NO
39	Hill Street / 8th Street	9.7	A	6.3	A	-3.4	NO
40	Broadway / 8th Street	20.4	C	19.2	B	-1.2	NO
41	Spring Street / 8th Street	9.7	A	9.7	A	0.0	NO
42	Figueroa Street / 9th Street	179.1	F	160.2	F	-18.9	NO
43	Flower Street / 9th Street	33.3	C	33.1	C	-0.2	NO
44	Hope Street / 9th Street	15.2	B	15.2	B	0.0	NO
45	Grand Avenue / 9th Street	17.4	B	17.4	B	0.0	NO
46	Olive Street / 9th Street	47.9	D	47.9	D	0.0	NO
47	Hill Street / 9th Street	23.8	C	26.1	C	2.3	NO
48	Broadway / 9th Street	9.4	A	9.0	A	-0.4	NO
49	Spring Street / 9th Street	14.7	B	14.7	B	0.0	NO
50	Figueroa Street / Olympic Boulevard	143.5	F	133.6	F	-9.9	NO

#	Intersection	2040 No Project Delay[a]	2040 No Project LOS	2040 Alternative 2 Delay[a]	2040 Alternative 2 LOS	Change in Delay	Significant Impact
51	Flower Street / Olympic Boulevard	21.9	C	21.9	C	0.0	NO
52	Hope Street / Olympic Boulevard	32.2	C	32.2	C	0.0	NO
53	Grand Avenue / Olympic Boulevard	18.0	B	18.0	B	0.0	NO
54	Olive Street / Olympic Boulevard	24.2	C	24.2	C	0.0	NO
55	Hill Street / Olympic Boulevard	18.9	B	19.0	B	0.1	NO
56	Broadway / Olympic Boulevard	24.1	C	24.9	C	0.8	NO
57	Main Street / Olympic Boulevard	38.9	D	38.9	D	0.0	NO
58	Figueroa Street / 11th Street	185.3	F	186.5	F	1.2	NO
59	Flower Street / 11th Street	17.8	B	18.1	B	0.3	NO
60	Hope Street / 11th Street	21.6	C	24.4	C	2.8	NO
61	Grand Avenue / 11th Street	10.6	B	10.5	B	-0.1	NO
62	Olive Street / 11th Street	20.5	C	20.9	C	0.4	NO
63	Hill Street / 11th Street	8.3	A	9.6	A	1.3	NO
64	Broadway / 11th Street	23.5	C	19.4	B	-4.1	NO
65	Main Street / 11th Street	12.3	B	12.3	B	0.0	NO
PM Peak Hour							
1	Hope Street / 1st Street	47.9	D	48.1	D	0.2	NO
2	Grand Avenue / 1st Street	44.7	D	73.6	E	28.9	YES
3	Olive Street / 1st Street	35.9	D	32.6	C	-3.3	NO
4	Hill Street / 1st Street	37.7	D	56.9	E	19.2	YES
5	Broadway / 1st Street	25.4	C	24.7	C	-0.7	NO
6	Spring Street / 1st Street	22.3	C	22.4	C	0.1	NO
7	Grand Avenue / 2nd Street	45.6	D	36.4	D	-9.2	NO
8	Hill Street / 2nd Street	38.0	D	32.2	C	-5.8	NO
9	Broadway / 2nd Street	43.9	D	41.4	D	-2.5	NO
10	Spring Street / 2nd Street	23.1	C	22.8	C	-0.3	NO
11	Grand Avenue / 3rd Street	19.5	B	18.2	B	-1.3	NO
12	Hill Street / 3rd Street	85.6	F	84.7	F	-0.9	NO
13	Broadway / 3rd Street	26.9	C	26.3	C	-0.6	NO
14	Spring Street / 3rd Street	30.0	C	30.0	C	0.0	NO
15	Grand Avenue / 4th Street	5.4	A	5.4	A	0.0	NO
16	Olive Street / 4th Street	42.8	D	42.8	D	0.0	NO
17	Hill Street / 4th Street	12.0	B	12.8	B	0.8	NO
18	Broadway / 4th Street	15.3	B	15.9	B	0.6	NO
19	Spring Street / 4th Street	23.0	C	23.0	C	0.0	NO
20	Grand Avenue / 5th Street	33.9	C	33.8	C	-0.1	NO

#	Intersection	2040 No Project Delay[a]	2040 No Project LOS	2040 Alternative 2 Delay[a]	2040 Alternative 2 LOS	Change in Delay	Significant Impact
21	Olive Street / 5th Street	41.1	D	41.7	D	0.6	NO
22	Hill Street / 5th Street	23.0	C	16.9	B	-6.1	NO
23	Broadway / 5th Street	17.5	B	18.0	B	0.5	NO
24	Spring Street / 5th Street	13.5	B	13.5	B	0.0	NO
25	Grand Avenue / 6th Street	22.9	C	22.9	C	0.0	NO
26	Olive Street / 6th Street	17.6	B	17.6	B	0.0	NO
27	Hill Street / 6th Street	8.7	A	6.3	A	-2.4	NO
28	Broadway / 6th Street	15.6	B	16.2	B	0.6	NO
29	Spring Street / 6th Street	12.6	B	12.5	B	-0.1	NO
30	Figueroa Street / 7th Street	115.0	F	113.9	F	-1.1	NO
31	Flower Street / 7th Street	18.9	B	19.0	B	0.1	NO
32	Hope Street / 7th Street	16.9	B	16.7	B	-0.2	NO
33	Grand Avenue / 7th Street	75.4	E	74.8	E	-0.6	NO
34	Olive Street / 7th Street	22.4	C	22.3	C	-0.1	NO
35	Hill Street / 7th Street	46.0	D	51.1	D	5.1	YES
36	Broadway / 7th Street	22.1	C	26.4	C	4.3	NO
37	Spring Street / 7th Street	31.4	C	31.3	C	-0.1	NO
38	Figueroa Street / 8th Street	184.9	F	144.7	F	-40.2	NO
39	Hill Street / 8th Street	32.1	C	29.4	C	-2.7	NO
40	Broadway / 8th Street	45.6	D	47.4	D	1.8	NO
41	Spring Street / 8th Street	24.4	C	24.4	C	0.0	NO
42	Figueroa Street / 9th Street	59.4	E	45.6	D	-13.8	NO
43	Flower Street / 9th Street	28.2	C	28.4	C	0.2	NO
44	Hope Street / 9th Street	27.0	C	27.0	C	0.0	NO
45	Grand Avenue / 9th Street	33.4	C	33.4	C	0.0	NO
46	Olive Street / 9th Street	278.6	F	278.6	F	0.0	NO
47	Hill Street / 9th Street	45.7	D	45.6	D	-0.1	NO
48	Broadway / 9th Street	18.3	B	19.0	B	0.7	NO
49	Spring Street / 9th Street	33.9	C	33.9	C	0.0	NO
50	Figueroa Street / Olympic Boulevard	111.1	F	106.5	F	-4.6	NO
51	Flower Street / Olympic Boulevard	32.1	C	32.1	C	0.0	NO
52	Hope Street / Olympic Boulevard	35.3	D	35.3	D	0.0	NO

#	Intersection	2040 No Project		2040 Alternative 2		Change in Delay	Significant Impact
		Delay[a]	LOS	Delay[a]	LOS		
53	Grand Avenue / Olympic Boulevard	34.8	C	34.8	C	0.0	NO
54	Olive Street / Olympic Boulevard	52.4	D	52.5	D	0.1	NO
55	Hill Street / Olympic Boulevard	30.7	C	29.3	C	-1.4	NO
56	Broadway / Olympic Boulevard	29.8	C	33.4	C	3.6	NO
57	Main Street / Olympic Boulevard	65.3	E	65.3	E	0.0	NO
58	Figueroa Street / 11th Street	105.1	F	104.7	F	-0.4	NO
59	Flower Street / 11th Street	39.8	D	41.5	D	1.7	NO
60	Hope Street / 11th Street	46.6	D	29.8	C	-16.8	NO
61	Grand Avenue / 11th Street	20.0	B	20.5	C	0.5	NO
62	Olive Street / 11th Street	23.6	C	29.1	C	5.5	NO
63	Hill Street / 11th Street	55.4	E	47.3	D	-8.1	NO
64	Broadway / 11th Street	93.8	F	45.1	D	-48.7	NO
65	Main Street / 11th Street	15.8	B	15.8	B	0.0	NO

[a] Average vehicle delay in seconds
Source: Appendix J

Bicycle Safety

Significant impact. Implementation of Alternative 2 would involve the installation of a fixed rail guideway within the roadway, which may present hazards for cyclists traveling parallel to, or across, the railway. Although the rail itself would be vertically flush with the road surface, there would be a horizontal gap between the track and the surrounding pavement, which is known as the "flangeway." The flangeway may be wider than the width of a typical bicycle tire, particularly the tires used on road bicycles, and therefore bicycle tires can be caught in the flangeway if the bicycle is traveling too close to and parallel, or close to parallel, to the flangeway. Bicycles crossing the rails at right angles (or similar) would not experience this problem. This "tire-in-track" issue would be a potential hazard for bicyclists using streets where: (a) the streetcar would be travelling in the right hand curb lane and (b) also would not have existing or planned separated bicycle lanes. Under Alternative 2, these streets would include Broadway (from 1st to 11th Streets) and Hill Street (from 4th to 1st Streets). In all instances in which the fixed guideway would occupy the same roadway as an existing or planned bike lane (and cyclists would be traveling parallel to the fixed guideway), designated bike lanes and the guideway would be sufficiently separated to alleviate this potential issue.

Roadways with bicycle lanes are expected to experience the highest volume of cyclists, but implementation of Alternative 2 would not prohibit cyclists from using any part of the alignment, in accordance with the *California Vehicle Code* (Article 4; par. 12202 & 21208). With the implementation of **MM-TRAF-O1**, which would include signage, pavement markings instructing cyclists how to cross tracks safely and other potential safety measures, safety hazards for cyclists would be lessened but would be considered significant.

Pedestrian Safety

Less-than-significant impact. Under Alternative 2, streetcars would operate in mixed-flow traffic, traveling in the same direction as other motor vehicles and stopping at designated stops along the route. The streetcar vehicles would operate at speeds no greater than the posted speed limits. Except for the fact that the streetcars would run on a fixed guideway and electricity would be supplied by an OCS, operation of Alternative 2 would be similar to the operation of local buses.

Platforms would be located either in the center of the roadway or adjacent to the sidewalk. The platforms would be 8 to 14 inches high to match, or nearly match, the floor height of the streetcar vehicles. Horizontal gaps between the curb and the vehicles would be small so that those with wheelchairs or other mobility devices could board without difficulty. Vehicles would be designed to be fully compliant with the *Americans with Disabilities Act* and associated regulations and guidance. Pedestrian access to the streetcar would be either from a curbside location or a median platform reached from a mid-block crosswalk. Following the construction period, there would be no impediments to pedestrians because sidewalks and crosswalks in the study area would not be obstructed. Impacts on pedestrians would be less than significant.

Vehicular Safety

Less-than-significant impact. Streetcar vehicles are unable to make lateral movements because of the fixed guideway, which reduces the ability of the operators to avoid hazards, such as vehicles, pedestrians, bicycles, or debris in the roadway. However, operating speeds would be the same as or slower than adjacent traffic, owing to the relatively short distances between stops and the presence of numerous traffic lights along the project alignment. In addition, the streetcars would have a braking system that would be capable of bringing the vehicles to a stop within distances comparable to buses. Streetcar vehicles would be equipped with audible warning devices, a train-to-wayside communication system, and signs for safety and wayfinding. Furthermore, operators would undergo extensive training and continuing evaluation to ensure the safety of streetcar operations. The City would also implement transit safety programs with the goal of raising streetcar safety awareness in the community. Consequently, risks related to vehicular collisions are not anticipated to increase under Alternative 2. Impacts related to vehicular safety would be less than significant.

Transit System Capacity

Less-than-significant impact. Operation of Alternative 2 would provide an additional public transit option in the study area, with an emphasis on short-distance trips among the various districts within downtown Los Angeles and to/from regional transit stations and stops. Underground and grade-separated services, such as the existing Red, Purple, Blue, and Expo lines, would not be affected by implementation of Alternative 2. Bus service along the project alignment would remain and would operate alongside the streetcars. Some of the streetcar platforms could be shared by Metro, LADOT DASH, and other regional buses.

Because bus service would operate within the same traffic conditions as other vehicular traffic, transit users would experience similar time delays at the intersections projected to experience significant impacts, as identified above. If any modifications to the bus operations or stop locations are needed, they would be evaluated by the appropriate transit agencies and adjusted accordingly. Impacts related to transit system capacity would be less than significant, as project operation would supplement both regional transit services and local circulators in the study area.

Parking

Implementation of Alternative 2 is expected to result in the loss of an estimated 19 on-street parking spaces. The Project aims to support non-motorized modes of travel in the area, and is consistent with LADOT's policies in developing transportation demand management measures that reduce single-occupancy vehicle (SOV) trips and encourage ridesharing and transit use (see Section 3.8). Therefore, the reduction of vehicular trips offsets the need to replace lost on-street parking spaces.

Alternative 3: 7th Street Alternative Without Grand Avenue Extension

Construction Impacts

Intersection Capacity

Less-than-significant impact with mitigation. Construction-period impacts under Alternative 3 related to intersection capacity would be similar to those identified under Alternative 2 with the exception that there would be no construction activities on Grand Avenue and on the portion of 1st Street between Hill Street and Grand Avenue. With the implementation of **MM-TRAF-C1 and MM-TRAF-C2**, impacts would be less than significant.

Bicycle, Pedestrian and Vehicular Safety

Less than significant impact with mitigation. Construction-period impacts under Alternative 3 related to safety would be similar to those identified under Alternative 2 with the exception that there would be no construction activities on Grand Avenue and on the portion of 1st Street between Hill Street and Grand Avenue. During construction, travel lanes would be kept open to the extent feasible, and the sidewalks would remain open to pedestrians, except where nearby construction activities would create potential temporary safety hazards.

Transit System Capacity

Less-than-significant impact with mitigation. Construction-period impacts under Alternative 3 related to transit system capacity would be similar to those identified under Alternative 2 with the exception that there would be no construction activities on Grand Avenue and on the portion of 1st Street between Hill Street and Grand Avenue. Delays associated with lane closures would affect public transit vehicles if services are not rerouted. This is a potentially significant impact prior to implementation of mitigation. The TMP identified in Mitigation Measure **MM-TRAF-C1** would reduce impacts to less-than-significant levels.

Parking

Construction-period temporary on-street parking losses under Alternative 3 would be similar to those identified under Alternative 2 with the exception that there would be no construction activities on Grand Avenue and on the portion of 1st Street between Hill Street and Grand Avenue.

Operational Impacts

Intersection Capacity

Existing 2014/2015 Scenario

Significant impact. Intersection capacity impacts under Alternative 3 in the 2014/2015 scenario would be similar to those that would occur under Alternative 2 with the exception that Alternative 3 would not result in a significant impact at the Hill Street/1st Street intersection or the Grand Avenue/1st Street intersection. The only remaining significant impact in the existing scenario would be at the Hill Street/7th Street intersection. Delays at the Hill Street/7th Street intersection would be identical to those identified above. Physical traffic improvement options were evaluated in an attempt to mitigate the impacts under Alternative 3, but none were found to be feasible.

Opening Year 2020 Scenario

Significant impact. Intersection capacity impacts under Alternative 3 in the 2020 scenario would be similar to those that would occur under Alternative 2 with the exception that Alternative 3 would only result in significant impacts at the Hill Street/7th Street intersection (both AM and PM peak hours). Delays at the Hill Street/7th Street intersection would be identical to those identified above. Physical traffic improvement options were evaluated in an attempt to mitigate the impacts under Alternative 3, but none were found to be feasible.

Horizon Year 2040 Scenario

Significant impact. Intersection capacity impacts under Alternative 3 in the 2040 scenario would be similar to those that would occur under Alternative 2 with the exception that Alternative 3 would only result in significant impacts at the Hill Street/7th Street intersection (both AM and PM peak hours). Delays at the Hill Street/7th Street intersection would be identical to those identified above. Physical traffic improvement options were evaluated in an attempt to mitigate the impacts under Alternative 3, but none were found to be feasible.

Bicycle, Pedestrian and Vehicular Safety

Significant impact. Impacts related to bicycle, pedestrian, and vehicular safety would be similar to those described under Alternative 2, with the exception that potential impacts related to the Grand Avenue extension would not occur. Impacts related to pedestrians and vehicles would be less than significant and impacts related to bicycle safety would be significant due to the potential for tire-in-track incidents, as discussed above. With the implementation of **MM-TRAF-O1**, impacts related to bicycle safety would remain significant.

Transit System Capacity

Less-than-significant impact. As discussed under Alternative 2, operation of Alternative 3 would provide an additional public transit option in the study area. Existing bus services in the project vicinity would experience delays at the intersections projected to experience significant impacts, as identified above, but project implementation would supplement existing transit services and would not reduce transit system capacity. Impacts would be less than significant.

Parking

Alternative 3 is expected to result in the loss of an estimated 19 on-street parking spaces, the same as Alternative 2. No spaces would be affected by the removal of the Grand Avenue extension.

Alternative 4: 9th Street Alternative With Grand Avenue Extension

Construction Impacts

Intersection Capacity

Less-than-significant impact with mitigation. Construction-period impacts under Alternative 4 related to intersection capacity would be similar to those identified under Alternative 2 with the exception that construction activities would take place along 9th Street instead of 7th Street. With the implementation of **MM-TRAF-C1 and MM-TRAF-C2**, impacts would be less than significant.

Bicycle, Pedestrian and Vehicular Safety

Less-than-significant impact with mitigation. Construction-period impacts under Alternative 4 related to safety would be similar to those identified under Alternative 2 with the exception that construction activities would take place along 9th Street instead of 7th Street. During construction, travel lanes would be kept open to the extent practicable, and the sidewalks would remain open to pedestrians. With the implementation of **MM-TRAF-C1 and MM-TRAF-C2**, impacts would be less than significant.

Transit System Capacity

Less-than-significant impact with mitigation. Construction-period impacts under Alternative 4 related to transit system capacity would be similar to those identified under Alternative 2 with the exception that construction activities would take place along 9th Street instead of 7th Street. Delays associated with lane closures would affect public transit vehicles if services are not rerouted. This is a potentially significant impact prior to implementation of mitigation. The TMP identified in Mitigation Measure **MM-TRAF-C1** would reduce impacts to less-than-significant levels.

Parking

Construction-period temporary losses of on-street parking spaces under Alternative 4 would be similar to those identified under Alternative 2 with the exception that construction activities would take place along 9th Street instead of 7th Street.

Operational Impacts

Intersection Capacity

Existing 2014/2015 Scenario

Significant impact. During the 2014/2015 AM and PM peak hours under the Alternative 4 scenario, impacts would be similar to those under Alternative 2, with the exception that the Hill Street/ 7th Street intersection would not be affected. Table 3.10-8 identifies the intersections that would experience significant delays under the 2014/2015 Alternative 4 scenario; delay and LOS for all other intersections are shown in Appendix J. Physical traffic improvement options were evaluated in an attempt to mitigate the impacts under Alternative 4, but none were found to be feasible.

Table 3.10-8. Intersection LOS Comparison (2014/2015) (No Project and Alternative 4)

#	Intersection	2014/2015 No Project		2014/2015 Alternative 4		Change in Delay	Significant Impact
		Delay[a]	LOS	Delay[a]	LOS		
AM Peak Hour							
1	Hope Street / 1st Street	32.1	C	32.1	C	0.0	NO
2	Grand Avenue / 1st Street	50.4	D	51.7	D	1.3	NO
3	Olive Street / 1st Street	16.8	B	14.8	B	-2.0	NO
4	Hill Street / 1st Street	23.9	C	35.8	D	11.9	YES
5	Broadway / 1st Street	22.4	C	22.3	C	-0.1	NO
6	Spring Street / 1st Street	19.6	B	18.6	B	-1.0	NO
7	Grand Avenue / 2nd Street	17.6	B	17.6	B	0.0	NO
8	Hill Street / 2nd Street	17.7	B	22.9	C	5.2	NO
9	Broadway / 2nd Street	26.3	C	26.1	C	-0.2	NO
10	Spring Street / 2nd Street	15.2	B	15.2	B	0.0	NO
11	Grand Avenue / 3rd Street	2.9	A	2.9	A	0.0	NO
12	Hill Street / 3rd Street	46.7	D	46.8	D	0.1	NO
13	Broadway / 3rd Street	116.6	F	115.2	F	-1.4	NO
14	Spring Street / 3rd Street	32.8	C	32.8	C	0.0	NO
15	Grand Avenue / 4th Street	4.0	A	4.0	A	0.0	NO
16	Olive Street / 4th Street	19.7	B	19.7	B	0.0	NO
17	Hill Street / 4th Street	18.3	B	18.7	B	0.4	NO
18	Broadway / 4th Street	22.0	C	22.4	C	0.4	NO
19	Spring Street / 4th Street	19.6	B	19.6	B	0.0	NO
20	Grand Avenue / 5th Street	15.9	B	15.9	B	0.0	NO
21	Olive Street / 5th Street	36.9	D	36.9	D	0.0	NO
22	Hill Street / 5th Street	8.6	A	8.8	A	0.2	NO
23	Broadway / 5th Street	9.0	A	9.7	A	0.7	NO
24	Spring Street / 5th Street	16.8	B	16.8	B	0.0	NO
25	Grand Avenue / 6th Street	19.9	B	19.9	B	0.0	NO
26	Olive Street / 6th Street	13.1	B	13.1	B	0.0	NO
27	Hill Street / 6th Street	9.3	A	9.7	A	0.4	NO
28	Broadway / 6th Street	16.7	B	15.9	B	-0.8	NO
29	Spring Street / 6th Street	7.7	A	7.8	A	0.1	NO
30	Figueroa Street / 7th Street	34.6	C	34.7	C	0.1	NO
31	Flower Street / 7th Street	18.7	B	18.7	B	0.0	NO
32	Hope Street / 7th Street	10.0	A	10.1	B	0.1	NO
33	Grand Avenue / 7th Street	17.0	B	17.0	B	0.0	NO
34	Olive Street / 7th Street	17.2	B	15.7	B	-1.5	NO
35	Hill Street / 7th Street	17.0	B	16.7	B	-0.3	NO
36	Broadway / 7th Street	14.3	B	15.6	B	1.3	NO
37	Spring Street / 7th Street	7.7	A	7.7	A	0.0	NO

#	Intersection	2014/2015 No Project		2014/2015 Alternative 4		Change in Delay	Significant Impact
		Delay[a]	LOS	Delay[a]	LOS		
38	Figueroa Street / 8th Street	19.2	B	17.5	B	-1.7	NO
39	Hill Street / 8th Street	8.0	A	7.5	A	-0.5	NO
40	Broadway / 8th Street	21.0	C	19.8	B	-1.2	NO
41	Spring Street / 8th Street	8.6	A	8.6	A	0.0	NO
42	Figueroa Street / 9th Street	39.4	D	40.0	D	0.6	NO
43	Flower Street / 9th Street	28.7	C	29.3	C	0.6	NO
44	Hope Street / 9th Street	14.1	B	14.2	B	0.1	NO
45	Grand Avenue / 9th Street	15.5	B	15.9	B	0.4	NO
46	Olive Street / 9th Street	19.9	B	18.5	B	-1.4	NO
47	Hill Street / 9th Street	21.8	C	21.8	C	0.0	NO
48	Broadway / 9th Street	6.6	A	6.0	A	-0.6	NO
49	Spring Street / 9th Street	12.9	B	12.8	B	-0.1	NO
50	Figueroa Street / Olympic Boulevard	70.7	E	70.2	E	-0.5	NO
51	Flower Street / Olympic Boulevard	17.4	B	17.4	B	0.0	NO
52	Hope Street / Olympic Boulevard	19.8	B	19.8	B	0.0	NO
53	Grand Avenue / Olympic Boulevard	15.4	B	15.4	B	0.0	NO
54	Olive Street / Olympic Boulevard	14.5	B	14.5	B	0.0	NO
55	Hill Street / Olympic Boulevard	17.1	B	17.1	B	0.0	NO
56	Broadway / Olympic Boulevard	20.7	C	21.0	C	0.3	NO
57	Main Street / Olympic Boulevard	23.9	C	23.9	C	0.0	NO
58	Figueroa Street / 11th Street	19.7	B	20.0	B	0.3	NO
59	Flower Street / 11th Street	18.8	B	18.6	B	-0.2	NO
60	Hope Street / 11th Street	14.9	B	15.8	B	0.9	NO
61	Grand Avenue / 11th Street	10.1	B	9.8	A	-0.3	NO
62	Olive Street / 11th Street	17.0	B	17.4	B	0.4	NO
63	Hill Street / 11th Street	5.5	A	6.1	A	0.6	NO
64	Broadway / 11th Street	15.8	B	16.1	B	0.3	NO
65	Main Street / 11th Street	10.9	B	10.9	B	0.0	NO
PM Peak Hour							
1	Hope Street / 1st Street	32.0	C	32.4	C	0.4	NO
2	Grand Avenue / 1st Street	30.4	C	39.0	D	8.6	YES
3	Olive Street / 1st Street	30.6	C	27.0	C	-3.6	NO
4	Hill Street / 1st Street	29.3	C	34.3	C	5.0	NO
5	Broadway / 1st Street	22.8	C	21.9	C	-0.9	NO
6	Spring Street / 1st Street	19.4	B	19.6	B	0.2	NO
7	Grand Avenue / 2nd Street	28.4	C	20.0	B	-8.4	NO
8	Hill Street / 2nd Street	23.3	C	18.8	B	-4.5	NO
9	Broadway / 2nd Street	23.6	C	23.9	C	0.3	NO
10	Spring Street / 2nd Street	20.0	B	19.9	B	-0.1	NO
11	Grand Avenue / 3rd Street	18.1	B	17.2	B	-0.9	NO

#	Intersection	2014/2015 No Project		2014/2015 Alternative 4		Change in Delay	Significant Impact
		Delay[a]	LOS	Delay[a]	LOS		
12	Hill Street / 3rd Street	38.3	D	37.8	D	-0.5	NO
13	Broadway / 3rd Street	21.7	C	21.1	C	-0.6	NO
14	Spring Street / 3rd Street	24.8	C	24.8	C	0.0	NO
15	Grand Avenue / 4th Street	5.2	A	5.2	A	0.0	NO
16	Olive Street / 4th Street	19.5	B	19.5	B	0.0	NO
17	Hill Street / 4th Street	10.8	B	11.7	B	0.9	NO
18	Broadway / 4th Street	13.0	B	13.6	B	0.6	NO
19	Spring Street / 4th Street	20.5	C	20.4	C	-0.1	NO
20	Grand Avenue / 5th Street	27.0	C	26.9	C	-0.1	NO
21	Olive Street / 5th Street	44.5	D	45.0	D	0.5	NO
22	Hill Street / 5th Street	21.1	C	16.6	B	-4.5	NO
23	Broadway / 5th Street	16.4	B	17.0	B	0.6	NO
24	Spring Street / 5th Street	12.0	B	12.0	B	0.0	NO
25	Grand Avenue / 6th Street	20.7	C	20.7	C	0.0	NO
26	Olive Street / 6th Street	14.1	B	14.1	B	0.0	NO
27	Hill Street / 6th Street	8.1	A	6.1	A	-2.0	NO
28	Broadway / 6th Street	14.3	B	14.8	B	0.5	NO
29	Spring Street / 6th Street	10.4	B	10.3	B	-0.1	NO
30	Figueroa Street / 7th Street	27.2	C	27.3	C	0.1	NO
31	Flower Street / 7th Street	16.3	B	16.3	B	0.0	NO
32	Hope Street / 7th Street	15.9	B	15.3	B	-0.6	NO
33	Grand Avenue / 7th Street	37.4	D	37.5	D	0.1	NO
34	Olive Street / 7th Street	19.2	B	24.0	C	4.8	NO
35	Hill Street / 7th Street	28.6	C	26.3	C	-2.3	NO
36	Broadway / 7th Street	16.9	B	19.2	B	2.3	NO
37	Spring Street / 7th Street	30.7	C	30.7	C	0.0	NO
38	Figueroa Street / 8th Street	42.3	D	43.1	D	0.8	NO
39	Hill Street / 8th Street	28.9	C	30.1	C	1.2	NO
40	Broadway / 8th Street	40.3	D	43.0	D	2.7	NO
41	Spring Street / 8th Street	22.2	C	22.2	C	0.0	NO
42	Figueroa Street / 9th Street	21.7	C	22.3	C	0.6	NO
43	Flower Street / 9th Street	24.8	C	25.3	C	0.5	NO
44	Hope Street / 9th Street	16.8	B	12.3	B	-4.5	NO
45	Grand Avenue / 9th Street	16.3	B	15.5	B	-0.8	NO
46	Olive Street / 9th Street	157.0	F	120.8	F	-36.2	NO
47	Hill Street / 9th Street	20.4	C	17.4	B	-3.0	NO
48	Broadway / 9th Street	13.8	B	14.1	B	0.3	NO
49	Spring Street / 9th Street	29.9	C	29.8	C	-0.1	NO
50	Figueroa Street / Olympic Boulevard	66.7	E	66.6	E	-0.1	NO
51	Flower Street / Olympic Boulevard	27.0	C	26.9	C	-0.1	NO

#	Intersection	2014/2015 No Project		2014/2015 Alternative 4		Change in Delay	Significant Impact
		Delay[a]	LOS	Delay[a]	LOS		
52	Hope Street / Olympic Boulevard	21.0	C	21.0	C	0.0	NO
53	Grand Avenue / Olympic Boulevard	24.1	C	24.1	C	0.0	NO
54	Olive Street / Olympic Boulevard	24.4	C	24.3	C	-0.1	NO
55	Hill Street / Olympic Boulevard	25.8	C	23.9	C	-1.9	NO
56	Broadway / Olympic Boulevard	19.4	B	19.8	B	0.4	NO
57	Main Street / Olympic Boulevard	36.3	D	36.3	D	0.0	NO
58	Figueroa Street / 11th Street	26.4	C	26.4	C	0.0	NO
59	Flower Street / 11th Street	16.0	B	15.3	B	-0.7	NO
60	Hope Street / 11th Street	30.4	C	22.4	C	-8.0	NO
61	Grand Avenue / 11th Street	17.5	B	17.4	B	-0.1	NO
62	Olive Street / 11th Street	18.0	B	17.2	B	-0.8	NO
63	Hill Street / 11th Street	25.7	C	25.9	C	0.2	NO
64	Broadway / 11th Street	21.0	C	18.1	B	-2.9	NO
65	Main Street / 11th Street	15.3	B	15.3	B	0.0	NO

[a] Average vehicle delay in seconds
Source: Appendix J

Opening Year 2020 Scenario

Significant impact. During the 2020 AM and PM peak hours under the Alternative 4 scenario, impacts would be similar to those under Alternative 2, with the exception that the Hill Street/ 7th Street intersection would not be affected. Table 3.10-9 identifies the intersections that would experience significant delays under the 2020 Alternative 4 scenario; delay and LOS for all other intersections are shown in Appendix J. Physical traffic improvement options were evaluated in an attempt to mitigate the impacts under Alternative 4, but none were found to be feasible.

Table 3.10-9. Intersection LOS Comparison (2020) (No Project and Alternative 4)

#	Intersection	2020 No Project		2020 Alternative 4		Change in Delay	Significant Impact
		Delay[a]	LOS	Delay[a]	LOS		
AM Peak Hour							
1	Hope Street / 1st Street	43.4	D	43.4	D	0.0	NO
2	Grand Avenue / 1st Street	61.4	E	62.0	E	0.6	NO
3	Olive Street / 1st Street	17.4	B	15.2	B	-2.2	NO
4	Hill Street / 1st Street	27.9	C	41.2	D	13.3	YES
5	Broadway / 1st Street	22.9	C	22.7	C	-0.2	NO
6	Spring Street / 1st Street	20.1	C	19.3	B	-0.8	NO
7	Grand Avenue / 2nd Street	19.7	B	19.7	B	0.0	NO
8	Hill Street / 2nd Street	20.0	B	24.8	C	4.8	NO
9	Broadway / 2nd Street	60.9	E	51.8	D	-9.1	NO
10	Spring Street / 2nd Street	15.9	B	15.7	B	-0.2	NO

#	Intersection	2020 No Project Delay[a]	2020 No Project LOS	2020 Alternative 4 Delay[a]	2020 Alternative 4 LOS	Change in Delay	Significant Impact
11	Grand Avenue / 3rd Street	3.1	A	3.1	A	0.0	NO
12	Hill Street / 3rd Street	53.1	D	53.2	D	0.1	NO
13	Broadway / 3rd Street	121.4	F	120.1	F	-1.3	NO
14	Spring Street / 3rd Street	38.0	D	38.1	D	0.1	NO
15	Grand Avenue / 4th Street	4.0	A	4.0	A	0.0	NO
16	Olive Street / 4th Street	20.5	C	20.5	C	0.0	NO
17	Hill Street / 4th Street	18.9	B	19.2	B	0.3	NO
18	Broadway / 4th Street	22.3	C	22.8	C	0.5	NO
19	Spring Street / 4th Street	21.3	C	21.3	C	0.0	NO
20	Grand Avenue / 5th Street	16.1	B	16.1	B	0.0	NO
21	Olive Street / 5th Street	37.5	D	37.5	D	0.0	NO
22	Hill Street / 5th Street	8.8	A	9.0	A	0.2	NO
23	Broadway / 5th Street	9.0	A	9.9	A	0.9	NO
24	Spring Street / 5th Street	17.0	B	17.1	B	0.1	NO
25	Grand Avenue / 6th Street	20.3	C	20.3	C	0.0	NO
26	Olive Street / 6th Street	15.2	B	15.2	B	0.0	NO
27	Hill Street / 6th Street	9.3	A	9.6	A	0.3	NO
28	Broadway / 6th Street	17.6	B	16.6	B	-1.0	NO
29	Spring Street / 6th Street	8.6	A	8.7	A	0.1	NO
30	Figueroa Street / 7th Street	145.3	F	145.3	F	0.0	NO
31	Flower Street / 7th Street	19.2	B	19.2	B	0.0	NO
32	Hope Street / 7th Street	11.3	B	11.3	B	0.0	NO
33	Grand Avenue / 7th Street	17.8	B	17.8	B	0.0	NO
34	Olive Street / 7th Street	17.4	B	15.8	B	-1.6	NO
35	Hill Street / 7th Street	17.5	B	17.3	B	-0.2	NO
36	Broadway / 7th Street	13.3	B	15.1	B	1.8	NO
37	Spring Street / 7th Street	7.7	A	7.7	A	0.0	NO
38	Figueroa Street / 8th Street	33.8	C	34.1	C	0.3	NO
39	Hill Street / 8th Street	8.9	A	8.6	A	-0.3	NO
40	Broadway / 8th Street	19.8	B	18.8	B	-1.0	NO
41	Spring Street / 8th Street	9.3	A	9.3	A	0.0	NO
42	Figueroa Street / 9th Street	142.1	F	109.7	F	-32.4	NO
43	Flower Street / 9th Street	30.4	C	31.1	C	0.7	NO
44	Hope Street / 9th Street	14.6	B	14.7	B	0.1	NO
45	Grand Avenue / 9th Street	16.4	B	16.8	B	0.4	NO
46	Olive Street / 9th Street	27.4	C	19.3	B	-8.1	NO
47	Hill Street / 9th Street	23.0	C	22.9	C	-0.1	NO
48	Broadway / 9th Street	7.9	A	7.5	A	-0.4	NO
49	Spring Street / 9th Street	13.9	B	13.9	B	0.0	NO
50	Figueroa Street / Olympic Boulevard	108.2	F	108.4	F	0.2	NO

#	Intersection	2020 No Project		2020 Alternative 4		Change in Delay	Significant Impact
		Delay[a]	LOS	Delay[a]	LOS		
51	Flower Street / Olympic Boulevard	19.3	B	19.3	B	0.0	NO
52	Hope Street / Olympic Boulevard	23.6	C	23.6	C	0.0	NO
53	Grand Avenue / Olympic Boulevard	16.8	B	16.8	B	0.0	NO
54	Olive Street / Olympic Boulevard	17.0	B	17.0	B	0.0	NO
55	Hill Street / Olympic Boulevard	18.1	B	18.1	B	0.0	NO
56	Broadway / Olympic Boulevard	21.9	C	22.5	C	0.6	NO
57	Main Street / Olympic Boulevard	31.0	C	31.0	C	0.0	NO
58	Figueroa Street / 11th Street	114.6	F	113.4	F	-1.2	NO
59	Flower Street / 11th Street	17.4	B	17.7	B	0.3	NO
60	Hope Street / 11th Street	19.7	B	24.3	C	4.6	NO
61	Grand Avenue / 11th Street	10.4	B	10.3	B	-0.1	NO
62	Olive Street / 11th Street	18.5	B	18.9	B	0.4	NO
63	Hill Street / 11th Street	7.8	A	8.7	A	0.9	NO
64	Broadway / 11th Street	21.1	C	18.5	B	-2.6	NO
65	Main Street / 11th Street	11.8	B	11.8	B	0.0	NO
PM Peak Hour							
1	Hope Street / 1st Street	35.4	D	35.8	D	0.4	NO
2	Grand Avenue / 1st Street	34.6	C	56.8	E	22.2	YES
3	Olive Street / 1st Street	32.0	C	28.5	C	-3.5	NO
4	Hill Street / 1st Street	32.1	C	40.8	D	8.7	YES
5	Broadway / 1st Street	23.5	C	22.8	C	-0.7	NO
6	Spring Street / 1st Street	20.6	C	20.7	C	0.1	NO
7	Grand Avenue / 2nd Street	32.8	C	23.5	C	-9.3	NO
8	Hill Street / 2nd Street	32.8	C	27.9	C	-4.9	NO
9	Broadway / 2nd Street	33.1	C	30.3	C	-2.8	NO
10	Spring Street / 2nd Street	20.4	C	20.3	C	-0.1	NO
11	Grand Avenue / 3rd Street	18.8	B	17.5	B	-1.3	NO
12	Hill Street / 3rd Street	56.9	E	56.2	E	-0.7	NO
13	Broadway / 3rd Street	22.4	C	21.8	C	-0.6	NO
14	Spring Street / 3rd Street	26.3	C	26.3	C	0.0	NO
15	Grand Avenue / 4th Street	5.2	A	5.2	A	0.0	NO
16	Olive Street / 4th Street	26.6	C	26.6	C	0.0	NO
17	Hill Street / 4th Street	10.7	B	11.6	B	0.9	NO
18	Broadway / 4th Street	13.3	B	13.9	B	0.6	NO
19	Spring Street / 4th Street	20.8	C	20.9	C	0.1	NO
20	Grand Avenue / 5th Street	29.0	C	28.9	C	-0.1	NO
21	Olive Street / 5th Street	45.2	D	45.7	D	0.5	NO
22	Hill Street / 5th Street	21.9	C	17.1	B	-4.8	NO
23	Broadway / 5th Street	17.2	B	17.7	B	0.5	NO
24	Spring Street / 5th Street	12.8	B	12.8	B	0.0	NO

#	Intersection	2020 No Project		2020 Alternative 4		Change in Delay	Significant Impact
		Delay[a]	LOS	Delay[a]	LOS		
25	Grand Avenue / 6th Street	21.6	C	21.6	C	0.0	NO
26	Olive Street / 6th Street	15.1	B	15.0	B	-0.1	NO
27	Hill Street / 6th Street	8.1	A	6.1	A	-2.0	NO
28	Broadway / 6th Street	15.3	B	15.8	B	0.5	NO
29	Spring Street / 6th Street	11.6	B	11.6	B	0.0	NO
30	Figueroa Street / 7th Street	84.0	F	84.0	F	0.0	NO
31	Flower Street / 7th Street	17.8	B	17.8	B	0.0	NO
32	Hope Street / 7th Street	16.5	B	15.7	B	-0.8	NO
33	Grand Avenue / 7th Street	56.0	E	56.0	E	0.0	NO
34	Olive Street / 7th Street	20.3	C	24.7	C	4.4	NO
35	Hill Street / 7th Street	35.1	D	33.0	C	-2.1	NO
36	Broadway / 7th Street	19.0	B	23.1	C	4.1	NO
37	Spring Street / 7th Street	30.8	C	30.8	C	0.0	NO
38	Figueroa Street / 8th Street	148.4	F	148.5	F	0.1	NO
39	Hill Street / 8th Street	30.3	C	30.6	C	0.3	NO
40	Broadway / 8th Street	42.1	D	44.3	D	2.2	NO
41	Spring Street / 8th Street	23.5	C	23.5	C	0.0	NO
42	Figueroa Street / 9th Street	40.7	D	31.2	C	-9.5	NO
43	Flower Street / 9th Street	27.8	C	28.1	C	0.3	NO
44	Hope Street / 9th Street	24.4	C	18.9	B	-5.5	NO
45	Grand Avenue / 9th Street	23.5	C	24.6	C	1.1	NO
46	Olive Street / 9th Street	227.4	F	180.4	F	-47.0	NO
47	Hill Street / 9th Street	28.9	C	19.1	B	-9.8	NO
48	Broadway / 9th Street	16.8	B	17.1	B	0.3	NO
49	Spring Street / 9th Street	31.8	C	31.8	C	0.0	NO
50	Figueroa Street / Olympic Boulevard	86.2	F	85.6	F	-0.6	NO
51	Flower Street / Olympic Boulevard	27.5	C	27.5	C	0.0	NO
52	Hope Street / Olympic Boulevard	25.3	C	25.3	C	0.0	NO
53	Grand Avenue / Olympic Boulevard	27.8	C	27.8	C	0.0	NO
54	Olive Street / Olympic Boulevard	36.1	D	35.9	D	-0.2	NO
55	Hill Street / Olympic Boulevard	28.1	C	25.8	C	-2.3	NO
56	Broadway / Olympic Boulevard	24.0	C	26.6	C	2.6	NO
57	Main Street / Olympic Boulevard	50.9	D	50.9	D	0.0	NO
58	Figueroa Street / 11th Street	71.8	E	71.6	E	-0.2	NO
59	Flower Street / 11th Street	42.6	D	40.9	D	-1.7	NO
60	Hope Street / 11th Street	38.7	D	28.1	C	-10.6	NO
61	Grand Avenue / 11th Street	18.3	B	18.5	B	0.2	NO
62	Olive Street / 11th Street	21.1	C	24.5	C	3.4	NO
63	Hill Street / 11th Street	40.3	D	37.4	D	-2.9	NO
64	Broadway / 11th Street	65.0	E	31.3	C	-33.7	NO

#	Intersection	2020 No Project		2020 Alternative 4		Change in Delay	Significant Impact
		Delay[a]	LOS	Delay[a]	LOS		
65	Main Street / 11th Street	14.8	B	14.8	B	0.0	NO
[a] Average vehicle delay in seconds Source: Appendix J							

Horizon Year 2040 Scenario

Significant impact. During the 2040 AM and PM peak hours under the Alternative 4 scenario, impacts would be similar to those under Alternative 2, with the exception that the Hill Street/ 7th Street intersection would not be affected. Table 3.10-10 identifies the intersections that would experience significant delays under the 2040 Alternative 4 scenario; delay and LOS for all other intersections are shown in Appendix J. Physical traffic improvement options were evaluated in an attempt to mitigate the impacts under Alternative 4, but none were found to be feasible.

Table 3.10-10. Intersection LOS Comparison (2040) (No Project and Alternative 4)

#	Intersection	2040 No Project		2040 Alternative 4		Change in Delay	Significant Impact
		Delay[a]	LOS	Delay[a]	LOS		
AM Peak Hour							
1	Hope Street / 1st Street	64.0	E	64.0	E	0.0	NO
2	Grand Avenue / 1st Street	79.8	E	80.2	F	0.4	NO
3	Olive Street / 1st Street	18.0	B	15.9	B	-2.1	NO
4	Hill Street / 1st Street	38.4	D	59.1	E	20.7	YES
5	Broadway / 1st Street	25.1	C	25.0	C	-0.1	NO
6	Spring Street / 1st Street	21.4	C	20.6	C	-0.8	NO
7	Grand Avenue / 2nd Street	29.1	C	29.1	C	0.0	NO
8	Hill Street / 2nd Street	24.6	C	30.5	C	5.9	NO
9	Broadway / 2nd Street	79.3	E	74.0	E	-5.3	NO
10	Spring Street / 2nd Street	19.5	B	18.7	B	-0.8	NO
11	Grand Avenue / 3rd Street	3.4	A	3.4	A	0.0	NO
12	Hill Street / 3rd Street	79.1	E	78.5	E	-0.6	NO
13	Broadway / 3rd Street	157.4	F	156.3	F	-1.1	NO
14	Spring Street / 3rd Street	59.1	E	59.1	E	0.0	NO
15	Grand Avenue / 4th Street	4.3	A	4.3	A	0.0	NO
16	Olive Street / 4th Street	21.2	C	21.2	C	0.0	NO
17	Hill Street / 4th Street	20.2	C	20.6	C	0.4	NO
18	Broadway / 4th Street	23.3	C	24.6	C	1.3	NO
19	Spring Street / 4th Street	26.8	C	26.8	C	0.0	NO
20	Grand Avenue / 5th Street	17.1	B	17.1	B	0.0	NO
21	Olive Street / 5th Street	52.8	D	52.8	D	0.0	NO
22	Hill Street / 5th Street	9.8	A	9.9	A	0.1	NO

#	Intersection	2040 No Project		2040 Alternative 4		Change in Delay	Significant Impact
		Delay[a]	LOS	Delay[a]	LOS		
23	Broadway / 5th Street	9.7	A	10.6	B	0.9	NO
24	Spring Street / 5th Street	17.7	B	17.7	B	0.0	NO
25	Grand Avenue / 6th Street	20.9	C	20.9	C	0.0	NO
26	Olive Street / 6th Street	15.8	B	15.8	B	0.0	NO
27	Hill Street / 6th Street	9.4	A	9.5	A	0.1	NO
28	Broadway / 6th Street	17.8	B	16.9	B	-0.9	NO
29	Spring Street / 6th Street	10.4	B	10.5	B	0.1	NO
30	Figueroa Street / 7th Street	183.9	F	183.9	F	0.0	NO
31	Flower Street / 7th Street	20.1	C	20.1	C	0.0	NO
32	Hope Street / 7th Street	11.8	B	11.9	B	0.1	NO
33	Grand Avenue / 7th Street	19.9	B	19.9	B	0.0	NO
34	Olive Street / 7th Street	19.0	B	17.3	B	-1.7	NO
35	Hill Street / 7th Street	19.8	B	19.6	B	-0.2	NO
36	Broadway / 7th Street	14.5	B	16.5	B	2.0	NO
37	Spring Street / 7th Street	8.3	A	8.3	A	0.0	NO
38	Figueroa Street / 8th Street	56.4	E	56.7	E	0.3	NO
39	Hill Street / 8th Street	9.7	A	9.4	A	-0.3	NO
40	Broadway / 8th Street	20.4	C	19.3	B	-1.1	NO
41	Spring Street / 8th Street	9.7	A	9.7	A	0.0	NO
42	Figueroa Street / 9th Street	179.1	F	153.2	F	-25.9	NO
43	Flower Street / 9th Street	33.3	C	34.2	C	0.9	NO
44	Hope Street / 9th Street	15.2	B	15.3	B	0.1	NO
45	Grand Avenue / 9th Street	17.4	B	17.9	B	0.5	NO
46	Olive Street / 9th Street	47.9	D	24.6	C	-23.3	NO
47	Hill Street / 9th Street	23.8	C	23.8	C	0.0	NO
48	Broadway / 9th Street	9.4	A	9.1	A	-0.3	NO
49	Spring Street / 9th Street	14.7	B	14.6	B	-0.1	NO
50	Figueroa Street / Olympic Boulevard	143.5	F	133.6	F	-9.9	NO
51	Flower Street / Olympic Boulevard	21.9	C	21.9	C	0.0	NO
52	Hope Street / Olympic Boulevard	32.2	C	32.2	C	0.0	NO
53	Grand Avenue / Olympic Boulevard	18.0	B	18.0	B	0.0	NO
54	Olive Street / Olympic Boulevard	24.2	C	24.2	C	0.0	NO
55	Hill Street / Olympic Boulevard	18.9	B	18.8	B	-0.1	NO
56	Broadway / Olympic Boulevard	24.1	C	25.0	C	0.9	NO
57	Main Street / Olympic Boulevard	38.9	D	38.9	D	0.0	NO
58	Figueroa Street / 11th Street	185.3	F	186.5	F	1.2	NO
59	Flower Street / 11th Street	17.8	B	18.1	B	0.3	NO
60	Hope Street / 11th Street	21.6	C	24.4	C	2.8	NO
61	Grand Avenue / 11th Street	10.6	B	10.5	B	-0.1	NO
62	Olive Street / 11th Street	20.5	C	20.9	C	0.4	NO

#	Intersection	2040 No Project		2040 Alternative 4		Change in Delay	Significant Impact
		Delay[a]	LOS	Delay[a]	LOS		
63	Hill Street / 11th Street	8.3	A	9.4	A	1.1	NO
64	Broadway / 11th Street	23.5	C	19.4	B	-4.1	NO
65	Main Street / 11th Street	12.3	B	12.3	B	0.0	NO
PM Peak Hour							
1	Hope Street / 1st Street	47.9	D	48.1	D	0.2	NO
2	Grand Avenue / 1st Street	44.7	D	73.6	E	28.9	YES
3	Olive Street / 1st Street	35.9	D	32.6	C	-3.3	NO
4	Hill Street / 1st Street	37.7	D	56.9	E	19.2	YES
5	Broadway / 1st Street	25.4	C	24.7	C	-0.7	NO
6	Spring Street / 1st Street	22.3	C	22.4	C	0.1	NO
7	Grand Avenue / 2nd Street	45.6	D	36.4	D	-9.2	NO
8	Hill Street / 2nd Street	38.0	D	32.2	C	-5.8	NO
9	Broadway / 2nd Street	43.9	D	41.4	D	-2.5	NO
10	Spring Street / 2nd Street	23.1	C	22.8	C	-0.3	NO
11	Grand Avenue / 3rd Street	19.5	B	18.2	B	-1.3	NO
12	Hill Street / 3rd Street	85.6	F	84.8	F	-0.8	NO
13	Broadway / 3rd Street	26.9	C	26.3	C	-0.6	NO
14	Spring Street / 3rd Street	30.0	C	30.0	C	0.0	NO
15	Grand Avenue / 4th Street	5.4	A	5.4	A	0.0	NO
16	Olive Street / 4th Street	42.8	D	42.8	D	0.0	NO
17	Hill Street / 4th Street	12.0	B	12.9	B	0.9	NO
18	Broadway / 4th Street	15.3	B	15.9	B	0.6	NO
19	Spring Street / 4th Street	23.0	C	23.0	C	0.0	NO
20	Grand Avenue / 5th Street	33.9	C	33.8	C	-0.1	NO
21	Olive Street / 5th Street	41.1	D	41.7	D	0.6	NO
22	Hill Street / 5th Street	23.0	C	17.8	B	-5.2	NO
23	Broadway / 5th Street	17.5	B	18.0	B	0.5	NO
24	Spring Street / 5th Street	13.5	B	13.5	B	0.0	NO
25	Grand Avenue / 6th Street	22.9	C	22.9	C	0.0	NO
26	Olive Street / 6th Street	17.6	B	17.6	B	0.0	NO
27	Hill Street / 6th Street	8.7	A	6.3	A	-2.4	NO
28	Broadway / 6th Street	15.6	B	16.0	B	0.4	NO
29	Spring Street / 6th Street	12.6	B	12.5	B	-0.1	NO
30	Figueroa Street / 7th Street	115.0	F	115.0	F	0.0	NO
31	Flower Street / 7th Street	18.9	B	18.9	B	0.0	NO
32	Hope Street / 7th Street	16.9	B	16.1	B	-0.8	NO
33	Grand Avenue / 7th Street	75.4	E	75.4	E	0.0	NO
34	Olive Street / 7th Street	22.4	C	26.0	C	3.6	NO
35	Hill Street / 7th Street	46.0	D	43.4	D	-2.6	NO
36	Broadway / 7th Street	22.1	C	26.7	C	4.6	NO

#	Intersection	2040 No Project		2040 Alternative 4		Change in Delay	Significant Impact
		Delay[a]	LOS	Delay[a]	LOS		
37	Spring Street / 7th Street	31.4	C	31.4	C	0.0	NO
38	Figueroa Street / 8th Street	184.9	F	185.0	F	0.1	NO
39	Hill Street / 8th Street	32.1	C	31.9	C	-0.2	NO
40	Broadway / 8th Street	45.6	D	47.4	D	1.8	NO
41	Spring Street / 8th Street	24.4	C	24.4	C	0.0	NO
42	Figueroa Street / 9th Street	59.4	E	40.8	D	-18.6	NO
43	Flower Street / 9th Street	28.2	C	28.5	C	0.3	NO
44	Hope Street / 9th Street	27.0	C	20.7	C	-6.3	NO
45	Grand Avenue / 9th Street	33.4	C	36.5	D	3.1	NO
46	Olive Street / 9th Street	278.6	F	233.9	F	-44.7	NO
47	Hill Street / 9th Street	45.7	D	20.4	C	-25.3	NO
48	Broadway / 9th Street	18.3	B	19.6	B	1.3	NO
49	Spring Street / 9th Street	33.9	C	33.9	C	0.0	NO
50	Figueroa Street / Olympic Boulevard	111.1	F	106.5	F	-4.6	NO
51	Flower Street / Olympic Boulevard	32.1	C	32.1	C	0.0	NO
52	Hope Street / Olympic Boulevard	35.3	D	35.3	D	0.0	NO
53	Grand Avenue / Olympic Boulevard	34.8	C	34.8	C	0.0	NO
54	Olive Street / Olympic Boulevard	52.4	D	52.4	D	0.0	NO
55	Hill Street / Olympic Boulevard	30.7	C	28.0	C	-2.7	NO
56	Broadway / Olympic Boulevard	29.8	C	33.4	C	3.6	NO
57	Main Street / Olympic Boulevard	65.3	E	65.3	E	0.0	NO
58	Figueroa Street / 11th Street	105.1	F	104.7	F	-0.4	NO
59	Flower Street / 11th Street	39.8	D	41.5	D	1.7	NO
60	Hope Street / 11th Street	46.6	D	29.8	C	-16.8	NO
61	Grand Avenue / 11th Street	20.0	B	20.5	C	0.5	NO
62	Olive Street / 11th Street	23.6	C	29.1	C	5.5	NO
63	Hill Street / 11th Street	55.4	E	47.3	D	-8.1	NO
64	Broadway / 11th Street	93.8	F	45.1	D	-48.7	NO
65	Main Street / 11th Street	15.8	B	15.8	B	0.0	NO

[a] Average vehicle delay in seconds
Source: Appendix J

Bicycle, Pedestrian and Vehicular Safety

Significant impact. Impacts related to bicycle, pedestrian, and vehicular safety would be similar to those described under Alternative 2, except that potential impacts would occur on 9th Street instead of on 7th Street. Impacts related to pedestrians and vehicles would be less than significant and impacts related to bicycle safety would be significant due to the potential for tire-in-track incidents, as discussed above. A slightly increased level of potential safety concern for bicyclists would be associated with this alternative, because there is currently not an existing or planned bicycle facility on 9th Street. With the implementation of **MM-TRAF-O1**, impacts related to bicycle safety would remain significant.

Transit System Capacity

Less-than-significant impact. As discussed under Alternative 2, operation of Alternative 4 would provide an additional public transit option in the study area. Existing bus services in the project vicinity would experience delays at the intersections projected to experience significant impacts, as identified above, but project implementation would supplement existing transit services and would not reduce transit system capacity. 9th Street has less transit service than 7th Street, and therefore impacts related to transit system capacity under Alternative 4 would be less than under Alternatives 2 and 3. Impacts would be less than significant.

Parking

Alternative 4 is expected to result in the loss of an estimated 41 on-street parking spaces. The project objectives support reductions in SOV trips, thereby decreasing the demand for parking.

Alternative 5: 9th Street Alternative Without Grand Avenue Extension

Construction Impacts

Intersection Capacity

Less-than-significant impact with mitigation. Construction-period impacts under Alternative 5 related to intersection capacity would be similar to those identified under Alternative 2 with the exception that under Alternative 5, construction activities would take place along 9th Street instead of 7th Street and would not include the Grand Avenue and 1st Street segments that would be part of the Grand Avenue extension. With the implementation of **MM-TRAF-C1 and MM-TRAF-C2**, impacts would be less than significant.

Bicycle, Pedestrian and Vehicular Safety

Less-than-significant impact with mitigation. Construction-period impacts under Alternative 5 related to safety would be similar to those identified under Alternative 2 with the exception that under Alternative 5, construction activities would take place along 9th Street instead of 7th Street and would not include the Grand Avenue and 1st Street segments that would be part of the Grand Avenue extension. During construction, travel lanes would be kept open as much as practicable, and the sidewalks would remain open to pedestrians. With the implementation of **MM-TRAF-C1 and MM-TRAF-C2**, impacts would be less than significant.

Transit System Capacity

Less-than-significant impact with mitigation. Construction-period impacts under Alternative 5 related to transit system capacity would be similar to those identified under Alternative 2 with the exception that under Alternative 5, construction activities would take place along 9th Street instead of 7th Street and would not include the Grand Avenue and 1st Street segments that would be part of the Grand Avenue extension. Delays associated with lane closures would affect public transit vehicles if services are not rerouted. This is a potentially significant impact prior to implementation of mitigation. The TMP identified in Mitigation Measure **MM-TRAF-C1** would reduce impacts to less-than-significant levels.

Parking

Construction-period temporary losses of on-street parking spaces under Alternative 5 would be similar to those identified under Alternative 2 with the exception that under Alternative 5, construction activities would take place along 9th Street instead of 7th Street and would not include the Grand Avenue and 1st Street segments that would be part of the Grand Avenue extension.

Operational Impacts

Intersection Capacity

Less-than-significant impact. As shown in the *Traffic Technical Study* (Appendix J), none of the 65 study area intersections would exhibit a significant impact under Alternative 5, in either the AM or PM peak hour for 2014/2015, 2020, and 2040 conditions. Removal of the Grand Avenue extension, under Alternative 5, would reduce delays and significant impacts at the Grand Avenue/ 1st Street and Hill Street/1st Street intersections that would occur under Alternative 4. As such, impacts related to intersection capacity under Alternative 5 would be less than significant.

Bicycle, Pedestrian and Vehicular Safety

Significant impact. Impacts related to bicycle, pedestrian, and vehicular safety would be similar to those described under Alternative 4. Impacts related to pedestrians and vehicles would be less than significant and impacts related to bicycle safety would be significant due to the potential for tire-in-track incidents, as discussed above. A slightly increased level of potential safety concern for bicyclists would be associated with this alternative, as well as Alternative 4, because there is currently not an existing or planned bicycle facility on 9th Street. With the implementation of **MM-TRAF-O1**, impacts related to bicycle safety would remain significant.

Transit System Capacity

Less-than-significant impact. As discussed under Alternative 2, operation of Alternative 5 would provide an additional public transit option in the study area. Existing bus services in the project vicinity would not experience significant delays, as no study area intersections would experience impacts. Project implementation would supplement existing transit services and would not reduce transit system capacity. Impacts would be less than significant.

Parking

Alternative 5 is expected to result in the loss of an estimated 41 on-street parking spaces, similar to Alternative 4. The project objectives support reductions in SOV trips, thereby decreasing the demand for parking. Off-street parking impacts are addressed in the MSF section below.

Traction Power Substations (TPSS)

The analysis presented in this section applies to all build alternatives.

Construction Impacts

Intersection Capacity

Less-than-significant impact with mitigation. With the exception of one location on Grand Avenue to the north of 2nd Street, all TPSS sites would be installed at off-street locations. During the installation period, worker equipment and vehicles may require temporary lane closures, resulting in temporary effects on roadway capacity, including at intersections. Impacts would be similar to those described under Alternative 2 and would be less than significant with implementation of **MM-TRAF-C1 and MM-TRAF-C2**.

Bicycle, Pedestrian and Vehicular Safety

Less-than-significant impact with mitigation. As discussed under Alternative 2, travel lanes would be kept open to the extent feasible, and the sidewalks would remain open to pedestrians. Nearly all activities related to the TPSS installation would be located off-street, but worker equipment and vehicles may require temporary lane closures. Such potential closures would be of short duration such that significant impacts related to bicycle, pedestrian, and vehicular safety would not occur. With the implementation of **MM-TRAF-C1 and MM-TRAF-C2**, impacts would be less than significant.

Transit System Capacity

Less-than-significant impact with mitigation. No additional transit passengers would result from installation of the TPSS units. Although nearly all of the construction activities would be off-street, worker equipment and vehicles may require temporary lane closures, which has the potential to affect bus operations. Potential lane closures would be of short duration and impacts on overall transit system capacity would not occur. With the implementation of **MM-TRAF-C1 and MM-TRAF-C2**, impacts would be less than significant.

Parking

Construction-period effects related to parking are discussed under Alternative 2 above. Installation of the TPSS units would not have a material effect on on-street parking.

Operational Impacts

Intersection Capacity

No impact. With the exception of the TPSS unit that would be installed on Grand Avenue (under Alternatives 2 and 4), all TPSS units would be located out of the roadway and would therefore have no effect on intersection capacity.

Bicycle, Pedestrian and Vehicular Safety

Less-than-significant impact. All TPSS units would be located out of the public right-of-way with the exception of the TPSS unit at 2nd Street and Grand Avenue. The units would be installed in a manner that would not obstruct pedestrian access. Bicycle and vehicular safety would be unaffected by placement of the TPSS units on a portion of the sidewalk.

Transit System Capacity

No impact. All TPSS units would be located out of the roadway, with the exception of the unit that would be installed on Grand Avenue (under Alternatives 2 and 4) and would therefore not have an effect on transit capacity.

Parking

All TPSS units would be located out of the roadway, with the exception of the unit that would be installed on Grand Avenue (under Alternatives 2 and 4). This unit would not affect parking as there is no parking permitted on lower Grand Avenue.

Maintenance and Storage Facility (MSF)

The analysis presented in this section applies to all build alternatives. With the exception of effects on off-street parking supply, each of the MSF sites would have similar effects related to traffic and transportation and are therefore evaluated together. Where differences in impacts would occur, those differences are discussed.

Construction Impacts

Intersection Capacity

Less-than-significant impact with mitigation. During the construction of the MSF, vehicle trips would be made for construction worker commutes, material deliveries, and off-hauling of excavated materials. Although the majority of commute trips by construction workers would be made outside of the peak commute periods, some may coincide with peak-period traffic, adding to intersection delays. As discussed under Alternative 2 above, approximately 10 to 15 trucks per day would occur as part of utility relocation, track-laying activities, and MSF excavation. Most of the activities associated with MSF construction would occur off-street, but there may be periods in which lane closures would be required to allow for the MSF to connect to the fixed guideway within the roadway. Such closures would be limited in duration and would not have a permanent effect on intersection capacity. With the implementation of **MM-TRAF-C1 and MM-TRAF-C2**, MSF construction-period impacts related to intersection capacity would be less than significant.

Bicycle, Pedestrian and Vehicular Safety

Less-than-significant impact with mitigation. As discussed under Alternative 2, travel lanes would be kept open to the extent practicable. In order to integrate the MSF with the fixed guideway, short-term sidewalk closures on the sidewalks adjacent to the MSF site may be required, which has the potential to temporarily reduce pedestrian access. However, with implementation of **MM-TRAF-C1 and MM-TRAF-C2**, MSF construction-period impacts related to project access would be less than significant.

Transit System Capacity

Less-than-significant impact. MSF construction workers would not rely heavily on transit for commute trips because their work hours would be irregular and the transport of equipment and tools to the work site would normally require the use of personal vehicles.

Parking

The MSF would require the acquisition of properties that currently serve as surface parking lots. Permanent loss of off-street parking spaces in the following estimated amounts would occur when construction commences, depending on the MSF site selected:

- 11th Street and Olive Street (West) – 350 spaces

- 11th Street and Olive Street (East) – 140 spaces
- Hill Street and 5th Street – 430 spaces
- Broadway and 2nd Street – 240 spaces

Although the loss of off-street parking may be an inconvenience to those currently using the surface parking lot that would be acquired, additional options for off-street parking exist in downtown Los Angeles and would remain available to the driving public. This loss of parking would represent a small percentage of the total parking resources in downtown Los Angeles.

Operational Impacts

Intersection Capacity

Less-than-significant impact. Trips generated by streetcar employees (i.e., operators, supervisors, maintenance staff) reporting to or working at the MSF site were not included in the estimate of additional trips because it is anticipated that their work hours would be outside the AM and PM peak hours commute periods. Normal streetcar operations would be distributed over the course of the day and would require employees to be available: (a) prior to the beginning of daily operations, (b) during off-peak periods when some vehicles would be taken out of service, and (c) at the end of daily operations. Consequently, trips generated by MSF employees at the MSF site would be distributed over the course of the day and would be minimal, if any, during the AM or PM peak hours. The number of trips generated by the employees would also be below the minimum threshold (25 vehicles per hour) set forth by the LADOT for evaluating traffic impacts.

Intersections nearby to the MSF sites would be potentially affected as follows:

The Broadway and 2nd Street MSF site is bounded by 2nd Street, 3rd Street, Broadway and Hill Street. The Broadway/2nd Street intersection is expected to experience a significant impact in both 2020 and 2040, due to growth in background traffic. The Broadway/3rd Street intersection has, and is expected to experience, a significant impact in 2015 and in both 2020 and 2040, due to existing and growth in background traffic. The 2nd/Hill Street and 3rd/Hill Street intersections are not projected to have significant impacts in 2015, 2020 or 2040.

The Hill and 5th Street MSF site is bounded by 4th, 5th Hill and Olive Streets. No significant impacts are projected at any of the four intersections.

The 11th and Olive Street (East) MSF site is bounded by 11th, 12th, Hill and Olive Streets. The 11th/ Hill Street intersection is projected to have a significant impact in 2040, due to growth in background traffic.

The 11th and Olive (West) MSF site is bounded by 11th, 12th and Olive Streets, and Grand Avenue. No significant impacts are projected at any of the four intersections.

Bicycle, Pedestrian and Vehicular Safety

Significant impact. Impacts related to bicycle, pedestrian, and vehicular safety would be similar to those described under Alternative 2. Impacts related to pedestrians and vehicles would be less than significant. Impacts related to bicycle safety would be significant due to the potential for tire-in-track incidents resulting from the fixed guideway's connection to the MSF, as discussed above. Following the implementation of **MM-TRAF-O1**, impacts related to bicycle safety would remain significant. Each of the four MSF sites would be designed to provide driveway access that would not result in an increased hazard to bicyclists. Adjacent sidewalks to each of the sites would be provided to allow for pedestrian flow. Vehicle access into and out of each of the MSF sites would be designed to LADOT requirements regarding placement of driveways within the site, proximity to the nearest intersection and permitted turning movements.

Transit System Capacity

Less-than-significant impact. Operation of the MSF would provide the supporting facilities for an additional public transit option in the study area. The implementation of the Project would supplement existing transit services and is not expected to generate additional transit demand such that transit system capacity would be exceeded.

Parking

As discussed above, MSF operation would result in the permanent loss of up to an estimated 430 off-street parking spaces. Although the loss of off-street parking may be an inconvenience to those drivers currently using the surface parking lot that would be acquired, additional options for off-street parking in downtown Los Angeles would remain available to the driving public. Once built, the facility would provide adequate parking spaces to accommodate its employees that are working on site, as required by the LAMC.

3.10.4 Mitigation Measures

3.10.4.1 Construction

Construction-related traffic impacts would be mitigated by the following measures.

MM-TRAF-C1: Develop a Construction Traffic Management Plan. The Los Angeles Department of Transportation (LADOT) shall develop and implement a Traffic Management Plan (TMP) to reduce construction-related traffic impacts on public services, community facilities, utilities, bicycle circulation, and pedestrian circulation. The TMP shall be prepared during final design for implementation during construction to mitigate the traffic impacts caused by construction of the Project. The TMP shall identify potential measures such as public awareness and changeable message signs. The TMP shall be developed in consultation with emergency service providers (i.e., local police and fire departments).

The TMP shall address construction duration and activities and include measures such as a temporary traffic signal, bicycle lane detours, or flagmen adjacent to construction activities. The TMP shall also coordinate review of construction activities along cross and parallel streets accordingly. A community affairs entity shall be established to administer a construction impact mitigation program for the benefit of the community. This program shall keep the community informed of all construction activities, with special emphasis on activities that affect the public. The program shall also set up a hotline number with a direct connection to staff familiar with the community and the Project. This entity shall offer individual consultation for residents, facilities, and businesses for remedies appropriate to the impacts encountered. The program shall identify community/business needs prior to and during the construction period through the use of surveys and community meetings. LADOT and the City of Los Angeles Department of Public Works, Bureau of Engineering (LABOE), through the construction contractor per bid specifications, shall be the responsible party. Access to businesses will be maintained during construction. Enforcement shall be achieved through the City of Los Angeles Department of Public Works Contracts Administration Bureau Construction Inspector.

MM-TRAF-C2: Construction Mitigation Monitoring. A construction mitigation program shall be established with participation of City of Los Angeles Department of Public Works, Bureau of Engineering (LABOE), Bureau of Contracts Administration, and the construction contractor. All mitigation measures shall be monitored and reported to LABOE on a quarterly basis. The Los Angeles Department of Transportation and LABOE, through the construction contractor per bid specifications, shall be the responsible party. Enforcement shall be achieved through the City of Los Angeles Department of Public Works Contracts Administration Bureau Construction Inspector.

3.10.4.2 Operation

Bicycle Safety

The following measure would reduce the impacts for the Project related to bicycle safety.

MM-TRAF-O1: Mitigation to be considered would include:

- Signage and pavement markings to alert bicyclists to the presence of streetcar tracks.
- Instruct cyclists to cross tracks perpendicular to the direction of the rails. For left-turning cyclists, pavement markings shall be provided to encourage perpendicular bicycle turning movements, such as “Copenhagen Left” turns.[4] The signage and/or pavement markings would also clearly identify the presence of the flangeway to cyclists traveling parallel to the fixed guideway.
- Alert bicyclists to use parallel bike routes (or Class II bike facilities) where available, such as Spring Street as an alternative to southbound Broadway.”
- Recommend alternate routes.

Intersection Capacity

With regard to mitigation for impacts on study area intersections, with the adoption of the *Downtown Design Guide* and new street standards, the roadway width has been set along the majority of streets in downtown. Therefore, street widening is not feasible either due to these new standards or because it was not considered practical or desirable to widen the street at the expense of reduced sidewalk widths. Therefore, no feasible measures would mitigate significant impacts on study area intersections. Significant and unavoidable intersection impacts would occur at each of the intersections identified below.

[4] A Copenhagen Left turn is a two-staged left turn wherein the bicyclist crosses the intersection ahead, stops on the opposite side in the direction he/she wishes to turn, awaits a green light, and crosses the intersection to complete the left turn.

Table 3.10-11. Significant and Unavoidable Intersection Impacts

Alternative	Grand Avenue/ 1st Street	Hill Street/ 1st Street	Hill Street/7th Street
Alternative 2			
Existing (2014/2015)	PM Peak (LOS D)	AM Peak (LOS D)	AM Peak (LOS D)
Opening Year (2020)	PM Peak (LOS E)	AM/PM Peak (LOS D)	AM/PM Peak (LOS D)
Horizon Year (2040)	PM Peak (LOS E)	AM/PM Peak (LOS E)	AM Peak (LOS E); PM Peak (LOS D)
Alternative 3			
Existing (2014/2015)	LTS	LTS	AM Peak (LOS D)
Opening Year (2020)	LTS	LTS	AM/PM Peak (LOS D)
Horizon Year (2040)	LTS	LTS	AM Peak (LOS E); PM Peak (LOS D)
Alternative 4			
Existing (2014/2015)	PM Peak (LOS D)	AM Peak (LOS D)	LTS
Opening Year (2020)	AM Peak (LOS E)	AM/PM Peak (LOS D)	LTS
Horizon Year (2040)	AM Peak (LOS E)	AM/PM Peak (LOS E)	LTS
Alternative 5			
Existing (2014/2015)	LTS	LTS	LTS
Opening Year (2020)	LTS	LTS	LTS
Horizon Year (2040)	LTS	LTS	LTS
LTS: Less-than-significant impact Source: Appendix J			

3.10.5 Cumulative Impacts

The selection of study area intersections was based on intersections where the streetcar would pass through, as well as nearby intersections that would account for potential traffic diversions that could occur due to reductions in the roadway capacity along the project alignment as a result of the *Broadway Streetscape Master Plan*, the *Figueroa Corridor Streetscape Project*, and new bicycle infrastructure contained in *Mobility Plan 2035.* In addition to these related roadway projects, the traffic model accounted for all projects listed in Table 2-5 of Chapter 2, *Project Description*. Based on this information, the study area for the purpose of cumulative impacts is the same study area as that analyzed in the *Transportation Technical Study* (Appendix J).

3.10.5.1 Construction

As discussed in Section 3.10.3.3, project-level impacts during construction activities would result in lane closures, commute trips by construction workers, and material hauling trips. Because other projects in the vicinity of the proposed Project could be under construction or in operation as the proposed Project is being constructed, the impacts of related projects could also occur in the project vicinity. However, the linear components of the Project would be short term for each affected roadway segment. MSF construction and TPSS installation would also be site specific and would require little in the way of lane closures or other traffic impacts. Furthermore, the implementation of **MM-TRAF-C1 and MM-TRAF-C2** would reduce Project-level impacts to less-than-significant levels. As such, the Project's contribution to cumulatively considerable construction-period impacts would not be significant.

3.10.5.2 Intersection Capacity

As discussed in Section 3.10.3.3, there would be significant unavoidable impacts associated with implementation of the Project at as many as three intersections for Alternatives 2, 3, and 4. Therefore, the Project would result in a cumulatively considerable contribution to a significant cumulative impact at these locations for these alternatives. For all other intersections, however, impacts of the Project in combination with related projects identified in Table 2-5 would not be cumulatively considerable. Because no significant unavoidable impacts related to intersection capacity would occur under Alternative 5, no cumulatively considerable effects would occur under Alternative 5.

3.10.5.3 Bicycle, Pedestrian, and Vehicular Safety

In terms of pedestrian circulation and safety, the Project would be consistent with the City's *Broadway Streetscape Master Plan*, the *Downtown Street Standards*, and the *Downtown Design Guide* because they would not conflict with recommended sidewalk widths or interfere with existing pedestrian patterns. Because these plans were formulated to ensure a safe pedestrian environment in the study area, impacts of the Project would not be cumulatively considerable.

Bicycle infrastructure in the study area is governed by the *City of Los Angeles 2010 Bicycle Plan*, a component of *Mobility Plan 2035*. As discussed above, the Project could result in tire-in-track accidents for cyclists who travel parallel or close to parallel to the fixed guideway. With the implementation of pavement markings and signage identified in **MM-TRAF-O1**, the risks would be reduced, but would remain potentially significant. Because significant project-level impacts related to bicycle safety have been identified, the Project would also result in cumulatively considerable impacts.

Increased delays relative to existing conditions would have implications with respect to response times to Project-related emergencies. Because of the increase in the number of intersections operating at LOS E or F during peak hours attributable to the Project, related projects, and growth, the effects on emergency service providers would be cumulatively considerable. However, the contribution from implementation of the Project would be minor, as evidenced by comparing traffic operations under the Project with the No Project Alternative. Although delays would occur as a result of implementation of any of the project alternatives, the low number of substantially affected intersections and the grid layout of downtown roadways would allow emergency service providers to reach emergency sites from alternative routes and avoid intersections with long delays. Therefore, the Project would not result in a cumulatively considerable contribution to cumulative effects related to emergency services.

3.10.5.4 Transit System Capacity

Implementation of the proposed Project, in combination with the projects identified in Table 2-5, is likely to result in additional demand for transit services in the project area, as people would shift from other modes of transportation. Given that the Project would create additional transit system capacity and that additional projects, such as the Regional Connector project, are also increasing transit system capacity in the project vicinity, impacts would not be cumulatively considerable.

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Chapter 4
Alternatives to the Project

4.1 Introduction

CEQA requires an EIR to describe a range of reasonable alternatives to a project, or an alternative location of a project, that could feasibly avoid or lessen any significant environmental impacts while substantially attaining the basic objectives of the project. An EIR should also evaluate the comparative merits of the alternatives.

This chapter discusses the process that was followed to consider alternatives. It documents those alternatives that were considered but eliminated from further consideration as well as the reasons for their dismissal. It also discusses the alternatives that have been carried forward for analysis and the reasons for their retention.

Key provisions of the State CEQA Guidelines (Section 15126.6) pertaining to the alternatives analysis are summarized below.

- The discussion of alternatives should focus on alternatives to a project or its location that are capable of avoiding or substantially lessening any significant effects of the project, even if the alternatives impede, to some degree, attainment of the project objectives or are more costly.
- The No Project Alternative must be evaluated along with its impact. The No Project analysis should discuss existing conditions as well as the reasonably expected outcome in the foreseeable future from not approving the project, based on current plans and consistent with available infrastructure and community services.
- The range of alternatives required in an EIR is governed by a "rule of reason"; therefore, the EIR need evaluate only those alternatives that are necessary to permit a reasoned choice.
- An EIR need not consider an alternative with effects that cannot be reasonably ascertained, an implementation plan that is remote and speculative, or a design that would not achieve the basic project objectives.

The range of feasible alternatives should be selected and discussed in a manner that fosters meaningful public participation and informed decision-making. Among the factors that may be taken into account when considering the feasibility of alternatives, as described in State CEQA Guidelines Section 15126.6(f)(1), are environmental impacts, site suitability, economic viability, availability of infrastructure, general plan consistency, regulatory limitations, jurisdictional boundaries, and whether the proponent could reasonably acquire, control, or otherwise have access to the alternative site.

4.2 Project Objectives

As presented in Chapter 2, *Project Description*, the Project has the following objectives.

- **Land Use and Economic Development: Support the growth and revitalization of downtown Los Angeles, including its historic districts.**
    - Revitalize geographically isolated, underutilized areas.
    - Promote smart, sustainable growth that helps to reduce sprawl.
    - Implement transit policies that support the City's General Plan.
    - Integrate transit and land use within the study area.
    - Encourage historic restoration and transit-oriented development.
    - Strengthen downtown's economic competitiveness.
    - Foster a more livable downtown.
    - Create a distinctive tourist draw that would expand the economic base of the City and maximize tax revenue.
    - Improve transit access to existing and planned developments.
    - Improve interconnectivity between residential areas, employment and activity centers and retail services.
    - Help to create a vibrant outdoor ambience that would attract residents and visitors to the streets of downtown Los Angeles.
- **Mobility: Enhance mobility and transit circulation in downtown Los Angeles.**
    - Connect major districts, destinations, and activity centers.
    - Improve transit coverage and circulation.
    - Provide easy to use, localized, high-frequency service.
    - Serve transit-dependent populations.
    - Improve transit accessibility and operational efficiency.
- **Congestion Relief: Create pedestrian-oriented amenities interconnected with sidewalks and public space that will enhance downtown Los Angeles' distinct identity.**
    - Reduce dependency on automobiles by implementing transit services and improving walkability.
    - Increase mobility and accessibility for visitors and people who live and work in downtown.
- **Environmental Benefits: Protect and improve aspects of the downtown core.**
    - Preserve the area's historic significance and revitalize the Historic Core.
    - Reduce automobile trips within downtown.

4.3 Alternatives Considered but Eliminated from Further Discussion

Section 15126.6(c) of the State CEQA Guidelines states that alternatives may be eliminated from detailed consideration in the EIR if they fail to meet most of the project objectives, are infeasible, or are unable to avoid any significant environmental effects. The sections that follow provide the following information: (1) a summary description of a formal Alternatives Analysis process that was carried out, (2) an identification of the alternatives that were eliminated from further consideration as a result of that process, (3) summary of an alternative mode that was considered and the reasons for it not being considered further, (4) a discussion of alternatives that were raised during the scoping process and their disposition, and (5) a discussion of recently considered modifications to the project alternatives.

4.3.1 Alternatives Analysis

A formal Alternatives Analysis process (Metro 2012) was conducted to develop and evaluate potential alternatives for restoring historic streetcar service in downtown Los Angeles. This process was carried out with the cooperation of the Community Redevelopment Agency of the City of Los Angeles (CRA/LA), Los Angeles County Metropolitan Transportation Authority (Metro), Los Angeles Streetcar, Inc. (LASI), and the Federal Transit Administration (FTA). The Alternatives Analysis was the culmination of several planning and feasibility studies that were conducted between 1995 and 2010; it was completed in 2012.

The Alternatives Analysis process developed a range of routing and operating options and evaluated them using a two-step screening process. The initial screening was a conceptual-level evaluation of the advantages and disadvantages of the alternatives considered. It included an analysis of alternatives that were developed cooperatively by Metro, CRA/LA, the “Bringing Back Broadway” initiative, and LASI. The purpose of the initial screening was to narrow down the range of alternatives considered for more detailed analysis in a subsequent final screening phase. The initial screening evaluation criteria were qualitative in nature and sought to eliminate alternatives having “fatal flaws” or that did not meet project goals or have public support.

The final screening evaluation criteria were more quantitative than those used in the initial screening and addressed additional topics such as ridership potential, operational characteristics, costs, system configuration, design issues, environmental issues, land use and economic development opportunities, and community support. Below is a summary of the alternatives that were considered in the Alternatives Analysis and the results of the initial and final screening evaluations.

4.3.1.1 Initial Screening of Alternatives

The alternatives were initially screened according to evaluation criteria developed by CRA/LA and Metro. The evaluation criteria correlated to the Project’s first two objectives stated above, which were originally generated during public workshops, meetings, and open houses intended to reflect input from public agencies, community groups, and stakeholders.

To evaluate the range of alternatives and reduce the number of potential combinations of alternatives, the initial screening alternatives were divided into three geographic segments, within which a range of alternative alignments was analyzed. Use of Broadway in the southbound direction was common to each initial screening alternative. The following initial screening evaluation criteria were developed and a rating system of High (1), best score; Medium (2); or Low (3), least score, was used for each criterion:

- Length (shorter alternatives received higher ratings due to reduced capital costs).
- Connectivity among downtown's various districts.
- Missed destinations (alternatives not reaching major destinations received lower ratings).
- Required connections (alternatives that required transfers, walking, or stairs/escalators to reach major destinations received lower ratings).
- Street grade (alternatives that use streets with a grade above 9 percent received lower ratings).
- Out of direction travel (travel that increases time required).
- Ridership potential.
- Capital costs.
- Operation and maintenance costs.
- Transit system integration (how well each alternative would connect to the existing transit system).
- Expandability (flexibility for future expansion of the streetcar service).
- Historic integrity (using streets that historically had streetcar service).
- Traffic delay.
- Travel and parking (alternatives requiring elimination of travel and/or parking lanes received lower ratings).
- Risks (major risks such as schedule, design, or construction).
- Economic development (ability of an alternative to serve areas with economic development potential).
- Local funding potential.
- Consistency with adopted plans and guidelines.
- Community support.
- Fatal flaws.

Table 4-1 provides the range of alternatives analyzed in the initial screening analysis and the individual scores resulting from the analysis.

Table 4-1. Initial Alternatives Screening by Segment

Alternative	Description	Details	Overall Score[a]
Segment A – North of 5th Street			
A1	Northbound on Hill Street between 5th Street and 1st Street, westbound on 1st Street between Hill Street and Hope Street, two-way on Hope Street between 1st Street and Hope Place, and eastbound on 1st Street between Hope Street and Broadway.	• Uses Broadway/Hill Street couplet. • Uses 1st Street and Hope Street to access Bunker Hill. • Two-way segment on Hope Street between 1st Street and Hope Street could be single track. • Serves Bunker Hill. • Does not serve Union Station.	34
A2	Northbound on Hill Street between 5th Street and 1st Street, westbound on 1st Street between Hill Street and Grand Avenue, southbound on Grand Avenue between 1st Street and 3rd Street, westbound on 3rd Street between Grand Avenue and Hope Street, northbound on Hope Street between 3rd Street and 1st Street, and eastbound on 1st Street between Hope Street and Broadway.	• Uses Broadway/Hill Street couplet. • Uses 1st Street and a Grand Avenue/3rd Street/Hope Street clockwise loop to access Bunker Hill. • Serves Bunker Hill. • Does not serve Union Station.	34
A3	Northbound on Olive Street between 5th Street and General Thad Kosciuszko (GTK) Way, westbound on GTK Way between Olive Street and Hope Street, northbound on Hope Street between GTK Way and 1st Street, and eastbound on 1st Street between Hope Street and Broadway.	• Uses Olive Street and GTK Way to access Bunker Hill. • GTK Way passes under Grand Avenue bridge deck. • Serves Bunker Hill. • Does not serve Union Station. • Forms a continuous loop.	49
A4	Westbound on 5th Street between Hill Street or Olive Street to Grand Avenue, northbound on Grand Avenue between 5th Street and 1st Street, and eastbound on 1st Street between Grand Avenue and Broadway.	• Uses Grand Avenue (14% grade). • Requires custom vehicle technology and operation because of 14% grade on Grand Avenue. • Risk regarding grade (feasibility cannot be determined until final design). • Creates one-way clockwise loop. • Serves Bunker Hill. • Does not serve Union Station. • Forms a continuous loop.	32
A5	Northbound on Hill Street between 5th Street and Temple Street, westbound on Temple Street between Hill Street and Grand Avenue, two-way on Grand Avenue between Temple Street and 1st Street, eastbound on Temple Street between Grand Avenue and	• Uses Broadway/Hill Street couplet. • Uses Temple Street and Grand Avenue to access Bunker Hill. • Two-way segment on Grand Avenue between Temple Street and 1st Street could be single track. • Serves Bunker Hill.	34

Alternative	Description	Details	Overall Score[a]
	Broadway, and southbound on Broadway between Temple Street and 1st Street.	• Does not serve Union Station.	
A6	Northbound on Hill Street between 5th Street and 1st Street, westbound on 1st Street between Hill Street and Grand Avenue, two-way on Grand Avenue between 1st Street and the Grand Avenue bridge deck north of 2nd Street, and eastbound on 1st Street between Grand Avenue and Broadway.	• Uses Broadway/Hill Street couplet. • Uses 1st Street and Grand Avenue to access Bunker Hill. • Two-way segment on Grand Avenue could be single track, as could the track on 1st Street. • Serves Bunker Hill. • Does not serve Union Station.	25
A7	Eastbound on 1st Street between Hill Street and Main Street, northbound on Main Street between 1st Street and Paseo de la Plaza, southbound on Los Angeles Street between Paseo de la Plaza and 1st Street, and westbound on 1st Street between Los Angeles Street and Broadway.	• Uses Broadway/Hill Street couplet. • Uses Main Street/Los Angeles Street couplet to access Union Station. • Crosses US 101. • Serves Union Station. • Does not serve Bunker Hill. • Forms a continuous loop.	28
Segment B – Between 5th and 9th Streets			
B1	Southbound on Broadway, northbound on Hill Street between 9th Street and 5th Street.	• Uses Broadway/Hill Street couplet. • Uses peak-hour travel lane/off-peak parking lane on Hill Street (one or the other would need to be eliminated because they currently share the same travel lane).	23
B2	Southbound on Broadway, northbound on Olive Street between 9th Street and 5th Street.	• Uses Broadway/Olive Street couplet.	25
Segment C – South of 9th Street			
C1	Southbound on Broadway, westbound on Pico Boulevard, northbound on Figueroa Street, eastbound on 9th Street.	• Can use Broadway/Hill Street or Broadway/Olive Street couplet. • Crosses Blue Line at grade at Pico Boulevard.	30
C2	Southbound on Broadway, westbound on Pico Boulevard, northbound on Hope Street, westbound on 11th Street, northbound on Figueroa Street, eastbound on 9th Street.	• Can use Broadway/Hill Street or Broadway/Olive Street couplet. • Does not cross Blue Line at grade.	32
C3	Southbound on Broadway, westbound on 11th Street, northbound on Figueroa Street, eastbound on 9th Street.	• Can use Broadway/Hill Street or Broadway/Olive Street couplet. • Does not cross Blue Line at grade.	27

Source: Metro 2012.
[a] Lower scores denote better alternative performance.

The initial screening evaluation yielded the following recommendations: (1) within Segment A, Alternatives A4, A6, and A7 should be advanced; (2) both Segment B alternatives should be advanced; and (3) within Segment C, Alternatives C1 and C3 should be advanced, with Alternative C2 being reserved as a variation of Alternative C1.

4.3.1.2 Final Screening of Alternatives

Prior to moving forward with the final screening, the alternatives were refined, added, or replaced, as follows:

- Alternative A4 was modified to accommodate the 14 percent grade on Grand Avenue by including an elevated bridge structure, starting north of 6th Street and crossing over 5th Street. To accommodate this change, a new Alternative B3 was added to connect Alternative A4 with Segments B and C.
- Alternative C1 was ultimately replaced by C2 to avoid the at-grade Metro Blue Line/Expo Line crossing on Pico Boulevard.
- Alternative B4 was added, which would use Figueroa Street between 7th Street and 9th Street and Hill Street between 5th Street and 7th Street. This addition was made in response to public and stakeholder requests for the Project to include an alternative that better served the Financial Core and the 7th Street/Metro Center station.

With the changes noted above, the segments were then combined into seven individual alternatives, which were evaluated in the final screening analysis, as follows (see Table 4-1, above, and Figures 4a through 4g):

- Figure 4a: Alternative 1
- Figure 4b: Alternative 2
- Figure 4c: Alternative 3
- Figure 4d: Alternative 4
- Figure 4e: Alternative 5
- Figure 4f: Alternative 6
- Figure 4g: Alternative 7

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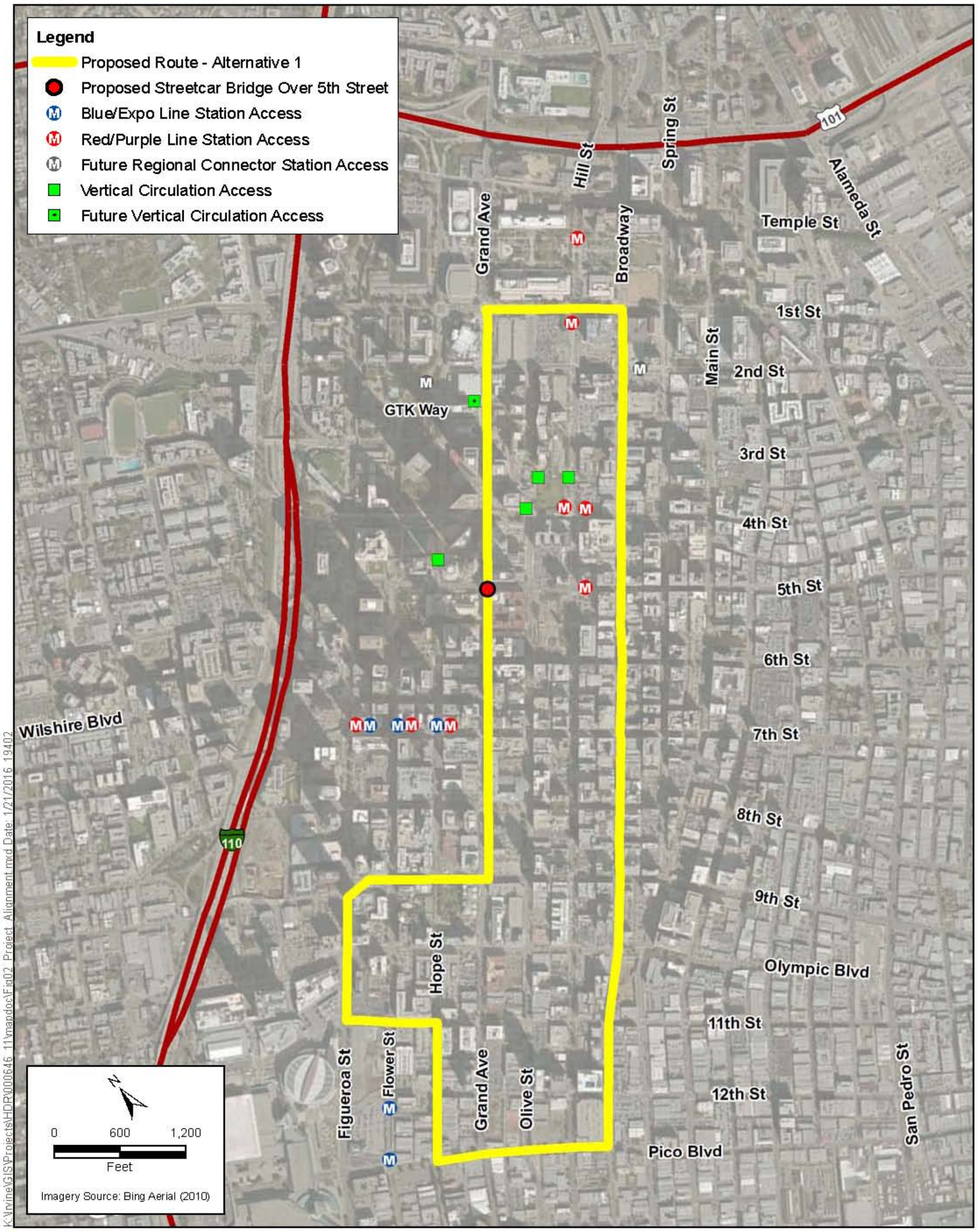

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Figure 4a
Alternative 1
Restoration of Historic Streetcar Service in Downtown Los Angeles

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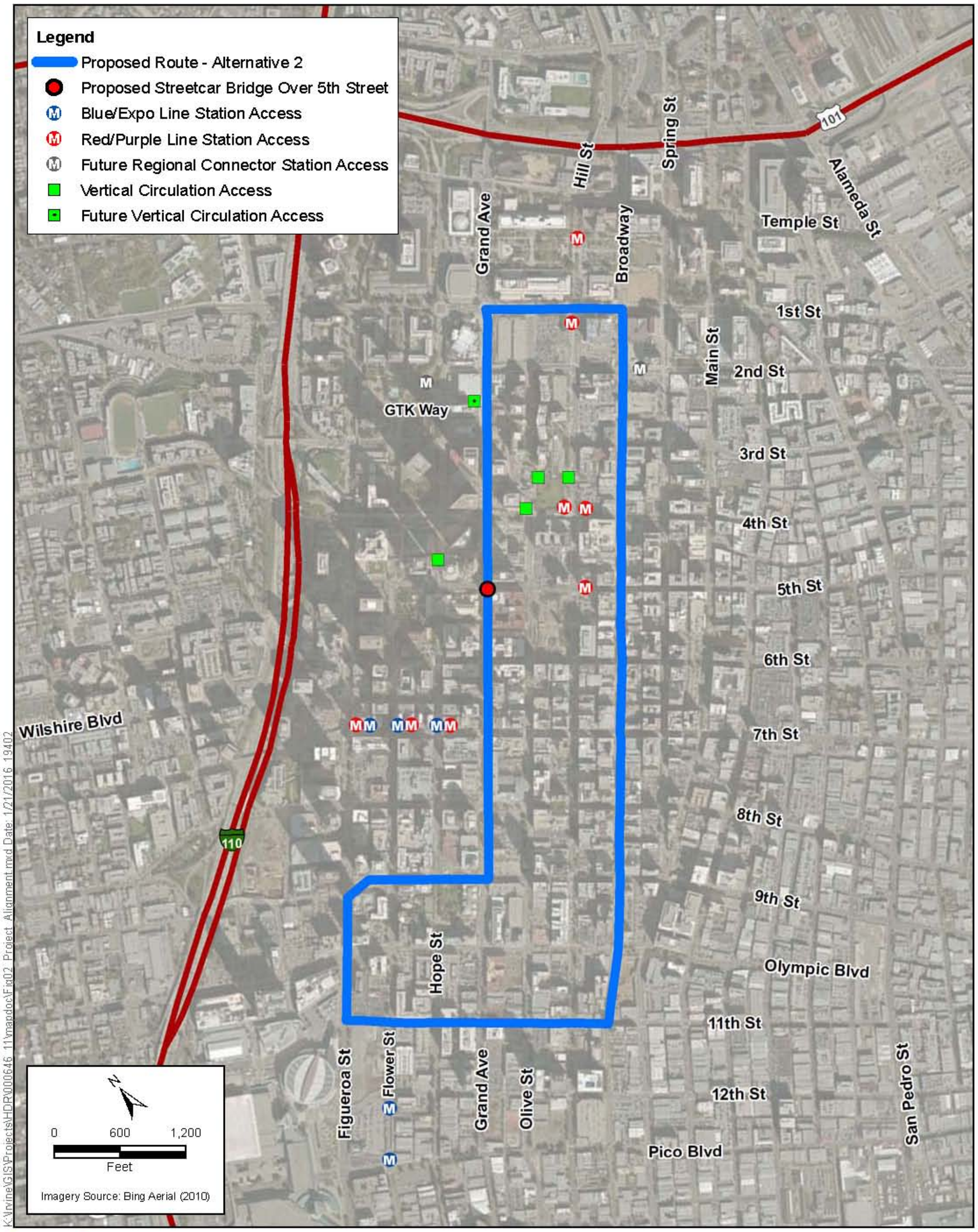

Figure 4b
Alternative 2
Restoration of Historic Streetcar Service in Downtown Los Angeles

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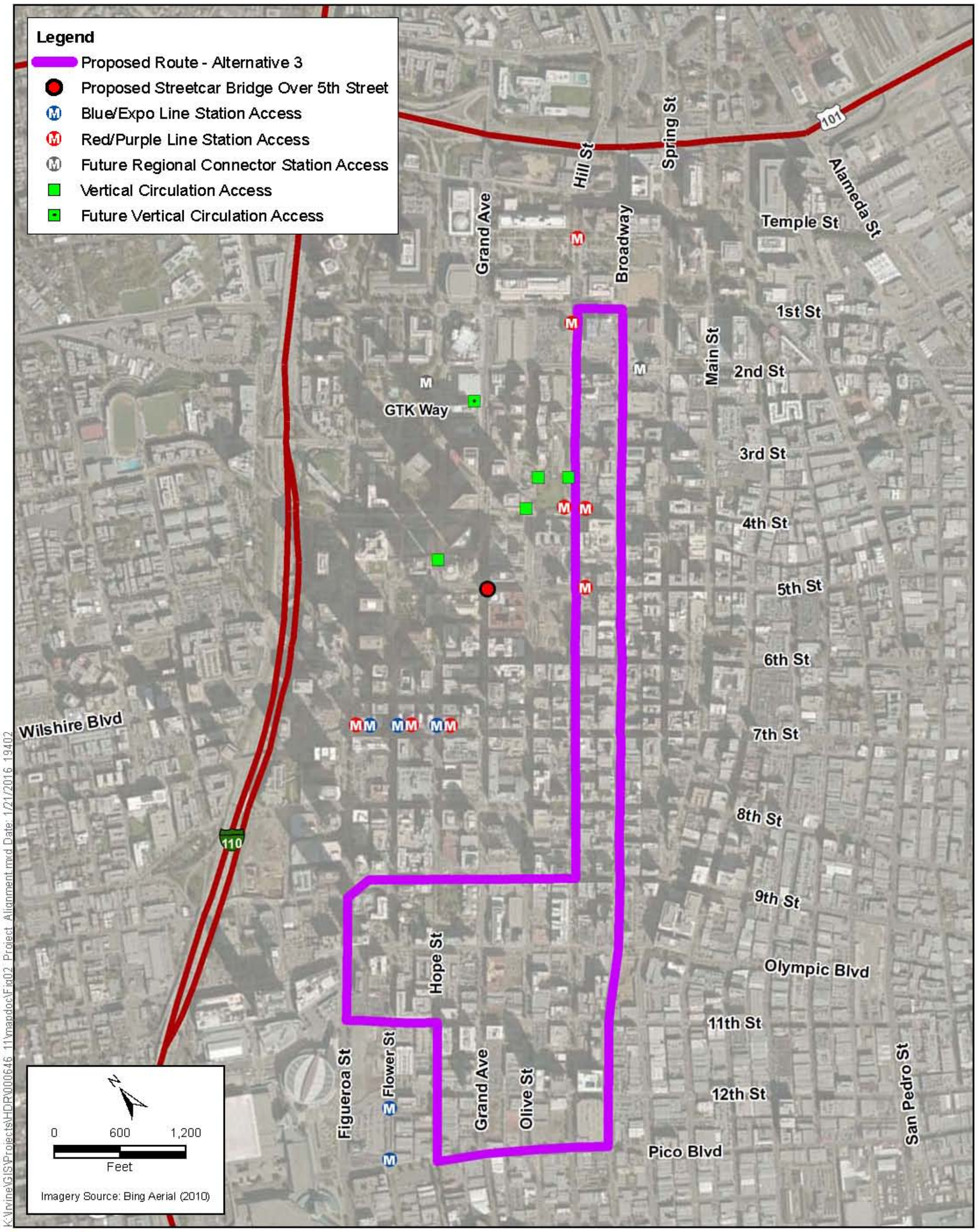

Figure 4c
Alternative 3
Restoration of Historic Streetcar Service in Downtown Los Angeles

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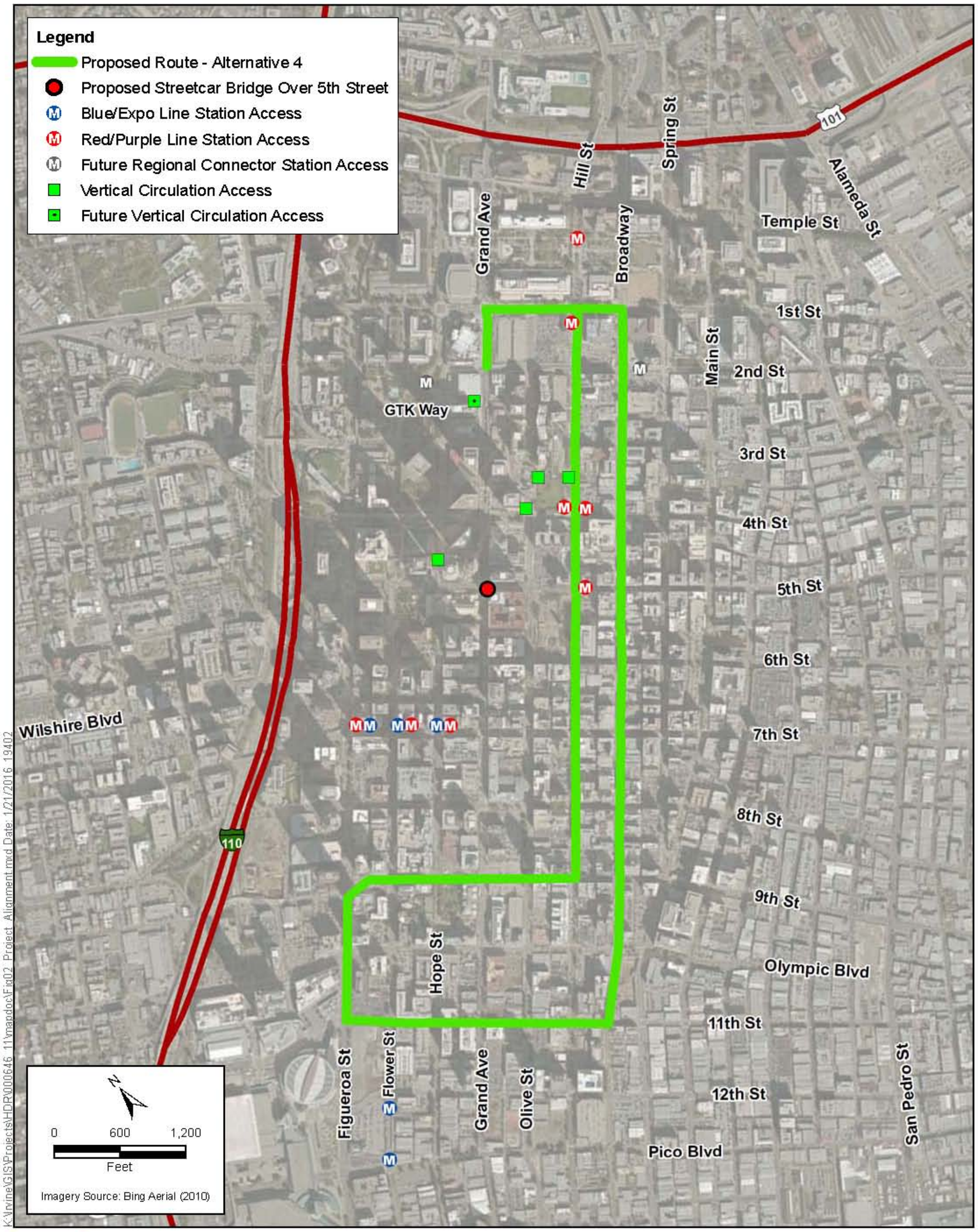

Figure 4d
Alternative 4
Restoration of Historic Streetcar Service in Downtown Los Angeles

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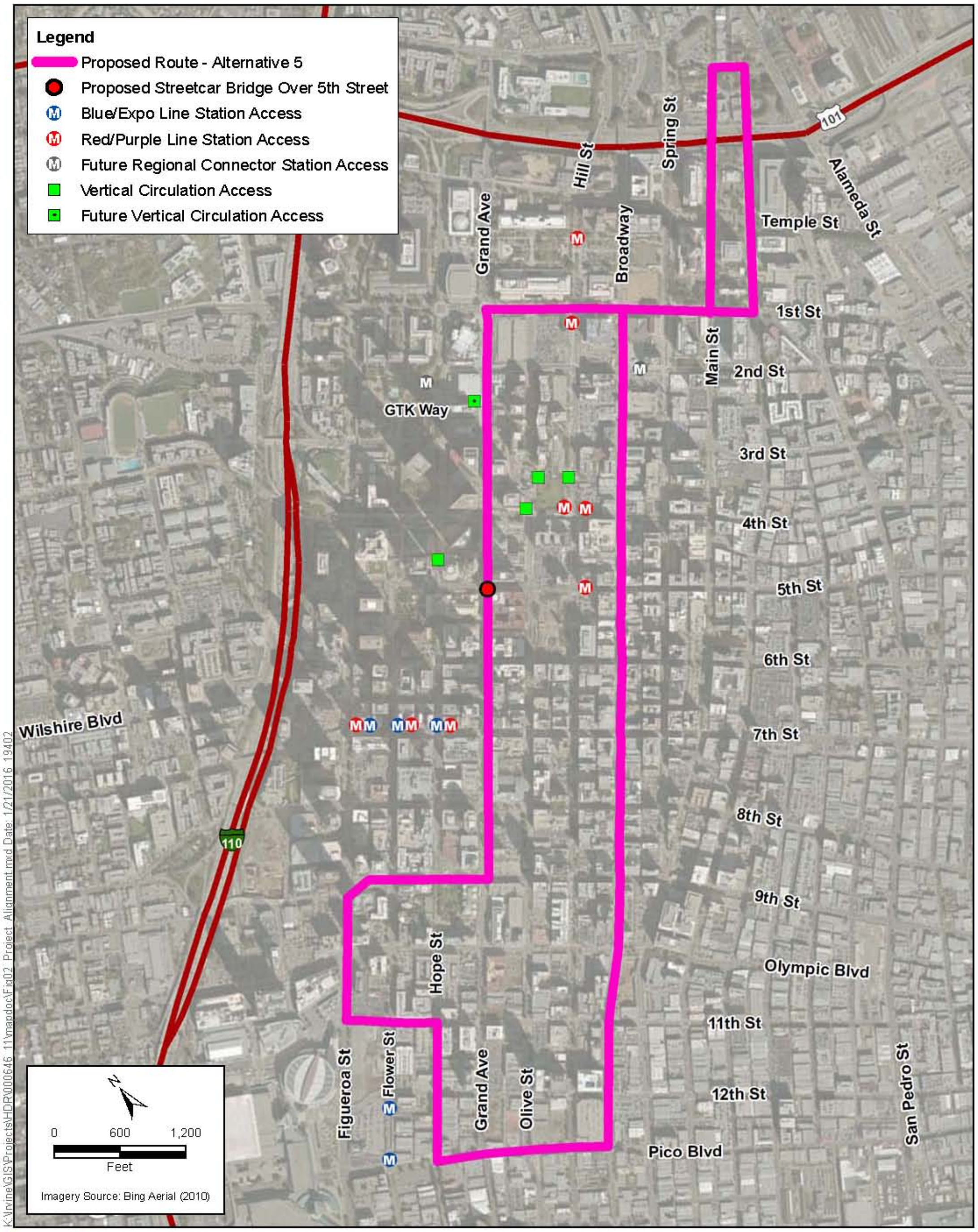

Figure 4e
Alternative 5
Restoration of Historic Streetcar Service in Downtown Los Angeles

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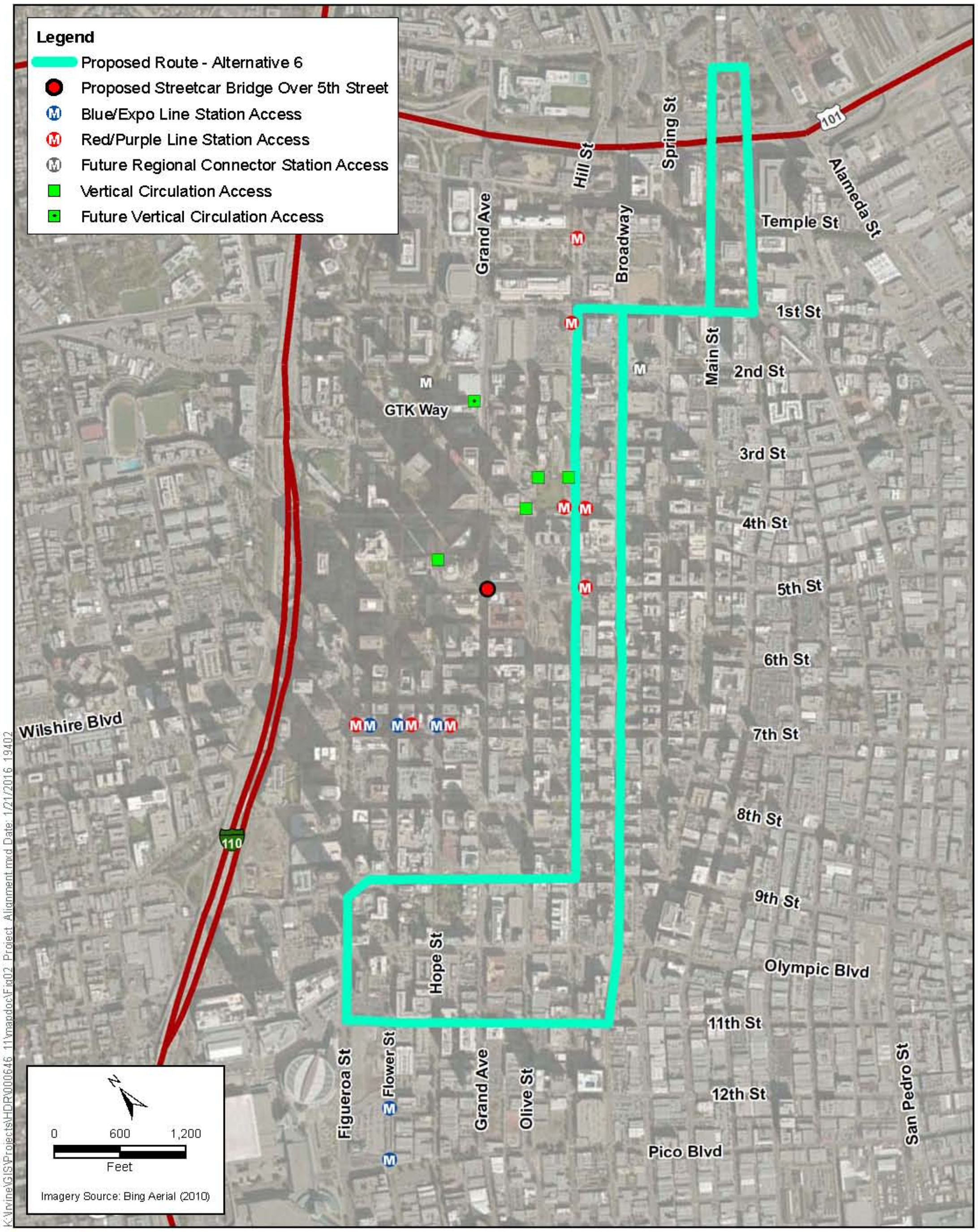

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Figure 4f
Alternative 6
Restoration of Historic Streetcar Service in Downtown Los Angeles

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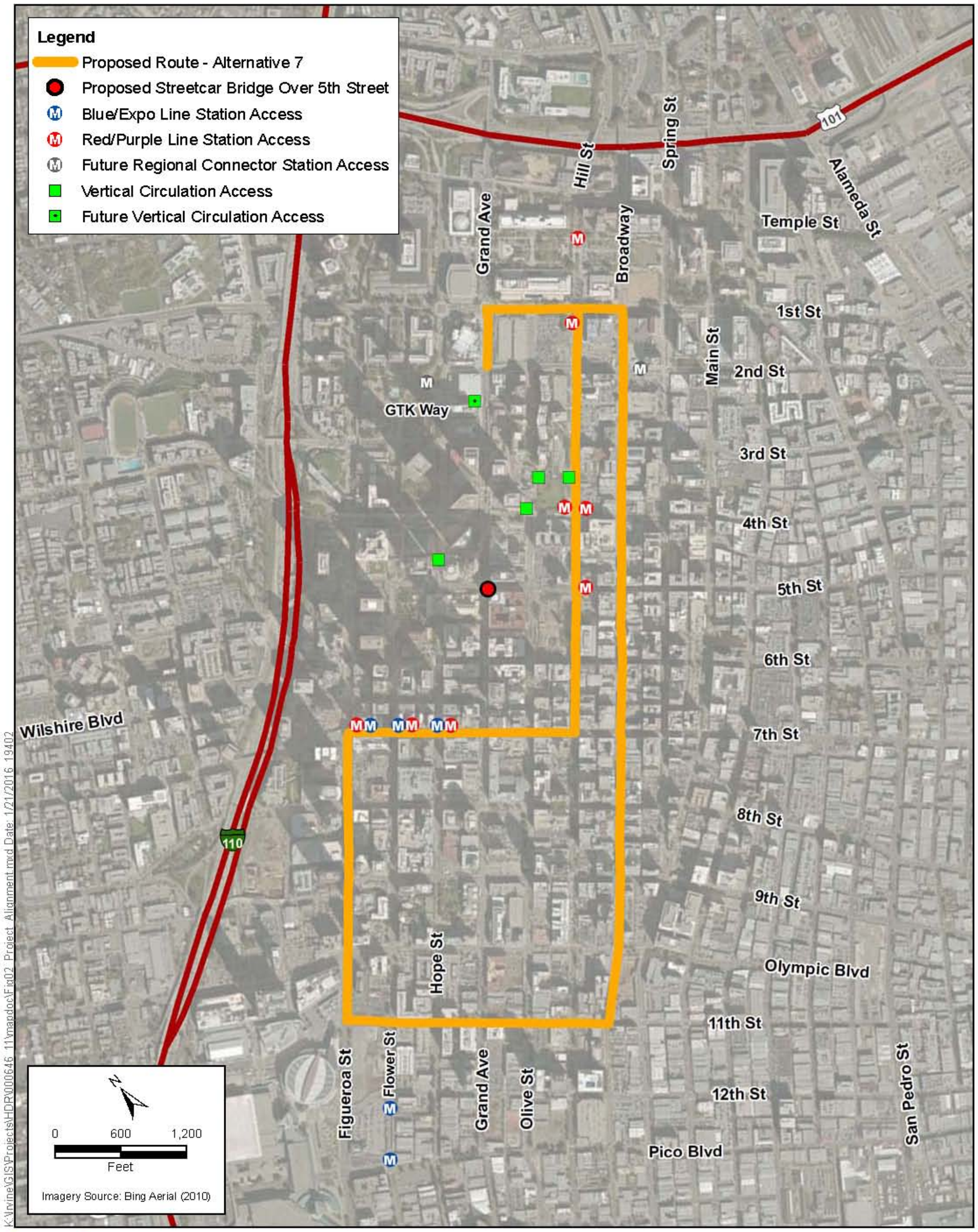

Figure 4g
Alternative 7
Restoration of Historic Streetcar Service in Downtown Los Angeles

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4.3.1.3 Results of Final Screening

Table 4-2 presents the results of the final screening analysis. The lower numbers represent better performance under the criteria.

Table 4-2. Final Alternatives Screening

Criteria	Alternative							Summary
	1	2	3	4	5	6	7	
Ridership Potential	1	3	1	3	2	1	1	Alternatives 1, 3, 6, and 7 had the highest combined averages for daily boardings and boardings per mile.
Capital Costs	2	2	2	1	3	3	1	Alternative 4 and Alternative 7 had the lowest capital cost.
Operation and Maintenance Cost	1	1	2	1	3	3	1	Alternatives 1, 2, 4, and 7 had the lowest operation and maintenance cost.
Cost/Benefit Ratio	1	3	1	1	1	3	1	Alternatives 1 and 3 had the lowest cost per user, followed by Alternative 7, Alternative 5, and Alternative 4.
Missed Destinations	3	3	2	1	3	3	1	Alternatives 1, 2, 3, 4, and 7 served Bunker Hill, while Alternatives 5 and 6 served Union Station.
Circulation	3	3	2	1	3	3	1	Alternatives 1 and 2 cannot serve stops on Grand Ave between 3rd Street and 6th Street because of an elevated bridge structure. Alternatives 5 and 6 cross US 101 on-ramps/off-ramps.
Design Considerations	3	3	2	1	3	3	1	Alternatives 1 and 2 require an elevated bridge structure on Grand Avenue. Alternatives 1 and 2 require modification of the Grand Avenue bridge deck. Alternatives 5 and 6 require modification of the Main Street and Los Angeles Street bridge decks over US 101.
Environmental Issues	3	3	2	2	2	2	2	Alternatives 1 and 2 had the most potential environmental issues because of the elevated bridge structure on Grand Avenue.
Economic Development	1	2	1	2	1	2	2	Alternatives 1, 3, and 5 (Pico Boulevard) had more economic development potential than Alternatives 2, 4, 6, and 7 (11th Street).
Total	16	21	14	13	19	21	**11**	The lower the score, the higher the performance of the alternative.

As demonstrated in Table 4-2, Alternative 7 (now known as Alternative 2 – 7th Street Alternative with Grand Avenue Extension) was the highest performing alternative. In general, Alternatives 3 through 7 all were determined to have similar potential for environmental impacts, but less than that of Alternatives 1 and 2. To the extent that the screening criteria represent the project objectives, Alternatives 3, 4, and 7 performed best among the final cut screening alternatives, with Alternative 7 performing best in the areas related to the project objectives. Namely, Alternative 7 best achieved transit coverage and circulation and best fostered connections among major districts, destinations, and activity centers. While each of the alternatives assessed in the Alternatives Analysis would satisfy a majority of the project objectives, Alternative 7 (the 7th Street Alternative) was advanced because it best satisfied the project objectives while maintaining relatively low potential for environmental impacts.

4.3.1.4 Additional Variations Subsequent to the Alternatives Analysis

Subsequent to completion of the Alternatives Analysis, two additional variations have been identified for evaluation. The first of these is an alternative alignment that would travel along 9th Street instead of 7th Street, between Figueroa Street and Hill Street. This variation, which is now termed the 9th Street Alternative, was made necessary because LADOT, as part of the *City of Los Angeles 2010 Bicycle Plan*, has implemented vehicle lane reductions on 7th Street in order to provide space for bicycle lanes. Recognizing that there could be potential traffic impacts on 7th Street that were previously unanticipated, the 9th Street Alternative is now also included.

In addition, the Grand Avenue Extension, which has been a component of final screening Alternatives 3, 4, and 7, has also been the subject of some discussion related to heightened sensitivity regarding potential impacts on the acoustics of the Walt Disney Concert Hall and the Dorothy Chandler Pavilion. Also, given the significant presence of these attractions, this portion of Bunker Hill does not exhibit the need for revitalization that exists in other areas within downtown. It has also been stated that the Regional Connector (currently under construction) would provide mobility and transit connectivity for Bunker Hill that would otherwise be lacking in other parts of the streetcar route. Finally, there are substantial pedestrian-oriented amenities in this area that are interconnected with wide sidewalks and public space, such that there is less need to improve pedestrian-oriented amenities compared to other portions of the study area. For these reasons, the two primary alternatives that are being carried forward for evaluation in this EIR (7th and 9th Street) are each being considered both with and without the Grand Avenue Extension, thereby permitting a full range of choices that respond to both the project objectives and previously expressed concerns.

4.3.2 Rubber-Tired Transportation Systems Management Alternative

A rubber-tired transportation systems management (TSM) alternative (i.e., local circulator bus) would provide general transit service improvements to enhance the capacity and efficiency of the existing transportation system. Improvements such as bus upgrades, traffic signal improvements, lane reconfiguration, and lane assignment changes, among other strategies, could be incorporated. A rubber-tired TSM alternative could be similar to the Project with respect to alignment and level of service but would utilize rubber-tired vehicles (similar to existing buses) with no track.

Such a TSM alternative was considered early in project development, but was not carried forward, for several reasons. First, and perhaps most important, a rubber-tired alternative would not meet one of the key elements of the Project's purpose and need (see Chapter 2), namely assisting in the effort to revitalize downtown's historic buildings. Restoring streetcar service would be consistent with the character of the historic portions of downtown that once had such complementary transit service as part of the urban landscape. The sense of permanency that would be provided by a fixed-rail transportation mode would be a substantial commitment to the continued focus on downtown's historic core as an important facet of the downtown image. A rubber-tired local circulator would not provide the same perceived level of commitment.

Also, rubber-tired transit modes, despite their long-standing presence in downtown Los Angeles, have not been shown to have a substantial effect on economic development, and providing another bus route in downtown Los Angeles would not be expected to serve as a catalyst for revitalization. Fixed-guideway systems, on the other hand, have been demonstrated to lead to economic development because they provide a stronger sense of permanency and they also can be a transportation focal point that attracts visitors, tourists, and residents, which is also a stated objective of the Project.

Existing rubber-tired transit options in downtown Los Angeles have become ubiquitous and while they offer many options for users, their multiplicity of operators and routes can also be confusing to those who are not familiar with the range of choices and how to effectively navigate them. This perception and resultant hesitancy can be overcome by a permanent fixed route with separate branding that can be easier for the new or occasional user to understand.

Also, the streetcar features level boarding and exceptional ride quality, which would expand the range of riders attracted to the streetcar. Persons with mobility impairments could move on and off the vehicle without assistance, whereas with a rubber-tired vehicle, they would require a lift, a "kneeling" bus, or a ramp, which are sometimes inconvenient and can result in delays.

A rubber-tired transit alternative would not offer material benefits regarding environmental impacts. It would not shift vehicle trips from fossil-fueled to electrically powered vehicles, and therefore it would not contribute to desired reductions in local air and associated greenhouse gas emissions. A rubber-tired alternative would not require a new maintenance and storage facility, but the addition of new vehicles would add to the ongoing need for vehicle maintenance and repairs, with associated energy consumption for those activities. A rubber-tired alternative would not contribute to rail-related noise impacts at the Disney Concert Hall, but, as explained in Section 3.9, those impacts can be effectively mitigated, and therefore no material difference would occur. Future noise increases at other receivers would also not be materially changed, because those increases are primarily attributable to growth in downtown vehicular traffic over time, which would occur irrespective of the alternative implemented.

A rubber-tired alternative would likely not add substantially to the expected intersection impacts, but those impacts are only projected to occur at a maximum of three intersections, depending upon the streetcar alternative; therefore, those differences would also not be material. One impact would be different with a rubber-tired alternative, and that is the potential for bicycle safety hazards associated with streetcar track flangeways, which would not occur with a rubber-tired alternative. While this one impact is considered significant and unavoidable, the extent to which actual impacts may occur is not known, and therefore the expected differences would be considered speculative at this time.

For the above reasons, a rubber-tired TSM alternative was not carried forward.

4.3.3 Alternatives Suggested during Scoping

As part of the CEQA process, a public scoping period was initiated in January 2013 to notify the public of the Project and receive comments. Through this process, 28 commenters provided comments related to the project alternatives, and seven commenters provided comments related to additional alternatives or routes. The following provides a summary of the alternatives suggested during the scoping period.

4.3.3.1 6th Street Alignment

One commenter requested that an alternative route on 6th Street be considered because it would serve the largest office population in downtown (the Financial Core), including Bunker Hill and the Bonaventure and Biltmore hotels. Using 6th Street instead of 7th Street or 9th Street as the connection between Figueroa Street and Hill Street would be feasible, but it would create a portion of "dead track" (i.e., without serviceability) on Broadway between 6th and 7th Streets, because a two-way service connection track on 7th Street between Hill Street and Broadway would still be required.

4.3.3.2 Alternate North/South Alignment

Comments related to the north/south alignment called for considering an alternative alignment to either the Hill Street or Broadway alignments, in order to provide service to a larger geographic area. Although no other north/south alignment was recommended, it was suggested that a two-way alignment on Broadway be considered to improve efficiency.

Placing the two directions of a transit route on different streets, also known as a couplet, has advantages and disadvantages. The advantage of a couplet is that the station stops are spread apart, making them closer to a larger area. The disadvantage is that for some trips, walking distances could be increased. If the different directions are separated by too much distance, then the length of the walk required to return in the opposite direction might make it worthwhile to go to the nearest stop and ride around the loop. The couplet on Hill Street and Broadway was determined by the Alternatives Analysis to be the best compromise.

4.3.3.3 Combined 7th Street Alternative and 9th Street Alternative

One commenter recommended implementing both the 7th Street Alternative and the 9th Street Alternative to provide greater service coverage. Operating a streetcar under both the 7th Street Alternative and the 9th Street Alternative would double the annual operating costs if the same minimum level of service frequency were to be provided on 7th Street and 9th Street as planned for the remainder of the system. The remainder of the system would receive double the planned service frequency, providing service capacity significantly greater than projected ridership. Alternatively, half the service frequency could be provided on 7th Street and 9th Street, with every other train serving one or the other. Including both alternatives would be likely to lead to confusion for riders, which is contrary to the goal of providing a simple, accessible transportation mode. Capital and operation costs would be increased by adding additional route miles and potentially requiring more vehicles. In addition, traffic impacts, both during construction and during operation, would be increased due to redistribution of vehicles on 7th and 9th Streets. Associated air quality and noise impacts would also increase along with these potential traffic impacts.

4.3.3.4 Two-Way Streetcar System

One commenter recommended making the entire Project a two-way system. Building and operating a streetcar system in both directions around the loop could double the capital and operating costs of the Project without providing substantially improved functionality. It would also conflict with the

Broadway Streetscape Master Plan. Furthermore, a two-way streetcar system would create potential conflicts along one-way streets and could result in greater traffic impacts due to the need to accommodate streetcar vehicles in additional traffic lanes. Alternatively, in order to maintain acceptable traffic flow, this alternative would require substantial right-of-way acquisition affecting numerous historic buildings, displacing residents and businesses, and substantial alteration to existing land use patterns. Accordingly, this alternative would not reduce the environmental impacts of the Project and would not satisfy the project objectives.

4.3.3.5 Personal Rapid Transit

One commenter suggested consideration of a Personal Rapid Transit (PRT) system instead of a streetcar system. A PRT system would consist of an elevated guideway with small, on-demand, accessible, driverless electric vehicles to transport individual passengers to various destinations. A 7-mile route was suggested that would include the study area as well as Little Tokyo, Chinatown, and Dodger Stadium as destinations. The commenter argued that a PRT system would be preferable to streetcar service because it (in stated opinion): (1) would be cheaper to construct while delivering a greater area of coverage, (2) would be quieter, (3) would consume less energy per passenger mile, (4) would not interfere with traffic, (5) would provide greater point-to-point efficiency (6) would provide flexibility to allow station elements to be integrated into new and old buildings, and (7) can be easily expanded in the future because of low cost.

A PRT system was not moved forward for further consideration because it would have greater impacts on the built environment in downtown. Significant space would be needed to accommodate the PRT guideway support columns. If such space cannot be provided outside the street rights-of-way, this could require eliminating at least one traffic lane from public streets, which would result in substantial traffic impacts. In addition, the elevated station platforms would need to be scaled to accommodate peak-period passenger queuing, which would require a large amount of elevated infrastructure that would cast shadows on the streets and sidewalks below as well as potentially obstruct views of historic buildings, substantially altering the visual character of downtown. An elevated guideway would also require a substantial amount of easements in order to cross above private property, which would further restrict the feasibility of implementing such an alternative. For these reasons, a PRT system was not given further consideration.

4.4 Further Modifications Considered

As part of the development of the project description to be used in this EIR, further consideration was given to improving the operating speed of the streetcar. Two approaches were considered. First, operational traffic improvements, targeted at selected intersections, were identified, including right-turn lanes (which would help to clear vehicular traffic ahead of the streetcar) and changes to signal phase timing to provide more “green time” for the streetcar. Secondly, the concept of “transit-only lanes” was also considered, which would give the streetcar a dedicated right-of-way within which to operate, in order to increase operating speeds along the route. Southbound Broadway (between 2nd and 11th Streets) was selected as the best opportunity for demonstrating the benefit of this approach. Also considered was reducing the number of proposed stops along the route, which also would improve run times.

The above options were developed and evaluated in a Speed Improvement Study that was conducted between August and September of 2015. The results indicated that the greatest incremental benefit could be achieved by implementing operational improvements at selected intersections along the route, including the recommended turn lane improvements and signal timing changes. It was also determined that only marginal further improvements in run times could be achieved with implementing the transit-only lane option, and reducing the number of stops would also only yield minor benefits. Implementing a transit-only lane would also require major concessions from existing stakeholders and local plans, including limiting driveway and parking access for some Broadway residents and businesses or eliminating the implementation of the *Broadway Streetscape Master Plan* on the east side of Broadway. It was then decided that the proposed list of traffic operation improvements would be advanced; these improvements have been incorporated into the project description (see Section 2.5.4).

4.5 Comparison of Alternatives

According to the State CEQA Guidelines, the EIR should compare the merits of the alternatives and determine an environmentally superior alternative. Although not required under CEQA, this Draft EIR analyzes the following project alternatives equally in Chapter 3:

- Alternative 1 – No Project Alternative
- Alternative 2 – 7th Street Alternative with Grand Avenue Extension
- Alternative 3 – 7th Street Alternative without Grand Avenue Extension
- Alternative 4 – 9th Street Alternative with Grand Avenue Extension
- Alternative 5 – 9th Street Alternative without Grand Avenue Extension

The discussion below summarizes the results of the CEQA significance analysis under all alternatives for each resource area, using the detailed information and analysis presented in Chapter 3. To summarize how the alternatives differ physically from one another:

- Alternative 1 (No Project) would not implement streetcar service in downtown Los Angeles and, as a result, it would not satisfy the Project objectives summarized in Section 4.2 and discussed in detail in Section 2.3. This alternative serves as the baseline against which the Build Alternatives are measured.
- Alternatives 2 and 4 differ from Alternatives 3 and 5 in that the former include the Grand Avenue Extension whereas the latter do not include that component of the Project.
- Alternatives 2 and 3 differ from Alternatives 4 and 5 in that a portion of the former would run along 7th Street, whereas the latter would run along 9th Street.

In all other respects, the four Build Alternatives would be essentially the same. Also, the eventually chosen MSF site would serve the streetcar operation, irrespective of which Build Alternative is ultimately selected. Finally, all four Build Alternatives would be powered from a set of TPSS units, spaced approximately the same for each alternative (excepting the 7th or 9th Street portions of the alignment associated with Alternatives 2 or 3, or Alternatives 4 or 5).

Differences among the Build Alternatives are observed for the following impact categories: Traffic and Transportation, Bicycle Safety, Noise, Energy, and Greenhouse Gas Emissions. For all other impact categories, the impacts among the alternatives would be essentially the same.

4.5.1 Traffic and Transportation

Alternatives 2 and 4 would have significant impacts at three intersections: 1st Street/Grand Avenue, 1st Street/Hill Street, and 7th Street/Hill Street. The impacts at the first two intersections are associated with the Grand Avenue Extension. Alternative 3 (which does not include the Grand Avenue Extension) would only have a significant impact at the 7th Street/Hill Street intersection, and this impact would be the same as under Alternatives 2 or 4. Alternative 5 (because it also does not include the Grand Avenue Extension) would not have a significant impact at the 1st Street/Hill Street or 1st Street/Grand Avenue intersection. In addition, it would also not have a significant impact at the 7th Street/Hill Street intersection; it therefore would have no significant intersection impacts. In all cases, mitigation is not available to reduce the significant impacts to the level of less than significant.

The above differences can be summarized as follows:

- Alternative 2 – Significant Unavoidable Impact (3 intersections affected)
- Alternative 3 – Significant Unavoidable Impact (1 intersection affected)
- Alternative 4 – Significant Unavoidable Impact (3 intersections affected)
- Alternative 5 – No impact (no intersections affected)

4.5.2 Bicycle Safety

All four Build Alternatives would result in a significant impact affecting bicycle safety in that they would create areas where there would be the potential for bicycle tires to become caught in the streetcar rail flangeways. These potential hazards are associated with portions of the streetcar alignment in which bicyclists must share the travel lane with the streetcar vehicles, which would include Broadway (1st Street to 11th Street) and Hill Street (4th Street to 1st Street). Both locations are common to all four Build Alternatives. This potential hazard would also exist along 9th Street (between Figueroa Street and Hill Street), which is part of the Alternatives 4 and 5 alignments. Alternatives 2 and 3 (which would run along 7th Street, rather than 9th Street) would not have this exposure. Mitigation, potentially including lane markings, signage, alternate recommended bicycle routes, and education, would lessen the impact, but it would remain significant.

The above differences can be summarized as follows:

- Alternative 2 –Significant Unavoidable Impact (separated bikeway on 7th Street)
- Alternative 3 – Significant Unavoidable Impact (separated bikeway on 7th Street)
- Alternative 4 –Significant Unavoidable Impact (shared lane on 9th Street)
- Alternative 5 –Significant Unavoidable Impact (shared lane on 9th Street)

4.5.3 Noise

Alternatives 2 and 4, because they include the Grand Avenue Extension, would have noise impacts, potentially affecting the Disney Concert Hall, that would be considered moderate under FTA criteria and would exceed CEQA significance thresholds. Mitigation is available to reduce the impacts to less than significant. Alternatives 3 and 5, because they would not include the Grand Avenue Extension, would not have these impacts. Because the impacts would be considered significant, but mitigable, under Alternatives 2 and 4, and no impact under Alternatives 3 and 5, the distinctions among the four Build Alternatives for this impact would be negligible.

When future year (2020 and 2040) noise conditions are considered, noise impacts (considered moderate under FTA criteria and significant under CEQA thresholds) would potentially occur at up to nine receivers. These impacts would be associated with Alternative 2 (1 receiver), Alternative 3 (5 receivers), Alternative 4 (8 receivers), and Alternative 5 (8 receivers). Because these impacts are the result of increased traffic growth in downtown, they are not specifically assigned to the Build Alternatives. Also, mitigation for these impacts is not feasible.

The above differences can be summarized as follows:

- Alternative 2 – Potentially Significant Impact (mitigation required)
- Alternative 3 – Less Than Significant Impact
- Alternative 4 – Potentially Significant Impact (mitigation required)
- Alternative 5 – Less Than Significant Impact

4.5.4 Energy

Energy consumption for streetcar operations would be very similar, but there would be a slight difference between Alternatives 2 and 4 (approximately28, 000 MMBtu/yr) as compared with Alternatives 3 and 5 (approximately 26,000 MMBtu/yr). The small difference (5.7%) is due to the shorter routes traversed under Alternatives 3 and 5. Energy usage by the streetcar would be considered a less-than-significant impact, because energy consumption has been accommodated in LADWP long-term electricity delivery to downtown.

Each of the Build Alternatives would have an estimated number of daily riders that correspond to the differences in alignment and associated passenger boardings. A substantial portion of these boardings result in reduced use of automobiles, which, in turn, results in reduced vehicle miles of travel and associated gasoline consumption.

The differences can be summarized (using year 2040 figures) as follows:

- Alternative 2 – 21,856 MMBtu used per year
- Alternative 3 – 24,128 MMBtu per year
- Alternative 4 – 21,900 MMBtu per year
- Alternative 5 – 24,924 MMBtu per year

4.5.5 Greenhouse Gas Emissions

Greenhouse gas emissions occur as a result of streetcar operations, MSF operations, amortized construction emissions, and savings from reduced auto vehicle miles traveled. Each of the Build Alternatives would contribute to greenhouse gas production (and reduction) in relationship to their respective energy use and vehicle miles of travel savings.

The differences can be summarized (using year 2040 figures) as follows:

- Alternative 2 – 866 metric tons of CO_2e saved per year
- Alternative 3 – 533 metric tons of CO_2e saved per year
- Alternative 4 – 834 metric tons of CO_2e saved per year
- Alternative 5 – 371 metric tons of CO_2e saved per year

4.6 Relationship of Alternatives to Project Objectives

The proposed Project is intended to fulfill the four objectives outlined in Section 4.2 above and Chapter 2, *Project Description*: Land Use and Economic Development, Mobility, Congestion Relief, and Environmental Benefits. The following sections discuss the relationship of the proposed alternatives to the project objectives.

4.6.1 Alternative 1 – No Project Alternative

The No Project Alternative would not support the Land Use and Economic Development objective, because it would not introduce improvements to support the growth and revitalization of downtown Los Angeles, including its historic districts. Particularly, it would not encourage historic restoration and transit-oriented development.

4.6.2 Alternative 2 – 7th Street with Grand Avenue Extension

All project objectives would be met under this Alternative. Specifically, the 7th Street Alternative with Grand Avenue Extension would support the Land Use and Economic Development objective, as it would support the growth and revitalization of downtown Los Angeles, including its historic districts. Particularly, this alternative would encourage historic restoration and transit-oriented development, would create a distinctive tourist draw that would expand the economic base of the City and maximize tax revenue, would improve transit access to existing and planned developments, and would improve interconnectivity between residential areas, employment and activity centers, and retail services. This alternative would also support the Mobility objective, as implementation of the streetcar would enhance mobility and transit circulation in downtown Los Angeles. The Congestion Relief objective would also be supported under this alternative, given that the streetcar would reduce dependency on automobiles and would increase mobility and accessibility for people who live and work in downtown. Additionally, implementation of this alternative would support the Environmental Benefits objective by reducing automobile trips within downtown and would preserve the area's historic significance and revitalize the Historic Core.

4.6.3 Alternative 3 – 7th Street without Grand Avenue Extension

The 7th Street Alternative without Grand Avenue Extension would support the project objectives in a way nearly identical to that discussed under the 7th Street Alternative with Grand Avenue Extension. However, without the Grand Avenue Extension, the improvement to transit access and interconnectivity in downtown Los Angeles would be slightly less than with the Grand Avenue Extension. Nonetheless, the project objectives related to Land Use and Economic Development, Mobility, Congestion Relief, and Environmental Benefits would all be met under this alternative.

4.6.4 Alternative 4 – 9th Street with Grand Avenue Extension

The 9th Street Alternative with Grand Avenue Extension would support the project objectives in a way nearly identical to that discussed under the 7th Street Alternative with Grand Avenue Extension. The project objectives related to Land Use and Economic Development, Mobility, Congestion Relief, and Environmental Benefits would all be met under this alternative.

4.6.5 Alternative 5 – 9th Street without Grand Avenue Extension

The 9th Street Alternative without Grand Avenue Extension would support the project objectives in a way nearly identical to that discussed under the 7th Street Alternative with Grand Avenue Extension. However, without the Grand Avenue Extension, the improvement to transit access and interconnectivity in downtown Los Angeles would be slightly less than with the Grand Avenue Extension. Nonetheless, the project objectives related to Land Use and Economic Development, Mobility, Congestion Relief, and Environmental Benefits would all be met under this alternative.

4.7 Environmentally Superior Alternative (CEQA)

Because it would not provide a new transportation mode, the No Project Alternative would generally have no impact compared to existing conditions and to the Build Alternatives for the majority of environmental resource areas, including aesthetics, cultural resources, energy consumption, geology and soils, greenhouse gas emissions, hazardous materials, land use and planning, and noise and vibration. However, the No Project Alternative would not reduce downtown vehicle miles of automobile travel and associated air emissions, which is projected to occur under all of the Build Alternatives. Therefore, taken on balance, all of the Build Alternatives would be environmentally superior to the No Project Alternative, if the benefits of reduced auto miles of travel and associated air emissions are acknowledged.

The four Build Alternatives would have similar impacts (see Section 4.5, above). A substantial portion of the differences that do exist derive in large part from the expected daily ridership estimates.

As stated above and discussed in Chapter 2 and Section 3.2, *Air Quality*, daily streetcar ridership is expected to be higher under the alternatives that include the Grand Avenue Extension: Alternative 2, 7th Street with Grand Avenue Extension; and Alternative 4, 9th Street with Grand Avenue Extension. Higher ridership results in a greater reduction in auto vehicle miles traveled, and reduced greenhouse gas emissions from reduced vehicle travel. Given that Alternatives 2 and 4 would reduce both greenhouse gas emissions more than Alternatives 3 and 5, they would be considered environmentally superior alternatives compared to the No Build Alternative and Alternatives 3 and 5.

Additionally, as discussed in Section 3.10, *Traffic and Transportation*, Alternative 2 would operate along 7th Street, which would have a designated bike lane, while Alternative 4 would operate along 9th Street, which would not have a designated bike lane. Given the potential conflict between bicycles and the streetcar flange gaps, the designated bike lane on 7th Street may allow for slightly lesser impacts related to bicycle safety. Thus, because Alternative 2 would have a slightly lesser bicycle safety impact, it would be considered environmentally superi,or to Alternative 4.

Alternatives 2 and 4 would result in significant impacts at three intersections, Alternative 3 would have a significant impact at only one intersection and Alternative 5 would have no significant intersection impacts.

Taking into account the described differences in impacts related to air quality, greenhouse gases, intersection capacity and bicycle safety, and estimated ridership, Alternative 2 is identified as the environmentally superior alternative, as required by State CEQA Guidelines Section 15126.

All four MSF sites would have similar impacts for all environmental resource areas. The MSF site at Broadway and 2nd Street would involve the displacement of a wedding chapel business, but adequate compensation would be provided. On balance, all four potential MSF sites would be considered environmentally comparable.

None of the TPSS installations would have significant impacts and they would be common to all Build Alternatives; therefore, no finding of environmental superiority would be assigned to these elements of the Project.

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Chapter 5
Other Environmental Considerations

5.1 Impacts Found to Be Less than Significant (CEQA)

In addition to the environmental impact categories analyzed in detail in Chapter 3 of this Draft EIR, the City has determined that the proposed Project would not result in potentially significant impacts for the environmental impact topics discussed below. Section 15128 of the State CEQA Guidelines states:

> An EIR shall contain a statement briefly indicating the reasons that various possible significant effects of the project were determined not to be significant and were, therefore, not discussed in detail in the EIR.

Based on the Initial Study prepared for the Project (see Appendix A), there is no evidence that the Project would result in significant environmental effects in the areas discussed below, and further environmental review of these issues is therefore not required.

5.1.1 Agriculture and Forestry Resources

5.1.1.1 Farmland Conversion

No impact. The Project would be located in downtown Los Angeles, primarily within existing transportation rights-of-way. The California Department of Conservation, Division of Land Protection, lists Prime Farmland, Unique Farmland, and Farmland of Statewide Importance under the general category of "Important Farmland." The 2010 Los Angeles County Important Farmland map maintained by the Division of Land Protection indicates that the project location does not contain any lands included in the Important Farmland category (California Department of Conservation 2010); therefore, no farmland conversion would occur.

All of the related projects identified in Section 2.10 of this EIR are also located within the same general vicinity as the Project. Therefore, the related projects would also not result in farmland conversion. Because no farmland conversion would occur under either the Project or the related projects, there would be no cumulative impact pertaining to farmland conversion.

5.1.1.2 Agricultural Zoning and Williamson Act Contract

No impact. Because there is no farmland within downtown Los Angeles, no portion of the project location is subject to a Williamson Act contract or usable as agricultural land (California Department of Conservation 2013). The Project would not involve the conversion of agricultural land to another use. Therefore, no impact on farmland or agricultural resources subject to either agricultural zoning or Williamson Act regulation would occur.

None of the related projects listed in Section 2.10 would involve land subject to Williamson Act regulation. Therefore, no cumulative impact would occur regarding Williamson Act governed land.

5.1.1.3 Timberland

No impact. According to the *Conservation Element* of the *City of Los Angeles General Plan*, the closest substantial conifer and big-tree forests in the region are located outside the City's boundaries within the Angeles National Forest, approximately 17 miles north of the project location (City of Los Angeles 2001). Therefore, no impact on forests, timberlands, or timberland-zoned areas would occur.

None of the related projects listed in Section 2.10 would involve forests, timberlands, or timberland-zoned areas. Therefore, no cumulative impact would occur regarding forests, timberlands, or timberland-zoned areas.

5.1.1.4 Loss or Conversion of Forestland

No impact. As discussed in Section 5.1.1.3, the closest forestland in the area is located approximately 17 miles north of the project location. Therefore, the Project would not result in the loss or conversion of forestland to non-forest uses, and no impacts would occur.

None of the related projects listed in Section 2.10 would result in the conversion of forestland to non-forest uses. Therefore, no cumulative impact would occur regarding forestland conversion.

5.1.1.5 Other Conversion of Agricultural Uses

No impact. As discussed above, the Project is not located in the vicinity of agricultural resources. Therefore, it would not result in the conversion of agricultural uses to non-agricultural uses. No impact would occur.

None of the related projects listed in Section 2.10 would result in the conversion of agricultural uses to non-agricultural uses. Therefore, no cumulative impact would occur regarding agricultural land conversion.

5.1.2 Air Quality

5.1.2.1 Odors

Less-than-significant impact. According to the South Coast Air Quality Management District's (SCAQMD) *CEQA Air Quality Analysis Guidance Handbook* (SCAQMD 1993), land uses associated with odor complaints typically include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting areas, refineries, landfills, dairies, and fiberglass molding facilities. The proposed Project does not include any of the uses identified above by SCAQMD as being associated with odors and is therefore not anticipated to produce objectionable odors. While the daily operation of the Maintenance and Storage Facility (MSF) would involve vehicle washing and other light maintenance activity, the materials and chemicals that would be used, such as lubricants and cleaning solvents, would conform to state and local requirements for formulation and proper handling. As a result, the use of these materials would not be expected to produce objectionable odors that could adversely affect offsite uses.

Odors resulting from construction of the proposed Project, should they be noticeable, are not likely to affect a substantial number of people because areas of construction would be limited in location and size. Potential odor-emitting elements used during construction activities could include asphalt and architectural coatings and solvents. SCAQMD Rules 1108 and 1113 would govern and limit emissions of reactive organic compounds from asphalt and architectural coatings and solvents, respectively. Given that compliance with SCAQMD rules would be mandatory and monitored, no construction activities or materials are proposed that would create a significant level of objectionable odors. Therefore, potential impacts during short-term construction would be less than significant.

It is possible that odors from as yet uncharacterized contaminated soil could be encountered during construction activities. However, Section 3.7, *Hazards and Hazardous Materials*, addresses this potential and includes mitigation measures to address the safe handling and disposal of soils with odor, should they be encountered.

None of the related projects listed in Section 2.10 would involve land uses typically associated with odor creation (i.e., agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting areas, refineries, landfills, dairies, or fiberglass molding facilities). Therefore, the Project would not contribute to significant odor impacts.

5.1.3 Biological Resources

5.1.3.1 Candidate, Sensitive, or Special-Status Species

Less-than-significant impact. According to the California Department of Fish and Wildlife's California Natural Diversity Database, there have been an estimated 19 occurrences of special-status species in the Los Angeles quadrangle in which the Project would be located (see Appendix A, Initial Study). The areas adjacent to the project alignment are nearly completely covered with concrete and asphalt; some areas are landscaped with ornamental trees, shrubs, and ground cover. According to local and regional plans, policies, and regulations, the California Department of Fish and Wildlife, and the U.S. Fish and Wildlife Service, an environment of this type is not considered to be suitable habitat for any of the identified candidate, sensitive, or special-status species. In addition, there are no known locally designated natural communities in the Project vicinity.

Migratory birds, including four of the special-status species known to occur in the Los Angeles quadrangle, are protected under the *Migratory Bird Treaty Act* (MBTA), which provides legal protection for migratory birds, their occupied nests, and their eggs. Activities that would result in a temporary or permanent take of a migratory bird, nest, or egg would constitute a violation of the MBTA. Construction of the Project would be conducted in a manner so as to comply with the MBTA. For street trees that would be removed as part of the Project, the following standard Los Angeles Bureau of Engineering practice would be implemented as part of project construction:

> **MBTA Regulatory Compliance Measure: Nesting Birds.** Within seven days prior to any construction activities during the general nesting season for birds (January to September for raptors; March to August for all other bird species), a survey of nesting birds will be conducted by a qualified biologist. Any active bird nests observed during the survey will be mapped on construction plans. Restrictions on construction activities will be implemented in the vicinity of the nest until it is no longer determined to be active. Typically, a 300- to 500-foot buffer zone will be designated around an active nest to allow construction to proceed elsewhere, while at the same time minimizing disturbance to the active nest. Once the nest is determined to no longer be active and the young have dispersed, construction would be allowed to proceed within the buffer zone. The DPW BOE, through the construction contractor bid specifications, shall be the responsible party. Enforcement shall be achieved through the DPW Contract Administration Bureau Construction Inspector.

With incorporation of the above regulatory compliance measure, there would be a less-than-significant impact on candidate, sensitive, or special-status species.

All of the related projects listed in Section 2.10 would be developed in the same general vicinity as the Project. The areas subject to implementation of the related projects, similar to the Project, are nearly completely covered with a combination of concrete, asphalt, ornamental trees, shrubs, and ground cover. These areas are not considered to be suitable habitat for any of the identified candidate, sensitive, or special-status species. Should construction of any of the related projects require removal of ornamental street trees, such construction would be managed independently so as to comply with the MBTA. Accordingly, the Project, when considered in conjunction with other past, present or reasonably foreseeable future projects, would not have an individual cumulative impact, nor would it result in a cumulatively considerable contribution to a significant cumulative impact.

5.1.3.2 Riparian Habitat or Other Sensitive Natural Community

No impact. As stated in Section 5.1.3.1, the Project would be located in an urbanized area of the City that is covered primarily with structures or concrete and asphalt paving; it does not have riparian or other habitats that would be suitable for sensitive natural communities. Implementation of the proposed Project would have no impact on riparian habitats or other sensitive natural communities.

All of the related projects listed in Section 2.10 would be developed in the same general vicinity as the Project; therefore, none of the related projects are located on sites that contain riparian or other habitats that would be suitable for sensitive natural communities. Implementation of the proposed Project and the related projects would, therefore, have no cumulative impact on riparian habitats or other sensitive natural communities.

5.1.3.3 Federally Protected Wetlands

No impact. According to the U.S. Fish and Wildlife Service's National Wetlands Inventory, there are no federally protected wetlands in the vicinity of the Project (U.S. Fish and Wildlife Service 2014). Therefore, the Project would not result in the direct removal, filling, or hydrological interruption of a federally protected wetland, as defined by Section 404 of the *Clean Water Act*.

Because there are no federally protected wetlands in the vicinity of the Project or the related projects, there would be no cumulative wetland impacts.

5.1.3.4 Native Resident or Migratory Fish or Wildlife Species Movement, Migration, or Nursery Sites

No impact. Because downtown Los Angeles is highly urbanized, there are no wildlife corridors or native wildlife nursery sites in the Project vicinity. Construction and operation of the proposed Project would therefore not affect the movement of any native resident or migratory fish species, interfere with wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. No impact would occur.

Because there are no wildlife corridors or native wildlife nursery sites in the vicinity of the Project or the related projects, there would be no cumulative impacts regarding native resident, migratory fish, wildlife species movements, migrations, or nursery sites.

5.1.3.5 Local Policies or Ordinances Related to Biological Resources

No impact. Implementation of the Project would not conflict with any local policies or ordinances related to biological resources. No trees under the purview of the *City of Los Angeles Native Tree Protection Ordinance* would be removed or otherwise affected. Ornamental street trees that may need to be removed for purposes of the Project would be replaced in accordance with the City's ordinance. Given the urban character of the area, no other local biological resource policies are also pertinent in the project vicinity. Therefore, no impact related to local biological resource policies or ordinances would occur.

The related projects listed in Section 2.10 would be developed in the same general vicinity as the Project and, therefore, it is highly unlikely that trees subject to protection under the *Native Tree Protection Ordinance* would be affected by the related projects. Should this prove not to be the case, each individual related project would be required to follow the requirements of the Ordinance. Because the Project would not affect protected trees, it would not result in a cumulatively considerable contribution to a significant cumulative impact regarding local policies or ordinances related to biological resources.

5.1.3.6 Habitat Conservation Plans, Natural Community Conservation Plans, or Other Plans

No impact. There is no habitat conservation plan, natural community conservation plan, or other conservation plan in place governing the area potentially affected by the proposed Project. Therefore, the Project would not conflict with the provisions of an adopted habitat conservation plan, natural conservation community plan, or other approved local, regional, or state habitat conservation plan. No impact would occur.

Because there are no habitat conservation plans, natural community conservation plans, or other such plans governing the project area, including the area in which the related projects would be developed, there would be no cumulative impact affecting such plans.

5.1.4 Hazards

5.1.4.1 Airport and Airstrip Hazards

No impact. The proposed Project would be located more than 10 miles northeast of Los Angeles International Airport and more than 10 miles southeast of Bob Hope Airport. The Project is also not located within an airport land use plan area (Los Angeles County Airport Land Use Commission 2012). In addition, no private airstrips operate within the vicinity of the project location. Therefore, the Project would not introduce elements of a height or nature that would be capable of disrupting air traffic patterns, and implementation of the proposed Project would not result in a potential safety hazard related to air traffic for people residing or working in the downtown area. No impact would occur.

The related projects would be developed in the same general vicinity as the Project; therefore, none of the related projects would have impacts affecting airports, nor would they result in airstrip hazards. Because neither the Project nor the related projects would have such impacts, there would be no cumulative impacts affecting airports or airstrips.

5.1.4.2 Wildland Fires

No impact. The Project would be located in downtown Los Angeles, a heavily urbanized area that is more than 4 miles southeast of the nearest wildland fire hazard area of Griffith Park, as designated in Exhibit D of the City of Los Angeles Safety Element (City of Los Angeles 1996). The Project would therefore not expose people or structures to a significant risk of loss, injury, or death involving wildland fires. No impact would occur.

Because there are no areas subject to wildland fires in the vicinity of either the Project or the related projects, there would be no cumulative impacts related to wildland fires.

5.1.5 Hydrology and Water Quality

5.1.5.1 Water Quality Standards

Less-than-significant impact. Project construction activities would be required to meet the National Pollutant Discharge Elimination System requirements for stormwater quality. The contractor would also be required to implement best management practices (BMPs) for water quality and erosion control. In addition, the contractor would prepare a Stormwater Pollution Prevention Plan (SWPPP) prior to any construction activity. Implementation of the BMPs in the Project's SWPPP and compliance with the City's discharge requirements would ensure that project construction would not violate any water quality standards or discharge requirements or otherwise substantially degrade water quality. Therefore, the Project's construction-related water quality impacts would be less than significant.

With respect to the operation of the proposed MSF, a Standard Urban Stormwater Mitigation Plan (SUSMP) would be implemented. The SUSMP would ensure that potential impacts associated with water quality, such as runoff resulting from vehicle cleaning and maintenance, would be less than significant because site-specific requirements would be imposed governing the handling and treatment of runoff from activities occurring within the MSF. Streetcar tracks would be maintained on a regular basis by the operator. With the above appropriate project design and compliance provisions in place and enforced, and with all applicable federal, state, and local regulations, code requirements, and permit provisions being adhered to, a less-than-significant impact would result.

Related projects may or may not result in potential impacts affecting water quality. However, each related project would adhere to requirements specified in their respective environmental clearance documents and underlying regulatory requirements. Because the Project would not have a significant impact and because the related projects would be required to adhere to their respective mitigation requirements, the Project would not result in a cumulatively considerable contribution to a significant cumulative impact affecting water quality.

5.1.5.2 Groundwater Supplies

Less-than-significant impact. Groundwater accounts for approximately 13 percent of the water supply for the City of Los Angeles but has accounted for as much as 30 percent of the total water supply in drought years (LADWP 2013). The Project would use water during construction and operation, and it is possible that such use could come, either directly or indirectly, from groundwater sources. Delivery of water to the site and selection of the appropriate source would be controlled by the Los Angeles Department of Water and Power (LADWP). During the construction period, water would be used for controlling fugitive dust emissions and mixing concrete. Project operations would require water for cleaning the streetcar vehicles and water would also be required for the restroom facilities within the MSF. Neither construction nor operation of the Project is expected to be water intensive, and the Project is expected to be well within the available capacity for downtown Los Angeles; such use would not substantially deplete groundwater supplies.

The Project would be located in an area that is paved and does not allow for in-place percolation of stormwater. Implementation of the Project would temporarily remove paved surfaces within the project limits. These areas would be repaved prior to operation; therefore, a measurable change in the potential for groundwater recharge would not result. Impacts related to groundwater supplies would be less than significant.

5.1.5.3 Drainage Pattern and Siltation

Less-than-significant impact. The Project may require the relocation or reconfiguration of some storm drains either within street rights-of-way or internal to the selected MSF site. Alterations to the storm drainage system would not change the overall drainage patterns of the area because drainage would be restored to flow via the modified storm drains in the same manner as before the modification was made. No courses of streams or rivers would be altered as a result of the Project because there are no streams or rivers present within the Project area. During the construction period, siltation and erosion related to the removal of paved surfaces and ground disturbance could occur. With preparation and implementation of the required SWPPP, however, the potential release of silt and other sediment as a result of erosion at the MSF, traction power substation (TPSS) sites, and along the alignment would be appropriately controlled in accordance with regulatory requirements, and impacts would therefore be less than significant.

Development of the related projects would individually be subject to site-specific design requirements related to the handling of storm drainage via the municipal storm drain system. Appropriate changes or modifications to the storm drain system would be made, just as they would be for the Project. Accordingly, less-than-significant impacts associated with the related projects would be expected and the Project would, therefore, not result in a cumulatively considerable contribution to a significant cumulative impact affecting drainage.

5.1.5.4 Drainage Capacity

Less-than-significant impact. During construction, water may be used to suppress fugitive dust emissions but not in quantities that would be capable of exceeding the capacity of the stormwater drainage system. During project operation, water may be used to clean the exterior of the MSF on an infrequent basis. Given that the size of the MSF would be 12,000 to 18,000 square feet and no larger than three stories tall, the quantity of water needed to clean the structure would be able to be handled within the capacity of the drainage system. All other water uses at the MSF would be handled by the wastewater system, which is separate from the system for runoff collected from public rights-of-way. The project MSF will follow the City of Los Angeles Low Impact Development requirements, which specify, for any project adding more than 500 square feet of building space, that rainwater resulting from a storm event of at least 0.75 inch be captured, infiltrated, and used on site. This will be enforced via review of design plans for the MSF. The Project would not substantially increase the amount of runoff because the impervious surface area of any of the candidate MSF sites would not be increased and may be reduced, due to the construction of the MSF building on what is currently an open parking lot. Onsite runoff would be managed in accordance with City of Los Angeles requirements. A less-than-significant impact would occur.

The related projects would all be developed to follow City of Los Angeles requirements for managing runoff, adhering to the Low Impact Development requirements, and ensuring that adequate drainage capacity is maintained. It is therefore reasonable to assume that the Project, in combination with the related projects, would not have a significant cumulative impact.

5.1.5.5 Polluted Runoff

No impact. As discussed in Section 5.1.5.1, construction-period runoff would be controlled through the implementation of erosion control BMPs and the SWPPP. These efforts would effectively prevent runoff at the MSF, TPSS sites, and along the alignment from releasing pollutants. Project operation would follow prescribed procedures for onsite pollutant control and treatment and would not create substantial additional sources of runoff. This would be ensured through implementation of a SUSMP. No impacts would occur.

Development of the related projects would individually be subject to site-specific design requirements related to the handling of polluted runoff. Accordingly, less-than-significant impacts associated with the related projects would be expected and the Project would, therefore, not result in a cumulatively considerable contribution to a significant cumulative impact due to polluted runoff.

5.1.5.6 Water Quality Degradation

Less-than-significant impact. Beyond the potential for runoff, which would be controlled through implementation of the provisions of the SWPPP and SUSMP, no new potential sources of pollutants that could substantially degrade water quality are associated with the Project. Impacts would be less than significant.

Because development of the Project and the related projects would individually be subject to site-specific design requirements that are intended to minimize or avoid adverse impacts on water quality, significant cumulative water quality impacts are not anticipated.

5.1.5.7 100-Year Flood Hazards to Housing

No impact. The proposed Project does not include housing. Therefore, there would be no flood-related risks to housing, and no impacts would occur. One or more of the related project would involve housing. Because the Project would not involve housing, it would not have a cumulatively considerable contribution to a significant cumulative impact affecting housing.

5.1.5.8 100-Year Flood Hazards from Structures

No impact. As shown in Exhibit F of the *Safety Element* of the *City of Los Angeles General Plan*, the proposed Project would not be located within a delineated 100-year floodplain. Therefore, structures constructed as part of the Project would not have the potential to redirect flows within a flood zone from a 100-year storm event (City of Los Angeles 1996). No impact would occur.

All of the related projects listed in Section 2.10 would be developed in the same general vicinity as the Project; therefore, none of the related projects would redirect or increase flows from a 100-year flood within a designated flood zone. No significant cumulative impacts would occur.

5.1.5.9 Levee and Dam Failure

Less-than-significant impact. Although the southeastern portion of the project alignment is located within or adjacent to a potential inundation area according to the City's Safety Element (City of Los Angeles 1996 [Exhibit G]), all project components would be located outside of 100- and 500-year floodplains, as documented in the Federal Emergency Management Agency's Flood Insurance Rate Map (Panels 06037C1620F and 06037C1636F) and Exhibit F of the City's Safety Element. The Project would not alter the permanent drainage patterns of the study area, nor would it result in a change in topography or other physical change having an effect on drainage. The Project would not change the project area's vulnerability to levee and dam failure, and therefore would not expose people or structures to a significant risk of loss, injury, or death related to flooding or inundation beyond existing conditions. The impact would be less than significant.

All of the related projects listed in Section 2.10 would be developed in the same general vicinity as the Project. Related projects located in the southeastern portion of the downtown area would need to be evaluated for their proximity to areas of 100- and 500-year floodplains. Design measures would likely be sufficient to address potential impacts, but the resolution of this issue would occur at the conclusion of individual related project environmental clearance processes. The Project would have a less-than-significant impact and it would not alter permanent drainage patterns of the study area. Therefore, the Project would not result in a cumulatively considerable contribution to a significant cumulative impact from levee or dam failures.

5.1.5.10 Seiche, Tsunami, or Mudflow

No impact. As stated in Section 5.1.5.9, the southeastern portion of the project alignment is located within or adjacent to a potential inundation area (City of Los Angeles 1996 [Exhibit G]). However, the Project would not alter drainage patterns or the existing flood control system, and would be built in an urbanized area not subject to potential mudflow. Therefore, the Project would not increase the risk of inundation by seiche or mudflow. The Project would not be located in a Tsunami Hazard Area (City of Los Angeles 1996 [Exhibit G]). No impacts related to inundation by seiche, tsunami, or mudflow would occur.

All of the related projects listed in Section 2.10 would be developed in the same general vicinity as the Project and, therefore, they also would not increase the risk of inundation by seiche or mudflow, or be located in a Tsunami Hazard Area. No cumulative impact would occur.

5.1.6 Land Use and Planning

5.1.6.1 Habitat Conservation Plans and Natural Community Conservation Plans

No impact. As discussed in Section 5.1.3.6, there are no habitat, natural community, or other conservation plans in place having jurisdiction over the vicinity of the proposed Project. Therefore, the Project would not conflict with the provisions of an adopted habitat conservation plan, natural conservation community plan, or other approved local, regional, or state habitat conservation plan. No impact would occur.

Because there are no habitat or natural community plans governing the project study area, no cumulative impact would result from the Project in combination with the related projects.

5.1.7 Mineral Resources

5.1.7.1 Known Mineral Resources

No impact. No known mineral resources underlie the project alignment, TPSS sites, or potential MSF locations. The project alignment is not within a known source area for aggregate or other mineral resources (City of Los Angeles 2001 [Figure GS-1]). The Project, however, is located immediately north of the LA Downtown Oil Field, as depicted in the City of Los Angeles Safety Element (City of Los Angeles 1996 [Exhibit E). Although petroleum resources are present within the project vicinity, the area is urbanized and there are no existing oil extraction operations located nearby to the project alignment, TPSS sites, or MSF locations. Therefore, the Project would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state, and no impact would occur.

The related projects are all located within the same general vicinity as the Project and they would be presumed to also not have any effect on mineral resources. However, each of these projects would have to make an independent finding and, therefore, the result cannot be known at present. The Project, because it would not have an effect on mineral resources, would not contribute to any significant cumulative impacts that might occur due to the related projects.

5.1.7.2 Locally Important Mineral Resource Recovery Sites

No impact. The project location is not delineated as a locally important mineral resource recovery site in any City plans (City of Los Angeles 2001 [Figure GS-1]). Therefore, implementation of the Project would not result in the loss of availability of a locally important mineral resource recovery site. The Project would have no impact on mineral resources.

Because the Project and also the related projects are not located in an area delineated as a locally important mineral resource recovery site, there would not be a cumulative impact.

5.1.8 Noise

5.1.8.1 Public Airport Noise

No impact. The Project would not be located within an airport land use plan or within 2 miles of a public airport (Los Angeles County Airport Land Use Commission 2012). Therefore, the Project would not expose people residing in the project vicinity to excessive airport-related noise levels. No impact would occur.

Because the Project and also the related projects are not located within a land use plan area or within 2 miles of a public airport, there would not be a cumulative impact related to public airport noise.

5.1.8.2 Private Airstrip Noise

No impact. There are no private airstrips within the project vicinity. Therefore, the Project would not expose people residing in the project vicinity to excessive airstrip-related noise levels. No impact would occur.

Because the Project and also the related projects are not located in the vicinity of a private airstrip, there would not be a cumulative impact related to private airstrip noise.

5.1.9 Population and Housing

5.1.9.1 Population Growth

Less-than-significant impact. Population distribution and density are managed by the City's land use and zoning designations and building codes. The Project would involve construction and operation of a streetcar service. The Project would not include the construction of homes or businesses; therefore, the Project would not directly increase population. The Project would not involve changing the City's land use or zoning designations to a more intense land use and therefore would not directly contribute to substantial population growth. The Project would employ approximately 20 full-time employees to operate the streetcar system and conduct maintenance activities. It is not anticipated that any of these employees would be required to relocate to downtown; most could be hired from the existing labor force either already residing in downtown or in its general commuter vicinity. Accordingly, a less-than-significant increase in population, if any, would be directly attributable to the Project.

However, one objective of the Project is to encourage revitalization of the downtown area through pedestrian-friendly improvements; therefore, the Project could indirectly contribute to commercial development and/or residential population growth (see Section 5.2, *Growth-Inducing Impacts*). This indirect effect, however, is expected to be less than significant, as the presence of the Project would be one of a multitude of factors in commercial and residential development decisions (with general economic trends being among the most important). Furthermore, growth in the residential population is planned for in the City's Housing Element, which guides citywide residential development, and has identified 443 sites in the Central City area with the capacity to support just under 18,000 units (City of Los Angeles 2013, Table 3.1). Because it is not possible to specifically attribute the amount of potential induced growth occurring as a result of the Project, the indirect growth impacts would be speculative and therefore cannot be evaluated (see State CEQA Guidelines Section 15145).

The Project would only have a potential indirect impact on commercial development and/or residential population growth, the degree of which cannot be determined at the present time and therefore would be speculative. Therefore, the Project would not result in a cumulatively considerable contribution to a significant cumulative population growth impact.

5.1.9.2 Housing Displacement

No impact. No housing would be displaced during either construction or operation of the proposed Project. Therefore, no impact would occur.

The Project, because it would not displace any housing, would not contribute to any significant cumulative housing displacement impacts that might occur due to the related projects.

5.1.9.3 Population Displacement

Less-than-significant impact. As discussed in Section 5.1.9.2, the proposed Project would not displace housing. The four MSF sites currently being evaluated are all located on currently operating surface parking lots. Selection of one of these sites for an MSF would displace the current parking business from that location. All property owners would be compensated for the purchase of property and also for relocation or compensation for loss of the affected business(es), should that occur, in conformance with the *Uniform Relocation and Real Properties Assistance Act*, *California*

Relocation Assistance Law, and Division 7, Chapter 3 of the *City of Los Angeles Administrative Code*. A less-than-significant impact would occur.

The Project, because it would not displace any housing, would not contribute to any significant cumulative population displacement impacts that might occur due to the related projects.

5.1.10 Public Services and Recreation

5.1.10.1 Police Service

Less-than-significant impact. The Los Angeles Police Department (LAPD) has primary jurisdiction in the downtown Los Angeles area. However, the Los Angeles Sheriff's Department (LASD) Transit Services Bureau would provide contract police services for the Project. At present, the Transit Services Bureau provides transit-related security for Metro and LADOT's DASH and Commuter Express services; such services would be expanded to include the streetcar system.

The Project would be located in an area that has a high degree of police presence because of its proximity to City Hall and LAPD headquarters. Given that the Project would have a dedicated security service, provided by the LASD Transit Services Bureau, operation of the Project would not increase the burden placed on the LAPD. Although the expansion of transit service presented by the Project would require some redistribution of LASD resources, the Transit Services Bureau has adequate resources for providing police protection on the new streetcar system. Approximately two additional sheriff's deputies during daytime shifts and two additional deputies during nighttime shifts would be required to serve the Project. These deputies could be drawn from LASD's existing pool of deputies (Sgt. Thomas pers. comm.). LAPD officers would continue to police the area, but would not have the additional responsibility of monitoring the safety and security of the streetcar operation. No new police facilities (either LAPD or LASD) would be required to maintain acceptable police services, as the Project would not directly result in population growth in the project area. Therefore, the impact of the Project with respect to police services would be less than significant.

Although the related projects could directly result in increases in residential and employee populations in the project area that would cumulatively increase the demand for LAPD police protection services, the Project would not increase the demand for LAPD services for the reasons described above. Therefore, it would not contribute to any significant cumulative police protection impacts.

5.1.10.2 Fire Service

Less-than-significant impact. The Project would be served by Los Angeles Fire Department (LAFD) Division 1, Battalion 1, at Station No. 3, located at 108 North Fremont Avenue, approximately 0.4 mile west of the project alignment.

The Project does not include new housing and would not result in a substantial increase in the employee population in the project area. Additionally, the MSF would be constructed in accordance with all applicable fire codes set forth by the State Fire Marshall and LAFD. The design of the streetcar overhead contact system (OCS) poles and wires would adhere to all applicable fire and building code requirements. The Project would not be considered a potential fire hazard because the streetcar vehicles would be electrically powered and would not use flammable chemicals or materials. The capacity of LAFD to serve the area with its existing level of fire protection services would not be substantially affected because no habitable structures, other than the MSF, would be added to the study area.

The nearest local fire responders would be notified, as appropriate, of traffic control plans during construction to coordinate emergency response routing. Also, construction and operation of the Project would not create hazards beyond typical hazards associated with industrial buildings similar to the MSF or other typical transit facilities.

Therefore, the Project would not substantially increase the demand for fire protections services and result in a need for new or altered fire protection facilities. Indirectly, the Project could contribute to residential and/or commercial development in the area, but estimating the amount of potential growth attributable to the Project would be speculative.

The related projects would result in new buildings and would increase the residential and employee populations in the project area, which would increase the demand for fire protection services. However, it is not known whether that increased demand would require new or expanded facilities, and whether the construction of those facilities would result in significant impacts on the environment. Therefore, the Project would not meaningfully contribute to a significant cumulative fire service impact.

5.1.10.3 Schools

Less-than-significant impact. Public school services in the study area are provided by the Los Angeles Unified School District, which currently has more than 640,000 students enrolled in kindergarten through 12th grade. The Project would not include new housing and, therefore, would not directly increase the demand for schools in the area. The Project would directly result in a minimal increase in the number of employees in the downtown area, which would not result in a significant increase in student enrollment at project area schools. Indirectly, the Project could contribute to residential and/or commercial development in the area, but estimating the amount of potential growth that would be attributable to the Project would be speculative. Existing and planned future school facilities would be adequate to serve the anticipated increase in future population. The impact would be less-than-significant.

The related projects would directly and indirectly increase student enrollment levels. However, it is not possible to determine, for the purposes of this EIR, the extent of potential enrollment increases at individual schools and within affected school districts. For that reason and because, pursuant to Government Code Section 65995, related residential and commercial development projects would be required to pay the requisite school impact fees and under the provisions of Senate Bill 50, those fees would be deemed to be full mitigation of a project’s impacts on school facilities, the Project would not contribute to a significant cumulative impact on schools.

5.1.10.4 Parks and Recreational Facilities

Less-than-significant impact. The Project would not increase the demand for parks in the area because it would not include new residential or business development. The Project would not necessitate the construction of new parks or recreational facilities because it would not affect any park property. A less-than-significant impact would result from operation of the Project because the addition of a small number of new employees would not require an expansion of park facilities.

The increases in residential and employee populations due to the related projects could increase the demand for parks and recreational facilities. However, it is not known whether that increased demand would require the construction of new parks that would have a significant impact on the environment. For that reason and because the Project would not result in a meaningful increase in demand for park services, the Project would not contribute to a significant cumulative impact on parks and recreational facilities.

5.1.11 Traffic and Transportation

5.1.11.1 Air Traffic Patterns

No impact. Bob Hope Airport and Los Angeles International Airport are both located approximately 10–12 miles from the Project. The proposed Project would not include any components of a height or nature that would affect air traffic. The proposed Project would not result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that would create substantial safety risks. No impact would occur.

The related projects would be developed in the same general vicinity as the Project; therefore, none of the related projects would have impacts affecting air traffic patterns. Because neither the Project nor the related projects would have such impacts, there would be no cumulative impacts affecting air traffic patterns.

5.1.12 Utilities and Service Systems

5.1.12.1 Wastewater Treatment Requirements

No impact. Wastewater would be generated as part of operation of the MSF, resulting from vehicle cleaning activities and the use of bathroom facilities. Neither of these activities would be expected to generate wastewater that would exceed wastewater treatment requirements of the Regional Water Quality Control Board. No impacts would occur and, consequently, the Project would not contribute to cumulative impacts on wastewater treatment requirements.

5.1.12.2 Water and Wastewater Treatment Facilities

No impact. The MSF is the only component of the proposed Project that would require water and wastewater service for bathroom facilities and cleaning activities. All wastewater would be controlled and managed on site before being conveyed to the sewer system. Each possible location for the MSF is within a short distance of a direct connection to existing water and wastewater services.

The City of Los Angeles Bureau of Sanitation operates four treatment and water reclamation plants: Hyperion Treatment Plant, Donald Tillman Water Reclamation Plant, the Terminal Island Water Reclamation Plant, and the Los Angeles Glendale Water Reclamation Plant.

The wastewater treatment system of the City of Los Angeles is divided into two major service areas: the Hyperion Service Area and the Terminal Island Service Area. The project site is located within the Hyperion Service Area. Sewage flow from the MSF would be conveyed to the Hyperion Treatment Plant. The Hyperion Treatment Plant currently has a daily flow of 362 million gallons per day and has a capacity of 450 million gallons per day (City of Los Angeles Bureau of Sanitation 2014). It is anticipated that the MSF would generate a relatively small amount of wastewater from bathroom facilities and washing equipment. It is also anticipated that the Hyperion Treatment Plant would be able to accommodate the wastewater generated by the MSF.

With the exception of the installation of connections to the new MSF structure, no new extensions of water and wastewater treatment facilities would be required to serve the Project. No impacts related to the expansion or construction of new water or wastewater facilities as a result of project implementation would occur.

The related projects would increase the amount of wastewater generated in the project area, which would be conveyed by existing public sewer lines to the City's Hyperion Treatment Plant. Other development outside the project area but within the City's Hyperion Treatment Plant service area could also increase wastewater flows to the Hyperion Treatment Plant. If new sewer lines or expanded treatment plant facilities beyond that previously planned and approved are required to accommodate future growth and development within the Hyperion Service Area, the construction of those new facilities and sewer lines could result in impacts on the environment. However, it would speculative to assume that those impacts would be significant. For that reason and because the Project would result in a negligible increase in wastewater flows, the Project would not contribute to a significant wastewater impact.

5.1.12.3 Stormwater Drainage Facilities

Less-than-significant impact. As discussed in Chapter 2, the Project may require the relocation or modification of some storm drains. However, the Project would not result in an increase in stormwater runoff from the project sites and the Project would also not change current drainage patterns. Impacts would be less than significant.

Because the Project would not result in increased stormwater runoff, would not alter drainage patterns, and would not permanently change storm drain capacities, it would not contribute to any cumulative stormwater drainage facilities impacts.

5.1.12.4 Water Supplies

Less-than-significant impact. New or expanded water supplies would not be required because neither construction nor operation of the Project would include water-intensive activities. Construction of the Project would require minimal amounts of water for fugitive dust control, which would most likely be provided by trucks at the construction site. Project operation would require water for streetcar vehicle cleaning and bathroom facility use. This would not necessitate new water deliveries to the region or increased reliance on groundwater resources. Increases in water use would be minimal based on the 12,000- to 18,000-square-foot size of the building and the small number of employees at the MSF at any given time, and no new or expanded water entitlements would occur.

Development of the related projects in the project area would result in the consumption of water. Other future development within the LADWP service area would also consume water. The extent to which the related projects and future growth and development in the LADWP service area would result in an increased demand for water will depend on the amount of development, when and where that development occurs, and the effectiveness of future water conservation measures. If new facilities beyond that currently planned and approved are required to meet increased water demand, it is possible that the construction and operation of those facilities could result in significant impacts on the environment. However, because the extent and location of possible new facilities is not known, it would be speculative to determine the significance of impacts due to those facilities. For that reason, the Project would not contribute to a significant water supply impact.

5.1.12.5 Wastewater Treatment Capacity

Less-than-significant impact. See the discussion above under *Water and Wastewater Treatment Facilities*.

5.1.12.6 Landfills

Less-than-significant impact. Construction of the Project would require the removal of concrete, asphalt, and soil to accommodate utility relocation, track-laying activities, and the MSF. Using a conservative estimate, the most intense construction work would generate an estimated 130 tons of solid waste over a 7-day workweek. Given that City-certified construction and demolition waste processors recycle at least 70 percent of their loads, the amount of solid waste that would reach the landfill would be much smaller than what would initially leave the construction site (City of Los Angeles Bureau of Sanitation 2012).

Operational solid waste generated by the Project is expected to be minimal, resulting from refuse collected at stops and on board vehicles. The amount of operational solid waste collected would have a negligible effect on landfill capacity. Therefore, neither construction nor operation would exceed permitted capacities at existing landfills. Impacts would be less than significant.

The related projects are all located within the same general vicinity as the Project and would generate solid waste that would be recycled or disposed of at the landfills that serve the project area. Other future development in the areas served by those landfills would also generate solid waste for disposal. Cumulative impacts could occur if expansion or construction of new landfill and solid waste facilities beyond those previously planned and approved would be required. However, it would be speculative to determine the significance of potential impacts. Therefore, the Project would not contribute to significant cumulative solid waste impacts.

5.1.12.7 Compliance with Solid Waste Statutes and Regulations

No impact. The Project would be designed, constructed, and operated in accordance with all applicable laws, regulations, ordinances, and City standards. Disposal of all solid waste generated by the proposed Project would comply with federal, state, and local statutes and regulations related to solid waste. No impact would result.

Because the Project would comply with all solid waste statutes and regulations, it would not contribute to any cumulative solid waste impacts.

5.2 Growth-Inducing Impacts

Pursuant to Section 15126.2 (d) of the State CEQA Guidelines, growth-inducing impacts of a proposed project are to be discussed in the EIR. Growth-inducing impacts are those effects of a project that might foster economic or population growth or the construction of new housing, either directly or indirectly, in the surrounding environment. According to CEQA, increases in the population may burden existing community service facilities, requiring construction of new facilities that could cause significant environmental effects.

Induced growth is defined as any growth that exceeds planned growth and results from new development that would not have otherwise taken place without implementation of a proposed project. The growth-inducing potential of a project would be considered significant if it results in growth or population concentration that exceeds the assumed levels included in applicable master plans, land use plans, or projections made by regional planning authorities. Under CEQA, it must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.

Any potential environmental impacts of induced growth would be secondary or indirect effects of the Project. Secondary effects of induced growth due to the Project could include impacts such as increased demand on community or public services, increased traffic and noise, or degradation of air and water quality.

The Project would not include any housing or require a large number of employees and, therefore, it would not directly increase population or generate a substantial amount of long-term employment, nor would implementation of the Project change patterns of land use or development. However, the Project could contribute to growth in downtown Los Angeles; as an expressed objective, the Project is intended to support growth in downtown Los Angeles by revitalizing areas and providing an amenity that would attract new residents and visitors to downtown. Accordingly, by providing investment in an area that has been targeted for revitalization, the Project could indirectly contribute to growth through the provision of new infrastructure and a population-attracting amenity that would bring new development.

Given the planned related projects in the study area (see Section 2.9), growth is reasonably foreseeable. There would be some physical changes associated with the MSF and TPSS sites, but implementation of the Project would affect primarily the transportation rights-of-way. Physical changes within the rights-of-way would not make adjacent properties easier to develop.

Downtown Los Angeles is the urbanized core of the City and has been designated for employment, housing, civic institutions, and entertainment venues by the City's General Plan and Zoning Code. The 2013–2021 *Housing Element* of the *City of Los Angeles General Plan*, adopted in December 2013, identified 443 sites in the *Central City Community Plan* Area that are capable of supporting just under 18,000 housing units within the study area (City of Los Angeles 2013c, Table 3.1). Any employment growth occurring as a direct or indirect effect of the Project is expected to be absorbed by the commercial and office property markets. In addition, if vacancy rates were to decline, new construction through redevelopment could also accommodate this growth. The Project would be consistent with projected growth and would support general plan objectives and policies with respect to projected growth by:

- Providing for future expansion and improvement based on travel demand (Framework Element, Land Use Objective 3.3).
- Recognizing all modes of travel, including pedestrian, bicycle, transit, and vehicular modes—including goods movement—as integral components of the City's transportation system (Mobility Element, Policy 3.1).
- Providing all residents, workers, and visitors with affordable, efficient, convenient, and attractive transit services (Mobility Element, Policy 3.4).
- Supporting "first-mile, last-mile solutions" such as multi-modal transportation services, organizations, and activities in the areas around transit stations and major bus stops (transit

stops) to maximize multi-modal connectivity and access for transit riders (Mobility Element, Policy 3.5).

- Expanding transportation services to enhance neighborhood accessibility and accommodate growth (Framework Element, Land Use Objective 3.11).

The Project would provide a transit amenity that emphasizes short-distance daily trips, which would be an amenity serving reasonably foreseeable growth within downtown Los Angeles. The Project could contribute to residential and commercial development in the area, but, as noted in Section 5.1.9.1, the amount of potential growth attributable to the Project would be too speculative to determine.

5.3 Irreversible and Irretrievable Commitment of Resources

State CEQA Guidelines Section 15126.2(c) requires a discussion of any significant irreversible environmental impacts that would be caused by implementation of a proposed project. Generally, a project would result in significant irreversible environmental impacts if any of the following would occur:

- The project would involve a large commitment of nonrenewable resources.
- The project consumption of resources is not justified (i.e., the project involves wasteful energy use).
- The primary and secondary impacts would generally commit future generations to similar uses.
- The project involves uses in which irreversible damage could result from any potential environmental accidents associated with the project.

Construction of the Project would require the irreversible and irretrievable commitment of nonrenewable resources, such as energy (fossil fuels used for construction equipment) and construction materials (such as lumber, sand, gravel, metals, and water). Commitment of nonrenewable resources would also be required for fabrication and assembly of components used in the operation of the streetcar (such as rail track sections, OCS power poles, streetcar vehicles, TPSS units, MSF equipment and physical installations, and associated other equipment and fixtures). Additionally, labor and natural resources would be used to produce construction materials that are not generally retrievable. However, none of the materials are in short supply, and usage would not have an adverse effect on continued availability of these resources. Construction of the Project would also require substantial local and federal funds for construction and operation, which would not be retrievable.

Land used to construct the proposed MSF is considered an irreversible commitment during the period the land is used. The commitment of long-term land resources is consistent with the policies of the City of Los Angeles, which promote transit uses. After construction is completed, land used for construction staging would be available for other uses. The Project would not involve a large commitment of nonrenewable resources.

The consumption of nonrenewable resources related to the build alternatives would include water, petroleum products, and electricity. Fossil fuels would be used for transporting workers and materials during the construction period, and electricity and fuel would be used for streetcar vehicles and worker vehicles for maintenance and operation throughout the life of the Project. The amount and rate of consumption of these resources would not result in significant environmental impacts or the unnecessary, inefficient, or wasteful use of such resources because they would increase transit use, a goal outlined in the *City of Los Angeles General Plan*.

The project benefits would include additional mobility and transit options in downtown Los Angeles. The resources committed and consumed for implementation of any of the build alternatives would be considered appropriate because area residents, workers, and visitors would benefit from the additional transit option for short-distance trips. As discussed in Section 3.4, *Energy*, the Project is expected to displace some trips that are currently made by passenger cars, which would have the beneficial long-term effect of assisting to reduce regional vehicle miles traveled from what they otherwise would be.

The Project would construct and operate a streetcar route within downtown Los Angeles using existing street rights-of-way and one off-street location for an MSF site. Should it be determined in the future that this transportation service no longer is required, all components of the Project could be removed and the rights-of-way and off-street property can be returned to former or new uses. Therefore, the Project, either by its primary or secondary effects, would not commit future generations to similar uses.

During Project operation, cleaning and maintenance activities at the MSF would require the use of household-type cleaning materials, such as detergents and cleansers. Oil, solvents, and other materials would be used for streetcar vehicle maintenance in relatively small volumes and are not considered to be acutely hazardous materials according to the National Institute of Health. There is the potential for hazardous materials/waste spills to occur; however, the storage and disposal of hazardous materials/waste would be conducted in accordance with all federal and state requirements to prevent or manage hazards. In the unlikely event that a spill would occur, remediation would be conducted in accordance with prescribed regulations and procedures. Therefore, there would be a minimal risk of irreversible damage caused by an environmental accident associated with hazardous or acutely hazardous materials. The Project would not involve uses in which irreversible damage could result from any potential environmental accidents associated with the Project.

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Chapter 6
Agencies and Organizations Consulted

This chapter lists the organizations and persons consulted during the preparation of the report. For a detailed list of the agencies, organizations, and individuals who commented only on the Notice of Preparation (NOP), refer to the Scoping Report (Appendix B) that was prepared for this Project.

6.1 Agencies

California Office of Historic Preservation

City of Los Angeles Department of Public Works, Bureau of Sanitation

City of Los Angeles Department of City Planning

City of Los Angeles Department of Recreation and Parks

City of Los Angeles Department of Water and Power

Los Angeles Fire Department

Los Angeles Police Department

Native American Heritage Commission

South Central Coastal Information Center

South Coast Air Quality Management District

United States Department of the Interior, National Park Service

6.2 Organizations

Gabrieleno Band of Mission Indians

Gabrielino Tongva Tribe

Tongva Ancestral Territorial Tribal Nation

Southern California Gas Company

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Chapter 7
List of Preparers

The lead agency for the Project under CEQA is the City of Los Angeles. ICF International prepared this EIR on the Lead Agency's behalf. Additional technical assistance was provided by HDR Engineering Inc. for project management and engineering support, by Intueor Consulting for the traffic analysis, and by ATS Consulting for the noise and vibration analysis. Metro, the City of Los Angeles Department of Public Works, Bureau of Engineering, and Los Angeles Streetcar Inc. (LASI) provided environmental review. This chapter lists the individuals who prepared the report.

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Chapter 8
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