

Metro

*Los Angeles County Metropolitan Transportation Authority
One Gateway Plaza
3rd Floor Board Room
Los Angeles, CA*



Agenda - Final

Thursday, June 21, 2018

1:00 PM

**One Gateway Plaza, Los Angeles, CA 90012,
3rd Floor, Metro Board Room**

Ad Hoc Customer Experience Committee

Mike Bonin, Chair

Robert Garcia, Vice Chair

Tafarai Bayne

Jacquelyn Dupont-Walker

Kurt Hagen

Lys Mendez

Dave Myers

Carrie Bowen, non-voting member

Phillip A. Washington, Chief Executive Officer

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(ALSO APPLIES TO BOARD COMMITTEES)

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A member of the public may address the Board on agenda items, before or during the Board or Committee's consideration of the item for one (1) minute per item, or at the discretion of the Chair. A request to address the Board should be submitted in person at the meeting to the Board Secretary. Individuals requesting to speak on more than three (3) agenda items will be allowed to speak up to a maximum of three (3) minutes per meeting. For individuals requiring translation service, time allowed will be doubled.

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In accordance with State Law (Brown Act), all matters to be acted on by the MTA Board must be posted at least 72 hours prior to the Board meeting. In case of emergency, or when a subject matter arises subsequent to the posting of the agenda, upon making certain findings, the Board may act on an item that is not on the posted agenda.

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- b. A breach of the peace, boisterous conduct or violent disturbance, tending to interrupt the due and orderly course of said meeting.
- c. Disobedience of any lawful order of the Chair, which shall include an order to be seated or to refrain from addressing the Board; and
- d. Any other unlawful interference with the due and orderly course of said meeting.

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NOTE: ACTION MAY BE TAKEN ON ANY ITEM IDENTIFIED ON THE AGENDA

CALL TO ORDER**ROLL CALL**

38. **SUBJECT: ORAL REPORT ON NEXTGEN BUS STUDY SERVICE PARAMETERS** [2018-0229](#)

RECOMMENDATION

RECEIVE oral report on NextGen Bus Study Service Parameters Update.

Attachments: [Presentation](#)

(ALSO ON SYSTEM SAFETY, SECURITY & OPERATIONS COMMITTEE)

55. **SUBJECT: ACTIONS TO MITIGATE SEVERELY CONGESTED BUS CORRIDORS** [2018-0305](#)

RECOMMENDATION

RECEIVE AND FILE report identifying examples of actions available to mitigate the effects of severe bus congestion.

Attachments: [Presentation](#)

56. **SUBJECT: CHIEF EXECUTIVE OFFICER REMARKS** [2018-0365](#)

RECOMMENDATION

RECEIVE report by the Chief Executive Officer

- Ridership Initiatives

Attachments: [Presentation Item 56](#)

57. **SUBJECT: ACCESSIBILITY ENHANCEMENTS** [2018-0286](#)

RECOMMENDATION

RECEIVE AND FILE status report on Accessibility Enhancements.

Attachments: [Presentation](#)

- SUBJECT: GENERAL PUBLIC COMMENT** [2018-0381](#)

Receive GENERAL PUBLIC COMMENT

Consideration of items not on the posted agenda, including: items to be presented and (if requested) referred to staff; items to be placed on the agenda for action at a future meeting of the Committee or Board; and/or items requiring immediate action because of an emergency situation or where the need to take immediate action came to the attention of the Committee subsequent to the posting of the agenda.

COMMENTS FROM THE PUBLIC ON ITEMS OF PUBLIC INTEREST WITHIN COMMITTEE'S
SUBJECT MATTER JURISDICTION

Adjournment



Board Report

File #: 2018-0229, **File Type:** Oral Report / Presentation

Agenda Number: 38.

**SYSTEM SAFETY, SECURITY AND OPERATIONS COMMITTEE
AD HOC CUSTOMER EXPERIENCE COMMITTEE
JUNE 21, 2018**

**SUBJECT: ORAL REPORT ON NEXTGEN BUS STUDY SERVICE
PARAMETERS**

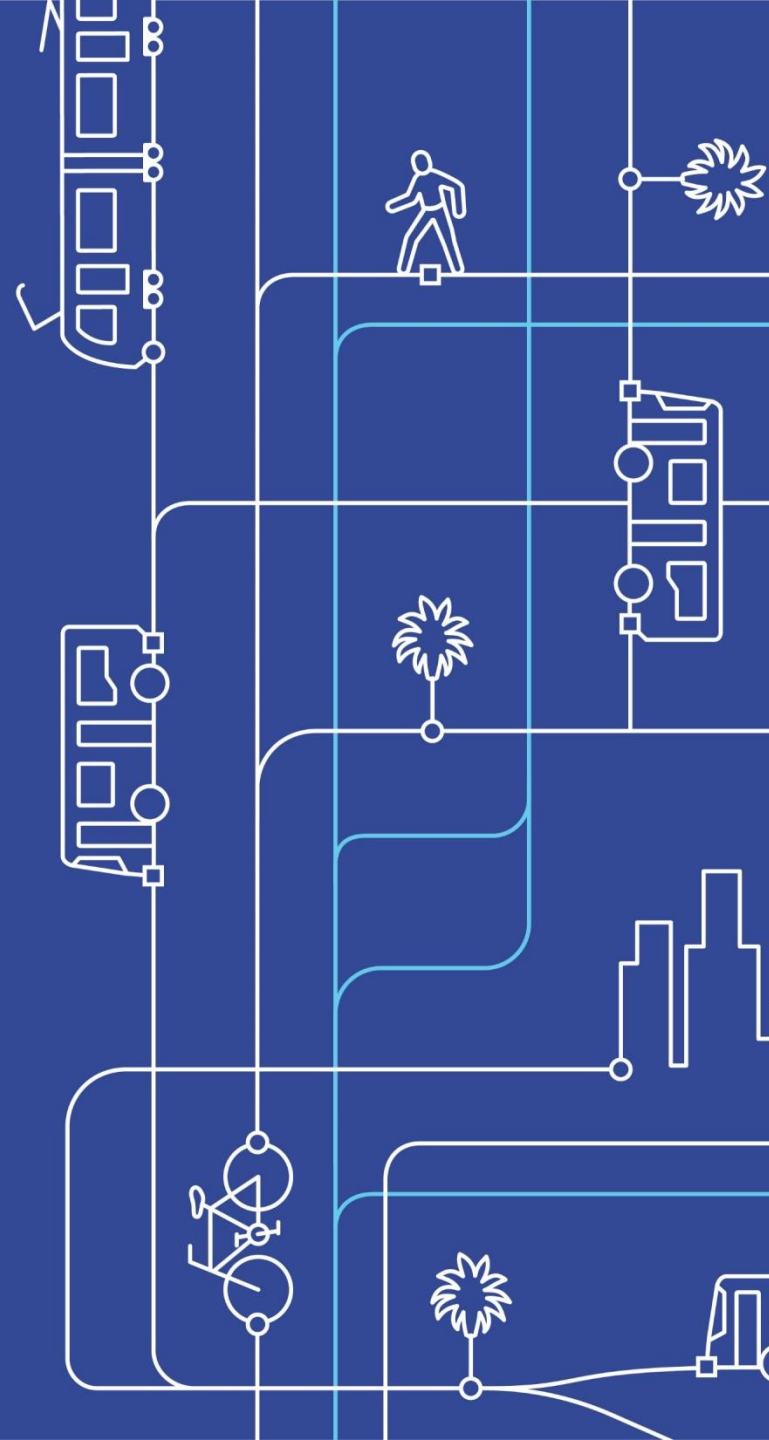
RECOMMENDATION

RECEIVE oral report on NextGen Bus Study Service Parameters Update.

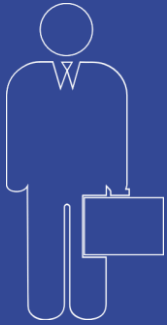
NEXTGEN Bus Study

Bus Service Parameters

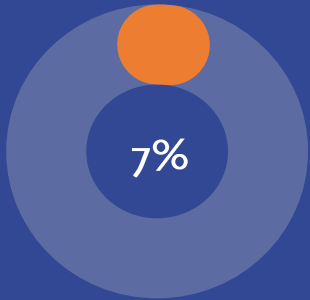
System Safety, Security & Operations
Committee
6.21.18



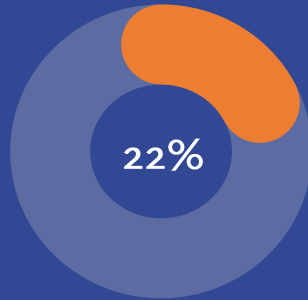
Four Types of Customers



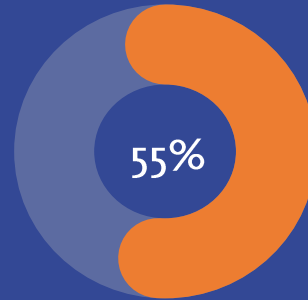
Frequent



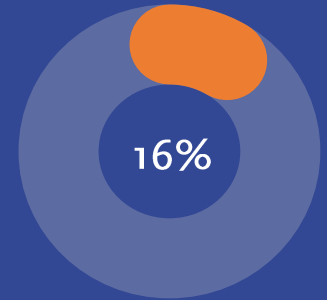
Occasional



Infrequent



Non-Rider



As a % of all LA County residents

Service Parameters

All Riders

Travel Speed

Frequency

Reliability

Current

More Service

Fares

Information

Former

Security
(women, certain geographies)

First/Last Mile
(elderly, higher income)

Comfort
(odors, crowding)

Infrequent/ Non-Rider

Information
(non-riders)

First/Last Mile
(women, youth, elderly)

Comfort
(odors, crowding)

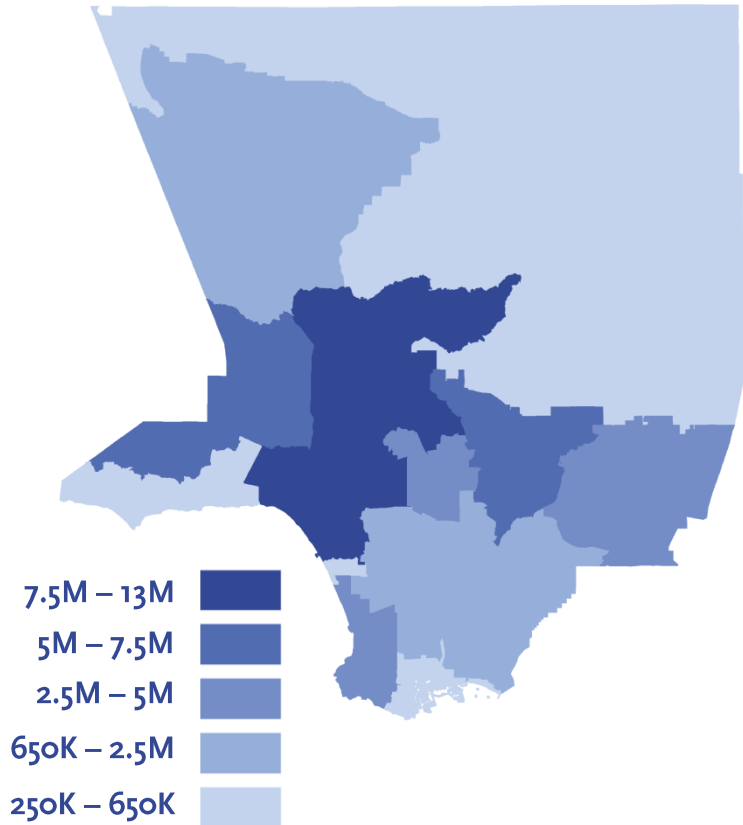
Transit Speed Competitiveness

Run all trips made in LA County through trip planning tools

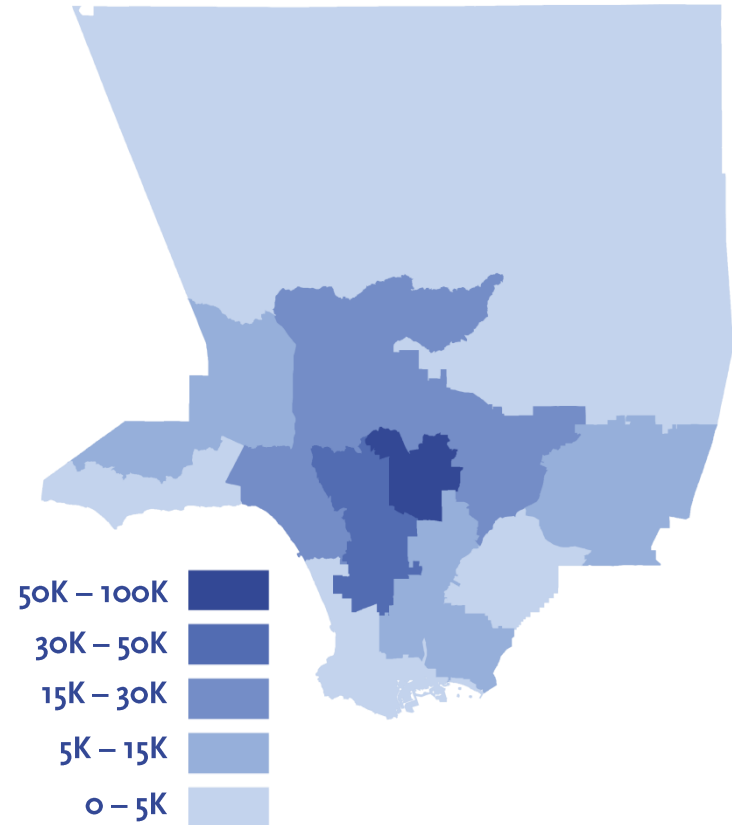


Trip Origins Total vs Transit Trips

All Trip Origins
Location Based Services (LBS)



Transit Trip Origins
(TAP Data)



Downtown LA

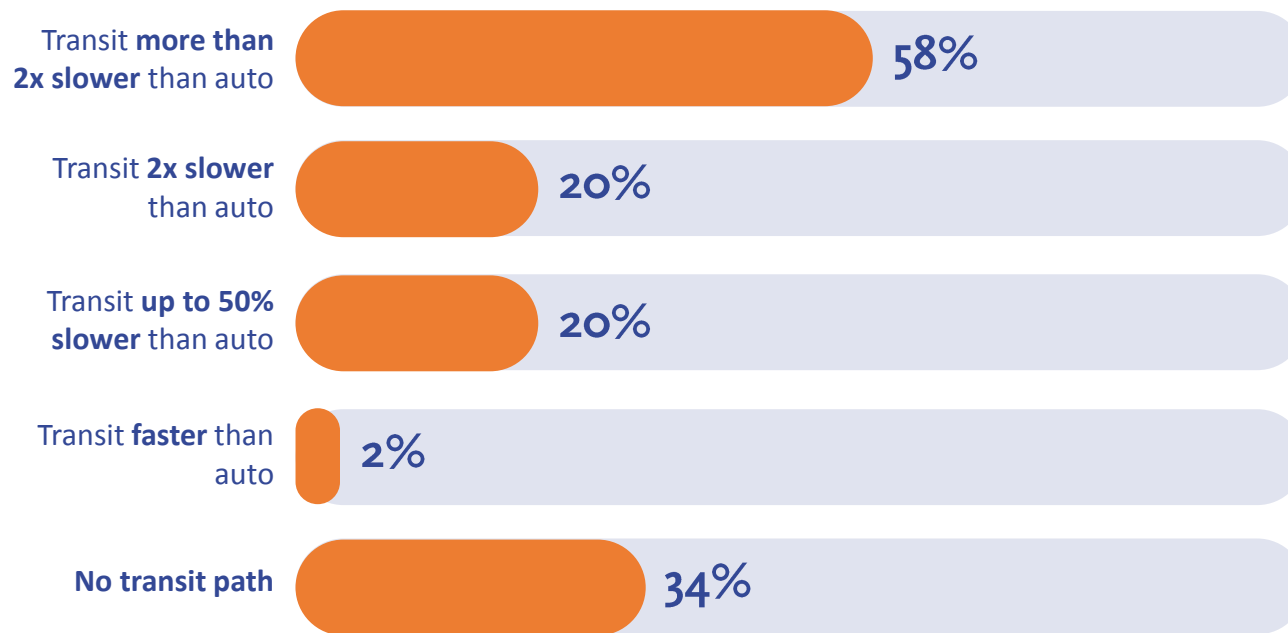
Where They Work

Work Location of
DTLA/Northeast LA Residents



Competitiveness of transit

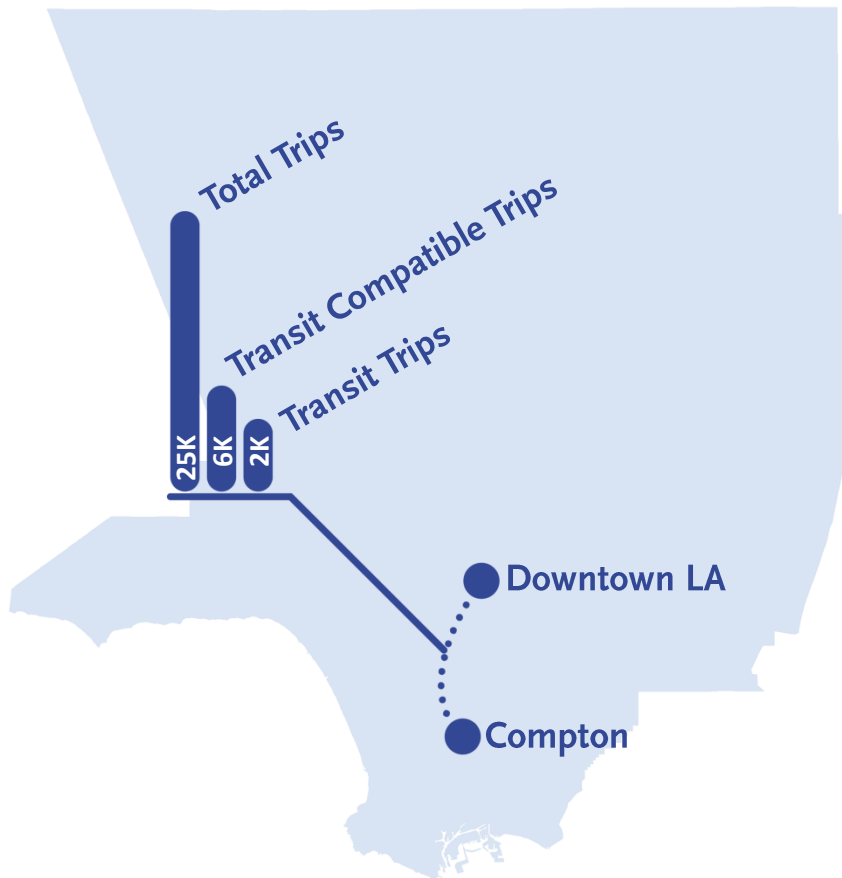
Competitiveness of 2,500 trips made by DTLA/Northeast LA residents



Transit

Competitiveness

How the analysis will be extended...



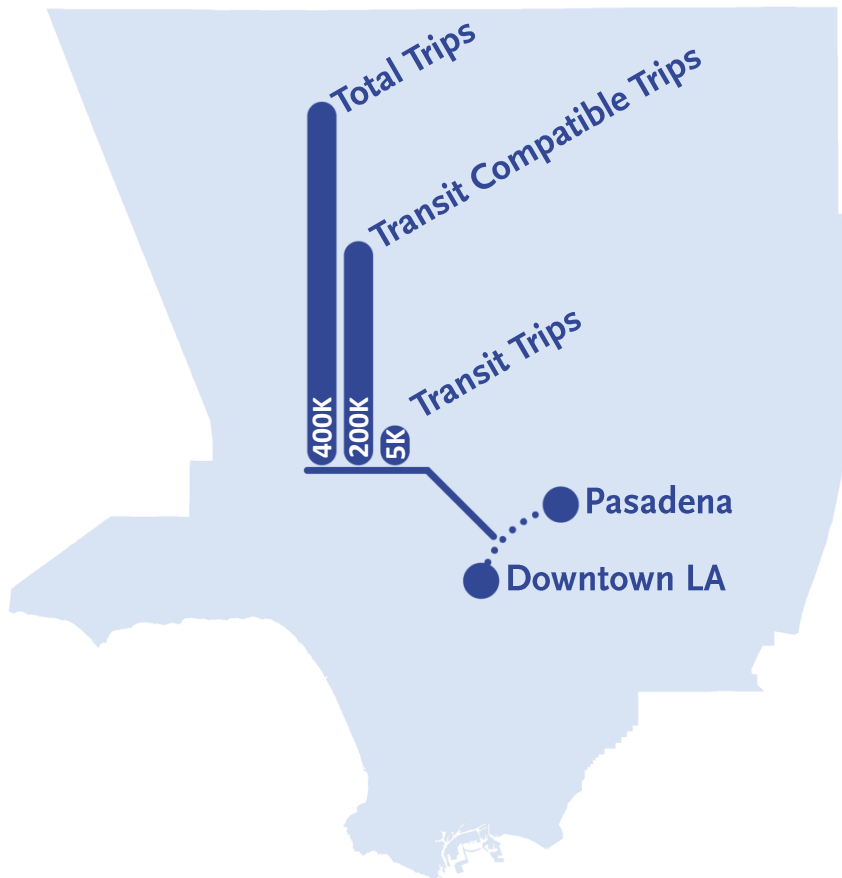
- Small travel market
- Transit competitiveness is low
- Among competitive trips, transit share is reasonably high

Should we invest to improve transit speed & frequency to increase compatible trips?

Transit

Competitiveness

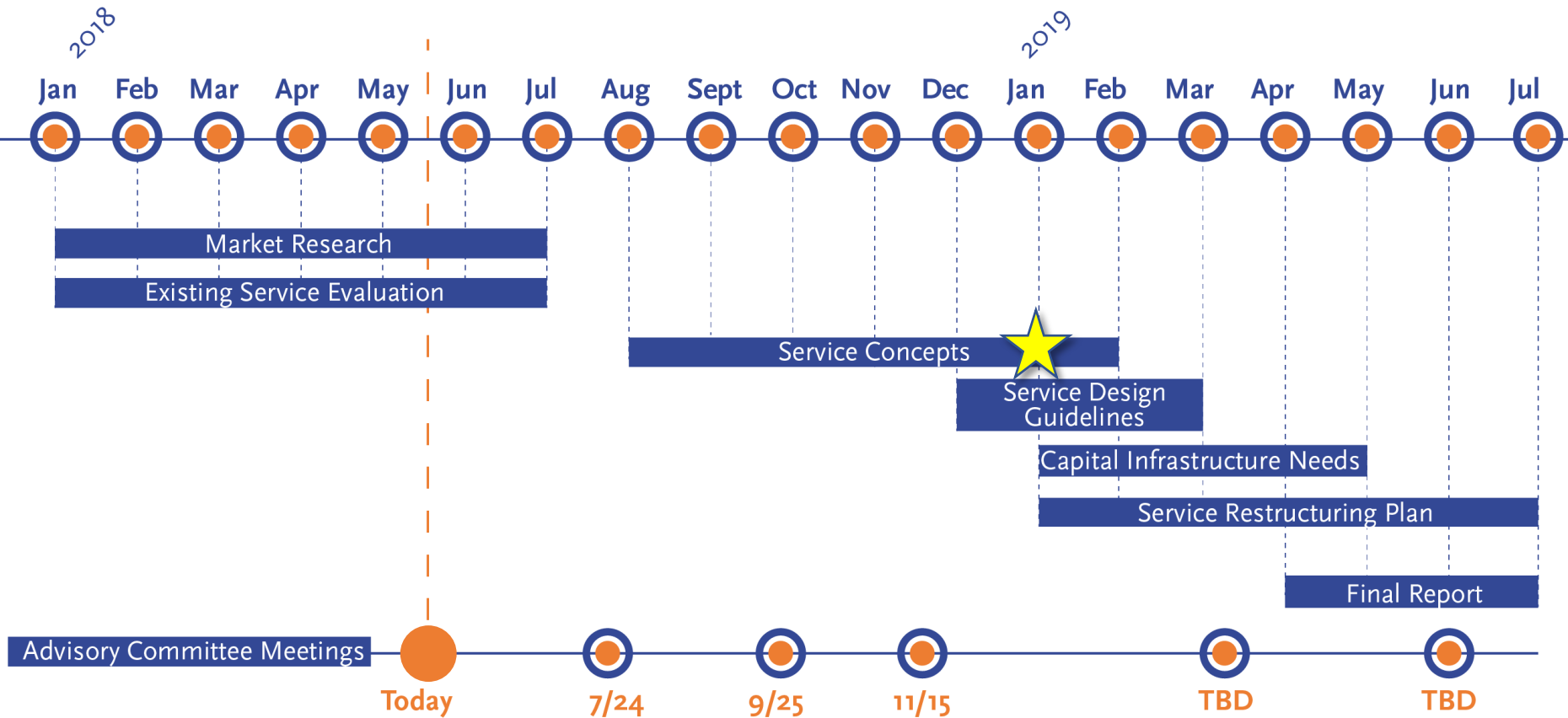
How the analysis will be extended...



- Large travel market
- Transit competitiveness is high
- Among competitive trips, transit share is low

Should we invest to improve service quality & amenities to capture larger share of compatible trips?

Schedule



Board approval of Service Concepts and Parameters

Questions?



Board Report

File #: 2018-0305, File Type: Informational Report

Agenda Number: 55.

AD HOC CUSTOMER EXPERIENCE COMMITTEE JUNE 21, 2018

**SUBJECT: ACTIONS TO MITIGATE SEVERELY CONGESTED BUS
CORRIDORS**

ACTION: RECEIVE AND FILE

RECOMMENDATION

RECEIVE AND FILE report identifying examples of actions available to mitigate the effects of severe bus congestion.

ISSUE

As part of the NextGen Bus Study, staff has developed a tool that allows us to identify the impacts of traffic congestion on bus speeds. This report identifies the severity of congestion along a sample bus corridor (Vermont Av.) and identifies examples of mitigating actions to reduce the impact on bus speeds.

DISCUSSION

Vermont Av. was chosen as an example corridor because it has been studied in detail for upgrade to Bus Rapid Transit (BRT) and possible future rail operation. The corridor is currently served by a Local bus (Line 204) and a Rapid bus (Line 754). Service is operated over a 12.5 mile segment from Vermont and 120th St. on the southern end to Sunset Bl. at the northern end (Figure 1).

Rapid Line 754 has 24 stops, and Local service on Line 204 serves 68 stops. Rapid service averages about 11.5 mph during peak periods compared with 9.0 mph on Local service. The Rapid is 28% faster than the local requiring an average of 65 minutes to complete a peak period trip while the local takes an average of 84 minutes. The Rapid has about a 32% advantage during off peak periods averaging 56 minutes per trip instead of 73 minutes.

Much of the speed advantage of the Rapid bus can be attributed to serving 44 fewer stops per trip as well as some time savings as a result of signal priority. Only buses equipped with devices that broadcast their presence to the city's traffic signals receive this priority treatment. Starting June 2018, All Door Boarding will be implemented on Line 754, reducing bus stop dwell times by allowing customers with valid TAP cards to board at any door.

Figure 1: Vermont Ave. Studied BRT Proposal



The Vermont Av. bus service is the most productive in the system with Line 754 averaging 80.1 boardings per revenue service hour on an average weekday (18,422 daily boardings), and Line 204 averaging 75.3 boardings per revenue service hour (20,843 daily boardings).

Vermont Av. buses are subjected to severe congestion over much of the service day. The severity of congestion is measured by a Travel Time Index (TTI) which reflects the ratio of travel time for a given time period with travel time during uncongested time periods. A ratio greater than 1.25 is indicative of significant congestion (the bus is taking 25% longer to make the trip than it would without congestion being present). A ratio exceeding 1.50 is indicative of severe congestion. Line 204 experiences severe congestion throughout the day with a TTI averaging 1.55 during the AM Peak period increasing to 1.67 by midday and 1.75 during the PM Peak. Rapid Line 754 experiences TTI's averaging 1.43 to 1.54 during the same time periods. It is less affected by traffic than the Local bus line because it does not make as many stops that require buses to merge in and out of the congested traffic flow.

Congestion Mitigations

The 12.5 mile Vermont Av. corridor exhibits three different street profiles: 1) Starting from the southern end, the first 2.5 miles from 120th St. to about 88th St. provides 3 traffic lanes and a parking lane in each direction separated by a wide median which itself could contain 2 travel lanes; 2) The following 2.5 miles from 88th St. to Gage Av. retains the 3 traffic lanes plus a parking lane in each direction, but the median narrows considerably such that it can no longer contain even one traffic lane; and 3) The northern 7.5 miles from Gage Av. to Sunset Bl. only allows for two traffic lanes and a parking lane in each direction with virtually no median. Thus, the street becomes narrower and more congested as it passes through areas of increasing density.

A study of ways to upgrade Vermont Av. to Bus Rapid Transit (BRT) has been underway for the past few years. A number of mitigations benefitting bus movement have been identified in that study. This report will provide examples of these and others along with their applicability.

- A. Stop Location** - Generally it is preferable to locate bus stops on the far side of intersections so that the traffic signal only affects bus movement once, upon arrival, and can create gaps in the traffic flow allowing the bus to merge back into traffic more easily. There are times when this is not possible such as when an abutting property owner objects, when two lines cannot share a single stop because there is not enough space, a desirable transfer location (such as a rail station) is located near side, or there isn't enough linear space. On Vermont Av. 76% of Rapid Line 754 stops and 44% of Line 204 stops are located far side.
- B. Dwell Time Reduction** - On some high demand bus lines it is possible to achieve significant time savings by converting to all door boarding. All door boarding allows customers with valid TAP cards to board at any door, increasing the flow into and through the bus. This feature will be implemented on Rapid Line 754 starting June 2018.
- C. Exclusive Lanes** - Exclusive lanes (Figure 2) free buses from interaction with other traffic (except at intersections). They are most beneficial if they add to the street capacity rather than sacrificing lanes from an already congested street. This may be accomplished through street widening, or where a sufficiently wide median exists, by adding lanes within the median.

Figure 2: Example of Exclusive Median Bus Lanes



Providing passenger stops may prove difficult if there is little space remaining after adding lanes to the median. Where space permits side platforms, this is ideal because standard buses can be employed. If there is only space for a center platform, then buses must either cross over to the opposite lane to serve each station or they must be equipped with left side doors. The Harbor Transitway Green Line station is an example of a center platform station requiring buses to cross over to serve the station and then cross back to continue on the transitway. The BRT implemented on Euclid Av. in Cleveland employs center platforms served by buses with left side doors (the buses also have right side doors because some operation is in street rather than on the exclusive guideway).

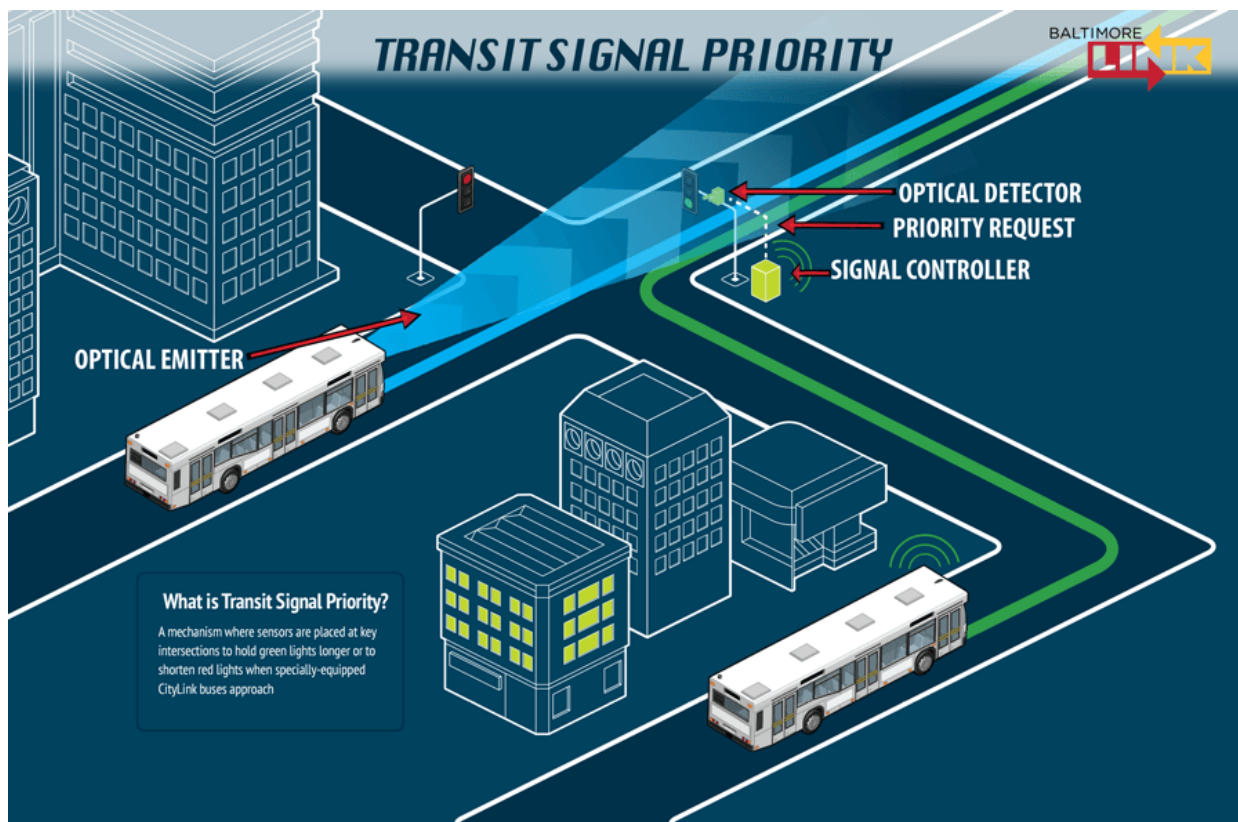
- D. Peak Period Lanes** - Peak period lanes (Figure 3) restrict use to only buses at specified times of the day (though other vehicles may encroach at intersections in order to make right turns). They provide a tradeoff because when limited to buses, the capacity of the street for other vehicles is reduced. Peak period lanes are limited to times of greatest congestion, and often require added enforcement to keep them clear of other vehicles. An example of this mitigation is the exclusive bus lanes on Wilshire Bl. during peak periods.

Figure 3: Example of Peak Period Bus Lane



E. Transit Signal Priority - Signal priorities can take several forms depending on the physical characteristics of the location (Figure 4) Key to its functioning is bus detection.

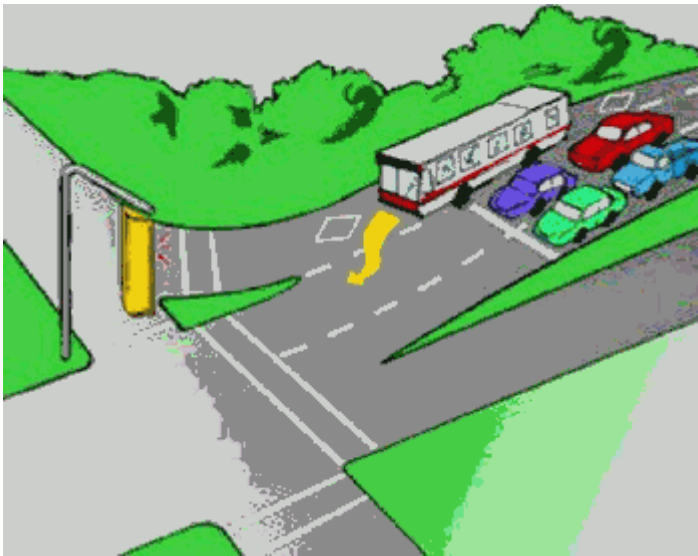
Figure 4: Example Transit Signal Priority Elements



If buses are equipped with an emitter that can be decoded by the city's signal system, then signals can be programmed to provide extended green indications, or advance green in the instance when the signal is red upon approach. Of course, adjusting the signal timing can have adverse consequences for cross streets, so signal priority works best in a corridor with few major cross streets. It is also of greater benefit if any bus stop associated with the intersection is located on the far side so that the bus's behavior is not affected by the signal twice.

- F. Queue Jumps** - The queue jump is an alternative form of transit signal priority that provides a dedicated curb lane for buses and an advance green when buses are detected in the curb lane (Figure 5).

Figure 5: Example of Bus Queue Jump



The dedicated bus lane at intersections can be readily provided when a parking lane is available without reducing street capacity. Whether through the use of an emitter or other sensing technology, the presence of a bus tells the traffic signal to provide a few seconds of advance green for buses so that they may “jump” ahead of other traffic.

G. Curb Extensions - These are often used to shorten the length of a crosswalk while making the pedestrians more visible to vehicle drivers. They are also a treatment for extending a bus stop out to the bus (Figure 6).

Figure 6: Example Bus Stop Curb Extension



This allows the bus to serve the stop from a moving lane making it easy to merge back into the traffic flow because the bus never left the flow. It also creates more sidewalk space for the bus stop and any associated street furniture. Since the bus remains in a moving lane when serving a bus stop it adversely impacts the flow of other traffic, but then our interest here is the bus and not the other traffic.

H. Passenger Islands - There may be occasions when the design of an intersection prevents a bus from serving the curb, or an extended curb. A median bus lane is one instance. Another would be where channelization separates right turning vehicles from the through traffic flow (Figure 7).

Figure 7: Example Bus Passenger Island



In the top center of Figure 7 there is an example of a passenger island serving buses continuing on the street exiting the illustration to the lower left. Without this treatment there would be no place to provide a bus stop for this line's passengers anywhere within the immediate vicinity of the intersection. An example exists within downtown Los Angeles at Pico Bl. Northbound Hill St. continues directly across Pico Bl. while a left diverging Olive St. originates at this intersection. Several Metro and Muni buses serve a passenger island for Olive St. passengers.

FINANCIAL IMPACT

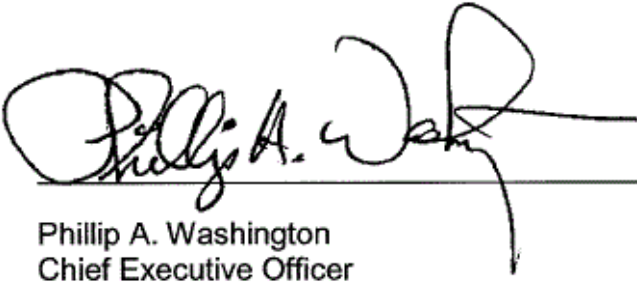
There is no budgetary or financial impact from the presentation of the information in this report. Application of the mitigation techniques could result in potential capital investments, which would likely be mitigated by increased speed and reliability resulting in decreased operating cost.

NEXT STEPS

Staff will identify the five most heavily congested bus corridors within the network, including specific congestion hot spots and root causes. We will then develop potential solutions to each hot spot and present a speed and reliability action plan to the Board within 6 months.

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Conan Cheung, Senior Executive Officer, Service Development (213) 418-3034

Reviewed by: James T. Gallagher, Chief Operations Officer (213) 418-3108



Phillip A. Washington
Chief Executive Officer

Bus Congestion Mitigation Strategies

June 2018



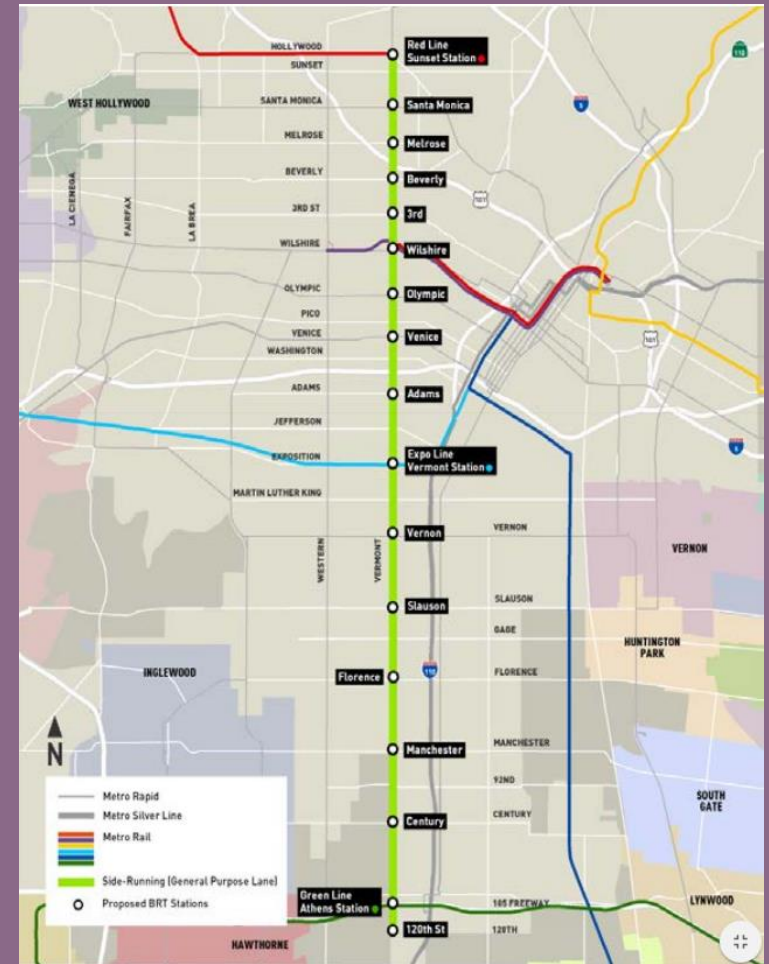
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Example Congested Corridor

- Vermont Ave among Top 20 Congested
- Under study for BRT improvements
- 12.5 mile Corridor
 - Local – 68 stops – 84 min – TTI 1.75 (peak)
 - Rapid – 24 stops – 65 min – TTI 1.54 (peak)

Corridor Profile (South to North)

- 2.5 mi 1 parking / 3 travel lanes wide median
- 2.5 mi 1 parking / 3 travel lanes thin or no median
- 7.5 mi 1 parking / 2 travel lanes no median



Reduce Stop Dwell Times

All Door Boarding and Far Side Stops



- All Door Boarding
 - Currently on Orange and Silver Lines
 - Line 754 (Vermont) in June 2018
 - Line 720 (Wilshire) in Oct 2018

- Far Side Bus Stops
 - On Vermont Ave:
 - Rapid 76% far-side
 - Local 44% far-side

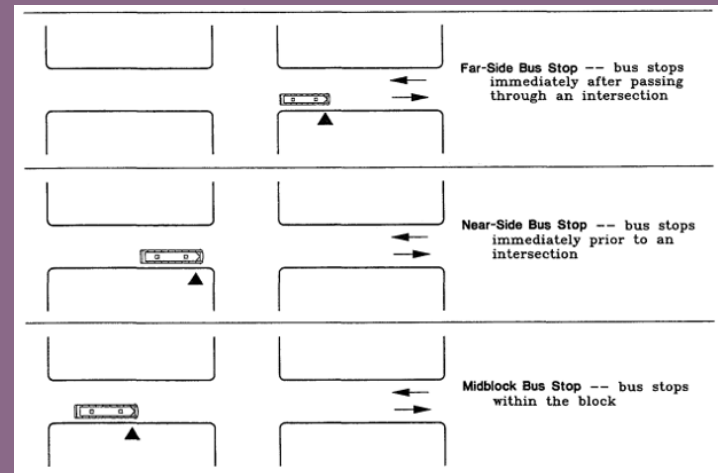


Figure 1. Example of Far-Side, Near-Side, and Midblock Stops.

Reduce Stop Dwell Times

Curb Extensions

- Buses can serve a stop from a moving lane so that merging with the traffic flow is not necessary
- Creates more sidewalk space for the bus stop and associated street furniture
- Forces traffic to wait behind the bus, or try to pass it, so the treatment is most useful at lower demand stops where the bus does not dwell long



Reduce Running Time

Bus Only Lanes

- Bus Lanes use exclusively or at limited times such as peak periods
- Curb vs. Median
- Added enforcement often required to keep lanes clear during restricted periods



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Reduce Running Time

Transit Signal Priority

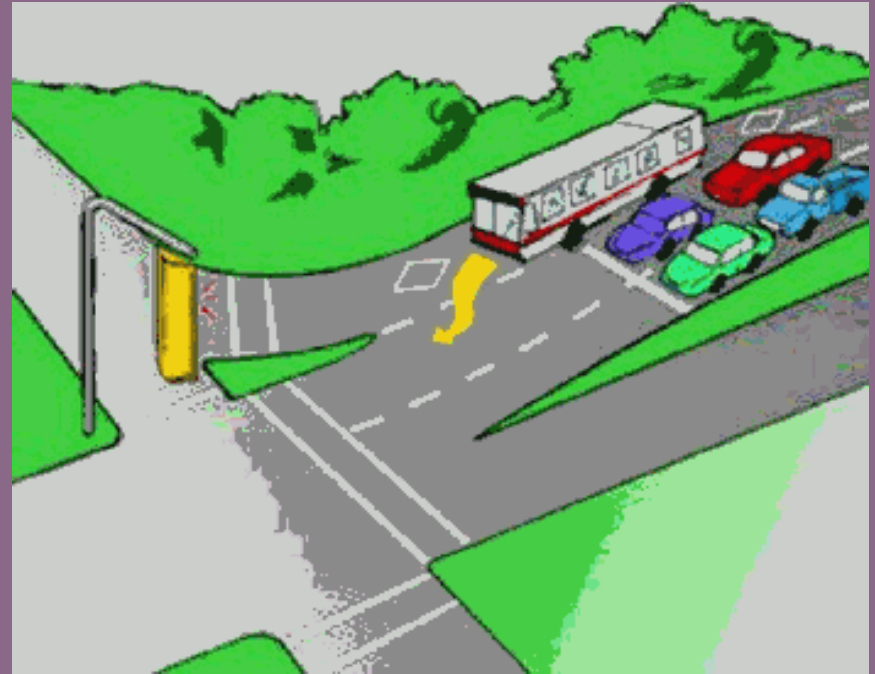
- Buses must be equipped with emitter to signal presence
- Each signalized intersection must have appropriate hardware
- Prioritization strategy must balance wider bus bandwidth against adverse cross street traffic impacts
- Works best with far-side stop locations so that bus doesn't trigger signal multiple times



Reduce Running Time

Queue Jumps

- Buses must be equipped with emitter to signal presence
- A curb lane is reserved for buses near a signalized intersection with the stop line moved back so that right turning vehicles do not block buses
- When buses are present the traffic signal will provide a few seconds of advance green so that buses may get in front of other traffic



Vermont Ave – Weekdays

Preliminary List of Mitigations

Segment NORTHBOUND	Severe Congestion	Applicable Mitigations
120th to Green Line		
Green Line to 92nd	AM - 754	1 - Bus Stop Location 2 - Dwell Time
92nd to Manchester	AM - 754 PM - 754	3 - Exclusive Lanes 5 - Transit Signal Priority
Manchester to 54th	AM - 204,754 Mid - 754 PM - 204,754	1 - Bus Stop Location 2 - Dwell Time 4 – Peak Period Lanes
54th to Slauson	AM - 204,754 Mid - 754 PM - 204,754	5 - Transit Signal Priority 7 - Curb Extensions
Slauson to Exposition	AM - 204 Mid - 754 PM - 204	
Exposition to Adams	AM - 204,754 Mid - 754 PM - 204,754	
Adams to Wilshire	AM - 204,754 Mid - 204,754 PM - 204,754	1 - Bus Stop Location 2 - Dwell Time 5 - Transit Signal Priority 6 - Queue Jumps 7 - Curb Extensions
Wilshire to Monroe	Mid - 754 PM - 754	
Monroe to Santa Monica	AM - 754 Mid - 754 PM - 754	
Santa Monica to Sunset	AM - 754 Mid - 754 PM - 754	

Segment SOUTHBOUND	Severe Congestion	Applicable Mitigations
Sunset to Santa Monica	Mid - 204,754 PM - 204,754	
Santa Monica to Monroe	Mid - 754 PM - 204,754	
Monroe to Wilshire	Mid - 754 PM - 204,754	1 - Bus Stop Location 2 - Dwell Time 5 - Transit Signal Priority
Wilshire to Adams	Mid - 754 PM - 204,754	6 - Queue Jumps 7 - Curb Extensions
Adama to Exposition	AM - 754 Mid - 754 PM - 754	
Exposition to Slauson	Mid - 754 PM - 754	
Slauson to 54th	Mid - 754 PM - 754	1 - Bus Stop Location 2 - Dwell Time 4 – Peak Period Lanes
54th to Manchester	AM - 754 Mid - 754 PM - 754	5 - Transit Signal Priority 7 - Curb Extensions
Manchester to 92nd		
92nd to Green Line		
Green Line to 120th		

Next Steps



- Conduct detailed analysis of congestion “Hot Spots” on 5 severely congested corridors and identify specific solutions
- Consider systemwide application of specific strategies as part of NextGen Bus study
- Work with local communities to implement identified actions

*Thank
You!*



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Board Report

File #: 2018-0365, **File Type:** Oral Report / Presentation

Agenda Number: 56.

**AD HOC CUSTOMER EXPERIENCE COMMITTEE
JUNE 21, 2018**

SUBJECT: CHIEF EXECUTIVE OFFICER REMARKS

ACTION: ORAL REPORT

RECOMMENDATION

RECEIVE report by the Chief Executive Officer

- Ridership Initiatives

Ridership Initiatives



Customer Experience

Item 56

June 21, 2018

Strategic Plan: Vision 2028

- The Strategic Plan focuses on the desired outcome of increased mobility in Los Angeles County measured in part by increased ridership.
- The initiatives to follow are drawn directly from these initiatives in Vision 2028:
 - Invest in a world class bus system
 - Manage transportation demand effectively
 - Improve Security for all Metro customers
 - Improve customer satisfaction at all customer touch points
 - Leverage transit investments to catalyze transit-oriented communities



Metro

Top Initiative: Improve Bus Travel Speeds

Invest in World Class Bus System

- Congested streets/highways degrade the quality of bus service.
- Speeding up the system addresses customer feedback that buses are too slow & inconvenient for their trip purposes.
- Running buses more efficiently can free up resources to be applied to more frequency, off-peak, or new services, which attract more riders.



Improve Bus Travel Speeds

Invest in World Class Bus System

- NextGen Study & BRT Vision and Principles Study are complementary efforts.
- Thinking outside the lane – work with Caltrans to allow buses to travel on highway shoulders.
- Pursue Signal Preemption for buses and trains
- Develop Strategy to Enforce Bus Only Lanes.

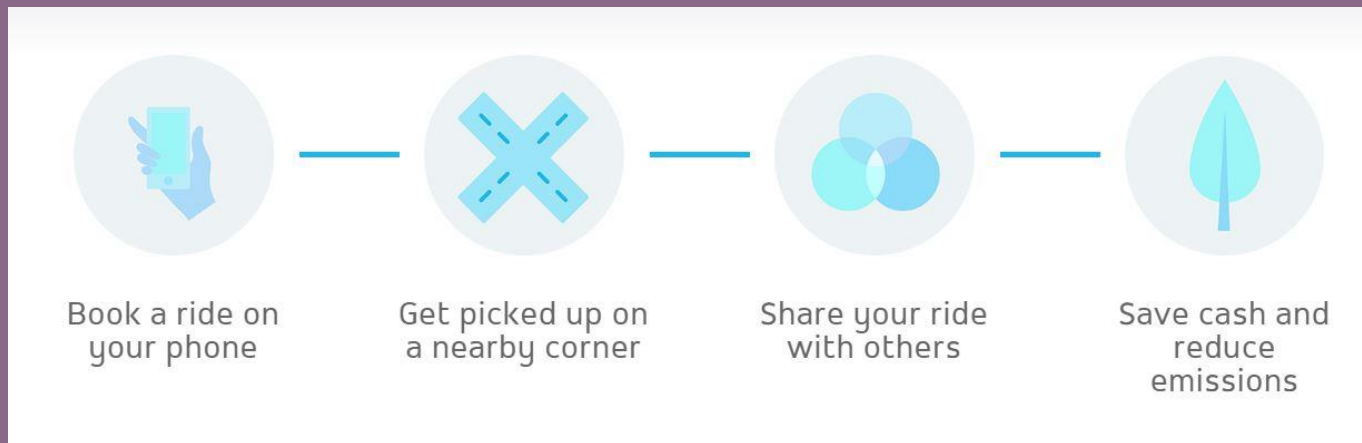


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Pilot Metro Microtransit

Invest in a World Class Bus System

- Test Metro version of on-demand shared ride services.
- Attract new customers and improve experience for existing customers.
- Feed more customers to Metro stations.



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Metro as the Mobility Integrator for LA County

Manage Transportation Demand Effectively

- Metro needs to step into the void of chief coordinator/integrator of mobility.
- TAP already links 25 operators together, offering customers seamless travel across county.
- Future plans include mobile payment opportunities, gamification, incentives and rewards that will link multiple modal services together.



Metro

Universal Blue Light Program

Improve Security for All Metro Customers

- The Blue Light beacon is a universal symbol for safety.
- Complete the installation of “Blue Lights” at major transit hubs.
- Introduce the “Blue Light” Metro App, a rebrand of the existing Transit Watch App.
- Promote Safety 24/7 multi-lingual.



Shining More Lights

Improve Security for All Metro Customers

- Bureau of Street Lighting received a grant from Metro last year to improve lighting at 21 bus stops and rail stations.
- Improved lighting will deter crime and improve sense of security for women and pedestrians.



The Power of TAP

Improve Customer Satisfaction at all Customer Touch Points

- Mobile App
- Full functionality of TAP is still “untapped”.
- Leveraging technology will enable a more versatile TAP card for users.
- Account based TAP card – expands use of TAP for Bikeshare, Parking, Microtransit, LYFT/Uber, Express Lanes and more.



Metro

Metro “Maintenance Diaries”

Improve Customers Satisfaction at all Customer Touch Points

- Cleaning Metro as part of “The Maintenance Diaries”
- Promote the frequent cleaning of buses & trains that are performed daily.
- Work with City partners to improve cleanliness of dirtiest bus stop locations.
- Develop performance metrics for improving cleanliness & report track trends.



Metro

Making the Switch

Improve Customers Satisfaction at all Customer Touch Points

- Pilot the removal of cloth seats on Metro buses.
- Frequent public comment received about soiled seats impacting customer experience negatively.
- Plastic seats are less prone to fluids, graffiti, vandalism and are more hygienic.



Metro

Digital Countdown Displays & Real-Time Accuracy

Improve Customers Satisfaction at all Customer Touch Points

- Improve the bus polling rate from every 3 minutes to every 10 seconds by accelerating router replacement.
- Establish rail polling by implementing a 10 second polling cycle. With the installation of routers.
- Alleviating perceived wait time is another key factor in encouraging ridership.



Putting the Customer at the Heart of Operations

Improve Customers Satisfaction at all Customer Touch Points

- Hire a Customer Experience Strategist.
- Develop and report Customer Experience performance metrics.
- Deploy annual Customer Satisfaction Surveys and benchmark to the July 2016 survey.





Board Report

File #: 2018-0286, File Type: Informational Report

Agenda Number: 57.

AD HOC CUSTOMER EXPERIENCE COMMITTEE JUNE 21, 2018

SUBJECT: ACCESSIBILITY ENHANCEMENTS

ACTION: RECEIVE AND FILE

RECOMMENDATION

RECEIVE AND FILE status report on Accessibility Enhancements.

ISSUE

The right of persons with a disability to ride Metro is a civil right enshrined in the Americans with Disabilities Act (ADA) of 1990. Established in 2011, Metro's Office of Civil Rights department is responsible for ADA compliance and reports directly to the Chief Executive Officer. Since the Office of Civil Rights was created there have been major advancements in accessibility on Metro. The Metro system is ADA compliant and in many areas, Metro goes above and beyond the minimum accessibility levels mandated by the ADA or the California Building Code (CBC). The goal of the Office of Civil Rights is to significantly improve the customer experience for persons with disabilities and make Metro the most accessible transit system in the world.

DISCUSSION

The changes that have been made in the last seven years include enhancements to the design of our buses, trains and stations, improved training of bus operators on issues related to the ADA, and more accessible information. Metro has also increased outreach to organizations and individuals with disabilities and is continuously developing innovative approaches to removing barriers, or adopting innovative technologies from other sources. Each of the innovations listed below goes above and beyond the requirements of the Federal ADA and more stringent CBC.

1. Recent Improvements at Rail Stations

Metro has more than 100 rail and BRT stations and all were built or expanded while the ADA has been in effect. This means that all stations must meet ADA requirements. A complete inventory of all stations conducted by Metro in 2014 did find some areas that need improvement or repair in order to be fully compliant. Those changes or repairs will be undertaken as part of the State of Good Repair program in the coming years. New lines built since 2011 have incorporated many new accessibility enhancements and these will be implemented at existing stations when they are renovated or

rehabilitated.

Directional Bars

The CBC requires that directional bars be placed to mark the boarding entrance of buses and trains at bus stops and train stations. Prior to 2014 this requirement was met at only 5 stations on the Red and Blue lines. Since 2014 the Office of Civil Rights has ensured that this feature has been incorporated at all new rail stations and a project has begun to retrofit the directional bars at existing bus and rail stations. The directional bars help the visually impaired find a safe place to wait on the platform, and know where to board a train regardless of the length of the consist. Directional bars have been installed at Silver and Orange Line Stations and the El Monte Bus Terminal.

Redundant Elevators

When an elevator at a station is out of service for any reason an alternative transit service must be provided. This is inconvenient for passengers with disabilities and can be expensive to provide. Metro has changed the design standards to require a second, redundant elevator at any station requiring an elevator. This additional elevator may not completely eliminate all elevator outages, but it will make transit more reliable for persons with disabilities and reduce the need to add special transit service. New elevated stations on the Expo Line all are equipped with redundant elevators and the requirement has been included in the lines now under construction.

Maximum Vertical Change with Ramps

Several existing stations on Metro rail lines including Union Station have wheelchair ramps that are very difficult to negotiate in manual wheelchairs due to the vertical distance that must be climbed. The ADA does not have a maximum vertical rise standard for ramps, although it does specify a maximum slope. The issue at Union Station will be eliminated when the rail yard is rebuilt for the Link US project; however other existing stations will continue to be a problem. In 2017 the Office of Civil Rights requested that the design standards for rail stations be changed to limit the vertical rise that can be served with a ramp. This means that all new stations any vertical rise over about 10 feet or one story will have elevators.

Lighting Design Criteria

In 2013 the Office of Civil Rights retained a consultant to develop lighting design criteria for rail stations following customer complaints about lighting on the Expo Line. A survey of several stations revealed significant lighting deficiencies and lighting system design problems. The lighting design criteria were developed to enhance the ability of users with limited vision, and particularly seniors to safely and confidently use the stations at any time of day or night. The guidelines were necessary because the ADA and CBC standards do not specifically address the kinds of lighting challenges such as glare, shadows and transitions between light/dark areas that can occur at transit stations.

Braille Signage

The ADA requires Metro to provide tactile and Braille signage in specific locations in rail stations.

Until recently the Metro standard was to blind emboss the signage and over print in visual characters. This signage was taken to the Braille Institute for testing and it was found that visually impaired individuals could not readily identify that there were any embossed characters. In addition people with good eyesight saw visual characters that are mildly misshapen by the underlying blind embossed characters.

In 2017 the Metro standard was changed to unify the visual and tactile characters. This improved the visibility of the signs for those that have some form of visual impairment and improved the legibility of the visual characters. As signs are replaced due to vandalism or other damage the replacement signs will meet the new standard. Signage materials/manufacturing standards were also updated to require integrated Braille rather than surface applied dots to improve durability and reduce maintenance.

Between Car Barriers

The ADA includes a requirement for between car barriers to be installed between rail vehicles to prevent pedestrians from falling between cars. Metro developed a unique approach to this requirement and became the first agency in the nation to install the platform mounted yellow delineator tubes now found at all Metro stations. The system has also been adopted by several other rail systems in the U.S. This has proven more effective than barriers mounted on railcars as required by the regulations. This unique approach was approved by the FTA.

2. Future Enhancements and Technologies

The Office of Civil Rights is continuing to bring new accessibility features and technology to Metro rail stations. These new features and technologies are all designed to improve the customer experience and continue to advance the goal of making L.A. Metro the most accessible transit system in the world.

Tactile Pathways

Rail stations in almost every country outside of North America have tactile pathways to guide the visually impaired safely from the street to the platform. A few stations in San Francisco have experimented with tactile pathways and the newest extensions of light rail in Seattle have incorporated this valuable feature. Metro has now adopted tactile pathways as part of the rail station design standards and a project to retrofit the pathways in the recently opened Foothill and Expo Line extensions is scheduled to be completed by the end of FY 2019. Tactile pathways will also be installed in the Willowbrook/Rosa Parks station as it is rehabilitated and all new rail stations including Crenshaw, the next phase of the Foothill extension, Regional Connector and the Purple Line extension.

Beacon Navigation System - Wayfindr

Union Station is the most complex transit and rail station in the Metro network and it presents

significant challenges for the visually impaired. It is not possible to install tactile pathways due to the historic designation of the building. An alternative beacon based way finding system has been found that will significantly improve the customer experience for the visually impaired, as well as the general population.

Beacon based navigation systems are slowly being introduced into the built environment. Union Station will be the first major transit hub in the U.S. to have this system installed. Demonstrations of the technology have been tested in major rail stations in London and Sydney. It is expected that more than 700 beacons will need to be placed to provide complete coverage to all areas and modes at this station.

Metro has chosen Wayfindr technology for this application. Wayfindr is a United Kingdom based non-profit that developed this technology in co-operation with the Royal Society for the Blind and a grant from Google. The system is based on open source software that can be adopted by other public facilities such as airports or malls.

Once the beacons are installed they would be available for other uses beyond way finding including allowing Union Station tenants to advertise their location or special offers, and providing transit and train schedule information. It is expected the demonstration system will be operational before the end of the calendar year.

Hands-free Intercoms

The same hands-free technology that was adopted for the G-Tels is now being applied to all new installations of Passenger Information (P-Tel) and Emergency Intercoms (E-Tel) at rail stations. The new intercoms offer hands free access that allow passengers with disabilities to access these important intercoms, without depending on the intervention of others. Metro is the first rail system in the North America, if not the world to adopt this technology.

Hands-free Elevators

Metro developed the Gate Telephone (G-Tel), hands-free intercom to facilitate entry to rail stations for persons who do not have full use of their arms or hands and are unable to tap on the turnstiles. Persons who do not have full use of their arms or hands and use a wheelchair also face a challenge in stations where it is necessary to use an elevator. If travelling independently they must still depend on other passengers to press the elevator buttons in order to access or leave the station.

The proposed solution will be to provide large accessible kick-plates as secondary elevator call buttons, and floor select buttons. A similar solution has been implemented in elevators at an orthopedic hospital in Vancouver, Canada. At our stations the elevators travel only between two floors which makes the solution easier to implement than in Vancouver

Redesign of Pedestrian Gates at Rail Crossings

The California Public Utilities Commission (CPUC) requires manually activated swing gates at

pedestrian crossings of light rail tracks at stations. The CPUC requires these gates to open away from the tracks, requiring a pull motion. When exiting the track crossing the gates are equipped with a kick panel that allows a passenger in a wheelchair to push open the gate. However for anyone without use of their arms or hands it is impossible to pull open the gate to access the crossing.

In the planning of the next Foothill LRT extension the Office of Civil Rights worked with the CPUC representative and the Foothill Construction Authority to devise a gate configuration that would allow individuals with disabilities to open the gates without creating an unsafe situation. This same design will be incorporated into the design standards for future rail lines. An alternative solution with an automatic gate was developed for the Rosa Parks station rehabilitation to solve the same issue.

The combination of hands free access at rail crossings, PTEs, ETEs, GTEs and elevators will make Metro the first truly hands free accessible system in the world.

New Safety Edges for Pedestrian Crossing of Railway at Stations

The design of the next phase of the Foothill rail line includes several pedestrian crossings of the rail tracks which are skewed. This presents a hazardous situation for the visually impaired who would expect the crossing to continue in a straight line from the sidewalk. In order to enhance the safety of the crossing, a system of edge markers were developed to enable someone using a cane to sense the edge of the crosswalk and not wander away from the crosswalk and onto the tracks. This enhancement was also reviewed and accepted by the CPUC.

3. Improvements to Vehicles

The ADA requires that priority seating be identified on buses and rail cars. Metro has marked these seats as “reserved” to strengthen the message and on all new vehicles since 2014 the seats have been covered in a special fabric with an integral logo to further identify the special designation of the seats. The reserved area is also identified by blue flooring to further strengthen the messaging. The special fabric is being installed on older buses and rail cars as they are being rehabilitated, if they are expected to have more than eight years of life remaining.

The reserved seats were also moved from being the same seats that flip-up to accommodate persons in wheelchairs. This was done because some seniors and persons with disabilities were unwilling to give up their priority seats to allow wheelchairs to board. This has increased the availability of space for persons in wheelchairs.

On all new buses delivered since 2014 a special location has been created to accommodate walkers. This space has a single flip up seat and it means that a walker can be carried on the bus without taking up spaced identified for persons in wheelchairs. This walker space is also being retrofit on about 500 buses scheduled for rehabilitation.

All buses delivered since 2014 have been equipped with dual position wheelchair positions. The

wheelchair positions feature Qpods for rear facing securement and a padded barrier for rear facing wheelchairs. The Qpods use only 3 securement points and are faster and easier for the operator to use. The rear facing barrier provides customers with an alternative that does not require the operator to attach any type of securement hooks to the wheelchair or lap and shoulder belts on the passenger in the wheelchair.

Metro intends to change the current voluntary policy for wheelchair securement to a mandatory requirement for wheelchair securement within the next 18 months. Metro is one of very few transit systems in California that does not have mandatory wheelchair securement policy. The change in policy will be tied to system wide implementation of the Qpod system which offers fast, easy securement, resulting in minimal service delays. Mandatory forward facing wheelchair securement, or use of the rear facing position will significantly improve the safety of all passengers on our buses.

Reducing Pass Ups

Metro recently ordered new articulated buses. The specifications included provision to have some buses configured with three wheelchair securement positions. Although other transit systems have had similar configurations for some time this marks the first time Metro has equipped any bus with more than the two required wheelchair positions. Installing three positions should reduce the number occasions when passengers in wheelchairs are passed up. It also maintains the same ratio between seats for ambulatory users and users in wheelchairs as exists on 40' standard buses.

Prior to the delivery of the new P-3010 railcars all light rail vehicles in the Metro fleet met the minimum requirement of two wheelchair positions per car. The new P-3010 cars became the first cars in the Metro Fleet to incorporate four wheelchair positions per car. In addition the four positions are separate from additional space dedicated to bicycles and strollers. This is an important improvement as the wheelchair positions on the older cars are shared with bikes or strollers, creating competition among passengers for use of the space.

The next order of heavy rail vehicles will also increase the space for wheelchairs from one position to four, including a tandem position that will allow two passengers in wheelchairs to sit adjacent to each other. The wheelchair space on the current vehicles is shared with bicycles and in the new cars the two modes will each have separate areas to reduce the potential for conflicts among passengers.

A pass-up occurs when a bus or train is too full to board additional passengers and it must skip a stop. A pass-up is very undesirable for anyone, particularly on routes with headways of more than 10 minutes. Passengers in wheelchairs face pass-ups much more often than ambulatory passengers as there are only two positions on a bus that can accommodate wheelchairs. A pass-up may occur if a passenger refuses to move out of a flip up seat when requested, if the bus has too many standees or there are already two wheelchairs onboard the bus. Some transit systems in the U.S. and California use the threat of a fine to encourage passengers who refuse to give up their seat for the passenger in

a wheelchair.

One of the routes with the most frequent rate of pass ups was the service that links to Rancho Los Amigos Rehabilitation Hospital in Downey with Rosa Parks rail station. In response to the heavy demand for wheelchair accommodation Metro contracted with Access Service to operate a fixed shuttle with a cutaway style vehicle capable of carry five wheelchairs. The service operates five days a week and has provided another option for wheelchair passengers travelling between the Blue and Green Lines and Rancho Los Amigos and reduced the occurrence of pass ups.

3. Other Improvements

Operator Training

In 2014 Metro introduced a new training course for bus operators dealing with ADA service requirements and wheelchair securement. All current operators were required to take the course, and it is now part of new operator basic training. The course takes nine hours and includes extensive hands on training for wheelchair securement. Operators are also required to board a bus while operating a power wheelchair. Since the training of existing operators was completed the number of ADA related complaints from passengers has been reduced significantly.

Outreach

The Office of Civil Rights has a very active outreach program for riders with disabilities. Metro participates in the annual Abilities Expo where contact is made with several thousand individuals with disabilities. On a regular basis Metro sends a bus to Rancho Los Amigos Rehabilitation Hospital to provide an orientation course to potential riders who have recently become disabled. The bus and operators familiarize the individuals with how to board a bus while using a wheelchair and show them how our securement systems work. Other outreach events include similar familiarization visits to the Braille Institute and events with Guide Dogs of America.

STAR Program

The Safely Transporting All Riders (STAR) program was begun in 2017 as means of reaching out to passengers using wheelchairs. This program involves a mobile team that can attach securement straps onto wheelchairs and provide training on how to board buses in wheelchairs. Prior to the creation of this team, any individuals who wished to have the straps installed on their wheelchair were required to travel to the Access Services certification center in downtown Los Angeles. The team travels to events or locations where large numbers of wheelchair users may be found and also participates in programs such as the Accessibility Fairs at Metro Divisions.

Accessibility Fairs

Accessibility Fairs were conceived by the Office of Civil Rights as a means of making ADA training more fun and interesting for bus operators. Each bus division is visited by the civil rights team once per year and at each event up to seven tables are set up offering different games and activities related to learning about accessibility. Tickets are given to participants and they can turn them in for food or prize drawings.

The main event at each fair is the wheelchair securement competition. Operators are challenged to test their skills securing a wheelchair. They are scored and timed and the winner receives a personalized trophy. The winner is also eligible to compete in an agency wide competition at Gateway Headquarters. The winner of the agency wide competition is recognized at the annual Metro awards ceremony and their home Division receives a large trophy and bragging rights for one year.

TPIS Screen Redesign

Every Metro Rail station has digital displays known as the Transit Passenger Information System or TPIS to convey schedule, and service update information to our customers. When the system was installed it was not ADA compliant. The size of the text used was too small, and many of the messages were presented in colors that did not provide sufficient contrast.

The system was updated and brought into compliance with the standards required by the ADA. The larger font size is more readable for everyone, and the correct use of colors now means that the messages are easier to see in all conditions.

First On; First Off

Until 2013 the policy of Metro was that persons in wheelchairs board buses first, and alight last. This often created problems as someone in a wheelchair could not board as the existing two securement positions were both occupied. The person in the wheelchair would have to wait until one of the persons in a wheelchair on board was able to exit after everyone else boarded. By that time the bus could be too full to allow the person in a wheelchair to board, and he or she would be advised to wait for the next bus.

Early in 2013 the policy was revised to allow wheelchairs to alight first and board first. Passengers on the bus who wish to exit immediately are advised by the operator to use the center or rear doors. The operator can then assist the passenger(s) in a wheelchair to exit first, and allow any waiting wheelchair passengers to board before ambulatory passengers. Ambulatory passengers can board after the wheelchair passengers are settled on board. In addition to better serve our passengers using wheelchairs, the 'first on, first off' paradigm is easier for bus operators to remember and places the proper emphasis on service to riders with disabilities.

Braille Bus Stops & Fleet Numbers

Federal ADA regulations and the CBC do not require any tactile or braille information at bus stops; however Metro has placed panels with information in tactile lettering and Braille at the 500 busiest bus stops in our system.

In addition all of our buses and rail cars are equipped decals that provide the fleet number in tactile letter and Braille. This is not required by regulation however it allows persons with visual impairments to identify the vehicle they are using in the event they wish to file a complaint, compliment or retrieve a lost object.

Nextrip

Many Metro bus stops are now being fitted with Nextrip information signs that provide updated information on the estimated time until the next bus. The ADA does not require this information to be provided in an audio format for visually impaired; however Metro is providing a push to hear feature at each location. This will allow visually impaired persons to receive the same information as those with sight. This will improve the customer experience for the visually impaired as they wait for the next bus.

Gaddy Settlement Continuation

In 2011 the Metro Board settled a major lawsuit that claimed persons using wheelchairs were being systematically discriminated against by Metro. The lawsuit included 26 items of injunctive relief that required Metro to fully comply with the ADA and go above and beyond those requirements in many areas. The injunctive relief requirements in the settlement agreement were written to sunset after five years.

In March, 2015, prior to their sunset, the Metro Board unanimously voted to extend the requirements indefinitely. This was done to ensure that Metro continues to be highly responsive to the needs of the disabled community.

Mystery Ride Program

In order to verify that bus operators are correctly following the ADA requirements and Metro policies and procedures a mystery ride program is managed by the Office of Civil Rights. The mystery riders conduct more than 600 undercover rides on Metro buses each quarter to obtain a statistically valid sample of bus operator compliance with accessibility requirements. The observers use wheelchairs, walkers or other mobility aids and record the operator's proficiency in securing devices or offering assistance. Operators who provide exceptional service receive commendations, while operators who are found to have not followed the correct procedure are counseled or disciplined accordingly. The system wide results are published on the Metro website every quarter. The results show that in the critical aspects of wheelchair securement Metro operators are meeting the requirements of the ADA more than 96 percent of the time. Later this year the program will receive a major overhaul that will expand the range of observations and provide more detailed information on our ADA compliance.

ALTERNATIVES CONSIDERED

In general terms most of the actions described in this report are above and beyond the existing minimum state and federal regulations for providing access for persons with disabilities. Making transportation facilities and services accessible to persons with disabilities is a civil rights issue and failure to act to maintain and enhance the accessibility of Metro would make the agency potentially liable even if we meet the minimum requirements of the law. The aging population of baby boomers will mean that Metro will need to safely and effectively accommodate more and more people with disabilities in the future.

The alternative of not acting to improve accessibility was considered, but rejected due to the risk of increased claims and potential financial penalties for not making a best effort to accommodate persons with disabilities. A motion passed by the Board of Directors in 2015 requires Metro to continue with the accessibility enhancements that were implemented as part of a 2011 settlement agreement.

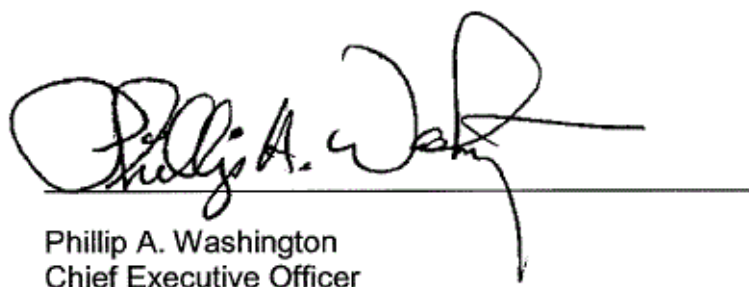
NEXT STEPS

Several initiatives are planned for the remainder of FY 18 and FY 19. These include:

- Identifying ADA capital improvement projects as part of the State of Good Repair effort for the next 10 year capital plan
- Installation and commission of a beacon based way finding system in Union Station
- Installation of the first tactile pathways on the Crenshaw Line and portions of the Expo, Gold, and Blue Lines.

Prepared by: Daniel Levy, Chief, Civil Rights Programs (213) 418-3169

Reviewed by: Daniel Levy, Chief, Civil Rights Programs (213) 418-3169



Phillip A. Washington
Chief Executive Officer

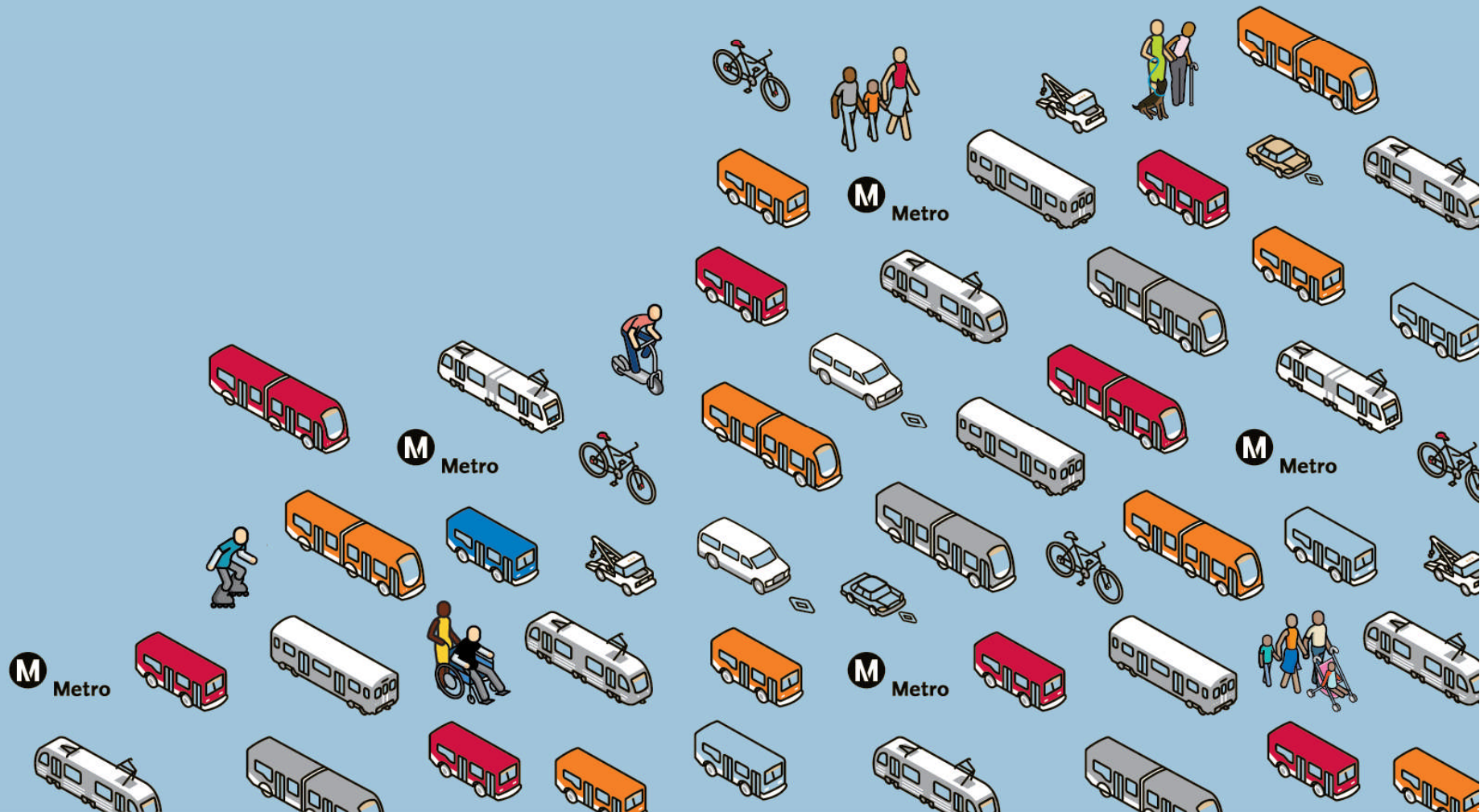
Accessibility Enhancements



Office of Civil Rights

Ad Hoc Committee on Customer Experience

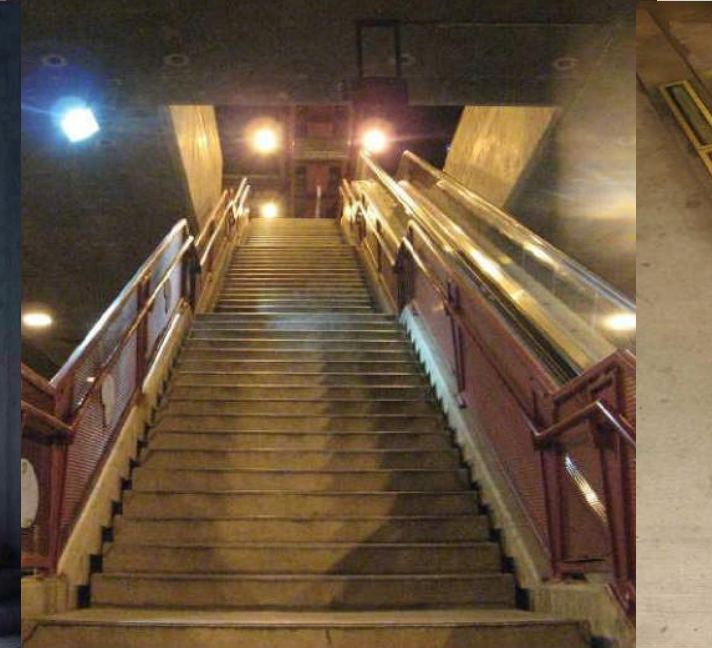
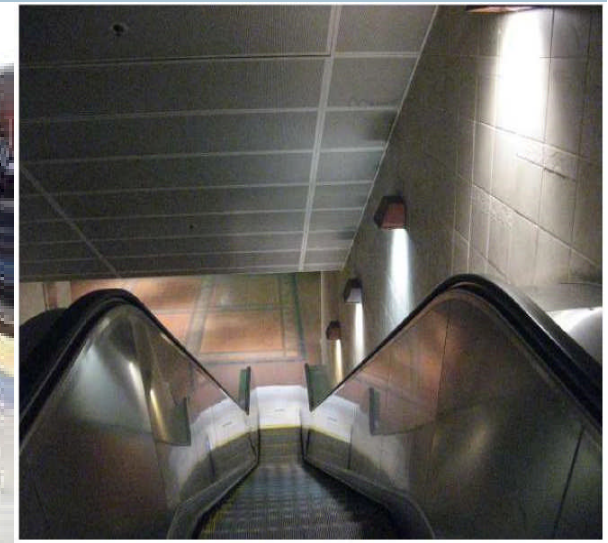
Dan Levy, Chief, Office of Civil Rights



Recent Improvements at Rail Stations



Office of Civil Rights



Braille Signage



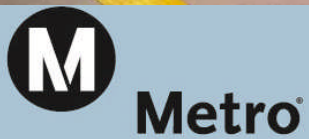
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Tactile Pathways



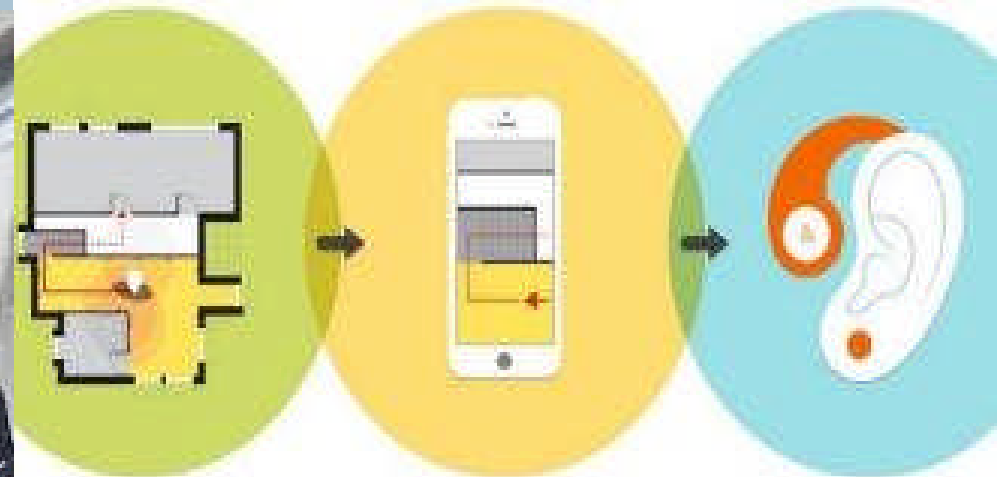
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Beacon Based Way Finding - Wayfindr



Office of Civil Rights



USER IS LOCATED BY THE NEAREST BEACONS (TRILATERATION)

USER'S LOCATION IS MAPPED ON THEIR MOBILE DEVICE

NAVIGATION DIRECTIONS ARE TRANSMITTED TO THE USER

<https://youtu.be/smAyNAn7ETc>



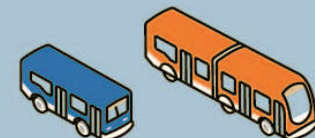
Hands Free Intercoms



Office of Civil Rights



Design Intents



Hands Free Elevators - *Future*



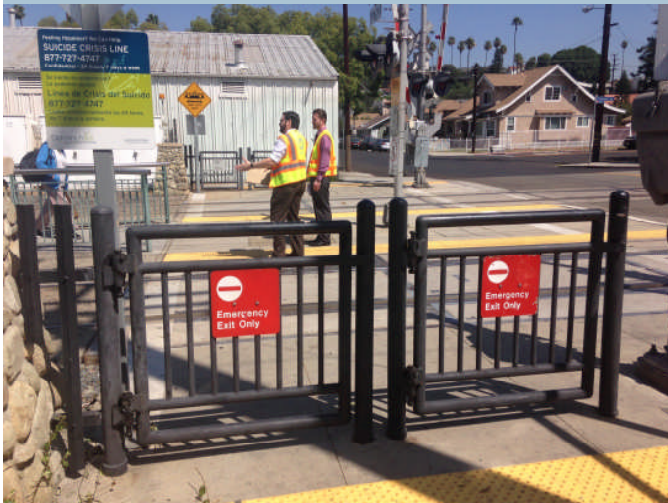
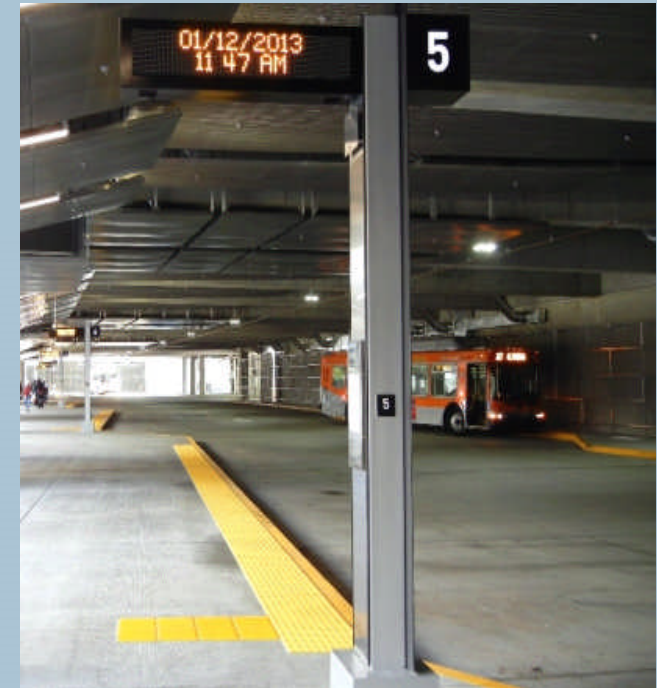
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Access and Safety at Stations



Office of Civil Rights



Accessibility Fairs & Securement Competition



Office of Civil Rights



Improved Passenger Information



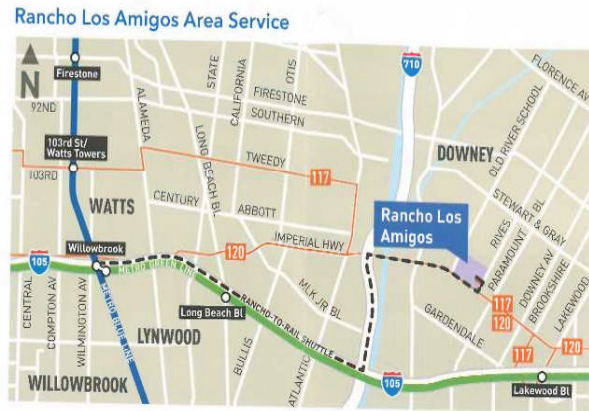
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Rancho Los Amigos Shuttle



Office of Civil Rights



Rancho Los Amigos Boarding Location



**Rancho-to-Rail
can get you
there.** 

Take our free shuttle
between the Metro Rail
Willowbrook Station and
Rancho Los Amigos National
Rehabilitation Center.

access

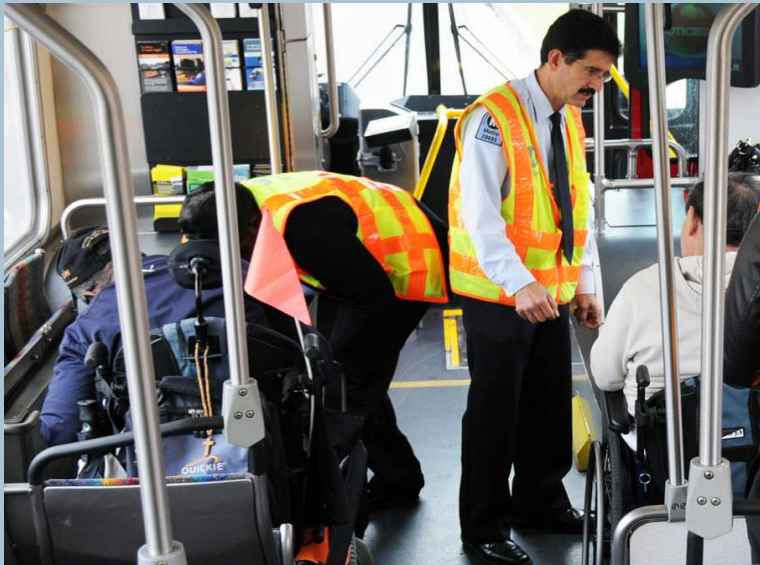
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Outreach Activities



Office of Civil Rights



Enhanced Operator Accessibility Training



Office of Civil Rights



First Off - First On



Office of Civil Rights

Make it a safe trip for everyone.



metro.net

- > Let riders in wheelchairs board first and **exit first**.
- > Please move from reserved and wheelchair seating areas if requested.
- > Bus operators will assist with wheelchair securement; it only takes a moment. Thank you for your patience.



Metro

If you have questions or concerns, call 213.922.6235.

EFFECTIVE 3/2013



Metro



Next Trip Information Audio



Office of Civil Rights



Metro



Three Wheelchair Positions per Bus



Office of Civil Rights



Improved Bus Accommodations

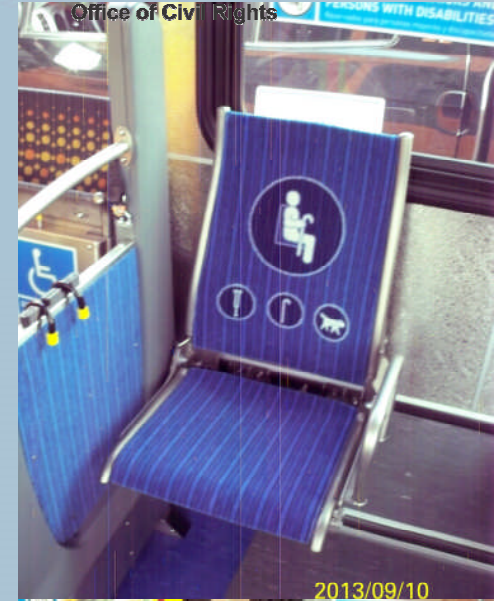
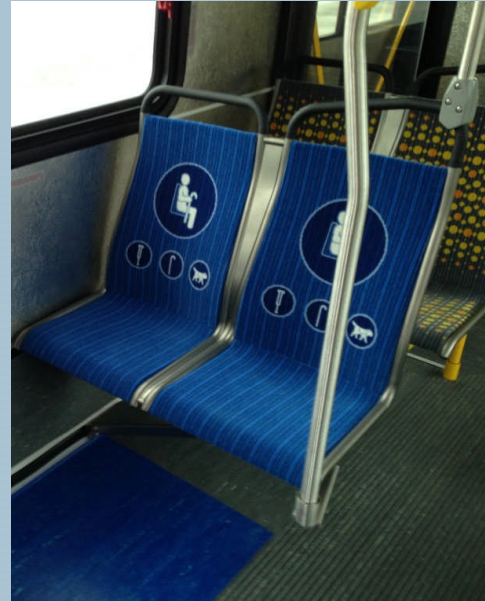


Office of Civil Rights



RESERVED FOR SENIORS AND PERSONS WITH DISABILITIES

Reservados para personas mayores y discapacitadas

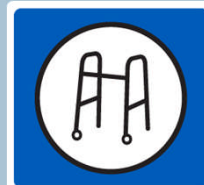


2013/09/10



RESERVED FOR MOBILITY DEVICES

Reservados para dispositivos de movilidad



PLACE WALKER HERE

Coloque el andador aquí

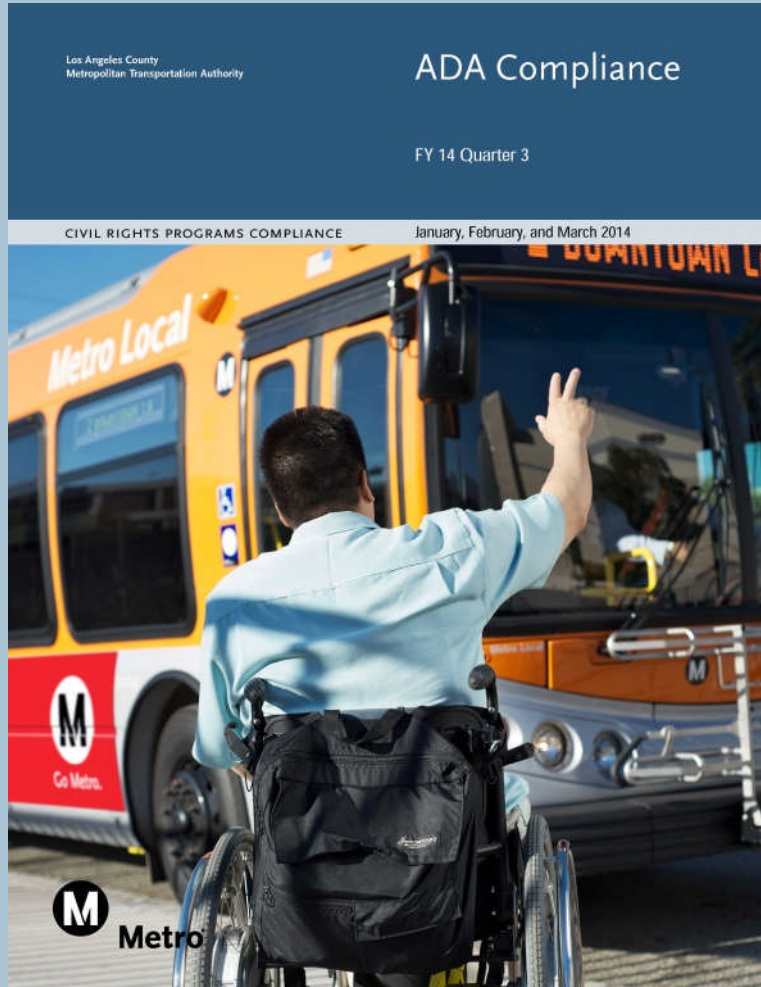


2013/09/10

Headline



Office of Civil Rights



Thank you



Office of Civil Rights

