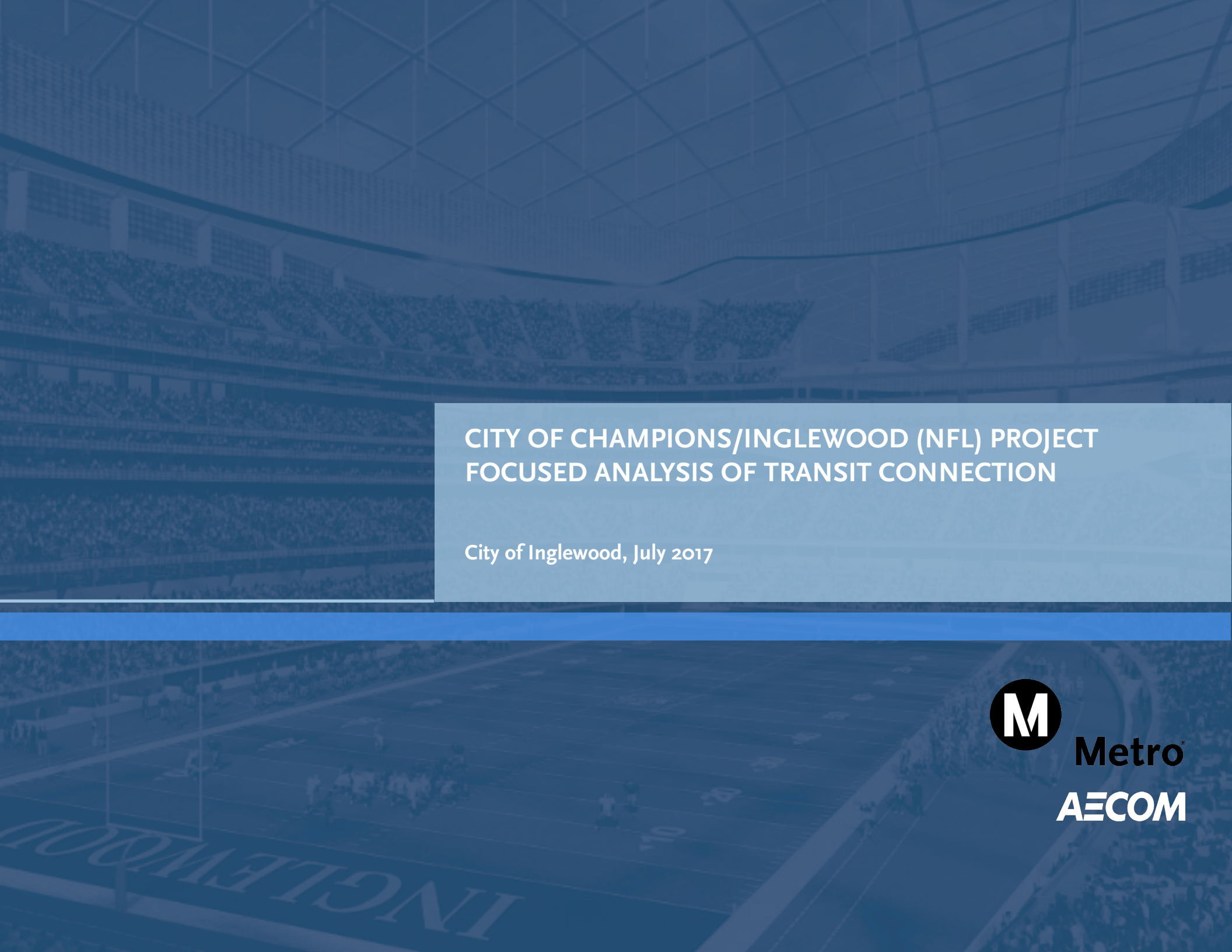

CITY OF CHAMPIONS/INGLEWOOD (NFL) PROJECT FOCUSED ANALYSIS OF TRANSIT CONNECTION

City of Inglewood, July 2017

Metro

AECOM

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Cover picture: HKS Architects

Los Angeles County
Metropolitan Transportation Authority

One Gateway Plaza
Los Angeles, CA 90012-2952

213.922.2000 Tel
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Metro

August 8, 2017

Louis A. Atwell, PE
Director of Public Works
City of Inglewood
One Manchester Boulevard
Inglewood, CA 90301

Re: Notice of Study Completion and Transmittal for City of Champions/Inglewood (NFL) Focused Analysis of Transit Connection

Dear Mr. Atwell:

The Los Angeles County Metropolitan Transportation Authority (Metro) prepared the aforementioned Study in the role of a consultant to the City of Inglewood. Metro is transmitting the final deliverable for the Study, with one hardcopy and one electronic copy on CD enclosed. The files in the enclosed CD have also been uploaded to the Dropbox site.

The City requested Metro to prepare a focused analysis study of a transit connection from the Metro Crenshaw/LAX light rail line to the Inglewood NFL Stadium/Hollywood Park mixed-use development. The Study explores how to connect Inglewood's future entertainment/stadium district to Metro's rail system via a high-capacity transit connection:

- Interlined Operability Scenario: studied connection from the Crenshaw/LAX Line in a subway under Prairie Avenue, which also would jointly operate on a portion of the Crenshaw/LAX Line; and
- Independent Operability Scenario: studied three options for independent services that provide a connection to the Metro Rail system at a Metro station.

Metro prepared this Study based on the City's direction that the connection be primarily grade-separated to the maximum extent possible and principally to serve the entertainment district/stadium site. Cost and ridership estimates are provided in the Study. The City and Metro agreed that the Interlined Operability Scenario is infeasible due to its cost and complexity. With regard to the Independent Operability Scenario, other alternatives, which could be considerably less costly, were not studied, because of the City's concern that congestion during peak periods at the entertainment/stadium district could create conflicts with at-grade, fixed-guideway transit service, degrading transit service.

Also, included in this Study was the initial exploration of the potential to establish an Enhanced Infrastructure Financing District (EIFD) to assist the City in funding the capital costs of building the fixed guideway transit connection. This was specifically included to facilitate the City's future consideration of a public-private partnership as a project financing and delivery option. Of the several findings outlined, an essential provision of EIFD formation requires that any included project(s) must be cleared by the appropriate California Environmental Quality Act (CEQA) environmental

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document—likely an Environmental Impact Report (EIR)—prior to the establishment of the EIFD to be eligible for funding. The EIFD should be in place prior to opening the stadium and/or related facilities to capture the value of those improvements to provide maximum financial capacity for the transit connection project.

To explore a transit connection further, Metro recommends that the City of Inglewood should undertake the following steps, which must occur expeditiously for an EIFD to be utilized effectively:

- Determine one or more potential transit connection projects to further evaluate, either from those included in the Independent Operability Scenario set of options, or a new alternative not previously studied;
- Select one or more transit projects to be environmentally-cleared pursuant to CEQA (note that NEPA clearance would also be required should federal funds be sought);
- Initiate the EIFD process concurrently with the CEQA process;
- Establish the EIFD prior to opening the stadium and/or related facilities.

Stakeholder and public outreach are highly recommended. The owner of the Los Angeles Rams and entertainment/stadium district developer, along with the County of Los Angeles, are two crucial stakeholders in the EIFD process.

As a reminder, this potential connection is not included in Metro's Long Range Transportation Plan and as such, no Metro funding is identified for it, including any entitlement and pre-construction activities.

Thank you for the opportunity to prepare the Study. Metro staff would be happy to present the Study to Honorable Mayor and Metro Board Second Vice-Chair James Butts, should you find that helpful. Please contact David Mieger, Executive Officer, at 213-922-3040 to arrange the presentation and to discuss any clarifying questions about the Study.

Sincerely,

Therese McMillan, Chief Planning Officer
Countywide Planning and Development

Enclosures: Final Study Report and Appendices

cc: Honorable Mayor and Vice Chair James Butts, City of Inglewood and Metro Board of Directors
Mike Bohlke, Transportation Deputy for Vice Chair Butts, City of Inglewood
Artie Fields, City Manager, City of Inglewood
Phillip A. Washington, Metro CEO
Stephanie Wiggins, Metro Deputy CEO
Manjeet Ranu, Metro Countywide Planning and Development
Calvin Hollis, Metro Countywide Planning and Development
David Mieger, Metro Countywide Planning and Development
Metro Vendor/Contract Management Contract Administrator

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Appendices

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EXECUTIVE SUMMARY

The Los Angeles County Metropolitan Transportation Authority (Metro), in the role of a consultant to the City of Inglewood, performed a focused analysis (Study) of a 1-2 mile transit connection from the Metro Crenshaw/LAX light rail line to the Inglewood NFL Stadium/Hollywood Park mixed-use development. This study explores the implementation of a convenient, reliable, high-capacity transit service, presents different opportunities for connecting to the regional Metro Rail system, and analyzes potential costs and impacts for two operability scenarios based on the following goals:

- **Reliability:** Convenient service with minimum delay, wait, and travel times
- **Connectivity:** Ease of transferring to and from the Metro Rail system
- **Capacity:** The ability to serve 20,000 passengers/hour event travel demand

The Interlined Operability Scenario looked at a branch from the Crenshaw/LAX Line in a subway under Prairie Avenue. The Independent Operability Scenario looked at three options for services "independent" of, but providing connection to the Metro Rail system.

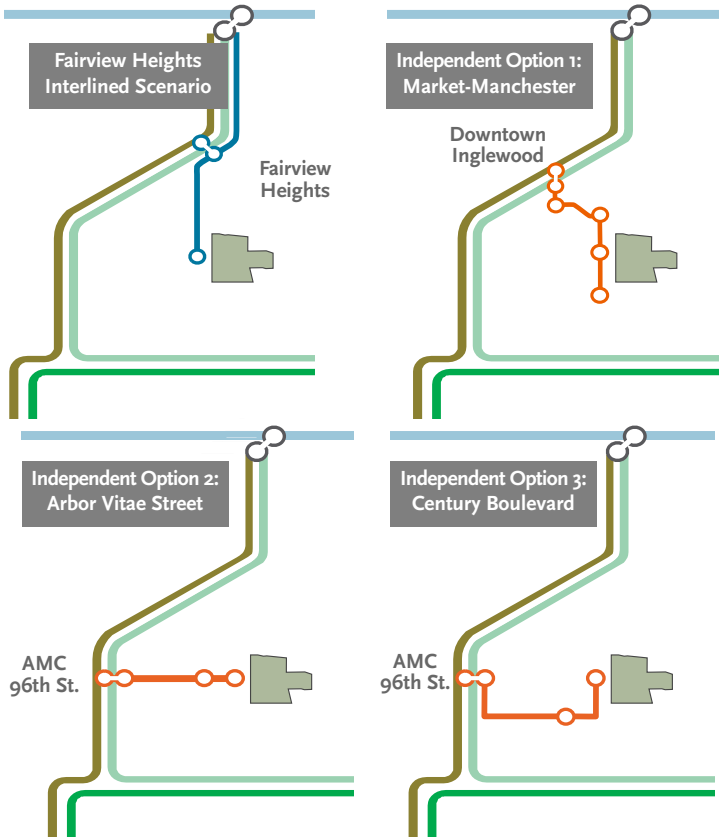
- **Option 1: An independent "urban rail"** transit connection to Downtown Inglewood to leverage Market Street in Inglewood's historic core and promote economic development opportunities in the City.
- **Option 2 & 3: An independent "automated people mover"** transit connection to the Airport Metro Connector 96th Street Transit Station via either Arbor Vitae Street (Option 2) or Century Boulevard (Option 3) to provide connections to LAX and Metro's major multi-modal hub at AMC 96th Street Transit Station.

Scenarios and Options considered for this Study are illustrated in **Figure ES-1**, and the technical specifications of the modes analyzed are summarized in **Table ES-1**.

Modes	Typical Train Length	Weight /Car	Capacity /Train	Speed	Examples
Light Rail	289 Feet (3-Car)	122,250 lb	450	25 - 65 mph	LA Metro LRT
Urban Rail	198 Feet (3-Car)	80,570 lb	450	5 - 55 mph	Rome Tram
APM	252 Feet (6-Car)	52,100 lb	600	5 - 35 mph	DFW Skylink
Monorail	240 Feet (6-Car)	48,000 lb	600	30 - 55 mph	Las Vegas Monorail

Source: AECOM

Table ES-1 Mode Specifications



Source: AECOM

Figure ES-1 Scenarios and Options Considered

The draft final report is divided into three parts:

- Part I - Introduction, Project Goals, and Operability Scenarios defines operability scenarios and options considered for the transit connection
- Part II - Operability Scenarios Evaluation explores impacts caused by the transit connection
- Part III - Funding, Financing, & Delivery presents strategies for implementation

The findings of this study is summarized as below (**Table ES-2**).

		Interlined with Crenshaw/ LAX Line	Independent		
			Option 1: Downtown via Market-Manchester	Option 2: Arbor Vitae Street	Option 3: Century Boulevard
Capacity Goal	Maximum Capacity:	5,400 passengers/hour	13,500 passengers/hour	18,000 passengers/hour	
	Projected Riders[1]:	Average Weekday: 3,734 riders/day	Average Weekday: 3,158 riders/day	Average Weekday: 1,740 - 3,803 riders/day	
		Event: 4,130 - 15,000 attendees/event	Event: 3,900 - 14,300 attendees/event	Event: 6,120 - 24,180 attendees/event	
Cost	Capital Cost (2017$)[2]	$1.333 - $1.960 billion	$497 - 746 million	$561 million - 990 million	$563 million - 1.049 billion
	Operating & Maintenance Cost (2017$)[3]	$13.6 - 22.5 million/year	$11.2 - 17.1 million/year	$9.9 - 14.3 million/year	$11.0 - 17.1 million/year
Technology/Mode		Underground LRT	Urban Rail	APM/Monorail	
Stations		Fairview Heights, Development[4]	Market North, Market South, Manchester, Forum, Development	AMC, La Brea, Development	AMC, La Cienega, La Brea, Century/Prairie, Development
Distance (mi.)		1.8[4]	1.2	2.1	2.8
Average Speed (mi./hr)		35.6[4]	14.9	32.7	24.6
One-Way Travel Time (min.)		3.0[4]	4.8	3.8	6.8
Potential Right-of-Way Acquisition (acres)		22	15	33	19
P3 Opportunities		Low	High	High	High

Note:
1. Range reflects differences in attendance between teams, varying mode splits, and parking utilization (for Independent Option 2&3)
2. Range reflects a low and high capacity operating plan as well as uncertainty and contingency due to current stage of design.
3. Range reflects a low and high capacity operating plan.
4. Based on the new branch from Fairview Heights Station to the Development.

Source: AECOM, Connetics Transportation Group

Table ES-2 Summary of Study Findings

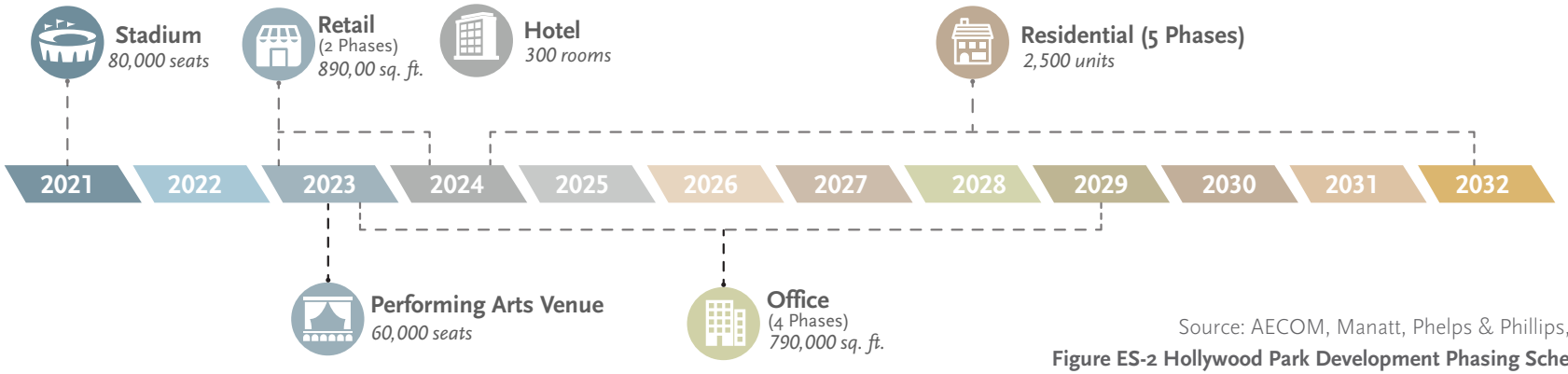
The City and Metro agreed that the Interlined Operability Scenario is infeasible due to its cost and complexity. With regard to the Independent Operability Scenario, other alternatives, which could be considerably less costly, were not studied, because of the City's concern that congestion during peak periods at the Development could create conflicts with at-grade, fixed-guideway transit service, degrading transit service.

The Enhanced Infrastructure Finance District (EIFD)is a new funding tool established in 2014, which has extraordinary flexibility, extensive reach of its powers, and high ability to combine multiple sources of revenue in addition to tax increment, as well as to integrate them into a locally-developed financial business plan. This capacity to bundle multiple revenue streams including development and user fees, bond funds federal and state grants and myriad other sources serves to enhance the revenue available to the EIFD to fund proposed projects.

As a major potential funding source, EIFD was assessed to see if there is sufficient financial capacity available to support operation and maintenance of the transit connection. This will also inform the decision as to whether, when utilized in connection with a project governance vehicle such as a Public Private Partnership (P3) or similar project delivery strategy, this strategy can attract the scale of private investment needed to operate as a stand-alone enterprise.

P3 benefits arise from optimizing risk allocation, aligning incentives for performance, and taking a project life-cycle perspective. Potential funding and P3 delivery options that could support and accelerate the delivery of the transit connection have been explored in this Study.

Implementation of the Hollywood Park Development has a major role on the timing and amount of projected tax increment and project-generated revenue to the City and thus its availability to the EIFD. The current schedule for development phasing is shown in **Figure 3.1-2**. A preliminary approximation of the total amount of potential net bondable proceeds is summarized in **Table 3.1-1**.



Source: AECOM, Manatt, Phelps & Phillips, LLP

Figure ES-2 Hollywood Park Development Phasing Schedule

	Max. 47.9% County and 14% City to EIFD	County 20% and City 14% to EIFD	County 10% and City 14% to EIFD	No County Share and City 14% to EIFD
Projected Year 5 & cum. through year. 4	$158,000,000	$82,000,000	$62,600,000	$33,800,000
Projected Year 10 & cum. through year. 9	$277,600,000	$159,5000,000	$108,400,000	$64,100,000
Projected Year 15 & cum. through year. 14	$428,200,000	$231,700,000	$163,000,000	$100,700,000
Projected Year 20 & cum. through year 19	$574,900,000	$314,400,000	$224,800,000	$128,100,000

Note: Assumes 30 year term and build-out as projected – Assume 1.35 coverage, 6% rate and 12% cost of issuance.

Source: Manatt, Phelps & Phillips, LLP

Table ES-3 City of Inglewood Projected Net Bond Proceeds

To explore a transit connection further, the City of Inglewood should undertake the following steps, which must occur expeditiously for an EIFD to be utilized effectively:

- Determine one or more potential transit connection projects to further evaluate, either from those included in the Independent Operability Scenario set of options, or a new alternative not previously studied;
- Select one or more transit projects to be environmentally-cleared pursuant to California Environmental Quality Act (CEQA) and possibly the National Environmental Protection Act (NEPA) should federal funds be sought;
- Initiate the ElFD process concurrently with the CEQA process;
- Establish the EIFD prior to the stadium opening and/or related development.
- Engage stakeholders and conduct public outreach.The owner of the Los Angeles Rams and the Development developer, along with the County of Los Angeles, are two crucial stakeholders in the El FD process.

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PART I

INTRODUCTION, PROJECT GOALS & OPERABILITY SCENARIOS

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1.1 INTRODUCTION

In November 2016, the Los Angeles County Metropolitan Transportation Authority (Metro), as a consultant to the City of Inglewood (the Project Team), initiated the City of Champions/Inglewood (NFL) Project Focused Analysis of Transit Connection (Study). This study analyzes a potential underground rail transit connection from the under-construction Metro Crenshaw/LAX Fairview Heights At-Grade Light Rail Transit (LRT) station at Florence Avenue south on Prairie Avenue to the City of Champions/Inglewood (NFL) Stadium/ Hollywood Park Development (Development), anticipated to open in 2019 and 2020, respectively, (**Figure 1.1-1**).

This Study evaluates the feasibility of using high capacity transit technology to serve the Development under either of two Operability Scenarios, either as a branch of the Metro transit network ("Interlined") or as a stand-alone system that connects via transfer to the Metro network ("Independent"). Other interim multi-modal and traffic management studies for access to the Development are being performed separately by the City of Inglewood.

The Independent Operability Scenario was expanded to include study of connections to either the Downtown Inglewood or AMC 96th Street stations along the Crenshaw/LAX Line.

Source: Metro, AECOM

Figure 1.1-1 City of Champions/Inglewood (NFL) Project Focused Analysis of Transit Connection Study Area Map

1.1.1 METRO CRENSHAW/LAX LINE

The Metro Crenshaw/LAX LRT Line extends 8.5 miles between the Metro Green Line and Expo Line, and is planned to open in 2019. In the City of Inglewood, the Crenshaw/LAX Line runs primarily at- or above-grade in a former railroad right-of-way (ROW) with two stations (Downtown Inglewood and Fairview Heights) located within the city (Downtown Inglewood and Fairview Heights) . The proposed Airport Metro Connector (AMC) 96th Street Transit Station, being built and operated by Los Angeles World Airport (LAWA) to provide access to future Automated People Mover (AMP), is anticipated to open in 2023.

1.1.2 HOLLYWOOD PARK DEVELOPMENT

The 238-acre Development is located in the City of Inglewood on the site of the former Hollywood Park Racetrack and equestrian training facility. The mixed-used development is proposed to include an 80,000-seat NFL stadium, a 6,000-seat performance venue, 2,500 residential units, retail, office and hotel, as well as recreational amenities (**Figure 1.1-2**, **Table 1.1-1**). The Stadium is expected to be complete in 2020.

In addition to 16-20 regular and pre-season professional football games, the Stadium will accommodate a variety of sporting and entertainment events year-round. The 2022 "Super Bowl" is planned to be held at the Stadium . Also, after a July 2017 vote by the International Olympic Committee, Los Angeles will tentatively host either the 2024 or 2028 Olympic Games. As part of the bid concept, the proposed Stadium will accommodate the opening ceremonies, among other events, with the nearby Forum also serving as a venue. This study also takes into consideration the safety, security and crowd control associated with serving peak major event travel demand.

Source: City of Inglewood

Figure 1.1-2 Hollywood Park Development Site Plan

Type of Use	Capacity / Sq. Footage
Stadium	Up to 80,000 seats
Performance Venue	6,000 seats
Residential	2,500 units
Retail	890,000 SF
Office Space	780,000 SF
Hotel	300 rooms
Neighborhood Parks & Recreational Amenities	25 acres

Source: City of Inglewood

Table 1.1-1 Hollywood Park Development Land Use

1.1.3 CLIPPERS ARENA

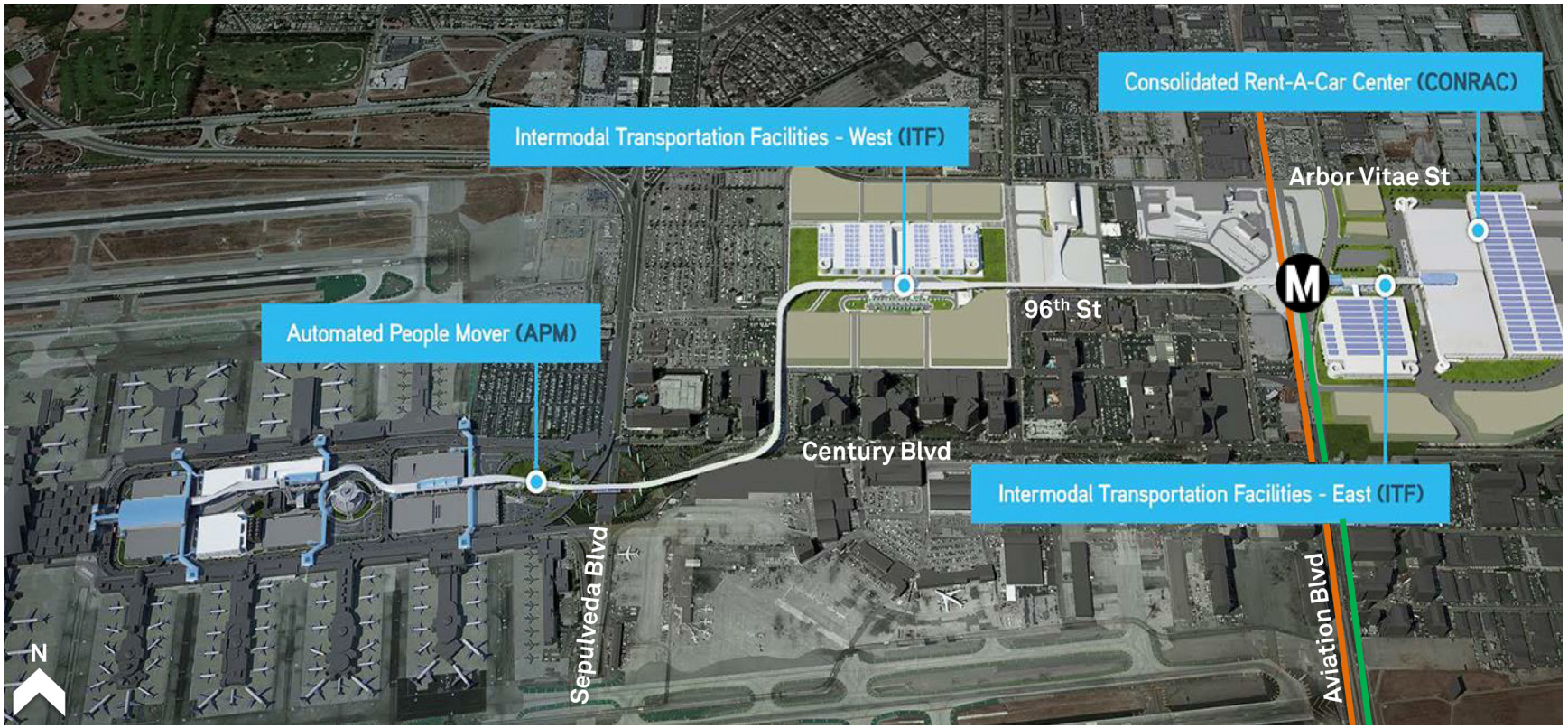
In June 2017, the Clippers National Basketball Association (NBA) Team announced the team is finalizing plans for a new arena that would seat up to 20,000 people located in the City of Inglewood near the intersection of Century Boulevard and Prairie Avenue, adjacent to the Development.

1.1.4 LOS ANGELES INTERNATIONAL AIRPORT

Access challenges and increasing congestion at Los Angeles International Airport (LAX) have prompted Los Angeles World Airports (LAWA) to develop the Landside Access Modernization Program (LAMP). The LAMP proposes to improve the ground transportation system at LAX by introducing an Automated People Mover (APM) to connect the airport terminals to several new multi-modal facilities including parking, a consolidated rental car facility (CONRAC), and the Metro AMC 96th Street Transit Station (**Figure 1.1-3**). The first phase, including the APM, is planned to open in 2023.

Metro will build the AMC 96th Street Transit Station on the Crenshaw/LAX Line to facilitate convenient transfers to the LAMP, also opening in 2023 (**Figure 1.1-4**). The station is planned to include:

- Three light rail platforms to be served by the Crenshaw/LAX Line and an extension of the Metro Green Line
- Metro and municipal bus transfer facility
- Bicycle "hub" with secure parking
- Pedestrian plaza
- Passenger vehicle pick-up and drop-off area
- Metro transit center/terminal building



Source: Los Angeles World Airports' Landside Access Modernization Program Study

Figure 1.1-3 Landslide Access Modernization Program Proposed Improvements

Source: Metro

Figure 1.1-4 AMC 96th Street Transit Station Aerial Rendering

Passengers, visitors, airport employees and others will be able to transfer from the at-grade LRT Platforms to be served by Metro Green & Crenshaw Lines, bus plaza, bike hub and dropoff to the elevated LAWA's APM via an elevated mezzanine.

1.2 PROJECT GOALS AND NEED - RELIABILITY, CONNECTIVITY, CAPACITY

Mobility and access to a major new activity center requires special consideration, especially given local and regional goals to increase transportation choice, reduce greenhouse gas emissions, and encourage compact development patterns.

The Development is 1.3 to 2.3 miles from the regional, high capacity rail system (either the Metro Crenshaw/LAX or Green Lines), farther than is reasonably walkable. A transit link would connect thousands of spectators to the rail network, while also providing an alternative to traveling by car via the I-405 freeway and other congested roadways in the area.

In addition, the study considers the compatibility of the options with local and regional plans, and the ability to encourage and support economic development in surrounding areas of Inglewood.

As a starting point, and based on national experience with transit service to major professional sports events, a target capacity was established to serve peak demand at the Development. With the knowledge that Metro served between 14% and 26% of Rams' games attendees at Los Angeles Memorial Coliseum during the 2016 season, and policy goals set at other locations for emptying the stadium after an event within one hour, it was calculated that the service should be able to serve 25% of the stadium capacity per hour. Therefore, for the study the **target capacity was set at** 25% of the 80,000 stadium capacity, or **20,000 passengers per hour.**

1.3 OPERABILITY SCENARIOS CONSIDERED

In developing options for the transit connection, the idea of both "interlined" and "independent" operating scenarios were considered. An **interlined** scenario (**Table 1.3-1**) would function as a branch of the Metro Rail network with Metro-owned-and-operated light-rail service directly to the Development. In order to complete a full set of possible scenarios, options were developed and organized into two sets of categories:

1. Implementation timeline:
   - Short term – minimum investment required to serve Development but often impacts level of service along existing lines
   - Upgrades to Crenshaw/LAX – adds capacity to the Crenshaw/LAX line to serve the Development
   - Long Term – extends the project to connect both north and south

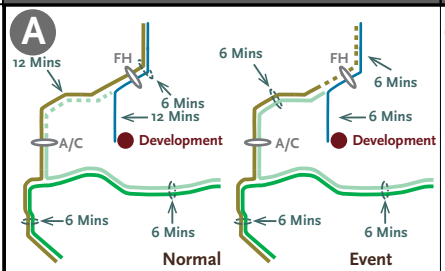
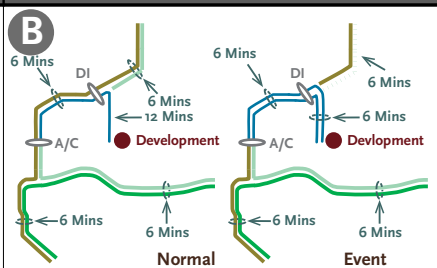
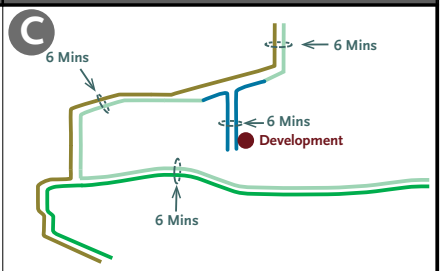
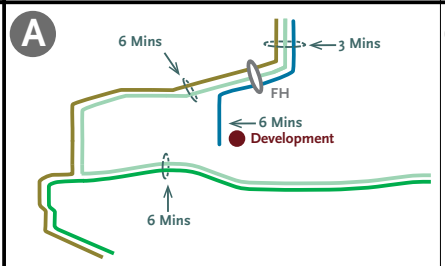
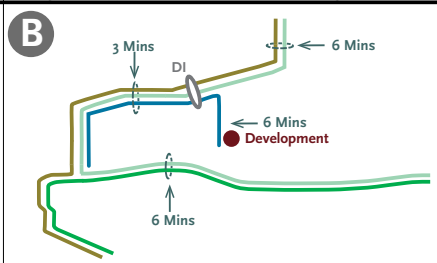
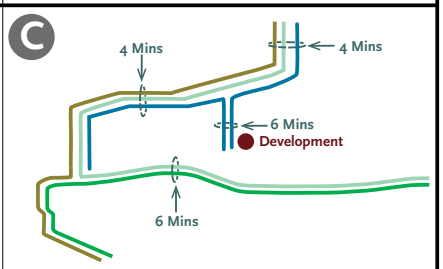
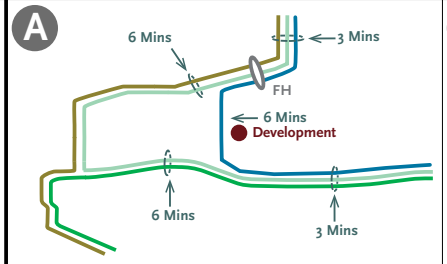
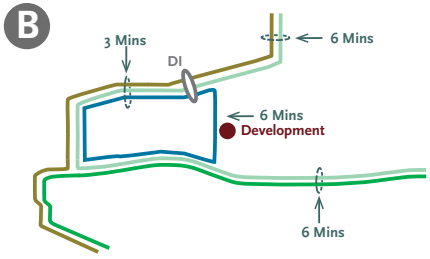
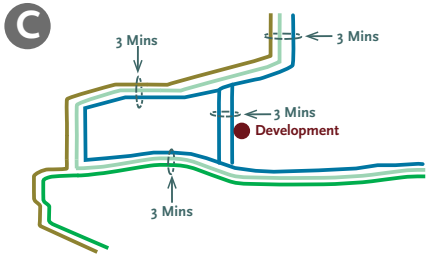
2. Directionality:
   - "A" - east-oriented – interlined via Fairview Heights Station
   - "B" - west-oriented – interlined via Downtown Inglewood Station
   - "C" - both east- and west-oriented

Alternatively, an **independent** scenario (**Table 1.3-2**) would function as a point-to-point service, "shuttling" passengers from the Development to the Metro rail network. Several "operability scenarios" were developed to explore the opportunities and challenges associated with a variety of route options. Future ("Long Term") connections to the Green Line and Hawthorne were identified but not recommended for further study and are not included in this analysis. These connections can be explored at a later date.

These options were screened based on certain criteria to yield the following options considered in the Study. Detailed discussion is provided in Appendix A.

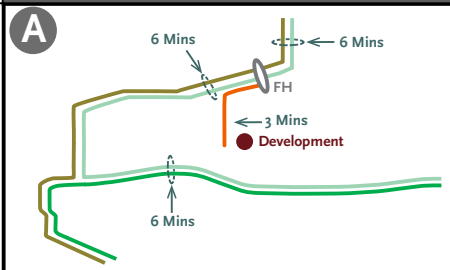
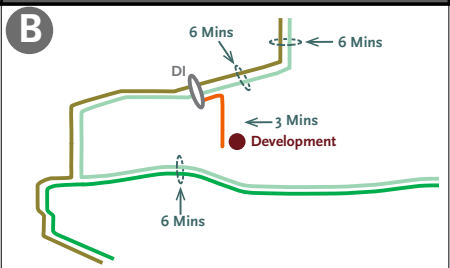
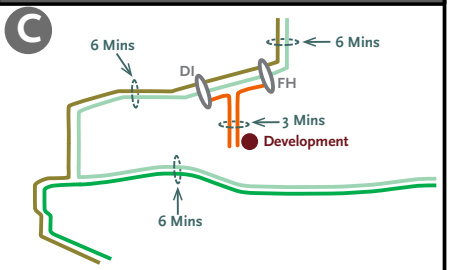
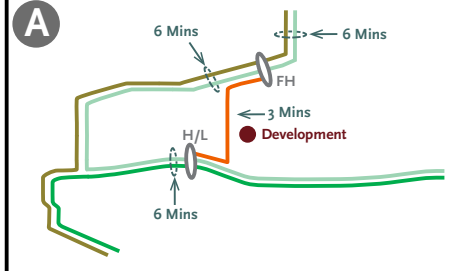
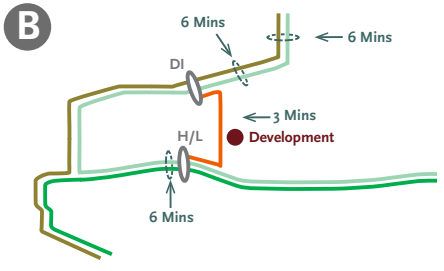
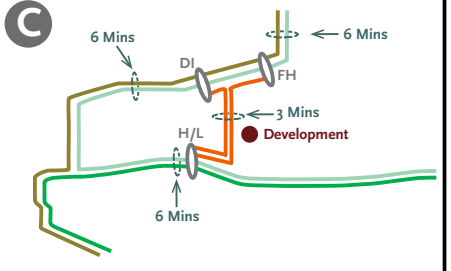
THE PROJECT'S PRIMARY GOALS INCLUDE:

- **RELIABILITY**: Convenient service with minimum delay, wait, and travel time
- **CONNECTIVITY**: Ease of transferring to and from the regional high-capacity transit network
- **CAPACITY**: The ability to serve peak travel demand to and from the Development

	North-Oriented (Fairview Heights Connection)	South-Oriented (Downtown Inglewood Connection)	2-Way Oriented (North and South Connection)
Short-term			
Normal Headways	12 Minutes	12 Minutes	6 Minutes
Event Headways	6 Minutes	6 Minutes	6 Minutes
Max Train Length	2 - 3 Cars	2 - 3 Cars	2 - 3 Cars
Opportunities & Challenges	- Major cost to upgrade FH Station for turning and terminating - Accommodation for major transfers at FH Station on Game Day	- Major cost to upgrade DI Station for turning and terminating - Accommodation for major transfers at DI Station on Game Day - Integration opportunities with businesses in Inglewood	- Major cost for the 3-way junction at Prairie/Florence - Does not require upgrades to DI or FH Stations
Upgrades to Crenshaw/LAX			
Normal Headways	12 Minutes	12 Minutes	6 Minutes
Event Headways	3 - 6 Minutes	3 - 6 Minutes	3 Minutes
Max Train Length	3 - 5 Cars	3 - 5 Cars	3 - 5 Cars
Opportunities & Challenges	- Upgrades to tunnel & signaling systems and/or platform length on Crenshaw/LAX line north of Fairview Heights Station - Tail tracks required at Expo/Crenshaw	- Upgrades to tunnel & signaling systems and/or platform length on Crenshaw/LAX and Green Line south of DI Station	- Upgrades to tunnel & signaling systems and/or platform length on all lines in this area
Long-term			
Normal Headways	12 Minutes	12 Minutes	6 Minutes
Event Headways	3 - 6 Minutes	3 - 6 Minutes	3 Minutes
Max Train Length	3 - 5 Cars	3 - 5 Cars	3 - 5 Cars
Opportunities & Challenges	- Upgrades to tunnel & signaling systems and/or platform length on both Crenshaw/LAX and Green Line - Tail tracks required at Expo/Crenshaw and Green Line Stations	- Upgrades to tunnel & signaling systems and/or platform length on both Crenshaw/LAX and Green Line	- Upgrades to tunnel & signaling systems and/or platform length on both Crenshaw/LAX and Green Line

Source: AECOM

Table 1.3-1 Range of Interlined Operability Scenarios

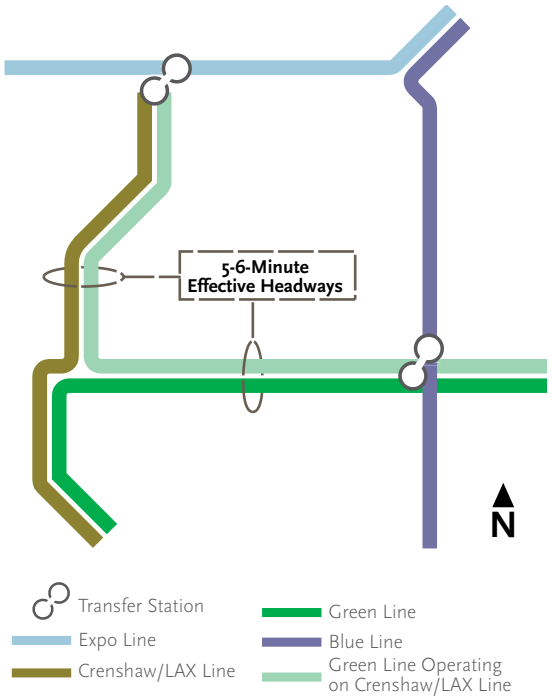
	North-Oriented (Fairview Heights Connection)	South-Oriented (Downtown Inglewood Connection)	2-Way Oriented (North and South Connection)
Short-term			
Normal Headways	6 Minutes	6 Minutes	6 Minutes
Event Headways	3 Minutes	3 Minutes	3 Minutes
Max Train Length	3 - 5 Cars	3 - 5 Cars	3 - 5 Cars
Opportunities & Challenges	- Major cost to upgrade FH Station for turning and terminating - Accommodation for major transfers at FH Station	- Major cost to upgrade DI Station for turning and terminating - Accommodation for major transfers at DI Station - Integration opportunities with businesses in Inglewood	- Major cost for the 3-way junction at Prairie/Florence - Accommodation for transfers at both Stations - Low cost effectiveness due reduced headways at split
Long-term			
Normal Headways	6 Minutes	6 Minutes	6 Minutes
Event Headways	3 Minutes	3 Minutes	3 Minutes
Max Train Length	3 - 5 Cars	3 - 5 Cars	3 - 5 Cars
Opportunities & Challenges	- Major cost to upgrade FH Station for turning and terminating - Accommodation for major transfers at FH Station - Major junction at Green Line and/or stations' expansions	- Major cost to upgrade DI Station for turning and terminating - Accommodation for major transfers at DI Station - Major junction at Green Line and/or stations' expansions	- Major cost for the 3-way junction at Prairie/Florence - Accommodation for major transfers at both Stations - Low cost effectiveness due reduced headways at split

Source: AECOM

Table 1.3-2 Range of Independent Operability Scenarios

1.3.1 INTERLINED SCENARIO

Existing and proposed operations on the Metro Crenshaw/LAX and Green Lines constrain the modification or expansion of service required to serve the Development. The Crenshaw/LAX Line is designed to support up to 5-minute minimum headways. The existing Green Line is also designed to operate at minimum 5-minute headways. The base network assumes the combined Crenshaw/LAX and Green Lines operate as three services on three branches terminating at Expo/Crenshaw, Redondo Beach, and Norwalk (**Figure 1.3-1**). As shown, each of the three services would operate at 10-12 minute headways, for effective headways on each branch of 5-6 minutes. This maximizes the service potential for these lines but **does not allow for additional capacity to serve a branch to the Development.** Therefore, any scenario involving integration with the Crenshaw/LAX Line or the Green Line requires upgrades to accommodate increased train frequency to provide service to the Development. An interlined LRT service to the Expo Line connecting the Development via the Fairview Heights Station along Prairie Avenue and requiring upgrades to the Crenshaw/LAX Line alignments and stations (**Figure 1.3-2**) was selected for the Study evaluation by the Project Team, because it is the most direct branch alignment from the Crenshaw/LAX Line and serves significant travel demand from the Westside, Central Los Angeles, and points further north and east via Downtown Los Angeles.



Source: AECOM
Figure 1.3-1 Base Metro Network

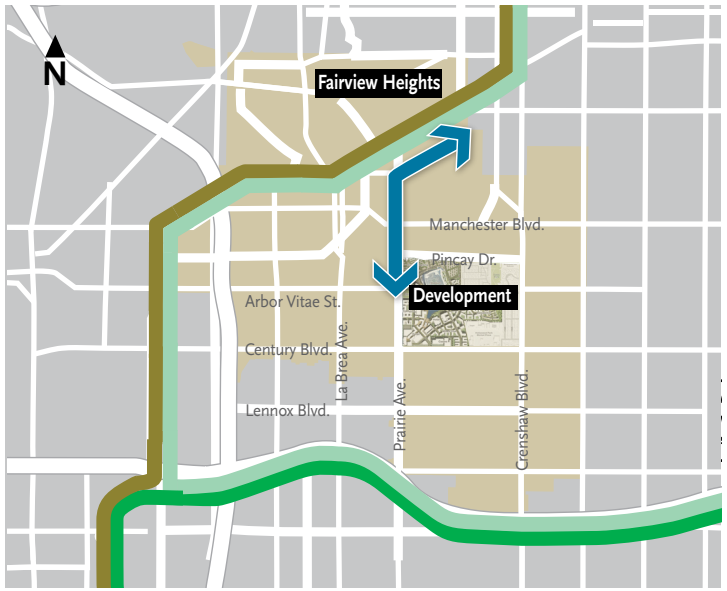
1.3.2 INDEPENDENT SCENARIO

Independent scenarios operate with the primary objective of providing reliable point-to-point service between the Crenshaw/LAX Line and the Development. Connections south to the Green Line and Hawthorne were identified as opportunities for future extension but not specifically included in this analysis.

The screened independent options include the following:

- Option 1 (Market-Manchester)
  Option 1 connects the Downtown Inglewood Station to the Development via Market St and Manchester Blvd. This option is recommended for study because it presents an opportunity for integration with local economic activity, transit-oriented development, and other initiatives in the area (**Figure 1.3-3**).
- Option 2 (Arbor Vitae)
  Option 2 connects the Metro AMC 96th Street Transit Station to the Development Station along the shortest route via Arbor Vitae Street (**Figure 1.3-4**). This option presents an opportunity to connect to a planned regional multi-modal hub served by both Metro's Crenshaw/LAX and Green Lines 13 different Metro and municipal lines, and LAWA's APM system.
- Option 3 (Century)
  Option 3 connects the Metro AMC 96th Street Transit Station to the Development Station via Century Boulevard (**Figure 1.3-5**). Century Boulevard is a major arterial, which is more compatible with a potential transit service. In addition to the AMC 96th Street Transit Station, this option presents the opportunity to connect to hotels and businesses along Century Boulevard.

An independent connection to the Fairview Heights station along the same alignment as the Interlined Scenario was not considered, as Fairview Heights is not an ideal location for event crush- or peak-load transfers and does not provide access to significant activity centers, multi-modal options, and is biased towards trips coming from the north (transfers from the Green Line and points south to the stadium would be circuitous via Fairview Heights).



Source: AECOM

Figure 1.3-2 Interlined Scenario

Source: AECOM

Figure 1.3-3 Option 1: Market-Manchester

Source: AECOM

Figure 1.3-4 Option 2: Arbor Vitae

Source: AECOM

Figure 1.3-5 Option 3: Century

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PART II

OPERABILITY SCENARIOS EVALUATION

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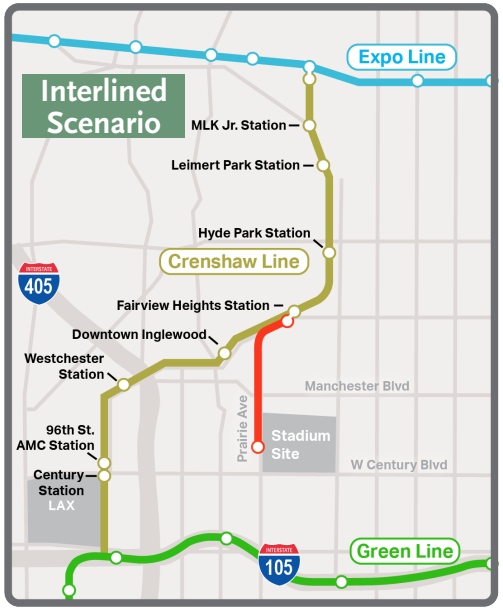
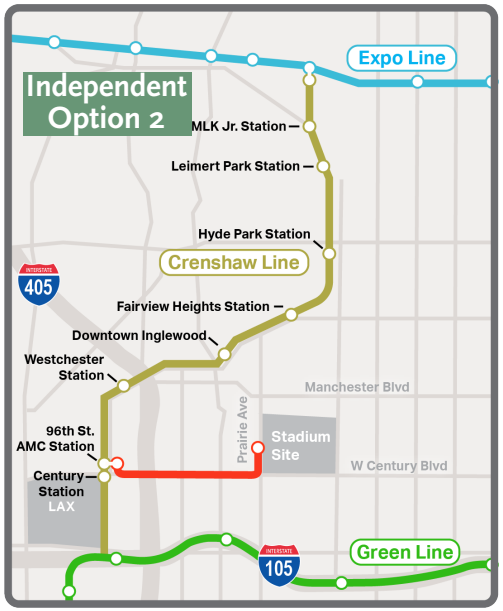
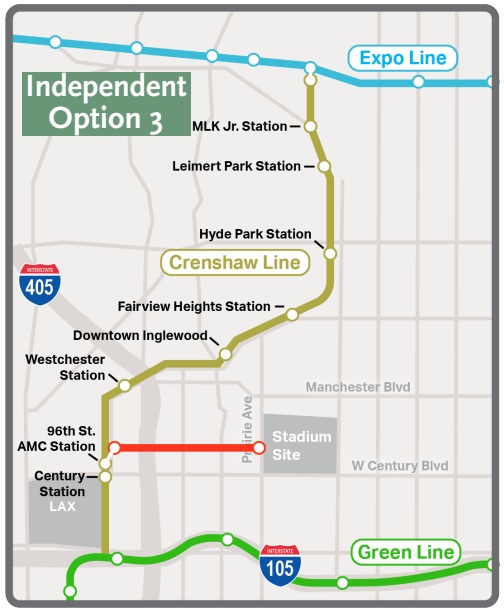






The Operability Scenarios discussed in Part I were evaluated on several technical areas of study that would assist in providing more information to determine the most reliable, effective and efficient transit service that also meets the goals of the Project. Below includes discussions for both the Interlined and Independent Operability Scenarios and the related options on the following technical areas: Guideway Configuration and Mode, Station Design and Connectivity, Operating Capacity, Ridership, Construction Methods and Impacts, Traffic Impacts, Maintenance and Storage Facilities, Right-of-Way Acquisition, Utility Conflicts and Relocation, Rail Systems, Environmental Scan and Potential Mitigation Requirements, Safety and Security, Capital and Operating Costs.

A summary of the findings of these technical areas can be found in Section 2.14.

2.1 Guideway Configuration and Mode

The initial definition of the interlined and independent options considered was based on the need to provide a reliable transit service that minimizes delay, wait and travel times. This is accomplished primarily through definition of the guideway configuration and technology characteristics. Discussion of the guideway configurations and technology modes are discussed in this section.

2.1.1 Guideway Configuration

The following section describes how reliable transit connection options were developed by determining the best location and configuration for the transit "guideway" or track structure.

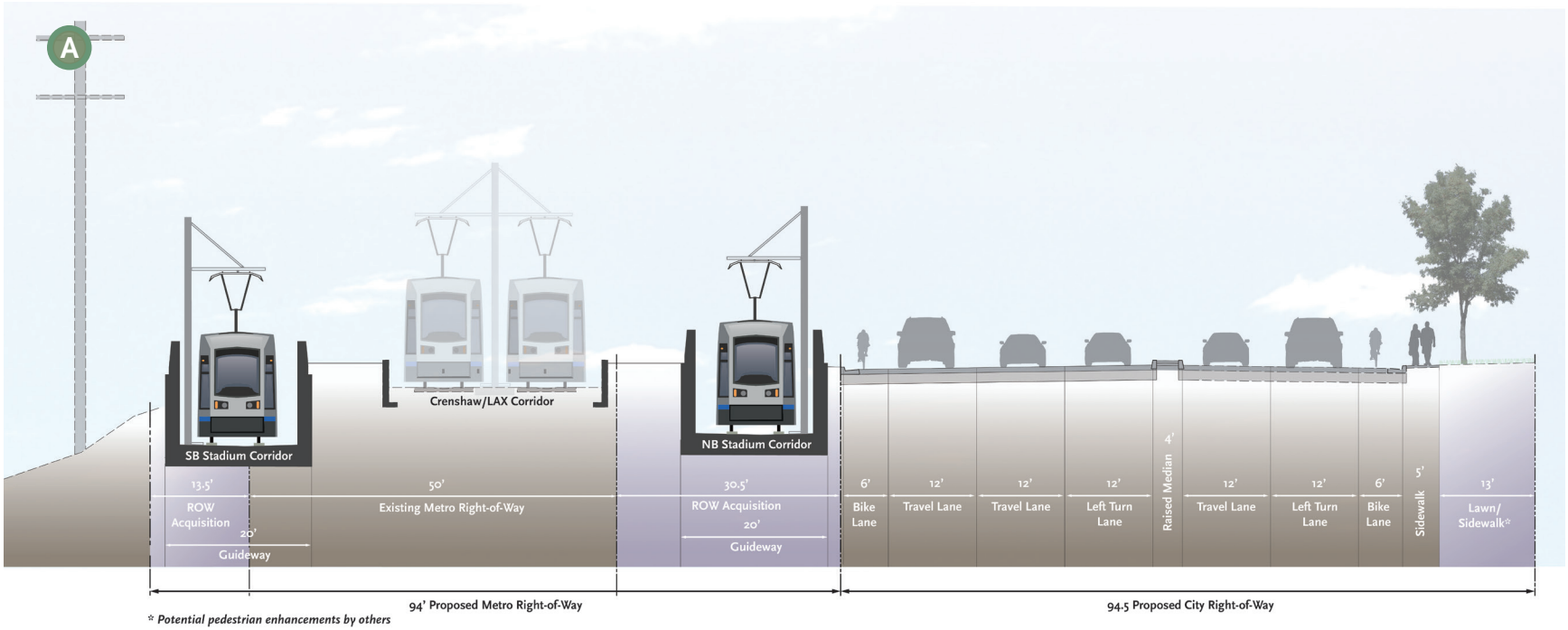
Source: AECOM

Figure 2.1-1 Fairview Heights Interlined Option

Interlined Scenario

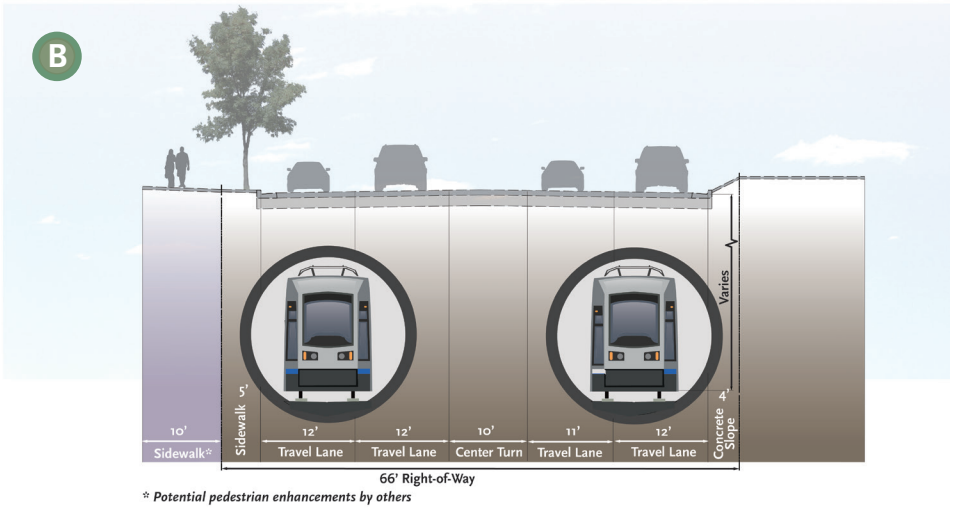
The Fairview Heights Interlined Scenario is assumed to include a fully exclusive, underground guideway from the junction point with the Metro Crenshaw/LAX Line to the Development (**Figure 2.1-1**, **Figure 2.1-2**, **Figure 2.1-3**). By being fully underground, the guideway:

- Avoids traffic impacts and delays along Prairie Avenue and at intersections with Florence Avenue, Manchester Boulevard, Pincay Drive, and Arbor Vitae Street
- Reduces noise, vibration, and visual impacts to residential neighborhoods along Prairie Avenue, The Forum, and the Inglewood Park Cemetery



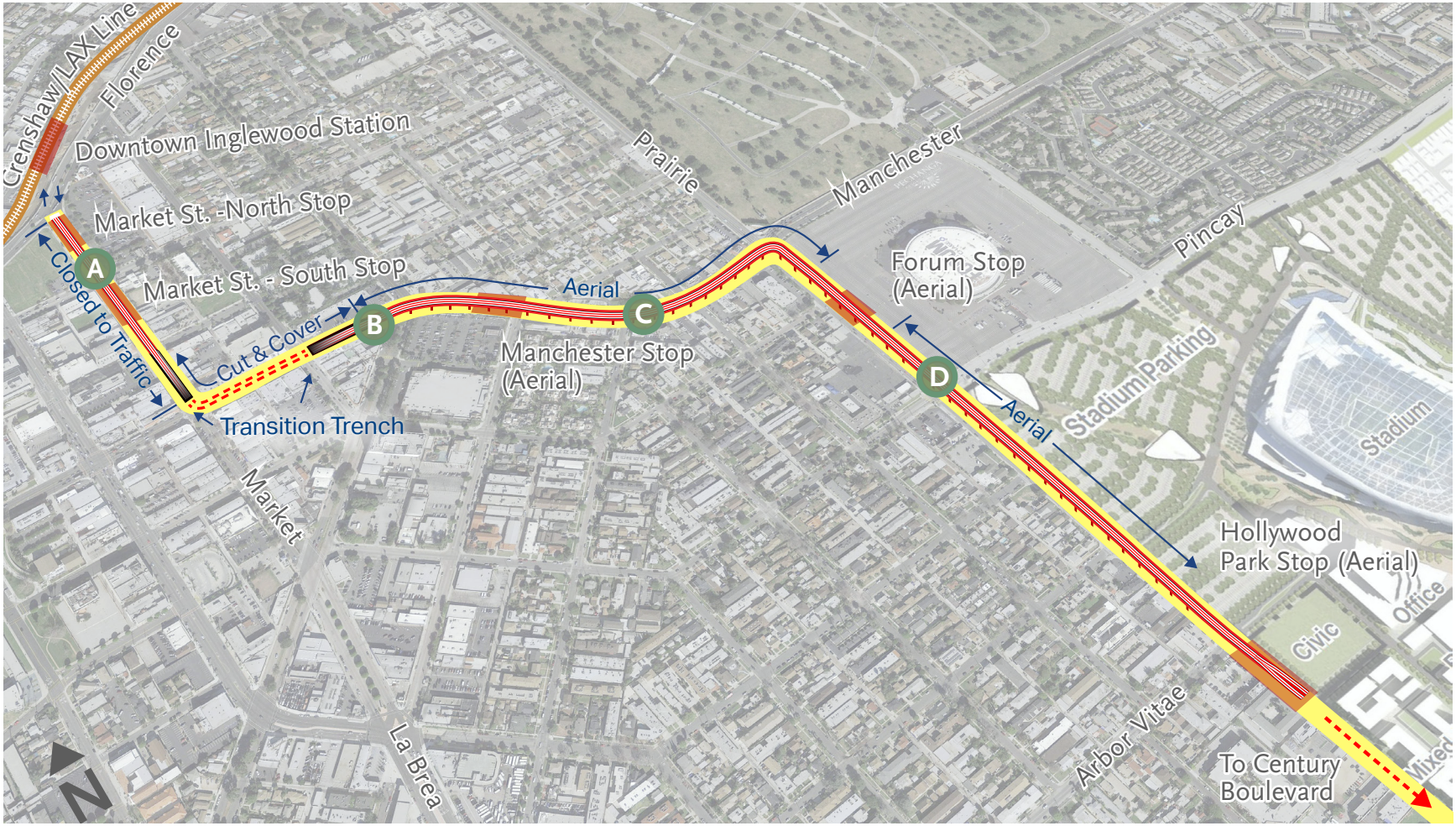
Source: AECOM

Figure 2.1-2 Florence Avenue Looking Northeast



Source: AECOM

Figure 2.1-3 Prairie Avenue North of Manchester Boulevard Looking North



Source: AECOM

Figure 2.1-4 Option 1: Market-Manchester

Independent Scenario

Option 1: Market-Manchester

Option 1 was developed to connect to Downtown Inglewood Station along the Crenshaw/LAX Line. It is the shortest distance from the Development to the Crenshaw/LAX line and would create additional economic activity in Inglewood's historic center.

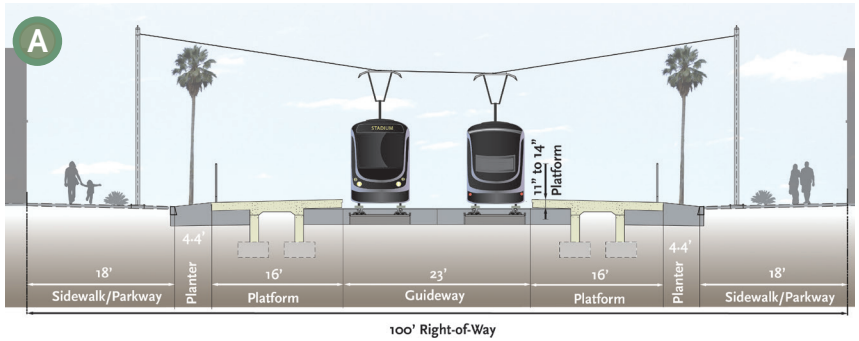
The guideway configurations were assumed to be:

Market Street: At-grade in a new pedestrian and transit mall to be compatible with urban environment and help encourage economic activity (**Figure 2.1-6**)

Market Street - Manchester Boulevard turn: Underground tunnel to avoid traffic impacts at intersection with Manchester Boulevard and visual impacts to Market Street (**Figure 2.1-7**)

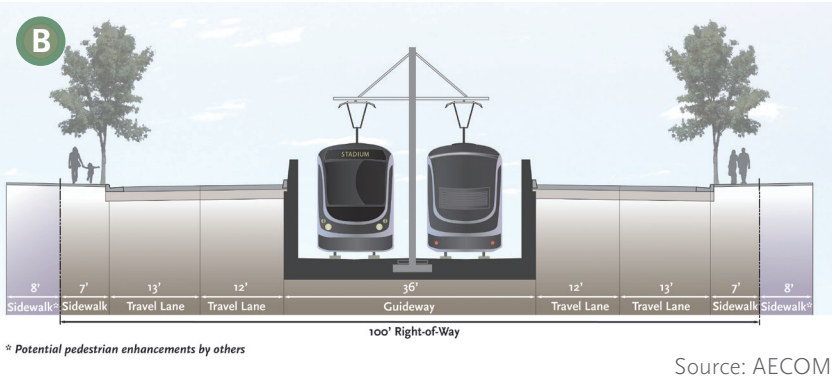
Manchester Boulevard: Elevated, aerial guideway to avoid traffic impacts on Manchester Boulevard and at intersections (**Figure 2.1-5**)

Prairie Avenue: Elevated, aerial guideway to avoid traffic impacts on Prairie Avenue and at intersections (**Figure 2.1-8**)



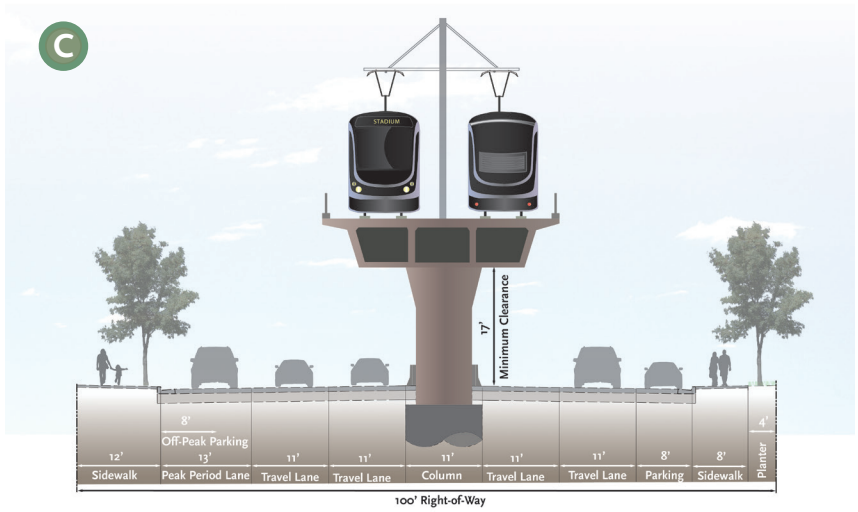
Source: AECOM

Figure 2.1-5 Market St. Looking North



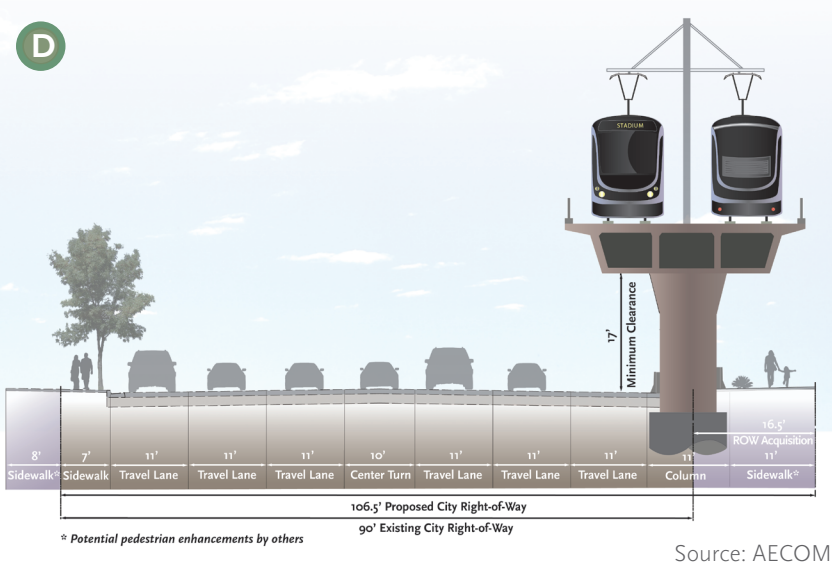
Source: AECOM

Figure 2.1-6 Manchester Blvd. Near Hillcrest Blvd. Looking West



Source: AECOM

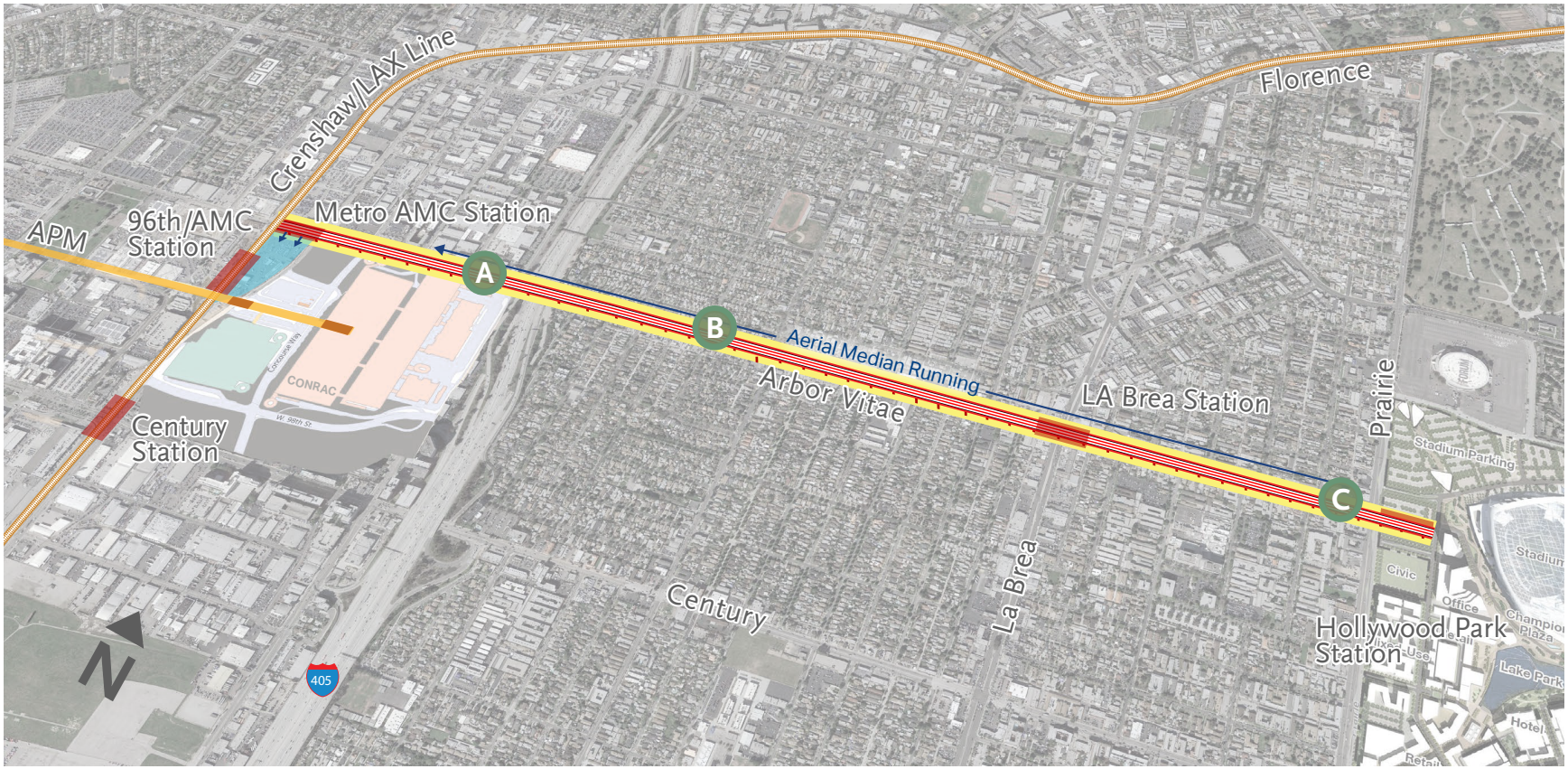
Figure 2.1-7 Manchester Blvd. Looking West



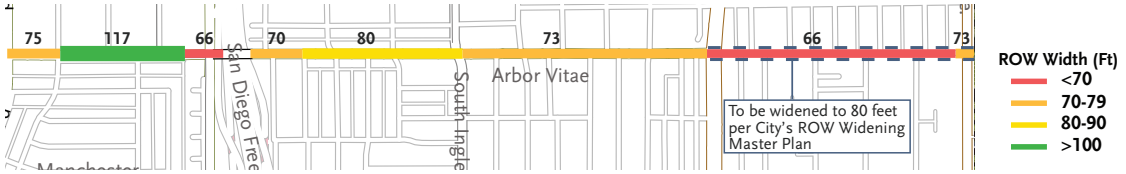
Source: AECOM

Figure 2.1-8 Prairie Ave. S. of Manchester Blvd. Looking North

Aerial guideways minimize operational impacts to the transit service but can cause impacts at guideway column locations to existing medians and/or turning lanes and have aesthetic impacts. The underground turn onto Market Street from Manchester Boulevard avoids impacting Market Street visually, but has "transition trenches" where the guideway enters and exits the tunnel which will impact traffic lane geometry on Manchester Boulevard. It is not anticipated that any through traffic capacity would be impacted, but lane widths and parking may be affected. On Prairie Avenue, the aerial guideway can be located within or on the east side of the ROW within the Forum and Development properties to minimize.



Source: AECOM
Figure 2.1-9 Option 2: Arbor Vitae

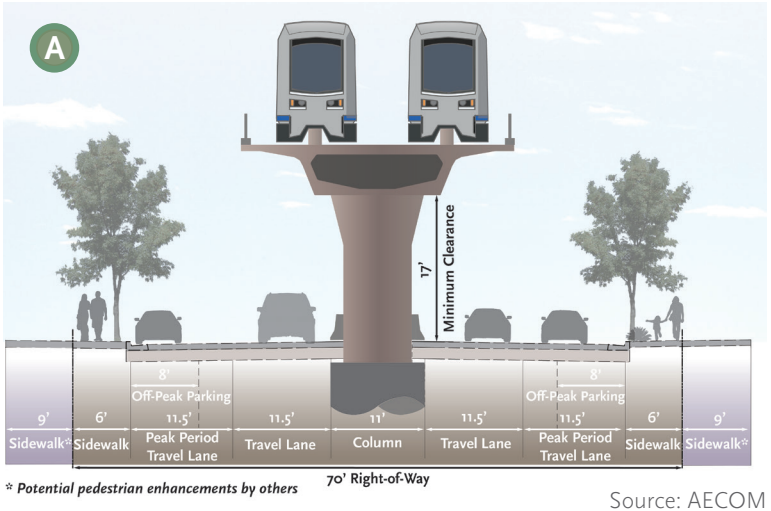


Source: AECOM
Figure 2.1-10 Arbor Vitae ROW Widths

Independent Scenario

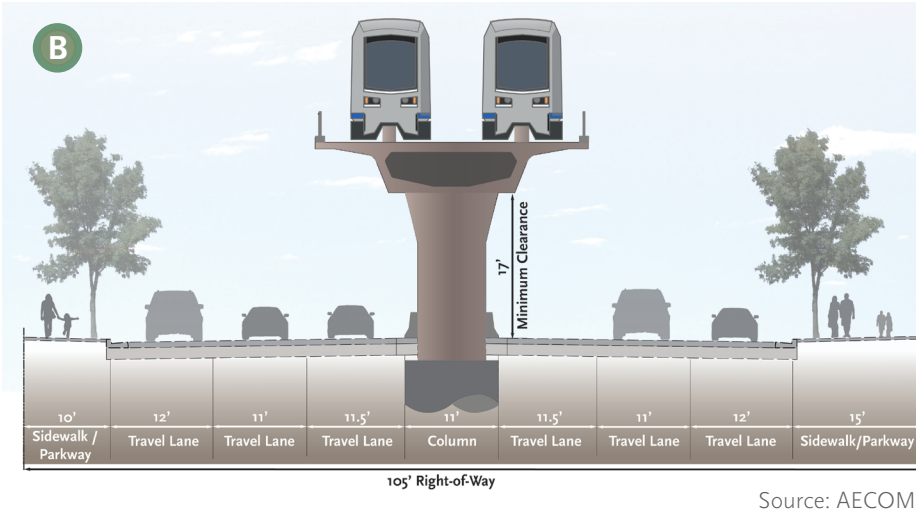
Option 2: Arbor Vitae

The Arbor Vitae option is the most direct connection from the Development to the AMC 96th Street Transit Station. It is assumed to feature a completely exclusive, elevated aerial guideway (**Figure 2.1-9** through **Figure 2.1-14**). Neighborhood-scale commercial and residential uses line Arbor Vitae. To be cost-effective, an underground guideway was not considered for this option. This option requires further noise, vibration, and visual impacts evaluation as part of the environmental review to be prepared by the City of Inglewood.



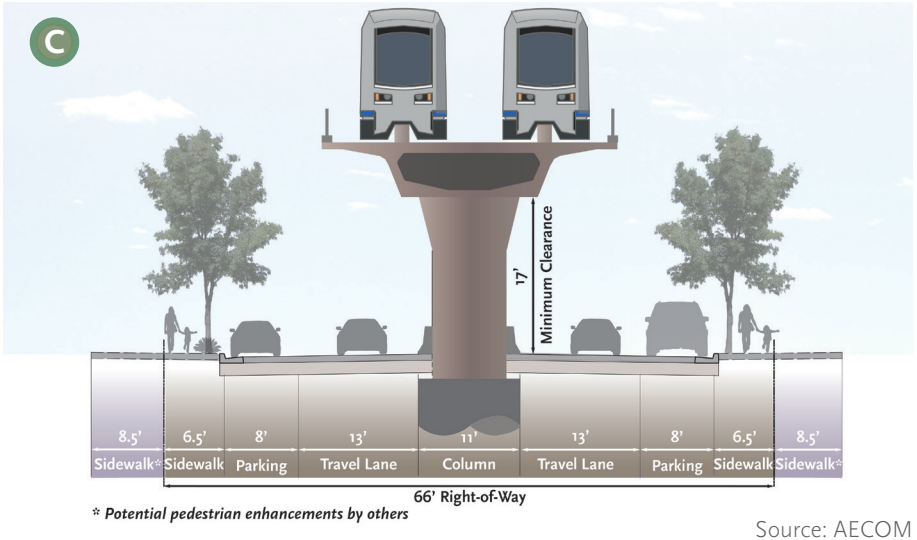
Source: AECOM

Figure 2.1-11 Arbor Vitae West of La Brea Looking West



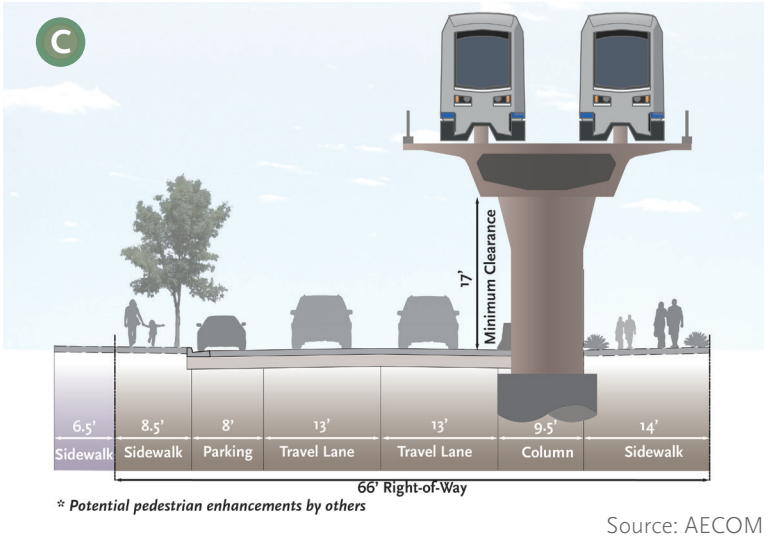
Source: AECOM

Figure 2.1-12 Arbor Vitae West of La Cienega Looking West (Future LAMP Section)



Source: AECOM

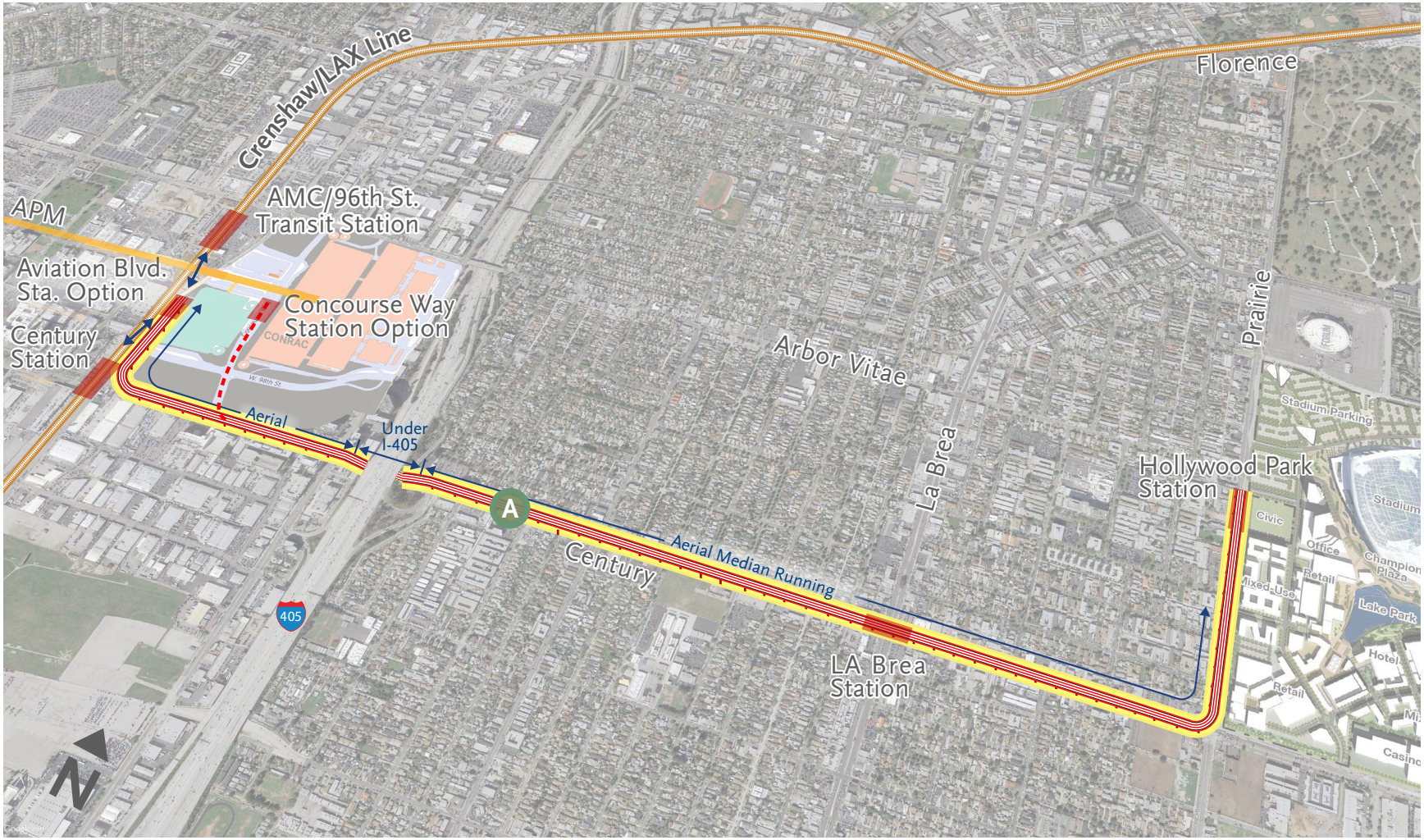
Figure 2.1-13 Arbor Vitae East of La Brea Looking West - Center Running Option



Source: AECOM

Figure 2.1-14 Arbor Vitae East of La Brea Looking West - Side Running Option

Aerial guideways minimize operational impacts to the transit service but can cause impacts at guideway column locations to existing medians and/or turning lanes. West of La Brea Avenue, Arbor Vitae Street includes a center two-way left-turning lane that is adequate for placement of guideway columns. East of La Brea Avenue, the roadway section only includes one through lane in each direction and parallel parking lanes. This section of Arbor Vitae street would require significant modification to accommodate the guideway columns.



Source: AECOM
Figure 2.1-15 Option 3: Century Boulevard

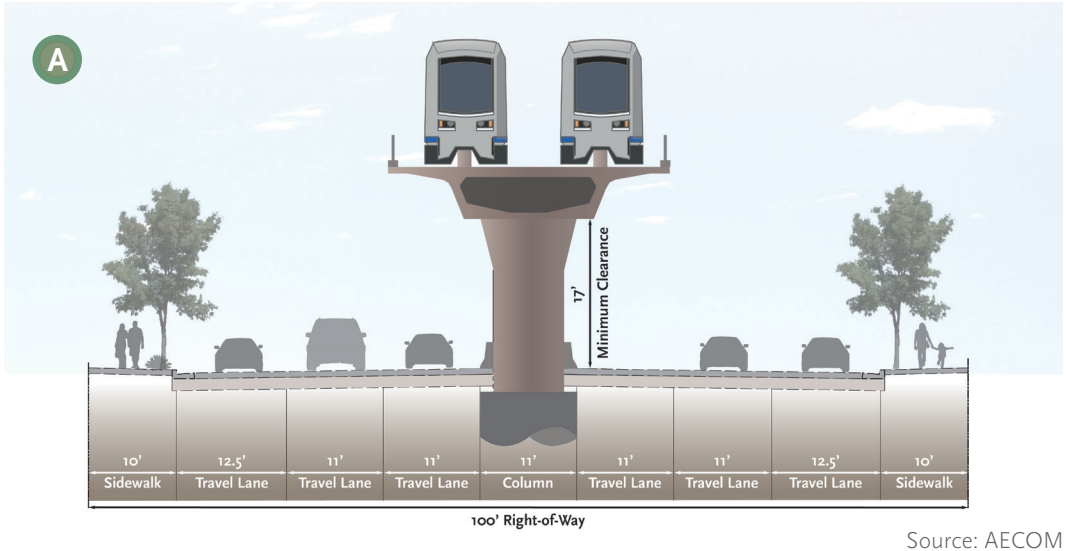
Independent Scenario

Option 3: Century

The Century Independent Option was developed as an alternative to Arbor Vitae Street. Century Boulevard has a wider ROW, continuous center median and a center two-way left-turn lane, and is lined by larger-scale commercial uses. It is also assumed to feature a completely exclusive, elevated aerial guideway (**Figure 2.1-15**, **Figure 2.1-16**, **Figure 2.1-17**). The Interstate 405 freeway crosses Century Boulevard with a single 100-foot span bridge. The elevated transit guideway could drop into the median of Century Boulevard to pass under the I-405 without affecting the bridge structure and with minor impacts to the existing lane configuration. Vertical clearance requirements, traffic impacts, and utility impacts for this crossing need to be studied further.

Source: http://www.monorailsaustralia.com.au/highpoint.html

Figure 2.1-16 Example Aerial Monorail Guideway



Source: AECOM

Figure 2.1-17 Century Boulevard Looking East

2.1.2 Technology / Mode

For the purpose of this transit connection project, fixed-guideway technologies with high capacity and urban compatibility are being explored. For the Interlined Scenario, LRT was considered. Urban Rail, Automated People Mover (APM), and Monorail were considered for the Independent Scenario Options (**Table 2.1-1**).

Interlined Scenario

LRT is a high capacity transit system operating in two to three car trains with power provided by overhead wires. The Fairview Heights Interlined Option would utilize the same type of LRT vehicles as the Crenshaw/LAX Line, adding additional LRT cars to the Metro fleet.

Independent Scenario

Urban Rail is a high capacity transit system similar to low-floor light rail, European tram or modern streetcar technologies that can operate as single cars or multiple car trains, depending on demand. It is also powered by overhead wires, and usually intended for shorter trips with frequent stops. For Option 1, this technology is being considered for flexibility of station and guideway configuration and ability to fit within surrounding urban context, especially in Downtown Inglewood.

An APM system is a high capacity transit system that usually operates over a limited distance. Vehicles are automated (i.e. driverless). APM vehicles have a similar minimum turning radius to LRT and urban rail vehicles. Monorail can also be automated, and operates on a single elevated rail or beam guideway. While monorail has the smallest guideway footprint (3-4 feet) among the four modes, and can accommodate a roadway grade of up to 10%, it also requires the largest minimum turning radius (120 feet).

APM and monorail technologies are considered for Options 2 and 3. Both systems could provide the necessary passenger capacity for game days to/from the Development. To minimize visual impacts to the communities nearby the two alignments will be fully aerial.

Modes	Train Length	Weight /Car	Capacity /Train	Speed	Examples
Light Rail	289 Feet (3-Car)	122,250 lb	450	25 - 65 mph	 LA Metro LRT
Urban Rail	198 Feet (3-Car)	80,570 lb	450	5 - 55 mph	 Rome Tram
APM	252 Feet (6-Car)	52,100 lb	600	5 - 35 mph	 DFW Skylink
Monorail	240 Feet (6-Car)	48,000 lb	600	30 - 55 mph	 Las Vegas Monorail

Source: AECOM

Table 2.1-1 Technology Specifications of Modes Considered

2.1.3 Travel Times

Travel times were calculated for each option considered based on the assumed guideway characteristics, alignment geometry, station locations and associated dwelling time, the particular technology's acceleration and deceleration rates and maximum speeds, as well as any anticipated delay in the operating environment.

Interlined Scenario

For the Interlined Scenario, the travel time for the new segment from the Fairview Heights Station to the Development Station was calculated based on the methodology above (**Table 2.1-2**); and from Fairview Heights Station to Expo/Crenshaw Station, the travel time of the Crenshaw/LAX Line in Metro's regional travel demand model was deployed. For the entire segment between the Development and Expo/Crenshaw Station, the calculated travel time is 15:03 minutes, with an average speed of 21.2 miles per hour.

Independent Scenario

For the three independent options, one-way run-times range from about 3.8 minutes to 6.8 minutes. Variations largely reflect the number of stations, project mileage, and alignment geometry. For instance, Option 1 has the lowest average speed at around 15 mph; whereas the average speed of Option 2 is around 32 mph for an assumed straight alignment with no turns.

The majority of the alignment in Option 1 is grade-separated; the only potential delay is on Market street. For this study's purpose, it is assumed that transit service has priority over crossing vehicular traffic at Queen and Regent Streets.

Subsequent refinement of Option 2 runtime can incorporate alternative alignments at the AMC 96th Street Transit Station or LAWA's APM, which may lengthen the runtime and decrease the average speed.

Detailed station-to-station travel times are included in Appendix B.

Option	Stations	Mode	Distance (Mi)	One-Way Time (Min)	Average Speed (Mph)
Interlined Scenario					
Fairview Heights	Fairview Heights, Development	LRT	1.78	3.0	35.60
Independent Scenarios					
Option 1: Market-Manchester	Market North, Market South, Manchester, Forum, Development	Urban Rail	1.23	4.8	14.90
Option 2: Arbor Vitae	AMC/96th St., La Brea, Development	APM/Monorail	2.06	3.8	32.70
Century	AMC, La Cienega, La Brea, Century/Prairie, Development	APM/Monorail	2.77	6.8	24.60

Source: Connetics Transportation Group

Table 2.1-2 One-Way Travel Times for Project Options (in Minutes)

2.2 Station Design & Connectivity

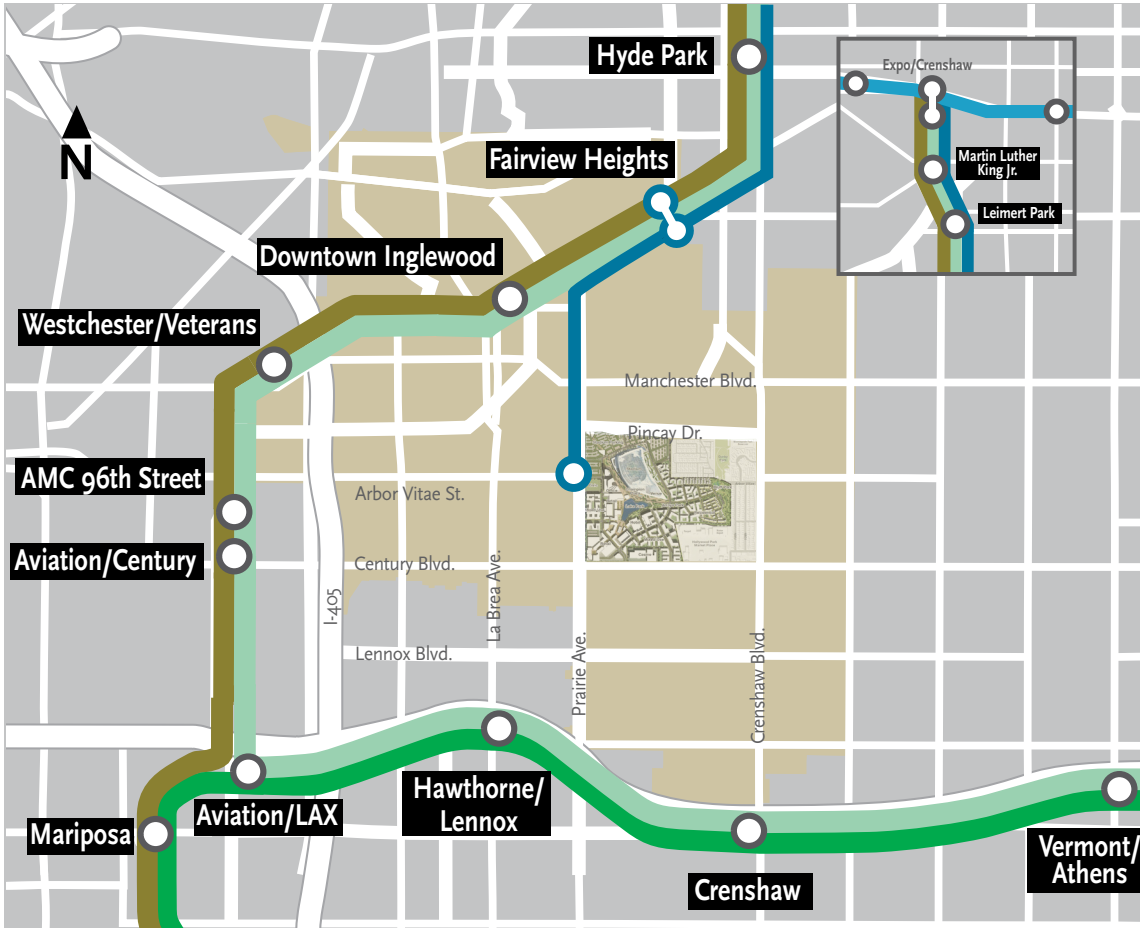
One of the goals of the Project is to provide a direct connection from the Development to the regional rail network by providing transfer service to a Metro rail station. The discussion below describes station design elements and associated station capacity that will successfully connect the Development to the Metro rail system and/or other multi-modal services to provide convenient transit access.

2.2.1 Station Design

Interlined Scenario

As an extension of the Crenshaw/LAX line (**Figure 2.2-1**), the station at Development is intended to be an underground terminal. As part of this transit line, the design of this station would include components from Metro's "kit-of-parts". An entry plaza would be provided which would also include elements from the kit such as a glass canopy at the portal (**Figure 2.2-2**).

In this interlined scenario, consideration would be given to the increased number of patrons aggregated from other connecting transit lines during event days. Those station plazas and sheltered waiting areas would be reviewed and modified to accommodate patrons transferring from other transit service lines to the Crenshaw/Expo line to reach the Development. Additional signage at those connecting stations would be provided to guide event patrons to the platforms for the Crenshaw/LAX line that would streamline their travel to the Development.



Source: AECOM

Figure 2.2-1 Interlined scenario

Source: Metro

Figure 2.2-2 Example Entry Plaza with Metro's Kit-of-Parts

Independent Scenario

Option 1: Market-Manchester

In this option (**Figure 2.2-3**), Market Street is closed to vehicular traffic during events (**Figure 2.2-4**). Stations on Market Street may be designed as sidewalk extensions. Design considerations include:

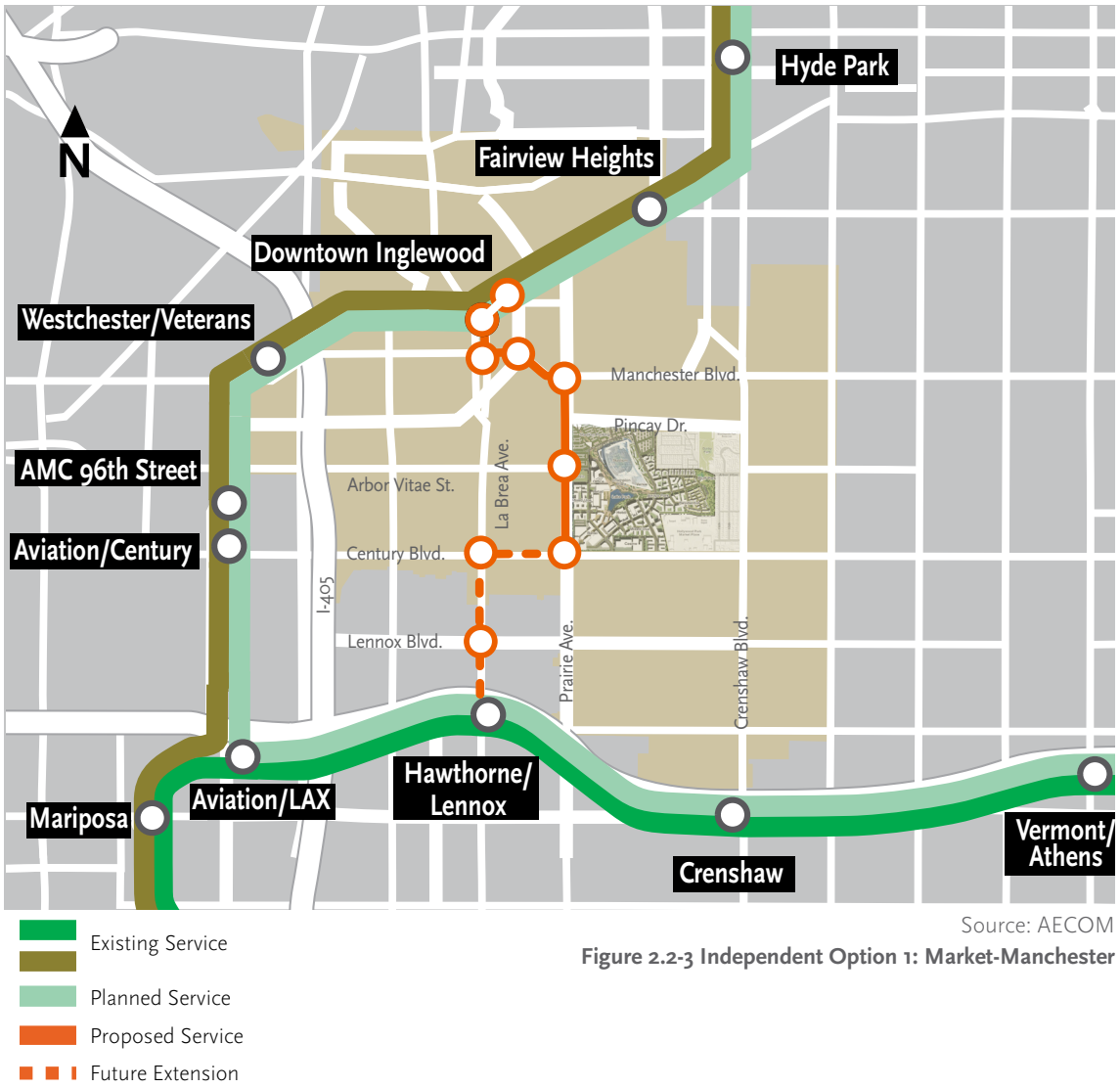
- Safety barriers at the boarding platforms and sidewalks to encourage patrons to cross at dedicated crossings where urban rail and pedestrian movements can be coordinated
- Sightlines of the transit operator
- Further safety measures such as crossing guards may be required on an event day
- Ramps may be required to transition from existing grades to the boarding height depending on the height of the vehicle

The Market Street North Station places the at-grade station is in close proximity to the Downtown Inglewood Station of the Crenshaw/LAX Line. This adjacency would allow the patrons to transfer to and from the Development and Crenshaw/LAX line. The primary design focus is the safe access across Florence Avenue to both stations.

One option to completely segregate pedestrians from vehicular traffic is aerial pedestrian bridges that would span over Florence Avenue to connect the Development station to the plaza at the Crenshaw/LAX station. Stairs and elevators will be provided on both sides of the street.

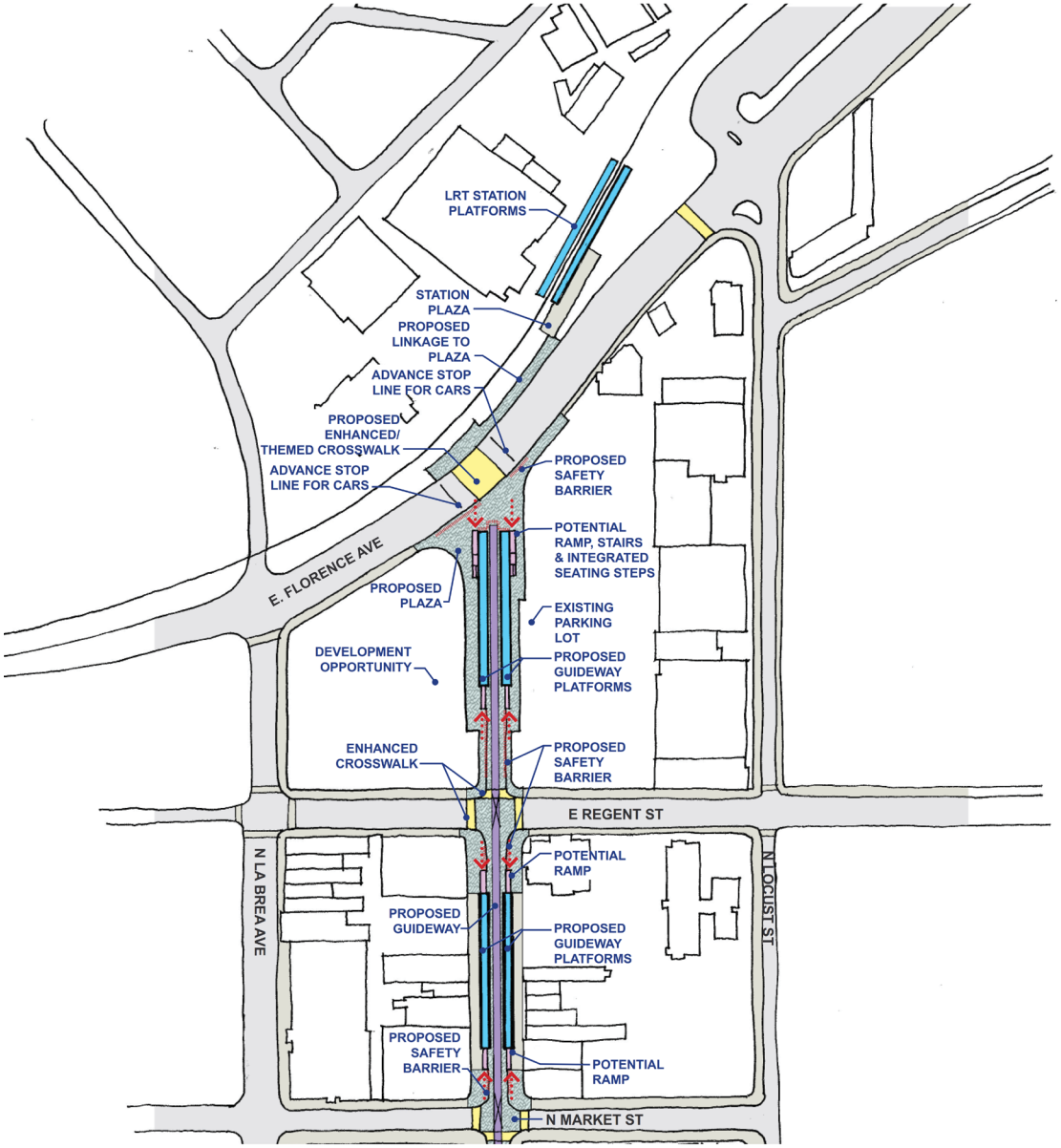
Source: https://www.denver.org/things-to-do/fall-winter/free-fall/

Figure 2.2-4 Example Transit Mall



Source: AECOM

Figure 2.2-3 Independent Option 1: Market-Manchester



Source: RAW International

Figure 2.2-5 Option 1: Market-Manchester Northern Terminus Area Sketch

Alternatively, a signature intersection may be designed at Market Street and Florence Avenue to provide at-grade pedestrian access (with a well governed crossing). Additional traffic studies are needed to identify the size of the queuing areas, ensure safe and efficient pedestrian crossings, and to minimize adverse impacts to vehicular traffic on Florence Avenue. In addition, sidewalk bulb-outs, bike boxes, two-stage queue boxes for bicyclists, median refuge islands, and advance stop lines could all serve as traffic-calming measures.

Another option to segregate vehicular and pedestrian traffic but still provide safe and ease of access from the Market Street North Station to the Downtown Inglewood Station of Crenshaw/LAX Line is to realign Florence Avenue. The roadway would descend below grade near Market Street and a pedestrian overpass with a maximum slope of 1:12 spanning over the depressed roadway will allow pedestrians to cross without stairs. In this configuration, neither vehicular nor pedestrian movements will be interrupted.

In addition to stations at the Development and Century Boulevard, stations could be located to provide local access along Manchester Boulevard and at The Forum. These stations would be similar to elevated light-rail stations with access to the platforms provided by bridges, escalators, elevators and stairs to adjacent access plazas (**Figure 2.2-6**).

Source: http://prr4ever.blogspot.com/2016/06/16-06-14-photos-san-diego-trolley.html

Figure 2.2-6 Example Aerial Guideway

Option 2: Arbor Vitae

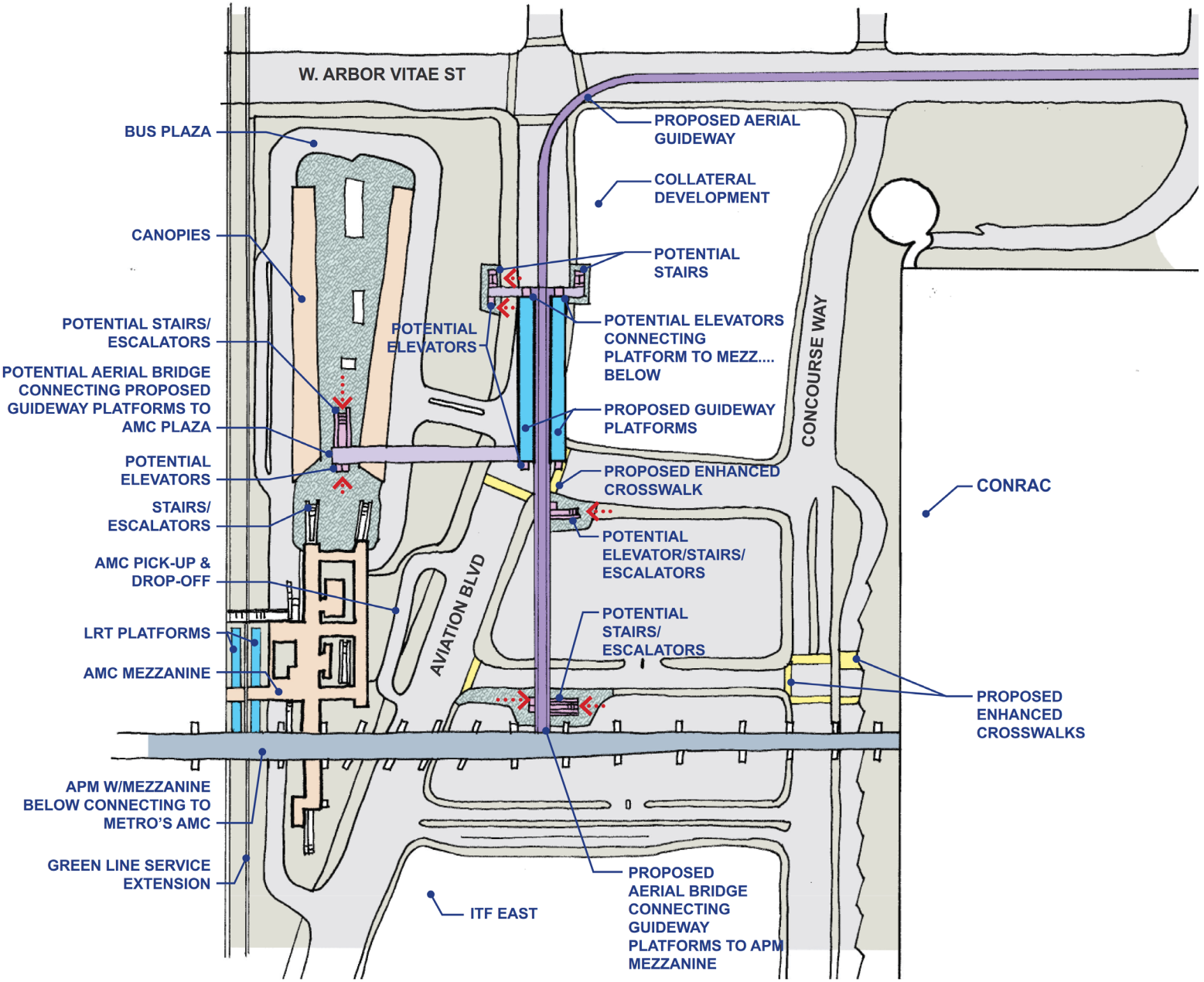
An aerial station on Arbor Vitae would be median running with pedestrian bridges and vertical circulation devices to the sidewalks below. This station is in close proximity to the Metro AMC 96th Street Transit Station, including the regional bus transfer center, LAWA's APM and CONRAC. As such, clear way-finding would be provided to direct patrons to transit modes for regional connectivity.

An alternative is to route the guideway from Arbor Vitae Street south along Concourse Way to provide a station that connects to LAWA's APM concourse (**Figure 2.2-8**). This aerial station would require its own vertical devices for access and egress. The capacity, ingress and egress strategy from the concourse would need to be reconsidered to accommodate the combined ridership from the APM and Development line.

At the Development station, there would be multiple platforms with redundant vertical circulation to provide ease of access and egress from the station on event day (**Figure 2.2-9**). Part of the station would be located over Prairie Avenue and align east/west with Arbor Vitae Street. Vertical access by means of stairs, escalators and elevators would be provided either on Arbor Vitae Street or Prairie Avenue. An optional station at La Brea Avenue would provide additional local access along a major existing travel corridor within Inglewood.

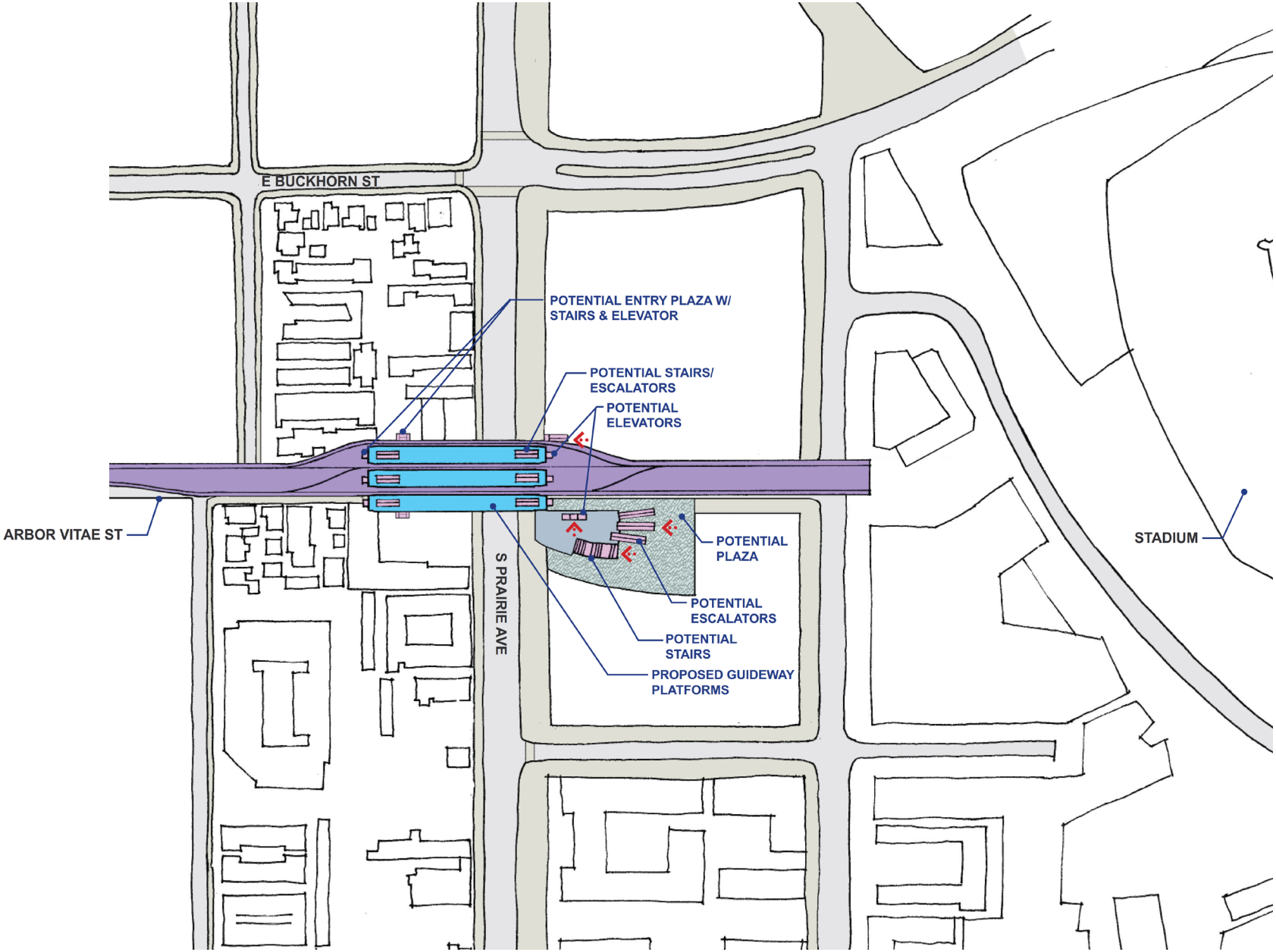
Source: AECOM

Figure 2.2-7 Independent APM/Monorail on Arbor Vitae



Source: RAW International

Figure 2.2-8 Option 2 Arbor Vitae AMC Terminus Area Sketch



Source: RAW International

Figure 2.2-9 Option 2 Arbor Vitae Development Terminus Area Sketch

Independent Scenario

Option 3: Century

An aerial station on Aviation Way routed from Century Blvd (**Figure 2.2-10**) would have similar design considerations as the Arbor Vitae independent scenario.

A proposed aerial station would also be located at the intersection of Century Boulevard and South La Brea Avenue. This station would require pedestrian bridges connecting the platform to vertical circulation on the north and/or south sides of Century Boulevard.

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Source: AECOM

Figure 2.2-10 Independent APM/Monorail on Century

2.2.2. Station Capacity

Station design capacity is established by passenger demand volumes under typical peak conditions in addition to demands that increase during special events, service disruptions and emergency evacuation situations. These additional factors would be considered in evaluating station capacity:

- Occupant load
- Design of the platform
- Configuration and number of tracks
- Capacity of trains, service headways, ridership
- Level of service
- Access to station and platform(s)
- Egress capacity, emergency evacuation strategy

Interlined Scenario

A new underground station at the Development will provide adequate queuing and waiting spaces without impediments to station access and egress. Overflow areas at the concourse and plaza levels may be required to relieve congestion on the platforms on event days. Additional considerations for emergency lighting and HVAC at underground egress paths would also be provided.

The Fairview Heights and Expo/Crenshaw stations need to be evaluated to accommodate normal daily ridership as well as the surge of event day ridership. However, the maximum train load would not exceed maximum passenger capacity for the largest capacity train operating on that track during the peak period, despite game day surge.

Egress at an underground station at Development would be provided by stairs, elevators and escalators that are in alignment with the platforms.

Independent Scenario

Option 1: Market-Manchester

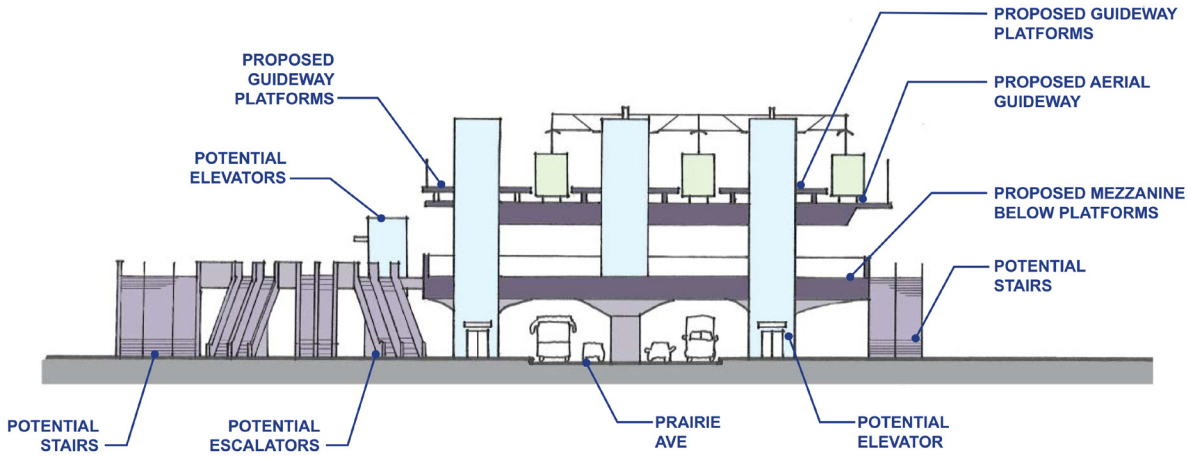
Option 1 includes at-grade stations. Design considerations for capacity would be similar to the aforementioned scenarios for each type of station. The North Market Street station places the at-grade station in close proximity to the Metro Crenshaw/LAX Line station north of Florence Ave. This adjacency would allow the patrons to transfer to and from the Development and Crenshaw/LAX line. The platform and queuing areas may need to be oversized to accommodate an influx of patrons transferring between the two transit lines. Egress at an aerial station at the Development would be provided by stairs, elevators and escalators that are located adjacent or in alignment with the platforms. Paths of egress which involve track crossing would be avoided. A concourse/mezzanine level would be required to egress passengers off the center platform onto pedestrian bridges that would descend to the north and south sidewalks below on Arbor Vitae. Egress from the two side platforms would be directly to grade via stairs, elevators and escalators.

Option 2: Arbor Vitae

The terminus station at Arbor Vitae (**Figure 2.2-11**) could either be standalone or connected to the AMC/96th Street station via the concourse level. In the scenario where the Development station is directly connected to the LAWA APM and concourse (**Figure 2.2-12**), the peak-period calculations contributing to occupant load may differ greatly from an emergency situation and thus impact station capacity and egress. Passengers who typically pass through to the airport or CONRAC via LAWA's APM may be required to exit at the Development station. The same is true in reverse. Egress at an aerial station at the Development would be provided by stairs, elevators and escalators that are located adjacent or in alignment with the platforms. Paths of egress which involve track crossing would be avoided. A concourse/mezzanine level would be required to egress passengers off the center platform onto pedestrian bridges that would descend to the north and south sidewalks below on Arbor Vitae. Egress from the two side platforms would be directly to grade via stairs, elevators and escalators.

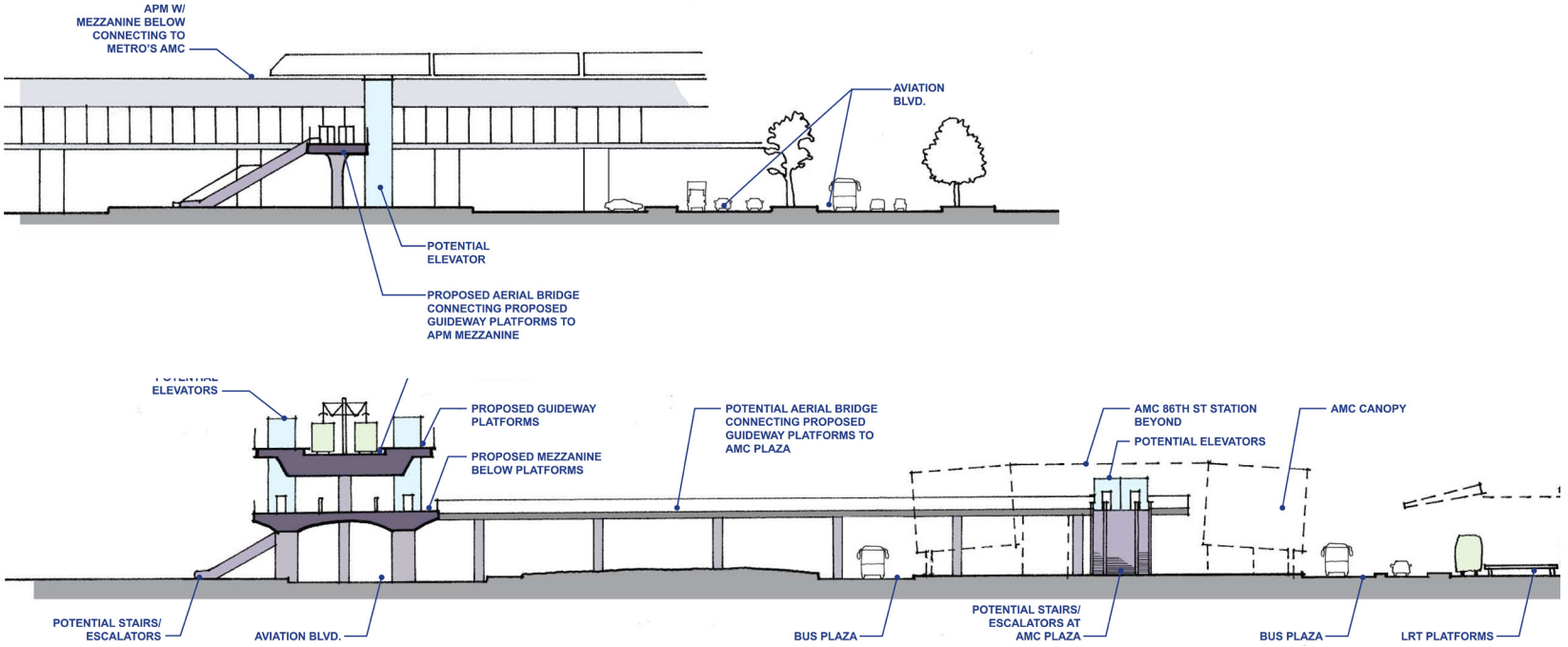
Option 3: Century

Station capacity considerations for Option 3 stations via Century are similar to the Arbor Vitae Independent Option.



Source: RAW International

Figure 2.2-11 Option 2 Arbor Vitae AMC Terminus Area Sketch



Source: RAW International

Figure 2.2-12 AMC 96th Street Transit Center Access

2.3 Operating Plan

One of the Project's primary goals is to accommodate the capacity of those traveling to and from the Development via public transportation. The Project must have the ability to serve peak travel demand during major events. This section presents an operating plan for both the Interlined and Independent Scenarios considered in this Study.

A high-capacity transit connection should be justified by anticipated travel demand, which in turn must be satisfied by the proposed operating plan. This is an iterative process with the following steps:

1. Set a peak-capacity goal to define conceptual service requirement
2. Develop conceptual operating plan to meet conceptual service requirement
3. Evaluate travel demand (ridership) and adjust operating plan as necessary

Station capacity is also crucial because of the special considerations associated with serving peak event loading, crowds, queuing, and fire-life safety (emergency evacuation).

With the knowledge that Metro served between 14% and 26% of Rams' games attendees at the Coliseum, and policy goals set at other locations for emptying the stadium after an event within one hour, it was calculated that the service should be able to serve 25% of the stadium capacity per hour. Therefore, for the study the target capacity was set at 25% of the 80,000 stadium capacity, or 20,000 passengers per hour.

Interlined Scenario

The Fairview Heights Interlined Option provides a new LRT branch from Metro's Crenshaw/Green Line to serve the Development via the station at Prairie/Arbor Vitae. The branch junction occurs south of the Fairview Heights station near Florence Avenue.

Routine Service

For routine service, the Project is envisioned to operate between the Expo/Crenshaw station and the Development at 5-minute peak period headways and 10-minute midday and evening headways, tapering to 20-minute headways at night (**Figure 2.3-1**). The service levels on this branch match the No-Build headways for the combined Crenshaw/LAX and Green Line service. This means that for the segment from Fairview Heights Station to the Expo/Crenshaw Line, the combined service frequencies between the Crenshaw/LAX, Green and Inglewood NFL lines would be 2.5 minutes in the peak and 5 minutes in the off peak. Capital improvements are required in this segment to accommodate the increased frequencies from the Crenshaw/LAX Line as currently designed.

With peak period headways at 5 minutes, the resulting twelve trains per hour serving this branch provide more than enough capacity given the interlined scenario serves one new market at the Development. Passenger loads are likely to be accommodated by single-car trains with this level of service. A refinement to the operating plan can be considered for 10-minute, all-day service tapering to 20-minute night service.

Special Event Service

For event days including NFL football games, additional service shall be scheduled and trains lengthened to their maximum (3-car) to accommodate peak demand over a certain period. Service is most needed after events as passengers tend to leave the event during a short time frame, whereas arrivals (particularly on weekends) are usually more dispersed. This study assumes a 9-hour period of event service:

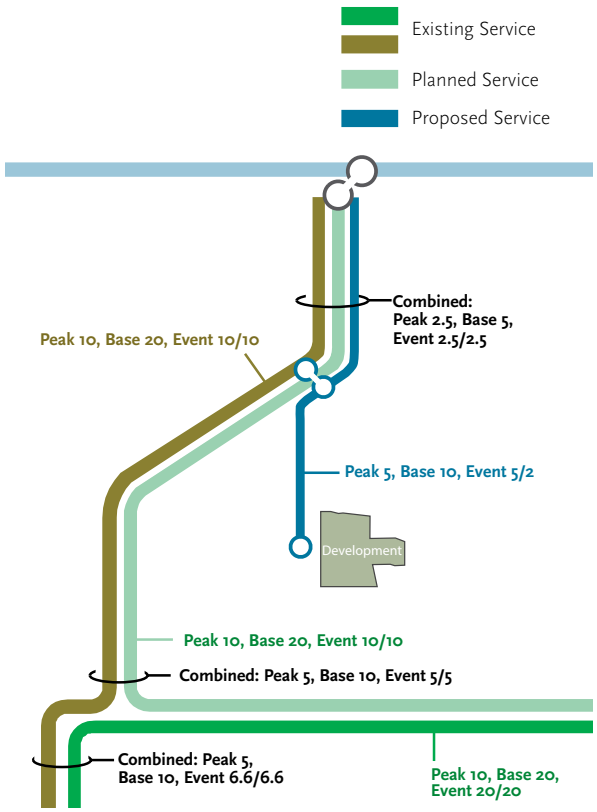
- a 6-hour period covering several hours before to mid-way through the event, and
- a 3-hour period mid-way through the event extending up to a couple hours past the event.

This event service span is consistent with that associated with the Rams games at the Coliseum during the 2016 NFL season.

NFL games are expected to occur on Sunday, Saturday or Monday & Thursday nights. For the 9-hour event service period, the following level of service is proposed (**Figure 2.3-1**):

- Development branch: 5 minute headways
- Crenshaw/LAX Line (Expo/Crenshaw to South Bay): 10 minute headways
- Green Line North (Expo/Crenshaw to Norwalk): 10 minute headways
- Expo Line (east west): 10-minute headways (5 minutes during weekday afternoon peak)
- Green Line South (Norwalk to South Bay): 20 minute headways (10 minutes during weekday afternoon peak)

Specifics of the service plans for this and all other scenarios are provided in Appendix D.



Source: Connetics Transportation Group, AECOM

Figure 2.3-1 Interlined Option Operating Concept

Independent Scenarios (Options 1 through 3)

The independent options assume a stand-alone line connecting the Development with Metro's rail network.

Routine Service

For routine service, the Project is envisioned to operate at 5-minute peak headways, 10-minute midday and evening headways, tapering to 20-minute night service. These service levels are set to be compatible with planned headways for the combined Crenshaw/LAX and Green Line service.

With peak period headways at 5 minutes, the resulting twelve trains per hour provide more than enough capacity for the forecasted travel demand. Passenger loads are likely to be accommodated by single-car trains with this level of service. A refinement to the operating plan can be considered for 10-minute, all-day service tapering to 20-minute night service.

Special Event Service

For event days including NFL football games, additional service shall be scheduled and trains lengthened to their maximum per station platform design (6-car trains for APM or monorail, and 3-car trains for urban rail). The analysis for Independent Scenario Options also assumes a 9-hour period of event service similar to the Interlined Scenario, and the service span is also consistent with the event service associated with the Rams games at the LA Coliseum during the 2016 NFL season.

Post-event service provides the "worst case" where the most service is needed, since passengers are more likely to leave the event during a short time frame, whereas arrivals (particularly on weekends) tend to be more dispersed. Since the independent options are not constrained by sharing track with other services, the post-event period can be designed at very tight headways to provide the most capacity. The frequency of operations is limited by:

- Operational considerations of how long it takes to turn trains around at each end and safely load and unload crush loads, and
- Considerations of whether passenger loads can be distributed effectively at the terminus of the line.

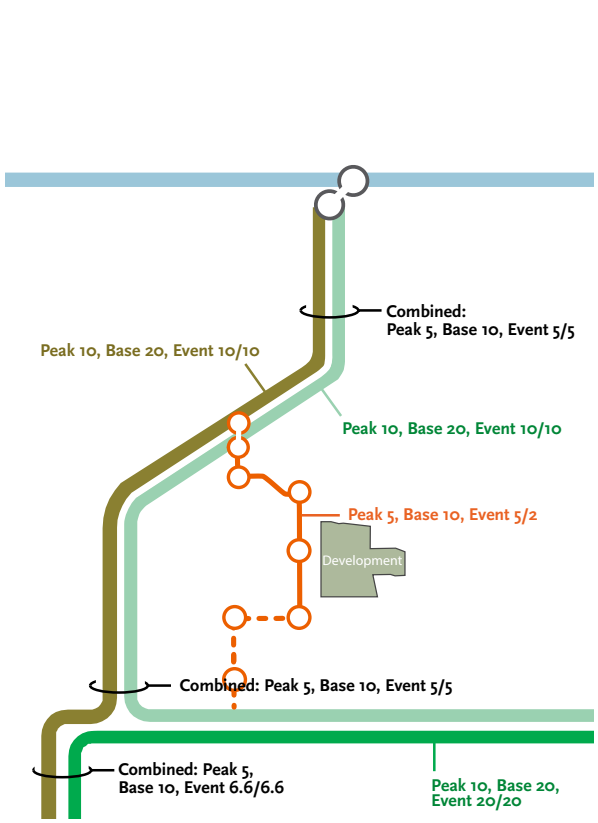
NFL games are expected to occur on Sunday, Saturday or Monday & Thursday nights. For the 9-hour event service period, the following level of service is proposed to provide the greatest capacity possible and allowing times for efficient loading and unloading passengers at each end of the line:

- Options 1 through 3: 5-minute headways pre- and during event; 2 minute headways mid- to post-event
- Crenshaw/LAX Line (Expo/Crenshaw to South Bay): 10-minute headways
- Green Line North (Expo/Crenshaw to Norwalk): 10-minute headways
- Expo (east west) Line: 10-minute headways (5 minutes during weekday afternoon peak)
- Green Line South (Norwalk to South Bay): 20 minute headways (10 minutes during weekday afternoon peak)

For Option 1 (**Figure 2.3-2**), passenger loads in Downtown Inglewood can be distributed toward the South Bay (via the Crenshaw/LAX Line southbound to El Segundo and eventually

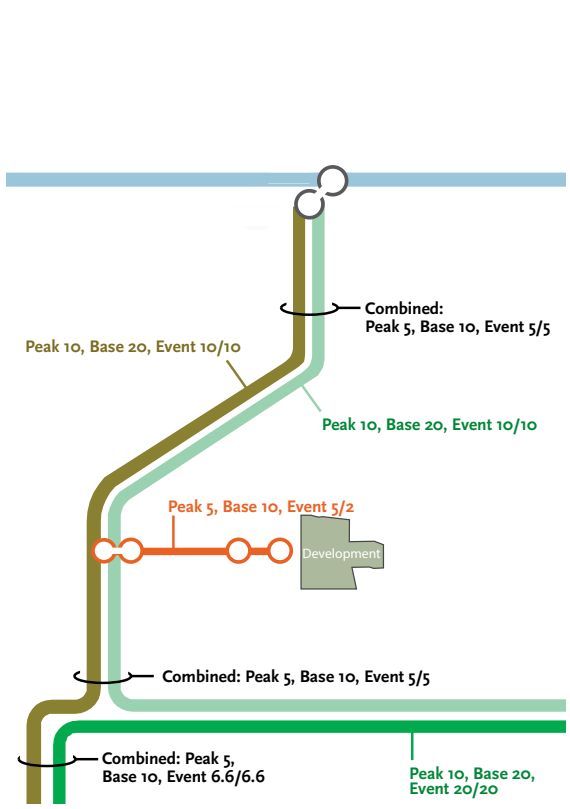
Torrance), communities to the south and east (via Green Line to Norwalk), and the Westside, downtown and East Los Angeles (via Crenshaw/LAX Line northbound to Expo/Crenshaw), with opportunities to further transfer onto other major transit lines serving the county and greater region. Connection to bus routes are limited since the Inglewood Transit Center is served by only a limited number of Metro and municipal lines compared to the AMC 96th Street Transit Station.

For Options 2 & 3 (**Figure 2.3-3 and Figure 2.3-4**) passenger loads at AMC 96th Street Transit Station can be distributed toward the South Bay (via Crenshaw/LAX Line southbound to El Segundo and eventually Torrance), communities to the south and east (via Green Line to Norwalk), and the Westside, downtown and East Los Angeles (via Crenshaw/LAX and Green Line northbound to Expo/Crenshaw), with opportunities to further transfer onto other major transit lines serving the county and greater region. Passengers will also be able to take advantage of a wide array of bus transit routes serving the AMC 96th Street Transit Station, as well as the airport via LAWA's APM.



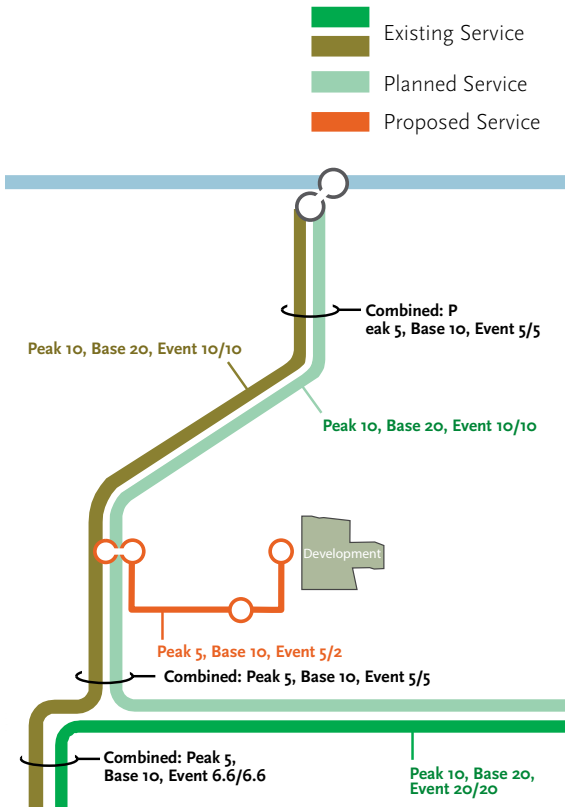
Source: Connetics Transportation Group, AECOM

Figure 2.3-2 Option 1: Market-Manchester Operating Concept



Source: Connetics Transportation Group, AECOM

Figure 2.3-3 Option 2: Arbor Vitae Operating Concept



Source: Connetics Transportation Group, AECOM

Figure 2.3-4 Option 3: Century Operating Concept

2.4 Ridership Analysis

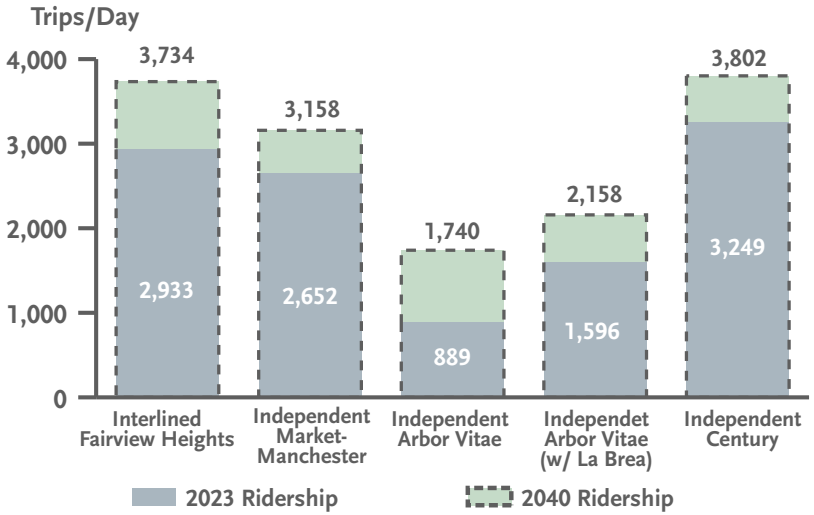
Based on the operating plan described above, an analysis of travel demand to estimate future ridership of both the Interlined and Independent Scenarios was evaluated. The Metro model was used to perform this analysis, which does not include special event forecasts. A separate model was developed for special events ridership forecasts.

2.4.1 Ridership Forecasts

This section documents the results of the travel demand forecasting process for both scenarios and related options. Included in this section is a description of the types of data used to assess and compare the scenarios, followed by additional model results for each option. The subsequent section presents a comparison of the performance of the scenarios and related options across a set of key performance indicators. Transit ridership is evaluated by a range of statistics that depict the ability of a project to attract riders and the ability of the bus and rail system to serve the traveling public. Key statistics for this project include:

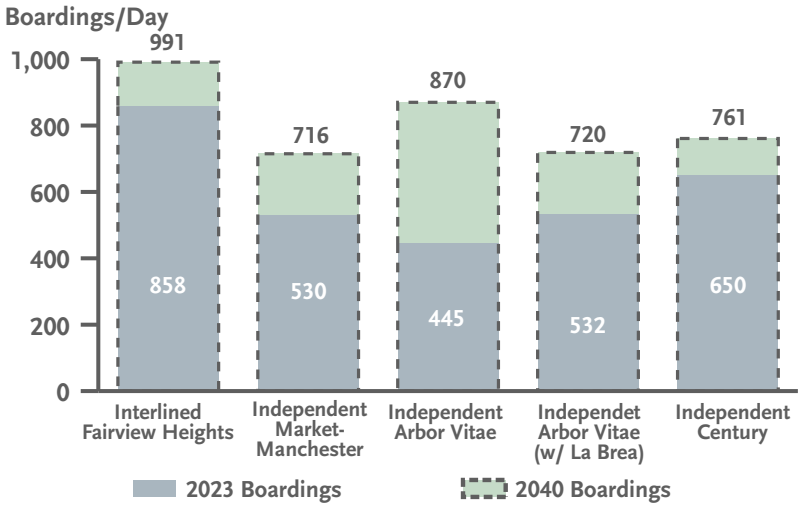
- **Boardings**: Boardings represent the number of times a traveler boards a new transit vehicle. With this statistic, a commuter driving to a train station and taking the train downtown counts as one boarding. A traveler walking from home to a bus and then transfers to another bus or train counts as two boardings. It can be measured at the route or station level and provides the most intuitive understanding of whether a project is able to attract ridership.
- **Trips on the Project**: Trips on the Project are a subset of the boarding statistic and represent those boardings making use of a new transit project. Trips on the Project are equal to the Administration (FTA) uses this measure to quantify ridership for New Starts project evaluations.
- **Station Boardings**: Station boardings are the number of boardings occurring at each station and can also show the modes of access and egress (e.g., walk, bus, park-and-ride or kiss-and-ride) to and from a station. This statistic provides information on the locations where the project is forecasted to attract demand. It is also useful in understanding the impacts that each station may have on the surrounding community.

The projected transit ridership of each of the Development transit options for the rail system and other Metro lines are shown in the tables below (**Figure 2.4-1**). Ridership projections by line are included in Appendix E.



Source: AECOM

Figure 2.4-1 Year 2023 and 2040 Typical Weekday Trips on Project



Source: AECOM

Figure 2.4-2 Year 2023 and 2040 Typical Weekday Average Station Boardings

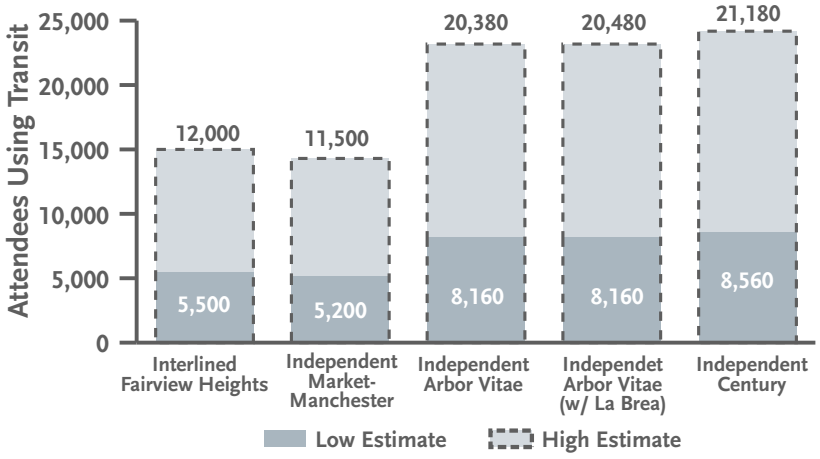
The interlined option essentially acts as a one station branch off of the Crenshaw/LAX Line, so trips on the project only include trips the new station is responsible for which is inbound ons and outbound offs at the station. As boardings are calculated as total ons added to total offs divided by two, and there are only inbound ons and outbound offs at the Development station, the interlined option's trips on the project are equal to the stations boardings multiplied by two. For Year 2023 and Year 2040 average weekday trips on the project, Option 3 has the highest weekday trips on the project with multiple stops through a higher density area along Century Boulevard. Option 2 has the lowest ridership with only two to three stops on the project. The 2040 forecasts increase trips on the project by 500 to 900 with the largest increase occurring on Option 2.

For station boardings, the interlined option has the highest station boardings at the Development of all the options with 1,500 in 2023 and 1,900 in 2040. The rest of the options have between 400 and 550 in 2023 and 700 to 900 in 2040 (**Figure 2.4-2**). Option 3 has the highest trips on the project due to the higher number of stations and alignment along Century Boulevard. Option 2 the lowest trips on the project as they are not interlined with the existing transit network and would include only a single new station at the Development. The difference in ridership between the APM and monorail technology are negligible as their difference in the model reflects a minor change in run-times.

2.4.2 Events-Based Forecasts

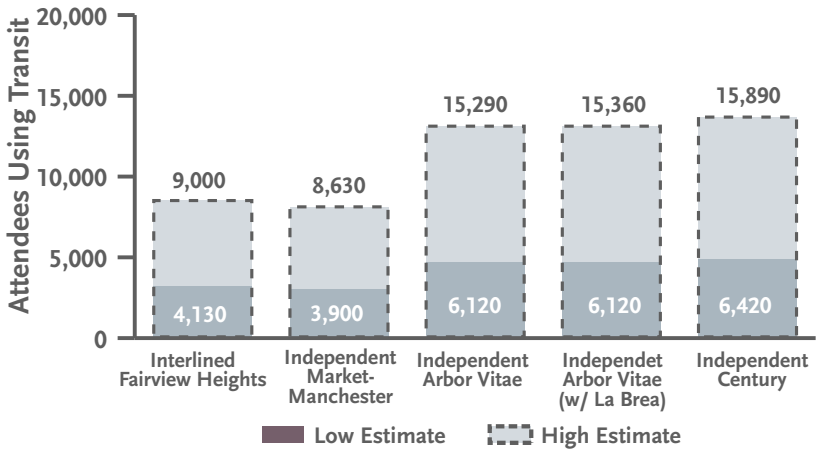
For the events based forecasts, a low-range and a high-range estimates were used for each of the scenarios which assumed a high and low average Rams and Chargers game attendance, transit mode shares, and of LAMP parking availability (**Figure 2.4-3, Figure 2.4-4**). These projections are based on one NFL team playing their home games at the stadium at the Development. Option 1 has the lowest estimate as it does not have the access to LAMP parking. Option 3 has the highest estimate due to access to the LAMP remote parking lots and high transit accessibility. Note that "attendees using transit" does not reflect boardings over a specific time period although it may be inferred that each attendee using transit will make a round-trip thus accounting for two boardings during an event day.

The options with LAMP parking have the highest game day usage with access to 3,200 to 9,500 remote parking spaces.



Source: AECOM

Figure 2.4-3 Year 2040 Rams Game Transit Usage Projection



Source: AECOM

Figure 2.4-4 Year 2040 Chargers Game Transit Usage Projection

2.5 Construction Methods and Impacts

This section presents an overview of the construction methods that would be used for the various guideway configurations of the Operability Scenarios as conceptually designed for this study.

A high level overview of the procedures is presented for each construction method, potential temporary and permanent traffic impacts, and temporary and permanent ROW acquisitions.

At-grade, aerial and underground guideway construction will have impacts to different extents in different scenarios (**Table 2.5-1**). Detailed descriptions of construction potential impacts are provided in Appendix F.

Construction Method	Interlined Scenario	Independent Scenario
At-Grade Guideway Construction Impacts	Along Florence Avenue where the alignment merges with the existing Crenshaw/LAX Line, consisting of two single-track at-grade guideway alignments on either side of the main line and two single track junctions into the main line.	Option 1: Market-Manchester: On Market Street in Downtown Inglewood between Florence Avenue and Manchester Boulevard,two at-grade stations would be constructed at the Development, the Forum, and two on Market Street.
Aerial Guideway Construction Impacts	N/A	Option 1: Market-Manchester: Along Manchester Boulevard between Locust Street and Prairie Avenue and on Prairie Avenue, an aerial structure would be constructed on Manchester Boulevard near Hillcrest Boulevard. Option 2: Arbor Vitae: On Arbor Vitae along the entire alignment between Prairie Avenue and the Crenshaw/LAX line. Two aerial stations would be constructed with one at each end of the alignment. Option 3: Century: Along the entire alignment on Prairie Avenue, Century Boulevard and parallel to the existing Crenshaw/LAX line. Two aerial stations would be constructed with one at each end of the alignment.
Cut & Cover Construction Impacts	Underground at the Development.	Option 1: Market-Manchester: A short underground segment on Manchester Boulevard between Market and Locust Streets. Guideway transitions from an underground to at-grade configuration would be constructed either end of the underground segment, on Manchester Boulevard and Market Street, creating two permanent open trenches with retaining walls.
Bored Tunnel Construction Impacts	Along Prairie Avenue from the Development station to Florence Avenue. Requires 4 to 6 acres for TBM launch, which could potentially occur at the Development station construction site. Guideway transitions on the north side of Florence Avenue adjacent to Edward Vincent Jr Park, creating two permanent open trenches with retaining walls on either side of the Crenshaw/ LAX line.	N/A

Source: AECOM

Table 2.5-1 Construction Impacts Summary

2.6 Traffic Impacts

Interlined Scenario

The Interlined Option will be fully underground along Prairie, and will transition back to at-grade on Florence and connect to the Crenshaw/LAX Line south of the Fairview Heights Station. Even though the alignment will not directly interfere with at-grade traffic flow, the proposed service increase on this spur and on the Crenshaw/LAX Line (2.5-minute headways) during events might result in significant traffic impacts at at-grade crossings along the Crenshaw/LAX upstream alignment. According to the Park Mesa Heights Grade Separation Study, Crenshaw/Slauson is the most problematic intersection (with high sensitivity to induced traffic) along the Park Mesa Heights at-grade alignment section, and queues and delays caused by the Crenshaw/Slauson have significant spill-over impacts on intersections nearby. Therefore, with the proposed service increase, additional study is required to define the feasibility of at-grade operation, but it is assumed that grade separation is required at Slauson Avenue. A summary of potential needs for grade separation of and traffic impacts due to service increase on Crenshaw/LAX Line is included in Appendix I.

Independent Scenario

All of the options evaluated are grade-separated except for Market Street in Downtown Inglewood. Market Street, Regent Street and Queen Street require further analysis to determine any impacts to traffic operations downtown.

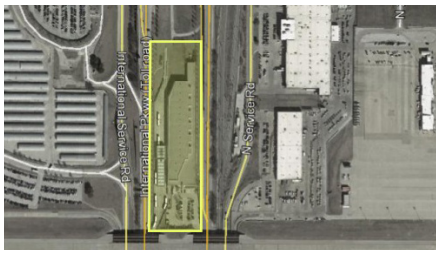
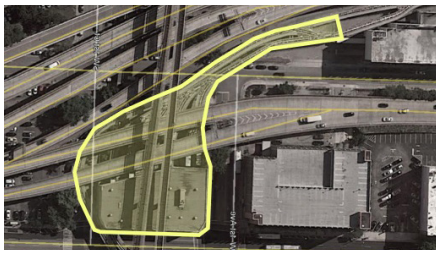
2.7 Maintenance and Storage Facilities

Each of the Operability Scenarios would require a maintenance and storage facility (MSF) to accommodate the new transit connection. Different fixed-guideway technologies have different space requirements for maintenance and storage facilities. As such, a discussion of the possible MSF facilities needs for each of the Operability Scenarios is discussed in the section below.

Many airport connectors deploy APM technology, and as **Table 2.7-1** presents, MSFs are usually located at some low-density urban area along the line (like those of AirTrain JFK, Sky Train, and BART) or at one terminus of the line (like Skylink's MSF). Miami Metromover's system has a downtown-based MSF, which is at the point where the-two loops split to run in adjacent parallel streets.

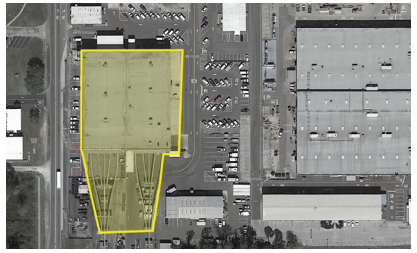
Some international practices were explored for Monorail system MSFs as the U.S. has limited experience in operating Monorail systems. As can be seen from site aerials included in **Table 2.7-2**, while generally still depending on the feet size and line length, the monorail systems usually require less maintenance bays, and therefore can be more compact in yard size and layout. Monorail MSFs are usually located at a terminus of the system.

While APM and Monorail are often deployed as shuttle systems for point-to-point or shorter trips, Urban Rail systems usually serve as local circulating systems. As shown in **Table 2.7-3**, Urban Rail MSFs can be either at the end of a line, next to a station on the line, or along the line.

System	No.	Name	City	# of Vehicles	MSF Size (acre)	Line Length (Mile)	Site Aerial
APM	1	AirTrain JFK	New York, New York	32	14	8.1	
	2	SkyTrain	Vancouver, Canada	298	22	49.5	
	3	Skylink	Dallas, Texas	64	10	4.8	
	4	BART Airport Line	Oakland, California	12	2.2	3.2	
	5	Miami Metromover	Miami, Florida	29	1.6	4.4	

Source: AECOM

Table 2.7-1 APM MSF Examples

System	No.	Name	City	# of Vehicles	MSF Size (acre)	Line Length (Mile)	Site Aerial
Monorail	1	Las Vegas Monorail	Las Vegas, Nevada	9	0.9	3.9	
	2	Disney World Monorail	Orlando, Florida	12	1.9	14.7	
	3	Sao Paulo Line 15	Sao Paulo, Brazil	378	14	17	
	4	Palm Jumeirah Monorail	Palm Jumeirah, Dubai	27	3.6	3	
	5	Kuala Lumpur Monorail	Kuala Lumpur Malaysia	24	3.7	5.3	

Source: AECOM

Table 2.7-2 Monorail MSF Examples

System	No.	Name	City	# of Vehicles	MSF Size (acre)	Line Length (Mile)	Site Aerial
Urban Rail	1	El Paso Streetcar	El Paso, Texas	6	0.8	5.0	
	2	Sun Link	Tucson, Arizona	8	1.1	3.9	
	3	Oklahoma City Streetcar	Oklahoma City, Oklahoma	7	2.5	6.9	
	4	Cincinnati Bell Connector	Cincinnati, Ohio	5	1.9	3.6	

Source: AECOM

Table 2.7-3 Urban Rail MSF Examples

System	No.	Name	City	# of Vehicles	MSF Size (acre)	Line Length (Mile)	Site Aerial
Urban Rail	5	QLINE	Detroit, Michigan	6	1.5	3.3	
	6	METRORail	Houston, Texas	76	45 *30 - Maintenance* *11- Storage 1* *4- Storage 2*	23.8	
	7	Nantes Tramway	Nantes, France	91	7	27.5	

Source: AECOM

Table 2.7-3 Urban Rail MSF Examples (Continued)

Interlined Scenario

LRT vehicles typically require more storage and maintenance space than smaller, APM vehicles. When taking the averages of the collected data, one acre of a maintenance site facility can accommodate about 3 LRT vehicles, 8 automated people mover (APM) vehicles, 6 monorail vehicles, or 5 urban rail (tram/urban rail) vehicles (**Table 2.7-5**).

Minimum site size requirements for average MSF sites can be calculated by dividing the fleet size from the operating plan by the average vehicle per acre requirements given above (**Table 2.7-6**). The Interlined Scenario would need at least 13 acres, the Independent Scenarios on Arbor Vitae or Century would need at least 5 to 7 acres, and the Independent Urban Rail Scenario would need at least 5 acres.

It should be noted that the actual space requirements can vary widely, depending on the shape of the site, the type of site (heavy maintenance, light maintenance, storage only, etc.), engineering layout, undeveloped space, price and availability of real-estate, proximity to main line, and other factors. Additionally, the acquisition of land is typically based on property tract lines instead of exact square footage, which results in purchasing more land than needed due to the full parcel takes.

2.7.1 Maintenance Facility Strategies

As part of this feasibility study, a preliminary MSF siting exercise was performed to identify site options that could potentially accommodate MSFs for the Project Options. Multiple solutions were presented for the scenarios, including the following strategies:

- **New MSF-only Parcel**
  Under this strategy, an all-new MSF would be built on land acquired for that purpose. Underutilized commercial properties or industrial lots within the vicinity of the line are potential candidate sites for a MSF to serve this Project.
- **Joint Development Site**
  Under this strategy, a new MSF would be built as part of a larger mixed-use development as part of a Public Private Partnership (PPP). This delivery strategy typically involves a rail operating agency and a property developer joining into agreement to develop a plot of land. The operating agency may purchase the parcels and construct the MSF and then lease land to property developers who could then build a development on top of adjacent to the MSF. Alternatively, the property can be sold to the property developer and then the operating agency could lease the land from the developer for the MSF site. Metro has several examples of PPP developments within the existing system. Underutilized commercial properties or industrial lots within the vicinity of the line are potential candidate sites for a MSF to serve this Project.

Mode	Average MSF Size # of Vehicles/acre
LRT	3*
APM	8**
Monorail	6**
Urban Rail	5**

* Average based on Metro Design Standards
** Averages based on collection of data for similar projects around US

Source: AECOM

Table 2.7-5 MSF Needs of Different Modes

Scenario	Fleet Size	Minimum Acreage Requirement*
Interlined: LRT	36	13
Independent: Option 1	23	5
Independent: Option 2	38	5 to 7
Independent: Option 3	38	5 to 7

* Actual MSF acreage can be greater due to site shape, type, layout, real-estate availability, proximity to main line, and parcel sizes.

Source: AECOM

Table 2.7-6 MSF Needs for Project

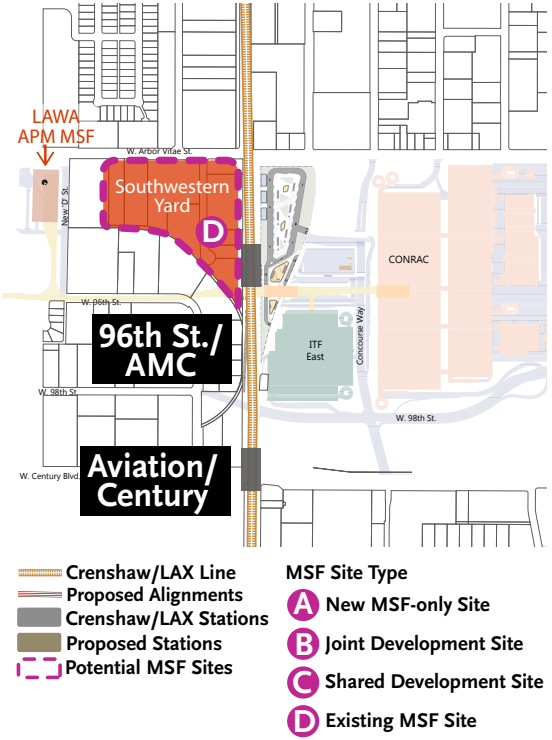
- **Shared Site with nearby Developments**
  The project study area contains several additional sites within larger, undeveloped properties that could be suitable for a MSF, such as the Forum, the Development, or LAWA APM development sites. This strategy would involve entering into agreement with an existing owner to either purchase a partial ROW easement or lease a portion of the site from the property owner.
- **Existing MSF Facility**
  Under this strategy, an existing MSF would be utilized with a non-revenue connection from this project. The existing MSF would need to be either expanded or reconfigured to accommodate the additional fleet size.

2.7.2 Potential MSF Locations

Interlined Scenario

The Interlined Scenario's rail vehicles would be an addition to Metro's Crenshaw/LAX Line LRT fleet. It is assumed for the purpose of this analysis that the Southwestern Yard would be utilized by the additional fleet for maintenance and storage purposes. The Southwestern Yard (**Figure 2.7-1**) would likely require an expansion in order to accommodate the storage and maintenance of additional LRT vehicles needed for the Development connector.

This yard would likely require an expansion to accommodate the increased fleet size of up to 13 acres. Adjacent properties include commercial businesses, airline cargo shipment companies, and temporary vehicle storage for rental car companies. Car rental storage parcels may be ideal candidates as these areas may become obsolete following the completion of the Consolidated Rental Car Facility (CONRAC) in development by LAX. If it is determined that this yard cannot accommodate a yard expansion, additional options would be explored such as expanding the Green Line maintenance yard or constructing a new maintenance yard for the additional fleet.



Source: AECOM

Figure 2.7-1 MSF Site for the Interlined Option

Independent Scenario

Option 1: Market-Manchester

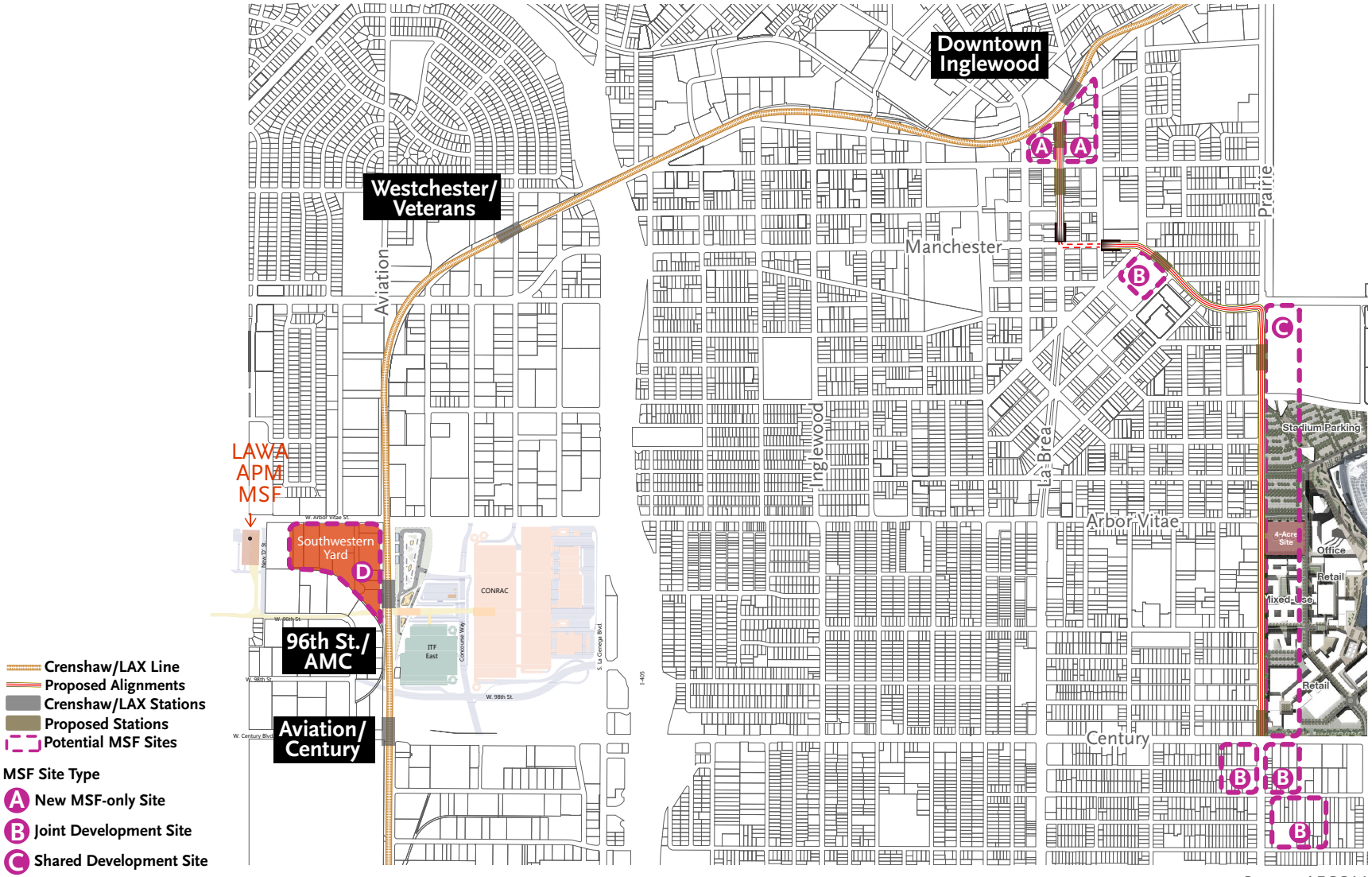
Option 1 would utilize use "urban rail" technology, assumed to be similar to tram, urban rail, or low-floor LRT. The MSF area required for urban rail systems can be less than that of typical Metro LRT. Eight potential MSF site options have been identified for the Independent Market-Manchester Option (**Figure 2.7-2**). Urban rail and LRT technologies generally have similar maintenance and storage requirements and can be compatible operationally, meaning that an existing Metro facility, such as the new Southwestern Yard, could accommodate vehicles from the Market-Manchester Option. This would require a "non-revenue" track connection to the Crenshaw/LAX line and also assumes that capacity is available at the Southwestern Yard. Another option would be for a Metro facility to assume specific, occasional "heavy maintenance" duties without storing or maintaining the entire fleet.

One site has been identified as being a potential for a joint development opportunity on East Manchester Boulevard between East Hillcrest Boulevard and Spruce Avenue. This MSF option assumes the opportunity for PPP for a mixed-use development in which the MSF would be designed and operated within the same property as a development.

One potential site has been identified as a location for a MSF site within a shared development. The site location is along South Prairie Avenue between West Manchester Boulevard, within the Development. This option would require re-programing a portion of the Hollywood Development and Development site.

The following five sites have been identified that could be used as a MSF site that exclusively serves the fleet independent of other transit systems.

- Southwest corner of intersection between South Prairie Avenue and West Century Boulevard
- Southeast corner of intersection between South Prairie Avenue and West Century Boulevard
- Along South Prairie Avenue between West 102nd Street and West 104th Street
- Southwest corner of East Florence Avenue and North Market Street
- Southeast corner of East Florence Avenue and North Market Street



Source: AECOM

Figure 2.7-2 Potential MSF Sites of Independent Option 1: Market-Manchester

Option 2: Arbor Vitae & Option 3: Century Boulevard

Option 2 uses an APM or Monorail technology along an aerial alignment. Four possible MSF site options have been identified for the Independent Arbor Vitae Option (**Figure 2.7-3**).

The following two sites have been identified near Arbor Vitae and the Crenshaw/LAX alignment could be used as a MSF site that exclusively serves the fleet independent of the LAWA APM system.

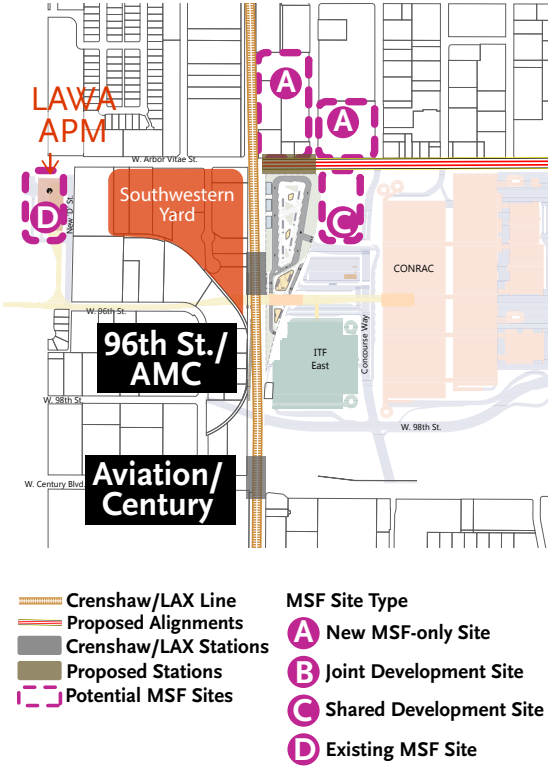
- Northeast corner of intersection between West Arbor Vitae Street and Aviation Boulevard
- Along westbound Arbor Vitae Street between Isis Avenue and Hindry Avenue

These parcels are currently occupied by car rental facilities which could be ideal candidates following the completion of the CONRAC facility.

A potential location for a MSF site within a shared development has been identified along eastbound Arbor Vitae Street between Isis Avenue and Hindry Place north of LAWA CONRAC. This site would be located with the LAX CONRAC area developments and would require agreements with LAX to lease and program the use of this space.

If the Independent Arbor Vitae Scenario uses an APM technology, it has the potential to be designed to be compatible with the LAWA APM maintenance facility. This would provide for the opportunity to utilize the same facility as the APM located at 93rd Street and Bedford Avenue. This facility may need to be expanded or reconfigured to accommodate the increased fleet size. This option would require complete system integration between the Development and LAX.

This option could add the requirement that LAX would need to operate the entire system for security and continuity purposes.

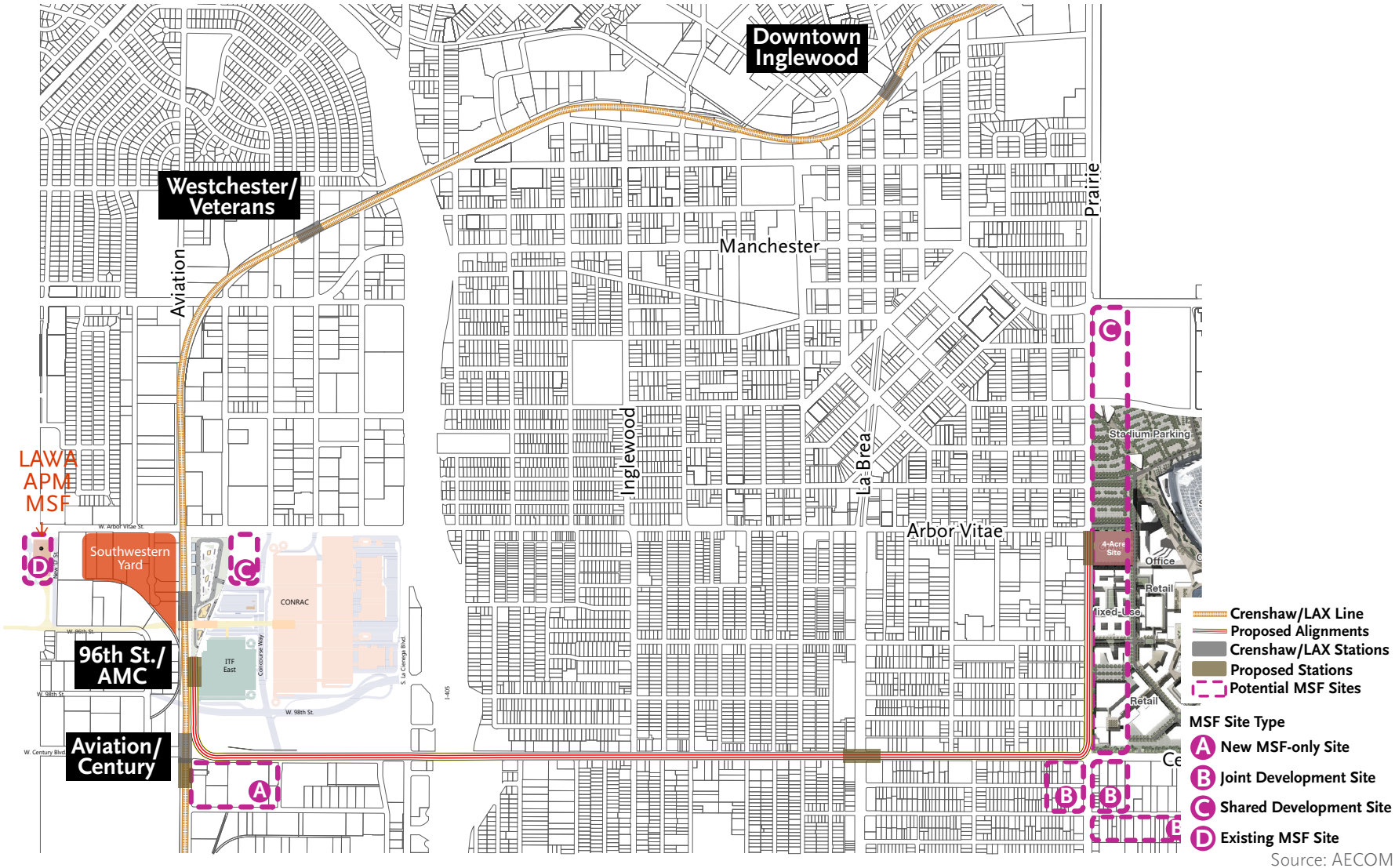


Source: AECOM

Figure 2.7-3 Potential MSF Sites of Independent Option 2: Arbor Vitae

Option 3: Century

Option 3 would also use APM or Monorail technology. Seven potential MSF site options have been identified for the Independent Century Option (**Figure 2.7-4**).



Source: AECOM

Figure 2.7-4 Potential MSF Sites of Independent Option 3: Century Boulevard

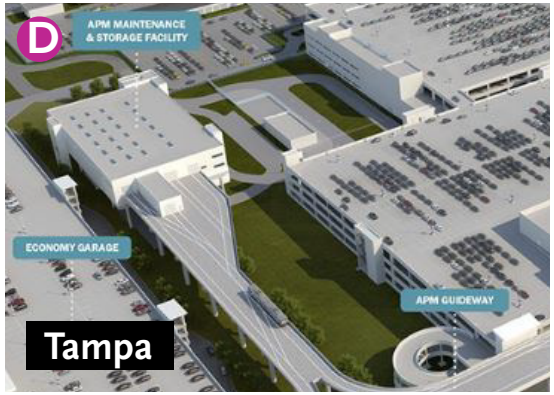
Four potential sites have been identified that could be the location of new MSF sites that would serve as an exclusive independent MSF.

- Southwest corner of intersection between South Prairie Avenue and West Century Boulevard
- Southeast corner of intersection between South Prairie Avenue and West Century Boulevard
- Along West 102nd Street between South Prairie Avenue and South Doty Avenue
- Opposite Aviation/Century Station between West Century Boulevard and West 102nd Street

These parcels are currently occupied by car rental facilities which could be ideal candidates following the completion of the CONRAC facility.

Two potential locations for a MSF site within a shared development have been identified. One site is located along eastbound Arbor Vitae Street between Isis Avenue and Hindry Place north of LAWA CONRAC. This site would be located with the LAX CONRAC area developments and would require agreements with LAWA to lease and program the use of this space. The second site is along South Prairie Avenue between West Manchester Boulevard, within the Development. This option would require re-programing a portion of the Hollywood Development and Development site to be a MSF.

As discussed above for Option 2, for the APM technology for Option 3, there is an opportunity to utilize the same facility as the APM is located at 93rd Street and Bedford Avenue.



2.8 Right-Of-Way Acquisition

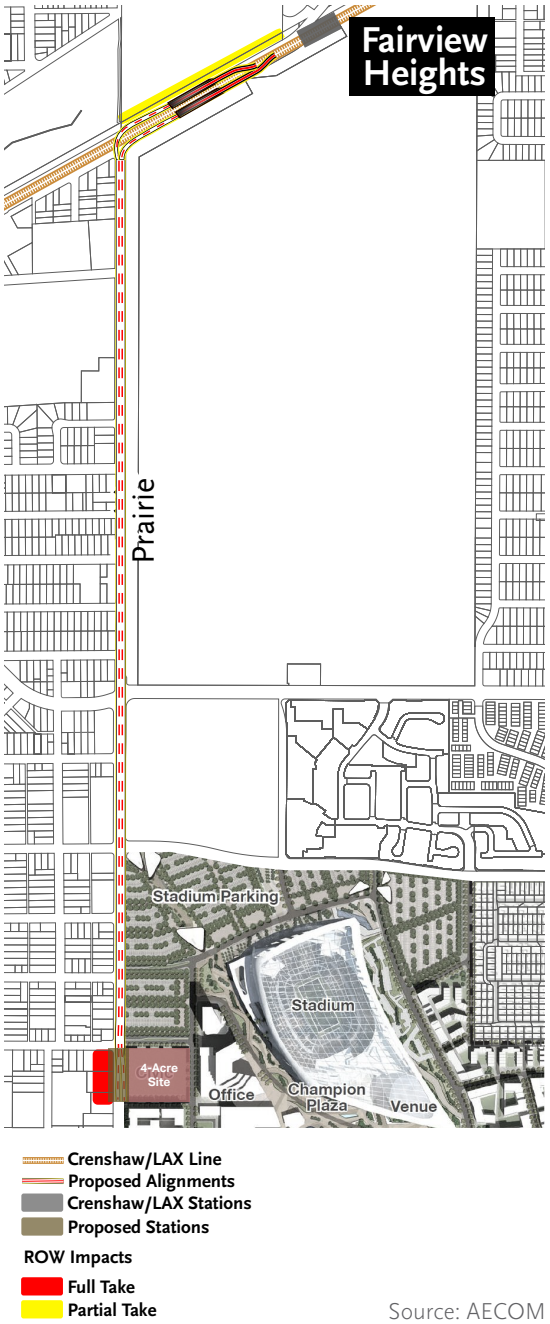
2.8.1 Right-of-Way Requirements and Constraints

This section summarizes the right-of-way (ROW) acquisitions that may be required for the Project Operability Scenarios (**Table 2.8-1**).

ROW acquisition will be required for delivering several components of the options. As mentioned previously, temporary construction staging areas will be required for tunneling, material lay-down, equipment storage, and project field offices. In the section above, multiple potential maintenance and storage facility (MSF) locations are presented that would require ROW acquisition for new MSF sites or expansion of existing MSF sites. Additionally, ROW acquisition may be required at station locations and station developments along the alignments.

Interlined Scenario

The underground guideway along Prairie Avenue requires additional right-of-way for construction, the junction with the Crenshaw/LAX Line, and potentially at the Development station. Temporary sites for tunnel boring machine launch and retrieval will be required during construction near the Crenshaw/LAX Line junction. The 4-acre Development station site can be used for this purpose at the south end, for example. The junction with the Crenshaw/LAX Line requires additional ROW along Florence Avenue and the Edward St. Vincent Jr. Park(**Figure 2.8-1**). If a station access plaza is provided on the west side of Prairie Avenue from the underground station additional parcels will be required.



Source: AECOM

Figure 2.8-1 Interlined Option ROW Needs

Independent Scenario

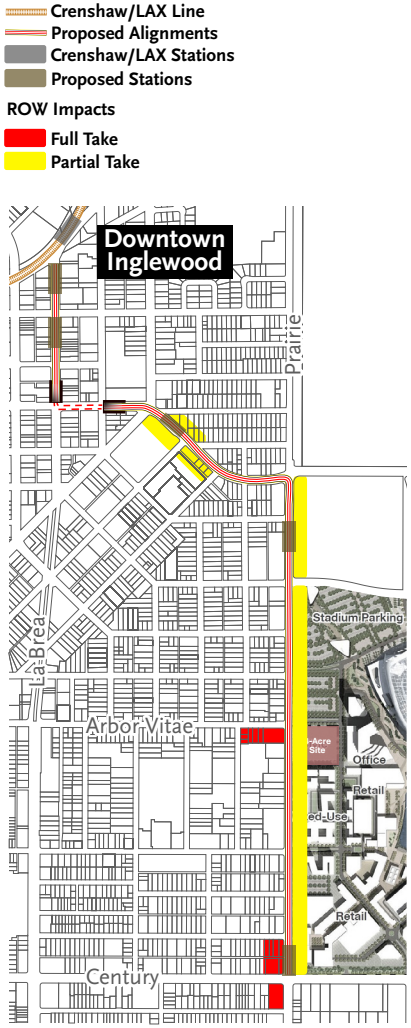
Option 1(**Figure 2.8-3**), Option 2 (**Figure 2.8-4**) and Option 3 (**Figure 2.8-5**) have stations along their respective alignment which may involve re-development of the areas adjacent to the stations.

Traction Power

In addition to station area and MSF ROW acquisitions, additional ROW acquisition may be required for traction power substations. While all of the options operate on DC electric current supplied from traction power supply substations (TPSS), LRT and urban rail operate with an overhead contact system (OCS), and APM and monorail use electrified channels attached to or enclosed within the guideway (**Figure 2.8-2**). Typical loading requirements require substations spaced at approximately half-mile intervals along the alignment. The substations can be located in locations along the alignment, including parking structures, in adjacent parcels, in the MSFs, or in underground vaults. The final size and spacing of the substations will require a detailed analysis based on vehicle, frequency of service and headways, alignment profile, passenger stations, and the speed and load cycle over specific time intervals, which determine the actual utility power demands.

Source: AECOM

Figure 2.8-2 Example Traction Power Substation

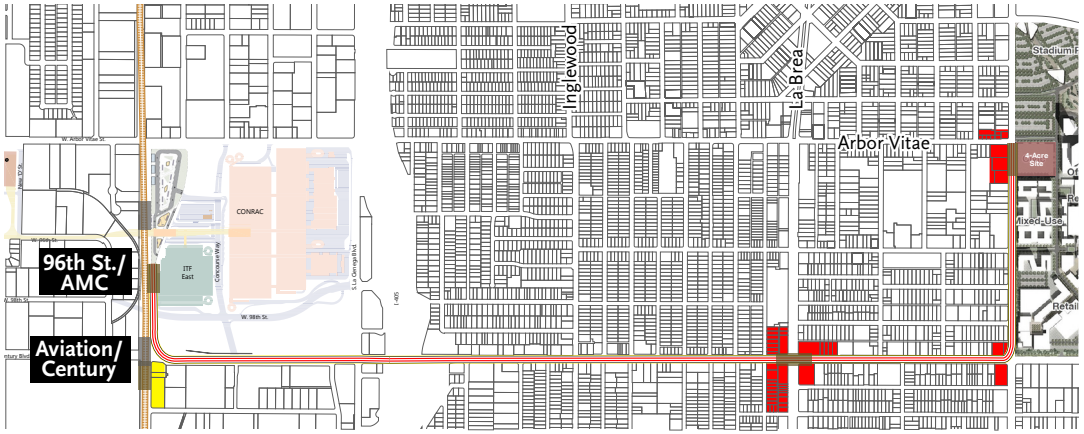


Source: AECOM

Figure 2.8-3 Independent Option 1: Market-Manchester ROW Needs

Source: AECOM

Figure 2.8-4 Independent Option 2: Arbor Vitae ROW Needs



Source: AECOM

Figure 2.8-5 Independent Option 3: Century Boulevard ROW Needs

ROW Needs	Interlined	Independent		
	Fairview Heights	Option 1: Market-Manchester	Option 2: Arbor Vitae	Option 3: Century
Construction Staging and TBM Assembly	6 to 8 Acres at TBM launch site and TBM extraction site.	2 Acres along alignment	No acquisition: Assumes using temporary construction staging area near LAX/APM Construction site.	No acquisition: Assumes using temporary construction staging area near LAX/APM Construction site.
Maintenance & Storage Facility	Minimum 13 Acres expansion on existing MSF Yard	Minimum 5 Acres New Yard, Joint Development, Shared Development, or existing yard expansion	Minimum 7 Acres New Yard or Joint Development	Minimum 7 Acres New Yard or Joint Development
Stations / Station Area Development / Traction Power Substations	Up to 4 Acres at Near Hollywood Park Station	Up to 8 Acres at Prairie/Century, Prairie/ Arbor Vitae, and Manchester/Hillcrest	Up to 26 Acres at Arbor Vitae/Prairie, Arbor Vitae/La Brea, and Arbor Vitae/Aviation	Up to 12 Acres at Century/Prairie, Century/La Brea, and Century/Aviation
Total Estimated ROW Acquisitions	22 Acres	15 Acres	33 Acres	19 Acres

Source: AECOM

Table 2.8-1 ROW Needs for all Options

2.9 Utility Conflicts and Relocation

Existing infrastructure along the alignments of the Options would need to be reconfigured to accommodate the new rail guideway structures. In addition to surface improvement, utility infrastructure under the surface will likely be in conflict with guideway structures and will need to be reconfigured to accommodate the guideway slabs, footings, and other components. This section summarizes a preliminary investigation of subsurface utility infrastructure along the Operability Scenario routes.

2.9.1 General Utility Relocation Impacts of Typical Construction Methods

Completion of any proposed interlined or independent alignment would involve general utility relocation. The extent of removal and re-installation depends on the construction methods used to build the scenarios and related options. Typical construction methods include underground, at-grade, aerial, cut-and-cover, tunnel portals, and bored-tunnel construction. Each method presents a unique set of utility impacts that require specific mitigation measures and further investigation during the environmental phase.

At-Grade Construction

Civil roadway and transit infrastructure typically requires minor modification, adjustment, and relocation of any utilities within the envelope of the proposed improvements, including utility mains, service laterals, and any other appurtenances such as valves, meters, etc. Exclusive at-grade transit guideways are typically cleared of parallel utilities. Crossing utilities may be protected (such as sleeved or encased), lowered, or left in place depending on the depth of the utility and loading due to the transit vehicle.

Aerial Construction

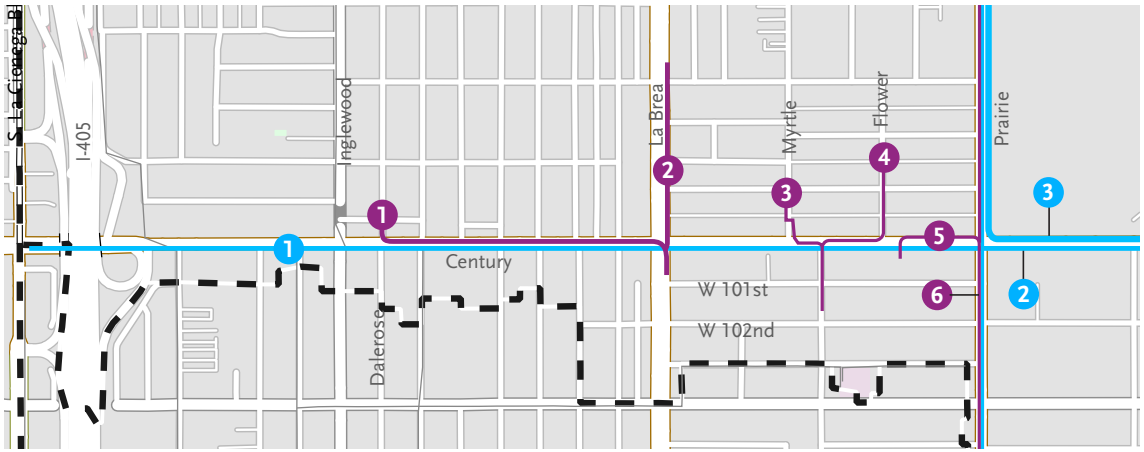
Exclusive aerial transit guideways require the clearance of utilities for deep column foundations. Aerial structures could result in the replacement of utilities only at the location of column foundations or relocation of utilities along the entire length of the alignment, depending on relation of the utilities to the footings. Overhead electrical and telecommunications utilities affected by an aerial guideway may be relocated elsewhere or underground.

Cut-and-cover Construction & Tunnel Portals

Cut-and-cover and tunnel portal sections typically require the full utility relocation from curb-to-curb for the length of the alignment. In some circumstances, utilities can be maintained and protected by being suspended over cut-and-cover boxes.

Bored-tunnel Construction

Bored tunnels typically avoid utility impacts except for major relocations at tunnel/launch station and other cut and cover excavations (see previous). Utility relocations are typically limited to TBM launching and extraction pits and underground stations.



Water Lines
1. 36" Water Line (LADWP)
2. 60" Water Line (LADWP)
3. 36" REC. Water Line in 54" Casing (West Basin Municipal Water Dist.)

Sewer Lines
1. 102" RCP Sewer Line
2. 60" RCP Sewer Line
3. 21" RCP Sewer Line
4. 4'(W) X 4'(D) R.C. ARCH Sewer Line
5. 42" RCP Sewer Line
6. 39" RCP Sewer Line

Source: AECOM

Figure 2.9-1 Non-City-owned Water and Sewer Lines on Century Boulevard

2.9.2 Utility Impact Feasibility Analysis of Options

Interlined Scenario

The interlined scenario will create the following utility impacts:

- At-grade construction impacts (as described above) for the junction with the Crenshaw/LAX Line near Fairview Heights
- Cut-and-cover and bored-tunnel construction impacts (as described above) for the launch and retrieval sites for the tunnel under Prairie Avenue, the extension of the Crenshaw/LAX Line northern terminus at Expo/Crenshaw for the additional tail tracks and crossover, and tunnel ventilation upgrades to the Crenshaw/LAX Line.

Independent Scenario

Options 1, 2, and 3 will have general utility impacts as described above along the length of the alignments. The cut-and-cover transition from Market Street to Manchester Boulevard will require complete relocation of utilities in the area of the excavation. In other areas, impacts are typically limited to relocating parallel utility lines running underneath the transit guideway and/or relocating access manholes, valves, and other infrastructure that falls within the guideway.

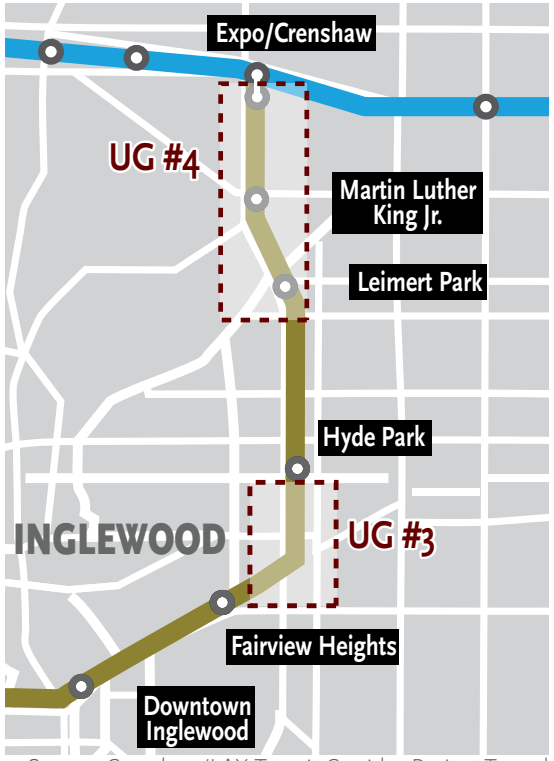
Option 3 will impact major utilities that exist on or are adjacent to the proposed alignment along Century Boulevard. For example, there are major water and sewer lines running down Century Boulevard (Figure 2.9-1). A full description of water, sewage, storm drain, electrical, natural gas, and hazardous liquid utilities impacts found on major alignment corridors in the Appendix G.

2.10 Rail Systems

The operability scenarios present unique transit systems requirements that will need to be satisfied to provide the level of service indicated in the operating plan. Tunnel ventilation and rail signaling in particular are critical systems for maintaining reliable, high-frequency service. Requirements for rail systems are typically not defined at this stage of conceptual study – the purpose of this section is primarily to analyze any impacts to the Metro Crenshaw/LAX Line, which is currently under construction.

2.10.1 Interlined

The under-construction Crenshaw/LAX Line guideway and facilities have been designed to maintain operational headways for the Crenshaw/LAX Line only. The interlined scenario would have additional trains connecting to and operating on the Crenshaw/LAX Line between Fairview Heights station and Expo/Crenshaw Station. The addition of more trains onto the Crenshaw/LAX Line would require upgrades to the existing infrastructure to accommodate the additional trains. Among the most crucial systems that would require upgrading would be the ventilation systems for the underground segments of the Crenshaw/LAX line and the train control and signaling for the length of the shared alignment. The number and length of ventilation zones, traction power blocks, the type of signaling system, and other factors are all affected by the operational headway.



Source: Crenshaw/LAX Transit Corridor Project Tunnel Ventilation Modeling Report

Figure 2.10-1 Schematic of Alignments and Underground Segments

Ventilation

This section summarizes the ventilation systems that would need to be upgraded from what is currently being built to support additional service to the Development. The interlined Scenario adds additional service to two underground guideway sections of the Crenshaw/LAX Line currently under construction, designated by that project as "UG#3" and "UG#4" (**Figure 2.10-1**). An analysis was performed to determine necessary changes to the existing ventilation zones to allow for a reduced headway on the Crenshaw/LAX Line and meet

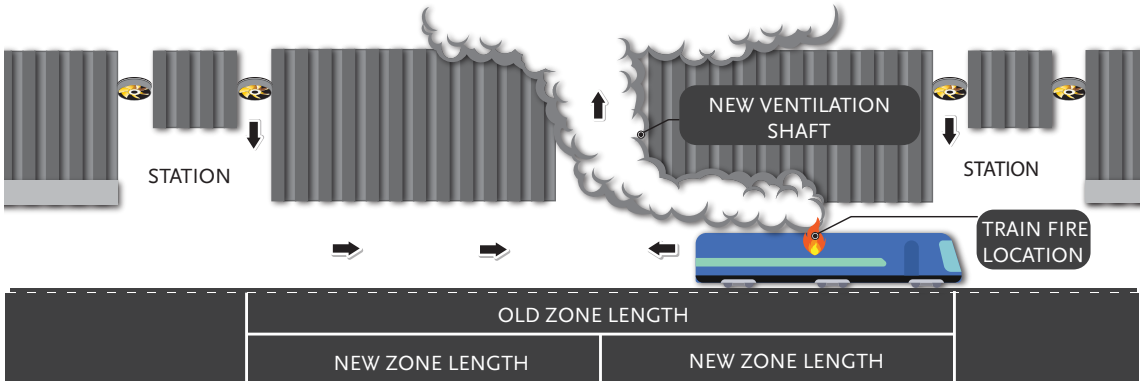
the Metro Rail Design Criteria (MRDC) for tunnel sections UG#3 and UG#4. Adding ventilation zones could allow trains to run at shorter headways.

The location of ventilation elements for UG#3 and UG#4 were determined from track plan and profile files, and the 2015 ventilation reports.

According to the MRDC Fire/Life Safety Criteria Rev. 1, 2.3.9.2, only one train is allowed per ventilation zone and a ventilation zone is defined as a section of tunnel between two ventilation shafts and/or portals. This requirement is one of the constraints on train throughput. Each ventilation zone becomes essentially a fixed signal block. Only one train can pass through each zone at a time. Creating shorter zone lengths increases the throughput of a particular tunnel section by allowing more trains to be in the tunnel simultaneously.

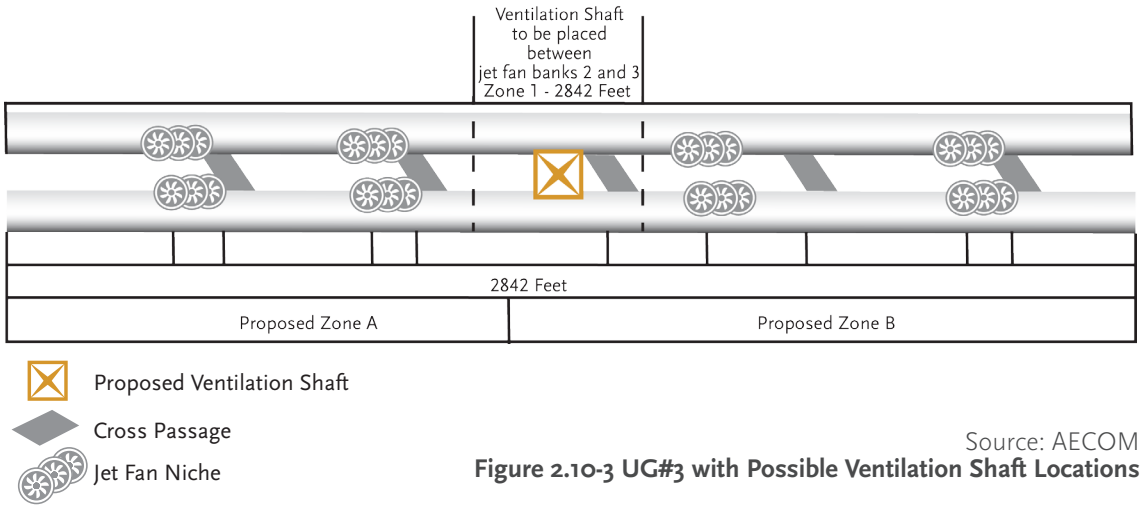
The only option available for reducing headway from a fire life safety and ventilation perspective is to divide existing ventilation zones into multiple shorter zones. This can only be accomplished by introducing portals or ventilation shaft inlets to the tunnels. For tunnels UG#3 and UG#4, adding additional shafts or portals between stations would increase the number of ventilation zones, allowing more trains to be in the tunnel concurrently. The additional tunnel ventilation zones will also impact the signaling system and traction power blocks, which should correspond to the limits of the ventilation zones.

According to a longitudinal section with a new ventilation shaft showing the reduction in ventilation zone length and possible emergency fan operation in a fire emergency, the new shorter ventilation zones would reduce the headway of that section (**Figure 2.10-2**).



Source: AECOM

Figure 2.10-2 Addition of Ventilation Shaft



Source: AECOM

Figure 2.10-3 UG#3 with Possible Ventilation Shaft Locations

UG#3 has a total distance of 2,970 feet and has no ventilation shafts. Therefore, according to MRDC, UG#3 is a single ventilation zone and only one train may be located within the tunnel at any time. An average speed throughout the tunnel that exceeds 13.5 mph must achieve headways of 2.5 minutes or less. If the average speed exceeds 13.5 mph, an additional ventilation shaft will not be required to UG#3 currently consists of one ventilation zone (**Figure 2.10-3**). With the current design, there can only be one train in the tunnel at any time. Therefore, a new ventilation shaft will be required between jet fan banks 2 and 3 if the minimum headway is determined to be insufficient.

UG#4 is a tunnel with three underground stations; Crenshaw/Expo (the terminus); Crenshaw/Vernon; and Crenshaw/MLK. Currently, the tunnel sections between the stations and the stations are individual ventilation zones with an additional zone near the Expo/Crenshaw station at the crossover. Based on the running times between stations and the dwell times (**Table 2.10-1**), the operational headway for UG#4 could possibly be decreased to 2.5 minutes by the addition of new ventilation shafts between the Development and the Crenshaw/LAX line (**Figure 2.10-4**).

Ventilation Zone	Run Time	Dwell Time	Total Time
Expo to MLK	2:40	0:20	3:00
MLK to Vernon	2:40	0:20	3:00

Source: AECOM

Table 2.10-1 Run and dwell times for tunnel segments in UG#4

Signals/Operations

The interlined scenario adds additional service for the approximately 3.5 mile segment from Fairview Heights to Expo/Crenshaw. The combined maximum service frequencies between the Crenshaw, Green and Inglewood NFL lines would be 2.5 minutes.

The constraints that the signal system has on the headway include the train separation requirements due to the tunnel ventilation zones, (discussed in the previous section) the track circuit block boundaries, and the turn-back capabilities at the terminal stations.

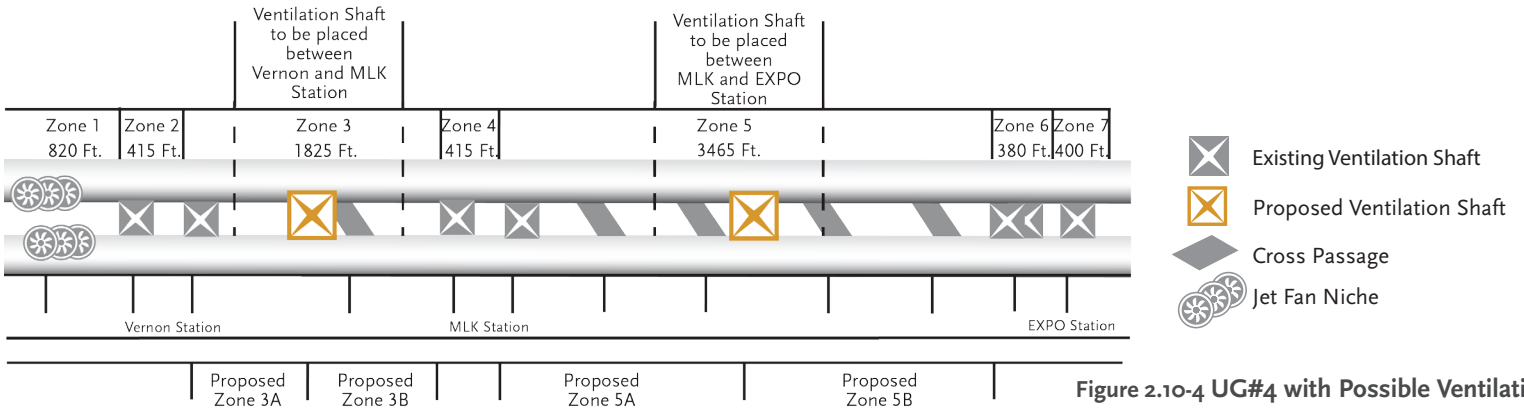
The Crenshaw/LAX Line utilizes a cab/no wayside (except at interlockings) signal system. The track circuits consist of AF-900/AF-904 Style digital FSK circuits, with digital cab signaling providing Automatic Train Control (ATC) functionality. These track circuit blocks are typically limited to an average length of 750'-1000', therefore making them conducive to close operating headways.

The Crenshaw/Exposition Station currently includes a diamond crossover on the south side of the station platforms for turn-back moves. Due to the increased headway requirements, a new tail track and/or crossover on the north end of the station platforms is assumed to be required to allow Crenshaw and/or Green Line trains to turn-back on north end crossovers, while the new Inglewood Development branch trains could turn-back on the south side of the station (during event service). The new Development branch line would occur just south of the Fairview Heights station. The Crenshaw line currently includes an interlocking at this location that could be extended/modified to include the additional crossovers/turnouts required for the new branch.

2.10.2 Independent Scenario

Independent Scenario

Requirements for rail systems are typically not defined at this stage of conceptual study. These systems will be designed as a project advances towards implementation. Costs are now included for these items at a rough-order-of-magnitude conceptual level.



Source: AECOM

Figure 2.10-4 UG#4 with Possible Ventilation Shaft Locations

2.11 Environmental Scan and Potential Mitigation Requirements

An environmental scan was conducted for the Scenarios. This section provides a preliminary analysis of the potential environmental impacts. The analysis also includes a comparison of the socio-economic factors, land use characteristics and potential visual effects .

The following conceptual-level assessment identifies likely environmental impacts related to Project Scenarios and related option implementation. The intent is to analyze the Project Options based on potential environmental impacts and/or identify areas that need further study. The document also provides streamlining for the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) documents.

The analysis employs a 150-foot wide study area on either side of the study scenarios (Study Area). This assessment includes identification of existing conditions, and a discussion of potential environmental effects based on relevant applicable standards and thresholds. The analysis addresses key issues included in the CEQA Guidelines supplemented by NEPA requirements.

2.11.1 Environmental Scan Summary

The Scenarios and related Options share similarities for a majority of the environmental impacts. All operating scenarios are anticipated to have no impact on the following environmental topics: Agriculture and Forestry Resources, Mineral Resources, Population and Housing, and Air Quality during Operations.

The Scenarios and related Options are anticipated to result in less than significant impacts with mitigation incorporated to the following environmental topics: Biological Resources, Greenhouse Gas (GHG) Emissions, Public Services, Utilities, Hazards/Hazardous Materials, Geology and Soils, and Tribal Cultural Resources. At least one scenario has moderate to high potential for significant impacts for all the remainder of the environmental categories. Further study is required for both air quality impacts and geology and soils in the next phase of study. The full environmental scan table with all findings is given in Appendix H.

Below includes a brief description the environmental issues with **high potential for significant impacts** for each of the Operability Scenarios.

Interlined Scenario

- Cultural Resources – due to close proximity to a cemetery

Independent Scenario

Option 1: Market-Manchester

- No environmental issue has high potential for significant impacts

Option 2: Arbor Vitae

- Visual Character – due to aerial structures along Arbor Vitae
- Light and Glare – due to the illumination of trains due to the proximity of light sensitive residential uses along the alignment.
- Land Use Compatibility – The introduction of a transit line on Arbor Vitae Street could limit circulation pathways along local north-south streets and may limit direct access to the existing driveways. Option 2 along Arbor Vitae would likely create a barrier that would divide an existing community
- Noise / Vibration Impacts – The highest potential for noise impacts is along Arbor Vitae Street because it has the highest number of Category 2 receptors and a narrow street width
- Circulation System - reduction in lane widths and potential turn limits may impact major intersections like La Cienega/Arbor Vitae and Inglewood/Arbor Vitae, that are currently operating at Level of Service (LOS) E or worse during peak hours. In addition, structural columns supporting the elevated guideway along turn-lanes may introduce intersection sight-distance challenges to drivers of vehicular traffic

Option 3: Century

- No environmental issue has high potential for significant impacts

2.12 Safety & Security

A planning-level Preliminary Hazard Analysis (PHA), based on the FTA Hazard Analysis Guidelines for Transit Projects (HAGTP), Final Report, January 2000, has been performed to assess the level of risk associated with each of the scenarios under study, and to determine if any one of the scenarios tends toward a higher safety risk than any of the others.

The analysis found that the Interlined Scenario and Independent Scenario Option 1 are believed to have the greatest potential for risk. Further, resolution of issues related to NFPA 130 compliance for the Interlined Scenario is expected to involve more costly design solutions (including potential HVAC and egress modifications), and/or implementation of special operational procedures than the other independent Options 2 and 3. All of the options have risks associated with the movement of large numbers of people nearby to special events of significance.

The focus of the Preliminary Hazard Analysis for this project was to identify hazards inherent to the design of the scenarios and identify suitable measures to control or mitigate for the hazard. While this analysis has considered security elements related to each of the various scenarios, a specific Threat & Vulnerability Analysis is not part of the scope of this assessment. However, it is important to note that there may be additional safety and security issues associated with Options 2 and 3, as these options will connect to the future Airport Metro Connector 96th Street Transit Station with direct access to LAX infrastructure via LAWA LAMP improvements such as the APM.

Based on risk, high-level safety concerns that might differentiate one alternative from another have been identified (**Table 2.12-1**).

#	Issue	Interlined Fairview Heights LRT	Independent Market-Manchester Street Urban Rail	Independent Arbor Vitae APM/ Monorail	Independent Arbor Vitae APM/ Monorail	Independent Century APM/ Monorail	Potential Mitigation Measures	Significant Cost Impacts
1	Increased potential for pedestrian/vehicle incidents at new, at-grade crossings, particular at transfer points		X				Perform diagnostic review of crossings, close coordination with CPUC on implementation of pedestrian safety treatments – warning gates, warning flashers, channelization, driveway closures, medians, signage, etc.; Consider street closures during major events.	
2	Emergency egress from aerial guideways.		X	X	X	X	Provide maintenance/emergency egress walkway, point of safety, associated area(s) of refuge, and access to grade; Coordinate with local Fire/EMS on best locations for elevated guideway access/ body removal points beyond NFPA requirements	
3	Point of safety and emergency egress off trackway in tunnel.	X	X				Provide maintenance/emergency egress walkway and associated area of refuge.	
4	Increased vehicular queuing at new at-grade crossings		X				Perform traffic safety analysis, Implement signal interconnection, traffic loops, signal pre-emption, roadway reconfiguration; Consider street closures during major events.	
5	Potential for increased risk to pedestrian and vehicular safety during construction	X	X	X	X	X	Prepare detailed construction sequencing plans; Provide changeable message signs with adequate advance notice to start of project; Provide advance warning to construction information – time/location/alternate routes.	

Source: AECOM

Table 2.12-1 PHA Risks Summary Matrix

#	Issue	Interlined Fairview Heights LRT	Independent Market-Manchester Street Urban Rail	Independent Arbor Vitae APM/ Monorail	Independent Arbor Vitae APM/ Monorail	Independent Century APM/ Monorail	Potential Mitigation Measures	Significant Cost Impacts
6	Potential for increased incidents due to introduction of new transit system (e.g. traffic control, signage, channeling devices, etc.).	X	X	X	X	X	Perform local public outreach in advance of construction, including educational programs in nearby schools for grade-crossing safety, how to ride transit safely, safety at stations Link to Metro's transit safety programs for kids and teens.	
7	Potential for crush loads of passengers during post-event service.	X	X	X	X	X	Provide adequate platform area; Perform egress analysis; Encourage methods/activities for crowd dispersal; Provide adequate personnel at Stations (SOPs); Review platform furnishing locations; Consider street closures during events; Consider sharing CCTV feeds with local police at key stations feeding the Development and analytics to respond to atypical crowd movement patterns	
8	Potential conflicts with pedestrians crossing the track mid-block for at-grade portion of urban rail alternative (particularly an issue during post-event service as people exit urban rail)		X				Consider use of pedestrian channelization devices; Provide adequate marked crossings; Develop SOPs for operations through areas of heavy pedestrian activity; Provide staffing to ensure track is clear to allow for continuous, uninterrupted service;	

Source: AECOM

Table 2.12-1 PHA Risks Summary Matrix (Continued)

#	Issue	Interlined Fairview Heights LRT	Independent Market-Manchester Street Urban Rail	Independent Arbor Vitae APM/ Monorail	Independent Arbor Vitae APM/ Monorail	Independent Century APM/ Monorail	Potential Mitigation Measures	Significant Cost Impacts
9	Potential increased risks on monorail/ APM, due to driverless vehicles: - Cyber Attacks - Difficulty determining responsibility for accidents - Difficulty addressing incidents onboard vehicle			X	X	X	Provide emergency call system on vehicle; Provide "Conductor" onboard train; Consider platform and vehicle security issues especially for the off-peak/night time hours – duress communications, lighting, eliminate areas for a person to obscure oneself, etc.	
10	Increased safety considerations around the secured perimeter of venues, including the increased security required to screen personal vehicles	X	X	X	X	X	1. Preserve enough distance between the station and the secured perimeter to ensure sufficient space for queuing, monitoring and screening; 2. Identify opportunities for pre-screening before spectators board the train: Create/enable a screening checkpoint at the main transfer point to create a "bubble to bubble" service, with witch spectators could be guided directly into the venue, potentially without the need for additional screenings, although random screenings would still be advised. Security screening on the Interlined Scenario may be more problematic than for other scenarios. 3. Recommend venues in the area consider the Department of Homeland Security safety certification, which could provide further consideration on the connection between transit and the venue; 4. Encourage increased mode share on transit through public outreach.	X
11	Ticketing Issues: Crowd management Device reliability & maintenance	X	X	X	X	X	Carefully consider the location of ticketing machines to avoid disruption to the pedestrian flow, particularly post-event. Consider on-line ticketing methods.	

Source: AECOM

Table 2.12-1 PHA Risks Summary Matrix (Continued)

#	Issue	Interlined Fairview Heights LRT	Independent Market-Manchester Street Urban Rail	Independent Arbor Vitae APM/ Monorail	Independent Arbor Vitae APM/ Monorail	Independent Century APM/ Monorail	Potential Mitigation Measures	Significant Cost Impacts
12	New line may impact NFPA 130 egress calculations	X					Review analyses previously performed for existing stations; Provide additional means of egress, if required.	X
13	Potential increase to time of tenability, which may increase required ventilation capacity.	X					Review capacities of existing system: Provide system modifications and/ or additional egress routes to achieve adequate time of tenability.	X
14	Shortened ventilation zones in the tunnel may be required, with a higher risk of affecting a non-fire train, and of misidentifying fire zone.	X					Provide a design for a more complex/ modified ventilation system, including additional shafts, fans, ventilation equipment, etc.	X
15	Pedestrian access to non-public areas of tunnel	X	X				Provide Intrusion Detection System (IDS) & signage; Integrate tunnel IDS into CCTV system to provide alerts to OCC.	
16	Potential for human contact with 3rd Rail/Hot Rail			X	X	X	Consider installation of Platform Screen Gates (PSGs); Provide warning signage.	
17	Pedestrian access to non-public areas of guideway		X	X	X	X	IDS & signage; Integrate guideway IDS into CCTV system to provide alerts to OCC	
18	Pedestrian access to areas beneath guideway, particularly at transitions, susceptible to vandalism and vagrancy.		X	X	X	X	Consider the installation of security lighting, fencing, or other means to discourage vandalism and vagrancy beneath the guideway.	
19	Public access to Maintenance Facility in joint-use development scenario		X				Consider the use of security fencing, Intrusion Detection System (IDS), regulatory signage; Carefully consider optimal locations for site egress/access	
	Unweighted Score:	**10**	**14**	**10**	**10**	**10**		

Source: AECOM

Table 2.12-1 PHA Risks Summary Matrix (Continued)

2.13 Capital and Operating Costs

The following section describes the Capital and Operating Costs of each of the Operability Scenarios.

2.13.1 Capital Cost Estimates

Rough-order-of-magnitude (ROM) capital costs were prepared for four operability scenarios, including the following interlined scenario and three independent scenarios (**Table 2.13-1**):

- Interlined Option
  - Fairview Heights – Underground LRT
- Independent Options
  - Option 1: Market-Manchester - Urban Rail
  - Option 2: Arbor Vitae – Aerial APM/Monorail
  - Option 3: Century – Aerial APM/Monorail

The rough-order-of-magnitude cost estimates presented in this memo are based on conceptual alignment drawings considered to be within a 0-5% level of design. Due to the preliminary nature of the design, the costs are presented in a range of costs that could be expected given the known project requirements and constraints. Rough-order-of-magnitude estimates could vary by as much as +/- 30% from the final project cost, and should be used for conceptual planning purposes only. It is the intention of the estimate to capture the fair market value under stable economic and bidding conditions for an average project with similar attributes within the Los Angeles area.

The low range represents the low end of an expected cost range based on the lower middle range of similar projects and standard contingencies. The high range represents the upper middle range of average costs for similar projects. Several factors could cause the actual project to increase in cost, such as designing the system to a level of design greater than standard, right-of-way acquisition issues, contractor bidding market, and material fluctuations. All costs listed are in current year (2017) dollar value and do not cost escalation between the current year and year of expenditure (YOE). Cost escalation should be added to these totals at a rate of 2 to 4% of the total project value per year to the mid-point of the construction schedule. If the mid-point of construction is 2024, the total project cost would increase by 15% to 30%.

Scenario and Option	Length (Route Miles)	Unit Cost/Mile (Millions in 2017$)		$ Capital Cost (Millions in 2017$)	
		Low	High	Low	High
Interlined Scenario	1.7	$ 800	$ 1,176	$ 1,358	$ 1,997
Option 1: Market-Manchester	1.8	$ 280	$ 419	$ 497	$ 746
Option 2: Arbor Vitae	2.1	$ 349	$ 468	$ 561	$ 982
Option 3: Century	2.8	$ 286	$ 375	$ 563	$ 1,049

Source: AECOM

Table 2.13-1 Project Operability Scenarios - Capital Cost Estimate Totals

The Independent Option 1 is the lowest cost compared to the other scenarios, followed by the Independent Option 2 and 3. The Interlined LRT Underground Scenario is by far the highest due to the fact that this scenario is underground, while the other scenarios are aerial. In general, capital cost and capital cost per mile are driven by alignment distance and the percentage of underground alignment. The cost of constructing bored tunnel guideway can be up to 2 to 3 times the cost of constructing aerial guideway.

Longer alignments typically have slightly lower cost per mile due to efficiencies involved with static, lump sum costs, spread out along the alignment. When comparing the unit cost per mile, it can be seen that the Interlined option clearly has the highest cost per mile due to the fact that it is mostly underground. Among the aerial Independent APM/Monorail options, it can be seen that the Independent Century Option has a lower cost per mile than the Independent Arbor Vitae Option, due to the project length. The Independent Urban Rail

cost has the lowest cost per mile due to the fact that the costs for urban rail components are less than APM/Monorail systems (**Figure 2.13-1**).

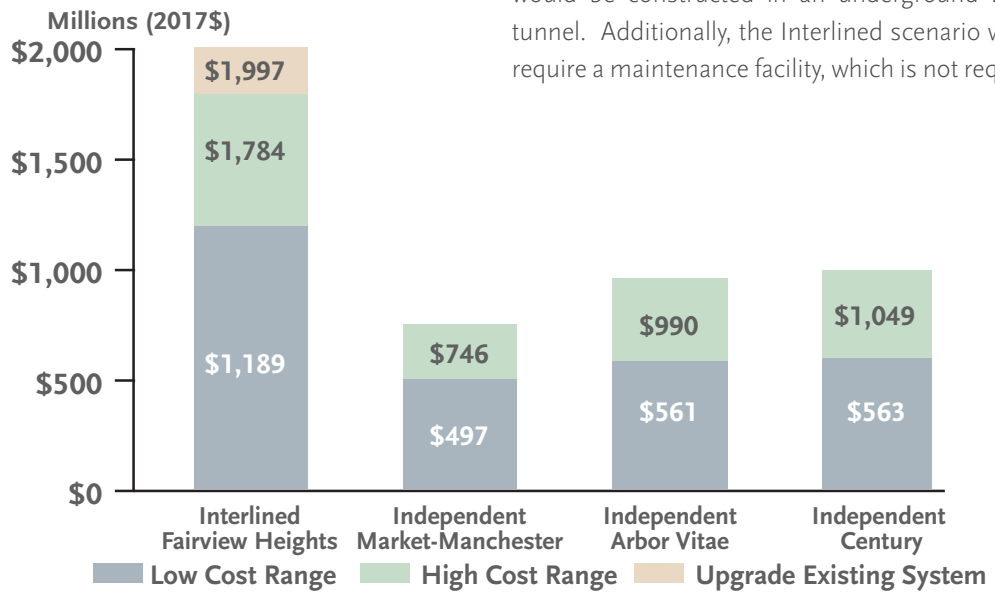
The Independent Urban Rail option is the least expensive and the Interlined scenario is the most expensive. The Urban rail option is within a $497 to $746 Million range, the Independent Arbor Vitae Option is within a $561-$990 Million range, the Independent Century Option is within a $563 Million to $1 Billion range, and the Interlined Option is within a $1.2 to $1.8 Billion range plus upgrades to existing Metro system that would raise the total to up to nearly $2 Billion.

2.13.2 Capital Cost Comparison to Referenced Projects

As part of this analysis, the total estimated capital costs were compared to referenced projects in order to validate the estimates and to provide a frame of reference for the expected level of design. The cost per mile of the Interlined LRT scenario and the independent Urban Rail scenario are compared against existing Metro LRT systems in place (**Figure 2.13-2**). The referenced Metro costs have been escalated to current year (2017) for accurate comparison.

The unit cost per mile for the Interlined LRT underground scenario is comparable to the Regional Connector project (**Figure 2.13-2**). Similar to the Regional Connector, the Interlined LRT underground scenario is approximately 2 miles and would be constructed in an underground bored tunnel. Additionally, the Interlined scenario would require a maintenance facility, which is not required for the Regional Connector. which the regional connector the cost per mile of the Interlined LRT scenario and the independent Urban Rail scenario compared to existing Metro LRT systems in place. The referenced Metro costs have been escalated to current year (2017) for accurate comparison. The Interlined LRT Underground scenario can be assumed to have a similar level of design to this project.

The unit cost per mile for the Independent Urban Rail scenario is comparable to the Crenshaw/LAX LRT project. Similar to the Crenshaw/LAX line, the Independent Urban Rail scenario would be constructed with multiple guideway types, including aerial, at-grade, and underground guideway. The Independent Urban Rail scenarios can be assumed to have a similar level of design, with a slightly lighter vehicle and systems components.

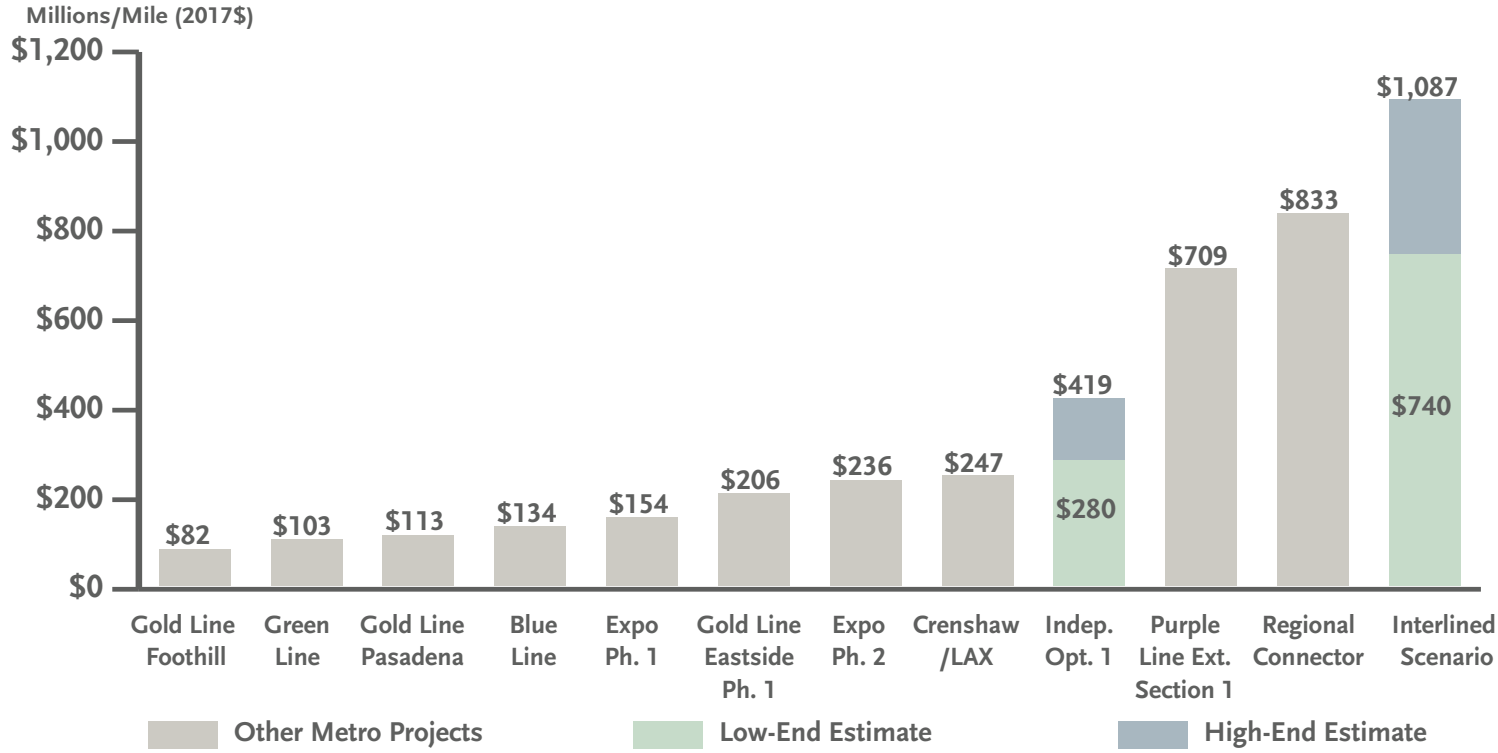


Source: AECOM

Figure 2.13-1 Capital Cost Range

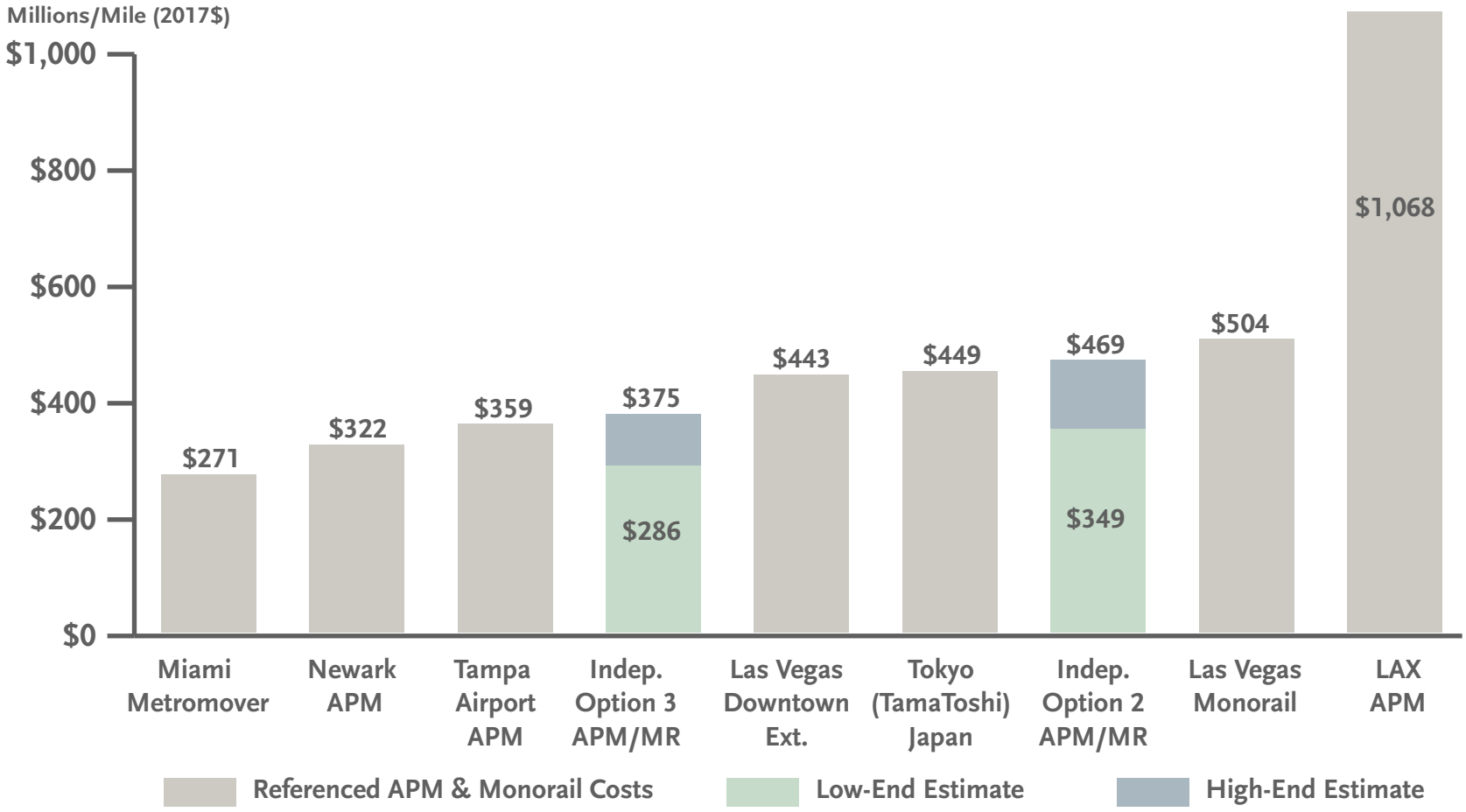
The cost per mile of the Independent APM/ Monorail scenarios compared to existing APM and Monorail projects are present on the next page, which the exception of the LAX APM cost, which is a conceptual engineering estimate. The referenced costs have been escalated to current year (2017) and adjusted to Los Angeles market for accurate comparison.

The unit costs per mile for the Independent APM/ Monorail scenarios have a range in cost that can be comparable to simple people movers (**Figure 2.13-3**), such as the Tampa APM at the low end and the Las Vegas Monorail at the high end. Despite the difference in unit cost, both Independent APM/ Monorail scenarios could be within this range of design. For the purpose of this study, both the APM/Monorail scenarios are assumed to have the same level of design and assumptions for guideway type, station design, and vehicle type. The reason for the variance between the two APM/Monorail scenarios is due to the difference in project length and right-of-way acquisition. As the project length increases, the cost per mile decreases slightly. Additionally, the greater right-of-way acquisition on the Arbor Vitae option increases the unit cost for that scenario.



Source: AECOM

Figure 2.13-2 LRT/Urban Rail Cost per Mile Comparison (2017$ Millions)



Source: AECOM

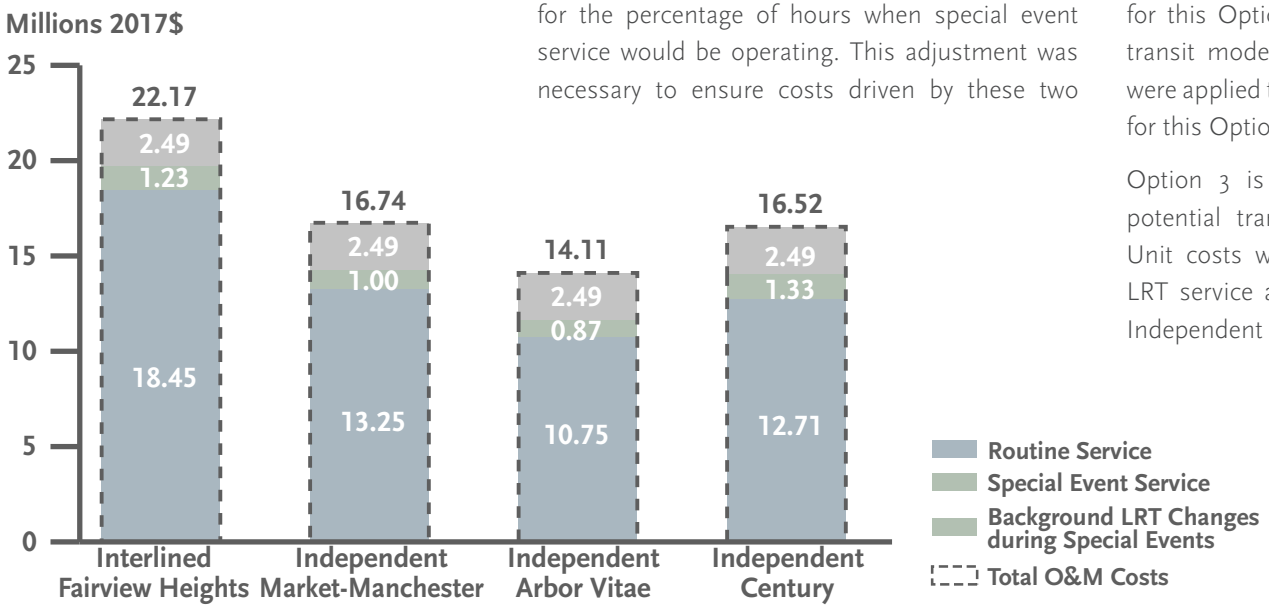
Figure 2.13-3 APM/Monorail Cost per Mile Comparison (2017$ Millions)

2.13.3 Operating and Maintenance Cost Estimates

Annual operating and maintenance (O&M) costs have been estimated with spreadsheet models that tie costs to the level of service that is to be operated and facilities that are to be maintained. Specifically, the cost allocation models assume that each operating expense incurred is driven by a key supply variable such as revenue-hours, revenue-miles or number of vehicles operated during peak periods. Unit costs are developed and applied to future service statistics. The result is an estimated annual O&M cost that is specific for the test scenario (**Figure 2.13-4**).

The interlined scenario reflects LRT service that operates as a branch of the Crenshaw/LAX Line and Green Line north pattern, proceeding from the Expo/Crenshaw LRT station, then branching at Fairview Heights to continue on Prairie Avenue until terminating at Arbor Vitae Street. Service and facility statistics were calculated for routine service based on 5-minute peak headways and 10-minute midday headways, with evenings tapering from 10 to 20 minutes. Besides routine service, special event service statistics are added representing 50 special events a year, with 9 hours of increased service for each special event. Special event service also assumes supplementation of background LRT service on the Crenshaw/LAX Line and Green Line north pattern.

Unit costs were applied to LRT service and facility statistics for the interlined scenario. Consideration was also given to costs related to potential yard expansion to accommodate additional LRT vehicles. For special events, costs driven by peak cars and stations were adjusted to account for the percentage of hours when special event service would be operating. This adjustment was necessary to ensure costs driven by these two variables are not over estimated, for these unit costs are based on annual cost characteristics. Detailed cost estimates for 2023 and 2040 are presented in Appendix K.



Source: AECOM

Figure 2.13-4 O&M Costs for Scenarios and Options

Independent Scenarios

For the Independent Options, service and facility statistics were calculated for routine service and for special event service. Additional event service is also assumed for background LRT service on the Crenshaw/LAX Line and Green Line north pattern. For special events, costs driven by peak cars and stations were adjusted to account for the percentage of hours when special event service would be operating. Detailed cost estimates for 2023 and 2040 are presented in Appendix K.

Option 1 reflects use of Urban Rail. Unit costs were applied to urban rail service and facility statistics for this Option. Option 2 includes two potential transit modes – APM and monorail. Unit costs were applied to APM and monorail facility statistics for this Option.

Option 3 is also under consideration for two potential transit modes – APM and monorail. Unit costs were applied to APM, monorail and LRT service and facility statistics for the Century Independent Option.

2.14 Summary / Findings

This section presents a summary of findings from the analysis performed on each of the Operability Scenarios as part of this feasibility study related to the following topics within the report:

2.1 Guideway Configuration and Mode
2.2 Station Design & Connectivity
2.3 Operating Capacity
2.4 Ridership Analysis
2.5 Construction Methods and Impacts
2.6 Traffic Impacts
2.7 Maintenance and Storage Facility
2.8 Right-Of-Way Acquisition
2.9 Utility Conflicts and Relocation
2.10 Rail Systems
2.11 Environmental Scan and Potential Mitigation Requirements
2.12 Safety & Security
2.13 Capital and Operating Costs

Recall that the goal of the service is to provide:

- **Reliability**: Convenient service with minimum delay, wait, and travel times
- **Connectivity**: Ease of transferring to and from the regional high-capacity transit network
- **Capacity**: The ability to serve peak travel demand to and from the Development

Both the interlined and independent scenarios are capable of reliable, convenient service with connectivity to the Metro Rail system from the Development. However, the scenarios yield differing capacity, ridership, and cost characteristics.

In general, the interlined scenario has the highest cost and the least capacity of the scenarios considered. Alternatively, the three independent scenario options meet the capacity goal for lower cost (**Table 2.14-1**).

The complete findings or results pertaining to each operability scenario and option for each topic are summarized below (**Table 2.14-2**).

Cost & Capacity Summary	Interlined Scenario	Independent Scenario		
		Option 1	Option 2	Option 3
	Via Fairview Heights - Prairie	Downtown Inglewood via Market-Manchester	AMC 96th St. Transit Station via Arbor Vitae	AMC 96th St. Transit Station via Century
Capacity Target	25% of 80,000 stadium capacity per hour = 20,000 passengers/hour			
Maximum Operating Capacity	5 minute peak headway = 5,400 passengers/hour	2 minute peak headway = 13,500 passengers/hour	2 minute peak headway = 18,000 passengers/hour	
Event Forecast (2040)- Attendees Using Transit per Event	4,130 - 15,000 attendees	3,900 - 14,300 attendees	6,120 - 23,180 attendees	6,420 - 24,180 attendees
Capital Cost Estimates (2017 $)	$1.333 - 1.960 billion	$416 - 624 million	$561 - 990 million	$563 million - 1.049 billion
Operating & Maintenance Cost (2017 $)	$22.2 million/year	$16.7 million/year	$14.0 - 14.1 million/year	$16.4 - 16.5 million/year

Source: AECOM

Table 2.14-1 Cost and Capacity Summary for Scenarios

		Interlined Scenario	Independent Scenario		
			Option 1	Option 2	Option 3
	Description	Via Fairview Heights - Prairie	Downtown Inglewood via Market-Manchester	AMC 96th St. Transit Station via Arbor Vitae	AMC 96th St. Transit Station via Century
	Alignment	Junction branching from Crenshaw/LAX south of Fairview Heights Station; underground along Prairie Avenue	Market Street - Manchester Boulevard - Prairie Avenue	Prairie Avenue to Aviation Boulevard via Arbor Vitae Street	Prairie Avenue to Aviation Boulevard via Century Boulevard
2.1	Guideway Configuration and Mode				
	Guideway Configuration	Fully Exclusive	Fully Exclusive Pedestrian/vehicle crossing on Market Street at Queen Street and Regent Street	Fully Exclusive	
	Technology / Mode	Metro Light Rail	Urban Rail (similar to european tram, streetcar, low-floor light rail)	Automated People Mover (APM) (including monorail)	
	Distance (route-miles)	1.5 miles (branch) - 5.3 miles (to Expo Line)	1.2 miles	2.1 miles	2.8 miles
	Travel Time (minutes)	3 minutes	5 minutes	4 minutes	7 minutes
	Average Speed (mi/hr)	21 mi/hr	15 mi/hr	33 mi/hr	25 mi/hr

Source: AECOM

Table 2.14-2 Findings or Results of Operability Scenarios and Options by Topic

		Interlined Scenario	Independent Scenario		
			Option 1	Option 2	Option 3
2.2	Station Design & Connectivity				
	Termini	• Upgraded Crenshaw/ LAX Terminus at Expo Line • New Terminus at Development	• New terminus on Market Street • New terminus at Development	• New terminus at AMC 96th St. Transit Station • New terminus at Development	• New terminus at AMC 96th St. Transit Station • New terminus at Development
	Station Design	• Assumed 270-feet platforms • Metro's "kit of parts" station design • Accommodation on plazas and waiting areas for patrons transferring from other transit service lines • Additional signage at connecting stations to guide event patrons to platforms to streamline travel	• Assumed 270' platforms • At-grade stations would be designed as an extension of existing sidewalks; safety barriers and other safety measures to encourage pedestrians to cross at dedicated crossings	• Assumed 270' platforms • Capacity, ingress and egress strategy from the LAWA concourse need to accommodate combined ridership from APM, AMC/96th St. Station and the Project; Station could be interlined with the developments on the site, currently slated for collateral development; vertical access needs to be provided on Arbor Vitae/Prairie Ave	• Assumed 270' platforms • Capacity, ingress and egress strategy from the LAWA concourse would need to accommodate combined ridership from APM, AMC 96th Street Transit Station and the Project; vertical access needs to be provided to the aerial station
2.3	Operating Capacity				
	Capacity Target	25% of 80,000 stadium capacity per hour = 20,000 passengers/hour	25% of 80,000 stadium capacity per hour = 20,000 passengers/hour		
	Train Consist	3 - Metro light rail vehicles	3 - low-floor urban rail vehicles	6 - 40-50' APM cars/segments	
	Train Capacity	150 passenger/vehicle = 450 passengers/train	150 passenger/vehicle = 450 passengers/train	100 passenger/car = 600 passengers/train	
	Maximum Operating Capacity	5 minute peak headway = 5,400 passengers/hour	2 minute peak headway = 13,500 passengers/hour	2 minute peak headway = 18,000 passengers/hour	

Source: AECOM

Table 2.14-2 Findings or Results of Operability Scenarios and Options by Topic (Continued)

		Interlined Scenario	Independent Scenario		
			Option 1	Option 2	Option 3
2.4	Ridership Analysis				
	Weekday Ridership Forecast (2040)	3,734 riders/day	3,158 riders/day	2,158 riders/day	3,802 riders/day
	Event Forecast (2040)- Attendees Using Transit per Event	4,130 - 15,000 attendees	3,900 - 14,300 attendees	6,120 - 23,180 attendees (assumes use of up to 25-75% LAX "ITF" parking)	6,420 - 24,180 attendees (assumes use of up to 25-75% LAX "ITF" parking)
2.5	Construction Methods and Impacts				
	Construction Methods and Impacts	Bored tunnel, cut & cover, and at-grade guideway and station construction	Cut & cover, at-grade, and aerial guideway and station construction	Aerial guideway and station construction	
2.6	Traffic Impacts				
	Permanent Traffic Impacts	Impact to at-grade crossings on Crenshaw/ LAX line. Slauson Avenue assumed to require grade separation	Full closure of Market Street to traffic with at-grade crossings at Regent Street and Queen Street. Some intersection turning movements may be impacted by aerial guideway/station columns	Some intersection turning movements may be impacted by guideway/station columns	
2.7	Maintenance and Storage Facilities				
	Vehicle Fleet Size (during maximum operations)	36 light rail vehicles	23 urban rail vehicles	38 APM cars/segments	
	Maintenance and Storage Facility (MSF) Size	13 acres	5 acres	5 - 7 acres	
	Maintenance Facility Strategies	Shared with existing/ expanded Metro facility	New joint-development/mixed-use redevelopment site or shared with existing/expanded Metro facility (requires non-revenue connection)	All-new redevelopment site (e.g. formal rental car lot), new joint development/mixed-use redevelopment site, or shared with LAWA APM	
	Potential MSF Locations	Metro Crenshaw/LAX Southwestern Yard or other	· Downtown Inglewood redevelopment site(s) · Other Inglewood infill site(s) · Forum or Hollywood Park sites · Metro Crenshaw/LAX Southwestern Yard or other	· Former LAX rental car lots · Hollywood Park sites · LAWA APM facility	

Source: AECOM

Table 2.14-2 Findings or Results of Operability Scenarios and Options by Topic (Continued)

		Interlined Scenario	Independent Scenario		
			Option 1	Option 2	Option 3
2.8	Right-Of-Way Acquisition				
	Right-Of-Way Acquisition - Construction/Staging	6 - 8 acres	2 acres	minimal	
	Right-Of-Way Acquisition - MSF	13 acres	5 acres	7 acres	
	Right-Of-Way Acquisition - Stations, Systems	up to 4 acres	up to 8 acres	up to 26 acres	up to 12 acres
	Right-Of-Way Acquisition - Total	22 acres	15 acres	33 acres	19 acres
2.9	Utility Conflicts and Relocation				
	Utility Conflicts and Relocation	Miscellaneous impacts due to cut & cover and at-grade construction	Miscellaneous impacts due to cut & cover and at-grade construction	Miscellaneous impacts due to support column construction for aerial guideway and stations	
2.10	Rail Systems				
	Ventilation	Assumed that increased ventilation capacity (additional vent shafts) are required for Crenshaw/LAX Line tunnel segments “UG3” and “UG4”	n/a		
	Signals/Operations	Assumed minor upgrades to Crenshaw/LAX systems to accommodate interlined service	n/a		

Source: AECOM

Table 2.14-2 Findings or Results of Operability Scenarios and Options by Topic (Continued)

		Interlined Scenario	Independent Scenario		
			Option 1	Option 2	Option 3
2.11	Environmental Scan and Potential Mitigation Requirements				
	Environmental Scan - High Potential for Significant Impacts	Cultural Resources – due to close proximity to a cemetery.	No environmental issue has high potential for significant impacts	• Visual Character – due to aerial structures along Arbor Vitae • Light and Glare – due to the illumination of trains due to the proximity of light sensitive residential uses along the alignment. • Land Use Compatibility – The introduction of a transit line on Arbor Vitae Street could limit circulation pathways along local north-south streets and may limit direct access to the existing driveways. • Noise / Vibration Impacts – The highest potential for noise impacts is along Arbor Vitae Street because it has the highest number of Category 2 receptors and a narrow street width • Circulation System - reduction in lane widths and potential turn limits may impact major intersections that are currently operating at Level of Service (LOS) E or worse during peak hours. In addition, structural columns supporting the elevated guideway along turn-lanes may introduce intersection sight-distance challenges to drivers of vehicular traffic.	No environmental issue has high potential for significant impacts

Source: AECOM

Table 2.14-2 Findings or Results of Operability Scenarios and Options by Topic (Continued)

		Interlined Scenario	Independent Scenario			
			Option 1	Option 2	Option 3	
2.12	Safety & Security					
	Safety & Security	Impacts to safety & security systems (fire life safety) on Crenshaw/LAX line as-designed (currently under construction). Fire-life safety systems require evaluation. Also, risks associated with movement of large passenger loads to special events.	Interface with pedestrians and vehicles along Market Street. Also, risks associated with movement of large passenger loads to special events.	Interface with Metro AMC 96th Street Transit Station and LAWA APM. Also, risks associated with movement of large passenger loads to special events.		Interface with Metro AMC 96th Street Transit Station and LAWA APM. Also, risks associated with movement of large passenger loads to special events.
2.13	Capital and Operating Costs					
	Capital Cost Estimates (2017 $)	$1.333 - 1.960 billion	$416 - 624 million	$561 - 990 million		$563 million - 1.049 billion
	Operating and Maintenance Cost - Routine	$18.5 million/year	$13.3 million/year	$10.2 - 10.7 million/year		$12.0 - 12.7 million/year
	Operating and Maintenance Cost - Special Event	$1.2 million/year	$1.0 million/year	$0.9 - 1.3 million/year		$1.3 - 1.9 million/year
	Operating and Maintenance Cost - Background Metro	$2.5 million/year	$2.5 million/year			
	Operating and Maintenance Cost - Total	$22.2 million/year	$16.7 million/year		$14.0 - 14.1 million/year	$16.4 - 16.5 million/year

Source: AECOM

Table 2.14-2 Findings or Results of Operability Scenarios and Options by Topic (Continued)

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PART III

FUNDING, FINANCING & DELIVERY

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Public Private Partnership (P3) benefits arise from optimizing risk allocation, aligning incentives for performance, and taking a project life-cycle perspective. This section presents a summary of potential funding and P3 delivery options that could support and accelerate the delivery of the transit connection. The analysis presented in this section includes a high-level summary of the formation process and financial assessment of Enhanced Infrastructure Finance Districts (EIFD), as well as an early identification of a range of governance and delivery options.

3.1 EIFD Formation and Financial Analysis

In June of 2011, Governor Brown signed into law two bills that effectively dissolved all California Redevelopment Agencies (RDAs). Among the many responsibilities of the RDA's was to improve or build new infrastructure to address the needs of the cities and communities. Since the dissolution of RDA's, California cities have struggled to improve and build the new infrastructure necessary for its growing population. However, in September 2014 a new bill, SB 68, was signed by the Governor, authorizing local agencies to create Enhanced Infrastructure Finance Districts (EIFD's). While also allowing the use of Tax Increment Financing (TIF), the newly authorized EIFD's differ significantly from the former RDA financing structures both in flexibility and scope. As with previous forms of "TIF", the principle taxing authority (here the County of Los Angeles) must consent to any use of its portion of tax increment. Therefore, Inglewood's formation of a new EIFD, would only allow it to direct the funds derived from its own share of tax increment to the EIFD and the County's voluntary agreement to participate will be necessary in order to secure any portion of the County's tax increment share for the proposed EIFD. As a result, local governments are clearly encouraged to partner on infrastructure development in order to maximize EIFD's financial capacity.

An additional and highly significant positive aspect of the newly created EIFD's is the extraordinary flexibility and reach of its powers and the ability to combine multiple sources of revenue in addition to tax increment and integrate them into a locally-developed financial business plan. This capacity to bundle multiple revenue streams including development and user fees, bond funds federal and state grants and myriad other sources serves to enhance the revenue available to the EIFD to fund proposed projects.

The following assessment and analysis provides an application of this new tool to the specific proposed project and determines if there is sufficient financial capacity available to support its operation and maintenance. This will also inform the decision as to whether, when utilized in connection with a project governance vehicle such as a P3 or similar project delivery strategy, whether this strategy can attract the scale of private investment needed to operate as a stand-alone enterprise.

3.1.1 EIFD Formation Process

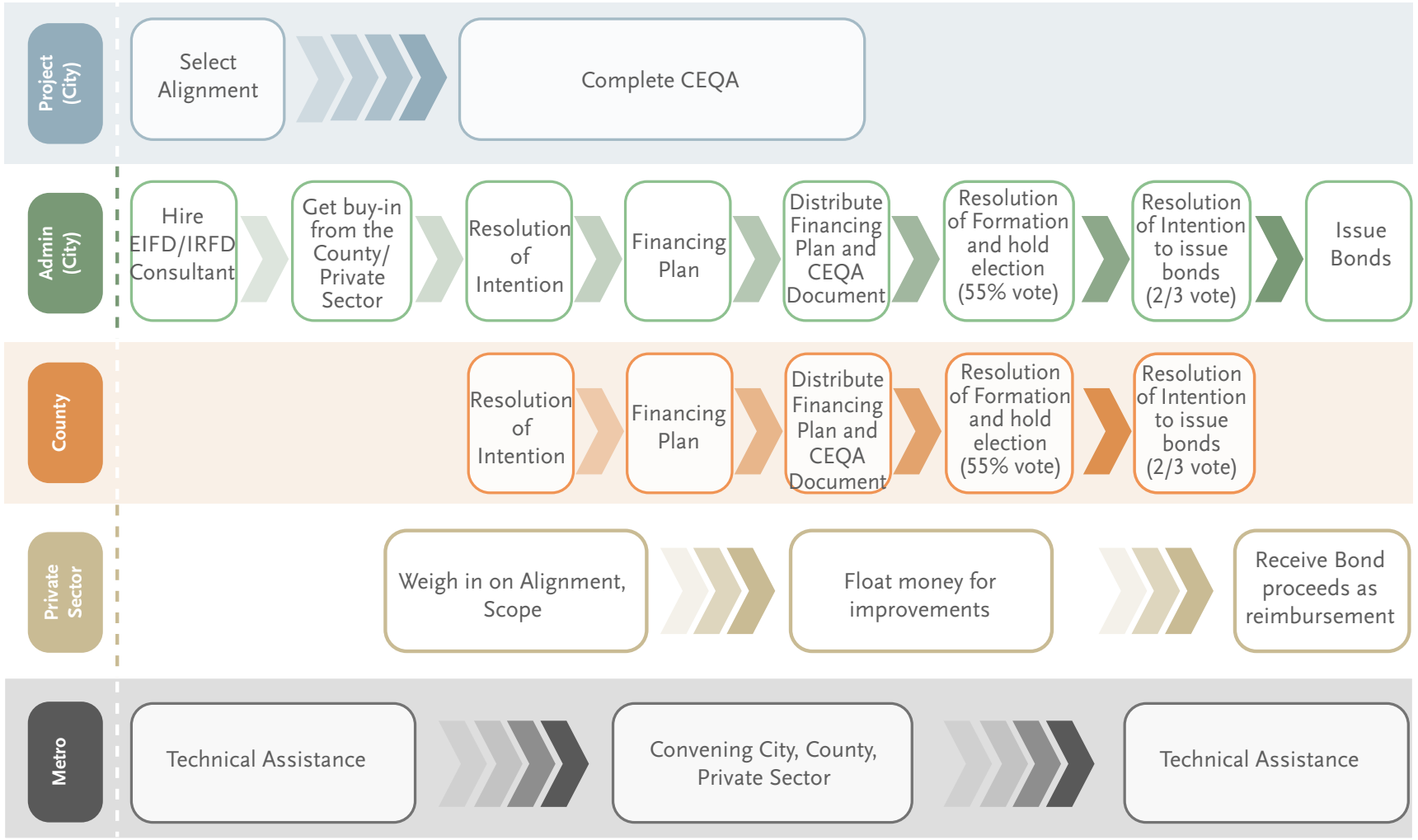
In order to form an EIFD, the Initiating Public Agency (IPA), in this case the City of Inglewood, must first adopt a resolution to establish the District and appoint the Public Financing Authority ("PFA"). The same process also must be followed by any other participating legislative bodies. The resolution identifies the proposed project and project area, along with district members, and appoints the individual PFA members. The PFA, which is the governing board of the EIFD, is a separate stand-alone governmental entity with relatively extensive powers. Its basic tasks include:

- Preparation of the Infrastructure Financing Plan ("IFP") that details the investment program and funding streams for the project
- Scheduling of a public hearing to review the IFP
- Proposal of a resolution to adopt the IFP and form the EIFD
- Approval of the IFP and officially establishment of the EIFD

In addition, an environmental review of the project is concurrently conducted and is presented as part of the public hearing process. A graphic presentation of the EIFD formation process and sequencing is presented as shown below (**Figure 3.1-1**).

Both the environmental review and the formation of the EIFD will need to take place before the completion of the first phase of the Development to take advantage of any tax increment generated.

Initial contacts with the County have occurred and await County Board of Supervisors approval of proposed County guidelines for tax increment utilization and EIFD governance participation, which will affect the identity of EIFD district members The project area is currently defined by City of Inglewood Ordinance No. 15-10 - City of Champions Revitalization Initiative, subject to potential consideration of areas encompassed by the proposed Clippers NBA stadium, also.



Source: Metro

Figure 3.1-1 EIFD Formation Process

3.1.2 Financial Assessment

In order to assess the potential availability of revenue to the EIFD to fund the project, the following was prepared:

- Tax increment projections
- City of Inglewood additional revenue projections to be derived from the Development
- Listing of potential additional EIFD revenue sources
- Table illustrating potential bonding capacity

In viewing the revenue and bond projections in this section, it is important to keep in mind the following:

A. Both the amount of potential tax increment and the revenue to the City of Inglewood are projections based on full build-out of all project improvements within the EIFD and within the projected time-frames established by the Developer and City.

Delays in construction of the improvements could result in major effects on the timing and amount of projected tax increment and project-generated revenue to the City and thus its availability to the EIFD. The current schedule for development phasing, adjusted for the recently announced one-year delay due to unusually inclement weather, is shown in **Figure 3.1-2**.

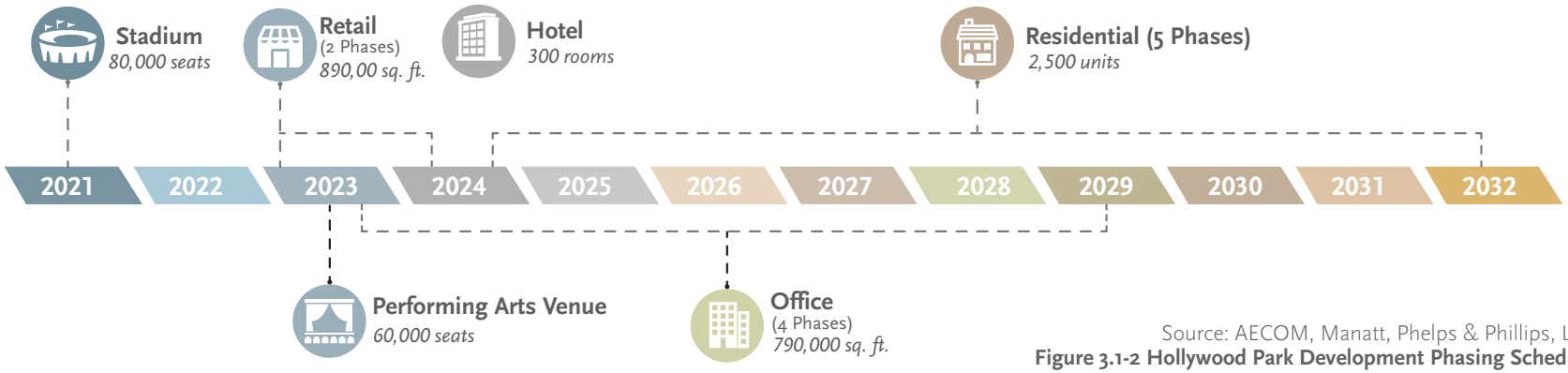
In order to assess the potential for both property tax increment and additional revenue streams generated by the project, the following project formation documents were reviewed:

- City of Inglewood ordinance adopting the initiative measure creating the City of Champions Revitalization Initiative
- Amended and Restated Development Agreement between the City and the project developers
- Owner Participation Agreement between the City and the developer defining the developers installation and rights to repayment for certain infrastructure improvements
- City of Inglewood Initiative Report relating to the proposed financial arrangements between the City and the developer
- City of Inglewood Budget for 2016-2017
- Other relevant documents

In addition, numerous meetings were conducted with City of Inglewood and County of Los Angeles officials to further clarify and assess the potential revenue generation available to the proposed EIFD.

B. Receipt by the EIFD of any portion of the County's share of tax increment is dependent upon the agreement by the County. The County, in its sole discretion, may choose whether and to what extent (in terms of percentage of tax increment funds) if any, it chooses to participate. The County is in the process of formulating guidelines for its EIFD participation.

The guidelines have not yet been published but are likely to require that in each instance the case be made as to the County-wide benefit that an EIFD-sponsored project would entail in order to allow the County to assess the magnitude of its participation by way of contribution of tax increment. In addition, the County guidelines may contain requirements for County membership on the EIFD PFA and/or other requirements relating to affordable housing that may further complicate the County's agreement to provide tax increment.



Source: AECOM, Manatt, Phelps & Phillips, LLP

Figure 3.1-2 Hollywood Park Development Phasing Schedule

C. The state Recognized Obligations Payment Schedule ("ROPS") indicated the obligation to pay former RDA debt is a senior obligation on both the City and County share of current tax as well as future tax increment. The City has recently re-issued bonds for two former redevelopment areas of the City totaling around $60 million and the remaining RDA obligation for former debt within the proposed EIFD area is about $14 million. Even though two of the former RDA areas are outside the proposed EIFD boundaries, the law requires that the total amounts of all former RDA debt be aggregated and thus the full amounts of all three are senior obligations to any proposed EIFD use.
The current City 14% share of property tax as well as the full 47.9% County retained share are both committed to repayment of the approximately $74 million former RDA debt. In addition, any increment to the current property tax amounts the County and City receive are likewise fully committed to repayment of the RDA debt and no tax increment will be available to the EIFD (or the transportation project) until the former RDA debt is fully retired. The current debt is being repaid at the rate of approximately $11 million per year. The proposed redevelopment as well as the general overall rise in property values throughout the City will substantially and quickly inflate the amount of repayment and thus retirement of the senior obligations. It is, therefore, difficult to assess the date at which these senior obligations will be repaid since they are dependent on both the projected rise in EIFD area property taxes as well as the overall rise in City-wide property tax share.

Tax Increment

Having established the issues, above, the following projected tax increment and project revenue are theoretically available to the EIFD under various tax increment contribution scenarios, again assuming full build out as scheduled and phased.

While more refined calculations will need to be made to adjust dates and amounts to reflect the date of RDA senior debt repayment the tables may be instructive as an indication of the amounts available to pay down the senior RDA debt, and as a guide to potential tax increment once that debt is retired.

A preliminary approximation of the total amount of net bondable tax increment available under four different circumstances was developed, which is dependent upon the extent of County participation in making tax increment available to the EIFD (**Table 3.1-1**).They are based upon relatively conservative projections as to the date and phasing of project build-out and do not represent the currently available tax increment. As noted, delay in phasing or non-build scenarios would have a negative effect on availability.

As noted above, the "ROP" repayment obligation is likely to somewhat diminish the available net bond proceeds in early years but is not subject to calculation due to the uncertainty of both City-wide tax collection amounts and County willingness to continue contribution of all or a portion of its tax share.

In addition, tax increment revenue representing additional required coverage ratio, to the extent not utilized for bond repayment, may also be available as additional revenue at later project stages.

	Max. 47.9% County and 14% City to EIFD	County 20% and City 14% to EIFD	County 10% and City 14% to EIFD	No County Share and City 14% to EIFD
Projected Year 5 & cum. through year. 4	$158,000,000	$82,000,000	$62,600,000	$33,800,000
Projected Year 10 & cum. through year. 9	$277,600,000	$159,5000,000	$108,400,000	$64,100,000
Projected Year 15 & cum. through year. 14	$428,200,000	$231,700,000	$163,000,000	$100,700,000
Projected Year 20 & cum. through year 19	$574,900,000	$314,400,000	$224,800,000	$128,100,000

Note: Assumes 30 year term and build-out as projected – Assume 1.35 coverage, 6% rate and 12% cost of issuance.
Source: Manatt, Phelps & Phillips, LLP
Table 3.1-1 City of Inglewood Projected Net Bond Proceeds

Revenue Projections

In addition to potential tax increment revenue, the project's additional streams of income will also inure to the City's benefit. These include ticket tax revenue from both the NFL teams as well as from the proposed entertainment venue, revenue generated by hotel taxes, sales tax revenue from both retail and entertainment venues and other sources emanating from the project. Some portion of this revenue may be available to the EIFD at the City's discretion, but is dependent on the City's prior commitments and plans.

The amount of project-generated revenue to the City of Inglewood is subject to an annual (guaranteed) "cap" of $25 million (adjusted for inflation). The amount actually available to the EIFD however, is somewhat less as certain project-related City expenses (fire, police, and traffic expenses, etc.) must be deducted.

The remainder of revenue, if any, above the $25 million, goes to the project developer until reimbursement for certain public improvement costs, park operations and maintenance and event public safety are satisfied. The potential for additional annual revenue to the City is attained as illustrated in the following scenarios.

A. One-Team Scenario

Projected City of Inglewood net revenue rises irregularly from initial Development completion through year 3, averaging at approximately $13.5 million per year and then gradually rises to $28 million per year through year 16 when developer infrastructure reimbursement is projected to be satisfied. The amounts to the City are then projected to increase to a year 17 total of $35 million and gradually rise to $43 million annually by year 20. Total net general fund impact approximately is approximately $670 million (**Table 3.1-2**)

B. Two-Team Scenario

The addition of revenue from a second NFL team provides additional project revenue to the City and could allow the re-imbursement to Developer to occur by as many as ten years sooner and thus additional revenue from years 11-25 could increase the total available revenue. However, amounts in this category are sensitive to both the ticket sales tax cap ($15 million annually), which under the current agreement does not increase under the two-team scenario, the potential for additional ancillary team product, food and retail sales, other terms and conditions which are expected to be further clarified with City officials and the developer.

C. Additional Los Angeles Clippers Development

The City has recently executed an Exclusive Negotiating Agreement (ENA) with the Los Angeles Clippers for the construction and operation of a professional basketball facility on a site near the projected EIFD. The City has indicated considering adding the projected site to the EIFD. If the ENA results in a final agreement of constructionand operation, additional revenue from ticket sales, retail taxes, as well as tax increment could become available. Depending on timing, there may be considerations of modifying the EIFD area to include the new NBA Clippers arena development.

While beyond the scope of the current study, additional funding vehicles such as the formation of an Infrastructure Revitalization Finance District ("IRFD") to allow cooperative funding and phased annexation in connection with the EIFD were explored. However the use of an IRFD is an unlikely prospect due to the restrictions contained in the IRFD legislation which requires that the "project" lie in redevelopment and former redevelopment project areas, a restriction not present in the EIFD legislation. As the likely "project" traverses many areas of the City not part of redevelopment areas this vehicle is likely unavailable.

City of Inglewood Project Revenue			City Re-imbursements		Pre-Expense Net	Additional City Expenses		Total Net General Fund Impact
Total City Project Revenues	One-time construction impact fees	Total Net to City Before Re-imbursements	Operating cost reimbursement to Developer	Capital Cost re-imbursement to Developer	Net to City after re-imbursements	Sales tax diversion	City annual expenses	
$1,282,969,963	$55,483,245	$1,338,455,208	($260,873,770)	($133,142,123)	$944,473,315	($14,008,394)	($260,373,518)	$670,055,855

Source: Manatt, Phelps & Phillips, LLP

Table 3.1-2 City of Inglewood General Fund - Total 25-Year Projected Project Revenue

Additional Potential Sources of EIFD Funding

As noted, an EIFD can utilize multiple funding sources along with tax increment. Those sources include, but are not limited to, the ones listed below. The City of Inglewood 2016-2017 Budget Plan was also reviewed to determine potential sources. As with the additional project revenue detailed in the previous section, they are subject to both the City's willingness to devote the City–controlled revenue to the EIFD revenue stream, prior commitments of those funds to other projects and, in the case of federal, state or other grants, on the availability and success in procurement of such potential sources. Potential funding sources include:

- Vehicle License Fee property tax backfill
- Development agreement/impact fees
- User fees
- City/County/Special District Loans
- Benefit assessments
- Proposition 1 bond funds
- GHG reduction funds (state)
- DOT/EPA/DOE funds (fed)
- Prop A local return
- Prop C Transportation Returns
- Measure R local return
- Off-site parking revenue
- AQMD funds
- Gas Tax Bill
- USDOT "FAST" Act
- Measure M Local Return
- Fare Revenue

While some of these sources may be substantial (e.g. $10.7 million from Motor Vehicle backfill annually, $2 million from Prop. A local return and Prop. C revenues annually), they are dependent upon the extent of prior City budget commitments and the City's willingness to devote to the EIFD.

Bonding Capacity

As the preceding discussions illustrate, any definitive projection of bonding capacity or a definitive timeline for formation of an EIFD are somewhat premature.

As one of the early steps in formation is the preparation of a "financing plan" for the project, several major pre-cursers to the plan are yet needed. They include, among other matters:

- The definition of and costs of both construction and operation of the transportation project
- Commitment from the County relating to its willingness to contribute tax increment and the amount thereof
- Commitment from the City as to the availability of and extent to which they are willing and able to contribute revenue from the project and from other uncommitted City-controlled sources

In addition, substantial work toward obtaining commitments from other sources (e.g., grants, state and federal programs, etc.,) as well as potential commitments from the Hollywood Park Development project developer and other stakeholder parties should also be undertaken.

As a further matter, the relationship between the transportation project governance and the EIFD governance needs to be carefully defined and coordinated – matters which await a final determination as to the options for project delivery and related matters.

3.1.3 Funding Summary

The EIFD is envisioned to be structured as one created by the City of Inglewood with the participation of the County of Los Angles in order to maximize the capture of tax increment and also to allow the capture of as many available additional revenue streams as may be available.

The bulk of potential EIFD funding emanates from two principal sources; a)tax increment, and; b) additional City of Inglewood general fund revenue generated by the proposed stadium and surrounding area development projects. A "very best scenario" aggregates $574 million in available bond proceeds and $670 million in additional City revenue derived from the project. Additional revenue from other qualified sources could further augment potential EIFD revenue.

However, as noted in the principle discussion of each of the tax increment and City revenue projection sections, significant uncertainties need to be resolved and the need for County and City commitments need to be established in order to craft a credible "Infrastructure Financing Plan" as required in the formation of an EIFD.

In the case of tax increment, the most critical factors are the percentage, if any, of potential tax increment the County is willing to contribute to the EIFD, the timing and completion of the phased construction of the stadium and surrounding development and the retirement timing of former Redevelopment Area debt.

In the case of City project-generated additional revenue (as well as additional eligible EIFD revenue sources), the total amount available will be

dependent on the extent of the City's contribution of these funds and potential prior budgetary commitments

It should be further noted that while the potential bond and development revenue may be substantial, this revenue is somewhat small during initial years and early funding sources need to be explored in order to support bond debt and initial formation expenses. These may, for example, include Bond Anticipation Notes, seed loans from City/County or other public agencies and institutions, and developer contributions/loans.

It should be further noted that among other important matters, the amassing of funding sources needs to be carefully coordinated with the analysis of project delivery method. As one primary example, the EIFD statute prohibits use of EIFD funds for normal maintenance and operation hence the contract with a presumed private operator would have to be carefully constructed to separate EIFD funds – usable only for construction – and a separate funding stream usable for operation and maintenance. One such option is, of course, fare revenue.

3.2 Preliminary P3 Project Delivery Options Analysis

In planning to procure, develop, finance, operate and maintain a fixed guideway transit system, two of the key issues that should be addressed as early in the planning process as possible are the optimal approaches to Project Governance and Project Delivery.

Addressing these questions at the outset will help drive answers to other important questions, including:

- How much preliminary engineering to do (and not to do) before further procurement
- How much should (and should not) be spent on project development before the owner achieves a high level of confidence of what the project will actually cost to build and operate;
- How much time it will take to complete the project (and opportunities to accelerate)
- What sources of funds will be available for the project (and when and how they will be routed)
- How to allocate risks between the owner and the contractors (including plan for early risk mitigation)

This section of the report will address a range of governance and delivery options that might be considered for the Project and a decision-making process that might be useful for the latter. Recommendations are outside the scope of this analysis and decisions will be reliant in part on legal issues that have not been researched.

3.2.1 Project Governance

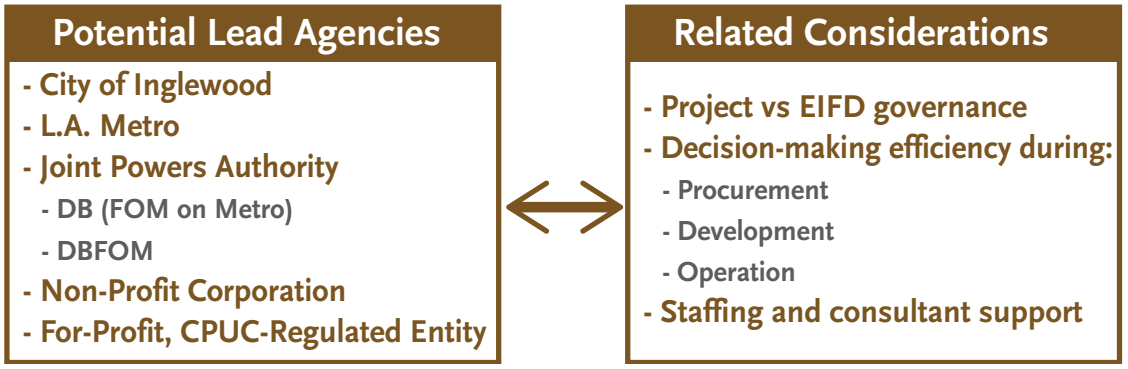
Among the important early decisions for a planned transit project are what entity or entities will be the:

- Owner
- Lead agency for environmental clearance and permitting
- Acquirer of real estate
- Contributor of funds; the issuer of debt
- Procurer and overseer of any services and supplies outsourced to contractors, consultants and vendors
- Provider of any other owner-retained functions.
- While often the above roles are aggregated within a single public entity, sometimes they are allocated by intergovernmental agreements among more than one public entity. Sometimes too, key responsibilities are carried out by non-public entities, subject to governmental regulation and/or outsourced private entities, subject to contractual oversight.

The aim should be to select the right entity or combination of entities that will achieve project goals, taking into consideration, among other factors, applicable law, potential sources of funding and financing and the extent of capabilities to carry out the functions efficiently and effectively.

Among the options to consider for one or more lead project roles area are (Figure 3.2-1):

- **City of Inglewood**: The City is a charter law city within the County of Los Angeles and has broad powers to carry out public works within its boundaries, either by itself or in combination with other public and private entities. Other cities within LA County and the State of California own and operate transit projects. One example is an APM system at LAX, currently being developed by the City of Los Angeles.
- **Los Angeles County Metropolitan Transportation Authority**: LA Metro is the primary public transit agency within the County of Los Angeles and as such carries out all governing entity functions for many fixed guideway transit projects.



Source: Nossaman LLP, AECOM

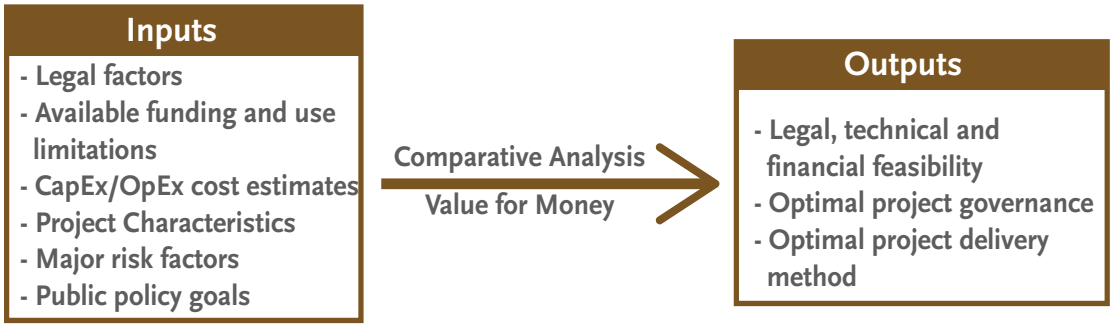
Figure 3.2-1 P3 Project Governance

- **Joint Powers Authority**: The term is applied to an entity formed, and participated in, by more than one public body, each of which has the powers to carry out the responsibilities of the joint entity. There are actually two different kinds of entities to which this label is commonly applied: one formed by agreement pursuant to the Joint Exercise of Powers Act; and one formed by special statutory enactment. Sometimes JPAs are used only for design and construction of a transit project, with another entity assuming responsibility for operations and maintenance.
- **Non-Profit Corporation**: To carry out key functions, sometimes transit projects and other public works are structured to rely for their governance on a non-profit corporation formed under state law and operating within the constraints of the federal and state taxing authorities. Such entities can be specially created by a public body, with approval of the articles of incorporation and the bylaws, or enabled by a lease, franchise or other agreement between the public body and the non-profit. The choice usually depends upon the degree of control over, or independence from, the project the involved public agencies wish to establish.
- **For-Profit Company**: There are circumstances under which a transit system is susceptible to being owned and operated by a for-profit company, which would be regulated by the California Public Utilities Commission.

Among the factors to take into account in selecting among governance options are (Figure 3.2-2):

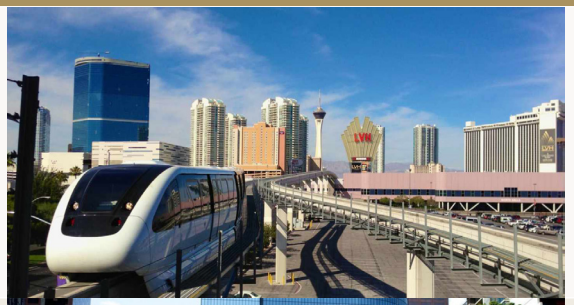
- **For-Profit Company**: There are circumstances under which a transit system is susceptible to being owned and operated by a for-profit company, which would be regulated by the California Public Utilities Commission.
- **Legal considerations**: There are a number of legal issues that typically need to be sorted out in arriving out the list of available governance options and then selecting from that list the optimal entity or combination of entities. We have provided to LA Metro and the City a preliminary list of such issues to consider.
- **Sources of funding**: How funding is to be sourced and routed into a project should be taken into account in determining project governance. For the Expo and Gold Lines developed by JPAs, LA Metro and the relevant JPA entered into funding and finance agreements. Similarly for the Inglewood project, an EIFD is under consideration and governance for the project's delivery will need an interface with EIFD governance.
- **Decision-making efficiency**: Capital-intensive and large rail transit projects require careful and efficient management and decision-making. This need starts in the development and carries through the environmental, project definition, procurement, construction and operation phases.
- **Organizational capability**: Undertaking the development of a rail transit system effectively is time and resource intensive, requiring significant expertise and capability. Deciding on optimal project governance should include a careful analysis of organizational capability to carry out retained governing entity functions and oversight of outsourced functions.

Established rail transit agencies exist to provide such resources, but there have been successful governing entities that: (a) had not previously delivered rail transit but effectively expanded their functions to do so; or (b) were newly created for the mission-specific job of delivering rail transit. Each option carries with it varying degrees of internal staff and consultant team capabilities, all with necessary qualifications.



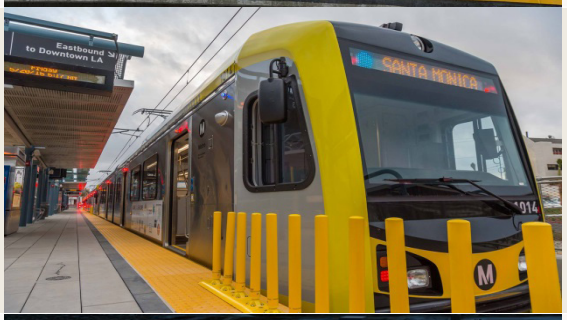
Source: Nossaman LLP, AECOM

Figure 3.2-2 Decision-Making Process for Project

Project Name	Location	Project Governance	Delivery Method	Picture
Las Vegas Monorail[1]	Las Vegas, NV	Non-Profit	P3 Revenue Risk	
Angels Flight[2]	Los Angeles, CA	Non-Profit	P3 Revenue Risk	
Napa Valley Wine Train[3]	Napa, CA	For Profit	P3 Revenue Risk	
Heathrow Express (UK)[4]	London, UK	For Profit	P3 Revenue Risk	

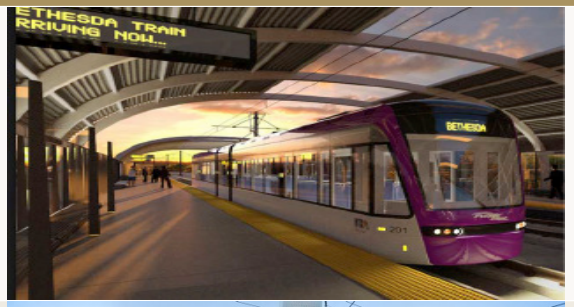
Source: Nossaman LLP, AECOM

Table 3.2-1 Example P3 Projects

Project Name	Location	Project Governance	Delivery Method	Picture
Gold Line[5]	Los Angeles, CA	JPA	Design-Build (Lump Sum)	
Expo Line[6]	Los Angeles, CA	JPA	Design-Build (Lump Sum)	
LAWA APM[7]	Los Angeles, CA	Municipal	P3 Performance Contract	
Purple Line[8]	Los Angeles, CA	Transportation Agency	Design-Bid-Build	

Source: Nossaman LLP, AECOM

Table 3.2-1 Example P3 Projects (Continued)

Project Name	Location	Project Governance	Delivery Method	Picture
Maryland Purple Line[9]	MD	Transportation Agency	P3 Performance Contract	
Houston Metro Solutions 2[10]	Houston, TX	Transportation Agency	PDA	
DFW Airport APM[11]	Dallas, TX	Transportation Agency	Design-Build-Operate-Maintain	

Picture Sources:
1, 5, 7, 9: Nossaman LLP
2: https://cdn.vox-cdn.com/thumbor/vLSrXijYPmS6ajaMtrxShlhkOeM=/0x0:1280x853/1200x800/filters:focal(538x325:742x529)/cdn.vox-cdn.com/uploads/chorus_image/image/55452705/61681400009_7afbf9ba80_o.0.jpg
3: http://winetrain.com/wp-content/uploads/2014/03/Napa-Valley-Wine-Train-Napa-Valley-Sign.jpg
4: https://static.standard.co.uk/s3fs-public/thumbnails/image/2014/06/18/08/heathrow-express.jpg
6: http://assets.inhabitat.com/wp-content/blogs.dir/1/files/2016/05/Los-Angeles-Metro-Santa-Monica.jpg
8: https://i.ytimg.com/vi/rKe8NKeJwBk/maxresdefault.jpg
10: https://upload.wikimedia.org/wikipedia/commons/5/54/METRO_Light_Rail3.jpg
11: http://www.bombardier.com/content/dam/Websites/bombardiercom/Projects/Innovia-APM-Dallas-2527_L.jpg/_jcr_content/renditions/original

Source: Nossaman LLP, AECOM

Table 3.2-1 Example P3 Projects (Continued)

3.2.2 Decision-Making Process for Project Delivery

One of the most important decisions made about a rail transit project is the plan to be used in contracting for its delivery and operation (Figure 3.2-2). There are a wide range of delivery options available. No one option is suitable for every project. Once the list of suitable options is delineated, a decision can then be made as to which is optimal.

3.2.3 Project Delivery

Rail transit projects in the United States historically have been awarded through conventional contracting, whereby the governing entity and its engineers design the project to 100% plans and specifications, divide the work up into multiple biddable construction packages, make awards to lowest responsible bidders, manage the contracts and their interfaces, pay contractors on progress, accept completed work and operate and maintain the completed system.

Over the last 10-15 years, the industry has opened to other forms of contracting. While many projects continue to be delivered conventionally, governing entities in a range of circumstances have sought to shift more risk and responsibility to the private sector, bundling together into single contracts project elements (i.e. civil, systems, vehicles) and/or project functions (i.e. design, construction, finance, operations, maintenance).

This has resulted in an array of now commercially accepted delivery methods, each of which has its own suitability criteria. Among the project delivery options to consider as alternatives to conventional delivery are:

- Progressive Design-Build / Construction Manager / General Contractor / Construction Management-at-Risk with public finance, operations and maintenance
- Design-Build (lump sum) with public finance, operations and maintenance
- Design-Build-Operate-Maintain
- P3 Performance Payment Contract
- P3 Revenue Risk Contract
- Pre-Development Agreement, which can lead to DB, DBOM or P3 option

P3 Performance Payment Contract

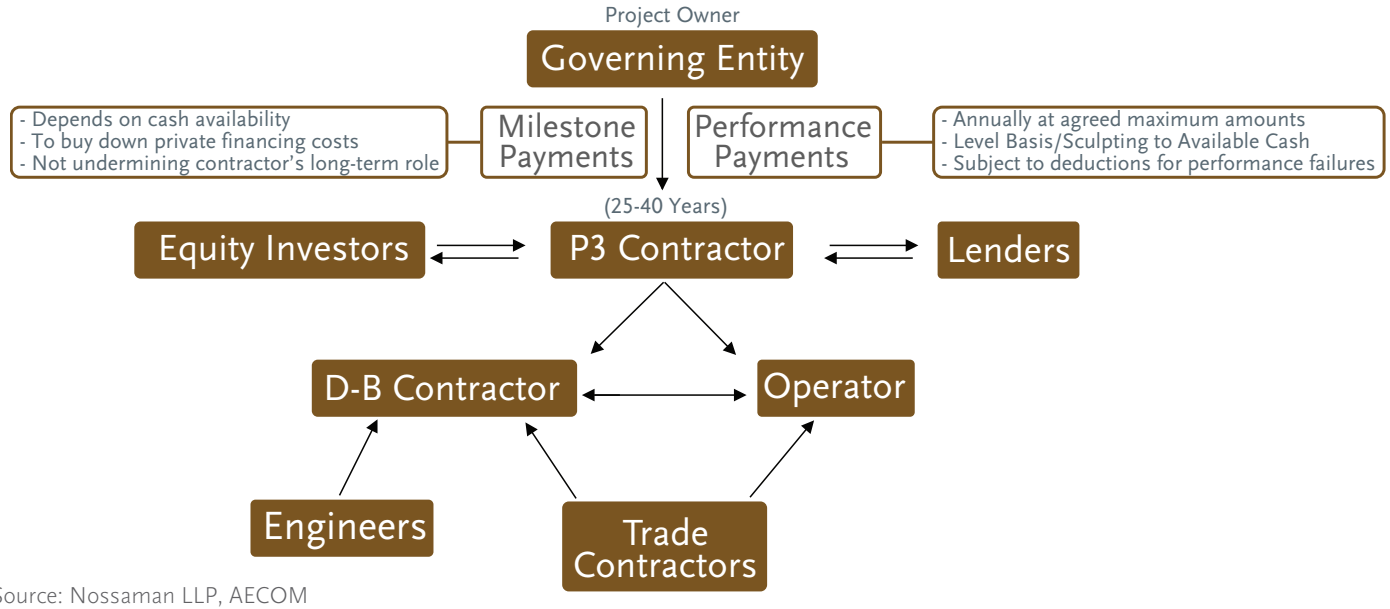
The key attributes of a P3 Performance Payment Contract are:

- Employing technical requirements well short of final design, focused more on performance/outcome based specifications, less on means and methods regulation, on maximizing private sector innovation opportunities and on capturing lifecycle cost efficiencies.
- Selecting the contractor on a best value basis, using lowest life-cycle cost as the price factor, along with technical factors.
- Procurements that can incentivize inclusionary practices for hiring, training and subcontracting at levels exceeding conventional procurements, favoring selection of contractors with favorable track records.
- Upon award, obligating the contractor to complete the project and to carry out operations and maintenance over the project's useful life (typically 25-35 years).
- Upon project completion, the governing entity making payments to the contractor over the duration of the contract at agreed maximum annual amounts, typically on a level basis, although amenable to sculpturing to match available cash.
- Providing, importantly, that the annual payment amounts are subject to deductions to the extent of any under-performance (e.g. safety, availability, maintenance, and other performance indices).
- Permitting the governing entity to make milestone payments, if cash is available, to buy down private financing costs, but typically not to the extent of undermining the contractor's long term "skin in the game".
- Governing entity, at all times, keeping project ownership, with the contractor handling the project back at the end of the term in a condition meeting contractually established specifications.
- Generally shifting more risks to contractors than conventional contracts, creating more cost and schedule certainty, as long as the governing entity timely carries out its retained responsibilities (e.g., ROW delivery).
- Particularly for $200 million to $2.5 billion capital projects, there is significant market interest in P3 Performance Payment Contracts, at commercially reasonable pricing, from internationally experienced companies.

The suitability criteria for Performance Payment Contracts generally include one or more of the following:

- The project's capital costs are sufficiently large enough to offer material economies of scale.
- The project is sufficiently complex to offer the governing entity significant benefits from shifting integration risk (i.e. between design and implementation, among civil construction, systems and vehicles).
- Governing entity will benefit from, and therefore want to incentivize:
  - Life-cycle cost efficiencies
  - Capital Expenditure (CapEx) and Operating Expenditure (OpEx) cost certainty
  - Cost savings and quality gains from private sector innovation
  - On-time or accelerated completion
- Operations, routine maintenance and/or capital maintenance can be efficiently separated from any existing systems.
- Outsourcing the operations and maintenance component doesn't create unmanageable collective bargaining agreement or related labor issues.
- A modest increase in cost of private capital (typically 90% debt/10% equity) over public sector borrowing is outweighed by:
- Shifting risks to a contractor, which can best manage and price
- Paying only to the extent the project performs as promised
- Contractor having financial "skin in the game," creating protection akin to a long-term "super-warranty".
- The project may have significant fare-box and advertising revenue potential, but the governing entity wishes to retain revenue risk and opportunity.
- The specified system and vehicle specifications can be set to attract sufficient competition (or, if not, consideration can be given acquiring that scope through a separate procurement and "stapling" that contract to the P3 Performance Payment Contract).

The major components and steps of the P3 Performance Payment Contract strategy is illustrated below (**Figure 3.2-3**).



Source: Nossaman LLP, AECOM

Figure 3.2-3 Performance Payment Contract Strategy

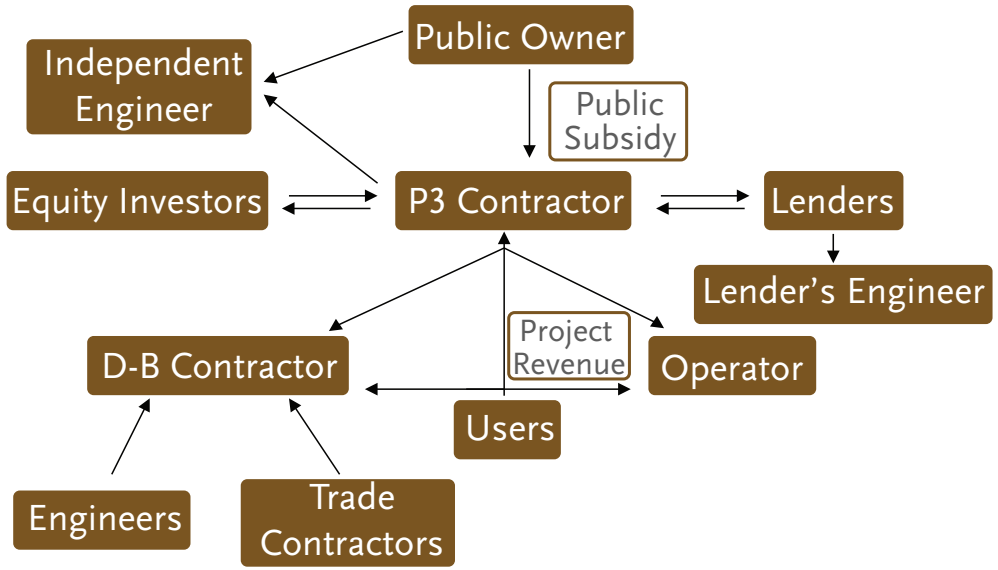
P3 Revenue Risk Contract

The key attributes of a P3 Revenue Risk Contract are similar to a P3 Performance Payment Contract, with certain refinements, including:

- Selecting the contractor on a best value basis, with lowest net present value public subsidy as the price factor, along with other technical factors.
- Instead of receiving performance payments, compensates the contractor through application of project revenues to CapEx, OpEx and finance costs, as supplemented by government funding only as agreed in advance.
- Maximizes the advancement of capital for construction from future project revenues (more than investment grade project revenue bonds would secure) and minimizes the need for other funding.
- Protects the governing entity (but not the contractor) from risk of revenue under-performance.
- Shares any actual revenue over-performance between the governing entity and the contractor.
- Employs a contract duration typically longer (40-50 years) than the 25-35 year duration of a Performance Payment Contract.
- Generally shifts more project-related risks to the contractor than a P3 Performance Payment Contract.
- Market interest is not as deep as for P3 performance payment contracts, but generally is still sufficient for real competition.

The suitability criteria for a P3 Revenue Risk Contract are similar to a P3 Performance Payment Contract, with refinements, generally including:

- - When fare-box and other project revenues are projected to exceed projected operations and maintenance costs (e.g. fare plan with premium pricing opportunities; cost of developing/operating infrastructure low relative to potential revenues; significant advertising and/or other project-generated ancillary revenues)
- - The governing entity is willing to allow private operator flexibility to set rates within contractual parameters
- - Higher cost of capital (typically 65-75% debt, 25-35% equity), compared to P3 performance contract, is outweighed by shifting risk of project revenue under-performance and securing more up-front capital for construction from future project revenues
- - Bidders able to attract equity/debt sufficient to meet P3 contract obligations
- The major components and steps of the P3 Performance Payment Contract strategy is illustrated below (**Figure 3.2-4**).



Source: Nossaman LLP, AECOM

Figure 3.2-4 Revenue Risk Contract Strategy

Pre-Development Agreement

In hard-bid procurements, whether conventional or alternative, governing entities engage with firms capable of delivering and financing their project only when preliminary engineering, environmental clearance and feasibility analyses have progressed sufficiently to the point that the project is well-defined and funded. Governing entities sometimes feel such delivery methods produce less than optimal outcomes, reflecting inadequate innovation or unaffordability.

In such instances, governing entities seek to bring a developer into the project definition process and feasibility analysis at a much earlier stage, in an effort to capture expertise and innovation directly from companies that has actually delivered such projects before.

This form of project delivery, via early contractor involvement, is frequently called a Pre-Development Agreement. Among the key attributes of a PDA are:

- Deploying a competitive procurement to select a developer, completed well before the environmental process and preliminary engineering are complete
- Selecting a developer based on qualifications, conceptual development/ finance plans and an offer to cost-share during the pre-feasibility phase
- Upon award, the governing entity and selected developer collaborating on a joint work plan seeking to achieve and accelerate project legal, technical and financial feasibility
- An agreement including "off ramps" at key points if either party wishes to terminate
- The governing entity retaining complete control over the environmental process and all other decision-making, using developer expertise for technical and financial innovation
- The governing entity owning all work-product
- If the joint work plan results in a project that the governing entity deems feasible, the parties entering into good faith negotiations for a contractually limited period on the terms of an implementation agreement
- The government sponsor sometimes securing a confidential "shadow bid" to use as a reference in the negotiations
- If an implementation agreement is not reached satisfactory to the governing entity, it may terminate and pursue other means of project delivery
- If an agreement is reached, it may take the form of any delivery option, including Design-Build, Design-Build-Operate-Maintain, P3 Performance Payment Contract or P3 Revenue Risk Contract
- If project is deemed infeasible or negotiations unsuccessful, the governing entity may or may not be obligated to compensate the developer, depending upon initial PDA commitments

Among the suitability criteria favoring use of a PDA are:

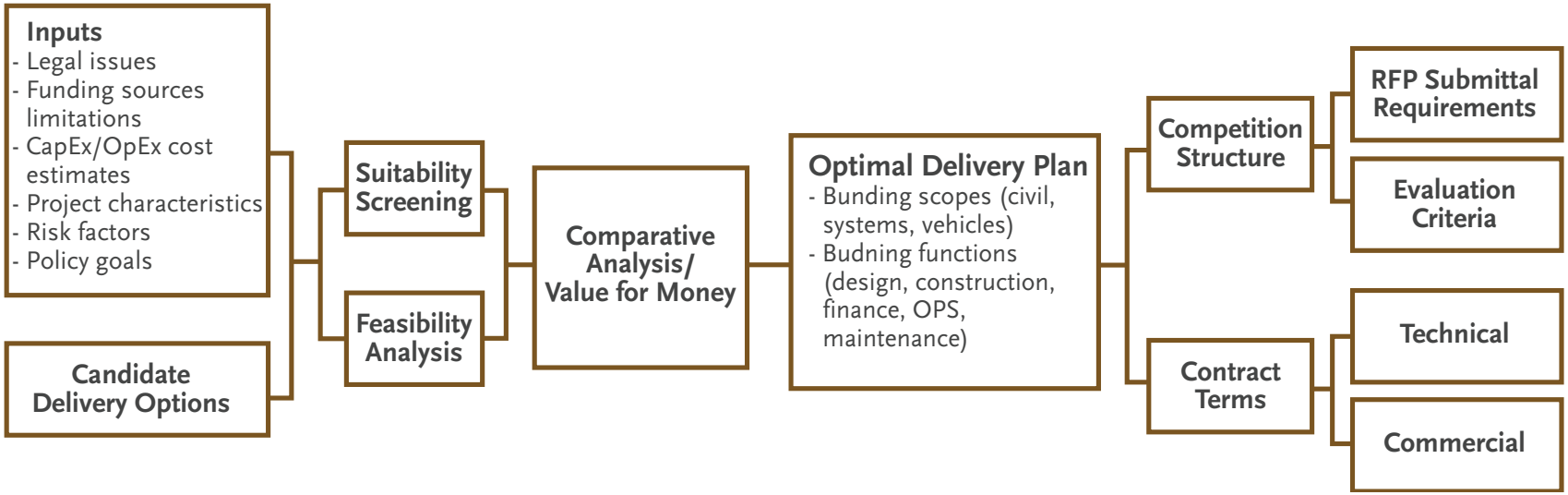
- Governing entity sees value in securing developer innovation and sweat equity during the project definition/feasibility/concept phase, much earlier than other forms of project delivery
- The benefit of early contractor involvement justifies reliance on a qualifications-based competition process, with subsequent negotiations in lieu of hard-bid price competition

3.2.4 Delivery Strategy Summary

There are multiple approaches to implementing a project. However, the right approach to provide the highest likelihood of success will be based on City of Inglewood's objectives.

Ascertaining this optimal approach for a given project depends upon careful establishment of the public policy goals the project is to serve, an assessment of the project's own unique characteristics and an understanding of its legal and financial constraints. Like other endeavors, these inputs are then properly subject to metrics, both qualitative and quantities, in the form of what is called a Value for Money Analysis . This leads to choosing, from among available options, the optimal governance and project delivery method.

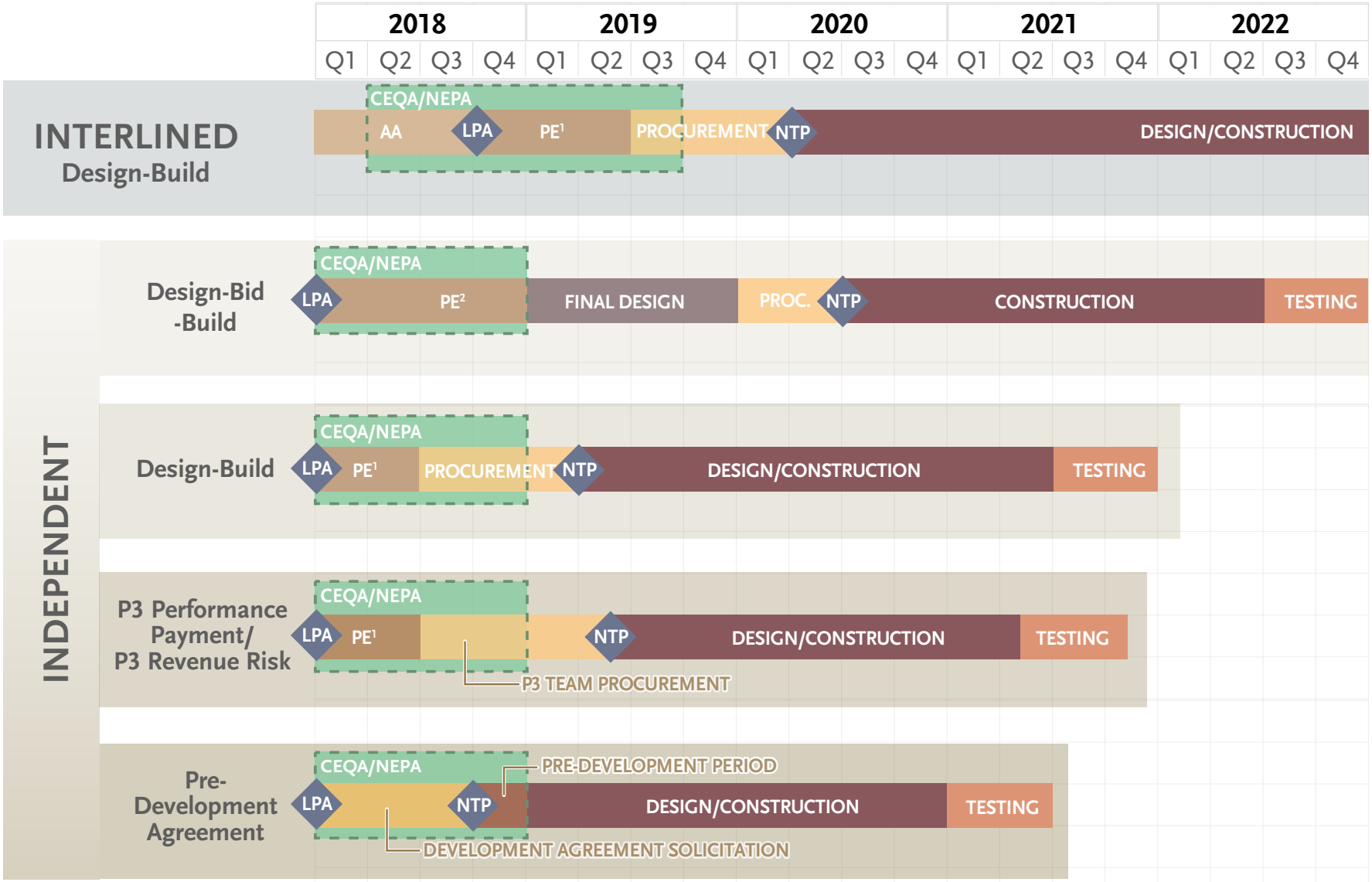
When chosen, the outputs are the procurement documents themselves, as depicted below (**Figure 3.2-5**).



Source: Nossaman LLP

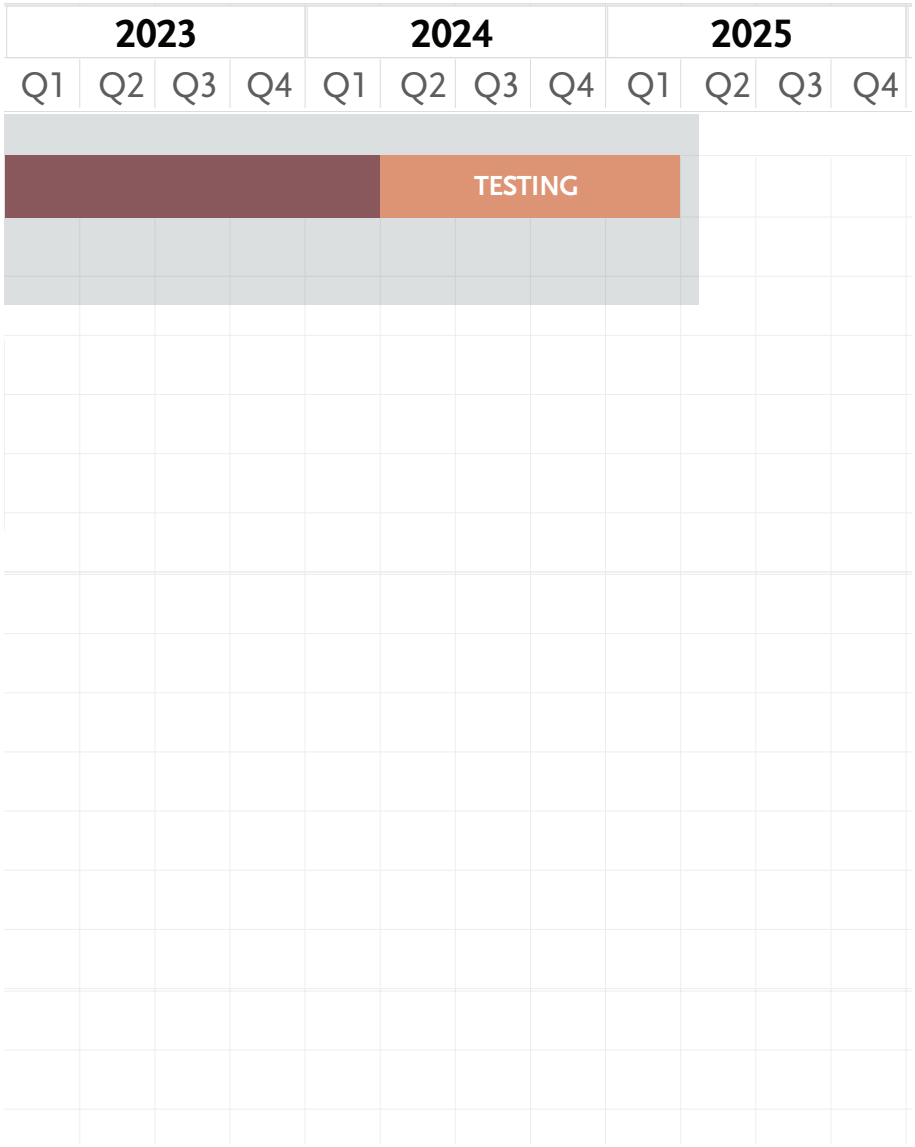
Figure 3.2-5 P3 Delivery Strategy Summary

3.3 Preliminary Project Delivery Schedule



Source: AECOM

Figure 3.3-1 Project Delivery Schedule under Different Methods



Abbreviations:

AA: Alternative Analysis

PE: Preliminary Engineering

LPA: Locally Preferred Alternative

NTP: Notice to Proceed

P3: Public Private Partnership

Notes:

1. PE in support of CEQA/NEPA and DB bridging documents.
2. PE to advance design and in support of CEQA/NEPA.

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PART IV

NEXT STEPS

In order to advance implementation of an independent operability scenario, the City of Inglewood should seek environmental and financial consulting to resolve the following:

A. Environmental Clearance

Potential project(s) will need to be cleared through the California Environmental Quality Act (CEQA) and possibly the National Environmental Protection Act (NEPA) should federal funds be sought.

B. Implementation of Financing District

County of Los Angeles Participation: It will be critical to enter into early discussions with the County of Los Angeles to determine the extent of its willingness to participate in tax increment funding, the retirement of former Redevelopment Agency obligations and to determine how any restrictions (e.g., affordable housing requirements in the EIFD area) may affect the financing plan. All of these recommended steps will be needed to remove the current funding level uncertainties and to move toward formation of a viable and credible Infrastructure Financing Plan, formation of an EIFD and eventual project delivery.

City Budget Analysis: The City will need to analyze its budget requirements to determine the extent to which it can contribute additional stadium project revenue and other City- controlled revenue (e.g., Proposition and Vehicle Tax License tax backfill etc.) to the EIFD. It must also aggressively pursue and establish any federal and state grants, loans and other funding sources at the earliest possible date.

C. Engage Developer

The City will need to consult with the developers of the stadium and surrounding venues and housing need to be initiated to assure coordination of effort and compliance with any potential development requirements. This should also include further in-depth discussion with the potential NBA stadium developer and exploration of the timing and feasibility of EIFD inclusion or some form of adjunct project or EIFD start-up funding.

D. Public & Stakeholder Outreach

Outreach/ workshops with public and private stakeholders should be conducted to build project support and transparency that will carry through to project delivery.

Both the environmental review and the formation of the EIFD will need to take place before the completion of the first phase of the Development to take advantage of any tax increment generated. Therefore, schedule needs to be maintained to assure completion of environmental and the initial steps to EIFD formation are adequately accounted for. This potential connection is not included in Metro's Long Range Transportation Plan and as such, no Metro funding is identified for it, including any entitlement and pre-construction activities.