SUPPORTIVE TRANSIT PARKING PROGRAM MASTER PLAN

Prepared For:
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY


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Metro

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EXECUTIVE SUMMARY

As the Los Angeles County Metropolitan Transportation Authority ("Metro") expands its services and increases station locations, the importance of a properly managed parking system to serve those Metro riders who must drive to access transit has gained importance. Plans to simply add parking spaces as the default response to all parking-related issues must instead consider the benefits and efficiencies of qualitative improvements to parking rather than simple quantitative increases in the number of spaces Metro must provide.

In recognition of the importance of maximizing the benefits of Metro's significant parking assets that serve transit patrons, consisting of approximately 24,000 parking spaces located in surface parking lots and parking structures throughout the County, Metro created a Parking Management unit, a team of subject matter experts in the area of parking operations and technology, in 2014.

The analysis of the supply and demand for parking at LA Metro facilities that is detailed in the enclosed document was designed to assist LA Metro, its parking team, and most of all Metro riders, for the purpose of informing and developing a formal Supportive Transit Parking Program ("STPP") Master Plan for the Agency's parking system. The key concerns and findings of the analysis include the following:

- The use of Metro's parking facilities by non-transit riders presents a significant obstacle for those who need "first mile" access to transit by car, in numerous locations.
- The push to build more parking spaces to improve access to transit at times results in an overbuilding of parking spaces. This issue is of particular concern when these spaces are underutilized, are not used by transit riders, or when some transit users can take advantage of non-driving modes to access stations, more consistent with the region's transportation and air quality goals, but drive instead.
- As part of improved parking management policy, the focus of Metro's efforts should be transit passengers who require parking to access transit. Discretionary parkers, those who are willing to access stations by means other than driving and parking, should be encouraged to do so. Such a policy strategy will make parking spaces available for those transit riders who need them, and offers the potential of increasing overall access to Metro transit stations.
- Building more parking spaces, effectively serving many drivers to the area whether they use parking or not, encourages driving and discourages the use of active transportation and transit connections, while not necessarily increasing access to the transit. It also redirects resources from transit service to the drive-alone mode share.
- Increasing the efficiency, benefits, and customer service levels of Metro's parking system requires that greater attention be paid to the occupancy and condition of parking facilities in the form of more active parking management and enforcement.
- To address these issues, the STPP Master Plan has been created. The Plan provides a comprehensive assessment and evaluation of Metro's current parking program.

Metro's approximately 24,000 parking spaces and 59 transit stations are spread over 1,400 square miles and provide parking for over four million vehicles a year. However, understanding and addressing Metro's parking issues is made more urgent considering that its parking inventory is expected to increase to 31,500 spaces by 2029, as future rail lines currently in construction or planning

phases enter into operation and parking policies and procedures must be considered to serve the growing transit network.

Metro's parking program provides an important first and last mile connection for Metro patrons who are unable to access a Metro station by means other than driving alone, such as walking, bicycle or public transit. Metro's increasing parking inventory will require that the Agency take a more proactive approach to managing its parking resources. The STPP Master Plan provides Metro with a roadmap to support these efforts in the future by addressing the following goals:

- Creation of a vision for managing Metro's parking resources.
- Development of Parking Management Alternatives.
- Establishment of a comprehensive set of recommendations.
- Cultivation of a program that prioritizes parking for transit riders.
- Development of an implementable Master Plan.
- Establishment of a 10-year Strategic Implementation Plan.

This STPP Master Plan is intended to provide an implementation roadmap for parking management policies, planning, enforcement, operations, maintenance, and the technologies required to support this plan. The STPP Master Plan effort is being led by Walker Consultants ("Walker") with support from Arellano Associates, Iteris, Steven Kuykendall and AVS Consulting.

The remainder of this Executive Summary briefly highlights the data, analysis, recommendations, and Strategic Implementation Plan contained within the Master Plan, which consists of the following key components:

- Stakeholder outreach and surveys
- Comprehensive review of the existing parking system
- Parking facility assessment
- Policy, technology, and enforcement review and recommendations
- Long-Range Parking Planning Toolkit, Parking Design Toolkit and transit patron parking demand model
- Parking Management Pilot Program ("Pilot Program") and case studies
- Development of parking management alternatives
- Recommendations
- 10-year Strategic Implementation Plan
- Findings/Recommendations

PARKING SYSTEM OVERVIEW

The observations and analysis of the parking system were performed with an eye toward conditions and operations that would maximize the efficiency, accessibility, and ease of use of parking to serve the transit system. The Metro parking system consists of approximately 24,000 total parking spaces within 70 lots, 16 garages and one on-street parking area together serving 59 Metro stations. At the time of data collection, the majority of spaces in the system (approximately 18,800 spaces) were free of charge, 4,200 required a daily or monthly fee and approximately 200 were reserved, mostly for

short-term pick-up/drop-off, EV charging and carshare. Subsequent to the STPP team's initial review and Facility Assessments, the Parking Management Pilot Program was implemented starting in May 2016 and is expected to be implemented at up to 15 locations by mid-2018, reducing the number of free spaces in the system to approximately 11,500, while increasing the number of paid parking spaces (including paid permit parking spaces) to approximately 12,500.

Permit parking spaces are currently found at over 20 stations. Metro manages permit parking at all Metro parking facilities except those at the South Pasadena station. At most Metro-managed parking facilities, designated spaces are reserved for permit parkers until 11:00 AM on weekdays; however variations do existing with some facilities having permit parking until 9:00 AM, 11:00 AM, or all day long.

With the Pilot Program and new enforcement team in place, the majority of reserved permit spaces will be eliminated and permit holders will be able to park in any area of the facility. Some high occupancy locations, such as North Hollywood, may retain a dedicated area for permit holders.

Permit parking rates range between $20.00 and $59.00 per month. Parkers also have the option of purchasing parking permits on a daily basis at all facilities offering permit parking. The fee for daily permit parking varies by location.

Metro's Parking Management unit manages the planning, enforcement, and operations of the parking system. There are currently five full-time employees focusing on program administration, day-to-day operations, planning, capital projects and parking enforcement. Metro's Facility Maintenance department handles routine maintenance and janitorial activities such as signage replacement, restriping and keeping the parking facilities clean. Parking enforcement is currently being transitioned from the Los Angeles County Sheriff's Department ("LASD") to the Parking Management unit, while LASD and Metro Transit Security will continue to handle the security and vehicle code enforcement. Metro's Customer Service Department assists with some customer service functions. A vendor provides support for permit processing and administration, and a parking operator has been engaged to run the Pilot Program locations.

STAKEHOLDER OUTREACH

The outreach effort undertaken to support the development of the STPP Master Plan consisted of outreach to transit riders and agencies, including local jurisdictions and municipal transit operators, throughout Los Angeles County, as well as Metro stakeholders. Transit rider outreach was geared toward understanding riders' needs and priorities with respect to Metro parking facilities and other travel modes for accessing transit stations. Agency outreach was intended to identify and address agency stakeholder concerns related to Metro parking facilities. Input received is included in the STPP Master Plan.

Transit rider outreach consisted of two rounds of surveys open to all transit riders, with an emphasis on those who drive and park. Key findings from the first round of transit rider outreach included:

- Of those who park and ride at a Metro parking facility, 69% have household incomes of $50,000 or more, which is higher than the average countywide household income of transit users.
- Approximately 60% of those who park at a Metro parking facility are able to find a space within three minutes or less.
- Over 50% of those who park at Metro parking facilities are very satisfied or extremely satisfied with their existing parking experience.
- Of those who ride Metro but park at a parking facility not operated by Metro, 47% do so because they cannot find parking inside a Metro facility while 32% indicated there is no parking available at a Metro facility.

Key findings from the second round of transit rider outreach included:

- Approximately 31% of Metro parkers would pay for parking. Of that group, 61% would pay up to $2.00, 16% would pay $3.00 and 11% would pay $5.00.
- Approximately 37% of parkers (at Metro and non-Metro facilities) live within two miles of their preferred station.
- For Metro parkers, the top alternative modes considered to access their preferred station are drop-off (indicated by 38% of respondents), bus (37%) and walk (22%).
- For those that park and ride at a Metro parking facility, the top reasons they choose to park and ride and use transit is to save money (indicated by 50% of respondents), convenience (49%) and because it's good for the environment (47%).
- The top three requested improvements to better access a Metro station was more bus service (59%), more drop-off areas (20%) and more bike racks (12%).

Agency stakeholder outreach consisted of an initial survey phase followed by a workshop held in three different locations as well as one-on-one meetings. A total of 42 responses from 36 cities and agencies were received from this survey.

Key findings from this survey include:

- When asked if there were issues with parking near their city's Metro station, nearly 50% responded that there was, approximately 33% said there were no issues, and the rest did not know. Over 50% of those who said there were issues cited insufficient station parking and 33% cited misuse of station parking.
- City respondents indicated a range of fees are charged at their public parking facilities, from free to $3.00 per hour. Most of the cities indicated that parking fees collected do not cover upkeep of the parking facilities.
- Nearly 80% of respondents expressed interest in learning more about addressing parking issues at or near Metro stations.

Workshops for agency stakeholders were held in three locations throughout the county to maximize attendance. In total, staff or consultants representing 19 agencies attended. The workshops provided an overview of the STPP Master Plan effort, presented work to-date status and solicited agency input on potential program management alternatives.

Meetings were also convened with 18 Metro internal departments to obtain their input for the STPP Master Plan.

The Stakeholder Outreach section of this report and related appendices provide additional detailed data on the outreach process and results.

FACILITY ASSESSMENTS

As part of the Master Plan effort an assessment of Metro parking facilities was conducted from December 2015 through February 2016 for stations providing parking. Parking facilities at the new Gold Line Foothill extension and Expo II stations were assessed in June 2016.

The purpose of the Facility Assessment effort was to understand current system operation and performance, which serves as baseline information required to recommend future policy and operational changes, and to recommend and quantify the cost of improving the parking facilities. The following evaluations were included in the facility assessment effort.

- Vehicle occupancy counts weekday late morning, weekday evening and weekends
- Assessment of parking wayfinding leading to each station and parking signage
- Parking facility ingress/egress
- Parking user groups
- Potential carshare and vanpool parking opportunities
- Observations regarding facility upkeep and facility maintenance
- Evening lighting level measurements
- Observations regarding safety and security
- Parking reconfiguration opportunities at highly utilized stations
- Bicycle rack occupancy counts and bicycle locker rental utilization data
- Assessment of bicycle and pedestrian infrastructure surrounding each station

The Facility Assessment included parking facilities at 59 Metro stations with a total of 87 parking facilities (lots, garages and on-street parking). There were 70 surface lots totaling approximately 15,700 patron-accessible spaces, 16 garages totaling approximately 7,300 spaces and one on-street parking area with approximately 200 spaces, which were surveyed. There were approximately 23,200 total patron-accessible spaces in the entire Metro system at the time the facility assessments were conducted. Of these spaces, approximately 18,800 were free, 4,200 required a daily or monthly fee and approximately 200 were reserved, mostly for short-term pick-up/drop-off, EV charging and carshare. Two future Crenshaw Line parking lots were also assessed, based on information currently available. These two lots comprise approximately 200 spaces.

Key findings of the facility assessment effort are as follows:

- Parking occupancy – Over 30% of stations have peak weekday parking occupancy of over 90%.

- Parking signage and wayfinding – The majority of locations have limited or no parking wayfinding.
- Lighting – Lighting levels are substandard in over 70% of parking facilities.
- Upkeep – Over 25% of stations have issues with litter and debris.
- Safety and security – Over 20% of stations were observed to have activities that increase security risk levels.
- Bicycle infrastructure and parking – Over 60% of stations do not have Class I or Class II bicycle facilities within one block of the station. Eight stations do not have any bicycle parking.
- Pedestrian infrastructure – Over 15% of stations would benefit from improvements to pedestrian infrastructure around the station, such as addition of crosswalks and adequate sidewalk widths.
- Parking reconfiguration – A few lots with long rows of standard dimension parking spaces may be restriped to increase capacity by less than 3%. Larger gains of 5% to 15% may be realized by reorienting some lots, but at a much higher cost.

The Facility Assessment section of this report and related appendices provide additional detailed data on the Facility Assessment process and results.

POLICY, TECHNOLOGY, ENFORCEMENT

In busy urban and suburban areas, under-regulated and under-enforced parking spaces will increasingly be used by drivers who are not accessing the land use for which the parking is intended, but instead be used by parkers accessing surrounding land uses or using the spaces for other purposes such as vehicle storage. This is true for parking facilities serving shopping centers, parks, offices and transit riders. The result is reduced parking access for those seeking to access the intended land use.

Policy provides direction and guidelines for those who seek to use the parking facility, ensuring that the facility first serves those for whom the parking is intended. Policy without enforcement is unworkable. The “honor system” or “self-regulation” is unsustainable. Effective enforcement that also provides quality service to riders is crucial. New technology enhances the ability of managers of parking to prioritize the use of parking facilities for the intended parker, in Metro’s case, its ridership.

For this reason, policy, technology and enforcement work together as components of the same apparatus to ensure access to Metro’s transit facilities.

POLICY

Establishment of an updated parking ordinance has been key to developing a focused and comprehensive approach to making transit available for Metro’s ridership. As part of its efforts to improve Metro’s parking program, Walker has reviewed Metro’s revised parking ordinance and finds it consistent with industry standards. Walker recommends that a reference to Metro’s administrative code be posted visibly in parking areas for patrons wishing to read and understand the parking ordinance.

Walker has also reviewed Metro's currently adopted fee resolution and provided recommended edits for Metro to consider the next time the fee resolution is updated and adopted. Walker also recommends that Metro add flexibility to the parking rate discussion at specific stations in the future so that the fee resolution need not be updated and adopted each time a change in the parking rate at a single station is desired.

TECHNOLOGY

Based on the unique parking-user needs of transit riders in general, and the LA Metro system specifically, Walker reviewed various technologies available to operate and enforce the parking system in the Pilot Program, including types of access control (gated versus ungated parking), cashiering and automated payment technologies, validations, permit parking, vehicle identification, license plate recognition, and parking guidance systems.

Based on the results of the Pilot Program implementations to date, it is Walker's opinion that the technology solutions Metro is currently using are effective and should be utilized as parking operations at other facilities are incorporated into the Parking Management Program. Thus far, the ridership verification has been effective at, and critical in, improving parking availability at high parking occupancy stations. The Pilot Program, which will be discussed further in this Executive Summary, has already partially developed and justified the technology recommendations included in the Master Plan, as Metro works towards an end goal of using TAP cards for parking payment to maximize the effectiveness of the efficiency of the parking program to serve Metro's ridership.

The ticketless and gateless system for managing ingress and egress has proven effective and efficient, allowing implementation of the Pilot Program at several locations without installation of expensive equipment that can result in the loss of parking spaces in parking facilities and slow ingress and egress. Discussion of technology recommendations is included in the recommendation section of this executive summary and report.

ENFORCEMENT

A parking enforcement analysis of Metro-operated parking facilities was conducted during the information gathering phase of the STPP. The analysis indicated that the parking citation issuance at Metro parking facilities is significantly lower than at other comparable transit agencies. Metro issued approximately 5,000 citations (0.0013% of total cars parked) which is 90% fewer citations per space per year compared to two other sizable transit agencies. Within the 5,000 issued citations, only half of Metro's parking citations were Parking Ordinance related. The concern was that this level of enforcement would allow non-transit users ample opportunity to park and hinder or prevent parking access to transit for Metro's ridership.

Based on a recent coordinated parking enforcement review, four LASD officers and three Metro support staff issued 35 parking citations in a six-hour time period. This effort only covered three Metro parking facilities along the Expo Line. The labor cost of LASD officers by itself was over $3,000, significantly higher than the citation revenue. If Metro utilizes non-sworn officers with the proposed

new innovative solutions for the same enforcement effort, the total labor cost for issuing 35 citations at three locations would have been $40.00, Through a new parking enforcement program, the estimated labor cost will result in approximately $1.00 per citation.

PARKING PLANNING AND DESIGN

Parking planning and design consists of the use of a Long-Range Parking Planning Toolkit to properly size parking facilities for transit for current needs and to take into account the impact of quickly changing auto-related technologies and trends. In some cases, parking planning and design must consider the desire for (joint) development on valuable sites located on or adjacent to transit stations to provide land uses beyond parking.

LONG-RANGE PARKING PLANNING TOOLKIT

As part of the STPP, a Long-Range Parking Planning toolkit was developed to guide the planning of parking facilities along future rail corridors. The toolkit is intended to help planners assess both the appropriate type and amount of parking planned at future facilities. The Long-Range Parking Planning Toolkit asks planners to identify and consider data in 11 categories, and is intended to engender a forward-thinking process for how Metro plans and manages parking in the future.

PARKING DEMAND MODEL

For long-range parking planning, projecting the needed transit parking capacity is critical. Walker developed a quantitative parking demand model for transit, as part of the Supportive Transit Parking Program, to provide a tool to project near-term parking demand at existing, new, and future facilities for a range of pricing from free to $5.00 per day.

The parking demand model is comprised of four components.

- Base data – parking occupancy, weekday boardings, and TAP activity.
- Station typology assignment – seven station typologies were established based on location within the system and in some cases the type of station.
- Demand ratios - three different demand ratios were developed to assess parking demand at transit stations, each using a different methodology based.
  - Parked cars as a percent of total weekday boardings using a specific station ratio.
  - Parked cars as a percent of total weekday boardings using a typology ratio. The typology ratio is based on a weighted average (by parked cars) of high occupancy and high capacity locations.
  - Parked riders as a percentage of first tap riders from opening to 10:00 AM. In case this value exceeded 100% (due to poachers – those who park at a transit station but do not ride transit), we adjusted it to 100%. Parked riders are based on the assumption of 1.1 riders per car.
- Multiple demand ratios were developed to provide a range of values that result in a reasonable estimate.

- Elasticity curve – the degree to which changes in price cause changes in parking demand.

An incremental logit model was utilized to develop parking demand elasticities that demonstrate reduced parking demand as the cost of parking is increased. The baseline is the previously free parking at all Metro stations that have parking. Each additional dollar results a larger reduction in parking demand.

The Parking Demand Model is intended for use in projecting near-term parking demand and parking facility sizing at future stations. Pricing, ridership and parking demand data from the Pilot Program locations will be used to update and refine the model going forward.

PARKING DESIGN TOOLKIT

The purpose of the Parking Design Toolkit is to establish reasonable and appropriate parking design standards that will serve and meet Metro transit patrons' parking needs. These design standards and Toolkit will ensure that new parking facilities built to serve Metro's transportation system provide an appropriate level of safety and service that meets industry standards and best practices. The parking design standards and Toolkit are meant specifically for Metro parking facilities and are intended to be a guide and not a complete set of design and construction specifications.

PARKING MANAGEMENT PILOT PROGRAM

The Parking Management Pilot Program ("Pilot Program") was created to test technology, policy, operations, and planning options explored during the Master Plan process to determine whether the components of the Plan are sufficient to fulfill Metro's policy goals. Key items tested in the early Pilot Program implementations were pricing and permit strategies, transit rider verification technology, gateless operation and payment options.

Implementation of the Pilot Program began in May 2016 at the following 15 stations:

- EXPO 2 (17th Street, Expo/Bundy and Expo/Sepulveda) –May 22, 2016
- La Cienega/Jefferson – Implemented March 1, 2017
- North Hollywood & Universal – Implemented April 24, 2017
- APU Citrus, Irwindale, and Monrovia – Implemented June 26, 2017
- El Monte & Atlantic – Implemented August 28, 2017
- Norwalk, Lakewood, Aviation, and Crenshaw – Implementing mid-2018

The objective of the Pilot Program is to implement a parking solution to make available and improve parking resources for Metro transit patrons. The Program is testing approaches to a fee structure, fee collection, facilities management, parking management equipment and enforcement needs. Based on the initial results at locations already implemented, Walker recommends the implementation of the program system-wide at up to 39 stations.

The Pilot Program utilizes a "toll road" concept Automated Parking Management System. The system combines a License Plate Recognition ("LPR") system, TAP card ridership identifier engine, and payment processing solutions. The program operates as a fully automated program, eliminating the need for onsite parking facility cashiers. On-site parking attendants will be available to provide customer service only and will not process payment transactions.

Not every station with parking will transition to paid parking in the near-term. Program management alternative flow charts, the Long-Range Parking Planning Toolkit, Parking Design Toolkit, and parking demand model have been created in support of the aforementioned parking management alternatives in order to assess parking on a station by station basis.

Detailed case studies are included in this report, which discuss the initial findings and lessons learned from the Pilot Program implementation. The key findings from the Pilot Program to-date are as follows:

- Transit rider verification system is a crucial and necessary step in transitioning locations to the parking program. While the Facility Assessment gave the STPP team an understanding of locations where parking availability was being impacted by the presence of non-Metro riders utilizing Metro's free parking facilities, the scale of this non-transit rider parking at some locations, notably North Hollywood and Universal, exceeded initial projections. Transit rider verification is essential to protecting Metro's parking supply for its intended users.
- Stations in close proximity to one another and transit lines need to be analyzed together. One-off implementation at a station without consideration of adjacent locations could lead to unforeseen circumstances.
- The STPP Master Plan should be utilized to improve availability of parking at high demand locations, while also increasing utilization at formerly underutilized locations. For example, the spaces Metro leases for the Expo/Crenshaw station represent a fixed cost whether they are used or not. By reducing parking at the Culver City station and implementing the Pilot Program at La Cienega/Jefferson, utilization of this resource has greatly increased.
- The gateless system works, as it eliminates egress and ingress problems for patrons entering/exiting a facility at locations such as the Atlantic station on the Gold Line where parking access and revenue control equipment would have either necessitated the loss of many parking spaces in the structure or resulted in queue spillback onto a major arterial road during peak ingress. In addition, the gateless system also supports Parking Management's parking enforcement program through the integration of the system parking and operations program into one platform.

RECOMMENDATIONS

FACILITY ASSESSMENT RECOMMENDATIONS

Based on the findings of the facility assessment effort, the STPP team developed a set of general recommendations as well as station-specific recommendations. The set of general recommendations are as follows:

- Focus on customer experience – Metro riders who drive and park must be able to easily find station parking, find a space within a parking facility, be comfortable walking to and from their car and the station platform/portal and should be able to exit in a convenient manner.
- Implement consistently system-wide – Signage, facility conditions and operations must be consistent system-wide.
- Enhance first/last mile options – Park and ride is just one form of station access and based on Metro surveys, it is estimated to make up 10% to 15% of station access. Other modes such as bicycle and pedestrian access need to be viable options. Improving bicycle infrastructure around stations and adding bicycle parking at stations that currently have none appears to be particularly important.
- Focus on managing demand – Due to the high cost of building new parking facilities, focus on managing existing demand. This includes introduction and expansion of permit programs, instituting daily fees for all parking at stations that experience high parking demand and developing permit parking zones to spread demand efficiently across multiple stations.
- Explore other uses during non-peak periods – Consider making Metro parking available for other uses, such as farmers markets and cultural events, during low demand periods.
- Consider rationalization of some parking facilities – Locations that experience very low occupancy (less than 10%) should be reviewed to determine whether there is a higher and better use for the facility.
- Where availability exists, consider selling parking to non-transit users – At locations where non-transit riders are parking and there is availability of parking spaces, consider selling parking to parkers who do not use transit.
- Adopt a consistent parking facility naming convention – Establishing a naming convention system-wide would avoid requiring that a rider know where he/she is parked relative to the station platform/portal.
- Improve consistency of experience at parking facilities under lease agreement – The parking user experience at these facilities should be comparable to Metro-owned facilities, including signage, lighting, security, upkeep and payment.
- Restripe spaces to add supply where possible – At high occupancy locations with long rows of standard dimension parking, restripe to compact stalls such that the total percentage of compact stalls does not exceed 20%.
- Increased enforcement – Enforcement is necessary to improve operation of permit and any other paid parking program and increase safety at Metro stations, making sure that Metro's policy priorities are followed.
- Pick-up/drop-off areas – Due to the popularity of ride-hailing services such as Uber and Lyft, provide pick-up/drop-off areas in parking facilities if no curb locations near the platform/portal are suitable.

- Lighting – Improve lighting levels at parking facilities with deficient lighting conditions, replacing existing fixtures with LED fixtures is recommended. For parking garages, we also recommend painting walls and ceilings white to improve illumination.
- ADA updates – Deficiencies were observed and a more comprehensive review should be undertaken.
- Carshare – Metro should continue to make spaces available to carshare providers for a monthly fee.
- Vanpool – Offer dedicated vanpool spaces, but vanpool participants should be treated as transit riders and will need to adhere to the parking programs in place at the parking facility at which their vanpool is based.

Station-specific recommendations have also been provided and cover the following categories:

- Parking Signage and Wayfinding
- Bicycle Parking
- Pedestrian Wayfinding
- Lighting
- Parking Surfaces
- Traffic Calming
- Appearance
- Enforcement
- Security
- Permit Parking
- Security, Bicycle and Pedestrian Infrastructure in Surround Area

Each station was assessed using 23 measures which fall under the aforementioned categories. Each measure was assigned a metric with associated cost assumptions as well as a priority (high, medium or low). Some measures are on-going in nature and are indicated as “annual”. High priority items are focused on safety and security, while medium and low priority items address other categories.

- Improve Wayfinding Signage to Station Parking – improving signage directing drivers to station parking.
- Improve Parking Wayfinding Signage among Facilities at Station – at stations with multiple facilities, improving signage to direct drivers from one facility to another.
- Improve Parking Signage at Facility Entrance(s) – improving signage at parking facility entrances.
- Increase Bicycle Racks – add bicycle racks at a station, some of which may not currently have any.
- Increase Bicycle Lockers – add bicycle lockers at a station, some of which may not currently have any.
- Improve Bicycle Parking Signage – improve signage directing bicyclists to station bicycle parking.
- Improve Pedestrian Wayfinding to Station – improve signage directing pedestrians to a station.

- Improve Pedestrian Wayfinding within Parking Facility/Facilities – improve signage within parking facilities that direct pedestrians to station platform.
- Upgrade Lighting – retrofit existing lighting system where minimum lighting is at level of service D or below, which are unacceptably poor lighting levels from a customer service perspective.
- Resurface Pavement – for parking lots, resurface with a new slurry coat.
- Restripe Spaces – restripe existing spaces to make them more visible.
- Implement Traffic Calming within Facility/Facilities – provide speed humps to slow traffic and improve pedestrian safety.
- Improve Landscaping – install new or upgrade existing landscaping.
- Improve Upkeep – provide additional janitorial services on an on-going basis.
- Power wash Facility/Facilities – for garages, power wash on an on-going basis.
- Increase Parking Enforcement – increase on an on-going basis, especially when adjustments to permit parking programs are proposed.
- Increase Security Patrols within Facility/Facilities – increase on an on-going basis.
- Initiate Permit Parking at Station for Transit Riders – restripe, add signage and update permit system; high parking occupancy stations where transit riders would benefit from availability.
- Initiate Permit Parking Spaces for Adjacent Uses – restripe, add signage and update permit system; only stations with ample parking availability considered.
- Increase Number of Permit Parking Spaces – restripe, add signage and update permit system; where permit spaces experience high occupancy.
- Improve Security on Sidewalks near Station – work with local agency to improve safety on sidewalks near station.
- Improve Bicycle Infrastructure near Station – where rating is low, work with local agency to improve bicycle infrastructure connecting to station.
- Improve Pedestrian Infrastructure near Station – where rating is low, work with local agency to improve pedestrian infrastructure connecting to station.

Based on the detailed recommendations by facility contained in the Facility Assessment, cost projections were developed to provide Metro a baseline of understanding of the costs to maintain the system in a state of good repair.

Cost projections were based on Walker experience and industry standards. Walker projects that $6.10 million over three years (including $5.24 million in one-time costs) would be required to address the recommended improvements. And approximately $286,000 per year thereafter for on-going maintenance and services. For Metro-owned facilities, $1.38 million would be required over three years (including approximately $943,000 in one-time costs) and approximately $144,000 per year.

Based on the need to improve and maintain Metro-owned parking facilities, revenue streams should be identified to offset these costs. These may include introduction or expansion of permit programs and charging daily fees to parkers at high occupancy locations. In addition, rationalization of low occupancy facilities would reduce expenses associated with maintaining those facilities.

TECHNOLOGY RECOMMENDATIONS

A user-friendly experience is key to Metro's goals to serve its riders. Walker recommends that Metro utilize Pay-By-Plate Multi-Space Meters with Stationary License Plate Recognition for parking enforcement, as this is an extremely efficient payment and enforcement scenario for both transient and monthly transit parking. This type of system would be ungated, requiring enforcement; however, post-processing could enable extremely high capture rates of unpaid vehicles, making such a system of enforcement efficient. Metro will need to administer citations to collect unpaid parking fees. Walker recommends offering mobile payments as there is no additional cost and it provides a convenient option to the customer. Walker recommends providing facility counts and mobile apps to advise patrons of the availability of parking spaces at Metro's parking facilities before drivers arrive.

Walker recommends that payment, enforcement and citation be fully integrated in a "TAP Wallet" in the future. The end goal is for the user to be able to use their TAP card for all payments related to their commute. Currently, parking is paid either with cash, credit card, or a credit/debit card tied to a parking flexible spending account. Transit payments are made via a TAP card which can be linked to a transit flexible spending account. Metro should continue to work with TAP to integrate both functions on a single TAP card, allowing a patron to tap once to pay for parking and tap once to pay the transit fare.

PARKING ENFORCEMENT RECOMMENDATIONS

The Parking Management unit has developed a Parking Enforcement Transition Program centered on engaging a Parking Enforcement Contractor to focus on enforcing Metro's Parking Ordinance and Parking Fee Resolution (Metro Administration Code Chapter 8), adopted by the Board in September 2015, at all Metro-operated parking facilities. A parking enforcement transition from Metro Security to Parking Management will not only eliminate jurisdictional confusion among Metro Transit Security, LASD and CHP officers, but also consolidate parking enforcement, eliminating the cost of reimbursements to other agencies.

The overall goal of the enforcement transition and enforcement effort should be compliance and customer service rather than revenue generation.

The Parking Enforcement Program objectives should be to:

- Ensure compliance with Metro's Parking Ordinance at Metro parking facilities.
- Facilitate availability of parking spaces throughout the system for transit patrons.
- Support Metro's Parking Management Programs.
- Increase safety and security.
- Identify and report maintenance needs.
- Increase patrons sense of safety at Metro parking facilities.
- Improve overall customer satisfaction with the transit system.
- Keep all citation administration and adjudication with the Transit Court.

Features of the enforcement program needed to achieve the objectives include:

- Use of innovative technology to support the Parking Management Program and enforce parking regulations. Parking enforcement vehicles equipped with mobile LPR cameras which are integrated with all parking payment systems available to Metro customers.
- Reduction of enforcement operating costs by utilizing non-sworn peace officers and providing dedicated enforcement resources.
- Implementation of a proactive approach to enforcement driven by compliance data.

PARKING MANAGEMENT UNIT ORGANIZATIONAL STRUCTURE RECOMMENDATIONS

With the transition of enforcement duties to Metro in 2018, and the continued inclusion of additional parking facilities into the Parking Management Program, the Parking Management unit's staff capacity will need to increase concomitantly to maintain a high level of customer service and management. Walker recommends that up to six additional positions be added to the unit over the next six years. These new positions could include the following:

- Enforcement Customer Service Agents (2)
- Facility Maintenance Inspectors (2)
- Operations Assistant
- Planning Manager

RECOMMENDED PARKING FACILITY MAINTENANCE PROGRAM (FOR STRUCTURED AND SURFACE PARKING FACILITIES)

The purpose of a Maintenance Program is to protect the initial investment in Metro's parking facilities by coordinating proper and timely preventive maintenance that reduces premature deterioration. This Maintenance Program will address general as well as specific maintenance needs in a cost-effective manner. Maintenance can be separated into two categories: Operational and Structural. Operational maintenance is required to operate a facility effectively. Structural maintenance is required to protect structural integrity and maintain the facility's fixed elements.

A key component of the implementation of the Strategic Implementation Plan is implementation of a comprehensive Maintenance Program at Metro parking facilities. As the Parking Management Program is rolled out to more locations, customer expectations related to the safety, cleanliness, and state of repair of parking facilities will rise.

Identification of specific repairs exceed the scope of this plan. A qualified engineer should be consulted for structural repairs such as patching, floor slab overlays, traffic topping installation, sealer application, crack repairs, and expansion joint installation as well as surface parking lots pavement, sidewalks, retaining walls, sound barriers, drains, and embankments. Manufacturers and suppliers should be consulted for mechanical and electrical repairs, light poles and foundations, security and surveillance systems, signs, pavement markings, security systems, architectural features, landscaping, and fencing.

Metro has been supplied with equipment "Owner's Manuals" and service information for these purposes.

Parking facility maintenance primarily includes actions to extend the service life and support the operation of the facility. Many factors influence the cost of maintaining a parking facility. The types of items that need to be included when determining these costs are as follows:

- Costs of periodic repairs and/or corrective actions that are necessary to maintain serviceability and facility operations. This includes daily or routine maintenance.
- Costs of preventive maintenance actions that are required to extend the service life of the facility.
- Costs of major structural repairs to restore structural integrity and serviceability when the effects of aging and deterioration become widespread.
- The replacement costs for operational elements at the end of their estimated service life.

Walker has prepared detailed maintenance manuals for both surface lots and parking structures. Walker recommends that the Parking Management unit add two staff members whose sole responsibility is to visit parking facilities and note maintenance and other issues that need to be addressed. Additionally, Walker recommends exploring the feasibility of outsourcing parking facility maintenance.

PARKING MANAGEMENT ALTERNATIVES

Based on the research, assessment, outreach, and analysis contained within this report, three general approaches to parking management based on a categorization of station type have been identified and are described below.

Alternative 1

- High Parking Demand Stations (90%+ utilization).
- Parking facilities within this category are either already nearing, at, or over-capacity. At several high demand locations, the parking facility fills up by 7:00 AM or earlier. High demand stations are in critical need of parking management and should be prioritized for transition to the Parking Management Program. It is recommended that locations which exceed 90% utilization do the following:
  - Implement paid parking.
  - Implement the transit rider verification system.
  - Should parking demand continue to reach capacity then identify resources to increase the parking inventory through shared use and other non-capital improvements.
  - Work with local jurisdictions to limit transit rider parking spillover and/or improve and implement parking management programs around the station areas.
- This parking management path is for stations that experience high parking occupancy even after transit rider verification steps are taken.

- Examples of high demand stations currently in the Pilot Program include North Hollywood and Universal stations, where TAP verification has been used to reduce non-transit parkers in the lot with an increase and maintenance of parking availability throughout the day.

Alternative 2

- Medium Parking Demand Stations (70% to 89% utilization).
- Parking demand at medium demand stations is nearing, but not yet at capacity, with parking generally available throughout the day. Medium demand locations should be transitioned to the Parking Management Program after the high demand locations. It is recommended that medium parking demand stations do the following:
  - Implement a paid parking fee.
  - Implement the transit rider verification system.
  - Paid parking for non-transit users if availability exists, during the weekday and on nights and weekends – shared parking of existing Metro facilities.
  - Work with local jurisdictions to limit transit rider parking spillover and/or improve and implement parking management programs around the station areas.
- This parking management path is for stations that experience medium occupancy after transit rider verification steps are taken, but are not expected to reach capacity on a regular basis with the implementation of paid parking.

Alternative 3

- Low-occupancy stations (below 69% utilization).
- Low demand stations cover a wide range, from stations that may be nearing 'medium demand status, to stations with very low parking occupancy rates. They have the lowest priority for entry into the Parking Management Program, but are an important component of the overall system. For example, parking demand from a nearby high demand station can be shifted to a low demand station, helping to balance the system and increase the overall availability of transit service to riders. It is recommended that lower parking demand stations do the following:
  - Free parking for transit riders.
  - Sell parking to non-transit riders and adjacent uses where parking demand and opportunities exist.
  - Actively market parking availability to increase occupancy and reduce utilization at nearby high demand locations.
  - Consider Shared Parking Agreements with adjacent land uses that may need additional parking.
  - Consider divestiture of some or all of a station's parking assets if parking demand remains low.

In cases and locations where Metro's parking spaces were found to be underutilized on a regular basis, the Pilot Program was used to make these spaces available to serve the adjacent community. For example:

- Monthly parking has been made available to non-transit users at Expo/Sepulveda, where parking demand has remained low. In July 2017, the Board authorized Metro to enter into a monthly parking program to provide 100 monthly parking spaces for $120.00 per

parking space per month for construction workers of an adjacent development project. Spaces are assigned in the upper level of the facility to minimize disruption to transit patrons. These parking passes may be cancelled if transit parking demand increases.

- Parking to serve customers of adjacent commercial uses has been made available at a daily rate with time limits for non-transit riders at Atlantic Station after 11:00 AM, once typical demand for transit parking has been met and when the demand for neighborhood customer parking increases.
- In Monrovia, available parking spaces on weekends and at night, when the demand for transit parking is low, have been made available to serve customers of the commercial district without TAP card verification.

Opportunities to leverage parking, and development, along transit lines and corridors have also been explored as part of this effort, recognizing that all parking along an individual line may operate as one comprehensive system, thereby presenting efficiencies and opportunities for management and building transit-oriented development. For example, Metro's North Hollywood and Universal City parking facilities both provide parking for transit riders accessing the Metro Red Line for trips to Hollywood, Downtown and other parts of the Metro system. The STPP analysis explored the advantages and opportunities to build transit-oriented development at the North Hollywood station by concentrating the parking supply for commuters at Universal City, which may be less suited for development. Under this scenario, more residential, transit-oriented development is possible in North Hollywood while maintaining a reasonable parking supply for transit riders in the San Fernando Valley who require parking to access Red Line service.

Based on the Facility Assessment, which is discussed in more detail further in this Executive Summary and in the report, and stations already in the Pilot Program, parking at approximately 39 of the 59 existing Metro stations qualify as either high demand or medium demand locations and should be prioritized, based on parking occupancy levels.

Figure ES-1: Metro Parking System Weekday Morning Occupancy Map

Source: Walker Parking Consultants, 2016. Based on data collected during the facility assessment research in 2016.

With some exceptions, high demand stations should be included in the Parking Management Program. In addition, several stations, identified as lower demand at the time of the facility assessment, have become high demand stations due to the implementation of Parking Management at an adjacent station. Several additional stations should be considered due to their adjacency to high demand stations.

Overall, a total of 39 stations are either in the Pilot Program or should be prioritized for inclusion in the Parking Management Program. Table ES-1 lists the initial stations that should be included in the Parking Management Program

Table ES-1: Stations proposed for Inclusion in the Parking Management Program

Line	Station
Orange	Reseda
Orange	Balboa
Orange	Van Nuys
Orange	Sepulveda
Red/Orange	North Hollywood*
Red	Universal City*
Gold	Atlantic*
Gold	Indiana
Gold	Lincoln/Cypress
Gold	Heritage Square
Gold	Fillmore
Gold	Sierra Madre Villa
Gold	Arcadia
Gold	Monrovia*
Gold	Duarte/City of Hope
Gold	Irwindale*
Gold	Azusa Downtown
Gold	APU/Citrus*
Silver	Harbor Gateway Transit Ctr
Silver	El Monte*

Line	Station
Expo	17th St/SMC*
Expo	Expo/Bundy*
Expo	Expo/Sepulveda*
Expo	Culver City*
Expo	La Cienega/Jefferson
Expo	Expo/Crenshaw
Blue	Florence
Blue/Green	Willowbrook/Rosa Parks
Blue	Artesia
Blue	Del Amo
Blue	Wardlow
Blue	Willow Street
Green	Norwalk*
Green	Lakewood*
Green	Long Beach Boulevard
Green	Crenshaw*
Green	Hawthorne/Lennox
Green	Aviation/LAX*
Green	Douglas

* = Pilot Program Location

Source: Walker Parking Consultants, 2017

STRATEGIC IMPLEMENTATION PLAN

The goal of the Strategic Implementation Plan, and of the overarching Master Plan effort, is to create a world class parking organization that improves access to transit, leverages technology, provides excellent customer service, and improves the overall transit experience while covering its operational costs. A 10-year planning horizon is envisioned for full implementation of the plan.

The primary objectives of the Strategic Implementation Plan are:

- Maintain a state of good repair at all parking facilities.
- Use available technology to improve customer service and reduce transaction times.
- Enforce the system with a focus on compliance.
- Monitor the Parking Management Program, and adjust operations as necessary.
- Act as a County-wide resource for local jurisdictions and assist with managing potential parking overspill in station-adjacent areas.
- Bring all existing parking facilities, and future facilities at new stations, under the Parking Program umbrella.

- Staff the Parking Management unit to grow with the growth of the Parking Management Program and provide excellent customer service, enforcement, planning and operations.
- Use the Parking Design Toolkit, Long-Range Parking Planning Toolkit, and parking demand model to plan future facilities in a forward-thinking manner.

The actions and recommendations to achieve the Strategic Implementation Plan's objectives are organized along two paths, overarching actions and recommendations that should occur throughout the 10-year horizon, as well as a list of specific actions and goals over the course of the planning horizon.

YEAR 1-10 ONGOING ACTIONS AND RECOMMENDATIONS

PLANNING

- Act as a Countywide planning resource, offering assistance to jurisdictions in the management of parking overspill issues near stations.
  - With authority from jurisdictions, Metro can offer parking enforcement around station areas and recommend parking policy adjustments such as time limits, permits, or manageable paid parking programs to increase the efficiency of the parking system.
- Review parking occupancy in Metro parking facilities on a quarterly basis.
  - Update the prioritization of stations being added to the Parking Management Program if necessary.
- The Parking Management unit should be involved in the planning of all future station areas, parking facilities, and programs, utilizing the tools that have been developed as part of the Master Plan.
  - The Long-Range Parking Planning Toolkit should be utilized to plan parking at all future facilities.
- Strategically design what parking capacity to build with an eye on technological trends that could affect parking demand.
- Strategically plan not to overbuild new parking facilities.
- Future facilities should be planned to accommodate and utilize paid parking on opening day.
  - The Parking Design Toolkit should be utilized to design future parking facilities to reasonable and appropriate parking design standards.
- Periodically conduct parking rate surveys of non-Metro parking facilities to keep Metro. parking competitively priced to discourage the use of Metro parking facilities by non-riders.
- Periodically evaluate the parking price ceiling.
- The Parking Management unit should be staffed appropriately to run and maintain a world-class parking system.

ENFORCEMENT

- Maintain a focus on customer service.
- Adjust enforcement program as needed to close loopholes and improve customer service.

OPERATIONS

- Facilities Maintenance Inspectors should visit parking facilities on a rotating basis, with an emphasis on stations in the Parking Program, to document repair and maintenance issues.
- Engage qualified structural engineers to provide assessments of structured parking facilities and prepare Capital Asset Plans for each facility to maintain a state of good repair.
- Consider outsourcing routine cleaning and maintenance for Metro parking facilities.
- Routinely clean parking facilities.
- Conduct structural repair as outlined in Capital Asset Plans for each facility to maintain a state of good repair.

PARKING MANAGEMENT PROGRAM

- At the end of the 10-year Strategic Implementation Plan horizon, the Parking Management Program should have been implemented in at least 39 of Metro's 59 stations with parking.

10-YEAR PLANNING HORIZON – SPECIFIC ACTIONS AND RECOMMENDATIONS

Table ES-2: Year-by-Year Strategic Implementation Items

Year/Action	Seismic Study of Older Structures	Seismic Retrofits Where Necessary	Implement Parking Management Program at Additional Locations	Staff Parking Management Unit Appropriatly	Complete Parking Enforcement Transition	Improve Signage/Wayfinding and Lighting at High Priority Locations	Improve Signage/Wayfinding and Lighting at Medium Priority Locations	Improve Signage/Wayfinding and Lighting at Low Priority Locations	Complete TAP Wallet Transition	Install Parking Guidance Systems at High Priority Locations	Install Parking Guidance Systems at Medium Priority Locations	Install Parking Guidance Systems at LOw Priority Locations	Resurface or Reconstruct Pavement at High Priority Locations	Resurface or Reconstruct Pavement at Medium Priority Locations	Resurface or Reconstruct Pavement at Low Priority Locations	Review Technology Options/Requirements and Re-bid Operator Contract
Year 1	X		X		X	X							X			
Year 2		X	X	X		X				X			X			
Year 3		X	X	X		X			X	X			X			
Year 4		X	X	X		X				X			X	X		
Year 5		X	X	X			X				X			X		X
Year 6			X	X			X				X			X		
Year 7			X	X			X				X			X	X	
Year 8			X				X					X			X	
Year 9			X					X				X			X	
Year 10			X					X				X			X	

Source: Walker Parking Consultants, 2017

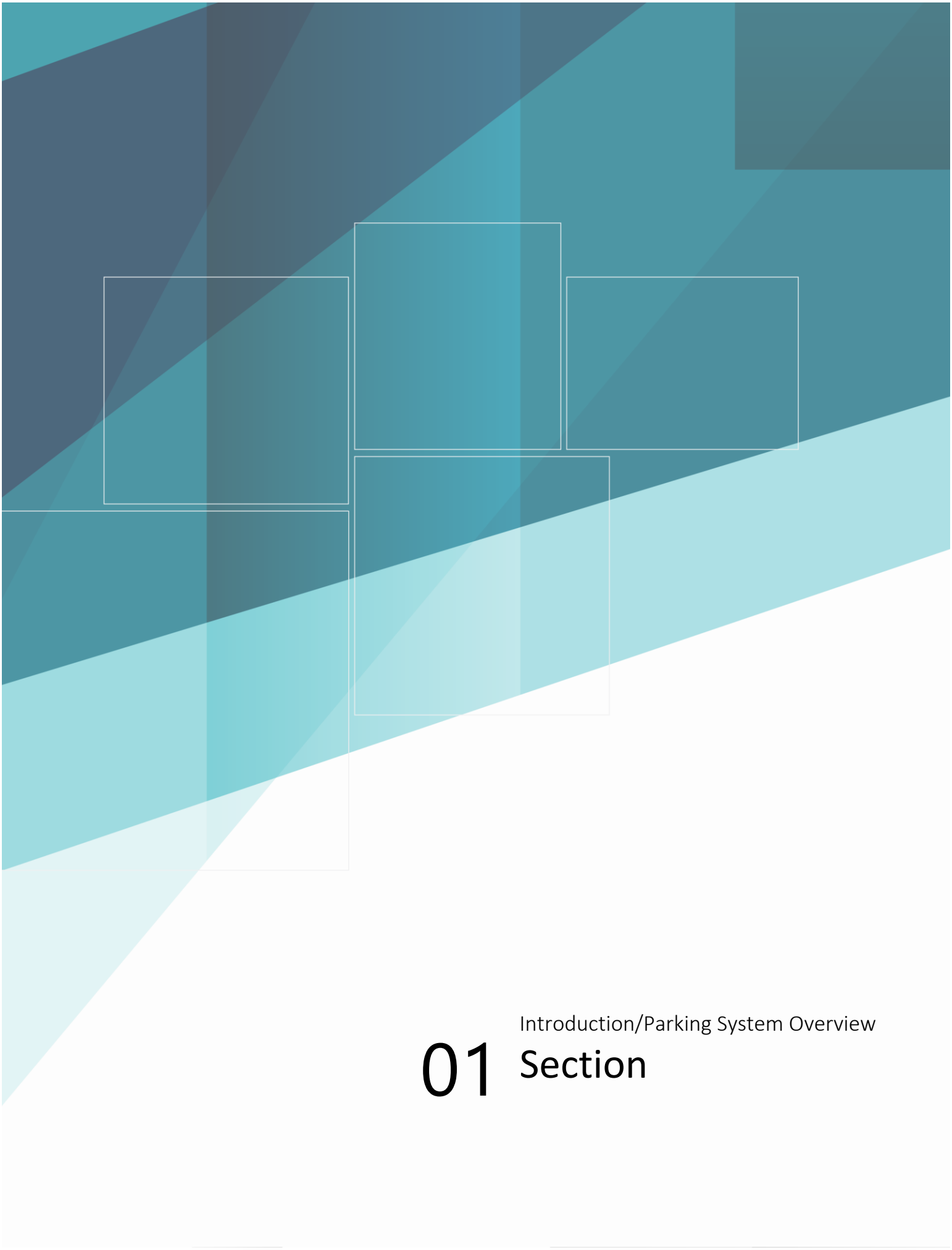
OVERALL FINDINGS/RECOMMENDATIONS

Based on the outreach, research, analysis and fieldwork completed by the STPP team, as well as the results of the Pilot Program to date, Walker provides the following overarching recommendations:

- Metro should adopt the Supportive Transit Parking Program ("STPP") Master Plan in its entirety as policy.
- Metro should transition the Pilot Program to a permanent system-wide Parking Management Program.
  - While parking fees that are charged will generate modest revenue, the focus should continue to be using reasonable pricing to manage parking demand as opposed to using pricing as a revenue generator.
- Metro should proactively manage its parking assets by incorporating parking management procedures when a location reaches 70% occupancy.
- Metro should adopt the updated parking ordinance and fee resolution contained in the Master Plan.

Metro's parking facilities represent a significant investment in both capital and land, and should be managed to maximize not only their utilization, but also to enhance Metro parker's customer service experience. Implementation of the STPP should achieve the following goals:

- Protect the parking supply and access to transit for Metro parkers where necessary.
- Increase availability of parking, including the ability for a Metro parker to find a parking space at any time during the day.
- Maximize the utility of parking assets by engaging in joint use and shared parking agreements at less utilized facilities.
- Extend the life of parking assets and reduce large capital expenditures by proactively maintaining parking facilities.
- Improve management and efficiency of non-Metro parking facilities in the vicinity of Metro stations via collaboration between Metro and the local jurisdictions.



Introduction/Parking System Overview

01 Section

The Supportive Transit Parking Program ("STPP") evaluation and analysis is a comprehensive assessment of the Los Angeles County Metropolitan Transportation Authority's ("Metro's") current parking program for Metro's Parking Management unit. The end product of the effort is the STPP Master Plan. The primary goals of this effort are to:

- Create an implementable Master Plan;
- Create a customer service focused parking system that assists in covering the cost of providing parking for transit users;
- Prioritize parking for transit riders; and
- Develop a 10-year Strategic Implementation Plan.

This Master Plan is intended to provide an implementation roadmap for parking management policies, planning, enforcement, and maintenance, as well as the technologies needed to support the recommended plan. The Master Plan also recommends ongoing program management measures to support the above-mentioned efforts.

The Metro parking system consists of approximately 24,000 total parking spaces within 70 lots, 16 garages and one on-street parking area together serving 59 Metro stations. At the time data was initially collected, the majority of spaces in the system (approximately 18,800 spaces) were free of charge to park, 4,200 required a daily or monthly fee and approximately 200 were reserved, mostly for short-term pick-up/drop-off, EV charging and Zipcar carshare. Subsequent to the STPP team's initial review and Facility Assessments, the Pilot Program will have been implemented at up to 15 locations by mid-2018, reducing the number of free spaces in the system to approximately 11,500, while increasing the number of paid parking spaces (including paid permit parking spaces) to approximately 12,500.

Permit parking spaces are currently found at 23 stations. Three additional stations along the Foothill Extension were added to the permit parking program on July 1, 2016. Metro manages permit parking at all Metro parking facilities except those in South Pasadena. At most Metro-managed facilities, designated spaces are reserved for permit parkers until 11:00 AM on weekdays; however, ther are exceptions with certain locations having permit parking until 9:00 AM, 11:00 AM , or all day long. Most permit parkers pay the permit fee monthly but there is also an option to pay daily. Monthly permit parking rates vary between $20.00 and $59.00 per month. Daily permits may be purchased at all facilities that offer permit parking, with the fee varying by location.

The three Expo 2 stations offer monthly permits for $39.00 per month. At 17th Street/SMC and Expo/Sepulveda, designated spaces are reserved for permit parkers until 9:00 AM on weekdays. At Expo/Bundy, monthly permits are required to park in designated monthly permit spaces at all times, every day of the week. Expo 2 parkers without a monthly permit must pay $2.00 per day, which allows for 24 hours of parking.

Metro's Parking Management unit manages the parking system. There are currently four full-time equivalent employees who focus on program administration, day-to-day operations and planning, and a fifth employee who focuses on capital projects. The Facility Maintenance Department handles routine maintenance and janitorial activities such as signage replacement, restriping and keeping facilities clean. LASD and Metro Transit Security handled security and parking enforcement; however, enforcement functions are being transitioned to the Parking Management unit. Metro's Customer Service Department assists with some customer service functions. A private vendor handles permit processing and provides technology for permit parking administration.

After the parking facility assessment was completed, Metro began to roll out a Parking Management Pilot Program ("Pilot Program") that will encompass the following 15 stations:

- EXPO 2 (17th Street, Expo/Bundy and Expo/Sepulveda) – Implemented May 22, 2016
- La Cienega/Jefferson – Implemented March 1, 2017
- North Hollywood & Universal – Implemented April 24, 2017
- APU Citrus, Irwindale, and Monrovia – Implemented June 26, 2017
- El Monte & Atlantic – Implemented August 28, 2017
- Norwalk, Lakewood, Aviation, and Crenshaw – Implementing mid-2018

Tables 1 and 2 summarize the number of free, paid and total spaces in the Metro system by station prior to the implementation of the Pilot Program. Free spaces include those that may be reserved for special uses such as short-term parking or EV charging. Paid space figures may include ADA spaces, when these spaces are located inside parking garages.

Table 1: Metro Parking System (Blue, Expo, and Gold Lines)

		Spaces			
Line	**Station**	**Free**	**Paid**	**Reserved**	**Total**
Blue	Florence	95	20	0	115
Blue	103rd Street/Watts Towers	69	0	0	69
Blue/Green	Willowbrook/Rosa Parks	224	0	10	234
Blue	Artesia	266	32	0	298
Blue	Del Amo	338	61	0	399
Blue	Wardlow	72	17	0	89
Blue	Willow	811	36	6	853
Crenshaw	Florence/West	TBD	TBD	TBD	0
Crenshaw	Florence/La Brea	TBD	TBD	TBD	0
Expo	Expo/Crenshaw	225	0	0	225
Expo	La Cienega/Jefferson	492	0	2	494
Expo	Culver City	568	0	0	568
Expo	Expo/Sepulveda	7	241	12	260
Expo	Expo/Bundy	8	206	3	217
Expo	17th Street/SMC	3	54	8	65
Gold	Atlantic	258	24	2	284
Gold	Indiana	35	5	2	42
Gold	Lincoln/Cypress	77	15	2	94
Gold	Heritage Square	118	11	0	129
Gold	South Pasadena	0	142	0	142
Gold	Fillmore	125	30	0	155
Gold	Del Mar	0	610	0	610
Gold	Lake	0	22	0	22
Gold	Sierra Madre Villa	837	124	4	965
Gold	Arcadia	298	0	2	300
Gold	Monrovia	348	0	2	350
Gold	Duarte/City of Hope	122	0	3	125
Gold	Irwindale	272	76	2	350
Gold	Azusa Downtown	155	73	9	237
Gold	APU/Citrus College	198	0	2	200

Source: Los Angeles Metro, 2016; Walker Consultants, 2016

Table 2: Metro Parking System (Green, Orange, Red, and Silver Lines)

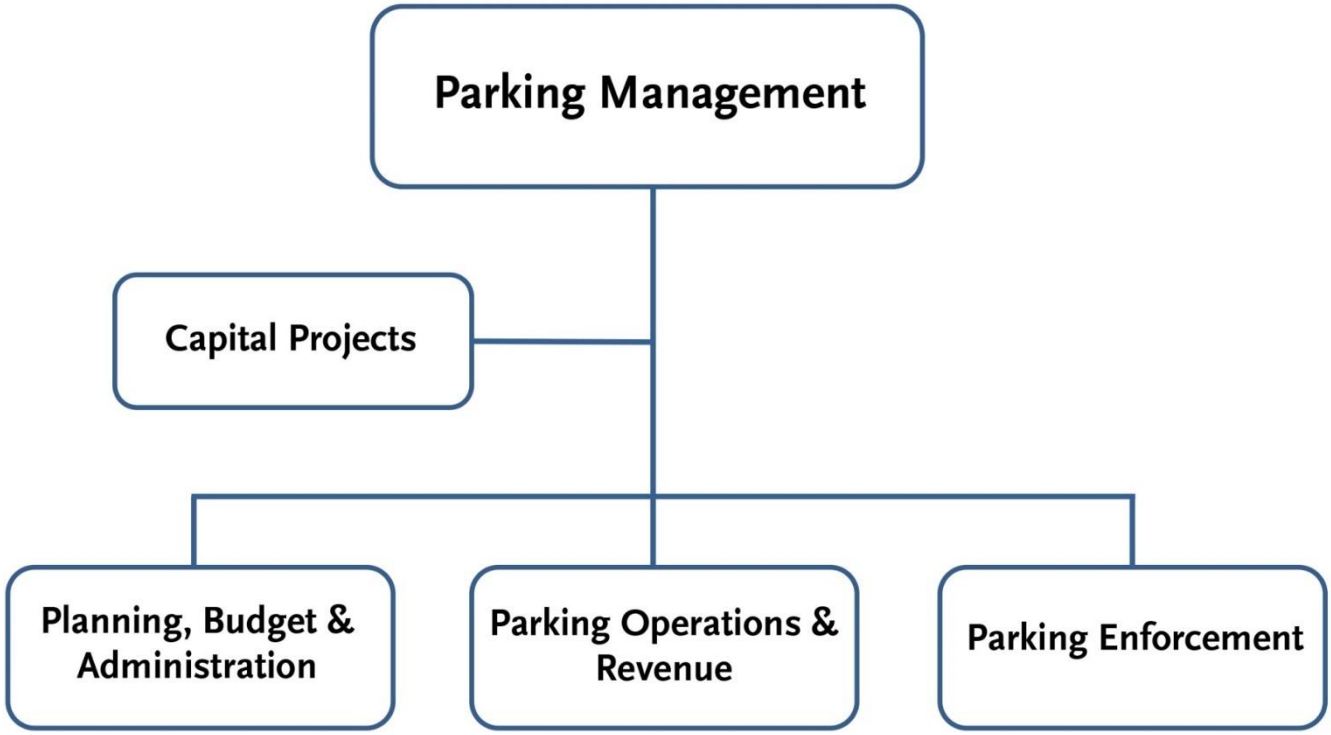
		Spaces			
Line	**Station**	**Free**	**Paid**	**Reserved**	**Total**
Green	Norwalk	1,720	0	0	1,720
Green	Lakewood	299	0	0	299
Green	Long Beach	646	0	0	646
Green	Avalon	160	0	0	160
Green/Silver	Harbor Freeway	252	0	0	252
Green	Vermont/Athens	155	0	0	155
Green	Crenshaw	516	0	0	516
Green	Hawthorne/Lennox	362	0	0	362
Green	Aviation/LAX	390	0	0	390
Green	El Segundo	74	0	19	93
Green	Douglas	30	0	0	30
Green	Redondo Beach	323	0	17	340
Orange	Van Nuys	305	0	2	307
Orange	Sepulveda	439	0	0	439
Orange	Balboa	264	9	0	273
Orange	Reseda	522	0	0	522
Orange	Pierce College	390	0	2	392
Orange	Canoga	241	0	8	249
Orange	Sherman Way	199	0	6	205
Orange	Chatsworth	595	0	14	609
Red/Purple/Gold	Union Station	0	1,848	12	1,860
Red	Universal City/Studio City	627	195	6	828
Red/Orange	North Hollywood	756	375	14	1,145
Red	Westlake/MacArthur Park	16	0	2	18
Silver	Slauson	150	0	0	150
Silver	Manchester	239	0	0	239
Silver	Rosecrans	338	0	0	338
Silver	Harbor Gateway Transit Cente	960	0	20	980
Silver	El Monte	1,432	0	3	1,435
Silver	Carson	143	0	0	143
Silver	Pacific Coast Highway	236	0	0	236
Total		**18,800**	**4,226**	**196**	**23,222**

Source: Los Angeles Metro, 2016; Walker Consultants, 2016

PARKING MANAGEMENT UNIT ORGANIZATIONAL STRUCTURE

The Parking Management unit was created in 2014 and tasked with developing a comprehensive approach to manage Metro's parking resources. Figure 1 shows the basic organizational structure of the Parking Management unit in its current form.

Figure 1: Current Parking Management Unit Organization Structure

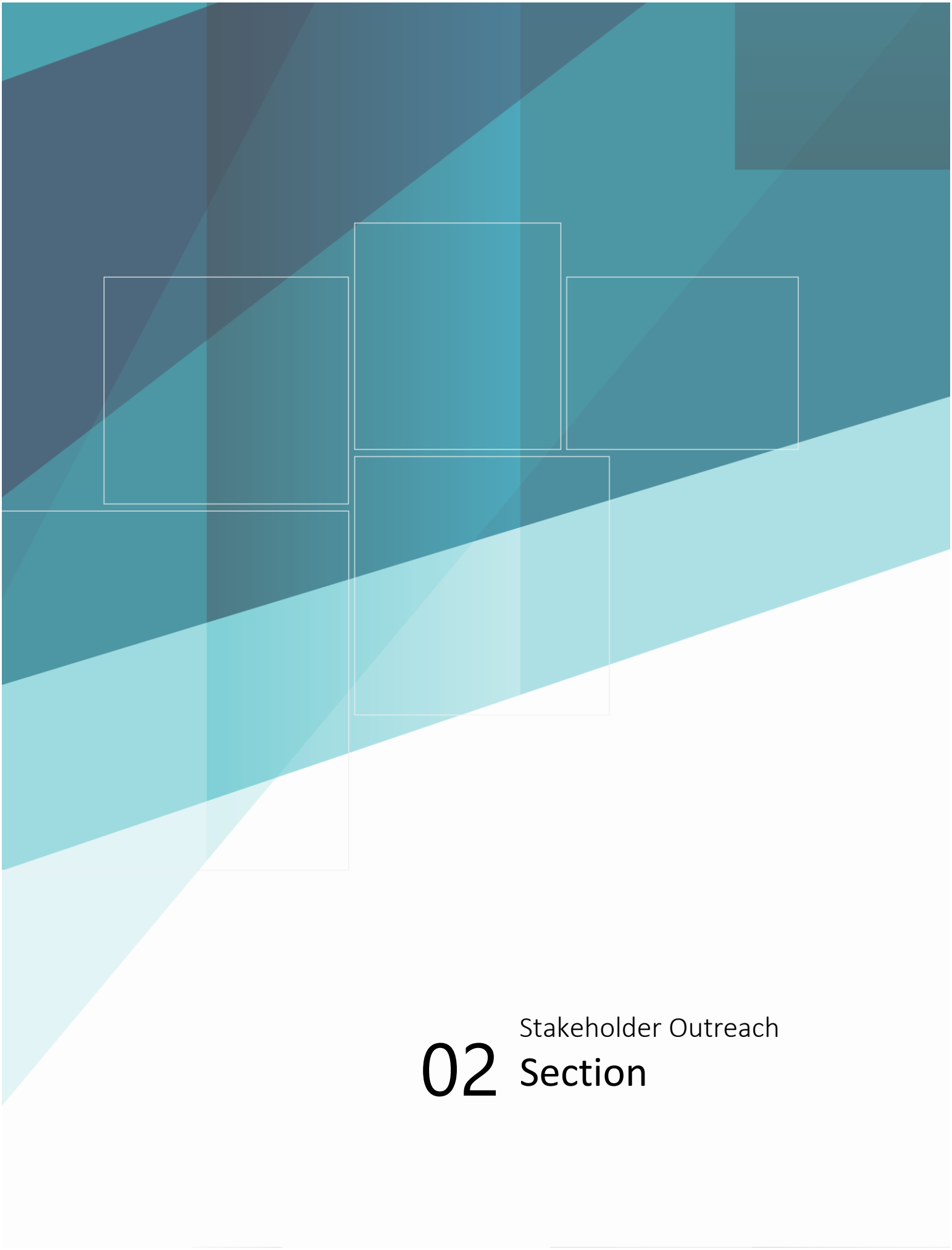


Source: Los Angeles Metro, Walker Consultants, 2017

The Parking Management unit currently has five employees, with plans to add an employee in late 2017 to provide depth and bench strength to the team.

As currently staffed, while doing an effective and laudable job of implementing the Pilot Program, the Parking Management unit is reaching the limit of staff capacity and will need to expand as the Pilot Program is expanded to as many as 39 total locations over the next few years.

Walker's recommendations for the Unit's organizational structure and staffing level are provided in the recommendations section of this report.



02 Stakeholder Outreach Section

The STPP outreach plan consisted of outreach to transit riders and a variety of public entities, including local jurisdictions and municipal transit operators, throughout Los Angeles County, as well as Metro stakeholders. Transit rider outreach was geared toward understanding riders' needs and priorities with respect to Metro parking facilities and other travel modes for accessing transit stations. Agency outreach was intended to identify and address agency stakeholder concerns related to Metro parking facilities. Input received has been considered and included in the STPP Master Plan.

TRANSIT RIDER OUTREACH

Transit rider outreach consisted of two rounds of surveys open to all transit riders, with an emphasis on those who drive and park. The first-round survey was launched in online and text message platforms on December 1, 2015 and ran through January 31, 2016. To promote the campaign, Metro designed A-frame sign posters and offered the possibility of free Metro 30-day passes as an incentive for riders to participate in the campaign. Metro sent a promotional e-blast to over 129,000 Metro Transit Access Pass ("TAP") cardholders and approximately 1,000 permit parkers inviting them to participate in the surveys. In addition, Metro promoted the survey on The Source blog and provided a link to it from the Metro Parking Management webpage. Both text message and online surveys featured Spanish versions to ensure responses from Spanish speaking riders. By the end of Round 1 of the campaign on January 31, 2016, over 9,000 responses were collected.

Key findings from the first round of transit rider outreach included:

- Of all respondents, just over 50% of respondents drive and park at a Metro parking facility, nearly 19% take a bus to access a station, 18% walk to access a station, over 6% drive and park outside of Metro stations and the remaining 7% use another mode.
- Of those who drive and park at a park and ride or facility parking facility not owned by Metro, 69% have household incomes of $50,000 or more, which is higher than the countywide figure of 55%.
- Nearly 60% of those who park at Metro parking facilities are able to find a space in three minutes or less.
- Over 50% of those who park at Metro parking facilities are very satisfied or extremely satisfied with the parking experience.
- For those who drive and park at a parking facility not owned by Metro, 47% do so because they cannot find parking at a Metro facility while 32% indicated there is no parking available at the Metro facility they typically use.
- For those who do not drive and park at or near a station, 66% indicated that infrequent bus service is the main challenge in arriving to a station followed by no drop-off area (16%) and no bike lanes (11%).

The second survey ran from April 13 through May 26, 2016. An e-blast was sent to all TAP cardholders and all permit parkers. Metro again promoted the survey on The Source blog and provided a link to it from the Metro Parking Management webpage. It was also emailed/texted to round one respondents who drive and park, whether at Metro parking facilities or elsewhere, and provided their email/cell phone number.

The second round asked more focused questions including willingness to pay for parking to ensure availability, price per day that a rider would be willing to pay to park, and the distance riders live from their preferred station. A total of 8,800 responses were received. Key findings from the second round of transit rider outreach included:

- Of the respondents, 63% reported that they drove and parked at Metro facilities, 19% drove and parked outside Metro stations, and 18% reported not driving to Metro stations.
- Red and Gold Line stations were most often selected as the station of origin with 25% of respondents selecting each. Red and Gold Lines were also the most often selected line along which the destination station was located with 40% and 15% of respondents selecting each, respectively.
- Approximately 7,900 respondents chose to identify their household income levels. Similar to round one, 68% of survey respondents reported a household income of over $50,000. Households earning over $75,000 per year comprised approximately 47% compared to the County figure of 38%.
- Approximately 31% of Metro parkers would pay for parking. Of that group, 61% would pay up to $2.00, followed by 16% who indicated $3.00 and 11% who indicated $5.00.
- Approximately 37% of parkers (Metro and non-Metro) lived within two miles of their preferred station.
- For Metro parkers, the top modes considered to access their preferred station, other than parking, were drop-off (indicated by 38% of respondents), bus (37%) and walk (22%).
- For Metro parkers, the top reasons they chose to park and ride transit were to save money (indicated by 50% of respondents), convenience (49%) and that it's good for the environment (47%).
- The top three requested improvements to better access Metro stations were more bus service (59%), more drop-off areas (20%) and more bike racks (12%).

AGENCY STAKEHOLDER OUTREACH

Agency stakeholder outreach consisted of an initial survey phase followed by a workshop held in three locations and one-on-one meetings. The primary motivation for the survey research was to identify and address stakeholders' concerns related to Metro parking facilities. By understanding current parking strategies in cities, and more specifically learning the issues and challenges faced by cities and agencies related to Metro transit station parking, this survey was intended to help guide Metro's planning efforts. Survey invitation letters were distributed to targeted stakeholders through e-mails. An online survey tool was employed to implement the survey and collect responses. Targeted stakeholders included City Managers, Transportation Directors, Public Works Directors and key personnel who are responsible for parking planning, management and enforcement within cities and agencies in Los Angeles County.

Survey invitation letters were emailed on December 21, 2015, with two follow-up reminders sent on January 4 and January 25, 2016. The survey reminders were sent specifically to 21 cities that presently had, or would have Metro transit stations in the future. Overall, survey invitations were sent out to 87 cities and agencies. A total of 42 responses from 36 cities and agencies were collected from the survey.

Key findings from the agency stakeholder surveys were:

- When asked if there were issues with parking near their city's Metro station, nearly 50% responded that there were, approximately 33% said there were no issues, and the rest did not know. Over 50% of those who said there were issues cited insufficient station parking and 33% cited misuse of station parking.
- A majority of city respondents indicated that their station areas had sidewalks present (75%) and had signalized or marked crosswalks (67%). Nearly 80% indicated they had made investments in other modes. Of those respondents, 75% indicated bike lanes and 63% indicated local transit.
- City respondents indicated a range of fees were charged at their public parking facilities, from free to $3.00 per hour. Several cities indicated that parking fees collected did not cover upkeep of the parking facilities.
- Nearly 80% of respondents expressed interest in learning more about addressing parking issues at or near Metro stations.

Workshops for agency stakeholders were held in three locations throughout the county to maximize attendance. In total, staff or consultants representing 19 agencies attended.

- City of Arcadia
- City of Artesia
- City of Baldwin Park
- City of Bell
- City of Bell Gardens
- City of Bellflower
- City of Compton
- City of Culver City
- City of Downey
- City of Long Beach
- City of Los Angeles
- City of Lynwood
- City of Monrovia
- City of Montebello
- City of Norwalk
- City of Pasadena
- City of Santa Monica
- City of South Pasadena
- Foothill Transit

The workshops provided an overview of the STPP, presented work to-date and solicited agency input on potential program management alternatives. Agency stakeholders provided valuable input that has been used to refine proposed program management alternatives.

METRO STAKEHOLDERS

Meetings were convened with the following Metro stakeholder departments to obtain their input regarding the STPP Master Plan.

- Customer Service
- Office of Innovation
- Joint Development
- Office of Management and Budget
- Union Station
- TAP
- Facilities Engineering
- Facility Maintenance
- Enforcement/Security
- General Services
- Marketing
- Community Relations
- ITS
- Bus Operations
- Rail Operations
- Civil Rights
- Environmental Compliance
- Active Transportation

STPP Master Plan input from each department is summarized in the following sections.

CUSTOMER SERVICE

- Communication between Customer Service and Parking Management is key. The process is currently efficient.
- Customer Service would like to have talking points when there are known issues such as upcoming parking facility closures.
- There should be consistency between Customer Service and Parking Management regarding what is provided for free to those who are low income.

OFFICE OF INNOVATION

- There should be performance measures to evaluate each individual parking location and whether parking is the best use based on the needs, goals, policies and priorities of Metro and its riders.
- Metro parking supply should be expected to decrease over time, as land adjacent to stations is utilized for transit-oriented development, in many cases increasing access to stations through land use policies, pedestrian access, and efficient means of accessing stations.

JOINT DEVELOPMENT

- The checklist for future parking facilities should include policy items (e.g. unbundling, shared parking, replacement parking), design standards and operating standards.
- Future parking facilities should be designed for adaptability to other uses, given the potential decline in parking demand over time.

OFFICE OF MANAGEMENT AND BUDGET

- The following are revenue streams to consider: car share, permits, Pilot Program, enforcement and advertising. The advertising effort is being led by Communications.
- OMB prefers that Parking Management be financially self-sustaining.

UNION STATION

- Not many Metro riders park at Union Station.
- Union Station Master Plan does not call for any additional parking. Some parking currently used for storage may be made available.

TAP

- Features needed to support the Master Plan are:
  - Real-time ridership verification.
  - Ability to load TAP card value using a parking pay station.
  - Ability to accept parking payment using a TAP card.
- Some additional features to consider are using a smartphone as a TAP card, as near-field communication technology matures, and integration of payment function for parking, transit and HOV lane tolls.

FACILITIES ENGINEERING

- The Facilities Engineering team needs to be kept informed of any project requirements.

FACILITY MAINTENANCE

- Maintenance is often overlooked. It is an important consideration, as it is essentially required for everything.
- Facility Maintenance stressed the need to understand the upfront cost to bring the Caltrans lots into a state of good repair. A self-sustaining operation may be based only on on-going maintenance efforts.

ENFORCEMENT/SECURITY

- Enforcement/Security are supportive of outsourcing parking enforcement function to a private entity.
- The Enforcement/Security team should retain the ability to issue citations, in particular for ADA violations.

GENERAL SERVICES (ONE GATEWAY PLAZA)

- General Services at One Gateway Plaza would like to sell every parking space, every single day. A PGS system may be able to assist with this effort.
- General Services is considering offering variable daily rates to commuters and Metro employees.

MARKETING

- Requested real-time data that is provided from the PGS system so that it may be shared with outside parties such as Google and Apple.
- Would like to incorporate parking customer data into the loyalty program that is being developed.
- Suggested that advertising should be included in the Master Plan. Considerations need to be included for providing the infrastructure within parking facilities.

COMMUNITY RELATIONS

- For stations under construction, opportunities to provide parking at existing facilities should be considered.
- Metro should be a willing community partner in future parking facility planning efforts.

ITS

- The ITS team is most interested in application program interfaces (APIs) that provide real-time data to internal applications or the private sector.
- Parking occupancy data should feed into Regional Integration of Intelligent Transportation Systems (RIITS) System.

BUS OPERATIONS

- Planning at future parking facilities needs to incorporate their department's facility needs, such as bathroom facilities for bus operators.
- Parking should be part of the planning effort for joint development.

RAIL OPERATIONS

- Security at parking facilities is an issue. They need to be open and visible. Design checklist should include close circuit television (CCTV), monitors that show CCTV feeds and clear elevator backs.
- Identify whether there are opportunities to get involved with planning of parking facilities at additional Foothill stations.

CIVIL RIGHTS

- Pertaining to parking facilities, compliance with the Americans with Disabilities Act (ADA) is the department's concern.
- Civil Rights department must review plans from Parking Management for new parking facilities and refurbishment of existing ones.

ENVIRONMENTAL COMPLIANCE

- Consider sustainability elements, such as EV chargers, solar panels and drought-tolerant landscaping in new parking facilities and refurbishments.
- Identify opportunities for collaboration, such as when incentives are provided to install EV chargers.

ACTIVE TRANSPORTATION

- Bicycle and pedestrian right-of-way is up to the cities to provide. Metro may provide some funding through the call for projects process.
- Provide a variety of bicycle parking (high capacity, racks and lockers). Bicycle parking should be located in areas with a lot of visibility in order to reduce theft.
- Consider establishing a bike valet program at stations with high bicycle parking use such as North Hollywood.
- The Department is open to outsourcing bicycle parking operations.

Detailed outreach reports prepared by the STPP team are contained in their entirety in Appendix 1.

Parking Facility Assessment

03 Section

PARKING FACILITY ASSESSMENT

As part of the overall Supportive Transit Parking Program ("STPP") effort, Walker Parking Consultants ("Walker") and its team performed an assessment of all parking facilities in the Los Angeles County Metropolitan Transportation Authority ("Metro") system to better understand the quantitative and qualitative nature of the parking spaces and access that Metro's parking system was providing its ridership. The purpose of the Facility Assessment effort was to understand current system operation and performance, which serves as baseline information required to recommend future policy and operational changes, and to recommend and quantify the cost of improving the parking facilities.

The Metro parking system consists of approximately 24,000 total parking spaces within 70 lots, 16 garages and one on-street parking area together serving 59 Metro stations. The Facility Assessment included the parking facilities at the 59 Metro stations with a total of 87 parking facilities (lots, garages and on-street). There are 70 surface lots totaling approximately 16,700 patron-accessible spaces, 16 garages totaling approximately 7,700 spaces and one on-street parking area with approximately 200 spaces. There are approximately 23,200 total patron-accessible spaces in the entire Metro system. Of these spaces, during the assessment approximately 18,800 were free at the time of the assessment, 4,200 require a daily or monthly fee and approximately 200 are reserved, mostly for short-term pick-up/drop-off, EV charging and Zipcar carshare. Two future Crenshaw Line parking lots were also assessed, based on information currently available. These two lots comprise 200 parking spaces.

The following evaluations were included in the facility assessment effort:

- Vehicle occupancy counts weekday late morning, weekday evening and weekends
- Assessment of parking wayfinding leading to each station and parking signage
- Parking access details
- Observed and potential parking user groups
- Potential carshare and vanpool parking locations
- Observations regarding facility upkeep and facility maintenance
- Evening lighting level measurements
- Observations regarding safety and security
- Parking reconfiguration opportunities at highly utilized stations
- Bicycle rack occupancy counts and bicycle locker rental utilization data
- Assessment of bicycle and pedestrian infrastructure surrounding each station

Parking reconfiguration opportunities were assessed at high occupancy stations with detailed options developed at priority stations (North Hollywood, Universal City/Studio City and Willowbrook/Rosa Parks). The assessment did not assess any structural conditions or measure pavement conditions.

It should be noted that the number of parking spaces provided include only facilities and spaces that are for Metro patron use. There are additional spaces that are leased to or reserved for specific users and are not available to patrons. Table 3 and Table 4 summarize the number of free, paid and total spaces in the Metro system by station at the time the facility assessments were conducted, but before the Pilot Program. Free spaces include those that may be reserved for special uses such as short-term parking or EV charging. Paid space figures may include ADA spaces, when these spaces are located inside parking garages.

Table 1 and Table 2 in the introduction section of this report previously listed the Metro parking system's facilities.

FACILITY ASSESSMENT METHODOLOGY

A large portion of the work for this assessment consisted of on-site data collection and observations. The methodology for each component of the facility assessment is described in the sections that follow.

VEHICLE OCCUPANCY DATA

At most stations, vehicle occupancy counts were conducted from the first week of December 2015 through the first week of February 2016. Due to the holidays, no occupancy counts were conducted the last two weeks of December 2015 and the first week of January 2016. Based on our research and experience, employee and commuter parking demand drops off during the second half of December, but the first two weeks of December still represents parking demand for employees and commuters that is typical throughout the year. For Gold Line Foothill and Expo 2 stations, vehicle occupancy counts were conducted in June 2016.

Vehicle occupancy data was collected during three different periods. Below are periods during which data was collected.

- Weekday mornings (9:00 AM to 12:00 PM)
- Weekday evenings (7:00 PM to 12:00 AM)
- Saturday afternoons (1:00 PM to 5:00 PM)

During weekday morning periods, we performed a count of free, permit, ADA and reserved (e.g. Zipcar, short-term kiss and ride, sheriff, etc.) parking. During weekday evenings and Saturday afternoons, we performed a count of all vehicles, regardless of parking type.

In cases where a facility was mostly full (over 90%), inventory data provided by Metro was used as a baseline. Empty spaces were counted and subtracted from the inventory figure while any vehicles parked in unmarked spaces were added to calculate an occupancy percentage.

In facilities with motorcycle parking spaces, motorcycles were also counted during weekday morning periods.

PARKING ACCESS

We identified potential challenges with entering and exiting each parking facility and included the number of parking entry and exit lanes at each facility.

PARKING USER GROUPS

By default, we assumed that parkers at Metro parking facilities were there to ride transit or another non-SOV mode such as carpooling. During the site visits, we observed individuals who parked and walked away from the station area, indicating parking for a use other than Metro transit. Non-transit parker user groups included employees of nearby uses (businesses, schools, churches and hospitals), residents who live nearby and visitors to adjacent uses. We observed vehicles that appeared to cluster near adjacent uses and vehicles with obvious identifiers (such as stickers or hangtags) or uses (such as box trucks).

PARKING SIGNAGE AND WAYFINDING

We made observations about signage and wayfinding to parking facilities from primary roadway access points. Specifically, we observed whether signage is present and if present, its adequacy in directing motorists to Metro parking. We assigned a low, medium or high rating based on our observations. Stations with no or very minimal parking wayfinding signage earned a low score. Those with abundant and visible signage earned a high score, while those with some readily visible signage earned a medium score.

POTENTIAL CARSHARE LOCATIONS

Potential locations for new or additional designated spaces for carshare (Zipcar or other provider) or new designated spaces for vanpool were noted. Carshare spaces are ideally located closest to the platform/portal as they are intended to serve a first/last mile function.

POTENTIAL VANPOOL LOCATIONS

Vanpool spaces are to be designated for the actual vans and do not require proximity to the platform/portal. They should be located on the periphery of parking facilities in order to provide more convenient parking for the vanpool participants who drive and park in order to access the vanpool.

FACILITY UPKEEP, MAINTENANCE AND PAVEMENT CONDITIONS

Facility upkeep in terms of general cleanliness in and around parking facilities was observed. Any visible facility maintenance issues were identified. We also qualitatively assessed pavement conditions and the visibility of parking space striping.

LIGHTING

A basic assessment of lighting levels was conducted as poor lighting levels may deter riders from using Metro's parking facilities due to personal security concerns, thereby hindering access. Lighting measurements were taken in each parking facility when evening occupancy counts were conducted. In garages, lighting levels were taken on a covered level and on the roof. Minimum and maximum lighting levels at each measurement location were recorded and an average was calculated.

Walker developed a Level of Service for Minimum Lighting table (Table 3), which incorporates recommendations of different industry standards for minimum lighting levels assigned to a level of service. It is to be used as a tool for assessing lighting levels in parking facilities. While there are other lighting metrics, the focus is on minimum lighting levels as these have the greatest impact on real and perceived personal safety/security.

The table lists separate minimum lighting levels in foot-candles for covered levels in a parking structure and open parking areas (top level of a parking structure or surface parking lots).

Table 3: Walker Level of Service for Minimum Lighting (in foot-candle [fc])

	Level of Service			
	A (Excellent)	B (Good)	C (Minimum Acceptable)	D (Poor)
Covered Levels	4.0	3.0	2.0	1.0
Top Level and Parking Lots	2.0	1.5	0.5	0.2

Source: Walker Consultants, 2017

Level of service (LOS) C is the recommended minimum threshold of acceptable lighting. For example, under LOS C, covered levels would have foot-candle levels between 2.0 and 3.0 while top levels and surface parking lots would have foot-candle levels between 0.5 and 1.5. Minimum foot-candle values that fall below LOS D (less than 1.0 for covered levels and less than 0.2 for top levels and surface parking lots) would be considered LOS E. Lighting levels continue to degrade over time. Therefore, lighting at levels D or E will only continue to decline in light output. Figure 2 illustrates examples of minimum lighting with level of service A.

Figure 2: Examples of Minimum Lighting with Level of Service A

Source: Walker Consultants, 2017

As shown in the figure, LOS A connotes excellent lighting conditions. LOS B would be above average or 'good' lighting, LOS C corresponds to average/okay lighting, and LOS D and worse correspond to unacceptably poor lighting.

More details about this table and other lighting measurements (average and maximum-to-minimum) may be found in the facility assessment appendices, contained in Appendix 2.

SAFETY

Safety features minimize accidents, especially personal injuries. The typical concerns in parking facilities are trips, slips and falls and preventing vehicular/vehicular or vehicular/pedestrian accidents. Regarding trips/slips and falls, a primary problem is curbs and wheel stops, as well as surfaces that are slippery when wet. Sometimes, traffic calming devices can help to create a safer environment for riders walking between their vehicle and the station portal/platform. We observed whether there were any potential safety issues in parking facilities.

SECURITY

Security features are intended to discourage and react to crime.

- Crime Prevention Through Environmental Design ("CPTED") – features which discourage crime; these used to be called passive security. Generally, these fundamentally rely on visibility and to some extent perimeter controls to funnel pedestrian and vehicular access through the appropriate paths, and prevent secret entry/exit.
- Active Security – cameras, emergency call systems, patrols.

Walker generally recommends that as many CPTED provisions be in place as possible in all parking facilities, because they not only discourage crime, but enhance the perception of being safe in the facility. Also risk levels change over time, so CPTED provisions are already in place if more might be needed more in the future. However,

for retrofit situations security provisions need to be based and site-specific security audit. Some facilities may be deficient in CPTED features, which tends to make them feel insecure and intimidating to park in. To determine the need for improvements in security, we recommend that a security audit be performed, to assess the CPTED provisions, and the risk of crimes.

We observed potential security issues in the parking facilities. These included signs of individuals living in parking facilities and potentially vulnerable areas (e.g. dimly lit or not readily visible due to walls) from a security standpoint. We also observed if there were obvious abandoned vehicles or signs of individuals living in a parking facility.

PARKING RECONFIGURATION

Since most Metro parking facilities are parking lots, there may be select opportunities to increase parking supply. We examined as-built plans, cross-referenced against aerial imagery, at the highest occupancy stations along with a sample of other stations to identify potential low-cost opportunities to add parking capacity. Detailed layouts were developed for North Hollywood, Universal City/Studio City and Willowbrook/Rosa Parks, and are included in Appendix 3.

BICYCLE OCCUPANCY DATA

For some users of transit, bicycles can provide a reasonable and efficient alternative to driving and parking at a transit facility. The Walker team counted bicycles parked at bicycle racks during weekday morning periods (9:00 AM to 12:00 PM). At some stations, bicycles were parked illegally (such as locked to fences or posts) and were recorded but not included in our occupancy data.

Metro provided bicycle locker data from late January 2016 for all stations except Expo 2 and Gold Line Foothill Extension stations, the data from which were provided in June 2016. We deducted “lockers removed from service” to arrive at current lockers in service and assume those designated as “in use” are utilized, whether they are actually used or not by the locker renters.

BICYCLE INFRASTRUCTURE RATING

The Walker team assigned a bicycle infrastructure rating (low, medium or high) based on the presence of Class I or Class II bicycle facilities within one block of a given station. Stations without a Class I or Class II facility received a low rating. Stations with at least a Class I or Class II facility received a medium rating, while those with both received a high rating.

Per the California Department of Transportation, a Class I bikeway provides a completely separated right of way for the exclusive use of bicycles and pedestrians with crossflow by motorists minimized while a Class II bikeway provides a striped lane for one-way bike travel on a street or highway. We also made qualitative observations regarding bicycle facilities during the site visits.

PEDESTRIAN INFRASTRUCTURE RATING

The Walker team assigned a pedestrian infrastructure rating (low, medium or high) based on the presence of north/south crosswalks, east/west crosswalks and the width of area sidewalks. One point was assigned if north/south crosswalks were present on both sides of the street. Same if east/west crosswalks were present on both sides of the street. A half point was assigned if only one side had a crosswalk and no points were assigned if no north/south or no east/west crosswalks were present. If a station has sidewalks leading to a station greater than 10 feet in width, then three points were assigned. Two points were assigned if the width was seven to 10 feet, one point assigned if less than seven feet and no points if there were no sidewalks. With a maximum of five points, stations that earned at least four points were scored high, two to four points earned a medium rating while less than two earned a low rating.

We also made qualitative observations about the pedestrian infrastructure near each station including pedestrian wayfinding to the station from both parking areas and the street.

KEY FINDINGS

The key findings of the facility assessment effort are summarized in the following sections:

- Occupancy Levels
- Parking Signage and Wayfinding
- Lighting
- Upkeep
- Safety and Security
- Parking Reconfiguration
- Bicycle Infrastructure and Parking
- Pedestrian Infrastructure

The key findings are general findings. Facility-specific findings are located within the complete facility assessment report in Appendix 2.

OCCUPANCY LEVELS

Over 30% of stations had weekday morning occupancy levels that were very high, which we define as 90% and higher. We view stations with 90% occupancy as effectively full as there needs to be a buffer to account for misparking, debris in spaces, spaces out of service for maintenance, and to allow motorists searching for parking the ability to find available parking spaces within a reasonable amount of time. The stations with weekday morning occupancy levels observed to be at least 90% are the following:

- APU / Citrus College
- Artesia
- Aviation / LAX

- Azusa Downtown
- Culver City
- Del Amo
- Duarte/City of Hope
- El Monte Station
- Florence
- Heritage Square
- Irwindale
- Lakewood
- Lincoln/Cypress
- Monrovia
- North Hollywood
- Norwalk
- Universal City/Studio City
- Wardlow

Figure 3 illustrates weekday morning occupancy throughout the Metro parking system. Occupancy levels were generally highest at terminus locations (and former ones in the case of Culver City) and stations that are the next closest to Downtown Los Angeles as demand at terminus locations will spill over to these. Gold Line stations along the Foothill extension experience high occupancy as do southern stations along the Blue Line.

Figure 3: Metro Parking System Weekday Morning Occupancy Map

Source: Walker Consultants, 2017

Weekday evening and weekend (Saturday afternoon) occupancy levels were almost always lower than weekday morning occupancy levels. Aviation/LAX station had consistently high occupancy levels, likely due to LAX

employees using the lot. APU/Citrus College also experienced high occupancy during the weekday morning and weekend.

Expo line stations Culver City and La Cienega/Jefferson were full during the UCLA-USC football game on November 28, 2015. Culver City was over 50% occupied at 7:00 PM on February 18, 2016 perhaps due in part to a Los Angeles Clippers game at Staples Center.

PARKING SIGNAGE AND WAYFINDING

Metro parking is challenging to find at a majority of locations as signage directing drivers to facilities was found not to be present or was not readily visible. In addition, signage at facility entrances, which might assist riders in finding parking was either not present or difficult to see while approaching. Wayfinding and entrance signage was also inconsistent throughout the system with different logos and verbiage in use. Stations with multiple facilities did not generally offer signage directing drivers between the facilities.

LIGHTING

Lighting levels were substandard (level of service D or E) in over 70% of the facilities. Lighting at those levels will continue to degrade in quality and may lead riders to at least perceive a lower level of security.

UPKEEP

Over one quarter of stations were observed to have issues with litter and debris in their facilities. This included litter and debris on parking surfaces, landscaped areas in parking lots, near station entrances and in parkway areas adjacent to roadways.

SAFETY AND SECURITY

We identified a few facilities would benefit from traffic calming measures to create a safer environment for riders walking between their vehicle and the station portal/platform. Over 20% of stations were observed to have activities that tend to raise the security risk level, including the presence of individuals living in vehicles or individuals at the parking facilities engaging in potentially illegal activities.

PARKING RECONFIGURATION

There were opportunities observed for minimal capacity gains (less than 3%) by restriping to include code allowed compact stalls. In particular, lots with long rows of standard dimension parking spaces (nine feet in width) were candidates for restriping to spaces that are compact. We recommend eight feet, six inches in width.

Larger gains of 5-15% may be realized through reorienting some lots to gain better efficiencies. However, the cost per net new space created may be high, approximating the cost of a structured parking space ($20,000 to $25,000).

BICYCLE INFRASTRUCTURE AND PARKING

Over 60% of stations were found not to have Class I or Class II bicycle facilities within one block of station areas. Coordination with local jurisdictions would be required to improve these conditions. Eight stations did not currently have any bicycle racks or bicycle lockers. Several stations experience high demand for bicycle lockers. In general, demand for bicycle lockers was found to be much higher than demand for bicycle racks.

PEDESTRIAN INFRASTRUCTURE

Pedestrian infrastructure, measured based on the presence of crosswalks and sidewalk widths, was generally found to be good. Over 15% of stations would benefit from pedestrian improvements and coordination with local jurisdictions would be required.

STATION FINDINGS

VEHICLE OCCUPANCY

Vehicle occupancy at each station, for each period in which occupancy data was collected, is detailed on Table 4 and Table 5. Weekday daytime peak occupancy across the entire system was approximately 73% while it was found to be 16% on weekday evenings and 28% on weekends.

Table 4: Vehicle Occupancy Summary (Blue, Expo, and Gold Lines)

		Occupancy Percentage		
Line	**Station**	**Weekday - Day**	**Weekday - Evening**	**Weekend**
Blue	Florence	95%	32%	39%
Blue	103rd Street/Watts Towers	0%	0%	20%
Blue/Green	Willowbrook/Rosa Parks	68%	7%	12%
Blue	Artesia	99%	13%	12%
Blue	Del Amo	96%	8%	29%
Blue	Wardlow	100%	20%	45%
Blue	Willow	88%	6%	13%
Crenshaw	Florence/West	N/A	N/A	N/A
Crenshaw	Florence/La Brea	N/A	N/A	N/A
Expo	Expo/Crenshaw	52%	0%	0%
Expo	La Cienega/Jefferson	68%	23%	100%
Expo	Culver City	99%	53%	100%
Expo	Expo/Sepulveda	7%	8%	10%
Expo	Expo/Bundy	11%	6%	11%
Expo	17th Street/SMC	25%	17%	28%
Gold	Atlantic	75%	4%	20%
Gold	Indiana	71%	10%	19%
Gold	Lincoln/Cypress	95%	26%	36%
Gold	Heritage Square	98%	19%	16%
Gold	South Pasadena	41%	11%	19%
Gold	Fillmore	86%	5%	15%
Gold	Del Mar	38%	25%	0%
Gold	Lake	73%	18%	0%
Gold	Sierra Madre Villa	93%	7%	30%
Gold	Arcadia	88%	15%	33%
Gold	Monrovia	93%	10%	21%
Gold	Duarte/City of Hope	94%	8%	25%
Gold	Irwindale	99%	2%	14%
Gold	Azusa Downtown	99%	8%	21%
Gold	APU/Citrus College	98%	6%	84%

Source: Walker Consultants, 2017

Table 5: Vehicle Occupancy Summary (Green, Orange, Red, and Silver Lines)

		Occupancy Percentage		
Line	**Station**	**Weekday - Day**	**Weekday - Evening**	**Weekend**
Green	Norwalk	100%	5%	13%
Green	Lakewood	104%	5%	25%
Green	Long Beach	53%	2%	10%
Green	Avalon	4%	1%	1%
Green/Silver	Harbor Freeway	58%	3%	18%
Green	Vermont/Athens	3%	4%	3%
Green	Crenshaw	38%	16%	47%
Green	Hawthorne/Lennox	33%	12%	6%
Green	Aviation/LAX	102%	82%	95%
Green	El Segundo	26%	16%	14%
Green	Douglas	87%	30%	30%
Green	Redondo Beach	51%	13%	15%
Orange	Van Nuys	63%	9%	15%
Orange	Sepulveda	40%	9%	7%
Orange	Balboa	83%	30%	13%
Orange	Reseda	50%	8%	11%
Orange	Pierce College	62%	11%	7%
Orange	Canoga	61%	8%	9%
Orange	Sherman Way	24%	12%	17%
Orange	Chatsworth	52%	9%	11%
Red/Purple/Gold	Union Station	73%	35%	58%
Red	Universal City/Studio City	94%	34%	50%
Red/Orange	North Hollywood	100%	36%	53%
Red	Westlake/MacArthur Park	72%	28%	94%
Silver	Slauson	7%	8%	5%
Silver	Manchester	17%	0%	6%
Silver	Rosecrans	21%	1%	7%
Silver	Harbor Gateway Transit Center	80%	7%	17%
Silver	El Monte	100%	18%	12%
Silver	Carson	16%	2%	8%
Silver	Pacific Coast Highway	34%	2%	2%
Total		**73%**	**16%**	**28%**

Source: Walker Consultants, 2017

The stations observed as having the highest parking occupancy (occupancy levels over 90%) are detailed on Table 6.

Table 6: Stations with Highest Vehicle Occupancy

Line	Station	Weekday - Day Occupancy %
Green	Lakewood	104%
Green	Aviation / LAX	102%
Blue	Wardlow	100%
Green	Norwalk	100%
Silver	El Monte Station	100%
Red/Orange	North Hollywood	100%
Blue	Artesia	99%
Gold	Irwindale	99%
Expo	Culver City	99%
Gold	Azusa Downtown	99%
Gold	Heritage Square / Arroyo	98%
Gold	APU / Citrus College	98%
Blue	Del Amo	96%
Blue	Florence	95%
Gold	Lincoln Heights / Cypress Park	95%
Gold	Duarte	94%
Red	Universal City	94%
Gold	Monrovia	93%

Source: Walker Consultants, 2017

BICYCLE OCCUPANCY

Bicycle occupancy at each station is detailed on Table 7 and Table 8. It is broken down by type of bicycle parking apparatus, rack or locker.

Table 7: Bicycle Occupancy Summary (Blue, Expo, and Gold Lines)

		Inventory		Occupied/Rented		Occupancy Percentage		
Line	**Station**	**Rack**	**Locker**	**Rack**	**Locker**	**Rack**	**Locker**	**Overall**
Blue	Florence	12	N/A	1	N/A	8%	N/A	8%
Blue	103rd Street/Watts Towers	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Blue/Green	Willowbrook/Rosa Parks	20	6	0	2	0%	33%	8%
Blue	Artesia	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Blue	Del Amo	10	11	0	8	0%	73%	38%
Blue	Wardlow	8	14	0	12	0%	86%	55%
Blue	Willow	16	6	1	4	6%	67%	23%
Crenshaw	Florence/West	TBD	TBD	N/A	N/A	N/A	N/A	N/A
Crenshaw	Florence/La Brea	TBD	TBD	N/A	N/A	N/A	N/A	N/A
Expo	Expo/Crenshaw	20	N/A	0	N/A	0%	N/A	0%
Expo	La Cienega/Jefferson	24	8	1	8	4%	100%	28%
Expo	Culver City	44	23	17	20	39%	87%	55%
Expo	Expo/Sepulveda	20	16	6	16	30%	100%	61%
Expo	Expo/Bundy	20	16	6	16	30%	100%	61%
Expo	17th Street/SMC	40	32	7	32	18%	100%	54%
Gold	Atlantic	12	6	1	5	8%	83%	33%
Gold	Indiana	10	N/A	0	N/A	0%	N/A	0%
Gold	Lincoln/Cypress	10	N/A	0	N/A	0%	N/A	0%
Gold	Heritage Square	4	N/A	1	N/A	25%	N/A	25%
Gold	South Pasadena	24	N/A	6	N/A	25%	N/A	25%
Gold	Fillmore	20	N/A	2	N/A	10%	N/A	10%
Gold	Del Mar	24	N/A	5	N/A	21%	N/A	21%
Gold	Lake	12	N/A	3	N/A	25%	N/A	25%
Gold	Sierra Madre Villa	10	15	2	14	20%	93%	64%
Gold	Arcadia	40	24	4	24	10%	100%	44%
Gold	Monrovia	40	24	4	21	10%	88%	39%
Gold	Duarte/City of Hope	38	24	2	7	5%	29%	15%
Gold	Irwindale	28	24	0	6	0%	25%	12%
Gold	Azusa Downtown	40	24	2	21	5%	88%	36%
Gold	APU/Citrus College	36	24	2	24	6%	100%	43%

Source: Walker Consultants, 2017

Table 8: Bicycle Occupancy Summary (Green, Orange, Red, and Silver Lines)

		Inventory		Occupied/Rented		Occupancy Percentage		
Line	**Station**	**Rack**	**Locker**	**Rack**	**Locker**	**Rack**	**Locker**	**Overall**
Green	Norwalk	36	40	5	37	14%	93%	55%
Green	Lakewood	22	11	7	6	32%	55%	39%
Green	Long Beach	12	N/A	0	N/A	0%	N/A	0%
Green	Avalon	8	N/A	0	N/A	0%	N/A	0%
Green/Silver	Harbor Freeway	10	N/A	1	N/A	10%	N/A	10%
Green	Vermont/Athens	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Green	Crenshaw	12	4	0	4	0%	100%	25%
Green	Hawthorne/Lennox	8	N/A	0	N/A	0%	N/A	0%
Green	Aviation/LAX	38	20	3	19	8%	95%	38%
Green	El Segundo	14	7	0	7	0%	100%	33%
Green	Douglas	6	11	0	9	0%	82%	53%
Green	Redondo Beach	12	5	0	5	0%	100%	29%
Orange	Van Nuys	12	8	0	2	0%	25%	10%
Orange	Sepulveda	12	11	0	5	0%	45%	22%
Orange	Balboa	6	18	0	12	0%	67%	50%
Orange	Reseda	6	14	0	5	0%	36%	25%
Orange	Pierce College	12	7	2	4	17%	57%	32%
Orange	Canoga	24	22	0	12	0%	55%	26%
Orange	Sherman Way	24	14	2	0	8%	0%	5%
Orange	Chatsworth	32	15	0	6	0%	40%	13%
Red/Purple/Gold	Union Station	74	37	36	29	49%	78%	59%
Red	Universal City/Studio City	16	31	2	23	13%	74%	53%
Red/Orange	North Hollywood	101	41	68	36	67%	88%	73%
Red	Westlake/MacArthur Park	12	0	2	N/A	17%	N/A	17%
Silver	Slauson	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Silver	Manchester	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Silver	Rosecrans	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Silver	Harbor Gateway Transit Center	6	14	3	13	50%	93%	80%
Silver	El Monte	110	8	41	2	37%	25%	36%
Silver	Carson	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Silver	Pacific Coast Highway	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total		**1,207**	**635**	**245**	**476**	**20%**	**75%**	**39%**

Source: Walker Consultants, 2017

Harbor Gateway Transit Center was the only station where bicycle parking achieved at least 80% occupancy overall. However, at several stations, bicycle lockers were highly utilized. In general, bicycle lockers were much more highly utilized, based on locker rental data, than bicycle racks at stations where both options were present.

STATION SCORES

Table 9 and Table 10 detail scores for bicycle infrastructure, pedestrian infrastructure and parking wayfinding based on the scoring methodology outlined in the Work Approach.

Table 9: Score for Bicycle/Pedestrian Infrastructure and Parking Wayfinding (Green, Orange, Red, and Silver Lines)

		Infrastructure		
Line	**Station**	**Bicycle**	**Pedestrian**	**Parking Signage and Wayfinding**
Blue	Florence	Low	Medium	Low
Blue	103rd Street/Watts Towers	Low	High	Low
Blue/Green	Willowbrook/Rosa Parks	Low	High	Low
Blue	Artesia	Low	Low	Low
Blue	Del Amo	Low	Medium	Medium
Blue	Wardlow	Low	High	Low
Blue	Willow	Low	High	Low
Crenshaw	Florence/West	Low	High	N/A
Crenshaw	Florence/La Brea	Low	Medium	N/A
Expo	Expo/Crenshaw	Medium	High	Low
Expo	La Cienega/Jefferson	Medium	High	Medium
Expo	Culver City	High	High	Low
Expo	Expo/Sepulveda	Medium	High	Low
Expo	Expo/Bundy	Medium	High	Low
Expo	17th Street/SMC	High	Medium	Low
Gold	Atlantic	Low	High	Low
Gold	Indiana	Low	High	Medium
Gold	Lincoln/Cypress	Low	Medium	Medium
Gold	Heritage Square	Low	Medium	Medium
Gold	South Pasadena	Low	High	Low
Gold	Fillmore	Low	High	Low
Gold	Del Mar	Low	High	Medium
Gold	Lake	Medium	Medium	Low
Gold	Sierra Madre Villa	Low	Low	Medium
Gold	Arcadia	Medium	High	Medium
Gold	Monrovia	Low	High	Low
Gold	Duarte/City of Hope	Low	High	Low
Gold	Irwindale	Low	Low	Medium
Gold	Azusa Downtown	Low	High	Medium
Gold	APU/Citrus College	Low	High	Medium

Source: Iteris,Walker Consultants, 2017

Table 10: Score for Bicycle/Pedestrian Infrastructure and Parking Wayfinding (Green, Orange, Red, and Silver Lines)

		Infrastructure		
Line	**Station**	**Bicycle**	**Pedestrian**	**Parking Signage and Wayfinding**
Green	Norwalk	Low	Medium	Low
Green	Lakewood	Low	Medium	Low
Green	Long Beach	Low	Low	Low
Green	Avalon	Low	Low	Low
Green/Silver	Harbor Freeway	Low	Low	Low
Green	Vermont/Athens	Medium	Low	Low
Green	Crenshaw	Low	Low	Low
Green	Hawthorne/Lennox	Low	Low	Low
Green	Aviation/LAX	Low	Medium	Low
Green	El Segundo	Low	High	Low
Green	Douglas	Low	High	Low
Green	Redondo Beach	Medium	Medium	Medium
Orange	Van Nuys	Medium	High	Low
Orange	Sepulveda	Medium	Medium	Low
Orange	Balboa	Medium	High	Low
Orange	Reseda	Medium	High	Low
Orange	Pierce College	Medium	High	Low
Orange	Canoga	Medium	Medium	Low
Orange	Sherman Way	Medium	High	Low
Orange	Chatsworth	Medium	High	Medium
Red/Purple/Gold	Union Station	Low	High	Low
Red	Universal City/Studio City	Low	High	Low
Red/Orange	North Hollywood	Medium	High	Low
Red	Westlake/MacArthur Park	Medium	High	Low
Silver	Slauson	Low	Medium	Low
Silver	Manchester	Low	Medium	Low
Silver	Rosecrans	Low	Medium	Low
Silver	Harbor Gateway Transit Center	Low	High	Medium
Silver	El Monte	Medium	Medium	Low
Silver	Carson	Medium	High	Low
Silver	Pacific Coast Highway	Low	Medium	Low

Source: Iteris, Walker Consultants, 2017

Due to the lack of Class I and Class II bicycle facilities within one block of stations, many (almost 65%) earned a low score for bicycle infrastructure. The majority of stations (85%) earned medium or high scores for pedestrian infrastructure. Culver City was the only station to score high for both bicycle and pedestrian infrastructure.

As the two Crenshaw Line stations with parking (Florence/West and Florence/La Brea) were still under development, we were only able to survey the bicycle and pedestrian infrastructure at the proposed parking facility locations. Both scored low on bicycle infrastructure. For pedestrian infrastructure, Florence/West scored high while Florence/La Brea scored medium.

Over 75% of stations earned a low score for parking wayfinding while the rest earned a medium score.

INTELLIGENT TRANSPORTATION SYSTEMS INFRASTRUCTURE

As part of the assessment, our team identified the availability of intelligent transportation systems ("ITS") infrastructure, as its presence may assist with parking management through the implementation of technology. The following stations have ITS infrastructure within one block of the station.

- 17th St./SMC
- 103rd St./Watts Towers station
- Arcadia
- Aviation/LAX
- Azusa Downtown
- Carson
- Culver City
- Hawthorne/Lennox
- Heritage Square
- Irwindale
- Lake
- Lincoln/Cypress
- Sierra Madre Villa
- Wardlow

In addition, the future Florence/La Brea station had ITS infrastructure within one block of the station. Metro may be able to utilize the existing ITS infrastructure near these stations as it implements parking guidance systems throughout the system.

04 Section

Technology, Enforcement and Operations Overview

TECHNOLOGY, ENFORCEMENT, AND OPERATIONS

TECHNOLOGY OVERVIEW

As part of the Pilot Program, Parking Management System devices, included TAP Card/ridership verification, License Plate Recognition (LPR), and pay machines are being installed at all Pilot Program Metro parking facilities to enhance customer service and convenience, and increase the efficiency of Metro's efforts to manage its parking supply. A mobile payment solution is also available for the Pilot Program locations. The LPR systems being installed can capture all vehicles entering and exiting Metro parking facilities. The pay machines have the capability of reading TAP cards for ridership verification and provide pay by license plate functionality. Pay machines are capable of accepting cash and credit cards on-site. Patrons can simply enter their license plate number and present their TAP card to obtain the transit parking rate and pay for their parking fee prior to exiting the parking facility. The LPR system captures the vehicle's exit and complete the transaction. The LPR system retains records for remaining vehicle inventory and outstanding transactions (exits without processing payment) for post-processing of bills.

PAY-BY-PLATE

In the pay-by-license plate mode, the patron is not required to remember the parking space or return to the vehicle with a receipt to put on the vehicle dashboard, facilitating the experience and convenience. Instead, the patron enters the vehicle's license plate number and selects the amount of parking time/flat rate. No receipt is required for enforcement, but there can be a receipt for proof of transaction.

Enforcement is conducted with a vehicle mounted, LPR system that scans the license plates of all parked cars and compares it to a list of paid license plates. Enforcement can also be conducted with a hand-held unit, either scanning or manually entering the license plate numbers.

MOBILE LICENSE PLATE RECOGNITION

Relatively recent improvements in the capability of mobile LPR parking enforcement has allowed for the successful application of technology in the pursuit of planning and transportation goals. Mobile LPR consists of cameras mounted on an enforcement vehicle that 'patrols' the streets. The cameras are typically placed on the left and right side of the patrol vehicle and record the rear (and/or front) license plates of parked vehicles. System software compares the plate number to databases of paid or permitted license plates, to determine if the vehicle has the right to park in that location at that particular time. A processor is installed in the vehicle's trunk or in the floor, and a laptop is installed on the dashboard, between the front seats.

The LPR software integrates with multi-space meter software, pay-by-cell software (discussed below), permit software, and other databases such as law enforcement agencies to not only identify paid and unpaid parkers, but also stolen or otherwise significant license plates (Amber Alerts or other 'Be on the lookout' (BOLO) vehicles). If the LPR camera reads a plate that is not recorded as registered or paid, or has been otherwise identified as searchable, an audible alarm ("ping") sounds to alert the driver, who can then take the appropriate action.

Figure 4: Mobile LPR Enforcement Vehicle

At a driving speed of just 15 MPH, mobile LPR is more than five times more efficient than foot-patrol, as the average foot patrol speed is less than 3 MPH. Note that the system won't know the exact time that the vehicle parked, but will utilize multispacer meter ("MSM") and pay-by-cell ("PbC") payment data, as well as the time that the vehicle was first recorded by the system.

The efficiency in coverage makes up for a less than 100% accuracy rate, and enforcement staff always have the opportunity to confirm the license plate on the in-vehicle laptop monitor prior to issuing a citation. This prevents citations from being issued due to a camera error.

STATIONARY LICENSE PLATE RECOGNITION IN GATELESS SCENARIOS

Stationary LPR cameras can be installed at the entrances and exits of ungated facilities to perform the same functions as mobile LPR enforcement. LPR system software would receive payment data from MSM and PbC software to determine if any vehicles that entered the garage did not pay. Enforcement could cite the unpaid vehicles. Installing cameras at the exits of the facilities will enable Metro to know the duration of stay for each vehicle, which vehicles are still present in the garage for enforcement, and will also provide occupancy counts.

This technology is similar to electronic tolling. Rather than placing citations on vehicles, Metro could elect to mail citations to vehicle owners ("post-processing"). This eliminates the need for enforcement to physically go to each facility before the unpaid vehicle exits, resulting in extremely high capture rates; however, collections will still be required.

REAL TIME ENFORCEMENT HANDHELDS

Enforcement handhelds enable staff to generate automated parking citations. LPR identifies paid and unpaid vehicles; however, LPR does not produce citations. Enforcement handheld devices with two-way communications enable enforcement officers to receive data directly from MSM software, PbC software and other peripherals such as back-end citation management systems and/or motor vehicle checks. All citation information can be sent in real time from the handheld to the courts and is available immediately as opposed to a batch mode process. Parking enforcement officers can work more efficiently because all violation data on handhelds is in real time.

Supervisors can also monitor staff locations and progress. Enforcement handhelds that do not communicate in real time store all citation information in the device, and download it to the server at the end of the officers' shift.

Figure 5: Conventional Enforcement Handheld Unit, a Tablet and Smart Phones

Source: T2 Systems, Engadget.com, 2016. In Miami Beach, Fl handheld units are used for enforcement.

GATELESS ACCESS

Permits are typically used to identify vehicles as authorized to park in gateless surface lots. Decals, stickers and hang tags have been the most common type of permit for years. Mobile LPR technology enables the vehicle's license plate to serve as the parking permit, for both monthly permit holders and daily parkers. There are significant benefits to using the license plate as the credential for parking:

- The motorist already has the license plate, so there's no need to come to an office to pick it up or have it mailed; which is more convenient for the motorist and saves time and resources for Parking Services.
- The license plate is a state issued credential, providing a higher level of integrity and less opportunity for misuse or fraud.
- Registration is typically done online, and can be done 24/7. Permit holders enter their own data, saving time and resources for Parking Services.
- Permit holders can register more than one vehicle, but the software will alert enforcement if more than one vehicle is detected as parked at the same time.
- The permit database can assign or segregate different license plates with different facilities.
- The greatest benefit is likely the opportunity to enforce via license plate recognition.

PARKING GUIDANCE SYSTEMS ("PGS")

A Parking Guidance System ("PGS") is an information network that provides parking availability and directional guidance to motorists. PGS utilizes dynamic signage to display occupancy information and/or directional arrows at key decision points so that motorists know what to expect and where to find parking as they drive to or through a facility.

Metro released an RFP in January 2016 seeking a parking guidance system supplier for the installation and ongoing operating service of a parking guidance system for 83 facilities to support the countywide transit system. This

project will be implemented as a multi-year, multi-phase project, over a three-year period, commencing on July 1, 2016, and ending by June 30, 2019. Metro has been seeking the following features as part of the PGS:

- Real-time occupancy from multiple parking facilities, global lot capacity, space availability and percent occupancy available 24 hours per day, seven (7) days per week.
- Support for lane scenarios with both single and dual direction.
- A public, mobile device compatible, web page for transit patrons to see the current occupancy counts and number of available spaces at each parking facility.
- Configurable system to allow for impending expansions through system configuration rather than hard coding or source code changes.
- Automated push notifications to defined users when field hardware related to the count solution goes offline.
- Counts per lane to reconcile parking revenue.

TAP CARD VERIFICATION TECHNOLOGY

A parking patron is considered a transit user if they use the system, or transit provided by other systems using a TAP card, within 96 hours of parking at a Metro Transit Parking facility. The time of 96 hours can occur prior to or after the patron parks their vehicle. The TAP card reader will allow the automated parking management system to verify transit versus non-transit riders. TAP card readers will be installed on the pay machines. Transit patrons can present their TAP card at the pay machine. Patrons park and pay upon entering the facility, if the TAP card identifier determines that no TAP transactions occurred 96 hours before or after parking, a violation can be issued.

Transit patrons must pay for their parking using their license plate as the credential. Pay machines accept cash and credit card payments. This function will apply to all daily transit users who pay for their parking at the pay machines upon their return to pick up their vehicles. Transit patrons can also use the mobile payment option to pay. Patrons will be able to simply download the pay by phone app and only need to register once with their personal and TAP card information. Transit user can use the mobile app to pay, using their license plate as the credential. Since the TAP card information had already registered, the TAP verification will be automated. Any un-identifiable parking customers or unpaid transactions will be recognized by the exit LPR system, then submitted to DMV through Metro's parking permit processor. The registered owner of the vehicle will then be issued a violation of unpaid transaction and billed for the violation within 21 calendar days.

PARKING FEE TRANSACTIONS

LA Metro's parking management program should ultimately include 3 types of parking fee transactions: Daily Parking, Monthly Parking and Carpool. The following provides a detailed description of how each type of transaction will take place.

Daily Parking Transactions

All the parking facilities will operate under an automated configuration. No cashiers will be available at the entrance or exit lanes, and patrons are not required to stop at the entrance or exit lanes. The LPR system will recognize and retain an inventory record for parking fee collection processing. The parking fee will be determined by the Transit User Identification Process described above. Customers can choose to pay for their parking fee at the pay machines or use a mobile pay option. Once the parking rate is determined, the patron's license plate will be notated and their payment (cash or credit card) will be processed. Their license plate will be entered into the system and serve as proof of payment, and a receipt will be provided by request. Patrons can exit the parking facilities and the LPR system will capture the exit and close the Daily Parking transaction. Any un-identifiable parking customers or unpaid transactions will be recognized by the exit LPR system, then submitted to DMV through Metro's parking permit processor.

Monthly Parking Transactions

The patron will arrive at the parking facility and the LPR system will recognize its eligibility. Once verified, the patron may park their vehicle without accruing any additional parking fees. A physical monthly parking permit will also be displayed on the vehicle for enforcement purpose. If the patron's permit is not valid, they will be responsible for paying the appropriate daily parking fee per the processes described above. Monthly Parking permits will be sold on a monthly basis and will be available for online purchase. These permits will require transit users to provide their TAP card number in order to be eligible for the permit. Once issued, the patron must maintain a minimum of ten (10) daily transactions using their TAP card, per month, in order to renew their permit for the following month.

Monthly Carpool Program

A Monthly Carpool Parking Program will be implemented at all locations. At selected locations, a Carpool Program may be the only monthly parking option to reduce parking demand. In order to be eligible for this program, a minimum of 3 patrons must register their TAP card numbers and license plate numbers through the online customer portal. In order to retain eligibility, each registered TAP card must maintain a minimum of ten (10) daily transactions, per month. Once registered and paid, a Monthly Carpool Permit will be issued. The LPR system will also recognize its eligibility and ensure only one out of the three registered vehicle in the account entered the facility. Only one of the registered vehicles will be able to enter the parking facility with the Carpool Permit. If a second vehicle registered under the Carpool Permit enters the parking facility, they will be expected to pay the prevailing daily parking rate.

PARKING RATES AND PERMIT FEE

All parking rates and permit fees will be collected according to the adopted Metro Parking Rates and Permit Fee Resolution without exceptions. The Daily Parking rate calculation is based on a 24-hour cycle. Monthly Permit Parking is based on the first day to the last day of the calendar month cycle. All parking rates and permit fees are applied 24 hours a day, 7 days a week. Pricing Adjustments Staff will assess the impacts of the Pilot Program every two (2) months, identifying occupancy levels (targeted at 85%), any impacts on ridership and other factors based

on feedback from transit patrons and the parking attendants. Based on these factors, parking rates may be adjusted. The Pilot Program will have a maximum parking fee of $5.00 daily and any pricing adjustments will require 30 days' notice (both increases and decreases). Pricing adjustments shall not occur more frequently than every two months.

PARKING ENFORCEMENT REVIEW

Parking enforcement is currently conducted via handled by Metro Transit Security and contracted law enforcement, whose primary focus is to provide safety and security at Metro properties. This expansive purview limits their ability to properly enforce parking regulations along Metro's expanding transit system.

Transition and outsourcing of parking enforcement to non-sworn officers was introduced to the Metro Board as one of Metro's RAM ("Risk Allocation Matrix") initiatives in January 2016. The Metro Board approved the transition of parking enforcement services at the September 2017 Board meeting, authorizing the transition of parking enforcement duties from Metro Security to Parking Management. In addition, the contract for parking enforcement services was also approved and Parking Management's enforcement team is expected to be fully operational in early 2018.

Metro currently parks approximately four million cars a year at 87 parking facilities throughout Los Angeles County and issues approximately 5,000 parking citations per year. As the transit system continues to expand, so will the need to administer a more proactive and focused parking enforcement management program.

The goal of implementing Parking Enforcement across the Metro system is to change the behavior of parking patrons influence occupancy levels by deterring non-transit use where applicable, and to ensure that Metro's parking regulations in service of broader customer service and policy goals are implemented. To facilitate this, paid locations will be equipped with License Plate Recognition Systems that link to Parking Enforcement vehicles equipped with Mobile LPR. In non-paid locations, Officers should enforce parking regulations, reporting items requiring Metro's attention, and be a visual presence for Metro to further giving a sense of safety and security to patrons.

PARKING ENFORCEMENT TRANSITION

Transitioning the parking enforcement duties to the Parking Management unit will allow Metro Transit Security and contracted police forces to reallocate their resources to further focus on safety and security along Metro's transit system. This move will also enhance safety at Metro parking facilities with additional personnel on site consistently and with dedicated staff resources.

As part of the Supportive Transit Parking Program (STPP) Master Plan study, the Walker team conducted a parking enforcement analysis of Metro-operated parking facilities. The analysis indicated that the parking citation issuance at Metro parking facilities is significantly lower than other comparable transit agencies. Metro issued approximately 5,000 citations (0.0013% of total cars parked) which is 90% fewer citations per space per year compared to two other sizable transit agencies. Within the 5,000 issued citations, only half of Metro's parking citations were Parking Ordinance related.

Table 11: Comparison of Citation Issuance with Other Transit Agencies

Agency	Number of Spaces	Parking Citations	Citations/Space/Year	Citation Issuance Relative to Metro
Transit Agency 1	48,000	98,700	2.06	8.5
Transit Agency 2	50,400	132,000	2.62	10.8
Metro	21,200	5,140	0.24	n/a

Source: Walker Consultants, 2017

Walker is therefore recommending that Metro utilize non-sworn officers and new innovative solutions to improve the performance of parking enforcement service while also allowing Metro Security and contracted law enforcement to further focus on safety and security.

Transitioning the parking enforcement duties to the Parking Management unit will allow Metro Transit Security and contracted law enforcement to reallocate their resources to further focus on safety and security along the Metro transit system. The move will also enhance safety at Metro parking facilities with additional personnel on site consistently and with dedicated staff resources.

COST ANALYSIS

Based on a recent coordinated parking enforcement review, consisting of four LASD officers and three Metro support staff issued 35 parking citations in a six-hour time period. This effort only covered three Metro parking facilities along the Expo Line. The labor cost of LASD officers by itself was over $3,000, significantly higher than the citation revenue. If Metro had utilized non-sworn officers with the proposed new innovative solutions for the same enforcement effort, the total labor cost for issuing 35 citations at three locations would have been $40.00, as shown on the following table.

Table 12: Coordinated Parking Enforcement

	Labor Hourly Billing Rate	Labor Cost	Labor Cost Per Citation
MTA Security	$ 64.00	$ 1,536.96	$ 43.91
LASD	$ 140.00	$ 3,360.00	$ 96.00
Parking Enforcement	$ 20.00	$ 40.00	$ 1.14

Source: La Metro, 2016

Through the new parking enforcement program, the estimated labor cost will result in approximately $1.00 per citation.

Based on a comparable analysis by Walker, an estimated 25,000 parking citations should be issued per year. However, Walker is recommending that Metro staff take a softer and customer service based approach on the parking citations issuance during the transition year. Therefore, Walker projects 15,000 parking citations to be

issued. The average parking citation per Metro's Parking Ordinance and Fee Resolution is $58.00 which is expected to generate approximately $870,000 in gross parking citation revenue during year one.

Parking Management Alternatives

05 Section

PARKING MANAGEMENT ALTERNATIVES

The objective of the Pilot Program is to implement a parking solution to retain and improve parking resources for Metro transit patrons. The Pilot Program is currently underway and will be expanded to a total of fifteen (15) locations by mid-2018. It is testing approaches to a parking fee structure, fee collection, facilities management, parking management equipment and enforcement needs. Based on the initial results of locations already implemented, Walker recommends that the Pilot Program be converted to a permanent program and implemented system-wide.

The Pilot Program utilizes a "toll road" concept parking management system. The system will combine a License Plate Recognition ("LPR") system, TAP card ridership identifier engine and payment processing solutions. The program operates as a fully automated program, eliminating the need for onsite parking facility cashiers. On-site parking attendants will be available to provide customer service in an ambassadorial role only and will not process revenue transactions. The Pilot Program is discussed in greater detail in Section 7 of this report.

Not every station with parking will necessarily transition to paid parking in the near-term. Decision flow charts and checklists have been created to assess the parking situation on a station by station basis, and have been split into three categories:

Alternative 1

- High Parking Demand Stations (90%+ utilization).
- Parking facilities within this category are either already nearing, at, or over-capacity. At several high demand locations, the parking facility fills up by 7:00 AM or earlier. High demand stations are in critical need of parking management and should be prioritized for transition to the Parking Management Program. It is recommended that locations which exceed 90% utilization do the following:
  - Implement paid parking.
  - Implementation of the transit verification system.
  - Should parking demand continue to reach capacity, identify resources to increase the parking inventory through shared use and other non-capital improvements.
  - Work with local jurisdictions to limit transit rider parking spillover and/or improve and implement parking management programs around the station areas.
- This parking management path is for stations that experience high parking occupancy even after transit rider verification steps are taken.
- Example of high demand stations currently in the Pilot Program include North Hollywood and Universal where TAP verification has been used to reduce non-transit parkers in the lot with an increase and maintenance of parking availability throughout the day.

Alternative 2

- Medium Parking Demand Stations (70% to 89% utilization).
- Parking demand at medium demand stations is nearing, but not yet at capacity, with parking generally available throughout the day. Medium demand locations should be transitioned to the Parking Management Program after the high demand locations. It is recommended that medium parking demand stations do the following:
  - Implement a paid parking fee.

  - Implement the Transit Verification System.
  - Paid parking for non-transit users if availability exists, during the weekday and on nights and weekends – shared parking of existing Metro facilities.
  - Work with local jurisdictions to limit transit rider parking spillover and/or improve and implement parking management programs around the station areas.
- This parking management path is for stations that experience medium occupancy after transit rider verification steps are taken, but are not expected to reach capacity on a regular basis with implementation of paid parking.

Alternative 3

- Low-occupancy stations (below 69% utilization) .
- Low demand stations cover a wide range, from stations that may be nearing medium demand status, to stations with very low parking occupancy rates. They have the lowest priority for entry into the Parking Management Program, but are an important component of the overall system. For example, parking demand from a nearby high demand station could be shifted to a low demand station, helping to balance the system and increase overall availability and access to transit for riders. It is recommended that lower parking demand stations do the following:
  - Free parking for transit riders.
  - Sell parking to non-transit riders and adjacent uses where opportunities exist.
  - Actively market parking availability to increase occupancy and reduce utilization at nearby high demand locations.
  - Consider Shared Parking Agreements with adjacent land uses that may need additional parking.
  - Consider divestiture of some or all of a station's parking assets if parking demand remains low.

In cases and locations where Metro's parking spaces were found to be underutilized on a regular basis, the Pilot Program was used to make these spaces available to serve the adjacent community including. For example:

- Monthly parking has been made available to non-transit users at Expo/Sepulveda, where parking demand has remained low. In July 2017, the Board authorized Metro to enter into a monthly parking program to provide 100 monthly parking for $120.00 per parking space per month for construction workers of an adjacent development project. Spaces are assigned in the upper level of the facility to minimize disruption to transit patrons. The program is flexible; these parking passes may be cancelled if transit parking demand increases.
- Parking to serve customers of adjacent commercial uses has been made available for a daily rate with time limits for non-transit riders at Atlantic Station, after 11:00 AM once typical demand for transit parking has been met and when the demand for neighborhood customer parking increases.
- In Monrovia, available parking spaces on weekends and at night, when the demand for transit parking is low, have been made available to serve customers of the commercial district without TAP card verification.

Opportunities to leverage parking, and development, along transit lines and corridors have also been explored as part of this effort, recognizing that parking along an individual line may operate as one comprehensive system, thereby presenting efficiencies and opportunities for management and building transit-oriented development. For example, Metro's North Hollywood and Universal City parking facilities both park transit riders, from the San Fernando Valley and beyond, who access the Metro Red Line for trips to Hollywood, Downtown and other parts of the Metro system.

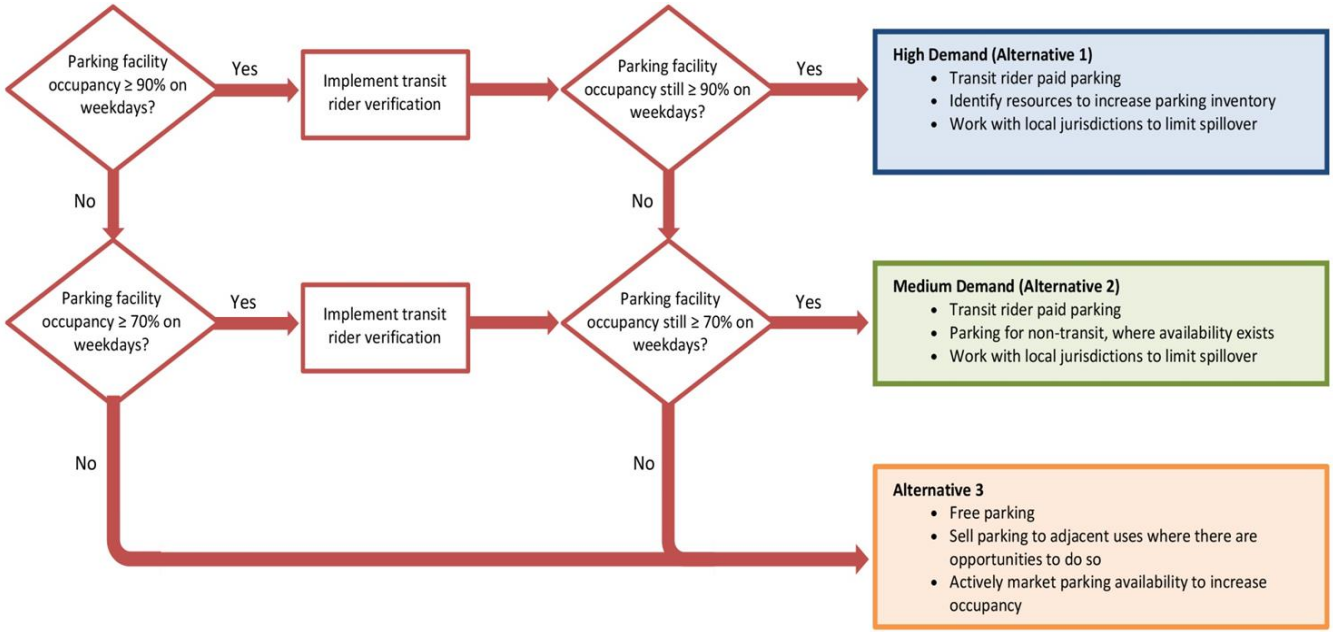
The STPP analysis explored the advantages and opportunities to build transit-oriented development at the North Hollywood station by concentrating the parking supply for commuters at Universal City, which may be less suited for development but offers the opportunity to provide parking. Under this scenario, more residential, transit-oriented development is possible in North Hollywood while maintaining a reasonable parking supply for transit riders who must drive to access the Red Line. Appendix 4 contains the North Hollywood shared parking analysis and Universal City financial feasibility study prepared as part of the STPP.

Figure 6 summarizes the decision flow chart for Metro parking facilities including the three alternatives for managing parking at each location.

In both the medium parking demand and low parking demand scenarios, the potential for exploring if Metro's parking facility can be shared with the community as a public benefit should be explored. Figure 6 summarizes the decision flow chart for Metro facilities where non-transit riders can possibly be accommodated.

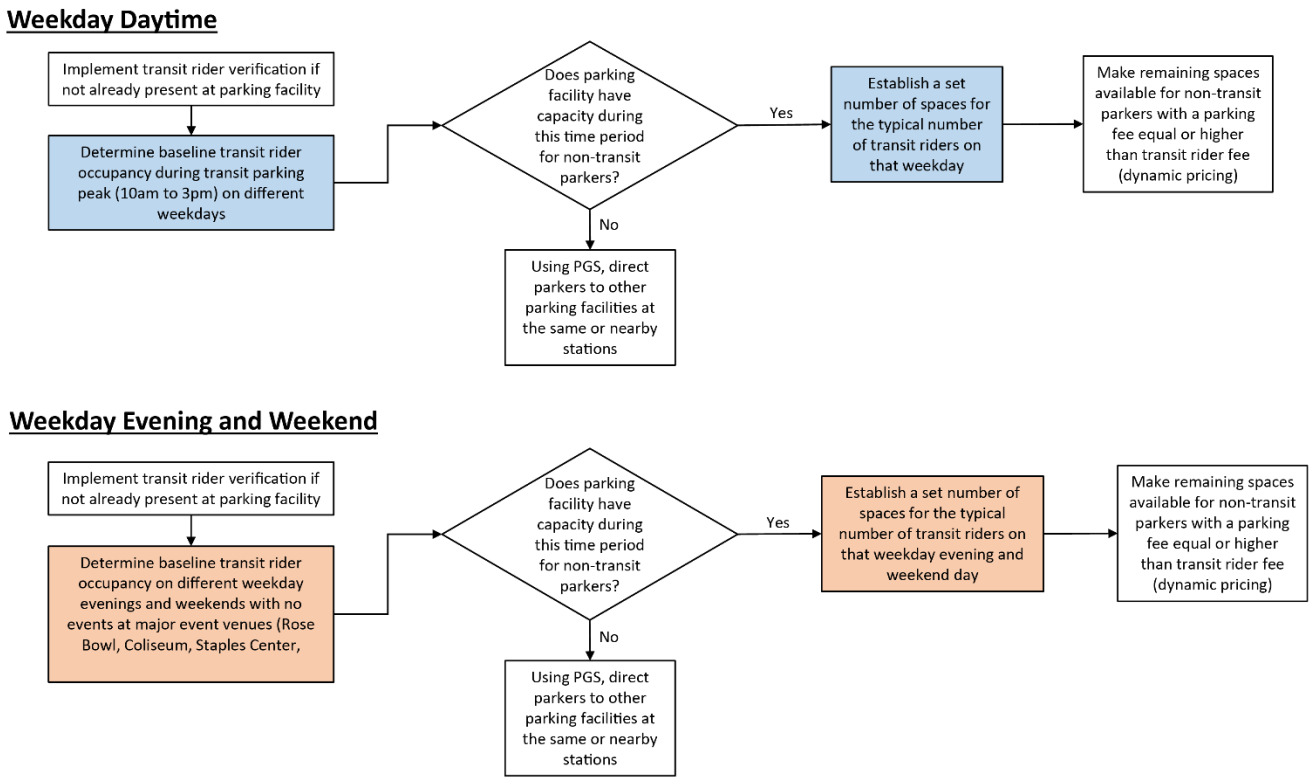
In addition to stations that already exist, parking management and proactive planning are needed for stations and parking at planned future Metro facilities such as the Gold Line II extension and the Crenshaw line.

Figure 6: Parking Management Program Decision Flowchart



Source: LA Metro, Walker Consultants, 2017

Figure 7: Non-Transit Rider Parking Management Program Decision Flowchart



Source: LA Metro, Walker Consultants, 2017

Parking Planning and Design

06 Section

PARKING PLANNING AND DESIGN

Parking planning and design consists of a Long-Range Parking Planning Toolkit to properly size parking facilities for transit, not only for current needs but also considering the impact of the following:

- Quickly changing auto-related technologies and trends.
- Land use patterns.
- The desirability for (joint) development on valuable sites located on or adjacent to transit stations.

LONG-RANGE PARKING PLANNING TOOLKIT

As part of the STPP a Long-Range Parking Planning Toolkit was developed to guide the planning of parking facilities along future rail corridors. The Toolkit is intended to help planners assess both the type and amount of parking planned at future facilities. The Long-Range Parking Planning Toolkit asks planners to identify and consider data in the following 11 categories, and is intended to foster a deliberate, forward-thinking process for how Metro plans and manages parking in the future.

- Projected service area of each station
- Distance between stations
- Station area demographics such as household income and vehicle ownership
- Projected boardings at each station
- Existing public transit near the station
- Existing parking supply and parking demand around the station
- Operational characteristics of the existing parking supply
- Nature of surrounding land uses
- Future development plans around the station
- First/Last mile connections
- Parking demand model output

PARKING DEMAND MODEL

For long-range parking planning, projecting the needed transit parking capacity is critical. The Walker team developed a quantitative parking demand model for transit as part of the Supportive Transit Parking Program to provide a tool to project parking demand at both existing, new and future facilities for a range of pricing from free to $5.00 per day.

PARKING DEMAND MODEL OVERVIEW

The parking demand model is comprised of four components.

- Base data
- Station typology assignment
- Demand ratios
- Elasticity curve

BASE DATA

The base data in the parking demand model consists of:

- Parking occupancy at all stations with parking that were opened at the time of data collection.
  - Collected by Consultant Team between December 2015 and February 2016.
  - Data was not collected during the last two weeks of December and the first week of January due to impacts of the holidays.
- Weekday boardings by hour data provided by Metro (FY 2015 weekday average).
- TAP card activity provided by Metro.
  - Data from the period 11/2/15 to 11/6/15.
  - Data in aggregate for period indicating total taps and number of first taps on rail. Non-first taps are assumed to have arrived at the rail station using bus service.

To project riders per parked car, Walker assumed 1.1 cars per space each day (turns per space) and 1.1 riders per car. These are based on estimates informed by TCRP Report 95 Chapter 3. Riders per car has been adjusted down from the 1.2 stated in TCRP Report 95 due to our own observations.

STATION TYPOLOGY ASSIGNMENT

Six station typologies were established based on location within the system and in some cases the type of station.

- Mid-point-suburban – suburban station that is mid-point in the system (e.g. Monrovia, Arcadia)
- Mid-point – station that is mid-point in the system (e.g. Douglas, Heritage Square)
- Terminus-suburban – a terminus station (e.g. Willow, Norwalk)
- Terminus – urban – a terminus station in an urban location (e.g. North Hollywood, Culver City)
- Terminus overflow – station that receives overflow demand from a terminus station (e.g. Wardlow, Universal City)
- Transfer – a station that serves as a transfer point. Only Willowbrook Station applies.
- Transit hub – a station that serves as a transit hub with multiple bus lines. El Monte and Harbor Gateway Transit Center fall under this typology

DEMAND RATIOS

Three different demand ratios were developed to assess parking demand at transit stations. These are the three methods to estimate demand at a given station.

- Parked cars as a percent of total weekday boardings using a specific station ratio.
- Parked cars as a percent of total weekday boardings using a typology ratio. The typology ratio is based on a weighted average (by parked cars) of high occupancy and high capacity locations.
- Parked riders as a percentage of first tap riders from opening to 10:00 AM. In case this value exceeded 100% (due to poachers – those who park at a transit station but do not ride transit), we adjusted it to 100%. Parked riders are based on the assumption of 1.1 riders per car.

The rationale for using different demand ratios is they would provide a range of values that result in a reasonable estimate.

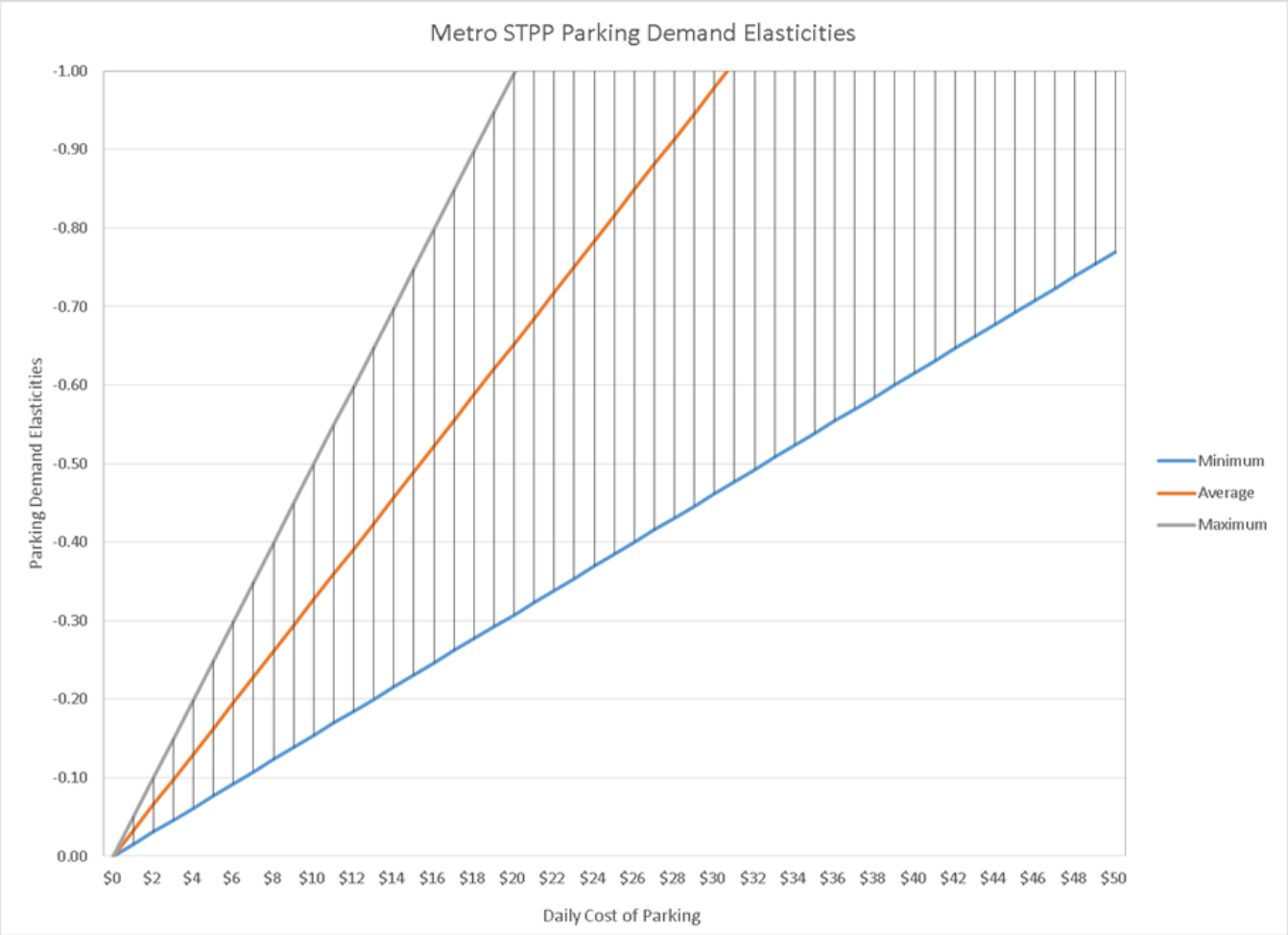
ELASTICITY CURVE

An incremental logit model was utilized to develop parking demand elasticities that reduce parking demand as the cost of parking is increased. The baseline is free parking as all Metro stations with parking currently offer free parking. Each additional dollar results in a larger reduction in parking demand. Minimum and maximum values were developed. We have applied the average values in the model.

Note that this elasticity curve only reflects transit parking behavior. The impact on demand of non-transit riders parking at Metro parking facilities is unknown.

The following figure shows currently assumed parking demand elasticity curves that have been developed for the model.

Figure 8: Parking Demand Elasticity Curve



Source: Iteris, Inc.

PARKING DEMAND MODEL EXAMPLE

The table below illustrates the model output for a hypothetical terminus station with the following attributes:

- 1,000 weekday boardings, 350 of which are from open until 10:00 AM
- 1.1 turns per parking space
- 1.1 transit riders per vehicle

Table 13 summarizes the output of the parking demand model for this hypothetical station.

Table 13: Projected Parking Demand Example

Parking fee of $0.00/day

	Peak Demand	Riders
Low	278	336
High	350	424
Average	314	380

Parking fee of $1.00/day

	Peak Demand	Riders
Low	269	325
High	339	410
Average	304	368

Parking fee of $2.00/day

	Peak Demand	Riders
Low	260	315
High	327	396
Average	294	356

Parking fee of $3.00/day

	Peak Demand	Riders
Low	251	304
High	316	382
Average	283	342

Parking fee of $4.00/day

	Peak Demand	Riders
Low	242	293
High	304	368
Average	273	330

Parking fee of $5.00/day

	Peak Demand	Riders
Low	233	282
High	293	355
Average	263	318

Source: Iteris Inc., Walker Consultants, 2016

The Parking Demand Model is intended for use in projecting parking demand and parking facility sizing at future stations. Pricing, ridership and parking demand data from the Pilot Program locations will be used to update and refine the model going forward.

PARKING DESIGN TOOLKIT

The purpose of the Parking Design Toolkit is to establish reasonable and appropriate parking design standards that will serve and meet Metro transit patrons' parking needs. These design standards and the Toolkit will ensure that new parking facilities built to serve Metro's transportation system provide an appropriate level of safety and service that meets industry standards and best practices. The parking design standards and Toolkit are meant specifically for Metro parking facilities and are intended to be a guide and not a complete set of design and construction specifications.

The Long-Range Parking Planning Toolkit and Parking Design Toolkit are included in Appendix 5.

Parking Management Pilot Program

07 Section

PARKING MANAGEMENT PILOT PROGRAM

The Parking Management Pilot Program ("Pilot Program") was created to test technology, policy, operations, and planning options explored during the Master Plan process to determine whether the components of the plan are sufficient to fulfill Metro's policy goals. Key items tested in the early Pilot Program implementations were pricing and permit strategies, transit rider verification technology, gateless operation and payment options.

Implementation of the Pilot Program began in May 2016 and will encompass the following 15 stations:

- EXPO 2 (17th Street, Expo/Bundy and Expo/Sepulveda) –May 22, 2016
- La Cienega/Jefferson – Implemented March 1, 2017
- North Hollywood & Universal – Implemented April 24, 2017
- APU Citrus, Irwindale, and Monrovia – Implemented June 26, 2017
- El Monte & Atlantic – Implemented August 28, 2017
- Norwalk, Lakewood, Aviation, and Crenshaw – Implementing mid-2018

The objective of the Pilot Program is to implement a parking solution to retain and improve parking resources for Metro transit patrons. The Program is testing approaches to a fee structure, fee collection, facilities management, parking management equipment and enforcement needs. Based on the initial results at locations already implemented, Walker recommends the implementation of the program system-wide at up to 39 stations.

The Pilot Program utilizes a "toll road" concept Automated Parking Management System. The system combines an LPR system, TAP card ridership identifier engine, and payment processing solutions. The program operates as a fully automated program, eliminating the need for onsite parking facility cashiers. On-site parking attendants will be available to provide customer service only and will not process payment transactions.

Not every station with parking will transition to paid parking in the near-term. Decision flow charts and checklists have been created in support of the aforementioned parking management alternatives in order to assess parking on a station by station basis.

The key findings from the Pilot Program to-date are as follows:

- Transit rider verification system is a crucial and necessary step in transitioning locations to the parking program. While the Facility Assessment gave the STPP team an understanding of locations where parking availability was being impacted by the presence of non-Metro riders utilizing Metro's free parking facilities, the scale of this non-transit rider parking at some locations, notably North Hollywood and Universal, exceeded initial projections. Transit rider verification is essential to protecting Metro's parking supply for its intended users.
- Groups of stations and transit lines need to be analyzed together. One-off implementation at a station without consideration of adjacent locations could lead to unforeseen circumstances.
- In some cases, the Parking Management Program leads to an increase in transit rider parking spillover into on-street parking and nearby off-street facilities. The issue of spillover should be proactively addressed, with Metro working with the affected jurisdiction to formulate solutions.

- The Parking Management Program should be utilized to improve availability of parking at a high demand location, while also increasing utilization at formerly underutilized locations. The spaces Metro leases for the Expo/Crenshaw station represent a fixed cost whether they are used or not. By reducing parking at the Culver City station and implementing the Pilot Program at La Cienega/Jefferson, utilization of this resource has greatly increased.
- The gateless system works, as it eliminates egress and ingress problems for patrons entering/exiting a facility at a location like the Atlantic station on the Gold Line where Parking Access and Revenue Control equipment would have either necessitated the loss of many parking spaces in the structure or resulted in queue spillback onto a major arterial during peak ingress. In addition, the gateless system also supports Parking Management's parking enforcement program through the integration of the system parking and operations program into one platform.

Case studies from the Culver City station and the Pilot Program are provided below.

CASE STUDY EXPO LINE – CULVER CITY CLOSURE & PAID PARKING AT LA CIENEGA/JEFFERSON

On February 14, 2017, the parking lot at the Culver City Expo Line station was closed as the first step in the multiyear construction of a large-scale transit development at the site, which when complete will also provide some parking for Metro riders. The Culver City lot had 568 parking spaces, and was one of the most utilized parking lots in the Metro system, often filling to capacity before 9:00 AM. Metro has an agreement with the City of Culver City, wherein approximately 235 parking spaces in the City's nearby Ince parking structure are reserved for Metro parkers at the $3.00 daily metro rate with TAP validation. Shortly after the Culver City station lot was closed, the closest free parking option in the Metro system, the parking structure at the La Cienega/Jefferson Expo station, was converted to paid parking at a rate of $3.00 per day.

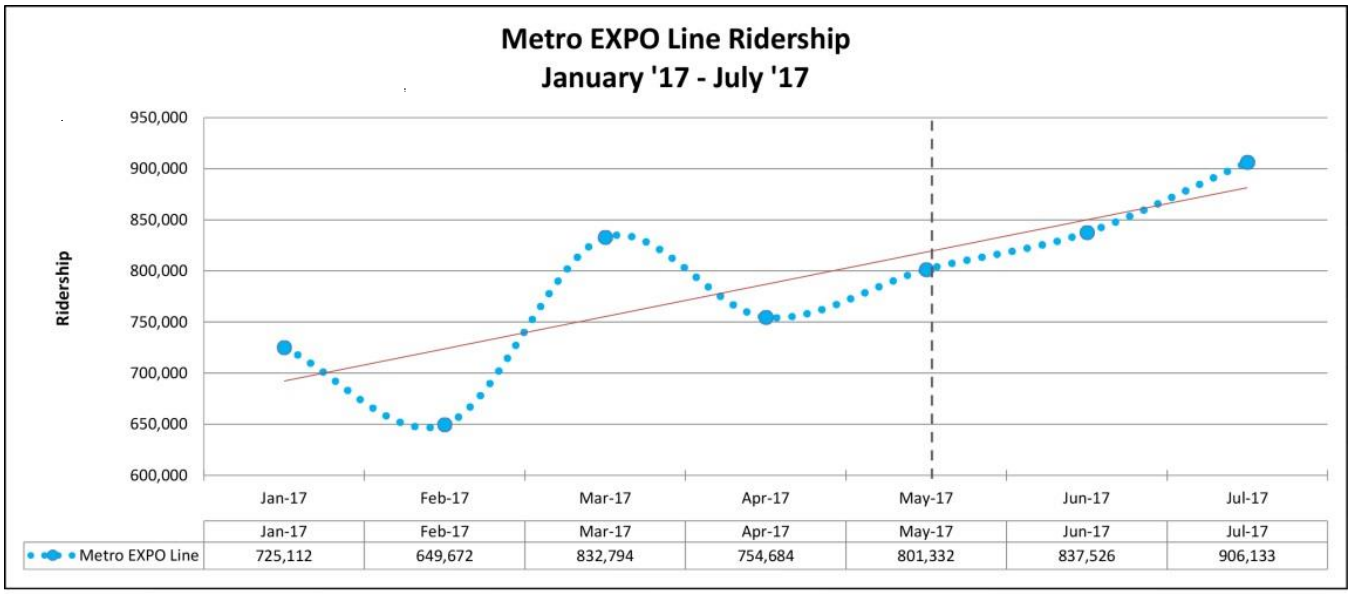
After the closure of the Culver City lot and implementation of paid parking at La Cienega/Jefferson, both ridership and parking demand along the Expo Line were tracked by Metro staff, revealing the following findings:

- Overall ridership on the Expo Line did not decline with the closure of the Culver City parking lot or implementation of the Pilot Program at Culver City and La Cienega/Jefferson.
- In between February 14, and March 1, the LA Cienega/Jefferson parking structure typically reached 100% occupancy, which was up from the approximately 70% occupancy observed during the facility assessment.
- After implementation of paid parking at La Cienega/Jefferson, the structure returned to approximately 80% parking occupancy.
- Approximately 100 vehicles per day park in the Ince parking structure at the Metro rate.
- The 252 spaces at the Expo Crenshaw station, approximately 50% utilized during the facility assessment, now routinely reaches 100% occupancy.
- Parking demand at Expo/Sepulveda and Expo/Bundy have increased by approximately 20 vehicles in total.

Overall, when 568 fully occupied spaces were removed from the parking system, approximately 250 vehicles of parking demand shifted to other parking locations. The result was a net decrease of approximately 300 spaces of transit parking demand, with no effect on Expo line ridership.

Figure 9 summarizes Metro ridership on the Expo line in 2017, including before and after parking at the Culver City Station was removed and the Pilot Program was implemented at the nearby La Cienega/Jefferson. Boardings at the individual stations in the vicinity of the Pilot Program locations are shown in the table below, as well.

Figure 9: Expo Line Ridership – January to July 2017



*The dashed line indicates the month the pilot program was implemented for that specific line

	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17
Metro EXPO Line	**725,112**	**649,672**	**832,794**	**754,684**	**801,332**	**837,526**	**906,133**
Culver City	59,216	48,023	53,042	46,413	50,683	49,355	48,697
Expo/Bundy	36,621	35,517	43,002	37,305	40,397	39,990	39,149
17th St/SMC	31,317	31,078	40,935	32,768	38,376	35,952	35,161
Expo/Sepulveda	34,436	36,027	40,490	37,872	39,378	41,052	42,296
La Cienega/Jefferson	34,761	32,400	39,570	35,426	36,254	37,521	39,683
Palms	30,665	28,544	37,957	36,170	36,652	37,322	38,197
Expo/Crenshaw	31,854	29,904	37,181	32,998	35,389	35,905	37,517

Source: Metro, 2017

The initial data indicates that the reduction in the available parking supply at Culver City and subsequent implementation of the Pilot Program at La Cienega/Jefferson, has not negatively impacted overall ridership on the Expo line. Boardings have declined at Culver City, but have increased at La Cienega/Jefferson, Expo/Crenshaw, Expo/Sepulveda and Palms, which are the two stations to both the east and west of Culver City station.

CASE STUDY RED LINE – NORTH HOLLYWOOD AND UNIVERSAL TAP VERIFICATION AND PAID PARKING

The facility assessment identified the North Hollywood and Universal Metro parking lots as some of the most parking impacted, with the lots filling up before 7:00 AM, and hundreds of people on the waiting list for reserved parking at both locations. On April 24, 2017, the Pilot Program was implemented at North Hollywood and Universal.

At both North Hollywood and Universal Metro implemented TAP card verification before implementing the full Pilot Program. Both locations are in areas of overall high parking demand, and Metro's free parking facilities were surrounded by paid parking options. TAP card verification was used to test the hypothesis that a significant portion of the parking supply at both stations were being poached by patrons of other land uses in the vicinity. Metro took a soft approach to TAP card verification, starting with warnings to patrons who were caught not using transit after parking at Universal or North Hollywood. This eliminated non-transit parkers in the parking lots before implementation of the Pilot Program.

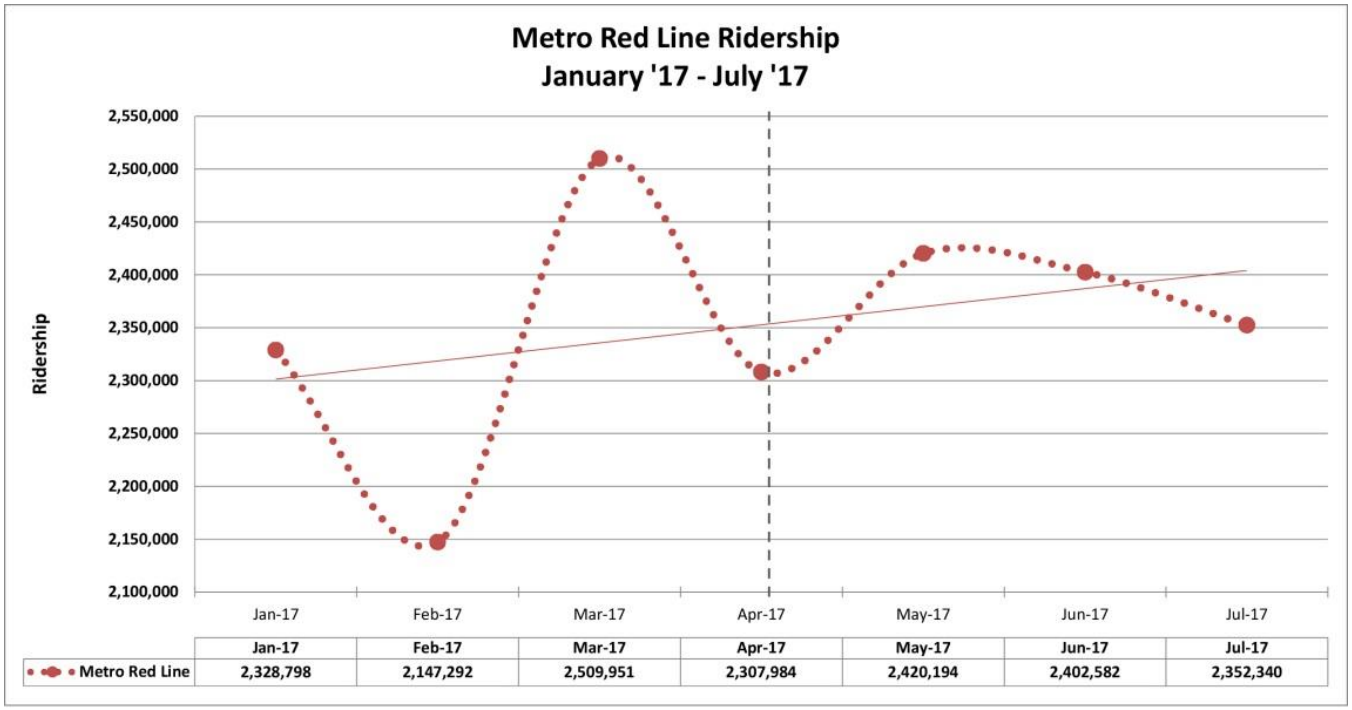
The results of the TAP card verification process at these locations was dramatic. After the initial rollout, hundreds of permit holders, who had previously not been using transit, were not eligible for and did not receive permit renewals. This cleared the waiting list for permit parking at both stations, although a small waiting list has again formed now that the system has been in place for months and parking has stabilized.

The second step at North Hollywood and Universal was full implementation of the Pilot Program with a $3.00 daily fee for transit riders with TAP verification. The initial results from the Pilot Program were again promising, and similar to what occurred on the Expo Line:

- Overall ridership on the Red/Oranges did not decline with the implementation of the Pilot Program at North Hollywood and Universal.
- Both North Hollywood and Universal reach approximately 90% utilization during the daytime, with riders able to find spaces throughout the day.
- To the extent that some Metro riders have switched back to their personal automobile due to the Pilot Program, these riders have been replaced by patrons who previously did not take transit due to the unavailability of parking at these stations.
- Parking demand at Orange Line Stations closest to North Hollywood has increased slightly, as some Metro parkers have relocated to free parking options.

Figure 10 summarizes Metro ridership on the Red line in 2017, including before and after the Pilot Program was implemented at North Hollywood and Universal, as well as boarding at the individual stations with parking in the vicinity of the Pilot Program locations.

Figure 10: Red Line Ridership – January to July 2017



*The dashed line indicates the month the pilot program was implemented for that specific line

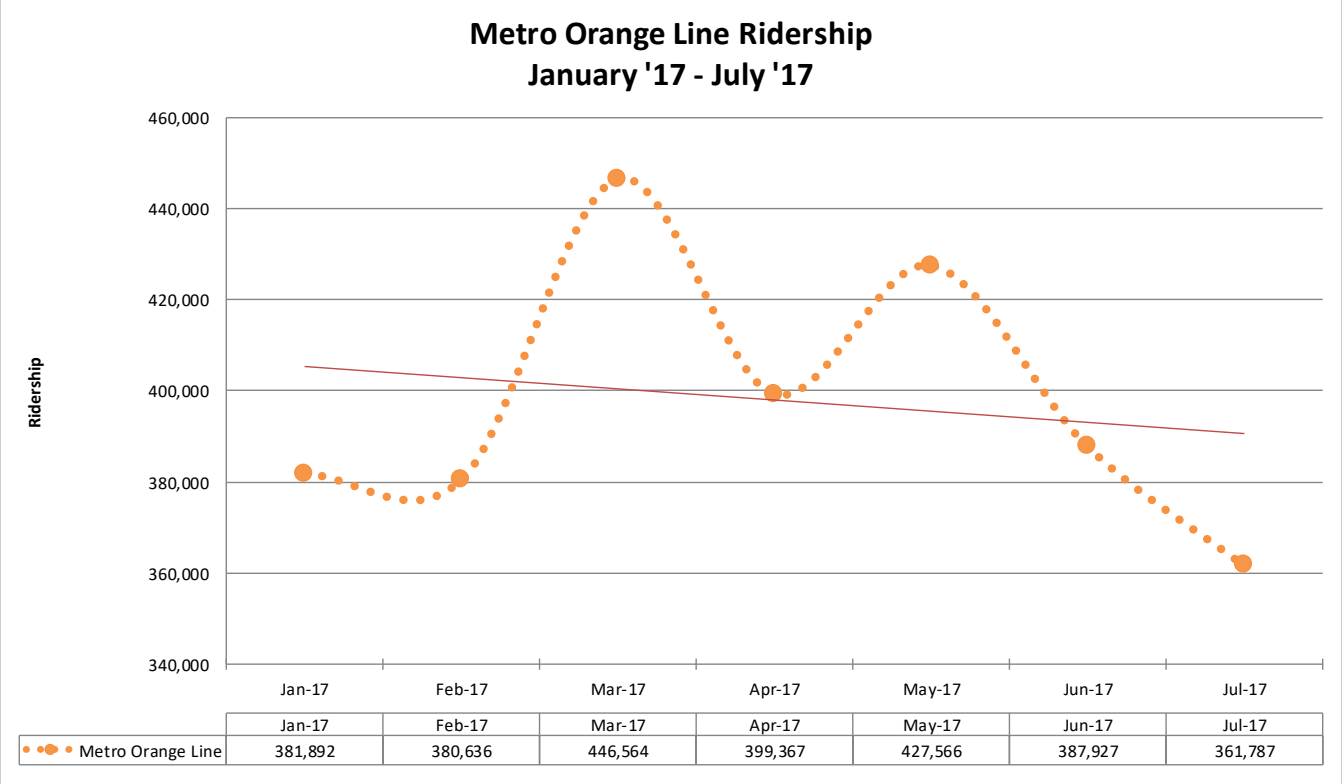
	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17
Metro Red Line	**2,328,798**	**2,147,292**	**2,509,951**	**2,307,984**	**2,420,194**	**2,402,582**	**2,352,340**
North Hollywood (Red)	326,415	308,294	363,023	336,199	347,001	345,786	332,017
Westlake/MacArthur Park	143,710	132,200	153,486	146,915	153,624	149,163	147,973
Universal City	136,524	122,447	145,994	138,357	136,558	144,801	146,323

Source: Metro, 2017

The initial data indicates that implementation of the Pilot Program at Universal and North Hollywood stations has not negatively impacted overall ridership on the Red line. Boardings have been fairly consistent at both locations since the Pilot Program implementation.

Figure 11 summarizes Metro ridership on the Orange Line in 2017, including before and after the Pilot Program was implemented at North Hollywood, as well as boarding at the individual stations with parking in the vicinity of North Hollywood station.

Figure 11: Orange Line Ridership – January to July 2017



	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17
Metro Orange Line	**381,892**	**380,636**	**446,564**	**399,367**	**427,566**	**387,927**	**361,787**
North Hollywood (Orange)	122,099	116,487	134,683	125,725	131,650	125,817	118,457
Van Nuys	45,327	44,336	51,927	46,490	49,822	46,694	45,015
Reseda	31,497	33,739	38,289	34,837	35,306	29,657	28,529
Sepulveda	24,980	24,257	28,959	25,315	27,359	25,662	23,779
Balboa	19,357	19,514	23,284	19,275	21,830	18,217	15,122
Pierce College	13,519	18,150	21,060	15,632	18,345	13,020	12,400

Source: Metro, 2017

The initial data indicates that implementation of the Pilot Program at North Hollywood has not negatively impacted Orange line ridership. Follow up analysis is necessary for the Orange Line due to the higher degree of seasonality in its ridership due to schools and colleges along the route.

CASE STUDY GOLD LINE – ARCADIA, MONROVIA, AND DUARTE

The Pilot Program was implemented at the Monrovia station on June 26, 2017, partly in response to the City's desire for a shared use agreement with Metro. The parking is reserved for Metro parking during the daytime, and serves surrounding land uses on nights and weekends, resulting in more efficient use of the built asset.

Arcadia and Duarte are the stops on either end of Monrovia. All three stations experienced very high parking demand when the Gold Line Extension was opened. With implementation of the Pilot Program at Monrovia, the following was observed:

- Parking occupancy at Monrovia declined from 100% to 30%-40%.
- Transit riders park in on-street parking spaces in Monrovia at a higher level than they do in other locations.
- The parking facilities at Arcadia and Duarte reached 100% occupancy earlier in the morning, sometimes before 6:00 AM.
- Parking occupancy at Sierra Madre Villa increased from 40% to 65% being the next closest free parking option with space availability.

The key lesson learned from implementation of the Pilot Program at Monrovia, is that there are challenges to implementing the Program at a single location without considering the effects on adjacent locations. Parking occupancy at Monrovia has declined while the parking challenges at the adjacent stations of Arcadia and Duarte have grown more acute. In the future, the Pilot Program should focus either on parking entire lines, or potions of a line with closely spaced stations as opposed to single stations for one-of implementation.

A second lesson from the Monrovia implementation is that the implementation of the Pilot Program with paid parking, leads to an increase in transit rider parking spillover into adjacent parking areas such as on-street parking and nearby off-street parking lots. Metro desires to proactively work with jurisdiction to manage and limit parking spillover.

CASE STUDY GOLD LINE – APU CITRUS, AZUSA DOWNTOWN AND IRWINDALE

The Pilot Program was implemented at APU Citrus and Irwindale on June 26, 2017. The Azusa Downtown station, in between the APU Citrus station and the Irwindale station, is not in the Pilot Program. With implementation of the Pilot Program at APU Citrus and Irwindale, the following was observed:

- Parking occupancy at APU Citrus and Irwindale declined.
- The parking facility at Azusa Downtown reaches 100% occupancy earlier in the morning, sometimes before 6:00 AM.
- Parking occupancy at Sierra Madre Villa increased.

The key lesson learned from implementation of the Pilot Program at APU Citrus and Irwindale, is that there are challenges to implementing the Program at a single location without considering the effects on adjacent locations.

In the future, the Pilot Program should focus either on entire lines, or potions of a line with closely spaced stations as opposed to single stations for one-of implementation.

CASE STUDY GOLD LINE – SIERRA MADRE VILLA

Before the extension of the Gold Line, Sierra Madre Villa was the terminus station of the Line. As a terminus station, it experienced high demand, with unreserved spaces generally 100% occupied on weekdays by 8:00 AM.

When the Gold Line Extension opened, parking occupancy at Sierra Madre Villa declined to approximately 40%, as riders who formerly drove in from points further east now had other options and home stations to park at. With implementation of the Pilot Program at Monrovia, parking demand has recovered somewhat at Sierra Madre Villa, reaching approximately 65% occupancy on most weekdays.

The lessons learned from Sierra Madre Villas' experience are listed below:

- While terminus stations experience high parking demand due to patrons driving in from points further away, an extension of a line, can cause parking demand to decline sharply at the former terminus. Parking planned at terminus stations should have an eye on flexibility, such as multiple surface parking lots rather than a permanent fixed parking structure.
- Parking Management can assist in spreading out parking demand among multiple locations. In the case of the Gold Line, pricing at extremely utilized locations such as Arcadia and Duarte, resulted in better utilization at Sierra Madre Villa, and greater parking availability later into the day at Arcadia and Duarte.

CASE STUDY GOLD LINE – ATLANTIC

The Pilot Program was implemented at Atlantic station on August 28, 2017. Atlantic Station is the southern terminus of the Gold Line, and prior to implementation of the Pilot Program, unreserved parking would typically fill up every weekday. The concern at Atlantic station was that employees and patrons of nearby businesses and schools were parking in the Metro parking facility while not using transit. Since, prior to implementation of the Pilot Program, Atlantic station did not reach full occupancy with reserved parking taken into account, the Pilot approach was to reserve the facility for Metro parkers prior to 10:00 AM, with a daily parking rate of $2.00 for Metro parkers, and thereafter allow non-Metro parkers to park for up to three hours for $3.00.

Since the Pilot Program was recently implemented, ridership data is not available on the effects of this implementation yet. However, the parking operator has provided anecdotal observations:

- Non-Metro parkers have been observed stopping at the entrance and turning around after realizing parking is now enforced for Metro riders only.
- The garage no longer reaches full occupancy during the day, with approximately 50 spaces open throughout the day.
- Non-Metro transient parking demand for parking in the garage after 10:00 AM has been very low.

CASE STUDY SILVER LINE – EL MONTE

The Pilot Program was implemented at the El Monte station on August 28, 2017. El Monte Station is the terminus of the Silver Line with approximately 1,435 public parking spaces prior to Pilot Program implementation, consisting of a mix of structured and surface parking. Prior to implementation of the Pilot Program, unreserved parking would typically fill close to capacity every weekday.

In addition to the Pilot Program implementation, Metro reduced the public parking supply as they allocated additional parking resources to its field office at El Monte Station. El Monte station is also the first non-rail station at which the Pilot Program was implemented. The fee for parking at El Monte station for transit riders is $2.00 per day.

Since the Pilot Program was recently implemented, data is not available on the effects of this implementation yet. However, the parking operator has provided anecdotal observations:

- Even with the removal of some transit rider parking, there are approximately 280 parking spaces open in the back lots throughout the day.
- Bus rider's patterns are much more fixed and rigid than rail riders, likely due to the longer headways between buses compared to the rail lines. The split of cash versus credit cards is 50/50, a much higher percentage of cash usage than at other Pilot Program locations. Bus riders have their timing down to a science so it is essential that transactions at bus locations be efficient and reliable.

08 Section

Parking Management Program Recommendations

PARKING MANAGEMENT PROGRAM RECOMMENDATIONS

Based on the results of the various information gathering components of the STPP, a set of general recommendations that apply system-wide have been developed. These are based on detailed station recommendations which were developed through data collection and observation.

PARKING FEE RESOLUTION AND PARKING ORDINANCE UPDATE

As part of the recommendations of this Plan, Walker has reviewed the currently adopted parking fee resolution and parking ordinance. Walker generally concurs with the content and delivery of each; however, Walker recommends the following items be considered the next time they are updated and presented to the Board:

- Transition the Pilot Program to a permanent Parking Management Program administered by the Parking Management unit.
- Update the parking resolution and fee ordinance to eliminate any inconsistencies.
- Consider language allowing a flexible parking fee of $0.00 to $5.00 at stations in the parking management program, with allowances for the parking management unit to periodically assess and update parking fees at stations. The current fee resolution includes specific fees at each parking management location which necessitates a change to and adoption of a new fee ordinance anytime any fee changes at any location. Incorporating some flexibility into the fee resolution should reduce the number of updates and approvals required.

FOCUS ON CUSTOMER EXPERIENCE

- Providing a strong customer experience is of paramount importance. We recommend ensuring that parking facilities can be easily located by riders who use parking facilities for station access.
- Within each facility, riders should be directed to open parking spaces. If a parking facility is full, a rider should be directed to the next available facility, whether at the current station or at another nearby station.
- Once parked, riders should be directed to the station platform/portal and should feel comfortable walking from their vehicle to it and vice versa in a clean and well-lit parking facility.
- Entering and exiting the facility should be a simple process.

IMPLEMENT CONSISTENCY SYSTEM-WIDE

- The current program does not provide consistency from the transit parking facilities user perspective.
- There is either inconsistent signage or no signage directing riders to the parking facilities. Facility entrance signage is highly variable. The easiest to find parking facilities are the ones within view when drivers see the station monument signage. But in many instances, the parking facility locations are not obvious and easily missed. There needs to be signage directing parkers to the platform/portal at locations where it is not visible from the entire parking facility (or facilities). In addition, there needs to be consistent signage directing parkers on how to pay, where applicable. Signage should be vibrant and lively as it is a patron's first experience with Metro parking facilities.
- Facility conditions vary, where some are well-kept and clean while others are debris-filled, run-down and unsafe. Part of the variability is due to differences between Caltrans-owned and Metro-owned facilities.

- Permit parking spaces should be available to patrons at the same time across all facilities. Currently, permit parking is available to patrons after 9:00 AM, 10:00 AM or 11:00 AM, depending on the station. We recommend setting the general patron availability time to 9:00 AM across the entire system.
- Transitioning Caltrans-owned facilities to Metro operation or ownership would allow for implementation of a consistent parking system. And the Parking Management initiative that is underway to implement consistent signage system-wide should address signage deficiencies.

ENHANCE FIRST/LAST MILE OPTIONS

- Since providing station access for Metro riders is the goal, transit riders need multiple options for accessing stations. Bicycle and pedestrian infrastructure in station areas must be robust, in order to provide equivalent options for station access.
- As our findings illustrate, better bicycle infrastructure is needed at many stations. Improvements in this area would provide some riders with additional options for accessing stations.
- All stations should have at least bicycle racks for parking bicycles.

FOCUS ON MANAGING DEMAND

- Due to the high cost to add parking capacity when construction is involved, as well as the short-term loss of spaces, we recommend focusing on managing existing parking demand.
- Consideration should be given to instituting daily fees across all parking spaces at stations that experience high parking demand. This concept is currently being tested through the Pilot Program.
- Develop permit parking zones that cover multiple stations to spread parking demand across those stations. Permit holders of a zone may park in permit spaces at any station within the zone. Development of the zones considers parking occupancy at stations within the zone and distance between stations. Proposed zones for current permit parking locations are the following:
  - 103rd/Watts Towers, Florence
  - Atlantic, Indiana
  - Del Amo, Artesia
  - El Segundo, Aviation/LAX, Hawthorne/Lennox
  - Heritage Square, Lincoln/Cypress
  - Lakewood, Long Beach
  - North Hollywood, Universal City/Studio City
  - Reseda, Balboa
  - Willow, Wardlow

EXPLORE OTHER USES DURING NON-PEAK PERIODS

- Since weekday evening and weekend parking demand is lower than weekday demand, consider making at least portions of parking lots available for other uses during low demand periods. These uses may include events such as farmers markets, fairs and cultural events.
- Providing Metro parking for these events may increase awareness of Metro parking leading to increased utilization of parking and ridership.

CONSIDER RATIONALIZATION OF SOME PARKING FACILITIES

- Facilities that experience very low occupancy on weekdays (below 10%) should be reviewed to determine whether they have a higher and better use as something other than transit parking. Slauson, Avalon, Vermont/Athens and 103rd St./Watts Towers were all less than 10% occupied when surveyed.
- These facilities suffer from poor upkeep and disrepair. In some cases, individuals living in vehicles have been spotted.
- Some riders may be dissuaded from parking there due to the poor conditions, which only exacerbates the situation as fewer eyes are available to provide some level of security and to report issues.

WHERE AVAILABILITY EXISTS, CONSIDER SELLING PARKING TO NON-TRANSIT USERS

- At some stations, it was apparent that some vehicles were parked for a use other than transit. During some of our observations, we noticed decals on rental cars and individuals walking to or from a nearby use.
- At stations where there is parking availability, consider selling available spaces on a month-to-month basis to non-transit riders who are willing to pay for the ability to park in a Metro parking facility. This permit would not guarantee a space but would allow a non-transit rider to park in a Metro facility without incurring citations.
- A formalized program would allow Metro to generate revenue without impacting transit riders. The program should be reassessed if occupancy in those facilities increases, creating challenges for transit riders to find parking.

ADOPT A CONSISTENT PARKING FACILITY NAMING CONVENTION

- Currently, stations with multiple parking facilities use cardinal (north, south, west and east) and intercardinal (northwest, northeast, southwest and southeast) directions relative to the portal or platform to establish the specific parking facility at a given station.
- Due to inconsistent and missing signage, it is often not clear to a rider which parking facility he or she is parked in. Metro employees may also not be able to readily differentiate one facility from another at a given station.
- The current naming convention requires one to know where the portal or platform is located and where other parking facilities are located. In addition, there is a separate lot numbering scheme in the permit processing system which may further confuse the situation.
- We recommend a consistent naming convention be adopted and propose a system with the station name followed by a number. For example, the North Hollywood lots would be North Hollywood-1 to North Hollywood-4. If a new facility is added to a station, the last parking facility at the station may be incremented by one. If a facility is removed at a station, the name may be removed from service. Recommended facility names are located in the Appendix 6.

IMPROVE CONSISTENCY OF EXPERIENCE AT PARKING FACILITIES UNDER LEASE AGREEMENT

- Metro currently has lease agreements with parking garages at Fillmore and Del Mar stations to provide its riders with parking at a discounted rate of $2.00 per day.

- Metro riders should be presented with an experience consistent with that found at Metro-operated parking facilities for these and any future parking facilities where Metro has a lease agreement to provide its riders with parking. Signage consistent with other Metro parking facilities should direct riders to these facilities and to any Metro-designated parking areas within the facilities. Once parked, riders should experience signage consistent with other Metro parking facilities to direct them to the portal/platform area. Lighting, upkeep and security must be at least comparable to that experienced at other Metro parking facilities. The payment process should be similar to as well. The Pilot Program has outlined a payment process with TAP card verification that may be replicated at the facilities with lease agreements.
- For parking facilities that will accommodate Metro riders and have not yet been built, Metro Parking Management will need to participate in the planning process to ensure that the parking will be consistent with its other facilities. A basis of design document may be provided to ensure that design standards, including signage, lighting and elevators, are met. Transit rider verification and payment process requirements must also be presented as they may impact operational requirements and the supporting technology selected.

RESTRIPE SPACES TO ADD SUPPLY WHERE POSSIBLE

- In facilities that experience high occupancy (over 90%), we recommend adding supply through restriping to include more compact spaces (eight feet, six inches in width), if the percentage of compact stalls does not exceed 20%. When compact space supply exceeds 20%, we expect increased misparking (i.e. cars occupying more than one space) which may minimize the benefit of restriping. In the process, locations may be brought to current ADA standards.
- Candidate stations for restriping include Del Amo, El Monte and Florence.
- Refurbishment efforts currently underway at Artesia, North Hollywood and Wardlow are expected to add some supply through restriping and update these facilities to current ADA standards.
- Continue the refurbishment program based on the prioritization in the facility assessment, until all facilities are in a state of good repair.

MISCELLANEOUS RECOMMENDATIONS

Some additional recommendations based on our observations are as follows:

- Increased enforcement, particularly at stations with permit parking spaces, is essential to ensure permit holders are able to utilize the spaces they pay for. Individuals who park and are observed walking to adjacent uses from Metro parking should be cited. Citations may be dismissed if a registered TAP card is provided that shows the TAP card holder rode transit during the parking grace period.
- Due to the increasing use of ride-hailing services (such as Uber and Lyft), we recommend planning for increased pick-up/drop-off activity at stations with the highest parking occupancy rates. Ideally pick-up/drop-off areas should be located curbside, whether on-street or in kiss-and-ride areas, adjacent to platform/portal entries/exits. If not feasible, non-ADA spaces in parking facilities which are closest to the platform/portal entries/exits may be converted to short-term parking for the purpose of pick-up/drop-off.

- At parking facilities with deficient lighting levels, we recommend replacing existing light fixtures with LED fixtures. An example ceiling mounted fixture is 17 inches in diameter housed in marine-grade diecast aluminum and has a type V-square distribution with integral control module and occupancy/light level sensor. An example pole-mounted fixture is 23 inches in diameter housed in marine-grade diecast aluminum and has a type III distribution with integral control module and occupancy/light level sensor.
- In order to improve lighting levels inside garages, we recommend that garages be painted white on interior walls and ceilings. This will improve light illumination and overall lighting levels, creating a safer environment for parkers. At a minimum, walls need to be painted halfway, from the ceiling down to the floor-to-ceiling vehicle height clearance level to improve lighting conditions. For example, if floor-to-ceiling height is ten feet and vehicle height clearance is seven feet, then the walls only need to be painted three feet from the ceiling downward. The wall would be unpainted from floor level up to seven feet.
- Americans with Disabilities Act ("ADA") parking deficiencies were observed at some station parking facilities. These were mostly missing fine amount signage but in some facilities, more serious issues, such as access path grades that are steeper than ADA parking guidelines were noticed. Further review of ADA parking conditions should be undertaken in the future to ensure that equal access is being provided.
- Metro should continue to make spaces available to carshare providers for a monthly fee. The designated spaces are prime parking spaces located closest to the platform/portal, to provide convenience to riders who are utilizing the service. Monthly fees charged should vary based on parking occupancy at Metro facilities, with highly utilized facilities charging a higher rate than lower utilized facilities.
- Dedicated vanpool spaces for vans may be provided for free in order to incentivize use of the program. However, participants should be treated as transit riders and will need to adhere to the parking programs in place at the parking facility that their vanpool is based at.

STATION-SPECIFIC RECOMMENDATIONS

A set of recommended measures was developed for each station based on the outcome of the facility assessment. The measures were grouped into the following categories:

- Parking Signage and Wayfinding
- Bicycle Parking
- Pedestrian Wayfinding
- Lighting
- Parking Surface
- Traffic Calming
- Appearance
- Enforcement
- Security
- Permit Parking
- Surrounding Area – Security, Bicycle and Pedestrian Infrastructure

The individual measures and a description of each follows:

- Improve Wayfinding Signage to Station Parking – improving signage directing drivers to station parking.
- Improve Parking Wayfinding Signage among Facilities at Station – at stations with multiple facilities, improving signage to direct drivers from one facility to another.
- Improve Parking Signage at Facility Entrance(s) – improving signage at parking facility entrances.
- Increase Bicycle Racks – add bicycle racks at a station, some of which may not currently have any.
- Increase Bicycle Lockers – add bicycle lockers at a station, some of which may not currently have any.
- Improve Bicycle Parking Signage – improve signage directing bicyclists to station bicycle parking.
- Improve Pedestrian Wayfinding to Station – improve signage directing pedestrians to a station.
- Improve Pedestrian Wayfinding within Parking Facility/Facilities – improve signage within parking facilities that direct pedestrians to station platform.
- Upgrade Lighting – retrofit existing lighting system where minimum lighting is at level of service D or below.
- Resurface Pavement – for parking lots, resurface with a new slurry coat.
- Restripe Spaces – restripe existing spaces to make them more visible.
- Implement Traffic Calming within Facility/Facilities – provide speed humps to slow traffic and improve pedestrian safety.
- Improve Landscaping – install new or upgrade existing landscaping.
- Improve Upkeep – provide additional janitorial services on an on-going basis.
- Power wash Facility/Facilities – for garages, power wash on an on-going basis.
- Increase Parking Enforcement – increase on an on-going basis, especially when adjustments to permit parking programs are proposed.
- Increase Security Patrols within Facility/Facilities – increase on an on-going basis.
- Initiate Permit Parking at Station for Transit Riders – restripe, add signage and update permit system; high parking occupancy stations where transit riders would benefit from availability .
- Initiate Permit Parking Spaces for Adjacent Uses – restripe, add signage and update permit system; only stations with ample parking availability considered.
- Increase Number of Permit Parking Spaces – restripe, add signage and update permit system; where permit spaces experience high occupancy.
- Improve Security on Sidewalks near Station – work with local agency to improve safety on sidewalks near station.
- Improve Bicycle Infrastructure near Station – where rating is low, work with local agency to improve bicycle infrastructure connecting to station.
- Improve Pedestrian Infrastructure near Station – where rating is low, work with local agency to improve pedestrian infrastructure connecting to station.

Figure 12 and Figure 13 show recommended measures by station. Stations marked with an asterisk have parking facilities that are not owned by Metro. Universal City and El Monte have a mix of Metro and non-Metro owned parking facilities.

Figure 12: Matrix of Measures (Blue, Expo, and Gold Lines)

Line	Station	Improve Wayfinding Signage to Station Parking	Improve Parking Wayfinding Signage among Facilities at Station	Improve Parking Signage at Facility Entrance(s)	Increase Bicycle Racks	Increase Bicycle Lockers	Improve Bicycle Parking Signage	Improve Pedestrian Wayfinding to Station	Improve Pedestrian Wayfinding within Parking Facility/Facilities	Upgrade Lighting	Resurface Pavement	Restripe Spaces	Implement Traffic Calming within Facility/Facilities	Improve Landscaping	Improve Upkeep	Powerwash Facility/Facilities	Increase Parking Enforcement	Increase Security Patrols within Facility/Facilities	Initiate Permit Parking at Station for Transit Riders	Initiate Permit Parking Spaces for Adjacent Uses	Increase Number of Permit Parking Spaces	Improve Security on Sidewalks near Station	Improve Bicycle Infrastructure Near Station	Improve Pedestrian Infrastructure Near Station
Blue	Florence	x		x						x	x				x								x	
Blue	103rd Street/Watts Towers*	x		x	x				x	x		x			x		x						x	
Blue/Green	Willowbrook/Rosa Parks*	x	x	x						x	x	x		x	x		x	x					x	
Blue	Artesia	x			x					x							x						x	x
Blue	Del Amo																						x	
Blue	Wardlow	x	x	x		x				x													x	
Blue	Willow	x	x	x						x													x	
Expo	Expo/Crenshaw*	x				x				x								x						
Expo	La Cienega/Jefferson	x				x				x												x		
Expo	Culver City*	x		x		x											x		x					
Expo	Expo/Sepulveda	x								x														
Expo	Expo/Bundy	x																						
Expo	17th Street/SMC	x																						
Gold	Atlantic	x	x	x		x				x													x	
Gold	Indiana			x																			x	
Gold	Lincoln/Cypress*									x		x										x	x	
Gold	Heritage Square			x		x									x						x		x	
Gold	South Pasadena*	x		x						x						x							x	
Gold	Fillmore*	x		x						x													x	
Gold	Del Mar*					x				x			x			x							x	
Gold	Lake*	x	x			x				x												x		
Gold	Sierra Madre Villa					x	x	x		x			x				x	x					x	x
Gold	Arcadia					x		x		x														
Gold	Monrovia	x				x				x													x	
Gold	Duarte/City of Hope	x						x															x	
Gold	Irwindale							x		x													x	x
Gold	Azusa Downtown	x		x		x	x																x	
Gold	APU/Citrus College					x				x													x	

Source: Walker Consultants, 2017

Figure 13: Matrix of Measures (Green, Orange, Red, and Silver Lines)

Line	Station	Improve Wayfinding Signage to Station Parking	Improve Parking Wayfinding Signage among Facilities at Station	Improve Parking Signage at Facility Entrance(s)	Increase Bicycle Racks	Increase Bicycle Lockers	Improve Bicycle Parking Signage	Improve Pedestrian Wayfinding to Station	Improve Pedestrian Wayfinding within Parking Facility/Facilities	Upgrade Lighting	Resurface Pavement	Restripe Spaces	Implement Traffic Calming within Facility/Facilities	Improve Landscaping	Improve Upkeep	Powerwash Facility/Facilities	Increase Parking Enforcement	Increase Security Patrols within Facility/Facilities	Initiate Permit Parking at Station for Transit Riders	Initiate Permit Parking Spaces for Adjacent Uses	Increase Number of Permit Parking Spaces	Improve Security on Sidewalks near Station	Improve Bicycle Infrastructure Near Station	Improve Pedestrian Infrastructure Near Station
Green	Norwalk*	x	x	x		x				x	x			x			x		x				x	x
Green	Lakewood*	x	x	x						x	x	x		x	x		x		x				x	
Green	Long Beach*	x	x	x						x	x			x									x	x
Green	Avalon*	x								x	x	x		x	x								x	x
Green/Silver	Harbor Freeway*	x		x							x			x									x	x
Green	Vermont/Athens*	x			x									x	x			x				x		x
Green	Crenshaw*	x		x		x								x	x			x					x	x
Green	Hawthorne/Lennox*	x	x	x						x	x	x		x	x		x			x			x	x
Green	Aviation/LAX*	x		x		x				x		x		x			x		x				x	
Green	El Segundo	x		x		x					x	x											x	
Green	Douglas*	x				x		x		x													x	
Green	Redondo Beach*	x	x	x		x				x														
Orange	Van Nuys	x	x	x						x					x			x				x		
Orange	Sepulveda	x		x				x		x			x											
Orange	Balboa	x		x						x								x			x			
Orange	Reseda	x	x	x					x	x		x					x			x				
Orange	Pierce College*	x		x						x			x											
Orange	Canoga	x		x						x														
Orange	Sherman Way	x	x	x						x							x			x				
Orange	Chatsworth*									x														
Red/Purple/Gold	Union Station	x		x						x														
Red	Universal City/Studio City*	x	x	x					x	x		x	x				x							x	
Red/Orange	North Hollywood	x	x	x	x	x				x		x					x	x			x			
Red	Westlake/MacArthur Park	x		x							x				x		x	x						
Silver	Slauson*	x	x	x	x					x	x	x		x	x			x					x	
Silver	Manchester*	x		x	x					x	x	x		x	x			x					x	
Silver	Rosecrans*	x		x	x					x	x			x				x					x	
Silver	Harbor Gateway Transit Center			x		x				x				x									x	
Silver	El Monte*	x	x	x						x		x		x	x		x		x					
Silver	Carson*	x		x	x									x	x									
Silver	Pacific Coast Highway*	x		x										x	x			x					x	

Source: Walker Consultants, 2017

Note that the Expo 2 stations (Expo/Sepulveda, Expo/Bundy and 17th St./SMC) had the Pilot Program in place at the time of Walker's assessment. Parkers had to be Metro patrons, with a TAP Card verification system in place, and paid $2.00 per day to park.

COST ESTIMATES AND TIMING

To estimate one-time and on-going rough order-of-magnitude (ROM) costs for the measures, each measure was assigned a metric with associated assumptions as well as a priority (high, medium or low). Some measures are on-going and are indicated as annual. High priority items are focused on safety and security, while medium and low priority items address other measures.

Note we have not included lighting as lighting retrofit costs are driven by light fixture selection and power requirements, and are difficult to generalize. Accurate cost estimates may be developed after developing a photometric layout. The financial benefits of lighting retrofits are derived from energy cost savings. While we do not have baseline energy consumption figures, we note that typical lighting retrofits can provide payback in under four years along with the benefit of improved lighting level of service.

Table 14 details the metric used as well as the priority for each measure.

Table 14: Measures – Cost Metrics and Priority

Category	Measure	Metric	Priority
Parking Signage and Wayfinding	Improve Wayfinding Signage to Station Parking	Number of entry lanes	Medium
Parking Signage and Wayfinding	Improve Parking Wayfinding Signage among Facilities at Station	Number of facilities	Low
Parking Signage and Wayfinding	Improve Parking Signage at Facility Entrance(s)	Number of entry lanes	Medium
Bicycle Parking	Increase Bicycle Racks	Percent of total spaces	Medium
Bicycle Parking	Increase Bicycle Lockers	Percent of total spaces	Low
Bicycle Parking	Improve Bicycle Parking Signage	Number of entry lanes	Low
Pedestrian Wayfinding	Improve Pedestrian Wayfinding to Station	Fixed cost per station	Low
Pedestrian Wayfinding	Improve Pedestrian Wayfinding within Parking Facility/Facilities	Number of facilities	Low
Lighting	Upgrade Lighting	Total spaces	High
Parking Surface	Resurface Pavement	Total spaces	Medium
Parking Surface	Restripe Spaces	Total spaces	Medium
Traffic Calming	Implement Traffic Calming within Facility/Facilities	Total spaces	High
Appearance	Improve Landscaping	Total spaces	Low
Appearance	Improve Upkeep	Total spaces	Annual
Appearance	Powerwash Facility/Facilities	Total spaces	Annual
Enforcement	Increase Parking Enforcement	Total spaces	Annual
Security	Increase Security Patrols within Facility/Facilities	Total spaces	Annual
Permit Parking	Initiate Permit Parking at Station for Transit Riders	Fixed cost	Medium
Permit Parking	Initiate Permit Parking Spaces for Adjacent Uses	Fixed cost	Medium
Permit Parking	Increase Number of Permit Parking Spaces	Additional spaces	Medium
Surrounding Area - Security	Improve Security on Sidewalks near Station	Local agency assistance required	N/A
Surrounding Area - Infrastructure	Improve Bicycle Infrastructure near Station	Local agency assistance required	N/A
Surrounding Area - Infrastructure	Improve Pedestrian Infrastructure near Station	Local agency assistance required	N/A

Source: Walker Consultants, 2017

Priorities correspond to timing with a three-year timeframe assumed. We have assumed that high priority items would be addressed in the first year, medium priority items in the second year and low priority items in the third year.

Table 15 details the assumptions we used to develop the ROM cost estimates. These cost assumptions are based on Walker experience and industry standard figures.

Table 15: Assumptions Utilized to Develop ROM Cost Estimates (2016 Dollars)

Parking Wayfinding		
Basic sign 2'x'4 & pole	$750.00	per sign
Entry lane multiplier	2.0	signs per entry lane
Facility multiplier	3.0	signs per facility where there are multiple facilities
Parking Signage		
Larger sign at facility entrances	$2,000.00	per sign
Bike Parking		
Bike rack	$200.00	per bike
New racks as % of total spaces	2.5%	
Bike locker	$2,000.00	per bike
New lockers % of total spaces	2.0%	
Bike Parking Signage		
Basic sign	$500.00	per sign
Entry lane multiplier	2.0	signs per entry lane
Pedestrian Signage		
Sign package to station	$2,500.00	per station
Sign package within facility	$2,000.00	per facility
Pavement Improvement (Lot)		
Patching, asphalt slurry and restripe	$2.00	per SF
SF per space in a lot	350	SF
SF per space in a garage	375	SF
Restriping		
Restripe existing striping	$12.00	per space
Traffic Calming		
Speed hump	$3,000.00	per hump
Speed humps per facility	4	humps
Landscaping		
Cost per SF of landscaped area	$3.00	
% of parking lot landscaped	10.0%	
SF per space in a lot	350	SF
Cleanliness		
Janitorial	$20.00	per hour (fully loaded)
Coverage per hour (janitorial)	500	spaces
Janitorial frequency	104	times per year
Powerwashing	$6.00	per space
Powerwashing frequency	2	times per year
Enforcement		
Parking enforcement officer	$35.00	per hour (fully loaded with vehicle)
Coverage per hour	500	spaces
Enforcement frequency	260	times per year
Security		
Security patrol	$20.00	per hour (fully loaded)
Coverage per hour	1,000	spaces
Security frequency	260	times per year
Permit Parking		
Program for transit riders	$1,000.00	per location
Program for non-transit parkers	$1,000.00	per location
Add new or increase existing	$50.00	per space (restripe and signage)
% of total spaces all-day reserved	2.0%	

Source: Walker Consultants, 2017

Note that our assumptions do not include parking wayfinding signage indicating availability as Metro is currently implementing a Parking Guidance System to provide this functionality.

Specific adjustments were made to assumptions related to restriping and traffic calming. The restriping specifics are detailed in the individual facility assessment reports. Other specific adjustments are as follows.

- Traffic Calming
  - Applied a multiplier of two at Pierce College.
  - Applied a multiplier of three at Sepulveda.
  - Added an additional $5,000 for signage at Sierra Madre Villa.

- Permit Parking
  - Add 10 spaces to permit program at Balboa.
  - Add 10 spaces to permit program at Heritage Square.

- Conversion of short-term spaces in South Lot at North Hollywood to curb pick-up/drop-off at a cost of $15,000, to be done in year one.

The resulting ROM cost estimates are detailed on Table 16 and Table 17. Note that stations with an asterisk have parking facilities that are not owned by Metro.

Table 16: ROM Cost Estimate for Blue, Expo, and Gold Lines (2016 Dollars)

Line	Station	Year 1	Year 2	Year 3	On-Going Annual
Blue	Florence	$2,100	$86,100	$2,100	$2,100
Blue	103rd Street/Watts Towers*	$3,300	$8,000	$5,300	$3,300
Blue/Green	Willowbrook/Rosa Parks*	$11,500	$185,100	$40,600	$11,500
Blue	Artesia	$5,400	$8,300	$5,400	$5,400
Blue	Del Amo	$0	$0	$0	$0
Blue	Wardlow	$0	$10,500	$8,500	$0
Blue	Willow	$0	$21,000	$6,800	$0
Expo	Expo/Crenshaw*	$5,200	$6,700	$15,200	$5,200
Expo	La Cienega/Jefferson	$0	$3,000	$20,000	$0
Expo	Culver City*	$10,300	$21,800	$32,300	$10,300
Expo	Expo/Sepulveda	$0	$1,500	$0	$0
Expo	Expo/Bundy	$0	$3,000	$0	$0
Expo	17th Street/SMC	$0	$1,500	$0	$0
Gold	Atlantic	$0	$7,000	$16,500	$0
Gold	Indiana	$0	$2,000	$0	$0
Gold	Lincoln/Cypress*	$0	$1,100	$0	$0
Gold	Heritage Square	$2,100	$4,600	$8,100	$2,100
Gold	South Pasadena*	$1,700	$5,200	$1,700	$1,700
Gold	Fillmore*	$0	$3,500	$0	$0
Gold	Del Mar*	$19,300	$7,300	$31,300	$7,300
Gold	Lake*	$0	$6,000	$2,300	$0
Gold	Sierra Madre Villa	$39,800	$22,800	$65,300	$22,800
Gold	Arcadia	$5,000	$0	$14,500	$0
Gold	Monrovia	$5,000	$1,500	$14,000	$0
Gold	Duarte/City of Hope	$5,000	$1,500	$2,500	$0
Gold	Irwindale	$5,000	$0	$2,500	$0
Gold	Azusa Downtown	$5,000	$3,500	$11,000	$0
Gold	APU/Citrus College	$5,000	$0	$8,000	$0

Source: Walker Consultants, 2017

Table 17: ROM Cost Estimate for Green, Orange, Red, and Silver Lines (2016 Dollars)

Line	Station	Year 1	Year 2	Year 3	On-Going Annual
Green	Norwalk*	$31,300	$1,250,300	$284,400	$31,300
Green	Lakewood*	$7,500	$228,400	$43,400	$7,500
Green	Long Beach*	$0	$466,200	$72,300	$0
Green	Avalon*	$2,100	$119,000	$18,900	$2,100
Green/Silver	Harbor Freeway*	$0	$183,400	$26,500	$0
Green	Vermont/Athens*	$7,300	$11,100	$23,600	$7,300
Green	Crenshaw*	$9,400	$19,900	$83,600	$9,400
Green	Hawthorne/Lennox*	$8,700	$277,900	$51,200	$8,700
Green	Aviation/LAX*	$7,100	$19,800	$64,100	$7,100
Green	El Segundo	$0	$69,700	$4,000	$0
Green	Douglas*	$0	$3,000	$4,500	$0
Green	Redondo Beach*	$0	$17,500	$18,500	$0
Orange	Van Nuys	$7,300	$24,800	$11,800	$7,300
Orange	Sepulveda	$36,000	$10,500	$2,500	$0
Orange	Balboa	$5,200	$12,700	$5,200	$5,200
Orange	Reseda	$9,500	$35,800	$18,300	$9,500
Orange	Pierce College*	$24,000	$10,500	$0	$0
Orange	Canoga	$0	$10,500	$0	$0
Orange	Sherman Way	$3,700	$18,700	$8,200	$3,700
Orange	Chatsworth*	$0	$0	$0	$0
Red/Purple/Gold	Union Station	$0	$17,500	$0	$0
Red	Universal City/Studio City*	$51,100	$38,200	$23,900	$15,100
Red/Orange	North Hollywood	$46,200	$63,600	$86,200	$31,200
Red	Westlake/MacArthur Park	$7,600	$23,700	$7,600	$7,600
Silver	Slauson*	$7,300	$121,900	$27,600	$7,300
Silver	Manchester*	$7,300	$185,700	$32,400	$7,300
Silver	Rosecrans*	$5,200	$246,900	$40,700	$5,200
Silver	Harbor Gateway Transit Center	$0	$6,000	$142,900	$0
Silver	El Monte*	$32,400	$69,900	$171,100	$32,400
Silver	Carson*	$2,100	$6,400	$17,100	$2,100
Silver	Pacific Coast Highway*	$7,300	$14,300	$32,100	$7,300
	Total (One-Time and Annual Costs)	**$456,300**	**$4,006,300**	**$1,636,500**	**$286,300**

Source: Walker Consultants, 2017

ROUGH ORDER-OF-MAGNITUDE COSTS AND TIMING

To develop rough order-of-magnitude ("ROM") cost estimates, we assigned cost assumptions to facility-level recommendations. Timing was based on recommended importance of each item with high priority items in year 1, medium priority items in year 2 and low priority items in year 3.

Based on results of the facility recommendations, we estimate that $6.10 million is required over a three-year period and approximately $286,000 per year going forward thereafter for all parking facilities. For Metro-owned facilities, we estimate that $1.38 million is required over a three-year period and approximately $144,000 per year thereafter. For Metro-owned facilities, the estimated costs per year are as follows:

- Year 1: $278,400
- Year 2: $573,400
- Year 3: $524,000

In terms of only one-time costs for Metro-owned facilities, the total is $942,600 over three years with the schedule as follows:

- Year 1: $134,000
- Year 2: $429,000
- Year 3: $379,600

The annual costs are assumed to be incremental to operating and maintenance costs being paid currently. All cost figures are in 2016 dollars.

Due to the costs required to implement the recommended facility improvements, we recommend identifying additional revenue streams to offset these costs, such as introduction or expansion of permit programs and introducing daily fees at high occupancy locations. We assume that permit program enhancements would result in additional revenue generated. In addition, rationalizing low occupancy locations would reduce costs associated with those facilities.

TECHNOLOGY RECOMMENDATIONS

Based on prior review of technology options, Walker recommended pay-by-plate multi-space meters with stationary license plate recognition for enforcement, as this is an extremely efficient payment and enforcement scenario for both transient and monthly transit parking. This would be an ungated system, requiring enforcement; however, post-processing could enable extremely high capture rates of unpaid vehicles. Metro will need to administer citation management to collect unpaid parking fees. Walker recommends offering PbC payments as there is no additional cost and it is a customer service enhancement. Walker recommends facility counts and mobile apps in order to advise patrons of facility status before they arrive – in order to avoid driving to a full facility.

As part of the Pilot Program, Parking Management System devices, included TAP Card/ridership verification, LPR, and pay machines will be installed at all the Pilot Program Metro parking facilities. Mobile payment solution should also be available for the Pilot Program locations. The LPR system will capture all vehicles entering and exiting Metro parking facilities. The pay machines should have the capability of reading TAP cards for ridership verification and provide pay by license plate function. Pay machines should be capable of accepting cash and credit cards on-site. Patrons can simply enter their license plate number and present their TAP card to obtain the transit parking rate and pay for their parking fee prior to exiting the parking facility. The LPR should capture the vehicle's exit and complete the transaction. The LPR system will also retain records for remaining vehicle inventory and outstanding transactions (exit without payment process) for posting billing process.

Walker further recommends that payment, enforcement and citation be fully integrated in a TAP Wallet. The end goal is for the user to be able to use their TAP card for all payments related to their commute. Currently, parking is paid for either with cash, credit card, or a credit/debit card tied to a parking flexible spending account. Transit payments are made via a TAP card which can be linked to a transit flexible spending account. Metro should

continue to work with TAP to integrate both functions on a single TAP card, allowing a patron to tap once to pay for parking and tap once to pay the transit fare.

PARKING ENFORCEMENT RECOMMENDATIONS

A parking enforcement transition will not only eliminate jurisdiction confusion among Metro Transit Security, LASD and CHP officers, it will also consolidate parking enforcement, eliminating the cost of reimbursement to other agencies.

The overall goal of the enforcement transition and enforcement effort should be compliance and customer service rather than revenue generation.

PARKING ENFORCEMENT PROGRAM

In moving forward with the parking enforcement transition, Parking Management held several interdepartmental meetings leading to an agreement by Metro Transit Security, Countywide Planning, Transit Court and Parking Management to transition parking enforcement responsibilities to the Parking Management unit. The Parking Management parking enforcement manager will oversee the new parking enforcement contract and all parking enforcement-related duties.

The Parking Enforcement Program objectives should be to:

- Ensure compliance with Metro's Parking Ordinance at Metro parking facilities.
- Facilitate availability of parking spaces throughout the system.
- Support the Pilot Program.
- Increase safety and security.
- Identify and report maintenance needs.
- Improve overall customer satisfaction with the transit system.

Parking Management has developed a parking enforcement transition program centered on contracting a parking enforcement contractor to focus on enforcing Metro's Parking Ordinance and Parking Fee Resolution (Metro Administration Code Chapter 8), adopted by the Board in September 2015, at all Metro-operated parking facilities. Features of the enforcement program include:

- Innovative technology to support the Pilot Program and enforce parking regulations. Parking enforcement vehicles equipped with mobile LPR cameras which are integrated with all parking payment systems available to Metro customers.
- Reduction of enforcement operating costs by utilizing non-sworn peace officers and providing dedicated enforcement resources.
- Proactive approach driven by compliance data.
- This program will support the Pilot Program and the overall STPP Master Plan findings and recommendations.
- Transit Court: All citation administration and adjudication will remain with Transit Court.

PARKING ENFORCEMENT IMPLEMENTATION PLAN

Metro Parking Management and Transit Court have developed the following inter-departmental responsibilities after the transition:

Metro Parking Management unit Responsibilities:

- Implement new parking enforcement protocol, procedures and schedule for the new parking enforcement program.
- Enforce Metro's Parking Ordinance and Parking Fee Resolution.
- Patrol all Metro-managed parking facilities.
- Report all irregular activities to Transit Court for coordination with law enforcement and/or Metro Transit Security.
- Provide adequate materials for hearing and appeal process to Transit Court.
- Upload via the Transit ECitation Software Application all parking citation data in a citation database of Transit Court.
- Install and purchase all parking enforcement equipment and innovative solutions.
- Procure, monitor performance, audit and administer the parking enforcement contractor contract.

Metro Transit Security Responsibilities:

- Enforce Metro Parking Ordinance violations not related to payment.
- Enforce all Metro adopted Administrative Codes.

LASD/LAPD/LBPD Responsibilities:

- Enforce all California Vehicle Code violations.
- Enforce ADA placard, license plate compliance and parking violations.
- Impound and tow vehicles according to regulation.

Metro Transit Court Responsibilities:

Process and collect parking citation fees.

- Conduct initial review of citations.
- Conduct an Administrative Hearing.
- Audit and account for the parking citation revenue collection.
- Recruit the independent reviewer and/or hearing officers and pay the costs for the review and hearing officers.
- Retention and safekeeping of the records of the appeal hearings.
- Prepare case package for citations which require further appeal process to the Superior Court and represent the Agency on appeals at Superior Court.
- Respond to customer-related citation complaints.

PARKING OPERATIONS RECOMMENDATIONS

PARKING FACILITIES

Each facility can be described as either an Automated Parking Facility or a Permit Only Parking Facility. Automated parking facilities will have parking attendants who serves as customer service ambassadors to assist patrons generally from 4:00 AM to 8:00 PM. Permit only parking facilities will depend on permit enforcement operation. Automated parking facilities should be available to transit patrons 24 hours a day and 7 days a week throughout the year. Parking attendants should be available during the operating hours of 4:00 AM to 8:00 PM to assist transit users and help answer any general customer service questions. Parking attendants should inventory the parking facilities at the beginning and the end of their shift to identify unreadable license plates, such as dealer plates, and international plates. Parking attendants should consolidate all the information gathered and submit it to the Metro parking permit processor to ensure that all outstanding transactions are billed properly. Patrons needing any assistance will be able to use the intercom at the pay machines to connect with the customer service center 24 hours a day.

PERMIT ONLY PARKING

The Expo/Bundy on-street parking spaces and the Downtown Azusa parking facility are two locations that will operate under the "Permit Only" parking configuration. The Expo/Bundy parking facility consist of 217 on-street parking spaces. For the Pilot Program, 175 of these spaces will be available only through monthly parking permits. The remaining 42 spaces will be daily permit parking. The Downtown Azusa Parking facilities has 186 Metro transit patron parking spaces located on the top two levels of the facility. All of these spaces are available only through monthly parking permits. Patrons can pay for monthly or daily permits through either a mobile application, by calling in to a customer service provider, or online. These parking spaces are for transit parking only and will be patrolled by officers of Metro-authorized parking enforcement agencies. Violators will be subject to citation or towed.

PARKING REVENUE COLLECTION AND REPORTING

Automated parking facilities will accept cash, credit card and mobile payment. The Parking Management Operator ("Operator") should collect all the daily parking revenue via different payment solutions. In addition to parking attendants, the Operator will provide revenue collection staff to retrieve cash revenue from all pay machines, and reconcile with the daily revenue report generated by the automated parking management system. All cash revenues are required to be deposited in the bank daily. Credit card and mobile payment transactions shall also be reconciled daily. The operator is anticipated to provide daily revenue report for gross revenue daily and submit to Metro Parking Management staff electronically. Metro Parking Management staff should also have access to the parking revenue collection system for auditing purposes. The operator should be required to provide monthly reports to illustrate all gross revenue and expenses, and pay any parking tax on Metro's behalf, if applicable. Monthly reports should include, but not be limited to, all labor costs, credit card processing fee, mobile payment transaction cost, amortization of parking equipment, all management fees, mobile payment application costs, amortization of parking equipment, all management fees, and other reimbursable expenses with detailed back up documents to support expenses.

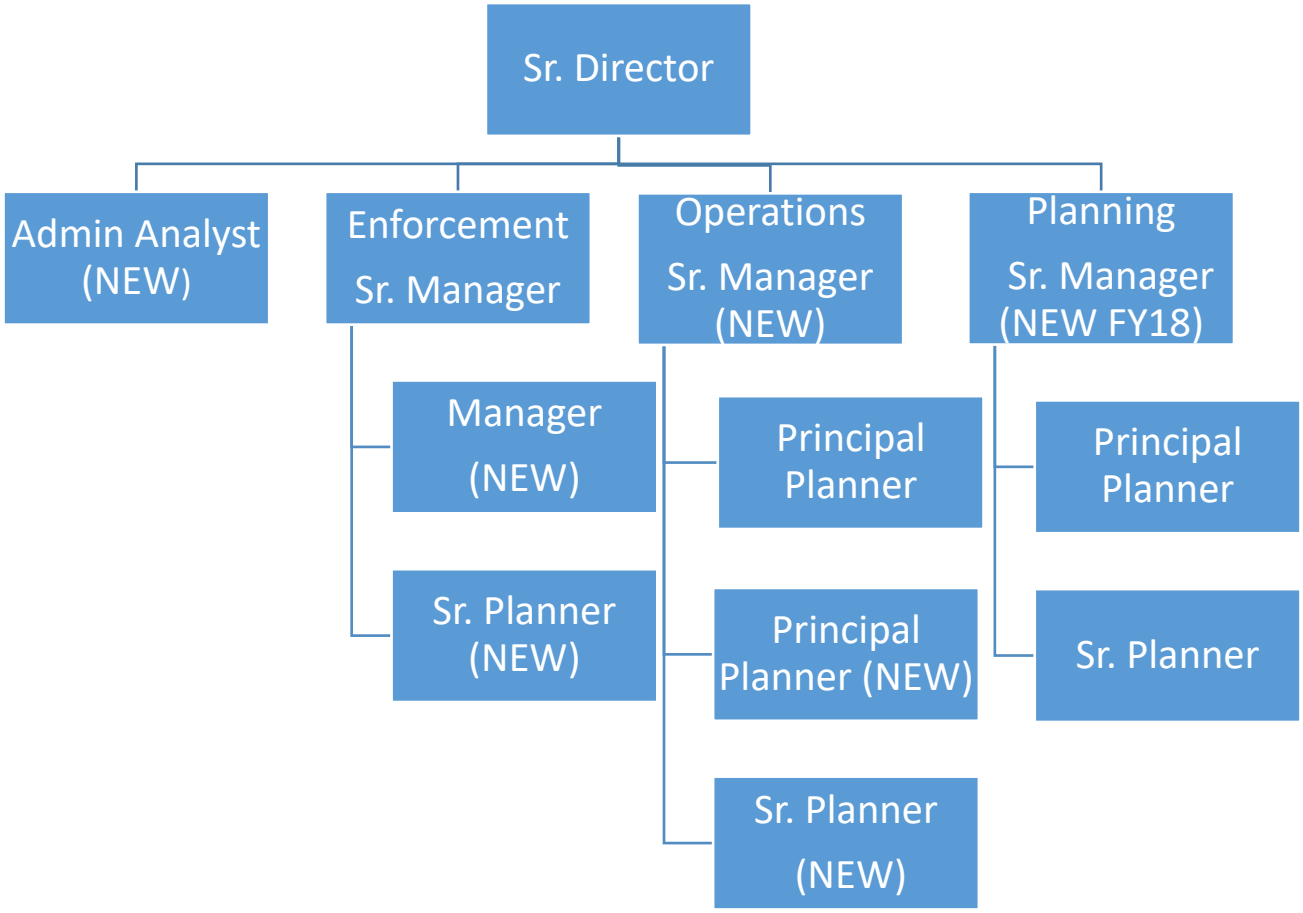
PARKING MANAGEMENT UNIT ORGANIZATION STRUCTURE RECOMMENDATIONS

Walker recommends the following additional positions be staffed within the parking management unit when/if the Pilot Program is expanded to additional locations.

- Senior Manager (Planning) – Responsible for leading the planning department, including capital projects and planning for new lines/parking facilities.
- Administrative Analyst – The eventual structure of the Parking Management unit will see the planning, budget and administrative piece split into two: Planning and Administration. This individual will need a parking administration skill set, and will report directly to the director of the Parking Management unit. This individual will focus on revenue/expense reconciliations and will liaise with and audit the parking operator managing Metro's paid parking facilities.
- Manager (Enforcement) – Customer service focused role to handle the back end of parking enforcement dealing with inquiries, complaints and disputes.
- Senior Planner (Enforcement) - Customer service focused role to handle the back end of parking enforcement dealing with inquiries, complaints and disputes.
- Senior Manager (Operations) – With the conversion of parking from free to paid, customer expectation for facility upkeep and safety will increase. While the facilities maintenance department is a separate entity from the Parking Management unit, the Parking Management unit will need inspectors to visit the parking facilities on a rotating basis to identify any maintenance needs, write up work orders based on their observations, and follow-up to ensure that the maintenance is performed. This operations manager will oversee the operations component of the Parking Management unit, which will include routine inspection of all Metro parking facilities, the compilation of work order requests, and collection of and analysis of data from the parking operator.
- Principal Planner (Operations) – Responsible for inspecting parking facilities on a rotating basis to identify any maintenance needs, write up work orders based on their observations, and follow-up to ensure that the maintenance is performed.
- Principal Planner (Operations) – Responsible for inspecting parking facilities on a rotating basis to identify any maintenance needs, write up work orders based on their observations, and follow-up to ensure that the maintenance is performed.
- Senior Planner (Operations) – This individual would help the operations manager and planners on a day to day basis. Urgent issues in the field would be delegated to the operations assistant.

Figure 14 shows the recommended organization structure for the Parking Management unit as the Pilot Program is transitioned to a permanent program.

Figure 14: Medium-Term Parking Management Unit Organizational Structure



Source: Metro, Walker Consultants, 2017

RECOMMENDED PARKING FACILITY MAINTENANCE PROGRAM (FOR STRUCTURED AND SURFACE PARKING FACILITIES)

The purpose of a maintenance program is to protect the initial investment by coordinating proper and timely preventive maintenance that reduces premature deterioration of the parking facilities. This maintenance program will address general as well as specific maintenance needs in a cost-effective manner. Maintenance can be separated into two classes: Operational and Structural. Operational maintenance is required to operate a facility effectively. Structural maintenance is required to protect structural integrity and maintain the facility's fixed elements.

A key component of the implementation of the Master Plan is implementation of a comprehensive maintenance program at Metro parking facilities. As the Pilot Program is rolled out to more locations/transitioned to a

permanent program, customer expectation related to the safety, cleanliness, and state of repair of parking facilities will rise.

Specific repairs exceed the scope of this plan. A qualified engineer should be consulted for structural repairs such as patching, floor slab overlays, traffic topping installation, sealer application, crack repairs, and expansion joint installation as well as surface parking lots pavement, sidewalks, retaining walls, sound barriers, drains, and embankments. Manufacturers and suppliers should be consulted for mechanical and electrical repairs, light poles and foundations, security and surveillance systems, signs, pavement markings, security systems, architectural features, landscaping, and fencing.

Metro has been supplied with equipment "Owner's Manuals" and service information.

RECOMMENDED APPROACH

Parking facility maintenance primarily includes actions to extend the service life and support the operation of the facility. We separated these actions into two main categories:

- Structural
- Operational

Many factors influence the cost of maintaining a parking facility. The types of items that need to be included are as follows:

- Cost of periodic repairs and/or corrective actions that are necessary to maintain serviceability and facility operations. This includes daily or routine maintenance.
- Cost of preventive maintenance actions that are required to extend the service life of the facility.
- Cost of major structural repairs to restore structural integrity and serviceability when the effects of aging and deterioration become widespread.
- The replacement cost for operational elements at the end of their estimated service life.

Costs are based on regular, timely maintenance that results in favorable long-term maintenance costs. Deferring maintenance can result in shorter service life, early replacement costs, expensive repairs, additional maintenance requirements, and higher maintenance costs. The costs shown do not eliminate long term repairs, but instead, help to keep long term repair costs manageable.

Operating a parking facility requires other procedures and costs in addition to the maintenance items presented. We have not attempted to show the soft costs of operating the facility or the daily operating procedures and costs (such as housekeeping, cashiering, management, other staffing, landscape maintenance, cleaning, taxes (if applicable), utilities, etc.). This cost will vary with the type of structure and the amount of maintenance required.

A comprehensive maintenance program requires that an annual budget be established. This budget should begin with the first day of operation and account for costs such as operating expenses, operating maintenance, and infrastructure maintenance. Operating expenses include costs for daily maintenance, supplies, insurance, cashiering, management fees, on-site security, infrastructure maintenance, and property, parking, and sales taxes. Operating maintenance includes costs for sweeping and cleaning sidewalks, removing graffiti, replacing light bulbs

and ballasts, repairing parking and revenue control equipment, restriping, sign replacement, and landscape maintenance. Infrastructure maintenance costs include conditional assessments, testing, concrete repairs, applications of overlays and penetrating sealers, repairs of traffic topping, routing and sealing cracks, water damage monitoring, security system maintenance, and lighting repairs.

The average annual operating cost of a parking structure on a per space basis is about $400 to $600. Cashiering and management account for 35% to 40% of that cost, while routine and preventative maintenance is about 10% to 18%, utilities are about 10% to 15%, and miscellaneous costs can be as high as 18% to 23%. The expenses, however, can vary dramatically, depending upon variables such as size of facility, geographical location, staffing patterns, method of operation, and local taxes.

The average annual operating cost of a surface parking lot on a per space basis is about $100 to $300. Landscaping, security, and management account for 35% to 40% of that cost, while structural and routine maintenance is about 10% to 18%, utilities are about 10% to 15%, and miscellaneous costs can be as high as 18% to 23%. The expenses, however, can vary dramatically, depending upon variables such as size of facility, geographical location, staffing patterns, method of operation, and local taxes.

DEFINITIONS

1. Housekeeping is the general cleaning and maintenance of the facility. Routine tasks include sweeping and washing floors, replacing lights, removing graffiti, emptying trash, washing windows, pruning trees, and maintaining the grounds.

2. Preventive maintenance are tasks to extend the life of the facility and extend the time before major repairs are needed. These include items such as corrosion protection, structural protection and waterproofing, traffic membrane, joint sealants, sealing cracks and potholes, upgrading security and surveillance systems, installing anti-graffiti coatings on metal surfaces, installing drains to remove nuisance water runoff, and trimming tree roots. Preventive maintenance does not usually entail the major disruptions associated with structural repairs.

3. Routine maintenance/repairs are tasks that restore or replace portions of the structure to forestall the need for major repairs. These include partial depth floor repairs at isolated locations to minimize the need for future full depth or total slab replacement. It also includes repairing leaking joint sealant, clearing plugged drain lines, replacing damaged light fixtures, replacing damaged sections of fencing, periodic maintenance of sealers and traffic toppings, retaining walls or sound barriers, small area repairs to spalled or delaminated concrete, replacing expansion joint seals, replacing signs and pavement markings, and replacing leaking irrigation systems and other similar work.

4. Structural repair costs involve extensive repairs to the structural floor and frame to restore structural integrity. This will occur later in the life of the structure when routine maintenance is no longer effective at slowing down the effects of ongoing deterioration. The intent is to bring the structure back to a condition where routine maintenance is once again effective for many years until another major structural repair project is needed.

5. Replacement costs include the cost to replace operational items that are at the end of their service life. Operational items include lighting, elevators, plumbing, security cameras, and parking access and control equipment.

6. NPDES (National Pollutant Discharge Elimination System) is a permitting program that aims to address water pollution by regulating the discharge pollutants to waters of the United States. SWPPP (Storm Water Pollution Prevention Plan) is a requirement in obtaining a stormwater permit. SWPPP's identify all potential sources of pollution that may be reasonably expected regarding storm water discharge following a storm event. Effort should be made for maintenance activities to conform to NPDES and SWPPP stated goals and objectives.

SPECIAL CONDITIONS

Parking structures are unique facilities and vary in many ways from most buildings. Structurally, parking facilities are more complex than other concrete buildings due to environmental conditions. A preventive maintenance program will help reduce the continuing deterioration.

Public surface parking lots near transit facilities are unique and serve a vital role in public mobility. They have more amenities than commercial parking lots and are subject to more wear and tear due to regular public use. A preventive maintenance program will help prolong their useful service life.

MAINTENANCE PROGRAM BENEFITS

Parking facilities represent a significant commitment of capital. The principal benefit of a maintenance program is protection of that capital investment. When a parking facility is part of a larger facility, such as an office or retail complex, the need for regular maintenance is even more critical. Any parking structure or surface parking lot deterioration could also affect the attached facilities. Maintenance must be performed at regular intervals to be cost-effective. Irregular maintenance will provide a marginal return on investment.

Attention to the facility's physical appearance and general cleanliness will promote user confidence. A regular maintenance program will help provide user safety through proper lighting levels, signage, and sound walking and driving surfaces.

INFLUENCE OF AS-CONSTRUCTED/EXISTING CONDITIONS ON MAINTENANCE

STRUCTURED PARKING

As-constructed and existing conditions present unique concerns. This section describes specific samples of maintenance items that should be checked during walk-through reviews.

1. Traffic Topping: Traffic bearing waterproofing membranes usually occur at the roof level and over any occupied spaces to protect the embedded mild steel reinforcement.

    a. High Wear Area: Areas where tight turns are made, such as at the top and bottom of express ramps, drive aisles, or entry/exits are subject to higher wear. These areas will probably require

recoating or repair sooner than parking areas. Any areas that wear through the membrane should be repaired as soon as possible after the condition is observed.

b. Cracks: The traffic bearing membrane is designed to span the shrinkage cracks and flexural bending cracks which typically occur in the structures. Cracks that breach the membrane should be routed and sealed immediately to prevent chloride-laden water from contaminating the concrete. The membrane should be repaired at these locations.

c. Blisters or Tears: In some areas the traffic topping may fail prematurely due to improper surface preparation, material failures, and too low temperatures during installation. These items are normally covered under warranty and usually occur during the first few years the structure is in use. Observed areas should be noted during operational inspections and cleaning. Observations should be noted and include a description of the location and extent of the problem.

2. Penetrating Sealer: Penetrating sealers help slow down chloride ion migration through the concrete floor slab. Sealers are sometimes applied at supported levels, except where a traffic topping membrane occurs. The sealer penetrates approximately 1/4", but it wears off over time due to heavy traffic. Reapplications should be performed every three to five years.

3. Expansion Joints: Expansion joints require a high level of maintenance. There are various types depending on the structure, environment, and use. Examples include rubber gland, silicone, and pre-molded, among others.

If properly maintained and repaired as soon as leaks are discovered, typical joint systems should have a 10- to 12-year life expectancy. Expansion joints will develop leaks at some point in their life. Prompt repair of leaks is important to avoid chloride contamination of the concrete below.

4. Concrete Repairs: Miscellaneous and ongoing concrete repairs are to be expected. The cause of chloride ion contamination would most likely come from a marine environment where the structure is constantly exposed to salt water moisture. Salt water damage is not a concern for facilities more than three miles away from a marine environment, however, the chloride ion content of the floor slabs should be regularly monitored at any facility.

Environmental monitoring should also take place with facilities located near industrial areas. Common soil contaminants include mercury, lead, and PCBs, all of which can be harmful to foundation concrete.

5. Floor Drains: Accumulation of dirt, leaves, oil, etc. can result in an aggregation of debris in the drain lines. Regular flushing of these lines will reduce buildup in the drain lines; however, it is expected that these lines will still have to be cleaned every few years.

Metro is encouraged to monitor and treat stormwater runoff from structure drains. Use Metro's NPDES General Permit as a guideline for thresholds of contaminant levels. Stormwater discharge may also be treated per the local city's SWPPP program.

SURFACE PARKING

Surface parking lots are typically designed and constructed as part of a major transit corridor project. Generally, the life cycle of a surface parking lot starts with the opening of service of the adjacent transit line. Surface lots near the Blue and Orange lines would be older and showing more signs of use, compared to the Expo and Gold lines which opened more recently. Therefore, surface lots would have different maintenance needs generally based on the age of the adjacent transit line.

A surface parking lot may last between 10 and 30 years, or beyond. Frequently, a surface lot may be absorbed into a transit-oriented development some years after opening for service. Maintenance needs, especially long-term capital costs, should be evaluated regularly for compatibility with transit-oriented development.

As-constructed and existing conditions present unique concerns. This section describes specific maintenance items that should be checked during walk-through reviews.

1. Pavement Surfaces: Surfaces of asphalt or concrete that accommodate vehicular and pedestrian travel.

    a. High Wear Area: Areas of high vehicular traffic such as entrances, exits, and drive aisles. These areas will require resurfacing or repair sooner than parking areas. Any areas of distress that wear through the pavement should be repaired as soon as possible after the condition is observed.

    b. Cracks: Asphalt pavement is designed to expand and flex through vehicular use, temperature cycling, and other dynamics typical of parking lot surfaces. Concrete is designed to stabilize areas subject to the movements of water and soil. Cracks and depressions that form over time should be routed and sealed immediately to prevent water from eroding pavement. Pavement should be replaced in locations of severe distress.

2. Light Poles and Foundations: Overhead light pole standards provide illumination for safe travel during dark hours. Over time, light poles may develop stress such as bending due to wind or seismic forces. Foundations can also be compromised from poor soil or water erosion. Corrosion and failure of electrical components would decrease the efficiency of the illumination. Light pole standards and electrical systems should be observed regularly, stresses noted, and equipment replaced to eliminate hazards.

3. Equipment for Electrical, Security, and Fire Protection Systems: These systems are crucial to a functional parking facility, providing efficient regular service and protection during emergencies. Reliable systems and components should be inspected regularly, and replaced promptly as needed, to ensure reliability.

4. Concrete Structure Repairs: Miscellaneous and ongoing concrete repairs are to be expected for retaining walls, sound barriers, and other structural elements. Control of nuisance water and vegetation is essential to reduce the long-term stresses they may impose on concrete structures.

5. Drainage: Elements of the drainage system include gutters, inlets, catch basins, piping, clarifiers, detention areas, and outlets. These elements must be inspected regularly for leaks and erosive damage. Prompt repair would ensure proper conveyance of water and prevent long term damage to infrastructure elements.

6. Landscaping, Fencing, and Facilities: Continual use of transit parking lots by the traveling public would take its toll on the parking lot facilities over time. Removal of graffiti, replacement of damaged fencing, and upkeep of trees and vegetation would provide a pleasant experience for the public and promote the facility's use to more travelers.

Appendix 7 contains the complete maintenance manuals and checklists developed for surface lots and parking structures by Walker for Metro.

Strategic Implementation Plan

09 Section

The goal of the Strategic Implementation Plan, and of the overarching Master Plan effort, is to create a world class parking organization that leverages technology, provides excellent customer service, and improves the overall transit experience while covering its operation costs to the extent possible. A 10-year planning horizon is envisioned for full implementation of the plan.

The primary objectives of the Strategic Implementation Plan are:

- Maintain a state of good repair at all parking facilities.
- Use available technology to improve customer service and reduce transaction times.
- Enforce the system with a focus on compliance.
- Monitor the Parking Program, and adjust operations as necessary.
- Act as a County-wide resource for local jurisdictions and assist with managing potential parking overspill in station-adjacent areas.
- Bring all existing parking facilities, and future facilities at new stations, under the Parking Program umbrella.
- Staff the Parking Management unit appropriately with the growth of the parking management program to provide excellent customer service, enforcement, planning and operations.
- Use Parking Design Toolkit and Long-Range Parking Planning Toolkit to plan future facilities in a forward-thinking manner.

The actions and recommendations to achieve the Strategic Implementation Plan's objectives are organized along two paths, overarching actions and recommendations that should occur throughout the 10-year horizon, as well as a list of specific actions and goals over the course of the planning horizon.

YEAR 1-10 ONGOING ACTIONS AND RECOMMENDATIONS

PLANNING

The objective of the planning department over the implementation plan horizon is to assess existing and proposed parking facilities to determine how best to operate them within the parking program and to prioritize implementation at stations with the highest parking utilization. At the end of the strategic implementation plan horizon, every station should be integrated into the parking program.

- Act as a Countywide planning resource, offering assistance to jurisdictions in the management of parking overspill issues near stations.
  - With authority from jurisdictions, Metro can offer parking enforcement around station areas and recommend parking policy adjustments such as time limits, permits, or a manageable paid parking program to increase the efficiency of the parking system.
- Review parking occupancy in Metro parking facilities on a quarterly basis.
  - Update the prioritization of stations being added to the Parking Management Program if necessary.
- The Parking Management unit should be involved in the planning and of all future assignment utilizing the tools that have been developed as part of the Master Plan.
  - The Long-Range Parking Planning Toolkit should be utilized to plan parking at all future facilities.

- Strategically design what parking capacity to build with an eye on technological trends that could affect parking demand.
- Strategically plan not to overbuild new parking facilities.
- Future facilities should be planned to have paid parking on opening day.
  - The Parking Design Toolkit should be utilized to design future parking facilities to reasonable and appropriate parking design standards
- The Parking Management unit should be staffed appropriately to run and maintain a world class parking system.
- Periodically conduct parking rate surveys of non-Metro parking facilities to keep Metro parking .competitively priced to discourage the use of Metro parking facilities by non-riders.
- Periodically evaluate the parking price ceiling.

ENFORCEMENT

There are three primary enforcement objectives to achieve during the strategic implementation plan horizon. The first is the transition of parking enforcement duties to the Parking Management unit, utilizing outsourced enforcement officers. The second overarching objective is to have a customer service focused enforcement program emphasizing compliance, and the third is to adjust the enforcement program as needed to close loopholes and improve customer service.

Over the next 1-3 years, the transition to outsourced enforcement should be completed, with enforcement technologies tested and working. The enforcement team should be added to as additional stations are incorporated into the parking program.

- Enforcement technologies should be tested on a limited basis in the field before being rolled out system wide.
- Enforcement personnel should be trained to properly use the enforcement technology and to focus on customer service.

OPERATIONS

The main objectives of the operations team should be to maintain a functional, world-class parking system in conjunction with it sparking vendors, and to maintain the parking facilities in a state of good repair.

- Facilities Maintenance Inspectors should visit parking facilities on a rotating basis, with an emphasis on stations in the Parking Program, to document repair and maintenance issues.
- Engage qualified structural engineers to provide assessments of structured parking facilities and prepare Capital Asset Plans for each facility to maintain a state of good repair.
- Consider outsourcing routine cleaning and maintenance for Metro parking facilities.
- Routinely clean parking facilities.
- Conduct structural repair as outlined in Capital Asset Plans for each facility to maintain a state of good repair.

PARKING MANAGEMENT PROGRAM

At the end of the 10-year Strategic Implementation Plan horizon, the Parking Management Program should have been implemented in at least 39 of Metro's 59 stations with parking.

10-YEAR PLANNING HORIZON – SPECIFIC ACTIONS AND RECOMMENDATIONSFADMIN

Table 18: Year-by-Year Strategic Implementation Plan Items

Year/Action	Seismic Study of Older Structures	Seismic Retrofits Where Necessary	Implement Parking Management Program at Additional Locations	Staff Parking Management Unit Appropriatly	Complete Parking Enforcement Transition	Improve Signage/Wayfinding and Lighting at High Priority Locations	Improve Signage/Wayfinding and Lighting at Medium Priority Locations	Improve Signage/Wayfinding and Lighting at Low Priority Locations	Complete TAP Wallet Transition	Install Parking Guidance Systems at High Priority Locations	Install Parking Guidance Systems at Medium Priority Locations	Install Parking Guidance Systems at LOw Priority Locations	Resurface or Reconstruct Pavement at High Priority Locations	Resurface or Reconstruct Pavement at Medium Priority Locations	Resurface or Reconstruct Pavement at Low Priority Locations	Review Technology Options/Requirements and Re-bid Operator Contract
Year 1	X		X		X	X							X			
Year 2		X	X	X		X				X			X			
Year 3		X	X	X		X			X	X			X			
Year 4		X	X	X		X				X			X	X		
Year 5		X	X	X			X				X			X		X
Year 6			X	X			X				X			X		
Year 7			X	X			X				X			X	X	
Year 8			X				X					X			X	
Year 9			X					X				X			X	
Year 10			X					X				X			X	

Source: Walker Consultants, 2017