Metro

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

Metro

Agenda - Final Revised

Thursday, September 17, 2015

10:15 AM

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

System Safety, Security and Operations Committee

John Fasana, Chair
Michael Antonovich, Vice Chair
Jacquelyn Dupont-Walker*
Don Knabe
Ara Najarian
Carrie Bowen, non-voting member
Phillip A. Washington, Chief Executive Officer

****Via Telephone***
Fess Parker Hotel, 633 E. Cabrillo Blvd.,
Santa Barbara, CA 93013

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

CALL TO ORDER

ROLL CALL

41. APPROVE Consent Calendar items: 42, 43 and 44.

42. RECEIVE AND FILE status report on the **summary and recommendations of the APTA Peer Review of Metro's Rail Operating Practices and Programs**, held in June 2015. 2015-0920

Attachments: Attachment A - APTA Review Closing Presentation
Attachment B - APTA Review Final Report
Attachment C - Motion on Rail Red Light Violations

43. RECEIVE AND FILE report on **feasibility study for the implementation of fare gates throughout the Blue Line, Expo Line Phase 1, and Gold Line**. 2015-1236

Attachments: Attachment A - Motion by Directors O'Connor, Yaroslavsky and Najarian to Item
Attachment B - Blue Line - Detailed Engineering Analysis
Attachment C - Expo Line - Metro LABOE Memorandum
Attachment D - Gold Line - Detailed Engineering Analysis
Attachment E - Gold Line - Rough Order of Magnitude

44. APPROVE **nominees for membership on Metro's San Gabriel Valley, South Bay, and Westside Central Service Councils**. 2015-1224

Attachments: Attachment A - New Appointees Biographies and Listing of Qualifications
Attachment B - Appointing Authority Nomination Letters

Non-Consent Items

45. Operations Employee of the Month. 2015-1098

Presentation honoring the Operations Employees of the Month for September.
This month we will be recognizing the Rail Roadeo Team that represented Metro at the International Rail Roadeo in Salt Lake City.

46. RECEIVE **report on System Safety, Security and Operations.** 2015-1097

Attachments: COO Report _ Ops Committee Sept 2015

47. CONSIDER: 2015-1265

A. authorizing the Chief Executive Officer to **cancel the Private Security Services Invitation for Bid PS-14199**;

B. executing Contract Modification No. 16 to **extend Contract No. PS26102156 with RMI International, Inc. for up to 12 months** (October 1, 2015-September 30, 2016) in an amount not to exceed $8,119,674, thereby increasing the total contract value from $37,938,383 to $46,058,057; and

C. amending the FY16 Budget for System Security and Law Enforcement in the amount of $3,019,674.

Attachments: Attachment A - Procurement Summary
Attachment B - Contract Modification/Change Order Log

48. AUTHORIZE the Chief Executive Officer to execute Modification No. 8 to Contract OP30002227 for **Uniform Rental services with Prudential Overall Supply** in the amount of $780,000 increasing the contract value from $3,735,029 to $4,515,029. This modification also extends the period of performance through June 30, 2016. 2015-1166

This contract provides on-going uniform rental services, vehicle seat covers, and laundry services for hand towels and floor mats.

Attachments: ATTACHMENT A - PROCUREMENT SUMMARY OP3000227
ATTACHMENT B - CONTRACT MOD LOG

49. INCREASE the life of project budget for the **Blue and Green Lines Transit Passenger Information System**, capital project 212010, by $3,842,533, increasing the life of project from $5,987,180 to $9,829,713 and amend the FY16 annual budget by $3,842,533. 2015-1290

Attachments: Attachment A - Funding Expenditure Plan
Attachment B - Timeline for TPIS Installation

50. AUTHORIZE the Chief Executive Officer to award a sole source firm fixed price Contract No. PS92403277 to **Xerox Transport Solutions, Inc. for the integration of a Countywide Signal Priority (CSP) software module into Metro's Advanced Transportation Management System (ATMS)** for an amount of $952,000. 2015-1226

Attachments: Attachment A - Procurement Summary
Attachment B - DEOD Summary

51. AUTHORIZE the Chief Executive Officer to award a 5-year firm fixed price Contract No. PS15360111323, to **FRS Environmental Inc., for parts washer services** in an amount not-to-exceed $1,223,820 for a 5-year period. 2015-0366

Attachments: Attachment A - Procurement Summary

64. AUTHORIZE the Chief Executive Officer to: 2015-1228

A. Increase the Life of Project (LOP) budget for the **900 bus buy project to include funding for Option 1 price escalation; retrofit of operator safety barriers; and Live Video Monitoring System** (LVMS) in the amount of $3,617,152 from $503,442,500 to $507,059,652; and

B. Approve Contract Modifications 9 and 10 for Contract OP33202869 to New Flyer of America, in the amount of $6,043,492, for Option 1 price escalation and for retrofit of operator safety barriers and LVMS, increasing the total Contract value from $498,652,341 to $504,695,833.

Attachments: Attachment A - Procurement Summary
Attachment B - Contract Modification
Attachment C - Funding/Expenditure Plan
Attachment D -Transit Agencies Using Operator Barriers

65. AUTHORIZE the Chief Executive Officer to: 2015-1164

A. Award a firm fixed unit rate Contract under RFP No. PS11654, for Region 1 to **Woods Maintenance Services, Inc., the second lowest responsive and responsible proposer, to provide graffiti abatement, landscape and irrigation maintenance, and trash and vegetation removal services throughout Metro Red Line (MRL), Metro Purple Line, Metro Orange Line (MOL), Inactive rights-of-way (IROWs) and various bus and rail locations within the geographical area specified as Region 1**, for a not-to-exceed amount of $16,542,520 for the three-year base period, $5,462,340 for the first option year, and $5,462,340 for the second option year, for a combined total of $27,467,200, effective October 1, 2015 through September 30, 2020.

B. Award a firm fixed unit rate Contract under RFP No. PS11654, for Region 2 to **Parkwood Landscape Maintenance, Inc., the lowest responsive and responsible proposer, to provide graffiti abatement, landscape and irrigation maintenance, and trash and vegetation removal services throughout Pasadena Gold Line (PGL),IROWs and various bus and rail locations within the geographical area specified as Region 2**, for a not-to-exceed amount of $12,599,235 for the three-year base period, $4,352,459 for the first option year, and $4,568,300 for the second option year, for a combined not-to-exceed total of $21,519,994, effective October 1, 2015 through September 30, 2020.

C. Award a firm fixed unit rate Contract under RFP No. PS11654, for Region 3 to **Woods Maintenance Services, Inc., the second lowest responsive and responsible proposer, to provide graffiti abatement, landscape and irrigation maintenance, and trash and vegetation removal services throughout Metro Expo Line (Expo I), Metro Green Line (MGL), IROWs and various bus and rail locations within the geographical area specified as Region 3**, for a not-to-exceed amount of $16,863,892 for the three-year base period, $5,575,764 for the first option year, and $5,575,764 for the second option year, for a combined total of $28,015,420, effective October 1, 2015 through September 30, 2020.

D. Award a firm fixed unit rate Contract under RFP No. PS11654, for Region 4: **Parkwood Landscape Maintenance, Inc., the lowest responsive and responsible proposer, to provide graffiti abatement, landscape and irrigation maintenance, and trash and vegetation removal services throughout Metro Blue Line (MBL), Harbor Transitway (HTW), IROWs and various bus and rail**

locations within the geographical area specified as Region 4. This contract amount consists of $11,996,937 for the three-year base period, $4,141,657 for the first option year, and $4,346,958 for the second option year, for a combined total of $20,485,552, effective October 1, 2015.

E. Amend the FY16 budget to add funds to CC3367 in the amount of $14,625,000 to ensure sufficient funding and service continuity for the four regions under RFP No. PS11654.

Attachments: Attachment B - Four (4) Regions' Maps

Attachment A Procurement Summary

52. RECEIVE **report of the Chief Executive Officer.** 2015-1379

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.

Adjournment

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

File #: 2015-0920, **File Type:** Informational Report **Agenda Number:** 42.

REVISED
SYSTEM SAFETY, SECURITY AND OPERATIONS COMMITTEE
SEPTEMBER 17, 2015

SUBJECT: SUMMARY AND RECOMMENDATIONS OF APTA PEER REVIEW REGARDING STOP SIGNAL VIOLATIONS

ACTION: RECEIVE AND FILE

RECOMMENDATION

RECEIVE AND FILE status report on the **summary and recommendations of the APTA Peer Review of Metro's Rail Operating Practices and Programs**, held in June 2015.

ISSUE

The APTA Peer Review was precipitated by a board-approved motion by Director Antonovich (Attachment C) that highlighted the 38 red light violations recorded for the Metro Rail system over the past 24 months. This motion called for independent review of Metro Rail operations and its safety culture. Additionally, the motion sought input from the Federal Transit Administration and Federal Railroad Administration to develop partnerships with the federal government to reduce Red Light violations systemwide and review policies and procedures to ensure industry best practices. ~~Metro Operations requested that~~ The American Public Transportation Association (APTA) conducted an independent peer review of Metro's Rail Operating Practices and Programs. The scope of APTA's peer review also included reviewing stop signal and red traffic signal incidents and recommending interventions to mitigate such incidents.

DISCUSSION

APTA assembled a panel of four experts from peer transit agencies to review Metro's bus and rail operating practices, with an emphasis on stop signal violations. The peer review panel reviewed the following seven areas:

1. Stop Signal/Red Traffic Signal Violations
2. Rules and Procedures
3. Program of Rules Compliance
4. Disciplinary Policies and Practices
5. Signal and Traffic Control System and New Technologies
6. Bus Control Center and New Technologies

7. Confidential Close Call Programs

As part of the peer review, the panel conducted the following activities:

- Review of policies and procedures for vehicle operations, training, and discipline
- Rides on Metro revenue vehicles, including cab rides on at-grade portions of rail alignments
- Visits to rail locations where stop signal violations have been reported
- Visits to rail and bus divisions
- Interviews with Rail and Bus Operators, and division managers
- Observations at Rail Operations Control Center and Bus Operations Control Center

The peer review was held over the course of four days, and led by Metro Operations staff. It concluded with a presentation of observations and findings by the APTA panel (Attachment A), and a report of findings (Attachment B).

Findings

The panel found that the Metro team works well together, with open dialogue between management and staff on safety issues. The panel also found that in some areas, Metro's policies, procedures, and actions are considered to be "best practices" for the industry.

Stop Signal/Red Traffic Signal Violations, with focus on street running segments with rail interlocking signals
The panel observed that on-time performance is a motivation for some Bus and Rail Operators' actions, ultimately resulting in stop signal/red traffic signal violations. The timetables and recovery times can be tight, especially on bus lines. However, the panel noted that there is little evidence to suggest that management is prioritizing on-time performance over safety.

Rules and Procedures, with Emphasis on Defensive Driving
The panel took no exception to the existing rail rules and procedures, but noted that bus has a more robust defensive driving module than rail. For both bus and rail, the panel noted inconsistencies between classroom training and field application on the rules and defensive driving modules. For example, while the classroom training teaches defensive driving practices, the panel observed Operators anticipating signal changes, which can result in Operators making abrupt stops or violating stop signals.

Program of Rules Compliance and Efficiency Testing
The panel identified several opportunities to improve this program, including additional Supervisory oversight activities, further developing the Efficiency Testing program, and repurposing the Mystery Rider program to transcend its current ADA focus. This could include having Mystery Riders on board to gauge whether there are abrupt stops due to anticipation, or other near-miss violations.

Disciplinary Policies and Practices
The panel considered the disciplinary policies of Metro, with regard to stop signal violations, to be a best industry practice for rail. Although the panel approved of the reclassification of red light violation incidents from "minor" rule infraction to "major" rule infraction, in the recent labor contract for both bus

and rail, they considered the six month rollback provision on bus to be a major risk for the agency. The panel also recommended developing a database to document violations for both bus and rail.

Signal and Traffic Control System and New Technology
The panel identified issues pertaining to design and placement of signals and signage for both rail vehicles and automobiles along the at-grade alignment. The panel recommended improvements to the signal design and signage to improve clarity. Suggested improvements include consistency in signal spacing, and additional Manual on Uniform Traffic Control Devices-approved signage to inform motorists.

Review Metro's Bus Control Center including new technology that could be implemented to mitigate violations
The panel found the Bus Control Center and Emergency Operations Center to be very impressive.

Explore Confidential Close Call Programs
The panel found this issue to be secondary to other issues previously identified. The panel suggested considering a pilot at select bus divisions.

NEXT STEPS

Staff has formed a Working Group comprised of labor and management to evaluate the recommendations and develop a plan for implementing them. This cross functional team will evaluate stop signal violation locations, assess existing conditions and make recommendations (e.g., education, engineering and enforcement) to further reduce stop signal violations.

Staff will conduct an outreach campaign at rail lines to educate employees about stop signal violations. Stop signal information will be posted at rail lines and updated monthly.

Staff will evaluate the current training program for Rail Operators. This evaluation will help identify opportunities to provide additional training and support for Rail Operators during their first two (2) years of rail service. Additionally, all front line Bus and Rail Employees, as well as Bus and Rail Supervisory staff, will participate in Metro Annual Safety Sustainment Training.

Staff will assess the feasibility of adding simulation-based training for Rail Operators and Rail Controllers to the existing training programs.

Staff will enhance the current efficiency test program. For example, structured efficiency tests will be developed to evaluate Rail Operator and Rail Controller compliance with signal rules in the field.

Staff will continue to maximize the effect of using Smart Drive video as a tool to change operators' behaviors and ultimately reduce red traffic light violations.

As of August 2, 2015, all Bus Operations Divisions began participating in the National Coalition for Safer Roads campaign, "Stop on Red." The campaign lasts for one week, and each day is dedicated to different safety aspects, useful statistics and information, and heartfelt messages from supporters.

In addition, Staff has created campaign banners featuring employees from each division.

Staff has certified Transit Operations Supervisors-Instruction to teach the National Safety Council's "Attitudinal Dynamics of Driving" course to Bus Operators. Operators identified as "high risk," based on Smart Drive events, and/or accident history, were the first to receive ongoing training.

Staff believes these actions will help reduce stop signal and red traffic violations even further.

The Inspector General is currently procuring for the independent consultant as directed by the motion (Attachment C).

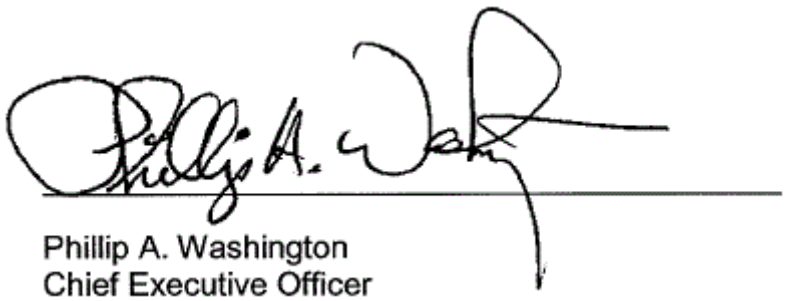
ATTACHMENTS

Attachment A - APTA Review Closing Presentation
Attachment B - APTA Review Final Report
Attachment C - Motion on Rail Red Light Violations

Prepared by: Patrick Preusser, Executive Officer, Rail Operations, (213) 922-7974
Diane Frazier, Interim Executive Director, Transportation, (213) 922-1101
Tamar Fuhrer, Transportation Planning Manager IV, Rail Operations, (213) 922-6937

Questions: Christopher Reyes, Transportation Planning Manager III, Operations, (213) 922-4808

Reviewed by: James T. Gallagher, Chief Operations Officer



Phillip A. Washington
Chief Executive Officer

Attachment A

BUS & RAIL OPERATING PRACTICES REVIEW

A Peer Review Provided by the North American Transportation Services Association

June 9 - 12, 2015

AMERICAN PUBLIC TRANSPORTATION ASSOCIATION

Peer Review Panel Members

Svetlana Grechka – Senior Engineer
Regional Transportation District
Denver, CO

Rodney Hunter– Transportation Superintendent
Sacramento Regional Transit District
Sacramento, CA.

Dave Jensen, Training Supervisor
San Diego Trolley
San Diego, CA

Russell Stone
Dallas Area Rapid Transit
Dallas, TX

AMERICAN PUBLIC TRANSPORTATION ASSOCIATION

Bus & Rail Operating Practices Review

- **Agenda**
  - Scope of Review
  - Peer Review Objectives
  - Methodology
  - Observations & Findings

AMERICAN PUBLIC TRANSPORTATION ASSOCIATION

Scope of Review

The Peer Review Panel was convened at the request of Arthur Leahy, former CEO, to assist LACMTA in reviewing its Bus and Rail Operating Practices with an emphasis on Red Light Signal Violations.

The observations and findings provided through this peer review are offered as an industry resource to be considered by LACMTA in support of strengthening the organization's operating policies, plans, procedures and enhancing practices for both the bus and the rail systems.

Peer Review Objectives

1. Review red signal violations for both bus and rail with focus on street running with interlocking signals.
2. Review Metro's rules and procedures with emphasis on defensive driving.
3. Review Metro's program of rules compliance and efficiency testing.
4. Review Metro's disciplinary policies and practices on red light violations and compare to other agencies.
5. Review Metro's Train Control Signal System to preclude red signal violations, including new technology that could be implemented to mitigate violations.
6. Explore confidential close call programs.

Peer Review Methodology

APTA is pleased to use its NATSA resources to support this peer review at LACMTA. The APTA Peer Review process is well established as a valuable resource to the public transit industry.

Highly experienced and respected professionals voluntarily provide their time and support to address the scope required to help the transit system and the industry as a whole.

The panel conducted this peer review through documentation review, field observations and a series of briefings and interviews with LACMTA staff from all levels within the organization.

Bus & Rail Operating Practices Review

Observations & Findings

Observations & Findings

Opening Comments:

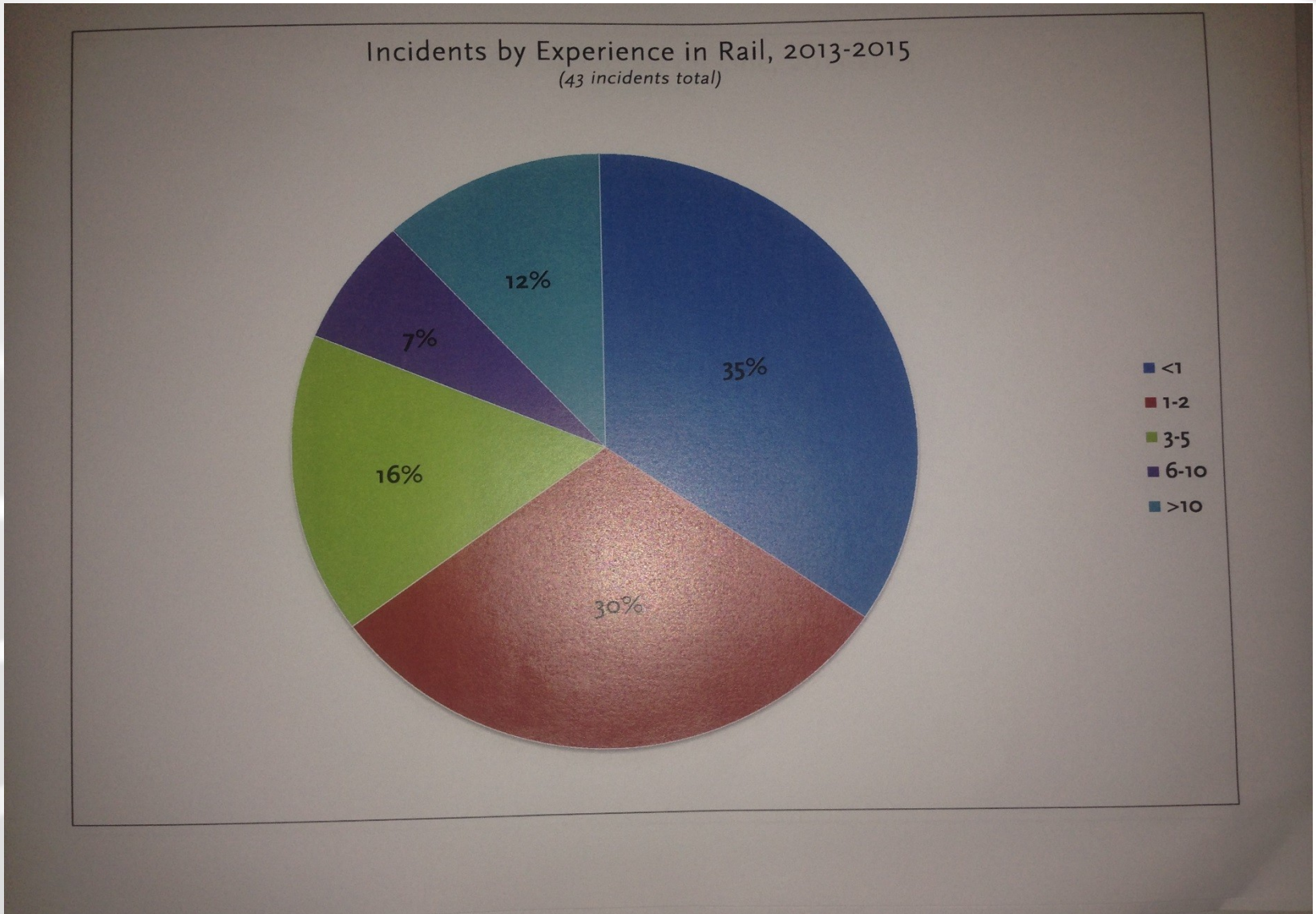
The peer review team found that LACMTA team works well together with open dialog between management and labor on safety issues. It is apparent that there is a well developed level of trust and openness shared by employees on the value of safety to the organization which has permeated all levels in the organization. The management system approaches and organizational structure follow industry practice in establishment of operating rules, procedures, training, discipline, and supervision. In some areas LACMTA has developed best practice and in other areas they have modeled best practice. In short, the peer review team found the conditions and programs were healthy to robust, which enabled the team to focus on areas where programs and practices could be enhanced or strengthened.

Observations & Findings

1. **Review red signal violations for both bus and rail with focus on street running with interlocking signals (Rail):**

- On the rail side there appears to be a disconnect within the levels of the organization on the cause for the spike in red signal violations.
  - -No real evidence that complacency is a factor
  - No observations that OTP pressure is being exerted
  - Signal placement could be a human factor issue
  - Signal display of red and green is being addressed
  - Integration of the interlocking and bar signals would eliminate the condition where proceed and stop are simultaneously displayed. Currently they operate independently of each other.
  - No written procedures found to guide operator on correct use of countdown timers.
  - Information on Blue Line LOS speeds vary between 32, 35, 36 and DOT recommendation of 33 – 35.
  - Training program documentation vs observed operation shows a gap exists. There could be a risk that line training is being taught in a fashion that the engineered system cannot support. Example is countdown and train coming short cycles.
  - Supervisors are not trained to identify operators “Hi-spotting” the signals to get over the road,

Effect of Operating Experience



Observations & Findings

1. **Review red signal violations for both bus and rail with focus on street running with interlocking signals (Bus):**

- On the bus side the motivation for running the signals are different from rail. The minimum recovery time is 6 minutes which can be lost if there are more than one wheelchair boardings, as example, which translates into loss of opportunity for restroom use, smoke break, or decompression time.
  - There is little evidence to suggest that management is prioritizing OTP over safety
  - Statistics showing an increase in bus red light running may be the result of installation of technology (Smartcam) so the management is seeing these events now when they couldn't prior to the installations
  - Smartcam is dependent upon other event tags to be found for a signal violation to be noticed. Not all signal violations are being discovered, so the overall red signal failure rate is likely much higher than currently reported.

Observations & Findings

2. Review Metro's rules and procedures with emphasis on defensive driving (Rail):

- The peer review team takes no exception to the rules and procedures being used
- The rules or procedures governing the countdown timers could not be located and is still an open item
- The rules and defensive driving modules are inconsistent for classroom training and not properly implemented in the field. Inconsistency between classroom training and field application were observed.

Observations & Findings

2. Review Metro's rules and procedures with emphasis on defensive driving (Bus):

- The Bus Defensive Driving modules are considered to be more robust than the peer review team saw in the rail program and this presents an opportunity for transference of program content to be able to improve both programs.
- As noted with the Rail program, the rules and defensive driving modules are inconsistent for classroom training and not properly enforced in the field. Inconsistency between classroom training and field application were observed.

Observations & Findings

3. Review Metro's program of rules compliance and efficiency testing (Rail):

- There is opportunity to improve the program with the development of additional Supervisory oversight activities, such as, using Smartcam clips for skill development instead of just discipline.
- The Efficiency Testing program needs to be more robust.
- The Mystery Rider program is primarily ADA focused but could easily be repurposed to include driver observations which could be used for indicators on what areas the Efficiency Testing program should target.

Observations & Findings

3. Review Metro's program of rules compliance and efficiency testing (Bus):

- There is opportunity to develop a supervisory oversight or formal efficiency testing program for bus operations and with the development of wireless capabilities of the TVX video system, a digital Efficiency Testing program could emerge.
- Currently there is little supervisory oversight programs being applied to verify that rules, procedures and training skills are being applied at an acceptable level.
- As with the Rail program, the Mystery Rider program is primarily ADA focused but could easily be repurposed to include driver observations which could be used for indicators on what areas the Efficiency Testing program should target.

Observations & Findings

4. Review Metro's disciplinary policies and practices on red light violations and compare to other agencies (Rail):

- The Rail disciplinary policies, such as successfully bargaining the issue of Red Light Violations from a minor to a major classification were highly regarded by the review team as was the strict suspension to termination progression of 3 – 15 – termination policy. The team considers this program to be at the level of best industry practice.

Observations & Findings

4. Review Metro's disciplinary policies and practices on red light violations and compare to other agencies (Bus):

- The Bus disciplinary policies, although successful bargaining raised the issue of Red Light Violations from a minor to a major classification, was considered by the team as an area where improvement can be made. It was considered to put the agency at too much risk due to the 6 month roll back provision. It is possible that an operator could continue to work with a major violation on his/her record without ever escalating the Level 1 discipline category as long as the events were spaced greater than 6 months apart.
- Both Bus and Rail could benefit from a database that documents the major violations in the same way that is being done with accidents.

Observations & Findings

5. **Review Metro's Train Control Signal System to preclude red signal violations, including new technology that could be implemented to mitigate violations (Rail):**

- **Line of Sight in the corridor does provide for interlocking signals for normal and reverse running. The signalling system does not provide an approach signal to the interlocking (home) signal which provides the operator no information as to what the aspect should be ahead. Because of space restrictions, these signals are not uniformly placed. Consistency of location and an advance approach indication would be helpful.**
- **Hot spot of the signal lens need to be aimed for the operators vision when berthed.**

Observations & Findings

5. **Review Metro's Train Control Signal System to preclude red signal violations, including new technology that could be implemented to mitigate violations (Rail):**

- **Consider separating the Normal and Reverse running signal heads as they are often set side by side and easily confused. (on approach we saw 3 reds and one green). Another option would be to make reverse running approach lit or use program view heads.**
- **Several locations were observed displaying proceed interlocking signal indications with a stop semaphore bar signal. These signals are not independent of each other. It is poor practice to display a stop signal and proceed signal at the same location.**

Observations & Findings

5. **Review Metro's Train Control Signal System to preclude red signal violations, including new technology that could be implemented to mitigate violations (Rail):**

- **Audible warnings for grade crossings were observed to not be consistant with the operating rule warning pattern established.**
- **Several locations were observed displaying proceed interlocking signal indications with a stop semaphore bar signal. These signals are not independent of each other. It is poor practice to display a stop signal and proceed signal at the same location.**

Observations & Findings

5. **Review Metro's Bus Control Center including new technology that could be implemented to mitigate violations (Bus):**

- **The Bus Control Center and the Emergency Operations Center were found to be very impressive. The controller's 3 display monitors, the colocation of the Sheriff's communication desk and the division of responsibility among the supervisors were excellent.**

Observations & Findings

Explore Confidential Close Call Programs (Rail):

- **Rail operations has several key conditions and operator competence issues to resolve as a more immediate and fundamental action before the team were to suggest that a Confidential Close Call Reporting system considered. Structure needs to be put place to support the program.**

Observations & Findings

Explore Confidential Close Call Programs (Bus):

- The Bus Divisions may be in a position to engage a Confidential Close Call pilot at a few divisions.

Addition Comments and Observations

Addition Comments and Observations

AMERICAN PUBLIC TRANSPORTATION ASSOCIATION

Addition Comments and Observations

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Suggested Improvements

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Suggested Improvements

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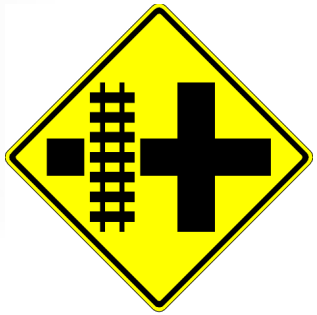
Suggested Improvements

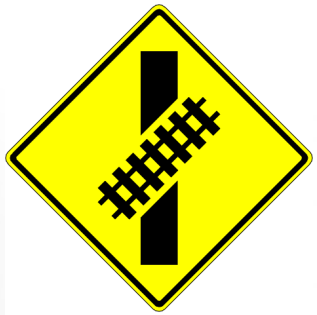
Suggested Improvements

- Advanced warning signs:
  - ✓ W10-2



W10-2
Parallel Railroad Crossing (crossroad)

  - ✓ W10-12



W10-12
Skewed Railroad Crossing

AMERICAN PUBLIC TRANSPORTATION ASSOCIATION

APTA AMERICAN PUBLIC TRANSPORTATION ASSOCIATION

Safety Treatments

- Alternating Black-out sign consists of:
  - ✓ W10-7 “Light Rail Transit Approaching”
  - ✓ R3-1 “No Right Turn” or R3-2 “No Left Turn”

Intersection Study

- Gathering data:
  - ✓ Field review
  - ✓ Surveillance cameras
- Focus of study – risky behavior
  - ✓ Vehicle collisions at crossings are rare
  - ✓ Risky behavior allows to assess the effectiveness of the traffic engineering treatments at crossings
    - The “before” and “after” analysis
      - ✓ effectiveness in decreasing the frequency of violations

AMERICAN PUBLIC TRANSPORTATION ASSOCIATION

Questions?

APTA AMERICAN PUBLIC TRANSPORTATION ASSOCIATION

AMERICAN PUBLIC TRANSPORTATION ASSOCIATION

PEER REVIEW

FOR

Los Angeles County Metropolitan Transportation Authority

Los Angeles, California

JUNE 2015

A Service of the American Public Transportation Association
performed by the
North American Transit Services Association
a wholly owned subsidiary of APTA

REPORT

OF THE

NORTH AMERICAN TRANSIT SERVICES ASSOCIATION

PEER REVIEW PANEL

ON

BUS AND RAIL OPERATING PRACTICES

PROVIDED AT

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

PANEL MEMBERS:

Svetlana Grechka
Rodney Hunter
Dave Jensen
Russell Stone
William Grizard

Published by the
North American Transit Services Association
1666 K Street, NW, 11th Floor
Washington, DC 20006

Michael P. Melaniphy, President

TABLE OF CONTENTS

INTRODUCTION

In March 2015, Mr. Arthur Leahy, Title at the Los Angeles County Metropolitan Transportation Authority (LACMTA) contacted the American Public Transportation Association (APTA) to request two peer reviews. The first regarding an appropriate zero tolerance policy for red light violation on LACMTA's bus and rail system. The second a review of rail system training programs, rules and procedures. It was determined that these two peer reviews could be combined into one peer review.

APTA, through its wholly owned subsidiary the North American Transit Services Association (NATSA) and through discussions between NATSA and LACMTA staff, determined the review would be conducted June 9 – 12, 2015.

A panel of industry peers was assembled comprised of individuals with senior and executive industry leadership skills from within the public transit sector to provide advice, guidance, benchmarking and best practices. The onsite peer review panel consisted of the following individuals:

SVETLANA GRECHKA
Senior Engineer
Regional Transportation District
Denver, CO

RODNEY HUNTER
Transportation Superintendent
Sacramento Regional Transit District
Sacramento, CA

DAVE JENSEN
Training Supervisor
San Diego Trolley
San Diego, CA

RUSSELL STONE
Assistant Vice President
Dallas Area Rapid Transit
Dallas, TX

WILLIAM P. GRIZARD
Acting Assistant Vice President Public Safety, Operations & Technical Services
American Public Transportation Association
Washington, DC

The panel convened in Los Angeles on June 9, 2015. Panel coordination and logistical support was provided by NATSA Staff Advisor Mr. William Grizard who coordinated panel

member input in the drafting of this peer review report. Ms. Diane Frazier, Interim Executive Officer, directed overall Agency participation and support for the Panel's work.

METHODOLOGY

The NATSA peer review process is well established as a valuable resource to the industry for assessing all aspects of transit operations and functions. The process begins much like a structured formal audit activity, but unlike a formal audit, peer review teams are comprised of highly experienced transit professionals who are selected on the basis of their subject matter knowledge. The purpose of using experienced subject matter professionals is to share methods, insight and experiences interactively with the requesting property. Through the utilization of on-site interviews of staff, review of relevant documents, and field inspections the review team engages the requesting property in an informal process of introspective examination and dialog on the areas of their concern.

It is through this exchange of ideas and experiences that the synergic process of the peer review earns value as each of the participants, on the review team and at the property, gain a better understanding of the complexities of transit functions and opportunities for improvement. It is truly an industry self-improvement process where all parties benefit.

The peer review concludes with a caucus among the peer review team to draw out the opinions of the team members and define a consensus summation of observations taken and their professional judgment as to where areas of improvement could be attained. This information is then presented to the requesting property in an exit conference and followed by a report, if so desired by the requesting property. There are no expectations expressed or implied that the requesting property take any action to satisfy the opinions of the peer review team or to engage any members of the team in any follow up activities as the requesting property may want to undertake as a result of the review. The information provided by the peer review team is consensus based and transferred to the requesting property as a "Pro Bono" work product which the transit property holds all rights to under the terms of the peer review agreement.

SCOPE OF THE REPORT

The review focused on the following objectives identified in the Letter of Request:

1. Review red signal violations for both bus and rail with focus on street running with interlocking signals.
2. Review Metro's rules and procedures with emphasis on defensive driving.
3. Review Metro's program of rules compliance and efficiency testing.
4. Review Metro's disciplinary policies and practices on red light violations and compare to other agencies.
5. Review Metro's Train Control Signal System to preclude red signal violations, including new technology that could be implemented to mitigate violations.
6. Explore confidential close call programs

OBSERVATIONS AND RECOMMENDATIONS

OPENING COMMENTS

The peer review team found that the LACMTA team works well together with open dialog between management and labor on safety issues. It is apparent that there is a well-developed level of trust and openness shared by employees on the value of safety to the organization which has permeated all levels in the organization. The management system approaches and organizational structure follow industry practice in establishment of operating rules, procedures, training, discipline, and supervision. In some areas LACMTA has developed best practices and in other areas they have modeled best practices. In short, the peer review team found the conditions and programs were healthy to robust, which enabled the team to focus on areas where programs and practices could be enhanced or strengthened.

OBSERVATIONS RAIL

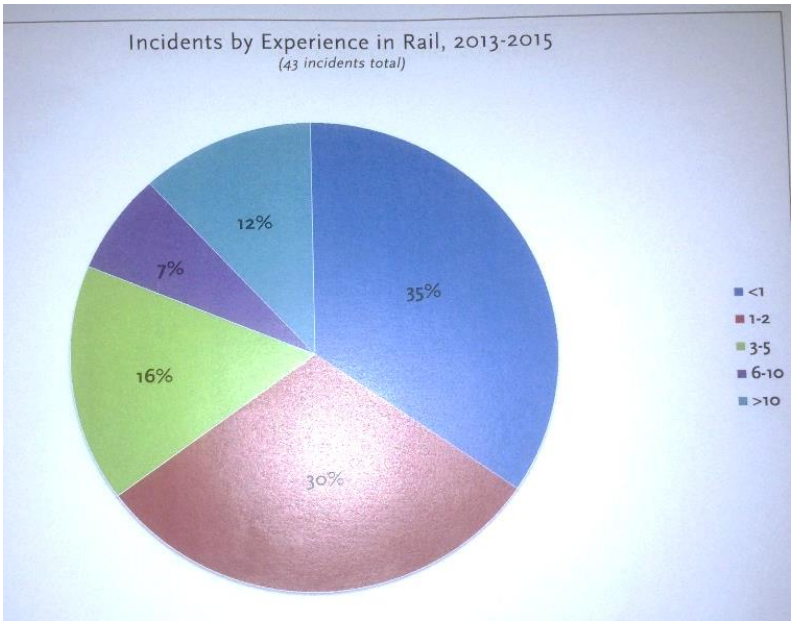
1. REVIEW RED SIGNAL VIOLATIONS FOR RAIL WITH FOCUS ON STREET RUNNING WITH INTERLOCKING SIGNALS:

- On the rail side, there appears to be a disconnect within the different levels of the organization on the cause for the spike in red signal violations.
  - Although the term "complacency" was offered as a causal factor, the peer review team did not find any real evidence that complacency is a factor.
  - No observations were made that indicated On Time Performance (OTP) pressure is being exerted over safety considerations.
  - The review team did find several observations where interlocking signals placement away from direct Line of Sight could impact the train operator performance and cause human error.
  - LACMTA does have an unusual interlocking signal display of red yellow and green aspects however, this situation is already actively being addressed by the agency.
  - It appears that both the traffic lights for motorists and the bar signals mounted on the mast arms are operated by local jurisdiction. The integration between traffic light/bar signs and interlocking signs could create a complex situation and cause human error.
  - Integration of the interlocking and bar signals would eliminate the condition where proceed and stop are simultaneously displayed. It appeared that currently, they operate independently of each other. The operators are being trained to observe the pedestrian crosswalk countdown timer to anticipate when the bar signal will change to a favorable signal.
  - No written procedures found to guide operator on correct use of pedestrian countdown timers. The only advice given was found in a training power point presentation.
  - There was a Training Power Point that indicated a "minimum speed of 30-32 MPH" operating through particular segment. This is a range rather than noting a minimum number. It's is suggested, however, that slowing should always be an

option to ensure safe passage through intersections and rail corridors. Instructing Train Operators not to go any slower than a particular speed may cause some reluctance to slow down when it may be warranted.

- Several sources of information on Blue Line LOS speeds vary between 32, 35, 36 and DOT recommendation of 33 – 35. The conflicting information needs to be standardized.
- Training program documentation vs observed operation shows a gap exists. There could be a risk that line training is being taught in a fashion that the engineering of the system cannot support. (Example is countdown and train coming short cycles).
- The Train Operators should be instructed that "Train Control" isn't sufficient to mitigate potential hazards and that "Situation Control" must be incorporated. In other words; it's not enough to be able to "handle the train", what must be done is to "handle the situation". This begins with recognition, anticipation and evasive action.
- Supervisors should be trained and encouraged to enforce the train handling skills obtained in training. Quality control should also be evaluated and deficiencies corrected. Rough Train Operation will result in on board injuries. Field supervision should incorporate smooth train handling as part of routine evaluations.
- Supervisors are not trained to observe for and identify operators "Hi-spotting" the signals to get over the road.
- Some of the signage for motorist is distorted by oxidization and should be replaced to ensure clarity. Some of the signage is misplaced and should be reviewed to ensure that they are in the most advantageous place to allow motorist the time to recognize and react to the information that is being displayed.

EFFECT OF OPERATING EXPERIENCE:



2. REVIEW METRO'S RULES AND PROCEDURES WITH EMPHASIS ON DEFENSIVE DRIVING (RAIL):

- The peer review team takes no exception to the rules and procedures being used.
- The rules or procedures governing the pedestrian countdown timers could not be located and is still an open item.
- The rules and defensive driving modules are inconsistent for classroom training and not properly implemented in the field. Inconsistency between classroom training and field application were observed.
- The agency could benefit from "real-life" rail simulator to supplement current training without affecting revenue service.

3. REVIEW METRO'S PROGRAM OF RULES COMPLIANCE AND EFFICIENCY TESTING (RAIL):

- There is opportunity to improve the program with the development of additional Supervisory oversight activities, such as, using *Smartcam* clips for skill development instead of just discipline.
- The Efficiency Testing program needs to be more robust.
- The Mystery Rider program is primarily ADA focused but could easily be repurposed to include driver observations which could be used for indicators on what areas the Efficiency Testing program should target.

4. REVIEW METRO'S DISCIPLINARY POLICIES AND PRACTICES ON RED LIGHT VIOLATIONS AND COMPARE TO OTHER AGENCIES (RAIL):

- The Rail disciplinary policies, such as successfully bargaining the issue of Red Light Violations from a minor to a major classification were highly regarded by the review team as was the strict suspension to termination progression of 3 – 15 – termination policy. The team considers this program to be at the level of best industry practice.

5. REVIEW METRO'S TRAIN CONTROL SIGNAL SYSTEM TO PRECLUDE RED SIGNAL VIOLATIONS, INCLUDING NEW TECHNOLOGY THAT COULD BE IMPLEMENTED TO MITIGATE VIOLATIONS:

- Line of Sight operations in the corridor does provide for interlocking signals for normal and reverse running. However, the signalling system does not provide an approach signal to the interlocking (home) signal, the result of which does not prepare the operator as to what the aspect they should be approaching. Because of space restrictions, these signals are not uniformly placed. Consistency of location and an advance approach indication would be helpful.
- The application in the field appeared to be, that the Train Operators operated with the assumption that a signal would be clear, or would change to a clear indication, when the train arrived at the signal. This thought process could lead to signal over-runs. Training the Train Operators to always expect a restrictive or stop indication, and to approach each signal prepared to stop, would be a benefit. The assumption must be, that the train will have to stop and then only proceed once it's observed that the signal is favourable.

Training operators to anticipate a signal aspects to change to something better than a stop indication should never be done. This type of operation challenges the safety aspect and ride quality of the entire operation.

- Hot spot of the signal lens needs to be aimed for the operator's vision when berthed at the platform.
- Consider separating the Normal (green over red) and Reverse running (red over green) signal heads as they are often set side by side and easily confused (one approach we observed 3 reds and one green). Another option would be to make reverse running approach lit or use program view heads.
- Several locations were observed displaying proceed interlocking signal indications with a stop semaphore bar signal. These signals are not independent of each other. It is poor practice to display a stop signal and proceed signal at the same location.
- Audible warnings for grade crossings were observed to not be consistent with the operating rule warning pattern established.

6. EXPLORE CONFIDENTIAL CLOSE CALL RAIL PROGRAMS.

Rail operations have several key conditions and operator competence issues to resolve as a more immediate and fundamental action before the team were to suggest that a Confidential Close Call Reporting system be considered. Structure still needs to be put place to support the program.

OBSERVATIONS BUS

1. REVIEW RED SIGNAL VIOLATIONS FOR BUS WITH FOCUS ON STREET RUNNING WITH INTERLOCKING SIGNALS:

- On the bus side, the motivation for running the signals are different from rail. The minimum recovery time is 6 minutes which can be lost if there are more than one wheelchair boardings, as example, which translates into loss of opportunity for restroom use, smoke break, or decompression time.
  - In response to Executive Management concerns, there is little evidence to suggest that management is prioritizing OTP over safety.
  - Statistics showing an increase in bus red light running may be the result of installation of technology (Smartcam) so the management is now seeing these events when they were "blind" to them prior to the installation.
  - For the Bus operations, Smartcam is dependent upon other event tags to be found for a signal violation to be noticed. Not all signal violations are being discovered, so the overall red signal failure rate is likely much higher than currently reported.
  - Operators reported not braking hard to stop at a signal to avoid "tagging" the video. The Operators indicated a desire not to "get caught" operating too aggressively which a hard brake and tagged video would reveal. Periodic, random checks of video would allow for a better deterrent.

2. REVIEW METRO'S RULES AND PROCEDURES WITH EMPHASIS ON DEFENSIVE DRIVING (BUS):

- The Bus Defensive Driving modules are considered to be more robust than the peer review team saw in the rail program and this presents an opportunity for transference of program content to be able to improve both programs.
- As noted with the Rail program, the rules and defensive driving modules are inconsistent for classroom training and not properly enforced in the field. Inconsistency between classroom training and field application were observed.

3. REVIEW METRO'S PROGRAM OF RULES COMPLIANCE AND EFFICIENCY TESTING (BUS):

- There is opportunity to develop a supervisory oversight or formal efficiency testing program for bus operations and with the development of wireless capabilities of the TVX video system, a digital Efficiency Testing program could emerge.
- Currently there is little supervisory oversight programs being applied to verify that rules, procedures and training skills are being applied at an acceptable level.
- As with the Rail program, the Mystery Rider program is primarily ADA focused but could easily be repurposed to include driver observations which could be used for indicators on what areas the Efficiency Testing program should target.

4. REVIEW METRO'S DISCIPLINARY POLICIES AND PRACTICES ON RED LIGHT VIOLATIONS AND COMPARE TO OTHER AGENCIES (BUS):

- The Bus disciplinary policies, although successful bargaining raised the issue of Red Light Violations from a minor to a major classification, was considered by the team as an area where improvement can be made. The review team believes that this issue is too lenient and put the agency at too much risk due to the 6 month roll back provision. It is possible that an operator could continue to work with a major violation on his/her record without ever escalating the Level 1 discipline category, as long as the events were spaced greater than 6 months apart.
- Both Bus and Rail could benefit from a database that documents the major violations in the same way that is being done with accidents.

5. REVIEW METRO'S BUS CONTROL CENTER INCLUDING NEW TECHNOLOGY THAT COULD BE IMPLEMENTED TO MITIGATE VIOLATIONS (BUS):

- The Bus Control Center and the Emergency Operations Center were found to be very impressive. The controller's 3 display monitors, the colocation of the Sheriff's communication desk and the division of responsibility among the supervisors were excellent.

6. EXPLORE CONFIDENTIAL CLOSE CALL BUS PROGRAMS.

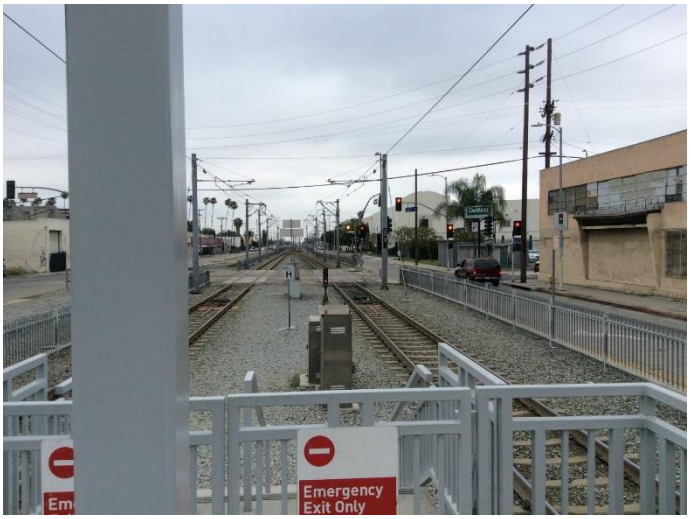
The Bus Divisions may be in a position to engage a Confidential Close Call pilot at a few divisions.

ADDITIONAL COMMENTS AND OBSERVATIONS

The following are examples of …..

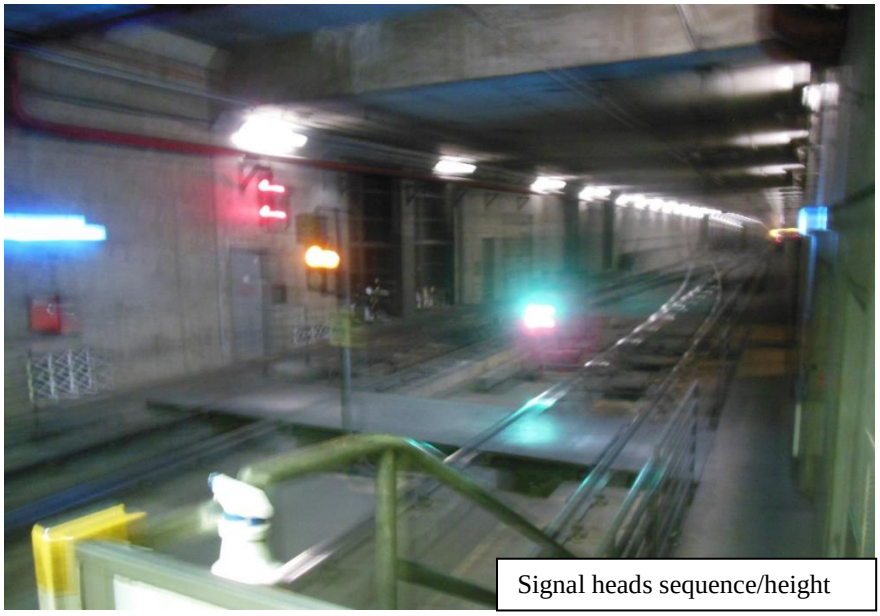
LIGHT TIMING DISCREPANCIES- Note the train occupying the intersection with a “Stop” indication illuminated

INCONSISTENT ASPECTS- Note “Stop” and “Proceed” indications illuminated simultaneously



Typical view of Interlocking signal from the station. This is clear and easily identifiable by the Train Operator. Much better design compared to other views where the reverse running singal is observed immediately next to the signal.

SUGGESTED IMPROVEMENTS:



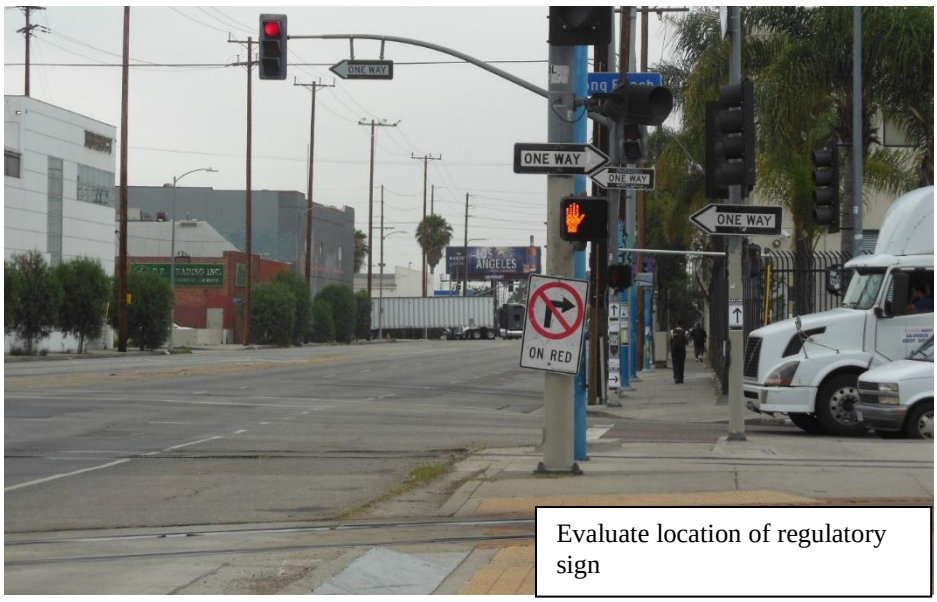
Signal heads sequence/height

Evaluate warrants for LT closure

Evaluate essential location and targeted audience of "No pedestrian crossing" sign

Rail the height of block signal

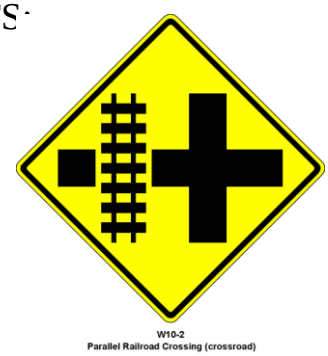
Evaluate the necessity to provide secondary access to platforms



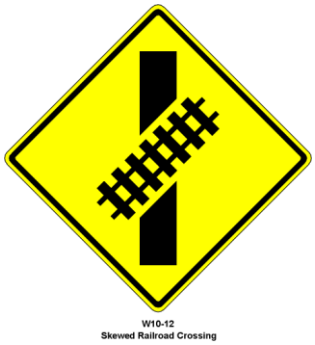
Evaluate location of regulatory sign

SUGGESTED IMPROVEMENTS

Install advance warning signs:



W10-2



W10-12

SAFETY TREATMENTS

Alternating Black-out Sign consists of:

W10-7 "Light Rail Transit Approaching

R3-1 "No Right Turn"
R3-2 "No Left Turn"

Intersection Study

- Gathering Data:
  - Field Review
  - Surveillance cameras
- Focus of study – risky behavior
  - Vehicle collisions at crossing are rare
  - Risky behavior allows to assess the effectiveness of the traffic engineering treatments at crossings
- The "before" and "after" analysis
  - Effectiveness in decreasing the frequency of violations

CONCLUDING REMARKS

The peer review panel wishes to express sincere appreciation for the professional support, assistance, and courtesy extended throughout the peer review process by the staff of LACMTA.

The observations and findings provided through this peer review are offered as an industry resource to be considered by Agency in support of strengthening the organization's strategic goals and enhancing practices in the operation and safety of bus and rail operations.

Appendix

Appendix A

Los Angeles County
Metropolitan Transportation Authority

One Gateway Plaza
Los Angeles, CA 90012-2952

Arthur T. Leahy
Chief Executive Officer
213.922.6888 Tel
213.922.7447 Fax
metro.net

March 27, 2015

Michael Melaniphy
President
American Public Transportation Association
1666 K Street, NW, 11th Floor
Washington, DC 20006

Dear Mr. Melaniphy,

As a follow up to my letter on March 10, 2015 (attached) regarding our request for the APTA Peer Review, I would like to inform you of additional efforts initiated by our Board of Directors. On February 26, 2015 our Board directed Metro's Inspector General to conduct research regarding an appropriate zero -tolerance policy for red light violations on our bus and rail system. Work thus far from the Inspector General's office includes the following:

- Requested appropriate Metro departments to provide applicable policies and procedures related to the subject matter.
- Reviewed applicable policies including the collective bargaining agreements, bus and rail operator rulebook, standard operating procedures and rules, and our system safety program plan.
- Interviewed and met with Metro officials.
- Researched internet related safety and red light violation policies.
- Contacted other transit agencies for their red light violation policies (WMATA, Maryland Transit Administration, SFMTA, and CTA).

Please let us know if you have any questions related to this additional information. We look to working with the panel on this review.

Sincerely,

Arthur T. Leahy

Arthur T. Leahy
Chief Executive Officer

Cc: Board of Directors
W.P. Grizard, Acting Director, Security, Operations & Technical Services, APTA
Kathy Waters, V.P., Member Services, APTA

Los Angeles County
Metropolitan Transportation Authority

Metro

One Gateway Plaza
Los Angeles, CA 90012-2952

Arthur T. Leahy
Chief Executive Officer
213.922.6888 Tel
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metro.net

March 10, 2015

Michael Melaniphy
President
American Public Transportation Association
1666 K Street, NW, 11th Floor
Washington, DC 20006

Dear Mr. Melaniphy,

The Los Angeles County Metropolitan Transportation Authority (LACMTA) requests the assistance of the American Public Transportation Association (APTA), in conducting a peer review of our rail operating practices and program. Specifically, I am looking to APTA to send us experts in the field of rail operations, technology and safety who can provide a review of our rail system training programs, rules and procedures, service management and control and disciplinary policies and oversight programs, such as rules compliance and efficiency testing for frontline employees. The panel should also evaluate our system to evaluate whether our practices are consistent with current safety standards and principles used by light rail transit systems in North America.

I would appreciate APTA's assistance in convening a Peer Review panel this spring in order to provide our agency and our patrons with an independent outside review of our rail safety programs and practices. Diane Frazier, Interim Executive Officer of Transportation, will serve as your main point of contact. She may be reached at 213-922-1101 or at Frazierd@metro.net.

Thank you in advance for your consideration in convening this Peer Review panel. I look forward to hearing from you regarding this request.

Sincerely,

Arthur T. Leahy

Arthur T. Leahy
Chief Executive Officer

cc: Board of Directors
W.P. Grizard, Acting Director, Security, Operations& Technical Services, APTA
Kathy Waters, V.P., Member Services, APTA

Appendix B

LACMTA Bus and Rail Ops Peer Review
Schedule

Tuesday, June 9, 2015

7:45 am—8:00 am	Walk from Millennium Biltmore Hotel to Pershing Square Station	Transportation Planning Manager IV, Tamar Fuhrer & Joanna Chan Rail Operations ELTP
8:04 am—8:08 am	Train ride: Red/Purple Line Pershing Square Station to Union Station	Transportation Planning Manager IV, Tamar Fuhrer & Joanna Chan Rail Operations ELTP
8:30 am—8:45 am	13th Floor Heritage - Introductions	Team
8:30 am—8:45 am	Opening Remarks	Interim Chief Operations Officer, Robert Holland
9:00 am—9:30 am	Scope of the peer review, overview of Metro's rail network, stop signal violations, and discipline	Executive Officer Rail Operations, Patrick Preusser
9:30 am—9:45 am	Overview of Corporate Safety Department & interface with Rail Operations	Director of Corporate Safety, Eddie Boghossian
9:45 am—10:00 am	Overview of Metro's Signal & Train Control System	Director Wayside Systems, Remi Omotayo
10:00 am—10:15 am	Overview of Metro's SCADA System	Supervising Engineer, Chuck Weissman
10:15 am—10:30 am	Break	
10:30 am—11:00 am	Overview of Metro's Training Program for Rail Operators, Controllers, and Supervisors	Rail Instruction Manager, Linda Leone
11:00 am—11:30 am	Overview of Metro's Rules and Procedures pertaining to signals	Service Operations Superintendent Robert Castanon
11:30 am—12:00 pm	Overview of Metro's Efficiency Testing Program	Service Operations Superintendent Patricia Alexander
12:00 pm—12:45 pm	Lunch	
12:45 pm—1:00 pm	Walk to Gold Line Union Station	
1:04 pm—1:26 pm	Observe Train Operators: Gold Line Union Station to Atlantic Station	Transportation Operations Manager, Michael Moore APTA Panel A
1:16 pm—1:38 pm	Observe Train Operators: Gold Line Union Station to Atlantic Station	Transportation Operations Manager, Michael Moore APTA Panel B
1:45 pm—2:30 pm	Drive alignment to Division 21	Transportation Planning Manager IV, Tamar Fuhrer & Stephen Tu
2:30 pm—4:00 pm	Interview employees	APTA Panel
4:00 pm—4:15 pm	Drive to Metro Headquarters	Transportation Planning Manager IV, Tamar Fuhrer & Stephen Tu
4:15 pm—5:00 pm	13th Floor Heritage - Exit briefing	Team

Wednesday, June 10, 2015

7:45 am—8:00 am	Walk from Millennium Biltmore Hotel to Pershing Square Station	Assistant Operations Manager, Michael Alexander
8:03 am—8:05 am	Train ride: Purple Line Pershing Square Station to 7th Street Metro Center Station	Assistant Operations Manager, Michael Alexander APTA Panel
8:09 am—8:21 am	Observe Train Operators: Blue Line 7th Street Metro Center Station to Washington Station	Assistant Operations Manager, Michael Alexander APTA Panel A
8:13 am—8:25 am	Train ride: Blue Line 7th Street Metro Center Station to Washington Station	Assistant Operations Manager, Michael Alexander APTA Panel B
8:30 am—9:30 am	Drive alignment to Division 11	Transportation Planning Manager IV, Tamar Fuhrer & Stephen Tu
09:30 am—11:30 am	Interview employees	APTA Panel
11:30 am—12:00 pm	Working Lunch	Team
12:00 pm—12:30 pm	Drive to Rail Operations Control Center	Transportation Planning Manager IV, Tamar Fuhrer & Stephen Tu
12:30 pm—12:45 pm	Overview of Control Center	Chol Kim
12:45 pm—1:45 pm	Observe Rail Controllers	APTA Panel
1:45 pm—2:00 pm		Break
2:00 pm—3:30 pm	Interview employees	APTA Panel
3:30 pm—4:30 pm	Drive to Metro Headquarters	Transportation Planning Manager IV, Tamar Fuhrer & Stephen Tu
4:30 pm—5:00 pm	13th Floor Heritage - Exit Briefing	APTA Panel

Thursday, June 11, 2015

8:00 am—5:00 pm		Bus
8:14 am—8:18 am	Travel on Red/Purple Line to Metro Headquarters	APTA Panel
8:30 am—8:40 am	13th Floor Heritage - Introductions	Interim Executive Director, Transportation, Diane A. Frazier
8:40 am—9:30 am	Overview of Metro's Program-Policies, Rules, Standard Operating Procedures Pertaining to Safety Compliance	Interim Executive Director, Transportation, Diane A. Frazier
	Metro's Red Traffic Signal Violations Data	Interim Executive Director, Transportation, Diane A. Frazier
	Metro's Training Program for Bus Operators	Service Operations Superintendent, Daniel Dzyacky
	Metro Safety Systems-Resources	Service Operations Superintendent, Stephen Rank
	Discipline -Metro/S.M.A.R.T. Union Collective Bargaining Agreement	Interim Service Operations Superintendent, Maria Reynolds
	Incentive Rewards, Recognition and Programs	Interim Executive Director, Transportation, Diane A. Frazier

Thursday, June 11, 2015

9:30 am—12:00 pm	Peer interviews	
Lunch		
1:15 pm—1:30 pm	Drive to Division 3201	Bus Operations Team
1:30 pm—2:30 pm	Interview employees	APTA Panel
2:30 pm—2:45 pm	Drive to Metro Headquarters	Bus Operations Team
2:45 pm—3:00 pm	Break	
3:00 pm—4:30 pm	Peer interviews	APTA Panel
4:30 pm—5:00 pm	13th Floor Heritage - Exit Briefing	APTA Panel

Friday, June 12, 2015

8:00 am—10:00 am	13th Floor Heritage - Prepare closeout presentation	APTA Panel
10:00 am—10:15 am	Break	
10:15 am—11:45 am	Closeout presentation	APTA Panel
11:45 am—12:00 pm	Closing remarks	Chief Executive Officer, Phil Washington
Box Lunch		
12:00 pm—1:00 pm	Drive to airport	Transportation Planning Manager IV, Tamar Fuhrer & Stephen Tu

Document List

February 26, 2015

MTA Board of Directors

MOTION

Directors Antonovich and Solis

MTA Rail Red Light Violations and Agency Safety Culture

The MTA Board has made a firm commitment on behalf of its riders to create a strong safety culture for the agency, recognizing that rail accidents in particular are often tragic final outcomes of an agency that has not provided a strong focus on fostering and maintaining a strong safety culture for the agency over a period of time.

The MTA board approved a motion in October 2011 (Attachment A) that sought a full review of the safety culture of the agency, with the understanding that this effort would become even more necessary as our rail system simultaneously ages (the Blue Line turns 25 years old this year) and expands (starting with extensions to Azusa and Santa Monica opening in early 2016).

To maintain a strong safety culture, the Board expects the CEO and staff to monitor continuously the safety of our system and work with the Board to develop policies and seek resources to resolve problems and trends that undermine the safe operation of our system.

Antithetical to a strong safety culture is the presence of Red Light violations on our rail system. We have seen in this County the tragedy that ensues from a Red Light violation, most notably in 2008 when a Metrolink engineer (operator) ran a Red Light and crashed his train into a freight train, killing 25 people and injuring over 100 more.

MTA has had its share of close calls in recent years with Red Light violations. An August 2012 accident that involved a Blue Line train striking an MTA bus was the result of a Red Light violation by the train. Only luck prevented the train from hitting the bus more squarely, which could have caused more injuries—in number and in severity—than the 31 minor injuries reported.

While Metrolink staff took immediate action to drive down red light violations and adopt a zero tolerance approach to such violations in the wake of the Chatsworth crash, the MTA's response after the Blue Line crash has been ineffective.

Over the past 24 months, the MTA has had 38 Red Light violations recorded. Even more alarming is that over the past two years, the Blue Line—which has the most complex operational environment of all our light rail lines due to the adjacent freight tracks within the right-of-way and number of at-grade crossings—has had 24 Red Light violations —an average of one per month. The Gold Line has had seven (7) in that same timeframe. Both the MTA rail system as a whole and the Blue Line have experienced more Red Light violations in the past 12 months (20 and 14, respectively) than the prior 12 months (18 and 10), suggesting a trend that is getting worse, not better.

A couple of Red Light violations over the course of the year could be the result of isolated operator error – however, 38 Red Light violations over 2 years signal a failure of effective management and focus by the CEO to identify and resolve this breakdown in MTA's safety culture and operational safety with appropriate urgency.

WE THEREFORE MOVE that the MTA Board directs the Inspector General to

A. conduct research into an appropriate zero-tolerance policy for Red Light violations for our Rail and Bus system and return to the Board in March with such a policy for consideration; and

B. retain an independent consultant with expertise in safety culture and rail operational safety to conduct a review of MTA rail operations and management, including a root cause analysis of the Red Light violations committed over the past two years.

   - This review must at minimum include an analysis of safety culture, infrastructure issues, operator training, use of efficiency testing, and effectiveness of discipline for both operator and management.

WE FURTHER MOVE that the MTA Board sends a letter to the Administrators of the Federal Transit Administration and Federal Railroad Administration to seek partnerships in working with the MTA to reduce Red Light violations system-wide and to evaluate current policies, conditions, and management structures for flaws and deviations from industry best practices.

LACMTA
Full Board Meeting
October 27, 2011

MOTION
Director Antonovich

The top priority for the MTA Board of Directors has been and must always be exercising vigilant oversight of MTA's bus and rail system to ensure the safety and integrity of our transit system for every one of our 38 million monthly passengers. As a Board we must remain committed to this priority and continually strive to improve the safety culture at MTA in a proactive manner, rather than in a reactive manner after suffering a major accident, such as the one on June 22, 2009, that claimed 9 lives and injured 76 other passengers on the Washington Metropolitan Area Transit Authority (WMATA) subway system.

In its report on this tragic accident, the National Transportation Safety Board (NTSB) determined that this accident was not just the result of operator error or faulty equipment, but rather served as "an example of a 'quintessential organizational accident.'" In short, the NTSB directly called into question WMATA's safety culture and the effectiveness of the WMATA Board's oversight responsibility for system and organizational safety.

ANTONOVICH MOTION
October 27, 2011

To ensure that we as a Board are fulfilling our oversight duties to the fullest extent possible, it is vital that we have a thorough review of our safety culture.

Our capabilities will be tested in the coming months and years as we aggressively expand our bus and rail system with the opening of the Expo Line to Culver City, followed by the Crenshaw/LAX Line, the Regional Connector, and extensions on Gold Line, Expo Line, Orange Line and Purple Line to Azusa, Santa Monica, Chatsworth and West Los Angeles, respectively. Should the America Fast Forward plan come to fruition, additional rail and bus projects will be implemented at a faster pace than expected.

Simultaneously, we will be faced with maintaining an aging rail system—with the Blue Line (opened in 1990), Red Line (1993-2000) and Gold Line (2003) reaching significant milestones in maturity—and fleet that will require rehabilitation.

ANTONOVICH MOTION
October 27, 2011

Fostering a vigorous and effective culture of safety at MTA requires the Board to take overt leadership to influence the behavior and expectations of all MTA employees to place safety above other competing priorities. According to Dr. James Reason, a leading scholar in this field, a **safety culture** consists of five elements – an **informed culture**, a **reporting culture**, a **learning culture**, a **flexible culture** and a **just culture:**

- An **informed culture** is one in which the organization collects and analyzes relevant data while also disseminating safety information throughout the organization.
- A **reporting culture** encourages employees to report safety concerns with confidentiality and without blame.
- A **learning culture** allows an organization to learn from mistakes and continually react to feedback and new information.
- A **flexible culture** provides for an organization and employees that can adapt in an effective manner to changing demands on the system.
- A **just culture** allows for maximum avoidance of major errors by differentiating consequences resulting from unintentional and intentional unsafe acts.

ANTONOVICH MOTION
October 27, 2011

To accomplish a healthy safety culture, it is incumbent upon the Board to take a very clear leadership role in its actions and its policies, from simple steps of renaming its committees and updating its bylaws to ensconce safety as our primary organizational value, to conducting a thorough review of our safety culture and maintaining frequent and meaningful oversight over safety at our meetings.

We can accomplish this goal by:

- reviewing thoroughly the safety culture of our organization
- clarifying our organizational values to support safety as our primary value
- reorganizing our committee structure to highlight and centralize the Board's fundamental responsibility to oversee safety
- developing frequent and comprehensive reports and agenda items regarding system safety for Board discussion and action

ANTONOVICH MOTION
October 27, 2011

I THEREFORE MOVE that the MTA Board takes the following actions:

(1) Direct the CEO to provide a literature review to the Board within 60 days on the topic of "safety culture". In particular, this review should clearly delineate the Board's role and responsibilities to ensure and support fully a strong safety culture at MTA, as well as provide a review of the WMATA accident and subsequent NTSB report.

(2) Direct the CEO to procure an outside, independent consultant to conduct and complete within 90 days a full review of MTA's safety culture, including specific evaluations of the five elements (informed culture, reporting culture, learning culture, flexible culture and just culture) that compose a safety culture, and present an evaluation of and recommendations on how to improve MTA's safety culture to the Board and CEO. The CEO shall follow-up within 30 days with a presentation to the Board on additional recommendations and a plan to implement all recommendations to enhance MTA's safety culture.

(3) Change the name of the "**Operations Committee**" to the "**System Safety and Operations Committee**" to indicate clearly the Board's central role of providing oversight of MTA's safety culture and system safety.

ANTONOVICH MOTION
October 27, 2011

(4) Expand the scope of the "**System Safety and Operations Committee**" to include:

a. Monthly reports on corporate safety and system safety

b. All items related to safety audits, safety upgrades, and overall system safety issues

c. All recommendations on how to improve the safety culture at MTA

(5) Direct the CEO to report to the full Board on a quarterly basis on MTA's system safety and provide recommendations on how the Board can better support the agency's safety culture and the safety of our transit system.

(6) Direct the CEO to provide a review of our agency bylaws and any associated statement of organizational values and Board responsibilities to determine if these documents promote safety as the Board's top oversight role and the agency's top priority.

(7) Direct the CEO to include as part of each board report and agenda item a separate, clearly marked section that provides an assessment of the item's impact on system safety and safety culture.

ATTACHMENT B

Red Signal Rail Violations

2011-2014

By Line and By Year

Violations	2011	2012	2013	2014	TOTAL
BLUE	6	17	14	15	**52**
EXPO		3	2	2	**7**
GOLD	2	7	6	2	**17**
RED	3	1	0	2	**6**
GREEN	0	1	0	0	**1**
TOTAL	**11**	**29**	**22**	**21**	**83**

Red Signal Rule Violations
02/01/2010 Through 12/31/2014

YEAR	Incident ID	Incident Date	Type	Line	TOTAL #
2010	1,557,188	04/01/10 03:56PM	Red Signal Main Line	Blue	1
2011	2,017,188	05/19/11 06:22PM	Red Signal Main Line	Blue	6
	2,039,899	07/30/11 11:46PM	Red Signal Main Line	Blue	
	2,045,615	08/17/11 06:09PM	Red Signal Main Line	Blue	
	2,069,338	10/05/11 05:33PM	Red Signal Main Line	Blue	
	2,091,421	11/08/11 06:30PM	Red Signal Main Line	Blue	
	2,112,199	12/12/11 11:23AM	Red Signal Main Line	Blue	
2012	2,125,506	01/11/12 04:26PM	Red Signal Main Line	Blue	17
	2,129,632	01/22/12 02:02PM	Red Signal Main Line	Blue	
	2,157,774	03/25/12 04:00PM	Red Signal Main Line	Blue	
	2,164,329	04/10/12 09:08AM	Red Signal Main Line	Blue	
	2,165,974	04/14/12 10:57AM	Red Signal Main Line	Blue	
	2,166,637	04/15/12 12:06PM	Red Signal Main Line	Blue	
	2,168,568	04/20/12 08:04AM	Red Signal Main Line	Blue	
	2,171,024	04/25/12 02:17PM	Red Signal Main Line	Blue	
	2,173,215	04/30/12 05:28PM	Red Signal Main Line	Blue	
	2,211,635	08/01/12 02:10PM	Red Signal Main Line	Blue	
	2,231,724	09/20/12 08:59AM	Red Signal Main Line	Blue	
	2,233,437	09/25/12 05:23PM	Red Signal Main Line	Blue	
	2,234,726	09/28/12 02:36PM	Red Signal Main Line	Blue	
	2,234,850	09/29/12 04:40AM	Red Signal Main Line	Blue	
	2,246,790	10/30/12 11:42AM	Red Signal Main Line	Blue	
	2,255,639	11/22/12 11:43PM	Red Signal Main Line	Blue	
	2,264,396	12/19/12 07:02AM	Red Signal Main Line	Blue	

2013	2,272,162	01/10/13	10:09AM	Red Signal Main Line	Blue	14
	2,274,173	01/16/13	06:18AM	Red Signal Main Line	Blue	
	2,275,609	01/19/13	12:48PM	Red Signal Main Line	Blue	
	2,277,118	01/23/13	05:16PM	Red Signal Main Line	Blue	
	2,282,987	02/07/13	07:15PM	Red Signal Main Line	Blue	
	2,315,916	05/06/13	04:55AM	Red Signal Main Line	Blue	
	2,323,007	05/26/13	01:35PM	Red Signal Main Line	Blue	
	2,323,855	05/29/13	08:16AM	Red Signal Main Line	Blue	
	2,339,316	07/01/13	04:54PM	Red Signal Main Line	Blue	
	2,361,294	09/05/13	08:27PM	Red Signal Main Line	Blue	
	2,365,773	09/18/13	05:48AM	Red Signal Main Line	Blue	
	2,401,617	12/22/13	04:01PM	Red Signal Main Line	Blue	
	2,403,841	12/29/13	10:55PM	Red Signal Main Line	Blue	
	2,403,850	12/29/13	10:58PM	Red Signal Main Line	Blue	
2014	2,404,777	01/01/14	11:26AM	Red Signal Main Line	Blue	15
	2,410,959	01/18/14	02:53PM	Red Signal Main Line	Blue	
	2,414,720	01/28/14	06:17PM	Red Signal Main Line	Blue	
	2,420,442	02/13/14	09:15AM	Red Signal Main Line	Blue	
	2,423,811	02/21/14	11:24PM	Red Signal Main Line	Blue	
	2,432,120	03/15/14	07:46PM	Red Signal Main Line	Blue	
	2,441,775	04/10/14	12:13AM	Red Signal Main Line	Blue	
	2,448,879	04/29/14	09:38PM	Red Signal Main Line	Blue	
	2,463,230	06/01/14	10:46AM	Red Signal Main Line	Blue	
	2,483,041	07/16/14	06:04PM	Red Signal Main Line	Blue	
	2,491,647	08/08/14	12:43AM	Red Signal Main Line	Blue	
	2,516,211	10/08/14	05:41PM	Red Signal Main Line	Blue	
	2,521,078	10/20/14	10:04PM	Red Signal Main Line	Blue	
	2,529,442	11/11/14	05:00PM	Red Signal Main Line	Blue	
	2,538,388	12/06/14	10:58AM	Red Signal Main Line	Blue	

Red Signal Rule Violations
02/01/2010 Through 12/31/2014

*Revenue Service began in April 2012; last 2 stations opened in June 2012

YEAR	Incident ID	Incident Date	Type	Line	TOTAL #
2012*	2,215,210	08/09/12 09:53AM	Red Signal Main Line	Expo	3
	2,240,624	10/15/12 01:07AM	Red Signal Main Line	Expo	
	2,261,247	12/10/12 06:53AM	Red Signal Main Line	Expo	
2013	2,300,472	03/20/13 10:20AM	Red Signal Main Line	Expo	2
	2,314,918	05/02/13 01:07PM	Red Signal Main Line	Expo	
2014	2,485,925	07/24/14 02:59PM	Red Signal Main Line	Expo	2
	2,529,698	11/12/14 11:37AM	Red Signal Main Line	Expo	

Red Signal Rule Violations
02/01/2010 Through 12/31/2014

YEAR	Incident ID	Incident Date	Type	Line	TOTAL #
2010	1,564,934	04/07/10 09:02AM	Red Signal Mail Line	Gold	5
	1,569,362	04/09/10 05:00PM	Red Signal Mail Line	Gold	
	1,858,418	10/26/10 01:12PM	Red Signal Mail Line	Gold	
	1,898,560	11/23/10 02:17PM	Red Signal Mail Line	Gold	
	1,915,798	12/07/10 11:10AM	Red Signal Mail Line	Gold	
2011	2,044,819	08/15/11 09:42PM	Red Signal Mail Line	Gold	2
	2,097,746	11/17/11 06:24PM	Red Signal Mail Line	Gold	
2012	2,127,739	01/17/12 05:22PM	Red Signal Mail Line	Gold	7
	2,157,374	03/23/12 02:44PM	Red Signal Mail Line	Gold	
	2,186,553	05/31/12 03:35PM	Red Signal Mail Line	Gold	
	2,214,401	08/07/12 07:19PM	Red Signal Mail Line	Gold	
	2,223,343	08/29/12 07:20PM	Red Signal Mail Line	Gold	
	2,229,760	09/15/12 01:06PM	Red Signal Mail Line	Gold	
	2,258,871	12/02/12 03:38PM	Red Signal Mail Line	Gold	
2013	2,269,508	01/03/13 08:26AM	Red Signal Mail Line	Gold	6
	2,292,899	03/02/13 12:41PM	Red Signal Main Line	Gold	
	2,309,505	04/16/13 09:48AM	Red Signal Main Line	Gold	
	2,309,928	04/17/13 12:00PM	Red Signal Main Line	Gold	
	2,353,512	08/16/13 07:56AM	Red Signal Main Line	Gold	
	2,356,106	08/23/13 06:30AM	Red Signal Main Line	Gold	
2014	2,473,300	06/26/14 08:10PM	Red Signal Main Line	Gold	2
	2,516,848	10/10/14 03:30AM	Red Signal Main Line	Gold	

Red Signal Rule Violations
02/01/2010 Through 12/31/2014

YEAR	Incident ID	Incident Date	Type	Line	TOTAL #
2011	2,015,566	05/14/11 05:49PM	Red Signal Main Line	Red	3
	2,068,527	10/03/11 04:37PM	Red Signal Main Line	Red	
	2,079,395	10/18/11 01:10PM	Red Signal Main Line	Red	
2012	2,222,537	08/27/12 10:17PM	Red Signal Main Line	Red	1
2013	--	--	Red Signal Main Line	Red	0
2014	2,514,606	10/05/14 05:54AM	Red Signal Main Line	Red	2
	2,521,475	10/21/14 07:35PM	Red Signal Main Line	Red	

Red Signal Rule Violations
02/01/2010 Through 12/31/2014

YEAR	Incident ID	Incident Date	Type	Line	TOTAL #
2010	*1,783,651*	*09/03/10 05:38AM*	*Red Signal Yard*	*Green*	0
2011	*2,020,074*	*05/29/11 03:05PM*	*Red Signal Yard*	*Green*	0
2012	**2,265,270**	**12/21/12 07:42AM**	**Red Signal Main Line**	**Green**	1
2013	--	--			0
2014	--	--			0

Red Signal Rule Violations
2011

Incident ID	Incident Date	Type	Line	TOTAL #
2,017,188	05/19/11 06:22PM	Red Signal Main Line	Blue	6
2,039,899	07/30/11 11:46PM			
2,045,615	08/17/11 06:09PM			
2,069,338	10/05/11 05:33PM			
2,091,421	11/08/11 06:30PM			
2,112,199	12/12/11 11:23AM			
2,044,819	08/15/11 09:42PM		Gold	2
2,097,746	11/17/11 06:24PM			
2,015,566	05/14/11 05:49PM		Red	3
2,068,527	10/03/11 04:37PM			
2,079,395	10/18/11 01:10PM			

2011 TOTAL	11

Red Signal Rule Violations
2012

Incident ID	Incident Date	Type	Line	TOTAL #
2,125,506	01/11/12 04:26PM	Red Signal Main Line	Blue	17
2,129,632	01/22/12 02:02PM			
2,157,774	03/25/12 04:00PM			
2,164,329	04/10/12 09:08AM			
2,165,974	04/14/12 10:57AM			
2,166,637	04/15/12 12:06PM			
2,168,568	04/20/12 08:04AM			
2,171,024	04/25/12 02:17PM			
2,173,215	04/30/12 05:28PM			
2,211,635	08/01/12 02:10PM			
2,231,724	09/20/12 08:59AM			
2,233,437	09/25/12 05:23PM			
2,234,726	09/28/12 02:36PM			
2,234,850	09/29/12 04:40AM			
2,246,790	10/30/12 11:42AM			
2,255,639	11/22/12 11:43PM			
2,264,396	12/19/12 07:02AM			
2,215,210	08/09/12 09:53AM		Expo	3
2,240,624	10/15/12 01:07AM			
2,261,247	12/10/12 06:53AM			
2,127,739	01/17/12 05:22PM		Gold	7
2,157,374	03/23/12 02:44PM			
2,186,553	05/31/12 03:35PM			
2,214,401	08/07/12 07:19PM			
2,223,343	08/29/12 07:20PM			
2,229,760	09/15/12 01:06PM			
2,258,871	12/02/12 03:38PM			
2,222,537	08/27/12 10:17PM		Red	1
2,265,270	12/21/12 07:42AM		Green	1

2012 TOTAL	29

Red Signal Rule Violations
2013

Incident ID	Incident Date	Type	Line	TOTAL #
2,272,162	01/10/13 10:09AM	Red Signal Main Line	Blue	14
2,274,173	01/16/13 06:18AM			
2,275,609	01/19/13 12:48PM			
2,277,118	01/23/13 05:16PM			
2,282,987	02/07/13 07:15PM			
2,315,916	05/06/13 04:55AM			
2,323,007	05/26/13 01:35PM			
2,323,855	05/29/13 08:16AM			
2,339,316	07/01/13 04:54PM			
2,361,294	09/05/13 08:27PM			
2,365,773	09/18/13 05:48AM			
2,401,617	12/22/13 04:01PM			
2,403,841	12/29/13 10:55PM			
2,403,850	12/29/13 10:58PM			
2,300,472	03/20/13 10:20AM		Expo	2
2,314,918	05/02/13 01:07PM			
2,269,508	01/03/13 08:26AM		Gold	6
2,292,899	03/02/13 12:41PM			
2,309,505	04/16/13 09:48AM			
2,309,928	04/17/13 12:00PM			
2,353,512	08/16/13 07:56AM			
2,356,106	08/23/13 06:30AM			
--	--		Red	0

2013 TOTAL	22

Red Signal Rule Violations
2014

Incident ID	Incident Date	Type	Line	TOTAL #
2,404,777	01/01/14 11:26AM	Red Signal Main Line	Blue	15
2,410,959	01/18/14 02:53PM			
2,414,720	01/28/14 06:17PM			
2,420,442	02/13/14 09:15AM			
2,423,811	02/21/14 11:24PM			
2,432,120	03/15/14 07:46PM			
2,441,775	04/10/14 12:13AM			
2,448,879	04/29/14 09:38PM			
2,463,230	06/01/14 10:46AM			
2,483,041	07/16/14 06:04PM			
2,491,647	08/08/14 12:43AM			
2,516,211	10/08/14 05:41PM			
2,521,078	10/20/14 10:04PM			
2,529,442	11/11/14 05:00PM			
2,538,388	12/06/14 10:58AM			
2,485,925	07/24/14 02:59PM		Expo	2
2,529,698	11/12/14 11:37AM			
2,473,300	06/26/14 08:10PM		Gold	2
2,516,848	10/10/14 03:30AM			
2,514,606	10/05/14 05:54AM		Red	2
2,521,475	10/21/14 07:35PM			

2014 TOTAL	21

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

File #: 2015-1236, **File Type:** Informational Report **Agenda Number:** 43.

**SYSTEM SAFETY, SECURITY AND OPERATIONS COMMITTEE
SEPTEMBER 17, 2015**

SUBJECT: FARE GATE PROJECT

ACTION: RECEIVE AND FILE

RECOMMENDATION

RECEIVE AND FILE report on **feasibility study for the implementation of fare gates throughout the Blue Line, Expo Line Phase 1, and Gold Line**.

ISSUE

In response to the Motion by Directors Yaroslavsky, O'Connor, and Narajian to Item 41, "Gate Latching Feasibility Studies (Attachment A)," Metro staff is reporting back on the feasibility of implementing fare gates at existing stations on the Blue Line, Expo Line Phase 1, and Gold Line.

DISCUSSION

Blue Line

Six (6) high volume stations underwent a preliminary and a detailed engineering analysis (Equipment Quantities Analysis and Queuing Analysis):

1. Pico
2. Grand
3. Florence
4. 103rd Street/Watts Towers
5. Willowbrook/Rosa Parks
6. Willow

The analysis was conducted to determine the minimum quantity of fare gate equipment required to satisfy Metro Rail Design Criteria (MRDC) including queuing standards. Based on the analysis, staff recommends implementing fare gates at the Willowbrook/ Rosa Parks station. This station has notable activity, ridership, TAPs, and TVM sales. The station's layout and infrastructure suggests there is space to accommodate the required amount of fare gate equipment.

Metro is advancing the Willowbrook/Rosa Parks Station Improvement Project. Project improvements include but are not limited to platform extension, additional entrances, pedestrian crossing, and

improvements to vertical circulation. Staff believes integrating fare gate requirements into the project scope is the optimal approach for implementing fare gates at this station.

Currently, the Green Line entrance at the Willowbrook/Rosa Parks Station is gated, while the two existing Blue Line entrances are not. The new entrances proposed by the Willowbrook/Rosa Parks Station Improvement Project must be gated per the updated MRDC. As such, the two existing ungated entrances should be gated in order to ensure that the gating at the station is effective.

To accomplish the integration of both projects, staff will ensure fare gates are included in preliminary and final design. The ridership distribution assumption from the Willowbrook/Rosa Parks Station Improvement Project will require a subsequent detailed engineering analysis, including an equipment quantities analysis and queuing analysis. The detailed engineering analysis will be performed for the final station layout and platform arrangements including additional entrances, modified quantity of planned fare gates and revised passenger access. Fare gates will be implemented during the execution phase of the project.

Conversely, the detailed engineering analysis revealed that five stations: Pico, Grand, Florence, 103rd Street/ Watts Towers, and Willow, would require more fare gate equipment than can be spatially accommodated due to current station layouts and infrastructure limitations (Attachment B). At these five stations there is insufficient platform width to install the required amount of fare gate equipment. Metro would need to acquire property and extend platforms, which would increase costs considerably. After careful consideration, staff does not recommend implementing fare gates at these five stations, because of the infrastructure limitations.

Expo Line Phase 1

Six (6) high volume, at-grade stations along Expo Line Phase 1 underwent a preliminary engineering analysis by Metro and the City of Los Angeles Bureau of Engineering (LABOE) staff:

1. Pico
2. Jefferson/USC
3. Expo Park/USC
4. Expo/Vermont
5. Expo/Western
6. Expo/Crenshaw

Based on current station layouts and infrastructure limitations, staff determined a number of station entrances would need to be widened to accommodate a minimum fare gate array. By widening station entrances, stations would encroach into traffic lanes or reduce vehicle staging areas at traffic intersections.

Staff worked with LABOE to determine the feasibility of encroachment at these stations. LABOE considered existing street design standards, including sidewalk width and obstructions. In reviewing the concept designs for the stations, LABOE concluded that station designs did not comply with City standards (Attachment C).

In collaboration with LABOE, staff does not recommend implementing fare gates at Expo Line Phase 1 at-grade stations.

Gold Line

Six (6) high volume stations underwent a preliminary and a detailed engineering analysis (Equipment Quantities Analysis and Queuing Analysis):

1. Del Mar
2. Highland Park
3. Chinatown
4. Indiana
5. Atlantic
6. Memorial Park

The analysis was conducted to determine the minimum quantity of fare gate equipment required and to satisfy MRDC Section 6, including minimum queuing distance requirements in front of consoles. Four of the stations: Del Mar, Chinatown, Indiana, and Atlantic, have an adequate amount of space to accommodate the required amount of fare gate equipment (Attachment D). The Highland Park station has insufficient platform width, and would not be feasible. The Memorial Park station also had infrastructure limitations deeming it infeasible.

Metro has prepared a Rough Order of Magnitude (ROM) estimate of $9,321,000 to implement fare gates at the four feasible stations, which includes construction cost and fare gate equipment and installation. The ROM estimate for recurring maintenance is $158,000 annually (Attachment E). Staff believes that the cost of implementation and maintenance will exceed the additional revenue collected by gating the stations over the 15 year useful design life of the equipment. After careful consideration, staff does not recommend implementing fare gates at any of the six stations at this time because the options analyzed do not make the business case for implementation.

DETERMINATION OF SAFETY IMPACT

The primary safety consideration is whether sufficient exiting capacity is provided for passengers to evacuate safely from the station in a timely manner during an emergency. This is a Fire Life Safety matter and a pre-requisite for fare gate implementation. Established safety standards apply and compliance with said standards must be demonstrated.

For the Willowbrook/Rosa Parks station, the results of the detailed engineering analysis will be performed for the final station layout and platform arrangements to ensure compliance with safety standards.

NEXT STEPS

1. Integrate fare gate requirements into the Willowbrook/Rosa Parks Improvement Project.
2. Work with a vendor to perform a subsequent detailed engineering analysis for the Willowbrook/Rosa Parks station.
3. Provide regular progress updates.
4. Staff will continue to assess opportunities to improve efficiencies and decrease revenue loss on the Metro system.

ATTACHMENTS

Attachment A - Motion by Directors O'Connor, Yaroslavsky and Najarian to Item 41, "Gate Latching Feasibility Studies"
Attachment B - Blue Line - Detailed Engineering Analysis
Attachment C - Expo Line - Metro LABOE Memorandum
Attachment D - Gold Line - Detailed Engineering Analysis
Attachment E - Gold Line - Rough Order of Magnitude

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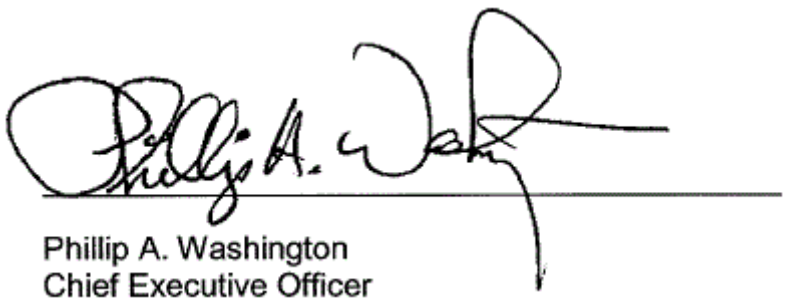


Phillip A. Washington
Chief Executive Officer

41.1

Motion by Directors O'Connor, Yaroslavsky and Najarian

Amendment to Construction Committee Item No. 41

Gate Latching Feasibility Studies

This past January, staff presented a Receive and File report at the Systems, Safety and Operations Committee which addressed the criteria for designing at-grade stations with gates, and the feasibility of implementing fare/security gate latching at all stations, including at-grade stations.

In the report, staff broke down the costs associated with (a) detailed engineering analysis for Expo Phase 1 and 2, Foothill Extension, Crenshaw/LAX, Blue Line and Gold Line to implement gating for at-grade stations and (b) cost of implementing installation of fare gates at existing aerial stations.

In its conclusion, staff recommended that the Board of Directors initiate the detailed engineering analysis through the Board Motion Process.

In light of the most recent information regarding the high rate of fare evasion and the success of latching those stations with gates, it is important that we pursue staff's recommendation and prepare the necessary feasibility studies.

We, therefore Move that the Metro Board of Directors authorize the CEO to include in the FY 14-15 Metro Budget the funding to perform the following staff recommendations consistent within the NFPA Section 130 guidelines and requirements:

1. Expo Phase 1: perform detailed engineering analysis (Physical Layout, Quantities Analysis, Queuing Analysis, and Exit calculations) for eight at-grade stations.

2. Expo Phase 1: re-evaluate the proposed cost of implementing fare gates at three aerial stations and look for ways to reduce those cost. Return to the board with a revised budget.

3. Expo Phase 2: initiate detailed engineering analysis (Physical Layout, Quantities Analysis, Queuing Analysis, and Exit Calculations) for three at-grade stations.

4. Foothill Extension: initiate detailed engineering analysis (Physical Layout, Quantities Analysis, Queuing Analysis, and Exit Calculations) for eight at-grade stations.

5. Crenshaw /LAX: Complete a detailed engineering analysis (Physical Layout, Quantities Analysis, Queuing Analysis, and Exit Calculations) for four at-grade stations.

6. Blue Line: initiate detailed engineering analysis (Physical Layout, Quantities Analysis, Queuing Analysis, and Exit Calculations) for 17 stations. Update the Board during the June 2014 Board meeting.

7. Gold Line: initiate detailed engineering analysis (Physical Layout, Quantities Analysis, Queuing Analysis, and Exit Calculations) for 16 stations. Update the Board during the June 2014 Board meeting.

WE FURTHER MOVE that staff conduct a fare evasion analysis similar to the one recently completed along the Orange Line, which used TAP data and boarding data to determine the level of evasion, for the Blue, Gold, and Expo lines and return to this committee in the May, 2014 Board cycle.

Introduction:

This report summarizes queuing analyses results for Metro Blue Line station entrances and also identify the number of fare gates required at each station entrance specified below:

- **Pico North Entrance**
- **Pico South Entrance**
- **Grand East Entrance**
- **Grand West Entrance**
- **Florence North Entrance**
- **103rd Street/ Watts Towers West Entrance**
- **Rosa Parks Willowbrook/ Imperial North**
- **Rosa Parks Willowbrook/ Imperial Mezzanine**
- **Willow South Entrance**

Key Source of Input Data and List of Assumptions:

1. **Projected Ridership Growth**: For Blue Line stations (Pico, Grand, Florence, 103rd street, Rosa Parks-Willowbrook, Willow), ridership demand is modeled based on ridership projections provided by LACMTA (***Blue Line - FY13 Station by hour boardings alightings.xlsx and RailActivity_May2013_Apr2014.xlsx) via email dated 10/06/14.***

   Ridership data for year 2013 and year 2014 was provided. The worst case ridership between 2013 and 2014 was considered for Queuing Analysis. Maximum passenger boarding and alighting for all stations is either between 4pm and 5pm or 5pm and 6pm during 2013 or 2014 PM peak period. Total maximum boarding and alighting for each station is considered for worst case scenario. **Tables 1 and 2** show the worst case peak period ridership data for 2013 and 2014. Based on the worst case peak hour ridership, all stations recorded the worst case ridership during 2013 except Pico. The worst case ridership for Pico is between 5pm and 6pm for 2014. **Table 3** includes the worst case ridership selected from year 2013 or year 2014 ridership data.

2013 - Peak Hour Ridership				
Station Name	Duration	Boarding	Alighting	2013 Max Total
PICO	5pm to 6pm	380	339	719
GRAND	4pm to 5pm	465	359	824
GRAND	5pm to 6pm	419	382	802
FLORENCE	5pm to 6pm	363	601	964
103RD/ WATTS	4pm to 5pm	324	393	717
103RD/ WATTS	5pm to 6pm	290	379	669
ROSA PARK - WILLOWBOORK IMPERIAL WILMINGTON	5pm to 6pm	1,041	1,151	2,192
WILLOW	5pm to 6pm	505	550	1,055
WILLOW	4pm to 5pm	654	453	1,107

Table 1: 2013 Peak Hour Ridership

2014 - Peak Hour Ridership				
Station Name	Duration	Boarding	Alighting	2014 Max Total
PICO	5pm to 6pm	397	359	756
GRAND	5pm to 6pm	400	357	757
FLORENCE	5pm to 6pm	361	517	877
103RD/ WATTS	5pm to 6pm	307	400	707
ROSA PARK - WILLOWBOORK IMPERIAL WILMINGTON	5pm to 6pm	966	1,025	1,991
WILLOW	5pm to 6pm	347	474	821
WILLOW	6pm to 7pm	371	600	972

Table 2: 2014 Peak Hour Ridership

Based on LACMTA's service planning department observations and input, ridership assumptions for Pico and Rosa parks is as follows: The worst case peak hour ridership for Pico station is 756 passengers including boarding and alighting. 80% of 756 peak hour passengers (605 passengers) are assumed to pass through the fare gates at each North and South entrance of Pico station. The worst case peak hour ridership for Rosa Parks - Willowbrook station is 2192. 28% of 2192 passengers (614 passengers) are assumed to utilize North Entrance fare gates. 72% of 2192 passengers (1578 passengers) are assumed to utilize Mezzanine level fare gates.

Worst Case Peak Hour Ridership (Per Metro's 2013 or 2014 Ridership Data)					
Station Name	**Duration**	**Boarding**	**Alighting**	**Max Total (Boarding + Alighting)**	**Per Metro Service Planning Input for two stations involving transfer between Green/Blue at Rosa Parks and Expo/Blue at Pico**
PICO - 2014	5pm to 6pm	397	359	**756**	**80% of 756 = 605 passengers**
GRAND - 2013	4pm to 5pm	465	359	824	-
FLORENCE - 2013	5pm to 6pm	363	601	964	-
103RD/ WATTS - 2013	4pm to 5pm	324	393	717	-
ROSA PARK - WILLOWBOORK IMPERIAL WILMINGTON - 2013	5pm to 6pm	1,041	1,151	**2,192**	**North Entrance - 28% of 2192 = 614 passengers** **Mezzanine Level - 72% of 2192 = 1578 passengers**
WILLOW - 2013	4pm to 5pm	654	453	1,107	None

Table 3: The Worst Case Peak Hour Ridership

As directed by LACMTA's email dated 10/06/14 **(see appendix for reference)**, 78.46% ridership growth was applied to calculate 2024 ridership projections. A demand model was created based on year 2024 ridership projections to estimate the amount of passengers each station must service during a peak surge that lasts one or two minutes long. However as per 01/26/15 conference call discussion **(see appendix for reference)** with LACMTA Operations Planning and Service Planning department, LACMTA's service planning had noted that 78.46% growth included Regional Connector ridership with Blue and Gold Line ridership data. LACMTA service planning requested CH2MHILL team to assume ridership growth at station level instead of line level as shown in **Table 4**. LACMTA service planning provided following growth percentage for each station:

Metro Service Planning Data based on Systems Analysis	
Station Name	**Growth Percentage - for Projected 2024 Ridership**
Pico	150%
Grand	-35%
Florence	27%
103rd Street	25%
Rosa Parks/ Willow Brook	17%
Willow	15%

Table 4: Growth Percentage for Projected 2024 Ridership

Per 01/26/2015 conference call discussion with LACMTA Operations and Service Planning department, LACMTA requested CH2MHILL to apply the worst case ridership growth of 27% to the worst case peak hour ridership (between year 2013 and year 2024) for Queuing Analysis of all stations except Pico. Initial Queuing Analysis for Pico station considered 78.46% growth percentage. However, as indicated in **Table 4** including growth rate of Pico station is 150%. Initial Queuing Analysis with 78.46% concluded that planned number of fare gates are not sufficient for Pico station. Therefore, LACMTA requested CH2MHILL team that Queuing Analysis with 150% ridership growth at Pico is not required to be analyzed.

2. For preliminary analysis, ADA gates that only cater to elevator passenger flow will be considered negligible due to varying elevator utilization factors, service times and capacities. The peak surge flow will still be applied to the remaining regular turnstile gates to represent the worst-case situation. Where an ADA gate is planned to be installed amongst the regular turnstiles in fare gate entrances, its throughput will be considered the same as a regular turnstile for this analysis. A demand model has been created to estimate the amount of people each station must service during a peak surge that lasts one or two minutes long

3. Peak hour ridership data was available for year 2013 and 2014. As shown in **Tables 1 and 2**, maximum boarding and alighting have been considered for the analysis. For example, Pico's worst case ridership was recorded in year 2014 and worst case ridership for all the remaining stations was recorded during year 2014. Total of maximum boarding and alighting could be for different peak hour duration. For example, as shown in **Table 3**, maximum boarding and alighting for Pico, Florence and Rosa Parks is between 5pm to 6pm and maximum boarding and alighting for Grand, 103rd street and Willow is between 4pm to 5pm.

4. **Gate Utilization:** All station entrances of Pico, Grand, Florence, 103rd street, Rosa Parks-Willowbrook and Willow have been analyzed to evaluate the gate capacity for each station entrance. Based on LACMTA's input and a worst case scenario, it is assumed that 100% of passengers during 1-2 minute surge will utilize each entrance/platform at Florence, 103rd street, Rosa Parks- Willowbrook and Willow. It is assumed that 70% of passengers will utilize each station entrance at Pico and Grand during 1-2 minute surge. Three scenarios have been considered to analyze queuing associated with each station entrance.

No.	Station Name/ Entrance	Overall Platform Length (ft.)	Distance Between Platform midpoint and planned Fare Gates (ft.)	Drawing Reference Contract # CO630	Gate Utilization
1	Pico - North	264	132	A-1.1	70%
	Pico - South	264	132	A-1.1	70%
2	Grand - LATTC - East	270	135	A-2.1	70%
	Grand - LATTC - West	270	135	A-2.1	70%
3	Florence - North	270	270	A-6.1	100%
4	103rd St./ Watts Towers - West	270	135	A-7.1	100%
5	Rosa Parks/ Willowbrook - North	288	190	A-8.1	100%
	Rosa Parks/ Willowbrook - Mezzannine	288	60	A-8.1	100%
6	Willow - South	270	135	A-13.1	100%

Table 5: Gate Utilization and Location of Planned Fare Gates

- **Scenario 1:** Planned Number of Fare Gates based on station layout and infrastructure limitations (Turnstiles and ADA Fare Gates)
- **Scenario 2:** Maximum number of fare gates based on EQA (Equipment Quantity Analysis).
- **Scenario 3:** Minimum number of fare gates required to meet queuing design criteria (wait times less than 55 sec.).

5. **Headway and Trains Per Hour (TPH):** ***As per data LACMTA provided in October 2014***

- AM and PM Peak period headway: 5 minute
- Peak period TPH: 12

6. **Rosa Parks/ Willowbrook Station Improvement Project:** *Queuing Analysis for Rosa Parks/ Willowbrook was performed based on station configuration provided under infrastructure drawing (A-8.1 C0630) by Metro. Current Queuing Analysis includes two entrances for Rosa Parks, North Entrance (28% passengers utilize North Entrance) and Mezzanine entrance (72% passengers utilize Mezzanine Entrance). It is noted that Rosa Parks/ Willowbrook Station Improvement project is underway. Conceptual plans will be finalized. Project improvements include but not limited to platform extension, pedestrian crossing, and improvements to vertical circulation. Ridership distribution assumption shall be revised for the future Queuing Analysis. Based on final conceptual plans for Rosa Parks/ Willowbrook, Queuing Analysis shall be performed for Rosa Parks/ Willowbrook station layout for the revised station platform arrangements including additional entrances, modified quantity of planned fare gates and revised passenger access. Equipment Quantity Analysis shall be revised per the revised Rosa Parks/ Willowbrook station layout.*

7. **Peak Hour Surge:**

- The peak surge demand (the highest amount of arrivals at a fare gate within a one-to-two minute time period) is dependent upon the number of trains that arrive at each station during a peak hour. Based on the July 2008 data collection effort at LACMTA, it is assumed that a percentage of total hourly passengers will all arrive at once causing a peak influx to the fare gates. In a peak hour where a total of 100 passengers pass through a set of fare gates, only 10 of the 100 passengers might arrive in the first surge, representing 10% of the hourly total; while 30 passengers might arrive in the next surge, representing 30% of the hourly total. In order to plan for the peak influx during a peak hour, the highest observed percentage that arrived in a surge is used in the demand model to capture the worst-case scenario.

- The arrival surge is affected by the distance from the midpoint of the station platforms to the planned fare gate areas. The longer the distance that passengers are required to walk to exit the station, the more spread out the arrival surge becomes. The data presented in the report reflects a 1 to 2 minute arrival surge in cases when the distance from the midpoint of the platform to the planned fare gate area is less than or about equal to 200 feet, but only the 2 minute arrival surge when the distance is well over 200 feet.

- To be consistent with all the prior queuing analysis for LACMTA, queuing analysis for Blue Line assumes the same number of trains for side and center platform. Please note that in case of Blue Line stations with center platform (Pico, Grand, Florence, 103rd street, Rosa Parks – Willowbrook, and Willow), queuing analysis assumes the worst case ridership/passengers arriving during 1-minute surge using 12 TPH/ 15% instead of 24 TPH and 7.5% factor. With this worst case approach, queuing analysis results could verify if the number of fare gates which could be accommodated at Pico, Grand, Florence, 103rd street, Rosa Parks – Willowbrook, and Willow based on station plans/architectural drawings are sufficient. Also to consider the same peak percentage factor (15% instead of 7.5%) of hourly passengers for 1-minute surge for center and side platform is evaluating the worst case fare gate capacity for the stations with center platform. For example, with 100 peak hour passengers, 1-minute arrival surge would be 15 passengers with 12 TPH (15% of hourly passenger) and 7.5 ~ 8 passengers with 24 TPH (7.5% of hourly passenger). Based on headway/TPH, it is assumed that 15% of total peak hourly passengers arrive during a 1-minute surge. Table below shows peak hour surge

Line	Number of trains per peak hour	Headway (min.)	Peak percentage of total hourly passengers that arrive during a 1-minute surge
Regional Connector (LACMTA)	24	2.5	7.5%
Gold Line Foothill Extension (LACMTA)	12	5	15%
Exposition 1 Line/ **Blue Line (LACMTA)**	**12**	**5**	**15%**
Red + Purple lines (LACMTA)	12	5	15%
Gold Line (LACMTA)	8	7.5	23%
Green Line (LACMTA)	8	7.5	23%

Table 6: Peak Hour Surge

- Based on a previous system wide queuing study for PATH NY & NJ and discussions with LACMTA, a maximum queuing time of 55-seconds during surge has been considered as an acceptable service standard. A minimum number of fare gates were suggested based on keeping the 'maximum queuing time' below a 55 second service standard during the worst case scenario to achieve acceptable service standard.

- The level of service factor in the suggested 'Distance Required Behind the Gates' is provided based on the guideline by John J. Fruin Ph. D in the text *Pedestrian Planning and Design*. A Level of Service 'D' represents a pedestrian area occupancy of 3-7 square feet per person and an average inter-person spacing of 2-3 feet. Space is provided for standing

without personal contact with others, but circulation through the queuing area is severely restricted and forward movement is only possible as a group. This level of area occupancy is not recommended for long-term periods of waiting, but may be acceptable in a metro station with a maximum 55 second wait.

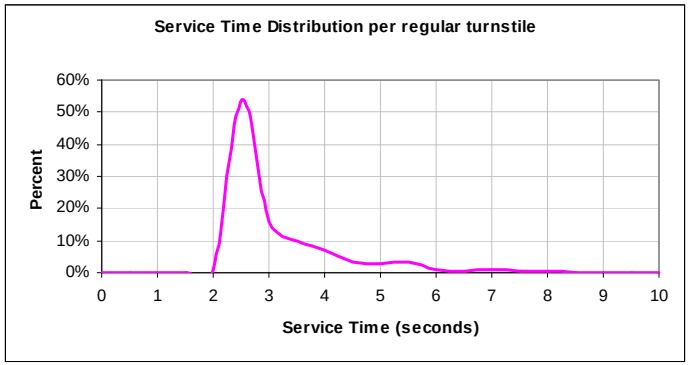
- **Surge Scenarios:** In order to capture variation in the service time of fare gates, the service time is assumed to have a chi-squared distribution ranging from 2 to 10 seconds for the worst case scenario and 1.7 to 4 seconds for the CUBIC estimated service scenario. The average service times used to predict the worst case scenario fluctuate around 3 seconds per person, while CUBIC estimates that the average service time is 2 seconds per person. Modeling with a higher service time enables the representation of a worst-case scenario during peak times and can account for the learning curve of riders using a new gating system.

Blue Line stations / Fare Gate Entrance Area (location)	Arrival Model		Delay Model			
	Surge (sec.)		Service Time		Worst Case Delay	
	Surge Scenario 1	Surge Scenario 2	Cubic Estimate (sec.)	Worst Case Estimate (sec.)	CUBIC Estimate (sec.)	Worst Case Estimate (sec.)
Pico North	60	120	2	3	1.7 to 4	2 to 10
Pico South	60	120	2	3	1.7 to 4	2 to 10
Grand East	60	120	2	3	1.7 to 4	2 to 10
Grand West	60	120	2	3	1.7 to 4	2 to 10
Florence North	60	120	2	3	1.7 to 4	2 to 10
103rd street/ Watts Towers West	60	120	2	3	1.7 to 4	2 to 10
Rosa Parks/ Willowbrook North	60	120	2	3	1.7 to 4	2 to 10
Rosa Parks/ Willowbrook Mezzanine	60	120	2	3	1.7 to 4	2 to 10
Willow South	60	120	2	3	1.7 to 4	2 to 10

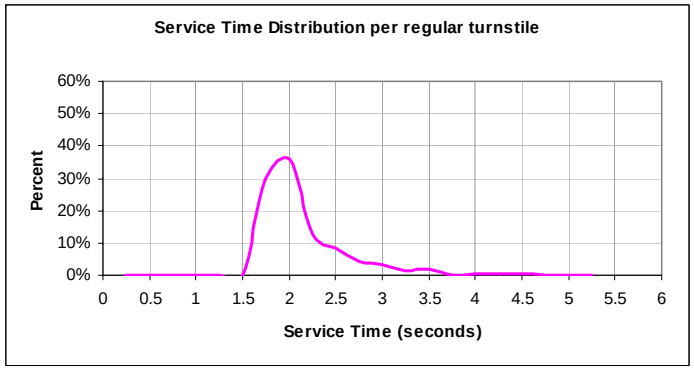
Table 7 – Surge Scenario Summary

The figures below represent the chi-squared distribution of the total amount of time it takes to get through a fare gate by the percentage of people who were serviced within that time.

Worst Case Scenario (3 second average service time)



Cubic Estimate Scenario (2 second average service time)



Results:

The following table describes the results presented in the conclusions for each station.

Field	Description
No. of Fare Gates	Number of turnstile and ADA fare gates in an array.
Surge Time (seconds)	The length of time between the first and the last person arriving at the turnstiles during a surge.
Maximum Wait (seconds)	The maximum time a person entering at the peak of the queue length would have to wait in the given scenario.
Maximum Number of Passengers in Queue	The expected maximum amount of people that will be delayed at the fare gates.
Maximum Queue Length Per Gate (feet)	The suggested queue space that would be needed behind each turnstile to accommodate people waiting in the queue, based on the maximum number of people in the queue.

CH2MHILL

LACMTA Blue Line Queuing Analysis - Assumptions and Input Data											
Station Name/ Entrance/ Year of Worst Case Ridership Data	Platform Type	Worst Case Ridership (Year 2013 or Year 2014): Peak of the Peak One Hour Passengers ON/OFF (Boardings and Alightings) as per Data provided by LACMTA	Year 2024 Ridership Projection (after applying 27% ridership growth on all stations except Pico. *78.46% ridership growth was applied for Pico*) - Peak of the Peak One Hour Passengers ON/OFF - Boardings/Alightings as per Data provided by Metro	Passengers per peak 1-2 minutes surge: 15% of peak one hour passengers during 1-minute surge 12 TPH/ 5-min headway Note 1	Gate Utilization Percentage (%)	1-minute surge based on gate utilization	Estimated Distance between Station Platform Midpoint and Planned Fare Gates (ft.) Note 4	*Scenario 1* Planned Number of Fare Gates based on Station Layout and Infrastructure Limitations (Turnstile and ADA Fare Gates) *Note 4 & 6*	*Scenario 2* Maximum number of fare gates required based on Equipment Quantity Analysis (EQA) *Note 6*	*Scenario 3* Minimum number of fare gates required to meet queuing design criteria Note 5 & 6
Pico - North - Year 2014 (80% of 756) - *Using 78.46% Riderrship Growth*	CENTER	605	1079	162	70%	113	132	2	6	4
Pico - South - Year 2014 (80% of 756) - *Using 78.46% Riderrship Growth*	CENTER	605	1079	162	70%	113	132	2	6	4
Grand - LATTC - East - Year 2013	CENTER	824	1046	157	70%	110	135	2	5	3
Grand - LATTC - West - Year 2013	CENTER	824	1046	157	70%	110	135	2	5	3
Florence - North - Year 2013	CENTER	964	1225	184	100%	184	270	2	9	5
103rd St./ Watts Towers - West - Year 2013	CENTER	717	911	137	100%	137	135	2	7	4
Rosa Parks/ Willowbrook - North - Year 2013 (28% of 2192 = 614)	CENTER	614	780	117	100%	117	190	3	6	4
Rosa Parks/ Willowbrook - Mezzannine - Year 2013 (72% of 2192 = 1578)	MEZZANINE LEVEL to CENTER	1578	2004	301	100%	301	60	5	14	8
Willow - South - Year 2013	CENTER	1107	1406	211	100%	211	135	3	10	6

Notes/ Assumptions:

Note 1: AM or PM Peak Period Headway: 5 min. headway/ 12 Trains Per Hour (TPH) as per LACMTA future operating plan.

Note 2: 78.46% of ridership growth is assumed for Pico (per LACMTA email 10/06/14). 27% ridership growth is assumed for all other stations to calculate 2024 ridership.

Note 3: Peak of the peak hour ridership is based on data provided for year 2013 and year 2014 by LACMTA (via email dated 10/06/14). Worst case peak hour ridership data (total of alightings and boardings) were used. For PICO, 2014 peak hour ridership data was used and for all other stations, 2013 ridership data was used.

Note 4: Station plan/ architectural drawings provided by LACMTA for Contract C0630.
(a) PICO Drawing No. A-1.1 (b) GRAND Drawing No. A-2.1 (c) Florence Drawing No. A-6.1
(d) 103rd St/ Watts Towers Drawing No. A-7.1 (e) Rosa Parks Willowbrook Drawing No. A-8.1 (f) Willow Drawing No. A-13.1
For Rosa Parks Mezzanine level, worst case distance between midpoint of station platform and southern part of existing fare gates (60 ft.) is considered.

Note 5: Queue Size Criteria: Bold red text indicates that station entrance has significant queues with passenger wait times greater than 55 seconds.
0 - No significant queues: wait times less than 5 sec. 1 - Slight queues: wait times between 5-30 sec.
2 - Noticeable queues: wait times between 30-55 sec. 3 - Significant queues: wait times greater than 55 sec.

Note 6: Scenario Description:
Scenario 1: Planned Number of Fare Gates based on Station Layout and Infrastructure Limitations (Turnstile and ADA Fare Gates)
Scenario 2: Max No. of fare gates required based on suggested Equipment Quantity Analysis (EQA)
Scenario 3: Min. No. of fare gates required to meet the queuing design criteria (wait times less than 55 sec.)

Note 7: Bold red text indicates that maximum queue length (linear ft.) is more than the Distance between Station Platform Midpoint and Planned Fare Gate. This condition may create overcrowding on the platform due to significant queues with long passenger wait times and significant queue length behind the gates.

Table 8: Input Data

Blue Line Project stations / Gate entrance area (location)/ The Worst Case Ridership Year	1-minute passenger surge based on gate utilization / (Percentage gate utilization for each station entrance)	Planned No. of fare gates station entrance can accommodate based on station plan and infrastructure limitations Scenario 1 Note 4	Max No. of fare gates required based on suggested EQA Scenario 2	Min. No. of fare gates required to meet the queuing design criteria (wait times less than 55 sec.) Scenario 3 Note 1 & 5	Maximum queue length - fare gates station entrance can accommodate based on station plan and infrastructure limitations (In linear ft.) Scenario 1 Note 4 & 6	Maximum queue length – fare gates required based on suggested EQA (In linear ft.) Scenario 2	Maximum queue length – minimum fare gates required to meet queuing design criteria (In linear ft.) Scenario 3 Note 1 & 5	Maximum Wait Times (Second)/Queue Size Type (see below the table)		
								Scenario No. 1 Note 5	Scenario No. 2 Note 5	Scenario No. 3 Note 5
Pico North – Year 2014	70%	2	6	4	72	6	21	111/ 3	7/ 1	29/ 1
Pico South – Year 2014	70%	2	6	4	72	6	21	111/ 3	7/ 1	29/ 1
Grand/ LATTC East – Year 2013	70%	2	5	3	68	11	35	97/ 3	18/ 1	52/ 2
Grand/ LATTC West – Year 2013	70%	2	5	3	68	11	35	97/ 3	18/ 1	52/ 2
Florence North – Year 2013	100%	2	9	5	140	8	34	234/ 3	10/ 1	54/ 2
103rd St./ Watts Towers - West - Year 2013	100%	2	7	4	97	6	31	157/ 3	9/ 1	50/ 2
Rosa Parks / Willowbrook North - Year 2013	100%	3	6	4	41	6	23	64/ 3	11/ 1	37/ 2
Rosa Parks / Willowbrook Mezzanine - Year 2013	100%	5	14	8	80	8	37	123/ 3	14/ 1	54/ 2
Willow South – Year 2013 Platform	100%	3	10	6	98	10	33	161/ 3	12/ 1	52/ 2

Note 1: Minimum number of fare gates required to meet queuing design criteria (passenger wait times greater than 55 seconds).
Note 2: AM or PM Peak Period Headway (12 TPH/ 5 min.) as directed by LACMTA.
Note 3: Peak of the peak hour ridership is based on data provided by LACMTA (RailActivity_May2013_Apr2014.xls and FY13 Station by hour boardings alightings.xlsx)
Note 4: Station plan/ architectural drawings (C0-0630) provided by LACMTA.
Note 5: Queue Size Criteria: Bold red text indicates that station entrance has significant queues with passenger wait times greater than 55 seconds.
0 - No significant queues: wait times less than 5 sec. 1 - Slight queues: wait times between 5-30 sec.
2 - Noticeable queues: wait times between 30-55 sec. 3 - Significant queues: wait times greater than 55 sec.
Note 6: Bold red text indicates that maximum queue length (linear ft.) is more than the Distance between Station Platform Midpoint and Planned Fare Gate. This condition may create overcrowding on the platform due to significant queues with long passenger wait times and significant queue length behind the gates

Table 9: Results Summary

Metro Blue Line – Pico North/ South Station Entrance	
Passengers per Peak Surge (1-2 minutes)	**113** (70% of 162 passengers for 1-minute surge utilize **Pico North/ South** station entrance fare gates)
Scenario 1 - Planned number of fare gates station entrance can accommodate based on station plan and infrastructure limitations	2
Scenario 2 - Maximum number of fare gates based on suggested Equipment Quantity Analysis (EQA)	6
Scenario 3 - Minimum number of fare gates required to meet queuing design criteria (wait times less than 55 sec.)	4

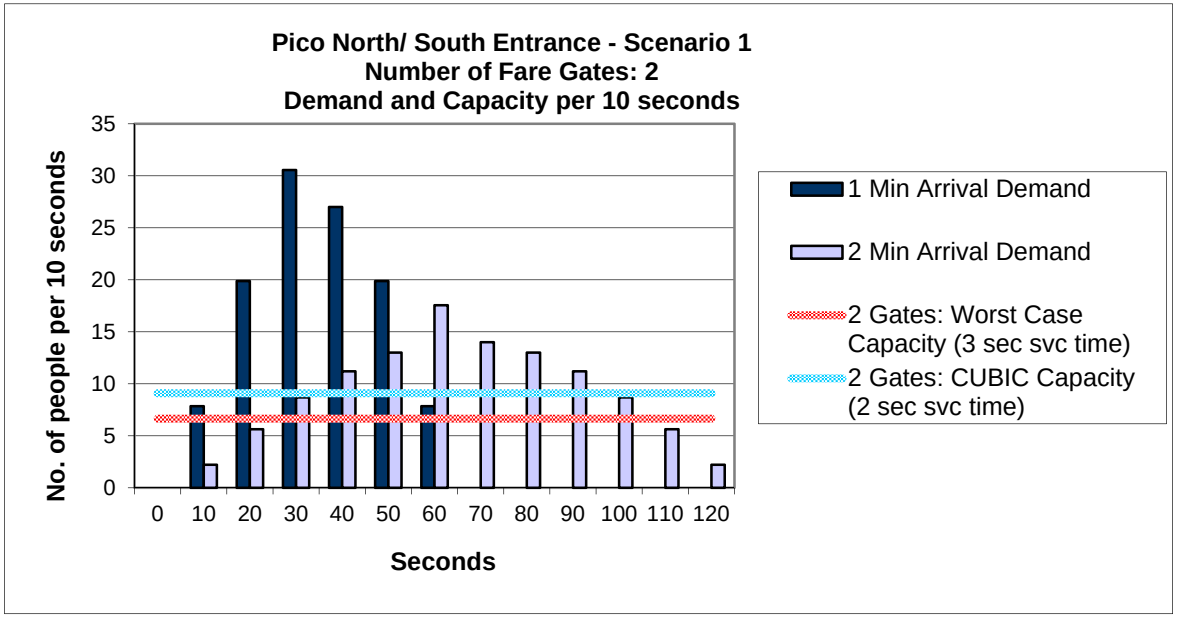
Station assumptions:
Ridership demand is modeled based on year 2024 peak hour ridership projections. A demand model has been created to estimate the amount of passengers each station must service during a peak surge that lasts one or two minutes long. Peak of the peak hour ridership for Pico includes maximum total of peak hour passenger boarding and alighting for year 2014.

Initial Queuing Analysis for Pico station considered 78.46% growth percentage. However, as indicated in **Table 4** including growth rate of Pico station is 150%. Initial Queuing Analysis with 78.46% concluded that planned number of fare gates are not sufficient for Pico station. Therefore, LACMTA requested that Queuing Analysis with 150% ridership growth at Pico is not required as 150% ridership growth is much worse than 78.46%, previously assumed.

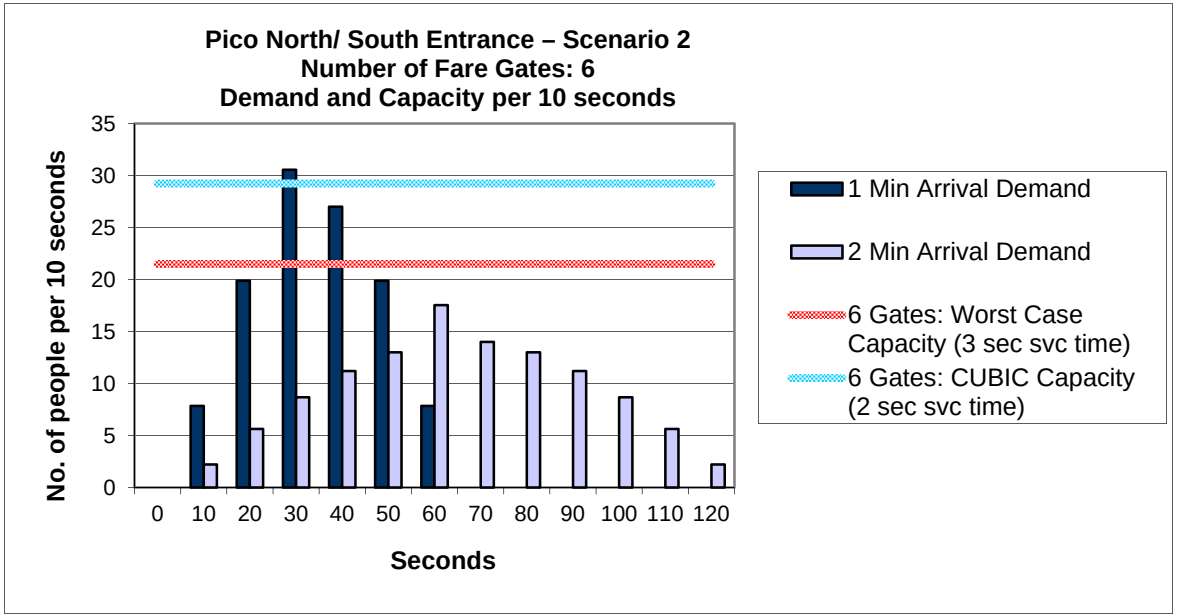
For **Pico North/ South**, maximum total peak of the peak hour (5pm to 6pm) passenger boarding (397) and alighting (359) is **756 during year 2014**. As per LACMTA service planning input on Pico, a station involving transfer between Expo and Blue line, 80% of 756, 605 passengers will utilize **Pico** Blue Line fare gates during peak hour. 78.46% ridership growth has been applied to 605 passengers to calculate year 2024 ridership projections at **Pico (1079 passengers)**. Based on 12 Trains per Hour (**TPH)/** 5 minute headway, it is assumed (as per **Table 6**) that 15% of peak one hour surge go through the fare gates during 1-minute surge. **70**% of gate utilization is assumed at each **Pico North/ South** entrances. Therefore, **70**% of 1-minute passenger surge (**15**% **of 1079** passengers = 162 passengers) utilize **Pico North/ South** station entrance fare gates. 70% of 1-minute surge (162 passengers), **113** passengers utilize **Pico North/ South** station entrance fare gates.

Results:

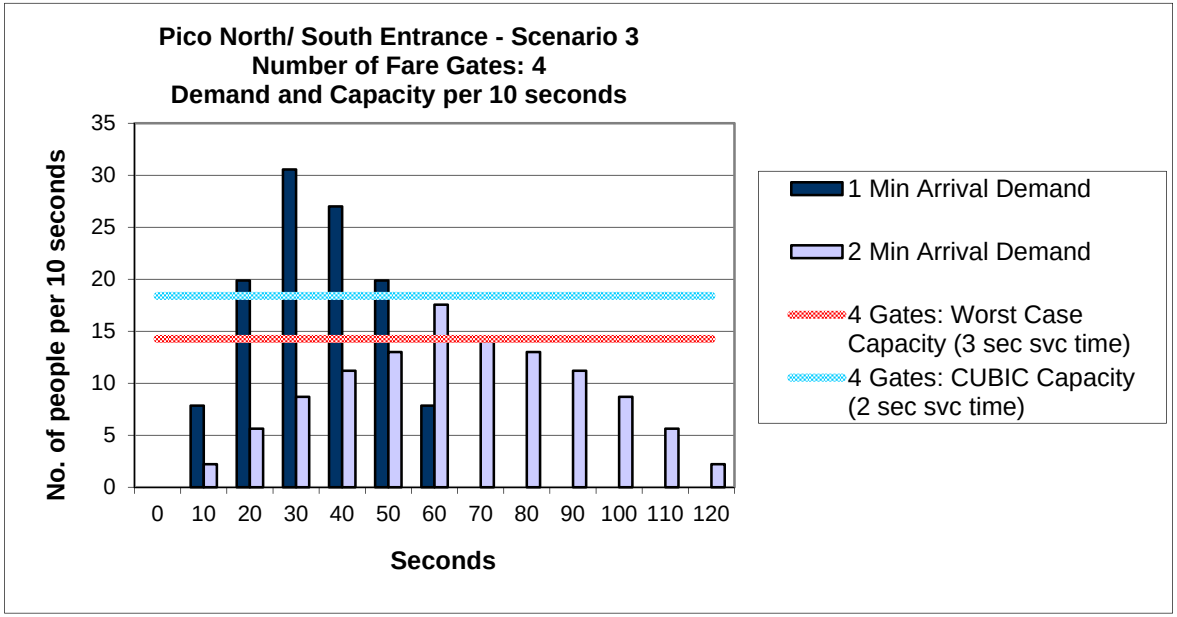
Scenario 1 – Planned number of fare gates station entrance can accommodate based on station plan drawings and infrastructure limitations / Number of Fare Gates: 2



Scenario 2 – Maximum Number of fare gates based on suggested Equipment Quantity Analysis (EQA) with 1-2 minute arrival surge/ Number of Fare Gates: 6



Scenario 3 – Minimum number of fare gates required to meet queuing design criteria (wait time less than 55 seconds) with 1-2 minute arrival surge/ Number of Fare Gates: 4



Metro Blue Line Pico North/ South Station Entrance - Worst Case (3 second average service time)					
No. of Fare Gates	**Scenarios**	**Surge Time (seconds)**	**Maximum Wait (seconds)**	**Maximum Number of People in Queue**	**Maximum Queue Length Per Gate (feet)**
2	**Scenario 1**	60	**111**	72	72
2	**Scenario 1**	120	**64**	39	39
6	Scenario 2	60	7	17	6
6	Scenario 2	120	0	0	0
4	Scenario 3	60	29	42	21
4	Scenario 3	120	4	4	2

Metro Blue Line Pico North/ South Station Entrance - CUBIC Estimate (2 second average service time)					
No. of Fare Gates	**Scenarios**	**Surge Time (seconds)**	**Maximum Wait (seconds)**	**Maximum Number of People in Queue**	**Maximum Queue Length Per Gate (feet)**
2	**Scenario 1**	60	**68**	60	60
2	Scenario 1	120	31	23	23
6	Scenario 2	60	1	2	1
6	Scenario 2	120	0	0	0
4	Scenario 3	60	12	26	13
4	Scenario 3	120	0	0	0

Metro Blue Line – Pico North/ South Station Entrance Conclusions:

- Based on demand (2024 ridership projections and 1-2 minute surge) and station assumptions, summary of the model results. See tables on page 16 for reference:

  - **Scenario 1** shows significant queues (maximum passenger wait time greater than 55 seconds) for 3 second average service time during 1-minute and 2-minute surge and shows significant queues for 2-second average service time during 1-minute surge.

  - **Scenarios 1** shows noticeable queues for 2 second average service time during 2-minute surge.

  - **Scenarios 2 and 3** do not show significant queues for 2 second and 3 second average service time. **Scenarios 2 and 3** as specified above, maximum passengers wait time is less than 55 seconds (a maximum queuing time of 55-seconds during surge has been considered an acceptable service standard).

  - Per 2024 peak hour ridership projections, model iterations suggest that installing minimum **four (4) fare gates** could have 29 **seconds of maximum passenger wait time** (less than 55 seconds of design criteria for significant queues) and therefore **four (4) fare** gates could be sufficient for **Pico North/ South** station entrance.

Metro Blue Line – Grand – LATTC East/ West Station Entrance	
Passengers per Peak Surge (1-2 minutes)	**110** (70% of 157 passengers for 1-minute surge utilize **Grand East/ West** station entrance fare gates)
Scenario 1 - Planned number of fare gates station entrance can accommodate based on station plan and infrastructure limitations	2
Scenario 2 - Maximum number of fare gates based on suggested Equipment Quantity Analysis (EQA)	5
Scenario 3 - Minimum number of fare gates required to meet queuing design criteria (wait times less than 55 sec.)	3

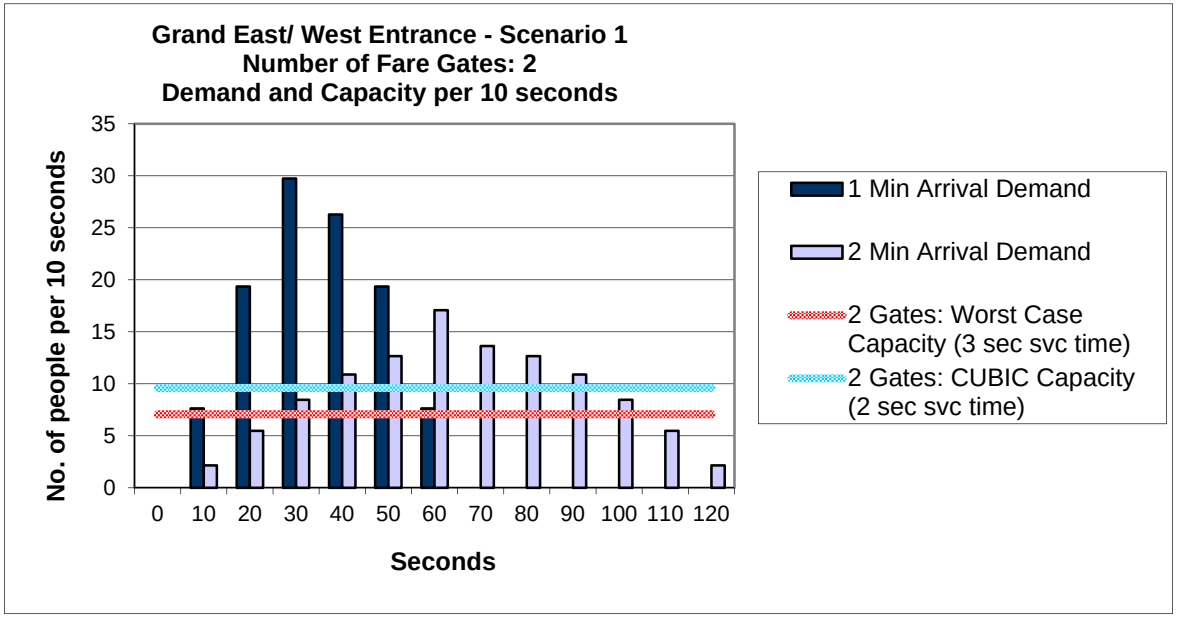
Station assumptions:
Ridership demand is modeled based on year 2024 peak hour ridership projections. A demand model has been created to estimate the amount of passengers each station must service during a peak surge that lasts one or two minutes long. Peak of the peak hour ridership includes maximum total of peak hour passenger boarding and alighting from data provided for year 2013.

Initial Queuing Analysis for **Grand East/ West** station entrances considered 78.46% growth percentage. However, LACMTA service planning noted that 78.46% ridership growth included Regional Connector ridership with Blue and Gold Line ridership data. LACMTA service planning requested CH2MHILL team to assume ridership growth at station level instead of line level as indicated in **Table 4**. Per 01/26/2015 conference call discussion with LACMTA Operations and service planning staff, LACMTA requested CH2MHILL team to apply the worst case ridership growth of 27% to the worst case peak hour ridership (between year 2013 and year 2014) for all the stations except Pico.

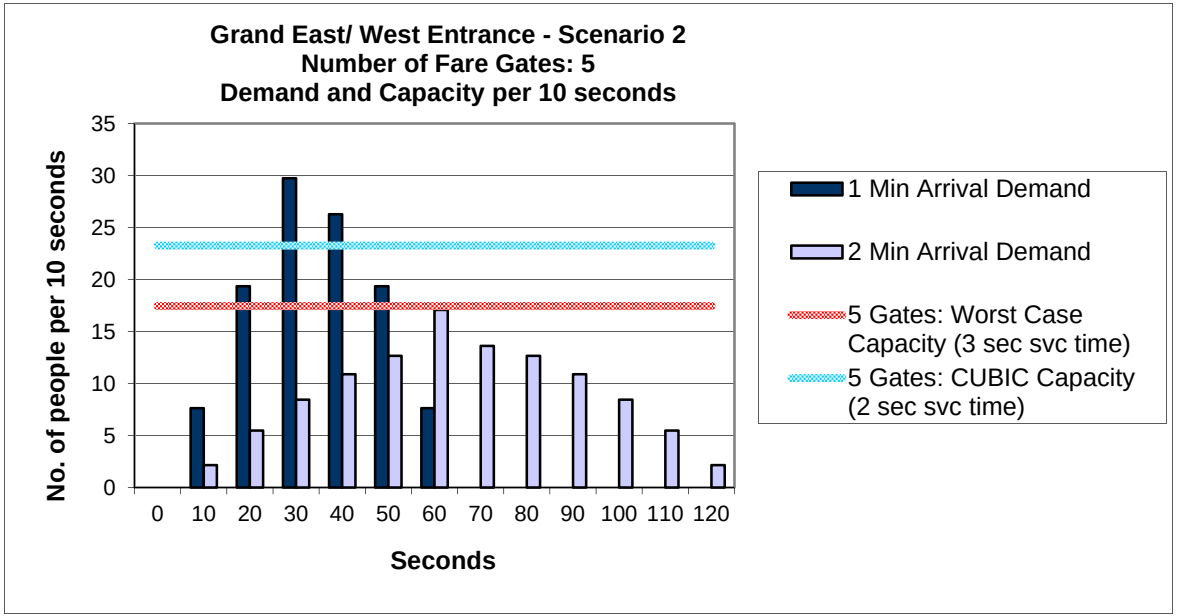
For **Grand East/ West**, maximum total peak of the peak hour (4pm to 5pm) passenger boarding (465) and alighting (359) is **824 during year 2013**. As per Metro service planning input on **Grand station**. 27% ridership growth has been applied to 824 passengers to calculate year 2024 ridership projections at **Grand (1046 passengers)**. Based on 12 Trains per Hour (**TPH)/** 5 minute headway, it is assumed (as per **Table 6**) that 15% of peak one hour surge go through the fare gates during 1-minute surge. **70**% of gate utilization is assumed at each **Grande East/ West** station entrances. Therefore, **70**% of 1-minute passenger surge (**15**% **of 1046** passengers = 157 passengers) utilize **Grand East/ West** station entrance fare gates. 70% of 1-minute surge (157 passengers), **110** passengers utilize **Grand East/ West** station entrance fare gates.

Results:

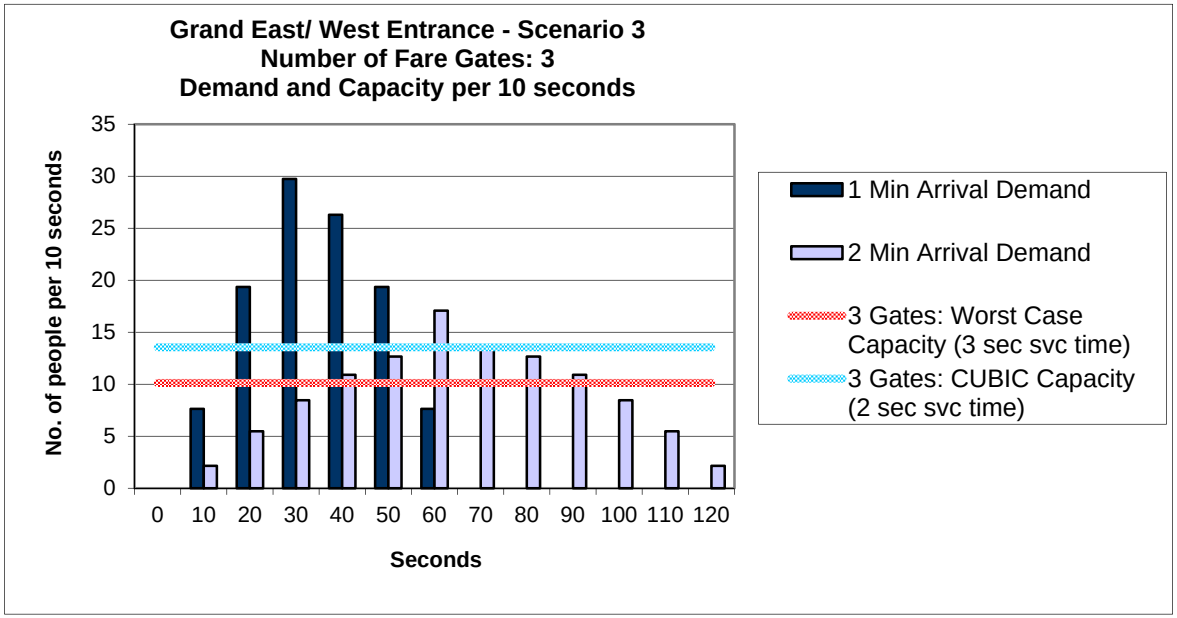
Scenario 1 – Planned number of fare gates station entrance can accommodate based on station plan drawings and infrastructure limitations / Number of Fare Gates: 2



Scenario 2 – Maximum Number of fare gates based on suggested Equipment Quantity Analysis (EQA) with 1-2 minute arrival surge/ Number of Fare Gates: 5



Scenario 3 – Minimum number of fare gates required to meet queuing design criteria (wait time less than 55 seconds) with 1-2 minute arrival surge/ Number of Fare Gates: 3



Metro Blue Line Grand East/ West Station Entrance - Worst Case (3 second average service time)					
No. of Fare Gates	**Scenarios**	**Surge Time (seconds)**	**Maximum Wait (seconds)**	**Maximum Number of People in Queue**	**Maximum Queue Length Per Gate (feet)**
2	**Scenario 1**	60	**97**	68	68
2	Scenario 1	120	55	38	38
5	Scenario 2	60	18	27	11
5	Scenario 2	120	0	0	0
3	Scenario 3	60	52	53	35
3	Scenario 3	120	15	17	12

Metro Blue Line Grand East/ West Station Entrance - CUBIC Estimate (2 second average service time)					
No. of Fare Gates	**Scenarios**	**Surge Time (seconds)**	**Maximum Wait (seconds)**	**Maximum Number of People in Queue**	**Maximum Queue Length Per Gate (feet)**
2	**Scenario 1**	60	**59**	56	56
2	Scenario 1	120	19	17	17
5	Scenario 2	60	3	9	4
5	Scenario 2	120	0	0	0
3	Scenario 3	60	28	38	25
3	Scenario 3	120	2	4	3

Metro Blue Line – Grand East/ West Station Entrance Conclusions:

- Based on demand (2024 ridership projections and 1-2 minute surge) and station assumptions, summary of the model results. See tables on page 22 for reference:

  - **Scenario 1** shows significant queues (maximum passenger wait time greater than 55 seconds) for 3 second average service time during 1-minute and shows significant queues for 2-second average service time during 1-minute surge.

  - **Scenarios 1** shows noticeable queues for 3 second average service time during 2-minute surge.

  - **Scenarios 1** shows slight queues for 2 second average service time during 2-minute surge.

  - **Scenarios 2 and 3** do not show significant queues for 2 second and 3 second average service time. **Scenarios 2 and 3** as specified above, maximum passengers wait time is less than 55 seconds (a maximum queuing time of 55-seconds during surge has been considered an acceptable service standard).

  - Per 2024 peak hour ridership projections, model iterations suggest that installing minimum **three (3) fare gates** could have 52 **seconds of maximum passenger wait time** (less than 55 seconds of design criteria for significant queues) and therefore **three (3) fare** gates could be sufficient for **Grand East/ West** station entrance

Metro Blue Line – Florence North Station Entrance	
Passengers per Peak Surge (1-2 minutes)	**184** (100% of 184 passengers for 1-minute surge utilize **Florence North** station entrance fare gates)
Scenario 1 - Planned number of fare gates station entrance can accommodate based on station plan and infrastructure limitations	2
Scenario 2 - Maximum number of fare gates based on suggested Equipment Quantity Analysis (EQA)	9
Scenario 3 - Minimum number of fare gates required to meet queuing design criteria (wait times less than 55 sec.)	5

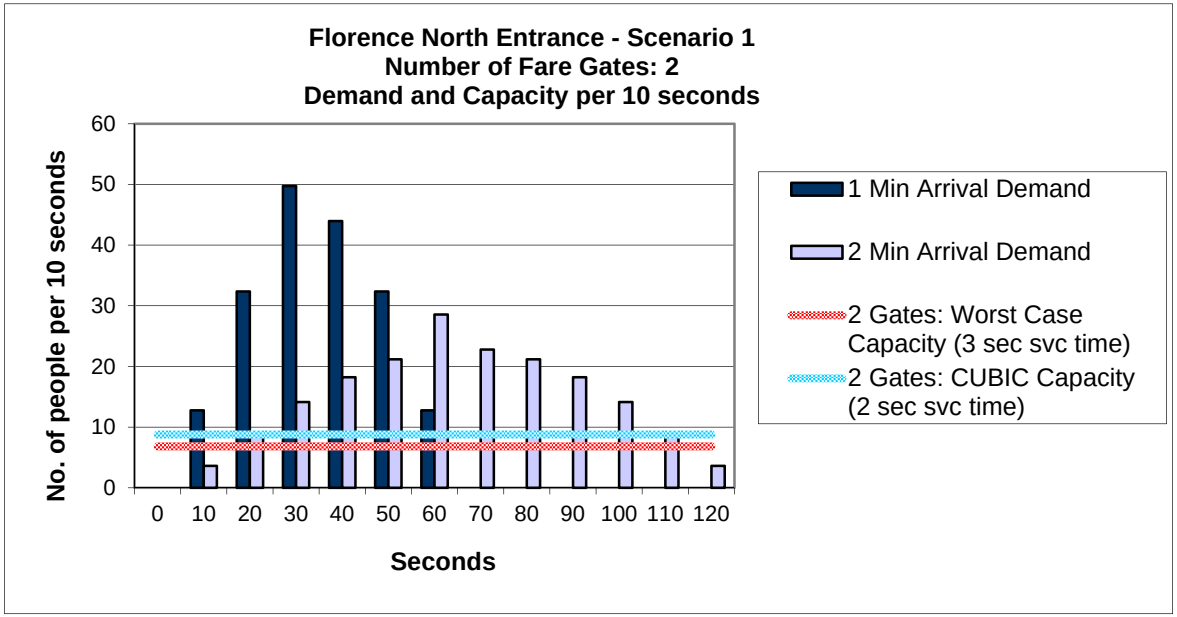
Station assumptions:
Ridership demand is modeled based on year 2024 peak hour ridership projections. A demand model has been created to estimate the amount of passengers each station must service during a peak surge that lasts one or two minutes long. Peak of the peak hour ridership includes maximum total of peak hour passenger boarding and alighting from data provided for year 2013.

Initial Queuing Analysis for **Florence North** station entrances considered 78.46% growth percentage. However, LACMTA service planning noted that 78.46% ridership growth included Regional Connector ridership with Blue and Gold Line ridership data. LACMTA service planning requested CH2MHILL team to assume ridership growth at station level instead of line level as indicated in **Table 4**. Per 01/26/2015 conference call discussion with LACMTA Operations and service planning staff, LACMTA requested CH2MHILL team to apply the worst case ridership growth of 27% to the worst case peak hour ridership (between year 2013 and year 2014) for all the stations except Pico.

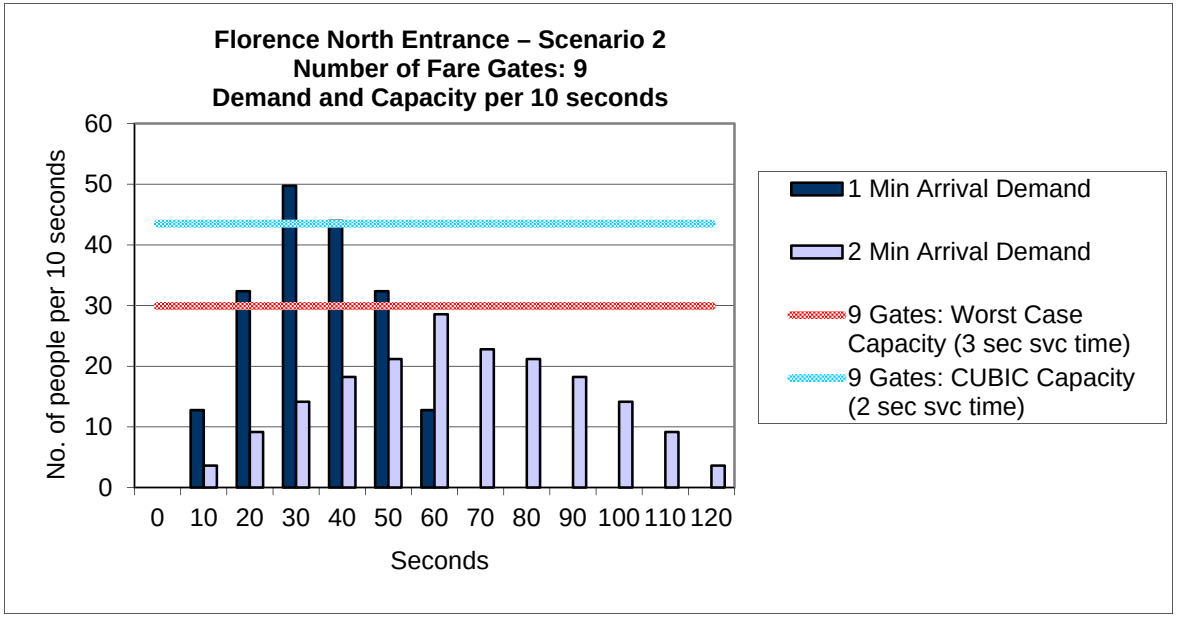
For **Florence North**, maximum total peak of the peak hour (5pm to 6pm) passenger boarding (363) and alighting (601) is **964 during year 2013**. As per Metro service planning input on **Florence station**. 27% ridership growth has been applied to 964 passengers to calculate year 2024 ridership projections at **Florence (1225 passengers)**. Based on 12 Trains per Hour (**TPH)/** 5 minute headway, it is assumed (as per **Table 6**) that 15% of peak one hour surge go through the fare gates during 1-minute surge. **100**% of gate utilization is assumed at **Florence North** station entrance. Therefore, **100**% of 1-minute passenger surge (**15**% **of 1225** passengers = 184 passengers) utilize **Florence North** station entrance fare gates. **100**% of 1-minute surge (184 passengers), **184** passengers utilize **Florence North** station entrance fare gates.

Results:

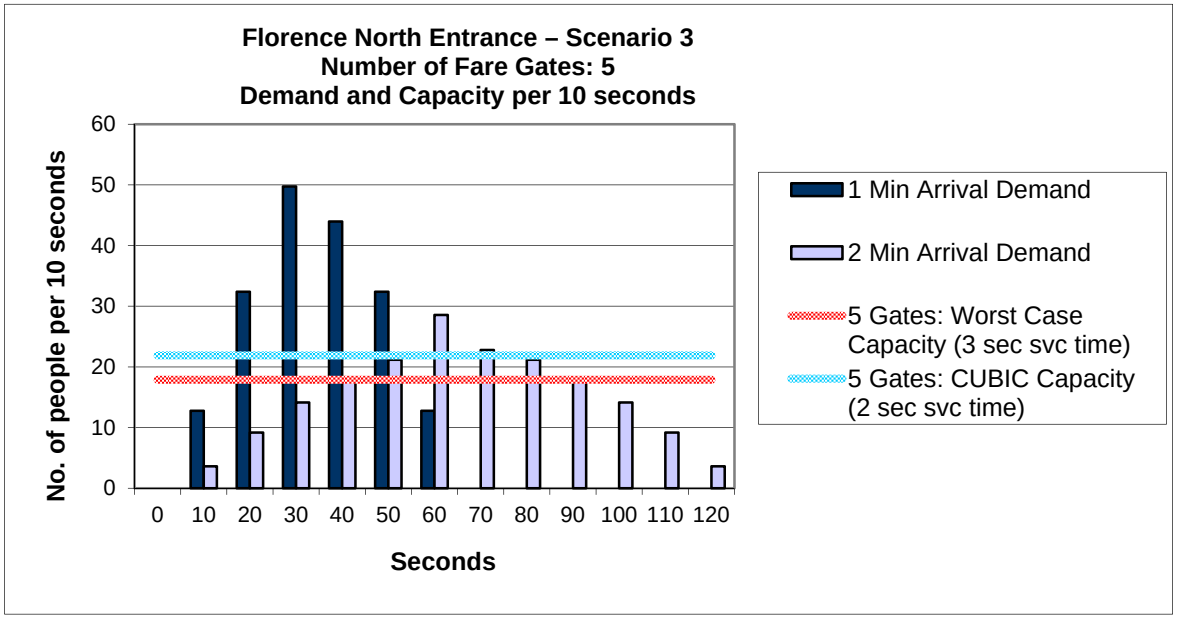
Scenario 1 – Planned number of fare gates station entrance can accommodate based on station plan drawings and infrastructure limitations / Number of Fare Gates: 2



Scenario 2 – Maximum Number of fare gates based on suggested Equipment Quantity Analysis (EQA) with 1-2 minute arrival surge/ Number of Fare Gates: 9



Scenario 3 – Minimum number of fare gates required to meet queuing design criteria (wait time less than 55 seconds) with 1-2 minute arrival surge/ Number of Fare Gates: 5



Metro Blue Line Florence North Station Entrance - Worst Case (3 second average service time)					
No. of Fare Gates	**Scenarios**	**Surge Time (seconds)**	**Maximum Wait (seconds)**	**Maximum Number of People in Queue**	**Maximum Queue Length Per Gate (feet)**
2	Scenario 1	60	**234**	140	140
2	Scenario 1	120	**177**	105	105
9	Scenario 2	60	10	37	8
9	Scenario 2	120	0	0	0
5	Scenario 3	60	54	85	34
5	Scenario 3	120	7	22	9

Metro Blue Line Florence North Station Entrance - CUBIC Estimate (2 second average service time)					
No. of Fare Gates	**Scenarios**	**Surge Time (seconds)**	**Maximum Wait (seconds)**	**Maximum Number of People in Queue**	**Maximum Queue Length Per Gate (feet)**
2	Scenario 1	60	**126**	130	130
2	Scenario 1	120	**84**	83	83
9	Scenario 2	60	2	6	1
9	Scenario 2	120	0	0	0
5	Scenario 3	60	25	67	27
5	Scenario 3	120	1	6	2

Metro Blue Line – Florence North Station Entrance Conclusions:

- Based on demand (2024 ridership projections and 1-2 minute surge) and station assumptions, summary of the model results. See tables on page 28 for reference:

  - **Scenario 1** shows significant queues (maximum passenger wait time greater than 55 seconds) for 3 second and 2-second average service time during 1-minute and 2-minute surge.

  - **Scenarios 2 and 3** do not show significant queues for 2 second and 3 second average service time. **Scenarios 2 and 3** as specified above, maximum passengers wait time is less than 55 seconds (a maximum queuing time of 55-seconds during surge has been considered an acceptable service standard).

  - Per 2024 peak hour ridership projections, model iterations suggest that installing minimum **five (5) fare gates** could have 54 **seconds of maximum passenger wait time** (less than 55 seconds of design criteria for significant queues) and therefore **five (5) fare** gates could be sufficient for **Florence North** station entrance.

Metro Blue Line – 103rd Street/ Watts Towers West Station Entrance	
Passengers per Peak Surge (1-2 minutes)	**137** (100% of 137 passengers for 1-minute surge utilize **103rd Street** station entrance fare gates)
Scenario 1 - Planned number of fare gates station entrance can accommodate based on station plan and infrastructure limitations	2
Scenario 2 - Maximum number of fare gates based on suggested Equipment Quantity Analysis (EQA)	7
Scenario 3 - Minimum number of fare gates required to meet queuing design criteria (wait times less than 55 sec.)	4

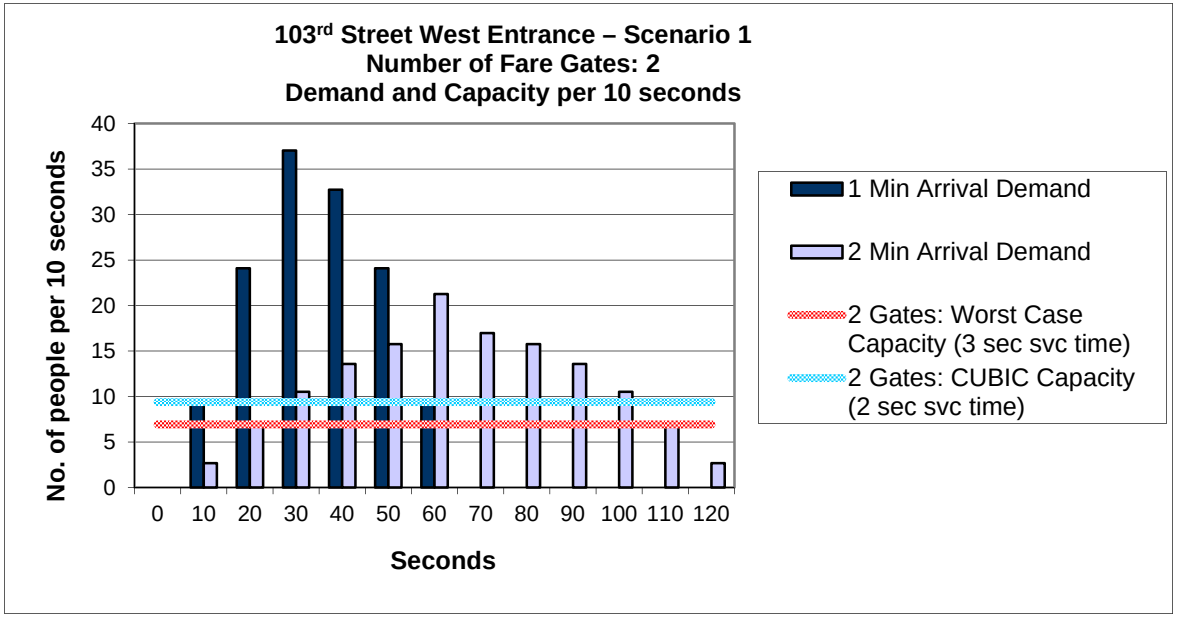
Station assumptions:
The demand model is driven by peak period ridership projection (year 2024) provided by LACMTA via email in October 2014. Ridership demand is modeled based on year 2024 peak hour ridership projections. A demand model has been created to estimate the amount of passengers each station must service during a peak surge that lasts one or two minutes long. Peak of the peak hour ridership includes maximum total of peak hour passenger boarding and alighting from data provided for year 2013.

Initial Queuing Analysis for **103rd Street west** station entrances considered 78.46% growth percentage. However, LACMTA service planning noted that 78.46% ridership growth included Regional Connector ridership with Blue and Gold Line ridership data. LACMTA service planning requested CH2MHILL team to assume ridership growth at station level instead of line level as indicated in **Table 4**. Per 01/26/2015 conference call discussion with LACMTA Operations and service planning staff, LACMTA requested CH2MHILL team to apply the worst case ridership growth of 27% to the worst case peak hour ridership (between year 2013 and year 2014) for all the stations except Pico.

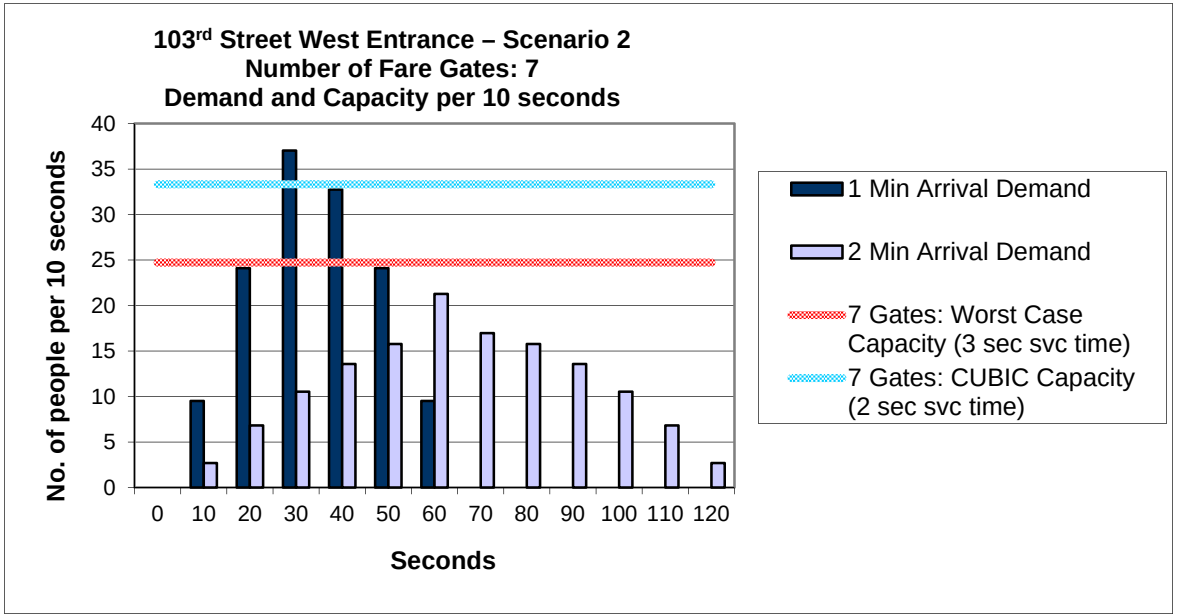
For **103rd Street west**, maximum total peak of the peak hour (4pm to 5pm) passenger boarding (324) and alighting (393) is **717 during year 2013**. As per Metro service planning input on **103rd Street station**. 27% ridership growth has been applied to 717 passengers to calculate year 2024 ridership projections at **103rd street (911 passengers)**. Based on 12 Trains per Hour (**TPH)/** 5 minute headway, it is assumed (as per **Table 6**) that 15% of peak one hour surge go through the fare gates during 1-minute surge. **100**% of gate utilization is assumed at **103rd Street west** station entrance. Therefore, **100**% of 1-minute passenger surge (**15**% **of 911** passengers = 137 passengers) utilize **103rd Street west** station entrance fare gates. **100**% of 1-minute surge (137 passengers), **137** passengers utilize **103rd Street west** station entrance fare gates.

Results:

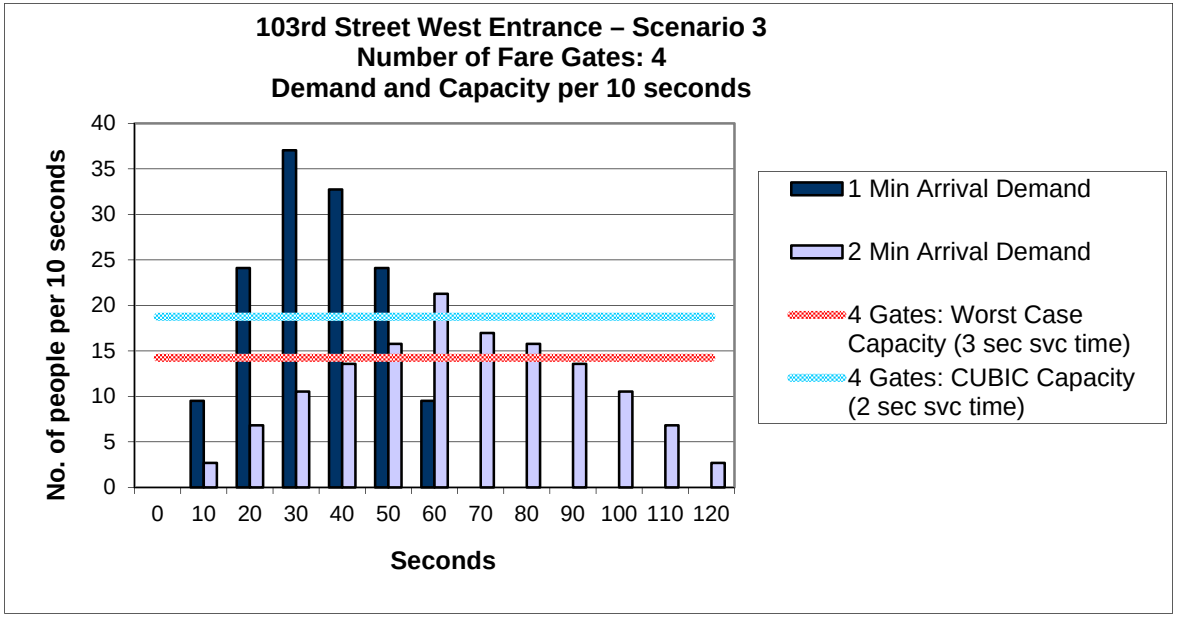
Scenario 1 – Planned number of fare gates station entrance can accommodate based on station plan drawings and infrastructure limitations / Number of Fare Gates: 2



Scenario 2 – Maximum Number of fare gates based on suggested Equipment Quantity Analysis (EQA) with 1-2 minute arrival surge/ Number of Fare Gates: 7



Scenario 3 – Minimum number of fare gates required to meet queuing design criteria (wait time less than 55 seconds) with 1-2 minute arrival surge/ Number of Fare Gates: 4



Metro Blue Line 103rd Street West Station Entrance - Worst Case (3 second average service time)					
No. of Fare Gates	**Scenarios**	**Surge Time (seconds)**	**Maximum Wait (seconds)**	**Maximum Number of People in Queue**	**Maximum Queue Length Per Gate (feet)**
2	Scenario 1	60	157	97	97
2	Scenario 1	120	84	59	59
7	Scenario 2	60	9	20	6
7	Scenario 2	120	0	0	0
4	Scenario 3	60	50	63	31
4	Scenario 3	120	3	14	7

Metro Blue Line 103rd Street West Station Entrance - CUBIC Estimate (2 second average service time)					
No. of Fare Gates	**Scenarios**	**Surge Time (seconds)**	**Maximum Wait (seconds)**	**Maximum Number of People in Queue**	**Maximum Queue Length Per Gate (feet)**
2	Scenario 1	60	79	85	85
2	Scenario 1	120	40	43	43
7	Scenario 2	60	0	4	1
7	Scenario 2	120	0	0	0
4	Scenario 3	60	24	43	22
4	Scenario 3	120	1	2	1

Metro Blue Line – 103rd Street West Station Entrance Conclusions:

- Based on demand (2024 ridership projections and 1-2 minute surge) and station assumptions, summary of the model results. See tables on page 34 for reference:

  - **Scenario 1** shows significant queues (maximum passenger wait time greater than 55 seconds) for 3 second average service time during 1-minute and 2-minute surge and shows significant queues for 2-second average service time during 1-minute surge.

  - **Scenarios 1** shows noticeable queues for 2 second average service time during 2-minute surge.

  - **Scenarios 2 and 3** do not show significant queues for 2 second and 3 second average service time. **Scenarios 2 and 3** as specified above, maximum passengers wait time is less than 55 seconds (a maximum queuing time of 55-seconds during surge has been considered an acceptable service standard).

  - Per 2024 peak hour ridership projections, model iterations suggest that installing minimum **four (4) fare gates** could have 50 **seconds of maximum passenger wait time** (less than 55 seconds of design criteria for significant queues) and therefore **four (4) fare** gates could be sufficient for **103rd Street West** station entrance.

Metro Blue Line – Rosa Parks/ Willowbrook North Station Entrance	
Passengers per Peak Surge (1-2 minutes)	**117** (100% of 117 passengers for 1-minute surge utilize **Rosa Parks North** station entrance fare gates)
Scenario 1 - Planned number of fare gates station entrance can accommodate based on station plan and infrastructure limitations	3
Scenario 2 - Maximum number of fare gates based on suggested Equipment Quantity Analysis (EQA)	6
Scenario 3 - Minimum number of fare gates required to meet queuing design criteria (wait times less than 55 sec.)	4

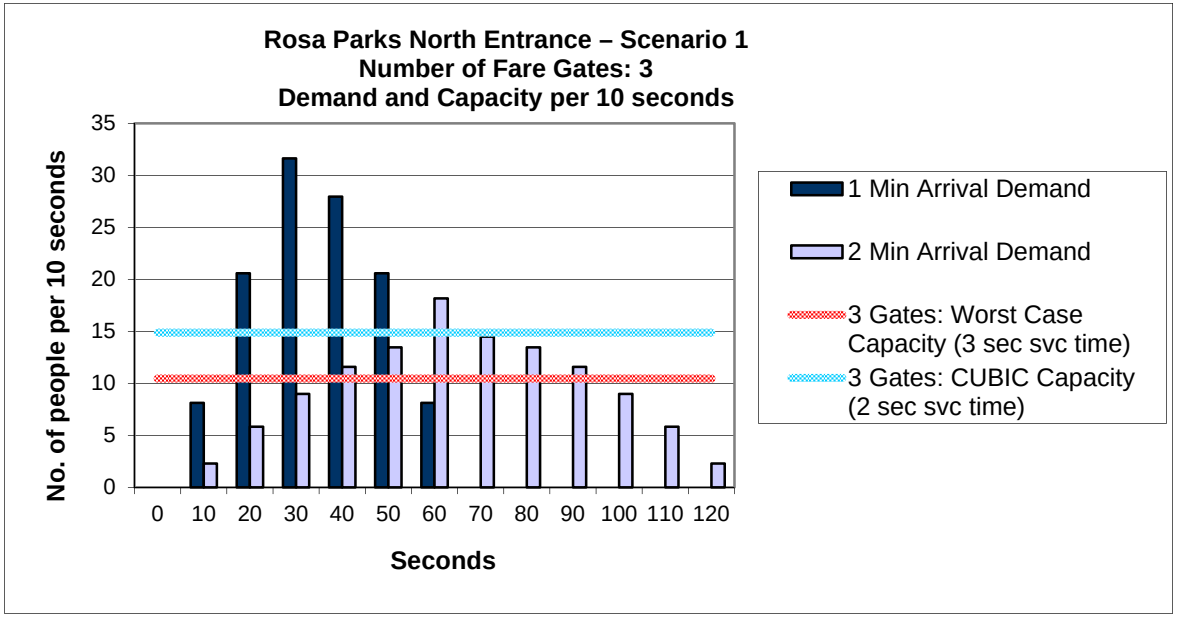
Station assumptions:
Ridership demand is modeled based on year 2024 peak hour ridership projections. A demand model has been created to estimate the amount of passengers each station must service during a peak surge that lasts one or two minutes long. Peak of the peak hour ridership includes maximum total of peak hour passenger boarding and alighting from data provided for year 2013.

Initial Queuing Analysis for **Rosa Parks North** station entrances considered 78.46% growth percentage. However, LACMTA service planning noted that 78.46% ridership growth included Regional Connector ridership with Blue and Gold Line ridership data. LACMTA service planning requested CH2MHILL team to assume ridership growth at station level instead of line level as indicated in **Table 4**. Per 01/26/2015 conference call discussion with LACMTA Operations and service planning staff, LACMTA requested CH2MHILL team to apply the worst case ridership growth of 27% to the worst case peak hour ridership (between year 2013 and year 2014) for all the stations except Pico.

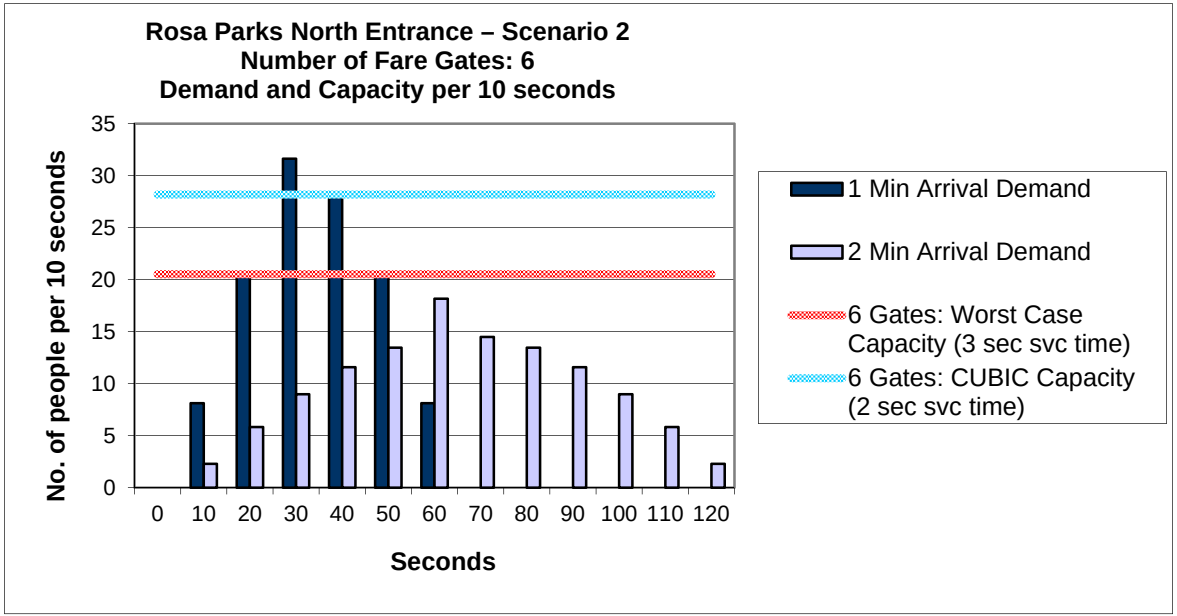
For **Rosa Parks**, maximum total peak of the peak hour (5pm to 6pm) passenger boarding (1041) and alighting (1151) is **2192 during year 2013**. As per Metro service planning input on **Rosa Parks station**, a station involving transfer between Green and Blue line, 28% of 2192, 614 passengers will utilize **Rosa Parks North and 72% of 2192**, 1578 passengers will utilize **Rosa Parks Mezzanine** fare gates during peak hour. 27% ridership growth has been applied to 614 to calculate year 2024 ridership projections at **Rosa Parks North (780 passengers)**. Based on 12 Trains per Hour (**TPH)/** 5 minute headway, it is assumed (as per **Table 6**) that 15% of peak one hour surge go through the fare gates during 1-minute surge. **100**% of gate utilization is assumed at **Rosa Parks North** station entrance. Therefore, **100**% of 1-minute passenger surge (**15% of 780** passengers = 117 passengers) utilize **Rosa Parks North** station entrance fare gates. **100**% of 1-minute surge (117 passengers), **117** passengers utilize **Rosa Parks North** station entrance fare gates.

Results:

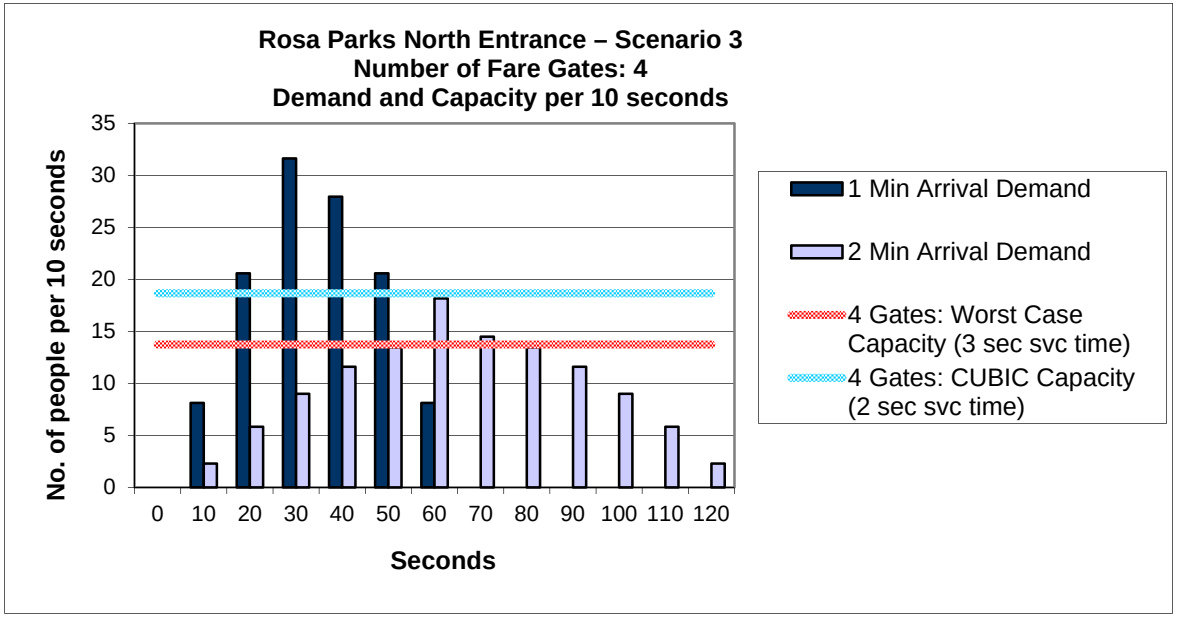
Scenario 1 – Planned number of fare gates station entrance can accommodate based on station plan drawings and infrastructure limitations / Number of Fare Gates: 3



Scenario 2 – Maximum Number of fare gates based on suggested Equipment Quantity Analysis (EQA) with 1-2 minute arrival surge/ Number of Fare Gates: 6



Scenario 3 – Minimum number of fare gates required to meet queuing design criteria (wait time less than 55 seconds) with 1-2 minute arrival surge/ Number of Fare Gates: 4



Metro Blue Line Rosa Parks North Station Entrance - Worst Case (3 second average service time)					
No. of Fare Gates	**Scenarios**	**Surge Time (seconds)**	**Maximum Wait (seconds)**	**Maximum Number of People in Queue**	**Maximum Queue Length Per Gate (feet)**
3	Scenario 1	60	**64**	62	41
3	Scenario 1	120	18	22	14
6	Scenario 2	60	11	19	6
6	Scenario 2	120	0	0	0
4	Scenario 3	60	37	45	23
4	Scenario 3	120	1	4	2

Metro Blue Line Rosa Parks North Station Entrance - CUBIC Estimate (2 second average service time)					
No. of Fare Gates	**Scenarios**	**Surge Time (seconds)**	**Maximum Wait (seconds)**	**Maximum Number of People in Queue**	**Maximum Queue Length Per Gate (feet)**
3	Scenario 1	60	31	42	28
3	Scenario 1	120	2	3	2
6	Scenario 2	60	1	4	1
6	Scenario 2	120	0	0	0
4	Scenario 3	60	14	25	13
4	Scenario 3	120	0	0	0

Metro Blue Line – Rosa Parks North Station Entrance Conclusions:

- Based on demand (2024 ridership projections and 1-2 minute surge) and station assumptions, summary of the model results. See tables on page 40 for reference:

  - **Scenario 1** shows significant queues (maximum passenger wait time greater than 55 seconds) for 3 second average service time during 1-minute.

  - **Scenario 1** shows noticeable queues for 2 second average service time during 1-minute

  - **Scenario 1** shows slight queues for 3-second average service time during 1-minute surge.

  - **Scenarios 1** shows no significant queues for 2 second average service time during 2-minute surge.

  - **Scenarios 2 and 3** do not show significant queues for 2 second and 3 second average service time. **Scenarios 2 and 3** as specified above, maximum passengers wait time is less than 55 seconds (a maximum queuing time of 55-seconds during surge has been considered an acceptable service standard).

  - Per 2024 peak hour ridership projections, model iterations suggest that installing minimum **four (4) fare gates** could have 37 **seconds of maximum passenger wait time** (less than 55 seconds of design criteria for significant queues) and therefore **four (4) fare** gates could be sufficient for **Rosa Parks North** station entrance.

  - ***Queuing Analysis for Rosa Parks/ Willowbrook was performed based on station configuration provided under infrastructure drawing (A-8.1 C0630) by Metro. Current Queuing Analysis includes two entrances for Rosa Parks, North Entrance (28% passengers utilize North Entrance) and Mezzanine entrance (72% passengers utilize Mezzanine Entrance). It is noted that Rosa Parks/ Willowbrook Station Improvement project is underway. Conceptual plans will be finalized. Project improvements include but not limited to platform extension, pedestrian crossing, and improvements to vertical circulation. Ridership distribution assumption shall be revised for the future Queuing Analysis. Based on final conceptual plans for Rosa Parks/ Willowbrook, Queuing Analysis shall be performed for Rosa Parks/ Willowbrook station layout for the revised station platform arrangements including additional entrances, modified quantity of planned fare gates and revised passenger access. Equipment Quantity Analysis shall be revised per the revised Rosa Parks/ Willowbrook station layout.***

Metro Blue Line – Rosa Parks/ Willowbrook Mezzanine Station Entrance	
Passengers per Peak Surge (1-2 minutes)	**301** (100% of 301 passengers for 1-minute surge utilize **Rosa Parks Mezzanine** station entrance fare gates)
Scenario 1 - Planned number of fare gates station entrance can accommodate based on station plan and infrastructure limitations	5
Scenario 2 - Maximum number of fare gates based on suggested Equipment Quantity Analysis (EQA)	14
Scenario 3 - Minimum number of fare gates required to meet queuing design criteria (wait times less than 55 sec.)	8

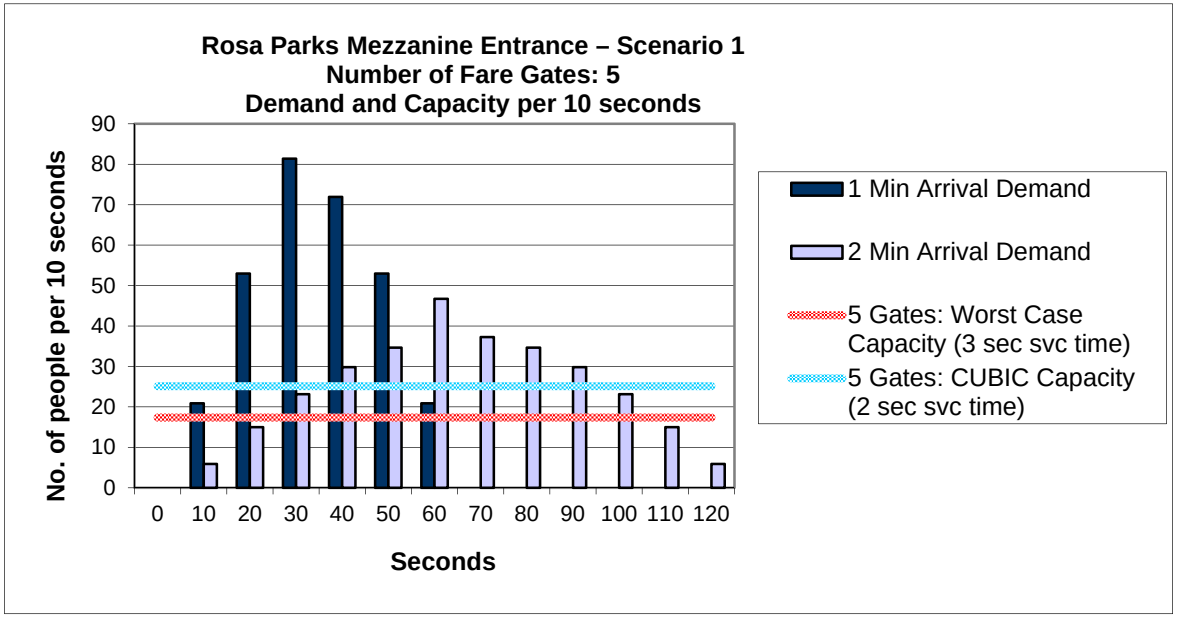
Station assumptions:
Ridership demand is modeled based on year 2024 peak hour ridership projections. A demand model has been created to estimate the amount of passengers each station must service during a peak surge that lasts one or two minutes long. Peak of the peak hour ridership includes maximum total of peak hour passenger boarding and alighting from data provided for year 2013.

Initial Queuing Analysis for **Rosa Parks Mezzanine** station entrances considered 78.46% growth percentage. However, LACMTA service planning noted that 78.46% ridership growth included Regional Connector ridership with Blue and Gold Line ridership data. LACMTA service planning requested CH2MHILL team to assume ridership growth at station level instead of line level as indicated in **Table 4**. Per 01/26/2015 conference call discussion with LACMTA Operations and service planning staff, LACMTA requested CH2MHILL team to apply the worst case ridership growth of 27% to the worst case peak hour ridership (between year 2013 and year 2014) for all the stations except Pico.

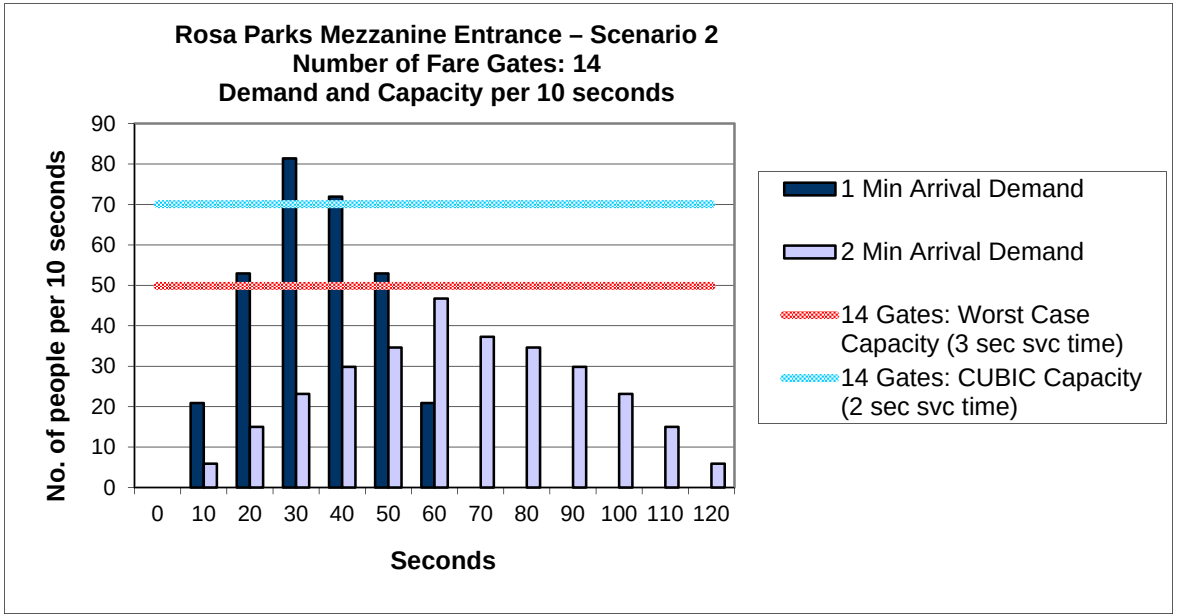
For **Rosa Parks Mezzanine**, maximum total peak of the peak hour (5pm to 6pm) passenger boarding (1041) and alighting (1151) is **2192 during year 2013**. As per Metro service planning input on **Rosa Parks station**, a station involving transfer between Green and Blue line, 28% of 2192, 614 passengers will utilize **Rosa Parks North and** 72% of 2192, 1578 passengers will utilize **Rosa Parks Mezzanine** fare gates during peak hour. 27% ridership growth has been applied to 1578 passengers to calculate year 2024 ridership projections at **Rosa Parks Mezzanine (2004 passengers)**. Based on 12 Trains per Hour (**TPH)/** 5 minute headway, it is assumed (as per **Table 6**) that 15% of peak one hour surge go through the fare gates during 1-minute surge. **100**% of gate utilization is assumed at **Rosa Parks Mezzanine** station entrance. Therefore, **100**% of 1-minute passenger surge (**15**% **of 2004** passengers = 301 passengers) utilize **Rosa Parks Mezzanine** station entrance fare gates. **100**% of 1-minute surge (301 passengers), **301** passengers utilize **Rosa Parks Mezzanine** station entrance fare gates.

Results:

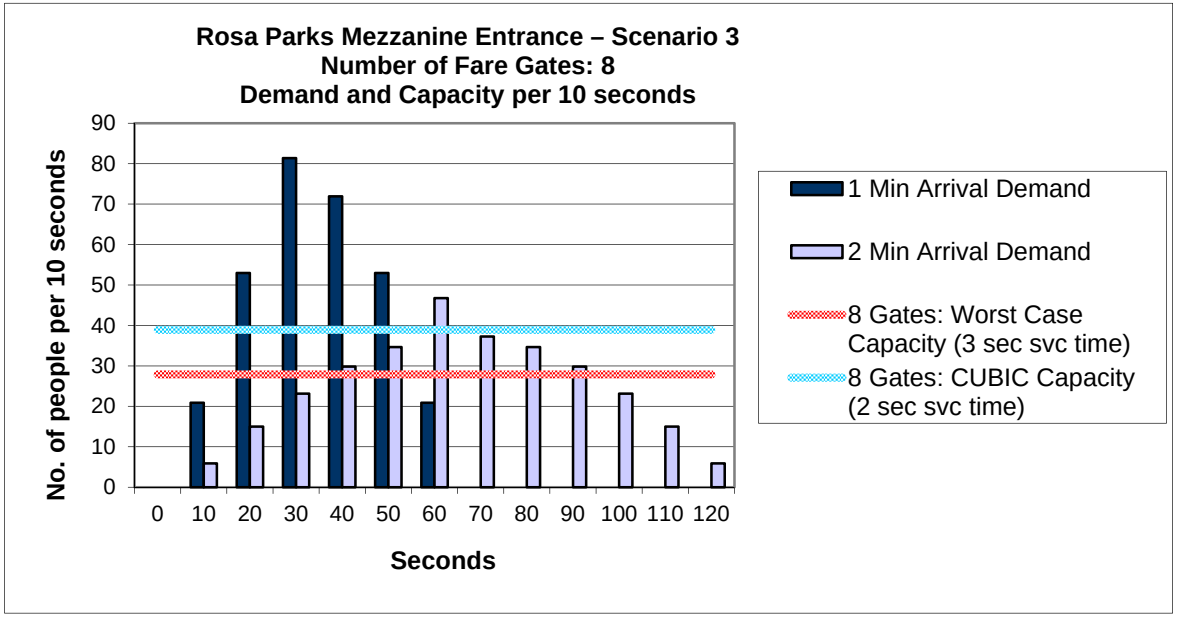
Scenario 1 – Planned number of fare gates station entrance can accommodate based on station plan drawings and infrastructure limitations / Number of Fare Gates: 5



Scenario 2 – Maximum Number of fare gates based on suggested Equipment Quantity Analysis (EQA) with 1-2 minute arrival surge/ Number of Fare Gates: 14



Scenario 3 – Minimum number of fare gates required to meet queuing design criteria (wait time less than 55 seconds) with 1-2 minute arrival surge/ Number of Fare Gates: 8



Metro Blue Line Rosa Parks Mezzanine Station Entrance - Worst Case (3 second average service time)					
No. of Fare Gates	**Scenarios**	**Surge Time (seconds)**	**Maximum Wait (seconds)**	**Maximum Number of People in Queue**	**Maximum Queue Length Per Gate (feet)**
5	Scenario 1	60	**123**	201	80
5	Scenario 1	120	**64**	121	48
14	Scenario 2	60	14	59	8
14	Scenario 2	120	0	0	0
8	Scenario 3	60	54	148	37
8	Scenario 3	120	14	37	9

Metro Blue Line Rosa Parks Mezzanine Station Entrance - CUBIC Estimate (2 second average service time)					
No. of Fare Gates	**Scenarios**	**Surge Time (seconds)**	**Maximum Wait (seconds)**	**Maximum Number of People in Queue**	**Maximum Queue Length Per Gate (feet)**
5	Scenario 1	60	**69**	161	64
5	Scenario 1	120	31	64	26
14	Scenario 2	60	2	13	2
14	Scenario 2	120	0	0	0
8	Scenario 3	60	27	105	26
8	Scenario 3	120	1	3	1

Metro Blue Line – Rosa Parks Mezzanine Station Entrance Conclusions:

- Based on demand (2024 ridership projections and 1-2 minute surge) and station assumptions, summary of the model results. See tables on page 46 for reference:

  - **Scenario 1** shows significant queues (maximum passenger wait time greater than 55 seconds) for 3 second average service time during 1-minute and 2-minute surge and shows significant queues for 2-second average service time during 1-minute surge.

  - **Scenarios 1** shows noticeable queues for 2 second average service time during 2-minute surge.

  - **Scenarios 2 and 3** do not show significant queues for 2 second and 3 second average service time. **Scenarios 2 and 3** as specified above, maximum passengers wait time is less than 55 seconds (a maximum queuing time of 55-seconds during surge has been considered an acceptable service standard).

  - Per 2024 peak hour ridership projections, model iterations suggest that installing minimum **eight (8) fare gates** could have 54 **seconds of maximum passenger wait time** (less than 55 seconds of design criteria for significant queues) and therefore **eight (8) fare** gates could be sufficient for **Rosa Parks Mezzanine** station entrance

  - ***Queuing Analysis for Rosa Parks/ Willowbrook was performed based on station configuration provided under infrastructure drawing (A-8.1 C0630) by Metro. Current Queuing Analysis includes two entrances for Rosa Parks, North Entrance (28% passengers utilize North Entrance) and Mezzanine entrance (72% passengers utilize Mezzanine Entrance). It is noted that Rosa Parks/ Willowbrook Station Improvement project is underway. Conceptual plans will be finalized. Project improvements include but not limited to platform extension, pedestrian crossing, and improvements to vertical circulation. Ridership distribution assumption shall be revised for the future Queuing Analysis. Based on final conceptual plans for Rosa Parks/ Willowbrook, Queuing Analysis shall be performed for Rosa Parks/ Willowbrook station layout for the revised station platform arrangements including additional entrances, modified quantity of planned fare gates and revised passenger access. Equipment Quantity Analysis shall be revised per the revised Rosa Parks/ Willowbrook station layout.***

Metro Blue Line – Willow South Station Entrance	
Passengers per Peak Surge (1-2 minutes)	**211** (100% of 211 passengers for 1-minute surge utilize **Willow South** station entrance fare gates)
Scenario 1 - Planned number of fare gates station entrance can accommodate based on station plan and infrastructure limitations	3
Scenario 2 - Maximum number of fare gates based on suggested Equipment Quantity Analysis (EQA)	10
Scenario 3 - Minimum number of fare gates required to meet queuing design criteria (wait times less than 55 sec.)	6

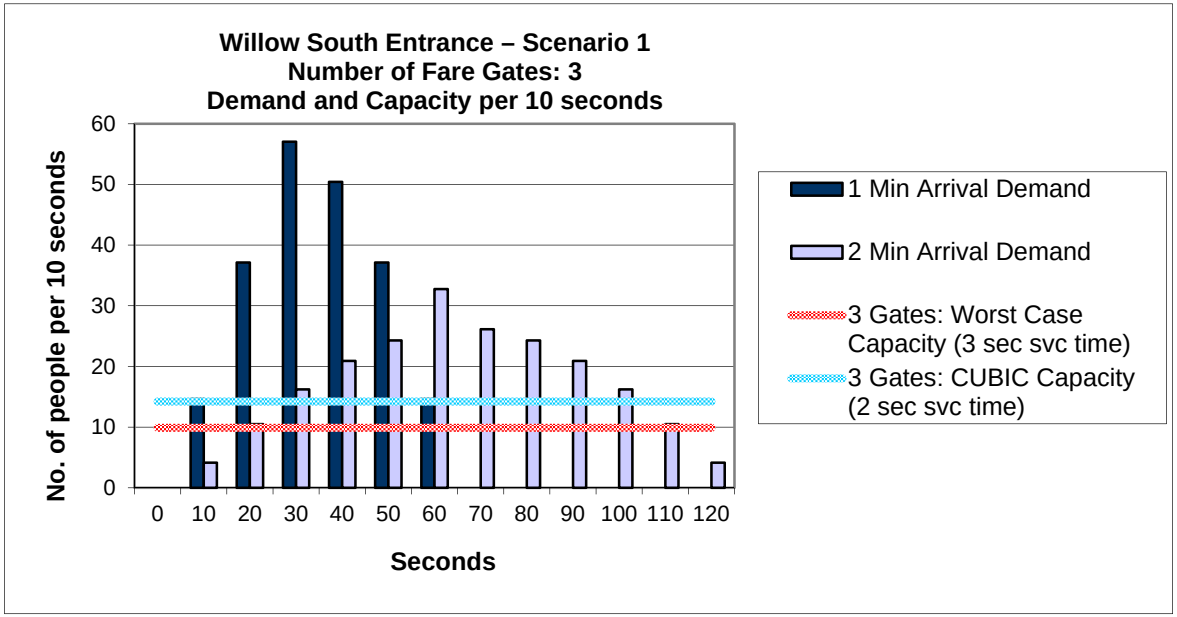
Station assumptions:
Ridership demand is modeled based on year 2024 peak hour ridership projections. A demand model has been created to estimate the amount of passengers each station must service during a peak surge that lasts one or two minutes long. Peak of the peak hour ridership includes maximum total of peak hour passenger boarding and alighting from data provided for year 2013.

Initial Queuing Analysis for **Willow South** station entrances considered 78.46% growth percentage. However, LACMTA service planning noted that 78.46% ridership growth included Regional Connector ridership with Blue and Gold Line ridership data. LACMTA service planning requested CH2MHILL team to assume ridership growth at station level instead of line level as indicated in **Table 4**. Per 01/26/2015 conference call discussion with LACMTA Operations and service planning staff, LACMTA requested CH2MHILL team to apply the worst case ridership growth of 27% to the worst case peak hour ridership (between year 2013 and year 2014) for all the stations except Pico.

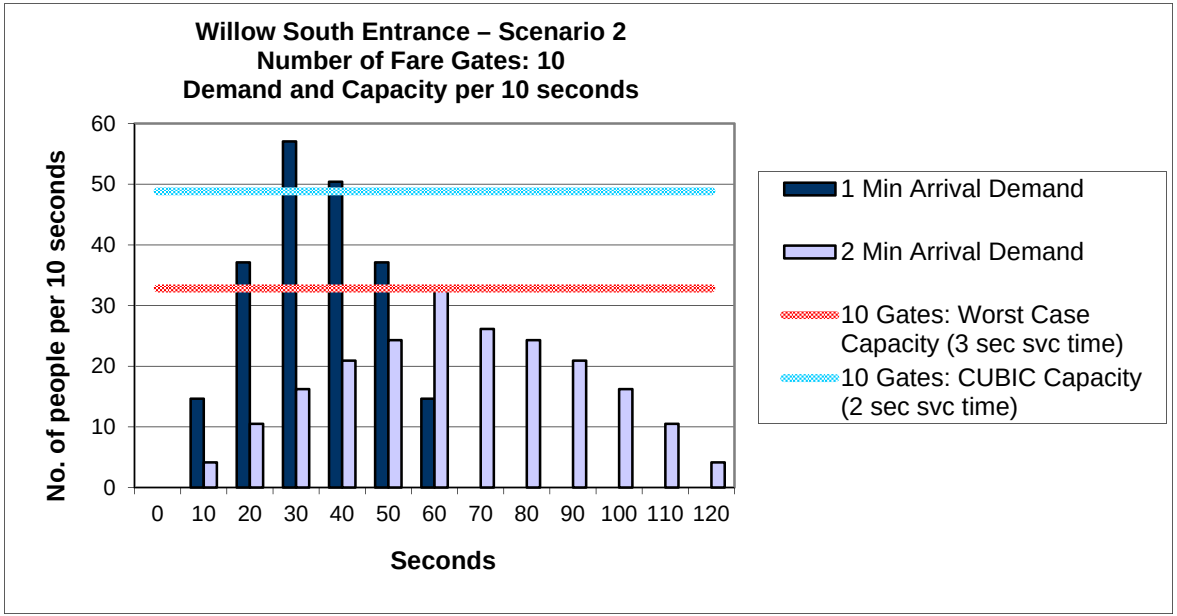
For **Willow South**, maximum total peak of the peak hour (4pm to 5pm) passenger boarding (654) and alighting (453) is **1107 during year 2013**. 27% ridership growth has been applied to 1107 passengers to calculate year 2024 ridership projections at **Willow South (1406 passengers)**. Based on 12 Trains per Hour (**TPH)/** 5 minute headway, it is assumed (as per **Table 6**) that 15% of peak one hour surge go through the fare gates during 1-minute surge. **100**% of gate utilization is assumed at **Willow South** station entrance. Therefore, **100**% of 1-minute passenger surge (**15**% **of 1406** passengers = 211 passengers) utilize **Willow South** station entrance fare gates. **100**% of 1-minute surge (211 passengers), **211** passengers utilize **Willow South** station entrance fare gates.

Results:

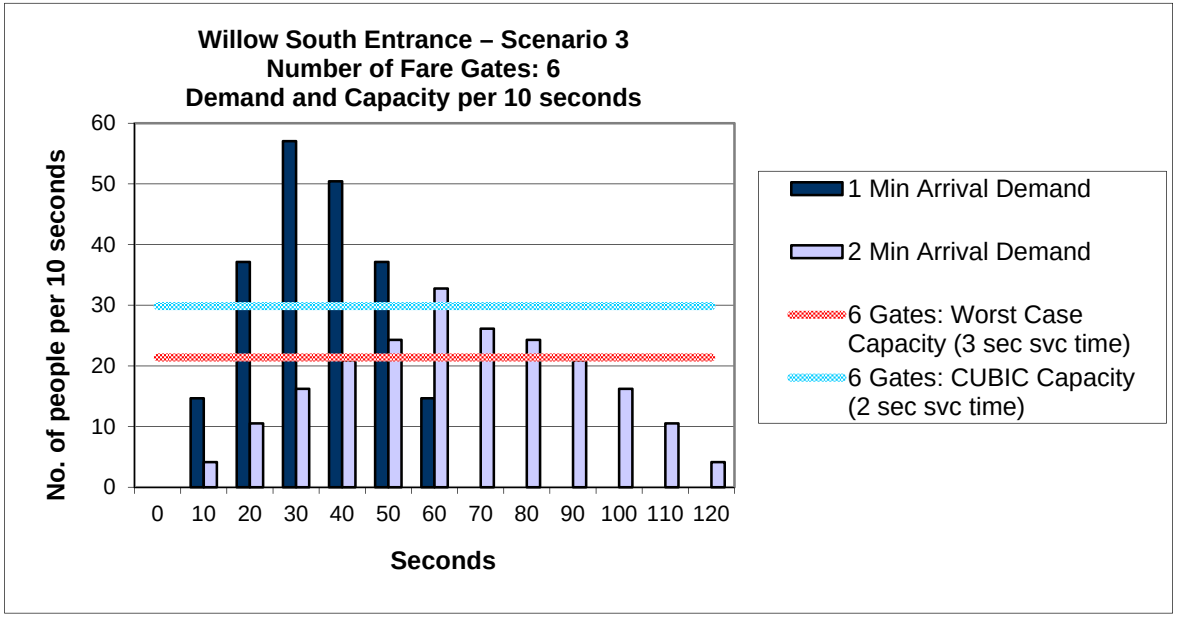
Scenario 1 – Planned number of fare gates station entrance can accommodate based on station plan drawings and infrastructure limitations / Number of Fare Gates: 3



Scenario 2 – Maximum Number of fare gates based on suggested Equipment Quantity Analysis (EQA) with 1-2 minute arrival surge/ Number of Fare Gates: 10



Scenario 3 – Minimum number of fare gates required to meet queuing design criteria (wait time less than 55 seconds) with 1-2 minute arrival surge/ Number of Fare Gates: 6



Metro Blue Line Willow South Station Entrance - Worst Case (3 second average service time)					
No. of Fare Gates	**Scenarios**	**Surge Time (seconds)**	**Maximum Wait (seconds)**	**Maximum Number of People in Queue**	**Maximum Queue Length Per Gate (feet)**
3	Scenario 1	60	161	147	98
3	Scenario 1	120	109	102	68
10	Scenario 2	60	12	50	10
10	Scenario 2	120	0	0	0
6	Scenario 3	60	52	98	33
6	Scenario 3	120	13	21	7

Metro Blue Line Willow South Station Entrance - CUBIC Estimate (2 second average service time)					
No. of Fare Gates	**Scenarios**	**Surge Time (seconds)**	**Maximum Wait (seconds)**	**Maximum Number of People in Queue**	**Maximum Queue Length Per Gate (feet)**
3	Scenario 1	60	93	125	83
3	Scenario 1	120	47	70	47
10	Scenario 2	60	3	9	2
10	Scenario 2	120	0	0	0
6	Scenario 3	60	22	60	20
6	Scenario 3	120	1	3	1

Metro Blue Line – Willow South Station Entrance Conclusions:

- Based on demand (2024 ridership projections and 1-2 minute surge) and station assumptions, summary of the model results. See tables on page 52 for reference:

  - **Scenario 1** shows significant queues (maximum passenger wait time greater than 55 seconds) for 3 second average service time during 1-minute and 2-minute surge and shows significant queues for 2-second average service time during 1-minute surge.

  - **Scenarios 1** shows noticeable queues for 2 second average service time during 2-minute surge.

  - **Scenarios 2 and 3** do not show significant queues for 2 second and 3 second average service time. **Scenarios 2 and 3** as specified above, maximum passengers wait time is less than 55 seconds (a maximum queuing time of 55-seconds during surge has been considered an acceptable service standard).

  - Per 2024 peak hour ridership projections, model iterations suggest that installing minimum **six (6) fare gates** could have 52 **seconds of maximum passenger wait time** (less than 55 seconds of design criteria for significant queues) and therefore **six (6) fare** gates could be sufficient for **Willow South** station entrance

Appendix

- **10/06/2014 email from Metro confirming projected ridership growth**

100614 LACMTA
Email Ridership Gro

- **01/26/15 email from Metro confirming revised projected ridership growth**

012615 LACMTA
Email with Revise Ri

Parikh, Anip/NJO

From: Preusser, Patrick <PreusserP@metro.net>
Sent: Monday, October 06, 2014 1:35 PM
To: Simon, John/LAC; Parikh, Anip/NJO
Cc: Li, Janice/NYC; Newton, Rick/STL
Subject: RE: Orange Line Assumptions - Follow-up BL 10/06/2014
Attachments: Boardings Projection 2014 V3 Rail - Metro Forecast 04_23_2014.xls; FY13 Station by hour boardings alightings.xlsx; RailActivity_May2013_Apr2014.xls

Third e-mail

Information from the first two files were used to derive platform occupancy loads for the preliminary gating analysis of MBL stations, using the 2013 boardings and alightings in second attachment together with a 2013-2023 (10-year out) increase of 78.46% reflected in the first attachment. We have included a third attachment with more recent boardings and alighting data provided by Service Planning (June 2014) for all rail lines covering the period of May 2013 through April 2014.

Patrick Preusser
Deputy Executive Officer, Rail Operations
Los Angeles County Metropolitan Transportation Authority
☎ 213.922.7974 | ☎ 213.842.5936 (mobile) | ✉ preusserp@metro.net | http://www.metro.net/
Vision: *Safe, clean, reliable, on-time, courteous service dedicated to providing Los Angeles County with a world class transportation system.*

From: Preusser, Patrick
Sent: Monday, October 06, 2014 10:32 AM
To: 'John.Simon@ch2m.com'; 'Anip.Parikh@ch2m.com'
Cc: 'Janice.Li@ch2m.com'; 'Rick.Newton@ch2m.com'
Subject: RE: Orange Line Assumptions - Follow-up BL 10/06/2014

Second e-mail

Patrick Preusser
Deputy Executive Officer, Rail Operations
Los Angeles County Metropolitan Transportation Authority
☎ 213.922.7974 | ☎ 213.842.5936 (mobile) | ✉ preusserp@metro.net | http://www.metro.net/
Vision: *Safe, clean, reliable, on-time, courteous service dedicated to providing Los Angeles County with a world class transportation system.*

From: Preusser, Patrick
Sent: Monday, October 06, 2014 10:32 AM

Parikh, Anip/NJO

From: Preusser, Patrick <PreusserP@metro.net>
Sent: Monday, January 26, 2015 5:14 PM
To: Parikh, Anip/NJO; Simon, John/LAC; Wasz, Gregory; Arteaga, Mauro; Chu, Chaushie; Burke, Paul
Cc: Li, Janice/NYC
Subject: RE: Fare Gate Project: Blue Line Ridership Growth Assumption

Hi Anip,

We have reviewed the assumptions and confirm with the following exception:

No need to reanalyze Pico station at a 27% growth factor. Systems Analysis provided a growth rate of 150% for this station. We already know this station has problems at a 78.46% growth rate; therefore, no need to model this station at a 27% growth rate.

Thanks.

Patrick Preusser
Deputy Executive Officer, Rail Operations
Los Angeles County Metropolitan Transportation Authority
☎ 213.922.7974 | ☎ 213.842.5936 (mobile) | ✉ preusserp@metro.net | http://www.metro.net/
Vision: *Safe, clean, reliable, on-time, courteous service dedicated to providing Los Angeles County with a world class transportation system.*

From: Anip.Parikh@ch2m.com [mailto:Anip.Parikh@ch2m.com]
Sent: Monday, January 26, 2015 12:51 PM
To: Preusser, Patrick; John.Simon@ch2m.com; Wasz, Gregory; Arteaga, Mauro; Chu, Chaushie; Burke, Paul
Cc: Janice.Li@ch2m.com
Subject: RE: Fare Gate Project: Blue Line Ridership Growth Assumption

Good Afternoon Patrick,

Please confirm the assumptions and input data provided in the email below. To make sure all are on the same page, please note that we will proceed with the Blue Line Queuing Analysis after receiving confirmation email.

I have copied Janice Li so she could update the Equipment Quantity Analysis (EQA) based on the revised ridership growth assumptions.

Following summarizes today's conference call discussion:

1. 78.46% ridership growth was applied in preliminary queuing analysis based on Metro's October 2014 data . However, Metro's review of the Preliminary Queuing Analysis report, Metro service planning had concern that 78.46% growth included Regional Connector ridership with Blue and Gold Line ridership data. Metro service planning requested to consider ridership growth at station level instead of line level.

2. Metro provided revised Station Growth.xlsx spreadsheet that includes Boarding ridership data for year 2014 and includes growth percentage for each station.

3. As specified in "**Station Growth.xlsx"** growth percentages for each station is as follows:

Station	For 2024 Ridership Growth Percentage
Willow	15%
Willowbrook	17%
Florence	27%
103rd	25%
Grand	-35%
Pico	150%

However, based on today's conference call discussion, Metro requested to **utilize 27% growth percentage for all stations** as a worst case scenario instead of considering separate ridership growth percentage for each station. (Few examples, 150% of growth shall not be considered for Pico considering the results from Preliminary Queuing Analysis with 78.46% projected growth. 35% of negative growth shall not be considered for Grand). Please see revised assumptions per Metro's request.

Note that Ridership baseline data (2013 or 2014 peak of the peak hour total of boarding and alighting data) as shown in the table below and gate utilization percentage for each station entrance assumptions remained the same. Ridership growth assumptions was revised to 27% for all stations instead of 78.46%.

Worst Case Peak Hour Ridership (Per Metro's 2013 or 2014 Ridership Data)					
Station Name	**Duration**	**Boarding**	**Alighting**	**Max Total (Boarding + Alighting)**	**Per Metro Service Planning Input for two stations involving transfer between Green/Blue at Rosa Parks and Expo/Blue at Pico**
PICO - 2014	5pm to 6pm	396	359	**756**	**80% of 756 = 605 passengers**
GRAND - 2013	4pm to 5pm	465	359	824	-
FLORENCE - 2013	5pm to 6pm	363	601	964	-
103RD/ WATTS - 2013	4pm to 5pm	324	393	717	-
ROSA PARK - WILLOWBOORK IMPERIAL WILMINGTON - 2013	5pm to 6pm	1,041	1,151	**2,192**	**North Entrance - 28% of 2192 = 614 passengers** **Mezzanine Level - 72% of 2192 = 1578 passengers**
WILLOW - 2013	4pm to 5pm	654	453	1,107	None

Revised Input Assumptions: LA			
Station Name/ Entrance - Worst Case Peak of the Peak Hour Ridership Data	Worst Case (2013 or 2014) Peak of the Peak One Hour Passengers ON/OFF - Boardings and Alightings per Data provided by Metro	2024 (after applying 27% growth) - Peak of the Peak One Hour Passengers ON/OFF - Boardings/Alightings per Data provided by Metro	Passengers per peak 1-2 minute surge: 15% of peak one hour passengers during 1-minute surge 12 TPH/ 5-min headway
Pico - North - Year 2014(80% of 756)	605	768	115
Pico - South - Year 2014(80% of 756)	605	768	115
Grand - LATTC - East - Year 2013	824	1046	157
Grand - LATTC - West - Year 2013	824	1046	157
Florence - North - Year 2013	964	1225	184
103rd St./ Watts Towers - West - Year 2013	717	911	137
Rosa Parks/ Willowbrook - North - Year 2013 (28% of 2192 = 614)	614	779	117
Rosa Parks/ Willowbrook - Mezzannine - Year 2013 (72% of 2192 = 1578)	1578	2004	301
Willow - South - Year 2013	1107	1406	211

Please let me know if any questions.

Regards,
Anip

From: Parikh, Anip/NJO
Sent: Monday, January 26, 2015 1:56 PM
To: 'Preusser, Patrick'; Simon, John/LAC; Wasz, Gregory; Arteaga, Mauro; Chu, Chaushie; Burke, Paul

Metro

Interoffice Memo

Date	April 21, 2015
To	Robert Holland, Interim Chief Operations Officer
From	Than Win, Senior Engineer, Project Engineering Facilities Curtis Tran, Civil Engineer, Bureau of Engineering, City of Los Angeles Patrick Preusser, Deputy Executive Officer, Rail Operations
Subject	Fare Gate Project: City of Los Angeles Review of At-Grade Rail Stations

Summary: This memorandum summarizes the feasibility review for fare gates at At-Grade Platforms along Expo Phase 1, as reviewed by City of Los Angeles Bureau of Engineering (LABOE) staff. The report concludes that Fare Gates are not feasible, as they conflict with existing design standards and policies adopted by LABOE.

Existing Conditions: Metro is currently undergoing feasibility studies of fare gates at LRT stations, in an effort to reduce fare evasion. There are already fare gates at Heavy Rail (Red and Purple Line) stations. As part of this effort, and LABOE has reviewed the feasibility of the fare gates and associated platform extensions along Expo Phase 1 at-grade stations, as they relate to the City's adopted design standards.

LABOE's Standard Street Dimensions (LABOE Standard Street Dimensions, Standard Plan S-470-0, May 1999) provide requirements for each roadway based on their designated classifications. Roadways along the Expo Phase 1 corridor are generally classified as Secondary Highways. The design standard for a Secondary Highway includes, at a minimum, the following roadway widths:

- 90' right-of-way
- 70' curb-to-curb
- 10' sidewalks

At the Pico Station, Flower Street is designated as a Downtown Street, which is designed as a modified one-way Secondary Highway. The design standard for Flower Street is a 105' right-of-way, including 70' curb-to-curb, and 15-20' sidewalks.

LABOE's Street Design Manual (Part E, September 1970, pp E 222.1) provides additional guidance for roadway design, stating that "on all other roads, including frontage roads, the clearances to the face of bridge piers, abutments, retaining walls, and other obstructions should be as follows... 2. One Way traffic: 4 ½ feet on the left and 6 feet on the right in the direction of traffic." To comply with

this portion of the Street Design Manual, there must be a 4 ½ foot gap between the outer edge of the platform and the curb face.

Furthermore, for ADA compliance, a 5 foot clearance from obstructions for pedestrian travel is now required.

Assessment: LABOE reviewed the proposed Metro concept drawings for the following at-grade stations along the Expo Phase 1 Light Rail corridor: Pico, Jefferson/USC, Expo Park/USC, Expo/Vermont, Expo/Western, and Expo/Crenshaw. Exhibit A provides concept designs and other documents presented by LABOE.

At the *Pico* station, the obstruction for the proposed Ticket Vending Machine (TVM) at the eastern platform would reduce the sidewalk below the minimum allowable width. The TVM would also present an obstruction, and would not be compliant with ADA requirements. Lastly, it is unclear whether the five (5) foot clearance would be met for ADA.

At the *Jefferson/USC* station, the addition of the platform extension would not allow for the required 4.5 foot clearance.

At the *Expo Park/USC* station, the platform extension would encroach into the travel lane. Furthermore, the required 4.5 foot clearance would not be met.

At the *Expo/Vermont* station, the clearance is already at the 4.5 foot minimum allowed. With the proposed platform extension, the clearance would not be compliant with the Street Design Manual (pp E 222.1).

At the *Expo/Western* station, the platform extension would allow for 4.5 foot clearances. LABOE, however, noted that it would be necessary for the extension to meet the visibility triangle. This is a feasible location.

At the *Expo/Crenshaw* station, the platform extension would not allow for the required 4.5 foot clearances.

Conclusion: Metro prepared conceptual drawings to implement the minimum amount of fare gates that would be needed at Expo 1 at-grade stations. Due to spatial constraints, the station platforms and/or entrances required widening. LABOE reviewed Metro's conceptual drawings and determined that the concepts have a negative impact on safety and conflict with adopted design standards:

- Due to the constraint of a 4.5 foot obstruction clearance, only the Western Station East and West platform extensions may be feasible. The Jefferson/USC, Expo Park/USC, Expo/Vermont, and Expo/Crenshaw stations would not meet the City's obstruction clearance.
- Due to the site constraint and existing sidewalk width, the proposed TVMs and map cases on the sidewalk at the Pico station would not comply with the City of Los Angeles Downtown Street Standards (Flower Street – Modified 1-Way Secondary, 11th Street to I-10 Freeway) requirement to provide for a 15' sidewalk width.

Recommendation: Metro recommends not implementing fare gates at the Expo Phase 1 at-grade stations.

Attachments:

A. City of Los Angeles Street Design Manual, page E-222
B. City of Los Angeles Roadway Standard Plan S-470-0
C. City of Los Angeles Comments on Metro Concept Plan
D. Downtown Street Standards, Flower Street – Modified 1-Way Secondary, 11th Street to I-10 Freeway

4/21/2015

Than Win P.E.
Senior Engineer, Project Engineering Facilities

4/21/15

Curtis Tran, P.E.
Civil Engineer, Bureau of Engineering, City of Los Angeles

4/21/2015

Patrick Preusser
Deputy Executive Officer, Rail Operations

Introduction:

This report summarizes queuing analyses results for Metro Gold Line station entrances and also identify the number of fare gates required at each station entrance specified below:

- **Atlantic East**
- **Atlantic West**
- **Chinatown North (elevator-only entrance)**
- **Chinatown Mezzanine East Side**
- **Chinatown Mezzanine West Side**
- **Chinatown South**
- **Highland Park East**
- **Highland Park West**
- **Indiana North**
- **Indiana South**
- **Del Mar East**
- **Del Mar West**

Key Source of Input Data and List of Assumptions:

1. **Projected Ridership Growth**: For Gold Line stations (Atlantic, Chinatown, Highland Park, Indiana and Del Mar), ridership demand is modeled based on ridership projections provided by Metro (***Gold Line Stations – Peak by Hour.xlsx***) via email dated 01/12/15. As directed by Metro's email dated 03/25/15, see **Table 1 and 2** for ridership projections to calculate year 2024 ridership. A demand model has been created based on year 2024 ridership projections to estimate the amount of passengers each station must service during a peak surge that lasts one or two minutes long.

   Table 1 shows ridership growth for all the stations as per data provided by Metro (***Future Gold Line and Blue Line Station Growth Ridership Projection.xlsx***). However, as directed by Metro (email dated 03/25/15), to calculate 2024 ridership, worst case ridership growth projection of 34% has been assumed for all the inline stations (i.e. Highland Park, Indiana and Del Mar). 58% of ridership growth projection has been assumed to calculate year 2024 ridership at Chinatown anticipating special events. 43% of ridership growth projection has been assumed to calculate year 2024 ridership at Atlantic station considering it is a terminal station.

Station	2024 Ridership Growth
Atlantic	43%
Indiana	34%
Chinatown	58%
Highland Park	28%
Del Mar	26%

Table 1: Ridership Projections for each station

Station Name	2024 Ridership Growth Rate Per Metero email 03/25/15
Atlantic (Terminal Station)	43%
Chinatown (Special Event)	58%
Highland Park (Inline Station)	34%
Indiana (Inline Station)	34%
Del Mar (Inline Station)	34%

Table 2: Ridership Projections for each station

Ridership data for year 2014 was provided. Maximum passenger boarding and alighting for Atlantic, Chinatown and Highland Park is between 5pm and 6pm, for Indiana between 3pm and 4pm and for Del Mar between 6pm and 7pm. Total maximum boarding and alighting for each station is considered for worst case scenario. **Table 3** shows ridership data for AM and PM peak period for year 2014. **Table 4** shows worst case/ maximum total boarding and alighting during peak of the peak hour.

AM and PM Peak Period Boarding + Alighting	ATLANTIC	CHINATOWN	HIGHLAND PARK	INDIANA	DEL MAR
06	189	88	203	111	75
07	315	189	377	207	196
08	241	163	345	152	220
15	384	294	422	274	192
16	372	309	456	269	232
17	397	353	518	258	281
18	313	254	415	229	289
Maximum Total Boarding + Alighting	397	353	518	274	289

Table 3: Maximum Total Boarding and Alighting by AM and PM Peak period

Worst Case Peak Hour Ridership (Per Metro's 2014 Ridership Data)						
Station Name	Duration	Boarding	Alighting	Max Total (Boarding + Alighting)	2024 Ridership Growth Rate Per Metro email 03/25/15	2024 Peak Hour Ridership
Atlantic (Terminal Station)	5pm to 6pm	154	243	397	43%	568
Chinatown (Special Event)	5pm to 6pm	200	153	353	58%	558
Highland Park (Inline Station)	5pm to 6pm	207	311	518	34%	694
Indiana (Inline Station)	3pm to 4pm	115	159	274	34%	367
Del Mar (Inline Station)	6pm to 7pm	108	181	289	34%	387

Table 4: Worst Case Peak Hour Ridership

2. For preliminary analysis, ADA gates that only cater to elevator passenger flow will be considered negligible due to varying elevator utilization factors, service times and capacities. The peak surge flow will still be applied to the remaining regular turnstile gates to represent the worst-case situation. Where an ADA gate is planned to be installed amongst the regular turnstiles in fare gate entrances, its throughput will be considered the same as a regular turnstile for this analysis. A

demand model has been created to estimate the amount of people each station must service during a peak surge that lasts one or two minutes long

3. **Gate Utilization:** All station entrances of Atlantic, Chinatown, Highland Park, Indiana and Del Mar have been analyzed to evaluate the fare gate capacity for each station entrance. Gate utilization table below shows that specific percentage of passengers will utilize each gate. For example, if a station has two gates, technically 50% of peak of the peak hour passengers utilize each gate. However, as per Metro's direction to consider the worst case scenario, model assumes 70% passengers utilizes each gate as worst case scenario to check the fare gate capacity at each entrance for all stations except Chinatown North (Elevator-Only entrance) and Chinatown Mezzanine East entrance.

No.	Station Name/ Entrance	Overall Platform Length (ft.)	Distance Between Platform midpoint and planned Fare Gates (ft.)	Drawing Reference Contract # / Drawing # / Sheet #	Gate Utilization
1	Atlantic - East	270	135	C0801 / A-101 / 8031	70%
	Atlantic - West	270	135	C0801 / A-101 / 8031	70%
2	Chinatown - North (elevator-only)	318	70	2000-02 / A-B110 through A-B1114	30%
	Chinatown - Mezzanine East	318	105	2000-02 / A-B110 through A-B1114	30%
	Chinatown - Mezzanine West	318	105	2000-02 / A-B110 through A-B1114	70%
	Chinatown - South	318	150	2000-02 / A-B110 through A-B1114	70%
3	Highland Park - East	319	225	2000-02 / A-F610	70%
	Highland Park - West	319	160	2000-02 / A-F610	70%
4	Indiana - North	270	135	C0801 / A-101 / 5035	70%
	Indiana - South	270	135	C0801 / A-101 / 5035	70%
5	Del Mar - East	279	135	2000-02 / A-I711	70%
	Del Mar - West	279	140	2000-02 / A-I711	70%

Table 5: Gate Utilization and Location of Planned Fare Gates

- **Scenario 1:** Planned Number of Fare Gates based on station layout and infrastructure limitations (Turnstiles and ADA Fare Gates)
- **Scenario 2:** Maximum number of fare gates based on EQA (Equipment Quantity Analysis).
- **Scenario 3:** Minimum number of fare gates required to meet queuing design criteria (wait times less than 55 sec.).

4. **Headway and Trains Per Hour (TPH):** *As per data Metro's future operating plan*

   - AM and PM Peak period headway: **5 minute**
   - Peak period TPH: **12**

5. **Peak Hour Surge:**

   - The peak surge demand (the highest amount of arrivals at a fare gate within a one-to-two minute time period) is dependent upon the number of trains that arrive at each station during a peak hour. Based on the July 2008 data collection effort at Metro, it is assumed that a percentage of total hourly passengers will all arrive at once causing a peak influx to the fare gates. In a peak hour where a total of 100 passengers pass through a set of fare gates, only 10 of the 100 passengers might arrive in the first surge, representing 10% of the hourly total; while 30 passengers might arrive in the next surge, representing 30% of the hourly total. In order to plan for the peak influx during a peak hour, the highest observed percentage that arrived in a surge is used in the demand model to capture the worst-case scenario.

   - The arrival surge is affected by the distance from the midpoint of the station platforms to the planned fare gate areas. The longer the distance that passengers are required to walk to exit the station, the more spread out the arrival surge becomes. The data presented in the report reflects a 1 to 2 minute arrival surge in cases when the distance from the midpoint of the platform to the planned fare gate area is less than or about equal to 200 feet, but only the 2 minute arrival surge when the distance is well over 200 feet.

   - To be consistent with all the prior queuing analysis and as directed by Metro, queuing analysis for Gold Line assumes the same number of trains for side and center platform as a worst case scenario. In case of Gold Line stations with center platform (Atlantic, Chinatown, Highland Park, and Indiana), queuing analysis assumes the worst case ridership/passengers arriving during 1-minute surge using 12 TPH/ 15% instead of 24 TPH and 7.5% factor. With this worst case approach, queuing analysis results could verify if the number of fare gates which could be accommodated at Atlantic, Chinatown, Highland Park, and Indiana based on station plans/architectural drawings are sufficient. For example, at any center platform station, with 100 peak hour passengers, 1-minute arrival surge would be 15 passengers with 12 TPH (15% of hourly passenger) and 7.5 ~ 8 passengers with 24 TPH (7.5% of hourly passenger). To consider the same peak percentage factor (15% instead of 7.5%) of hourly passengers

for 1-minute surge for center and side platform is evaluating the worst case fare gate capacity for the stations with center platform.

- Based on headway/TPH, it is assumed that 15% of total peak hourly passengers arrive during a 1-minute surge. **Table 6** below shows peak hour surge.

Line	Number of trains per peak hour	Headway (min.)	Peak percentage of total hourly passengers that arrive during a 1-minute surge
Regional Connector (LACMTA)	24	2.5	7.5%
Exposition 1 Line/ Blue Line (LACMTA)	12	5	15%
Red + Purple lines (LACMTA)	12	5	15%
Gold Line (LACMTA) – Atlantic/ Chinatown/ Highland Park/ Indiana/ Del Mar	**12**	**5**	**15%**
Green Line (LACMTA)	8	7.5	23%
Red Line (to North Hollywood) (LACMTA)	6	10	30%

Table 6: Peak Hour Surge

- Based on a previous system wide queuing study for PATH NY & NJ and discussions with LACMTA, a maximum queuing time of 55-seconds during surge has been considered as an acceptable service standard. A minimum number of fare gates were suggested based on keeping the 'maximum queuing time' below a 55 second service standard during the worst case scenario to achieve acceptable service standard. Metro has included 55 second as service standard in their design criteria.

- The level of service factor in the suggested 'Distance Required Behind the Gates' is provided based on the guideline by John J. Fruin Ph. D in the text *Pedestrian Planning and Design*. A Level of Service 'D' represents a pedestrian area occupancy of 3-7 square feet per person and an average inter-person spacing of 2-3 feet. Space is provided for standing without personal contact with others, but circulation through the queuing area is severely restricted and forward movement is only possible as a group. This level of area occupancy is not recommended for long-term periods of waiting, but may be acceptable in a metro station with a maximum 55 second wait.

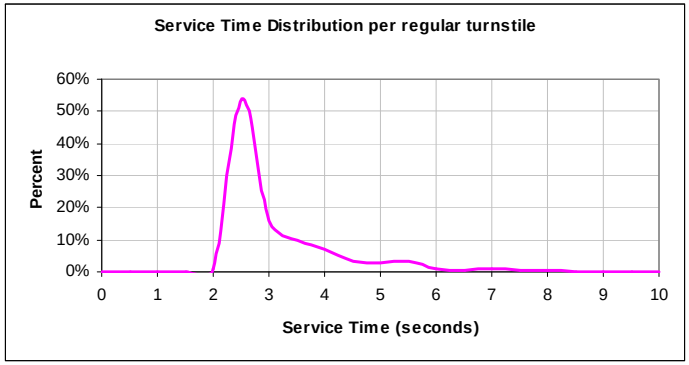
- **Surge Scenarios:** In order to capture variation in the service time of fare gates, the service time is assumed to have a chi-squared distribution ranging from 2 to 10 seconds for the worst case scenario and 1.7 to 4 seconds for the CUBIC estimated service scenario. The average service times used to predict the worst case scenario fluctuate around 3 seconds per person, while CUBIC estimates that the average service time is 2 seconds per person. Modeling with a higher service time enables the representation of a worst-case scenario during peak times and can account for the learning curve of riders using a new gating system.

Gold Line stations / Fare Gate Entrance Area (location)	Arrival Model		Delay Model			
	Surge (sec.)		Service Time		Worst Case Delay	
	Surge Scenario 1	Surge Scenario 2	Cubic Estimate (sec.)	Worst Case Estimate (sec.)	CUBIC Estimate (sec.)	Worst Case Estimate (sec.)
Atlantic East	60	120	2	3	1.7 to 4	2 to 10
Atlantic West	60	120	2	3	1.7 to 4	2 to 10
Chinatown North (elevator-only entrance)	60	120	2	3	1.7 to 4	2 to 10
Chinatown Mezzanine East Side	60	120	2	3	1.7 to 4	2 to 10
Chinatown Mezzanine West Side	60	120	2	3	1.7 to 4	2 to 10
Chinatown South	60	120	2	3	1.7 to 4	2 to 10
Highland Park East	60	120	2	3	1.7 to 4	2 to 10
Highland Park West	60	120	2	3	1.7 to 4	2 to 10
Indiana North	60	120	2	3	1.7 to 4	2 to 10
Indiana South	60	120	2	3	1.7 to 4	2 to 10
Del Mar East	60	120	2	3	1.7 to 4	2 to 10
Del Mar West	60	120	2	3	1.7 to 4	2 to 10

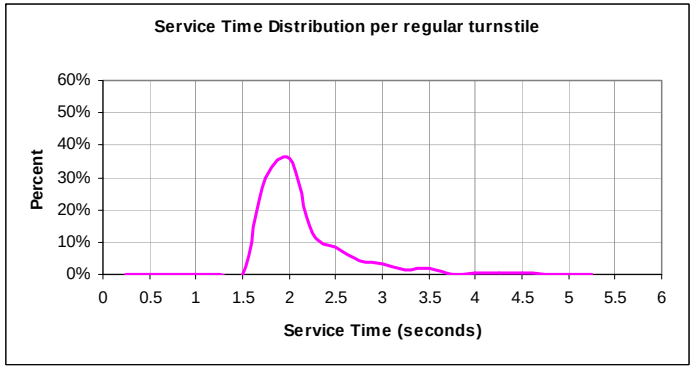
Table 7 – Surge Scenario Summary

The figures below represent the chi-squared distribution of the total amount of time it takes to get through a fare gate by the percentage of people who were serviced within that time.

Worst Case Scenario (3 second average service time)



Cubic Estimate Scenario (2 second average service time)



Results:

The following table describes the results presented in the conclusions for each station.

Field	Description
No. of Fare Gates	Number of turnstile and ADA fare gates in an array.
Surge Time (seconds)	The length of time between the first and the last person arriving at the turnstiles during a surge.
Maximum Wait (seconds)	The maximum time a person entering at the peak of the queue length would have to wait in the given scenario.
Maximum Number of Passengers in Queue	The expected maximum amount of people that will be delayed at the fare gates.
Maximum Queue Length Per Gate (feet)	The suggested queue space that would be needed behind each turnstile to accommodate people waiting in the queue, based on the maximum number of people in the queue.

LACMTA Gold Line Queuing Analysis - Assumptions and Input Data

Station Name/ Entrance	Platform Type	Worst Case Ridership (Year 2014): Peak of the Peak One Hour Passengers ON/OFF (Boardings and Alightings) as per Data provided by LACMTA Note 2	Year 2024 Ridership Projection (after applying ridership growth at all stations per Service Planning) - Peak of the Peak One Hour Passengers ON/OFF - Boardings/Alightings as per Data provided by Metro Note 2	Passengers per peak 1-2 minutes surge: 15% of peak one hour passengers during 1-minute surge 12 TPH/ 5-min headway Note 1	Gate Utilization Percentage (%)	1-minute surge based on gate utilization	Estimated Distance between Station Platform Midpoint and Planned Fare Gates (ft.) Note 4	*Scenario 1* Planned Number of Fare Gates based on Station Layout and Infrastructure Limitations (Turnstile and ADA Fare Gates) *Note 4 & 6*	*Scenario 2* Maximum number of fare gates required based on Equipment Quantity Analysis (EQA) *Note 6*	*Scenario 3* Minimum number of fare gates required to meet queuing design criteria Note 5 & 6
Atlantic - East	CENTER	397	568	85	70%	60	135	2	3	2
Atlantic - West	CENTER	397	568	85	70%	60	135	2	3	2
Chinatown - North (elevator-only)	MEZZANINE LEVEL to CENTER	353	558	84	30%	25	70	1	2	1
Chinatown - Mezzanine East Side		353	558	84	30%	25	105	2	2	1
Chinatown - Mezzanine West Side		353	558	84	70%	59	105	2	3	2
Chinatown - South		353	558	84	70%	59	150	2	3	2
Highland Park - East	CENTER	518	694	104	70%	73	225	1	4	2
Highland Park - West	CENTER	518	694	104	70%	73	160	2	4	2
Indiana - North	CENTER	274	367	55	70%	39	135	2	2	2
Indiana - South	CENTER	274	367	55	70%	39	135	2	2	2
Del Mar - East	SIDE	289	387	58	70%	41	135	2	2	2
Del Mar - West	SIDE	289	387	58	70%	41	140	2	2	2

Notes/ Assumptions:

Note 1: AM or PM Peak Period Headway: 5 min. headway/ 12 Trains Per Hour (TPH) as per LACMTA future operating plan.

Note 2: Year 2024 projected ridership growth for all the stations is based on Metro's email dated 3/25/15. Atlantic - 43%, Chinatown - 58%, Highland Park - 34%, Indiana - 34%, Del Mar - 34%

Note 3: Peak of the peak hour ridership is based on data provided for year 2014 by LACMTA (via email dated 01/12/15). Worst case peak hour ridership data (total of alightings and boardings) were used.

Note 4:
Station plan/ architectural drawings provided by LACMTA for Contracts 2000-02 and C0801.

Note 5: Queue Size Criteria: Bold red text indicates that station entrance has significant queues with passenger wait times greater than 55 seconds.
0 - No significant queues: wait times less than 5 sec. 1 - Slight queues: wait times between 5-30 sec.
2 - Noticeable queues: wait times between 30-55 sec. 3 - Significant queues: wait times greater than 55 sec.

Note 6: Scenario Description:
Scenario 1: Planned Number of Fare Gates based on Station Layout and Infrastructure Limitations (Turnstile and ADA Fare Gates)
Scenario 2: Max No. of fare gates required based on suggested Equipment Quantity Analysis (EQA)
Scenario 3: Min. No. of fare gates required to meet the queuing design criteria (wait times less than 55 sec.)

Table 8: Input Data

Gold Line Project stations / Gate entrance area	1-minute passenger surge based on gate utilization / (Percentage gate utilization for each station entrance)	Planned No. of fare gates station entrance can accommodate based on station plan and infrastructure limitations Scenario 1 Note 4	Max No. of fare gates required based on suggested EQA Scenario 2	Min. No. of fare gates required to meet the queuing design criteria (wait times less than 55 sec.) Scenario 3 Note 1 & 5	Maximum queue length - fare gates station entrance can accommodate based on station plan and infrastructure limitations (In linear ft.) Scenario 1 Note 4 & 6	Maximum queue length – fare gates required based on suggested EQA (In linear ft.) Scenario 2	Maximum queue length – minimum fare gates required to meet queuing design criteria (In linear ft.) Scenario 3 Note 1 & 5	Maximum Wait Times (Second)/Queue Size Type (see below the table)		
								Scenario No. 1 Note 5	Scenario No. 2 Note 5	Scenario No. 3 Note 5
Atlantic East	70%	2	3	2	24	8	24	32/ 2	17/ 1	32/ 2
Atlantic West	70%	2	3	2	24	8	24	32/ 2	17/ 1	32/ 2
Chinatown North (elevator-only)	30%	1	2	1	15	0	15	20/ 1	0/ 0	20/ 1
Chinatown Mezzanine East Side	30%	2	2	1	0	0	15	0/ 0	0/ 0	20/ 1
Chinatown Mezzanine West Side	70%	2	3	2	21	7	21	37/ 2	9/ 1	37/ 2
Chinatown South	70%	2	3	2	21	7	21	37/ 2	9/ 1	37/ 2
Highland Park East	70%	1	4	2	106	4	34	160/ 3	8/ 1	53/ 2
Highland Park West	70%	2	4	2	34	4	34	53/ 2	8/ 1	53/ 2
Indiana North	70%	2	2	2	6	6	6	9/ 1	9/ 1	9/ 1
Indiana South	70%	2	2	2	6	6	6	9/ 1	9/ 1	9/ 1
Del Mar East	70%	2	2	2	7	7	7	10/ 1	10/ 1	10/ 1
Del Mar West	70%	2	2	2	7	7	7	10/ 1	10/ 1	10/ 1

Note 1: Minimum number of fare gates required to meet queuing design criteria (passenger wait times greater than 55 seconds).
Note 2: AM or PM Peak Period Headway: 5 min. headway/ 12 Trains per Hour (TPH) as per LACMTA future operating plan.
Note 3: Peak of the peak hour ridership is based on data provided for year 2014 by LACMTA (via email dated 01/12/15). Worst case peak hour ridership data (total of alighting and boarding) were used.
Note 4: Station plan/ architectural drawings provided by LACMTA for Contracts 2000-02 and C0801.
Note 5: Queue Size Criteria: Bold red text indicates that station entrance has significant queues with passenger wait times greater than 55 seconds.
0 - No significant queues: wait times less than 5 sec. 1 - Slight queues: wait times between 5-30 sec.
2 - Noticeable queues: wait times between 30-55 sec. 3 - Significant queues: wait times greater than 55 sec.
Note 6: Bold red text indicates that maximum queue length (linear ft.) is more than the Distance between Station Platform Midpoint and Planned Fare Gate. This condition may create overcrowding on the platform due to significant queues with long passenger wait times and significant queue length behind the gates

Table 9: Results Summary

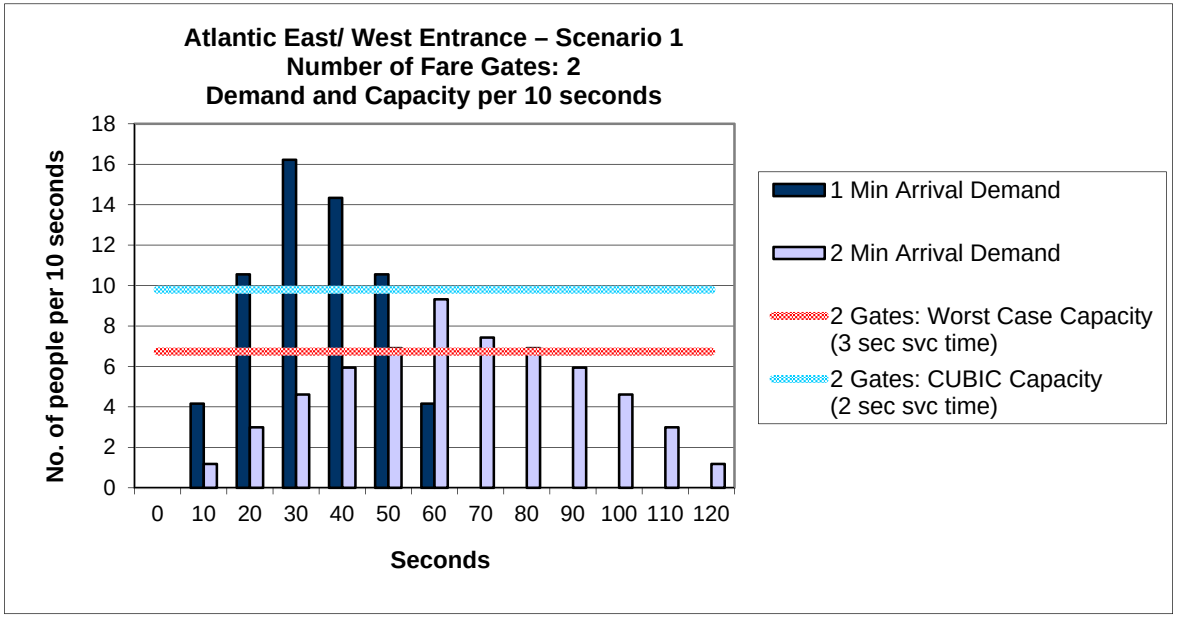
Metro Gold Line – Atlantic East/ West Entrance	
Passengers per Peak Surge (1-2 minutes)	**60** (70% of 85 passengers for 1-minute surge utilize **Atlantic East/ West** station entrance fare gates)
Scenario 1 - Planned number of fare gates station entrance can accommodate based on station plan and infrastructure limitations	2
Scenario 2 - Maximum number of fare gates based on suggested Equipment Quantity Analysis (EQA)	3
Scenario 3 - Minimum number of fare gates required to meet queuing design criteria (wait times less than 55 sec.)	2

Station assumptions:
Ridership demand is modeled based on year 2024 peak hour ridership projections. A demand model has been created to estimate the amount of passengers each station must service during a peak surge that lasts one or two minutes long. Peak of the peak hour ridership for Atlantic station includes maximum total of peak hour passenger boarding and alighting for year 2014. As indicated in **Table 2**, for Atlantic station 43% of ridership growth is considered to calculate 2024 projected ridership.

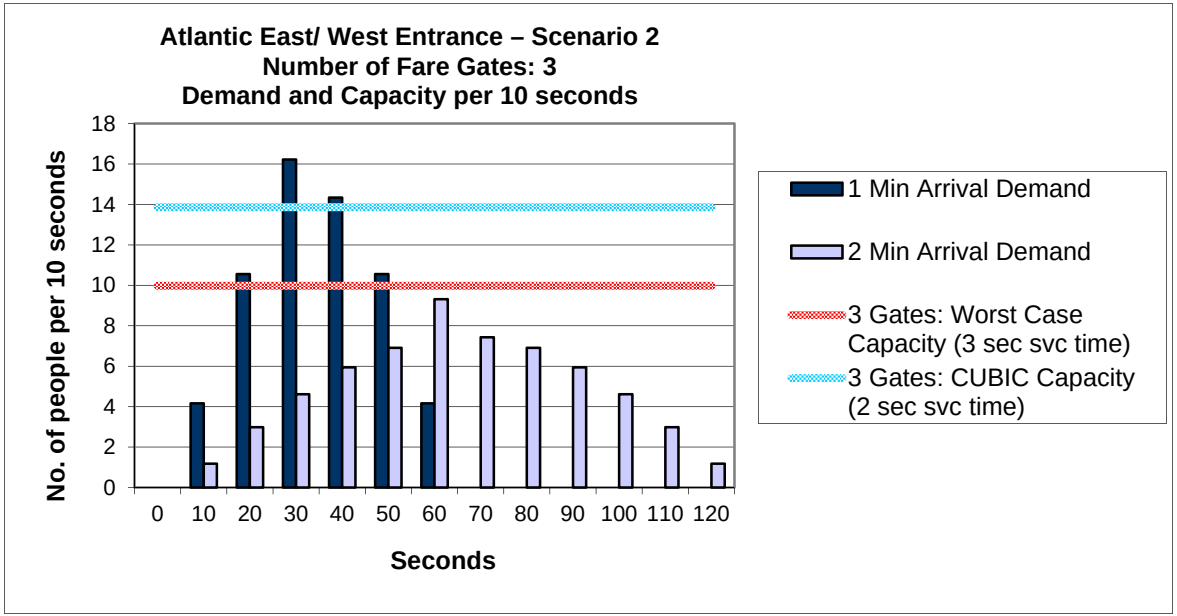
For Atlantic East/ West, maximum total peak of the peak hour (5pm to 6pm) passenger boarding (154) and alighting (243) is 397 during year 2014. 43% ridership growth has been applied to 397 passengers to calculate year 2024 ridership projections at Atlantic (568 passengers). Based on 12 Trains per Hour (TPH)/ 5 minute headway, it is assumed (as per Table 6) that 15% of peak one hour surge go through the fare gates during 1-minute surge. 70% of gate utilization is assumed at each Atlantic East/ West entrances. Therefore, **70**% of 1-minute passenger surge (**15**% **of 568** passengers = 85 passengers) utilize **Atlantic East/ West** station entrance fare gates. **70**% of 1-minute surge (85 passengers), **60** passengers utilize **Atlantic East/ West** station entrance fare gates. Refer to **Table 8** for details.

Results:

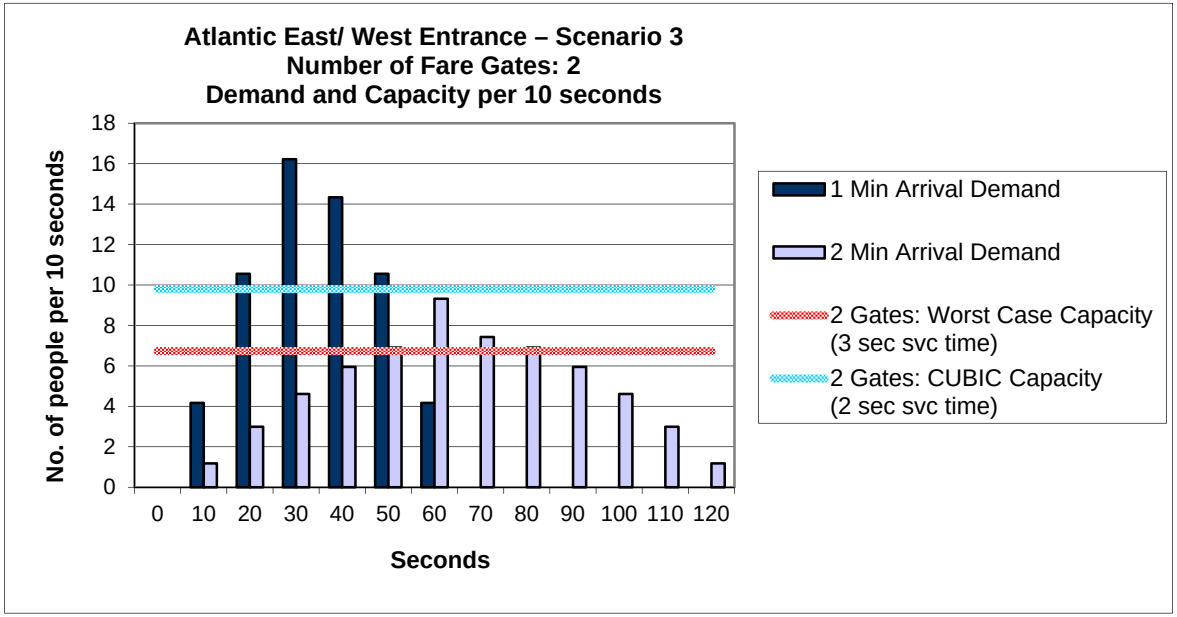
Scenario 1 – Planned number of fare gates station entrance can accommodate based on station plan drawings and infrastructure limitations / Number of Fare Gates: 2



Scenario 2 – Maximum Number of fare gates based on suggested Equipment Quantity Analysis (EQA) with 1-2 minute arrival surge/ Number of Fare Gates: 3



Scenario 3 – Minimum number of fare gates required to meet queuing design criteria (wait time less than 55 seconds) with 1-2 minute arrival surge/ Number of Fare Gates: 2



Metro Gold Line Atlantic East/ West Station Entrance - Worst Case (3 second average service time)					
No. of Fare Gates	**Scenarios**	**Surge Time (seconds)**	**Maximum Wait (seconds)**	**Maximum Number of People in Queue**	**Maximum Queue Length Per Gate (feet)**
2	Scenario 1 and 3	60	32	24	24
2	Scenario 1 and 3	120	1	2	2
3	Scenario 2	60	17	12	8
3	Scenario 2	120	0	0	0

Metro Gold Line Atlantic East/ West Station Entrance - CUBIC Estimate (2 second average service time)					
No. of Fare Gates	**Scenarios**	**Surge Time (seconds)**	**Maximum Wait (seconds)**	**Maximum Number of People in Queue**	**Maximum Queue Length Per Gate (feet)**
2	Scenario 1 and 3	60	16	12	12
2	Scenario 1 and 3	120	0	0	0
3	Scenario 2	60	2	2	2
3	Scenario 2	120	0	0	0

Metro Gold Line – Atlantic East/ West Station Entrance Conclusions:

- Based on demand (2024 ridership projections and 1-2 minute surge) and station assumptions, summary of the model results. See tables on page 15 for reference:

  - **Scenarios 1, 2 and 3** do not show significant queues for 2 second and 3 second average service time. **Scenarios 1, 2 and 3** as specified above, maximum passengers wait time is less than 55 seconds (a maximum queuing time of 55-seconds during surge has been considered an acceptable service standard).

  - Per 2024 peak hour ridership projections, model iterations suggest that installing minimum **two (2) fare gates** could have 32 **seconds of maximum passenger wait time** (less than 55 seconds of design criteria for significant queues) and therefore **two (2) fare** gates could be sufficient for **Atlantic East/West** station entrance.

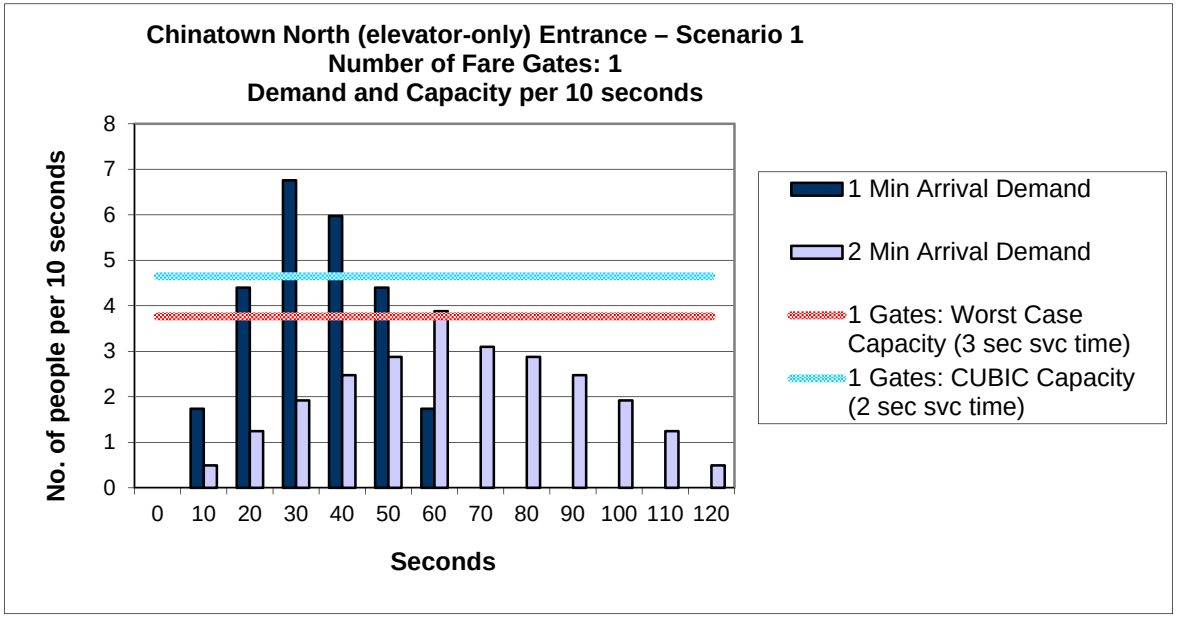
Metro Gold Line – Chinatown North (elevator-only) Entrance	
Passengers per Peak Surge (1-2 minutes)	**25** (30% of 84 passengers for 1-minute surge utilize **Chinatown North** (elevator-only) station entrance fare gates)
Scenario 1 - Planned number of fare gates station entrance can accommodate based on station plan and infrastructure limitations	1
Scenario 2 - Maximum number of fare gates based on suggested Equipment Quantity Analysis (EQA)	2
Scenario 3 - Minimum number of fare gates required to meet queuing design criteria (wait times less than 55 sec.)	1

Station assumptions:
Ridership demand is modeled based on year 2024 peak hour ridership projections. A demand model has been created to estimate the amount of passengers each station must service during a peak surge that lasts one or two minutes long. Peak of the peak hour ridership for Chinatown North (elevator-only) entrance includes maximum total of peak hour passenger boarding and alighting for year 2014. As indicated in Table 2, for Chinatown North (elevator-only) entrance 58% of ridership growth is considered to calculate 2024 projected ridership.

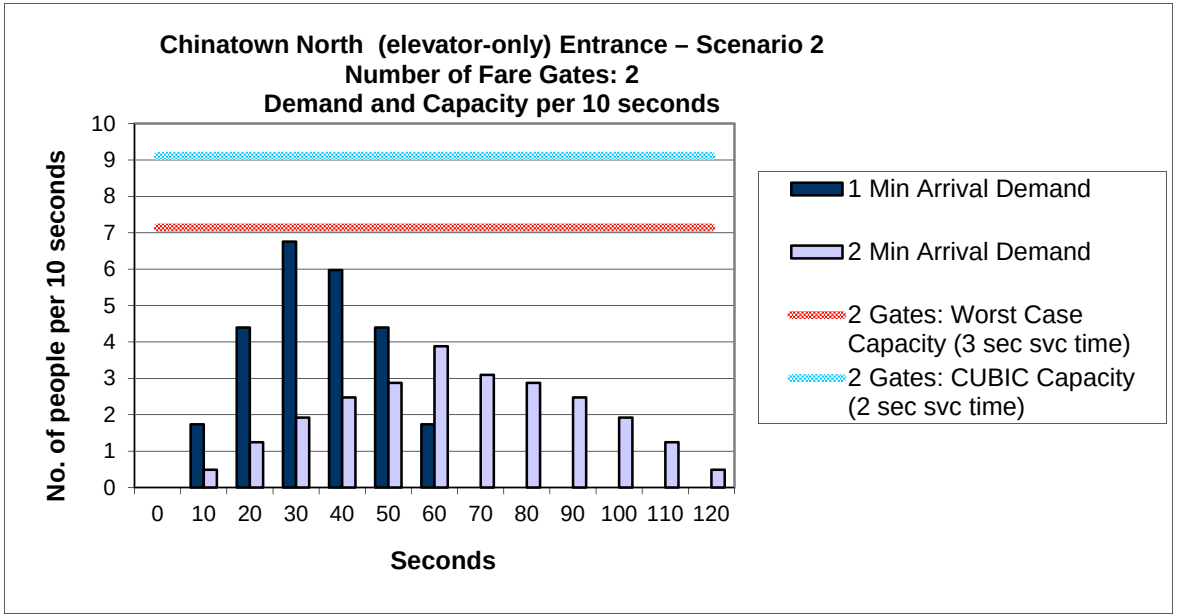
For Chinatown North (elevator-only) entrance, maximum total peak of the peak hour (5pm to 6pm) passenger boarding (200) and alighting (153) is 353 during year 2014. 58% ridership growth has been applied to 353 passengers to calculate year 2024 ridership projections at Chinatown North (558 passengers). Based on 12 Trains per Hour (TPH)/ 5 minute headway, it is assumed (as per Table 6) that 15% of peak one hour surge go through the fare gates during 1-minute surge. 30% of gate utilization is assumed at Chinatown North (elevator-only) entrance. Therefore, **30**% of 1-minute passenger surge (**15**% **of 558** passengers = 84 passengers) utilize **Chinatown North (**elevator-only) station entrance fare gates. 30% of 1-minute surge (84 passengers), **25** passengers utilize **Chinatown North (**elevator-only) station entrance fare gates. Refer to **Table 8** for details.

Results:

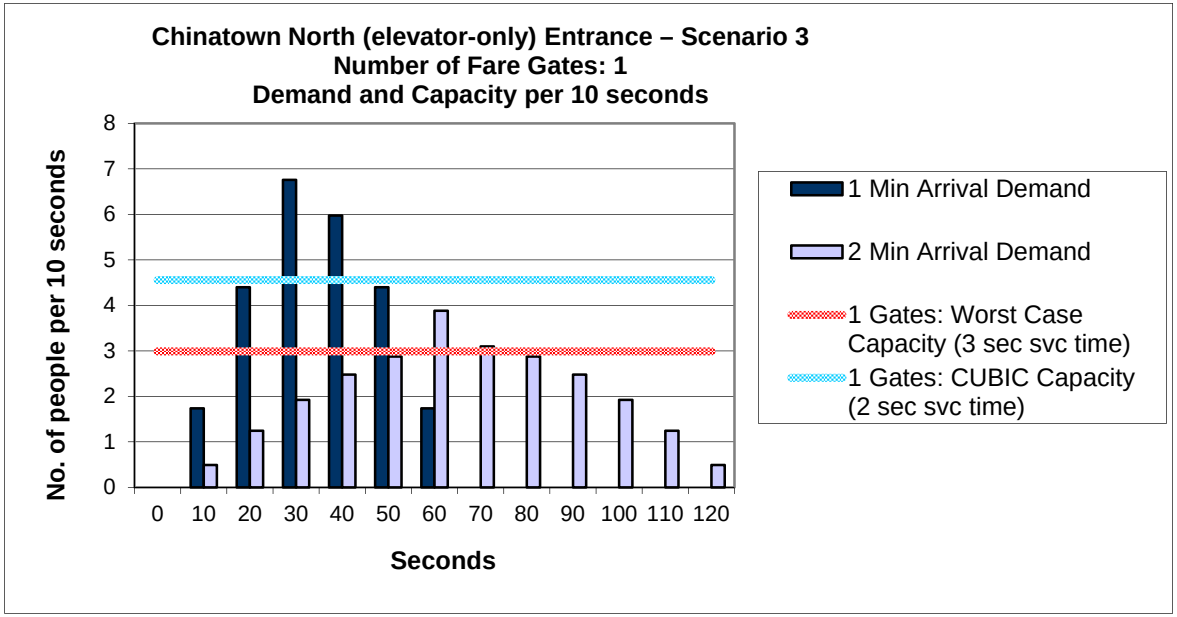
Scenario 1 – Planned number of fare gates station entrance can accommodate based on station plan drawings and infrastructure limitations / Number of Fare Gates: 1



Scenario 2 – Maximum Number of fare gates based on suggested Equipment Quantity Analysis (EQA) with 1-2 minute arrival surge/ Number of Fare Gates: 2



Scenario 3 – Minimum number of fare gates required to meet queuing design criteria (wait time less than 55 seconds) with 1-2 minute arrival surge/ Number of Fare Gates: 1



Metro Gold Line Chinatown North (elevator-only) Station Entrance - Worst Case (3 second average service time)					
No. of Fare Gates	**Scenarios**	**Surge Time (seconds)**	**Maximum Wait (seconds)**	**Maximum Number of People in Queue**	**Maximum Queue Length Per Gate (feet)**
1	Scenario 1 and 3	60	20	8	15
1	Scenario 1 and 3	120	0	0	0
2	Scenario 2	60	0	0	0
2	Scenario 2	120	0	0	0

Metro Gold Line Chinatown North (elevator-only) Station Entrance - CUBIC Estimate (2 second average service time)					
No. of Fare Gates	**Scenarios**	**Surge Time (seconds)**	**Maximum Wait (seconds)**	**Maximum Number of People in Queue**	**Maximum Queue Length Per Gate (feet)**
1	Scenario 1 and 3	60	8	3	6
1	Scenario 1 and 3	120	0	0	0
2	Scenario 2	60	0	0	0
2	Scenario 2	120	0	0	0

Metro Gold Line – Chinatown North (elevator-only) Station Entrance Conclusions:

- Based on demand (2024 ridership projections and 1-2 minute surge) and station assumptions, summary of the model results. See tables on page 21 for reference:

  - **Scenarios 1, 2 and 3** do not show significant queues for 2 second and 3 second average service time. **Scenarios 1, 2 and 3** as specified above, maximum passengers wait time is less than 55 seconds (a maximum queuing time of 55-seconds during surge has been considered an acceptable service standard).

  - Per 2024 peak hour ridership projections, model iterations suggest that installing minimum **one (1) fare gate** could have 20 **seconds of maximum passenger wait time** (less than 55 seconds of design criteria for significant queues) and therefore **one (1) fare** gate could be sufficient for **Chinatown North (elevator-only)** station entrance.

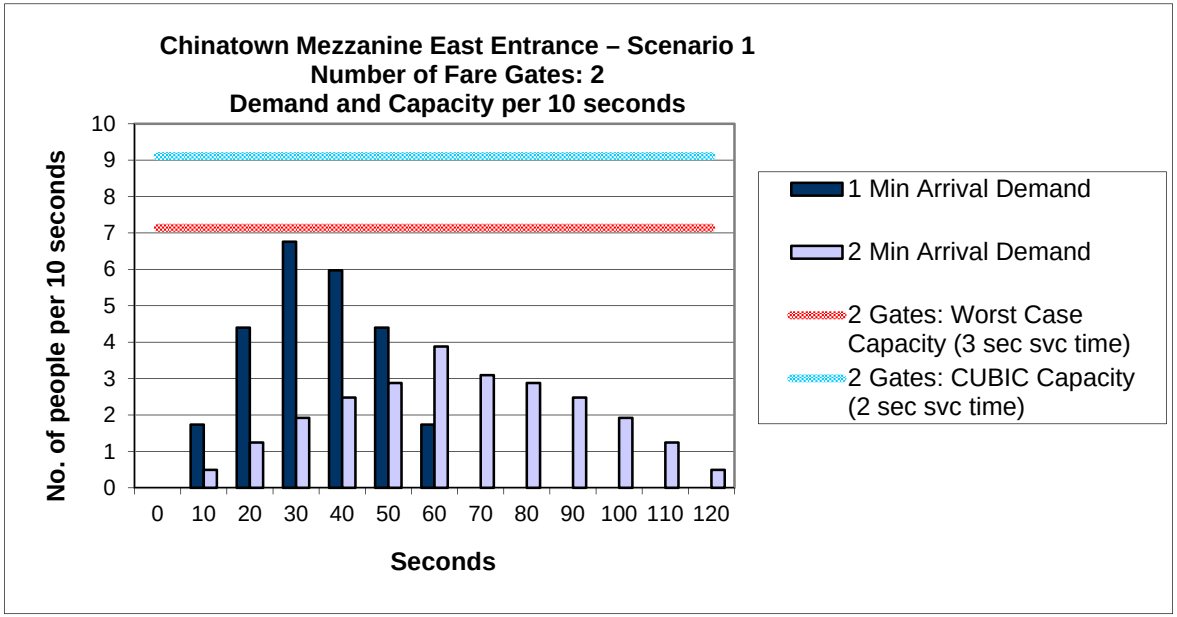
Metro Gold Line – Chinatown Mezzanine East Entrance	
Passengers per Peak Surge (1-2 minutes)	**25** (30% of 84 passengers for 1-minute surge utilize **Chinatown Mezzanine East** station entrance fare gates)
Scenario 1 - Planned number of fare gates station entrance can accommodate based on station plan and infrastructure limitations	2
Scenario 2 - Maximum number of fare gates based on suggested Equipment Quantity Analysis (EQA)	2
Scenario 3 - Minimum number of fare gates required to meet queuing design criteria (wait times less than 55 sec.)	1

Station assumptions:
Ridership demand is modeled based on year 2024 peak hour ridership projections. A demand model has been created to estimate the amount of passengers each station must service during a peak surge that lasts one or two minutes long. Peak of the peak hour ridership for Chinatown Mezzanine East entrance includes maximum total of peak hour passenger boarding and alighting for year 2014. As indicated in Table 2, for Chinatown Mezzanine East entrance 58% of ridership growth is considered to calculate 2024 projected ridership.

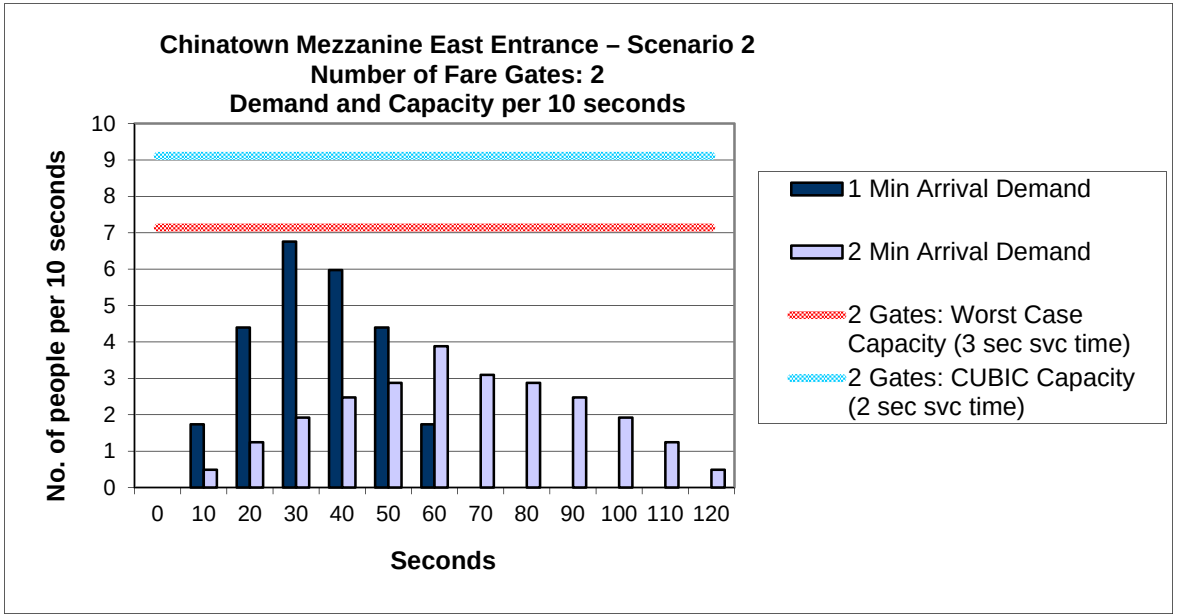
For Chinatown Mezzanine East, maximum total peak of the peak hour (5pm to 6pm) passenger boarding (200) and alighting (153) is 353 during year 2014. 58% ridership growth has been applied to 353 passengers to calculate year 2024 ridership projections at Chinatown Mezzanine East (558 passengers). Based on 12 Trains per Hour (TPH)/ 5 minute headway, it is assumed (as per Table 6) that 15% of peak one hour surge go through the fare gates during 1-minute surge. 30% of gate utilization is assumed at Chinatown Mezzanine East entrance. Therefore, **30**% of 1-minute passenger surge (**15**% **of 558** passengers = 84 passengers) utilize **Chinatown Mezzanine East** station entrance fare gates. 30% of 1-minute surge (84 passengers), **25** passengers utilize **Chinatown Mezzanine East** station entrance fare gates. Refer to **Table 8** for details.

Results:

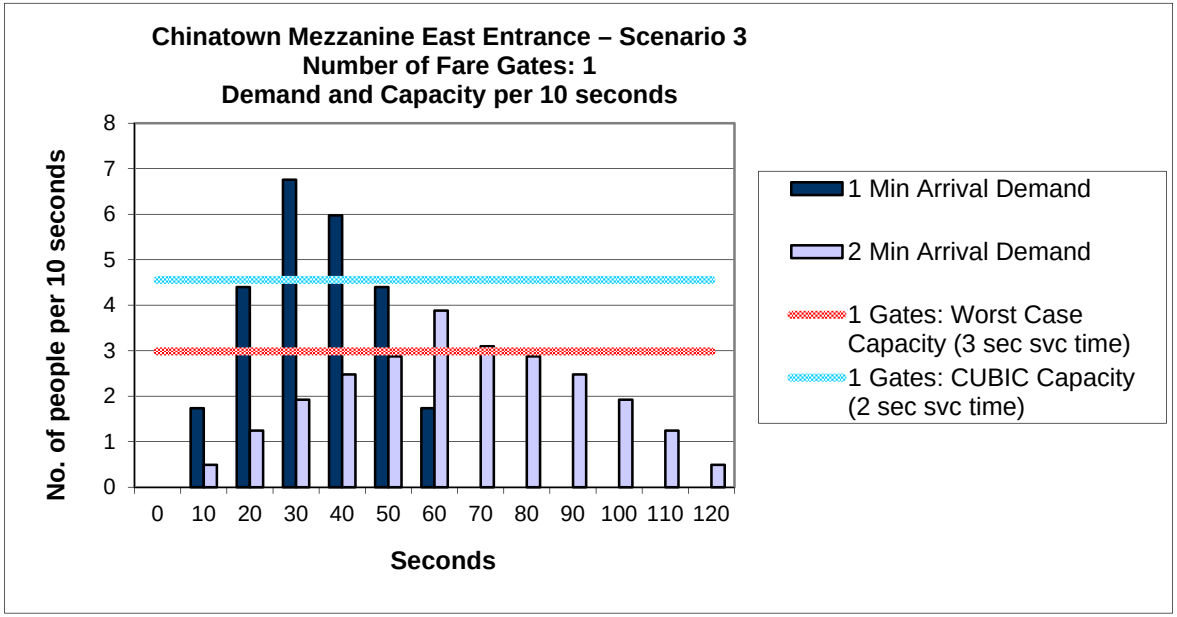
Scenario 1 – Planned number of fare gates station entrance can accommodate based on station plan drawings and infrastructure limitations / Number of Fare Gates: 2



Scenario 2 – Maximum Number of fare gates based on suggested Equipment Quantity Analysis (EQA) with 1-2 minute arrival surge/ Number of Fare Gates: 2



Scenario 3 – Minimum number of fare gates required to meet queuing design criteria (wait time less than 55 seconds) with 1-2 minute arrival surge/ Number of Fare Gates: 1



Metro Gold Line Chinatown Mezzanine East Station Entrance - Worst Case (3 second average service time)					
No. of Fare Gates	**Scenarios**	**Surge Time (seconds)**	**Maximum Wait (seconds)**	**Maximum Number of People in Queue**	**Maximum Queue Length Per Gate (feet)**
2	Scenario 1 and 2	60	0	0	0
2	Scenario 1 and 2	120	0	0	0
1	Scenario 3	60	20	8	15
1	Scenario 3	120	0	0	0

Metro Gold Line Chinatown Mezzanine East Station Entrance - CUBIC Estimate (2 second average service time)					
No. of Fare Gates	**Scenarios**	**Surge Time (seconds)**	**Maximum Wait (seconds)**	**Maximum Number of People in Queue**	**Maximum Queue Length Per Gate (feet)**
2	Scenario 1 and 2	60	0	0	0
2	Scenario 1 and 2	120	0	0	0
1	Scenario 3	60	8	3	6
1	Scenario 3	120	0	0	0

Metro Gold Line – Chinatown Mezzanine East Station Entrance Conclusions:

- Based on demand (2024 ridership projections and 1-2 minute surge) and station assumptions, summary of the model results. See tables on page 27 for reference:

  - **Scenarios 1, 2 and 3** do not show significant queues for 2 second and 3 second average service time. **Scenarios 1, 2 and 3** as specified above, maximum passengers wait time is less than 55 seconds (a maximum queuing time of 55-seconds during surge has been considered an acceptable service standard).

  - Per 2024 peak hour ridership projections, model iterations suggest that installing minimum **one (1) fare gate** could have 20 **seconds of maximum passenger wait time** (less than 55 seconds of design criteria for significant queues) and therefore **one (1) fare** gate could be sufficient for **Chinatown Mezzanine East** station entrance.

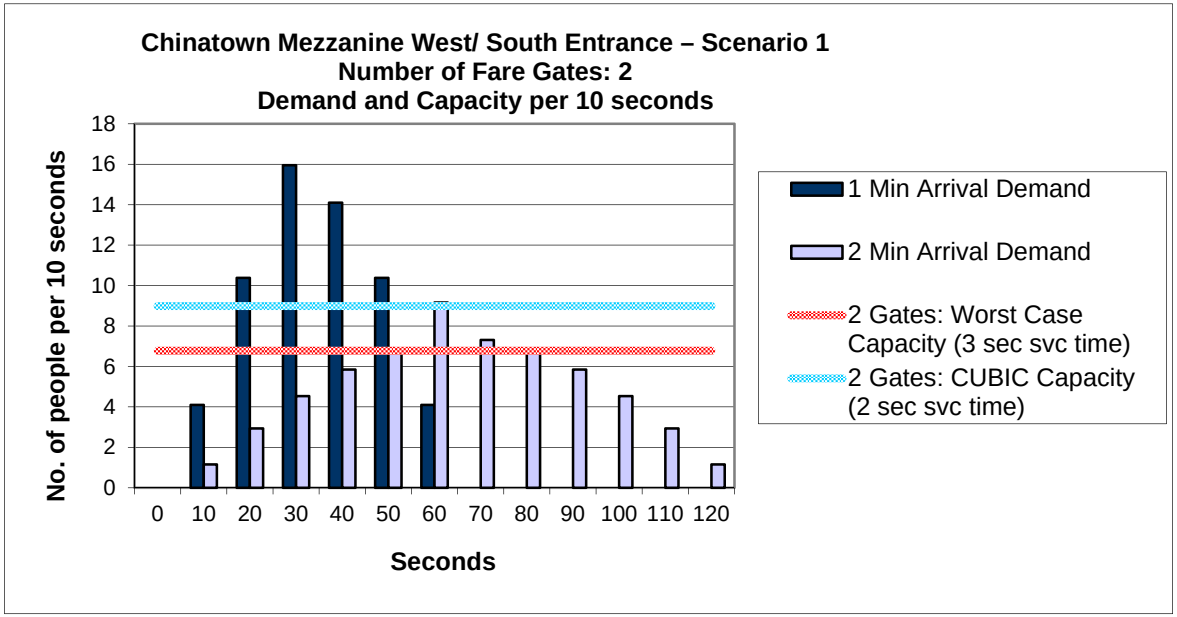
Metro Gold Line – Chinatown Mezzanine West/ South Entrance	
Passengers per Peak Surge (1-2 minutes)	**59** (70% of 84 passengers for 1-minute surge utilize **Chinatown Mezzanine West/ South** station entrance fare gates)
Scenario 1 - Planned number of fare gates station entrance can accommodate based on station plan and infrastructure limitations	2
Scenario 2 - Maximum number of fare gates based on suggested Equipment Quantity Analysis (EQA)	3
Scenario 3 - Minimum number of fare gates required to meet queuing design criteria (wait times less than 55 sec.)	2

Station assumptions:
Ridership demand is modeled based on year 2024 peak hour ridership projections. A demand model has been created to estimate the amount of passengers each station must service during a peak surge that lasts one or two minutes long. Peak of the peak hour ridership for Chinatown Mezzanine West/ South entrance includes maximum total of peak hour passenger boarding and alighting for year 2014. As indicated in Table 2, for Chinatown Mezzanine West/ South entrance 58% of ridership growth is considered to calculate 2024 projected ridership.

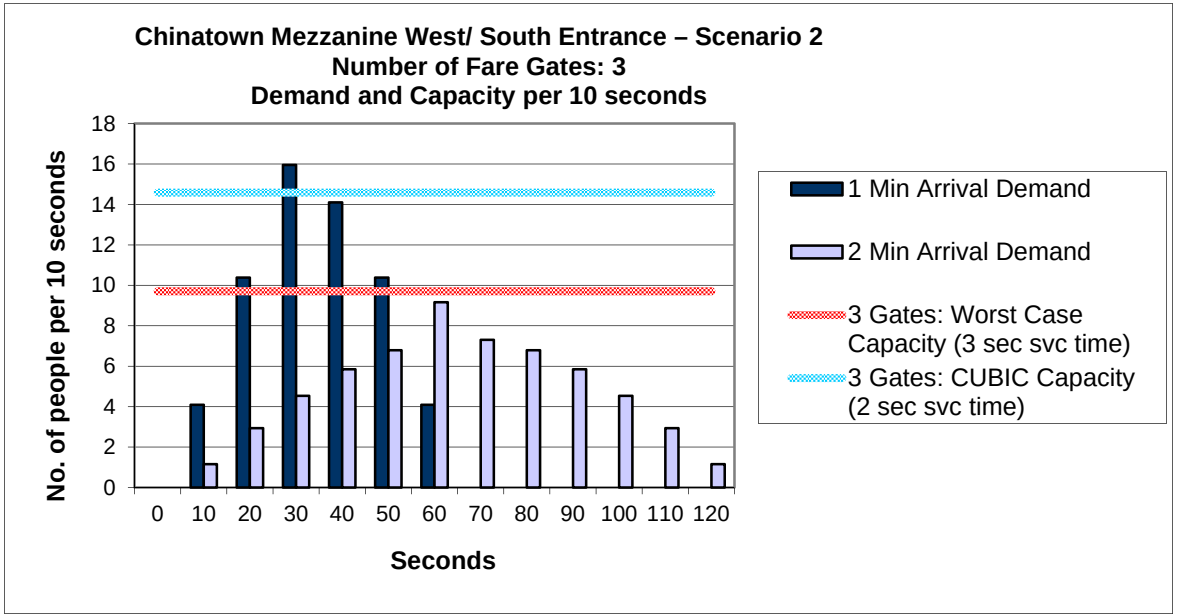
For Chinatown Mezzanine West/ South, maximum total peak of the peak hour (5pm to 6pm) passenger boarding (200) and alighting (153) is 353 during year 2014. 58% ridership growth has been applied to 353 passengers to calculate year 2024 ridership projections at Chinatown Mezzanine West/ South (558 passengers). Based on 12 Trains per Hour (TPH)/ 5 minute headway, it is assumed (as per Table 6) that 15% of peak one hour surge go through the fare gates during 1-minute surge. 70% of gate utilization is assumed at Chinatown Mezzanine West/ South entrance. Therefore, **70**% of 1-minute passenger surge (**15**% **of 558** passengers = 84 passengers) utilize **Chinatown Mezzanine West/ South** station entrance fare gates. 70% of 1-minute surge (84 passengers), **59** passengers utilize **Chinatown Mezzanine West/ South** station entrance fare gates. Refer to **Table 8** for details.

Results:

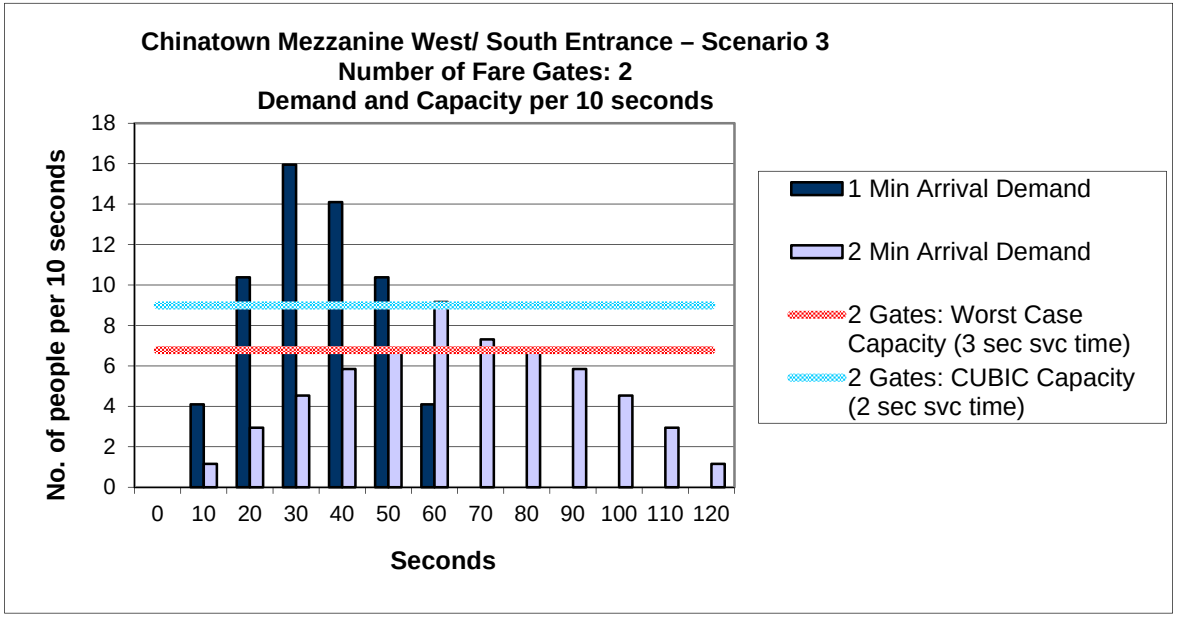
Scenario 1 – Planned number of fare gates station entrance can accommodate based on station plan drawings and infrastructure limitations / Number of Fare Gates: 2



Scenario 2 – Maximum Number of fare gates based on suggested Equipment Quantity Analysis (EQA) with 1-2 minute arrival surge/ Number of Fare Gates: 3



Scenario 3 – Minimum number of fare gates required to meet queuing design criteria (wait time less than 55 seconds) with 1-2 minute arrival surge/ Number of Fare Gates: 2



Metro Gold Line Chinatown Mezzanine West/ South Station Entrance - Worst Case (3 second average service time)					
No. of Fare Gates	**Scenarios**	**Surge Time (seconds)**	**Maximum Wait (seconds)**	**Maximum Number of People in Queue**	**Maximum Queue Length Per Gate (feet)**
2	Scenario 1 and 3	60	37	21	21
2	Scenario 1 and 3	120	4	2	2
3	Scenario 2	60	9	10	7
3	Scenario 2	120	0	0	0

Metro Gold Line Chinatown Mezzanine West/ South Station Entrance - CUBIC Estimate (2 second average service time)					
No. of Fare Gates	**Scenarios**	**Surge Time (seconds)**	**Maximum Wait (seconds)**	**Maximum Number of People in Queue**	**Maximum Queue Length Per Gate (feet)**
2	Scenario 1 and 3	60	11	13	13
2	Scenario 1 and 3	120	0	0	0
3	Scenario 2	60	1	1	0
3	Scenario 2	120	0	0	0

Metro Gold Line – Chinatown Mezzanine West/ South Station Entrance Conclusions:

- Based on demand (2024 ridership projections and 1-2 minute surge) and station assumptions, summary of the model results. See tables on page 33 for reference:

  - **Scenarios 1, 2 and 3** do not show significant queues for 2 second and 3 second average service time. **Scenarios 1, 2 and 3** as specified above, maximum passengers wait time is less than 55 seconds (a maximum queuing time of 55-seconds during surge has been considered an acceptable service standard).

  - Per 2024 peak hour ridership projections, model iterations suggest that installing minimum **two (2) fare gates** could have 37 **seconds of maximum passenger wait time** (less than 55 seconds of design criteria for significant queues) and therefore **two (2) fare** gates could be sufficient for **Chinatown Mezzanine West/ South** station entrance

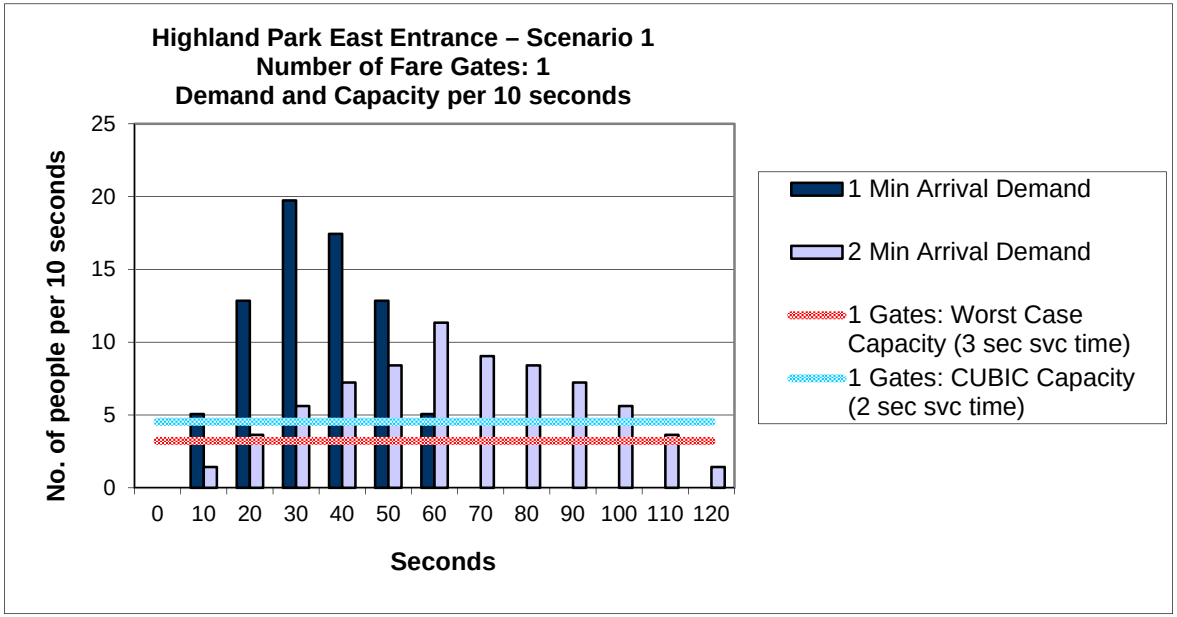
Metro Gold Line – Highland Park East Entrance	
Passengers per Peak Surge (1-2 minutes)	**73** (70% of 104 passengers for 1-minute surge utilize **Highland Park East** station entrance fare gates)
Scenario 1 - Planned number of fare gates station entrance can accommodate based on station plan and infrastructure limitations	**1**
Scenario 2 - Maximum number of fare gates based on suggested Equipment Quantity Analysis (EQA)	4
Scenario 3 - Minimum number of fare gates required to meet queuing design criteria (wait times less than 55 sec.)	2

Station assumptions:
Ridership demand is modeled based on year 2024 peak hour ridership projections. A demand model has been created to estimate the amount of passengers each station must service during a peak surge that lasts one or two minutes long. Peak of the peak hour ridership for Highland Park East includes maximum total of peak hour passenger boarding and alighting for year 2014. As indicated in Table 2, for Highland Park East entrance 34% of ridership growth is considered to calculate 2024 projected ridership.

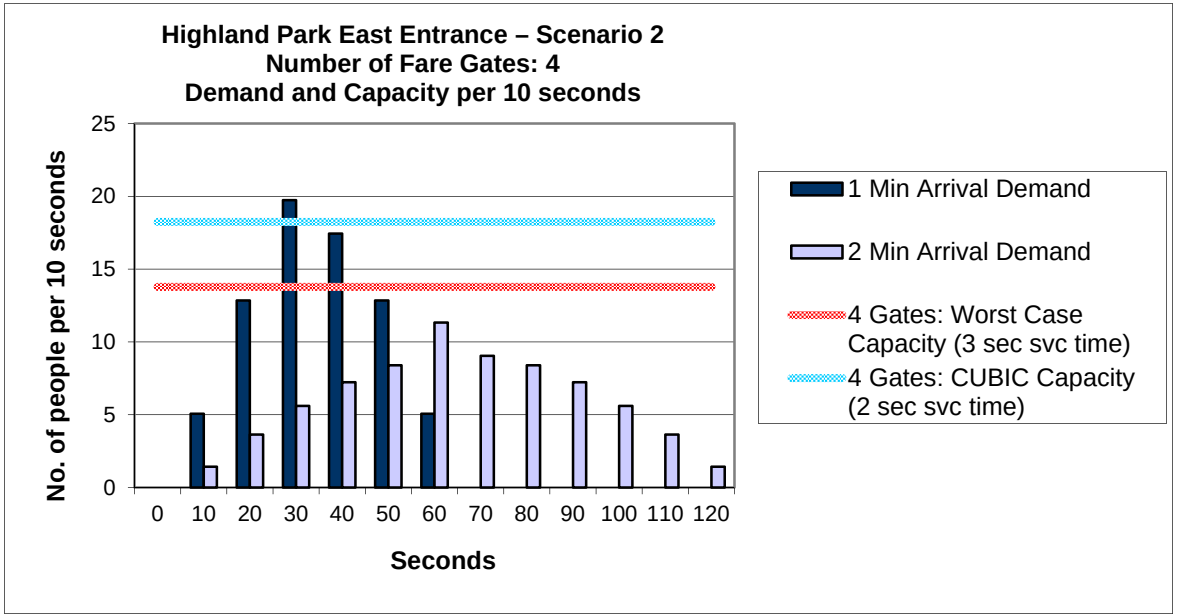
For Highland Park East, maximum total peak of the peak hour (5pm to 6pm) passenger boarding (207) and alighting (311) is 518 during year 2014. 34% ridership growth has been applied to 518 passengers to calculate year 2024 ridership projections at Highland Park East (694 passengers). Based on 12 Trains per Hour (TPH)/ 5 minute headway, it is assumed (as per Table 6) that 15% of peak one hour surge go through the fare gates during 1-minute surge. 70% of gate utilization is assumed at Highland Park East entrance. Therefore, **70%** of 1-minute passenger surge (**15% of 694** passengers = 104 passengers) utilize **Highland Park East** station entrance fare gates. 70% of 1-minute surge (104 passengers), **73** passengers utilize **Highland Park East** station entrance fare gates. Refer to **Table 8** for details.

Results:

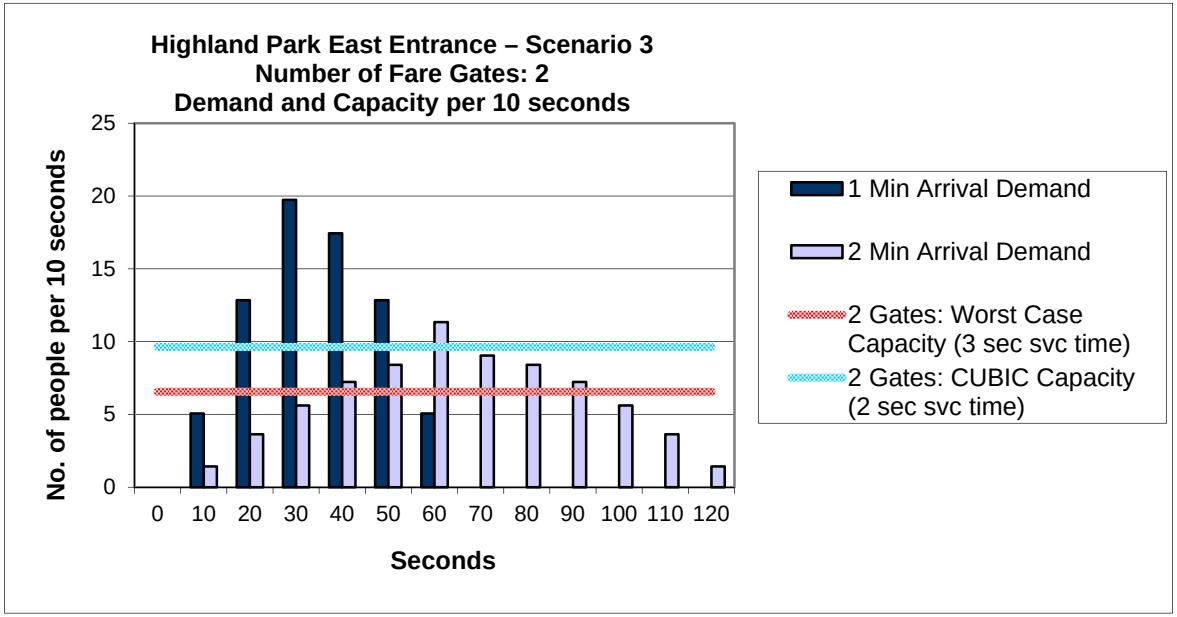
Scenario 1 – Planned number of fare gates station entrance can accommodate based on station plan drawings and infrastructure limitations / Number of Fare Gates: 1



Scenario 2 – Maximum Number of fare gates based on suggested Equipment Quantity Analysis (EQA) with 1-2 minute arrival surge/ Number of Fare Gates: 4



Scenario 3 – Minimum number of fare gates required to meet queuing design criteria (wait time less than 55 seconds) with 1-2 minute arrival surge/ Number of Fare Gates: 2



Metro Gold Line Highland Park East Station Entrance - Worst Case (3 second average service time)					
No. of Fare Gates	**Scenarios**	**Surge Time (seconds)**	**Maximum Wait (seconds)**	**Maximum Number of People in Queue**	**Maximum Queue Length Per Gate (feet)**
1	Scenario 1	60	**160**	53	106
1	Scenario 1	120	**97**	37	73
4	Scenario 2	60	8	8	4
4	Scenario 2	120	0	0	0
2	Scenario 3	60	53	34	34
2	Scenario 3	120	13	8	8

Metro Gold Line Highland Park East Station Entrance - CUBIC Estimate (2 second average service time)					
No. of Fare Gates	**Scenarios**	**Surge Time (seconds)**	**Maximum Wait (seconds)**	**Maximum Number of People in Queue**	**Maximum Queue Length Per Gate (feet)**
1	Scenario 1	60	**97**	45	90
1	Scenario 1	120	**55**	25	51
4	Scenario 2	60	1	2	1
4	Scenario 2	120	0	0	0
2	Scenario 3	60	29	23	23
2	Scenario 3	120	2	1	1

Metro Gold Line – Highland Park East Station Entrance Conclusions:

- Based on demand (2024 ridership projections and 1-2 minute surge) and station assumptions, summary of the model results. See tables on page 39 for reference:

  - **Scenario 1** shows significant queues (maximum passenger wait time greater than 55 seconds) for 3 second and 2 seconds average service time during 1-minute and 2-minute surge.

  - **Scenarios 2 and 3** do not show significant queues for 2 second and 3 second average service time. **Scenarios 2 and 3** as specified above, maximum passengers wait time is less than 55 seconds (a maximum queuing time of 55-seconds during surge has been considered an acceptable service standard).

  - Per 2024 peak hour ridership projections, model iterations suggest that installing minimum **two (2) fare gates** could have 53 **seconds of maximum passenger wait time** (less than 55 seconds of design criteria for significant queues) and therefore **two (2) fare** gates could be sufficient for **Highland Park East** station entrance.

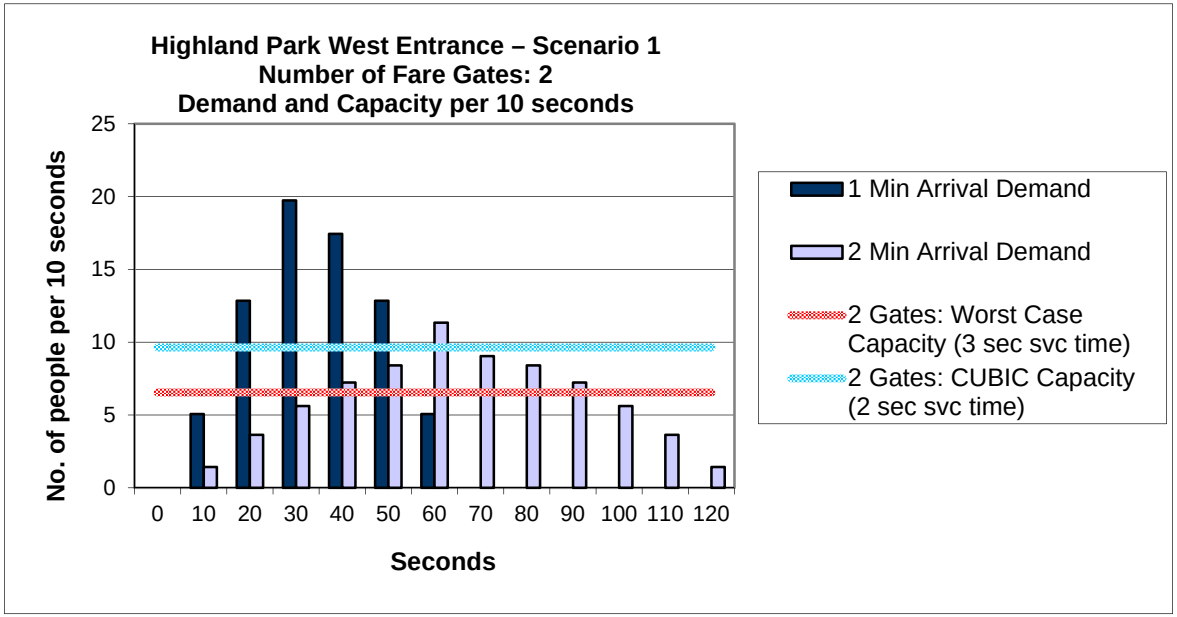
Metro Gold Line – Highland Park West Entrance	
Passengers per Peak Surge (1-2 minutes)	**73** (70% of 104 passengers for 1-minute surge utilize **Highland Park West** station entrance fare gates)
Scenario 1 - Planned number of fare gates station entrance can accommodate based on station plan and infrastructure limitations	2
Scenario 2 - Maximum number of fare gates based on suggested Equipment Quantity Analysis (EQA)	4
Scenario 3 - Minimum number of fare gates required to meet queuing design criteria (wait times less than 55 sec.)	2

Station assumptions:
Ridership demand is modeled based on year 2024 peak hour ridership projections. A demand model has been created to estimate the amount of passengers each station must service during a peak surge that lasts one or two minutes long. Peak of the peak hour ridership for Highland Park West includes maximum total of peak hour passenger boarding and alighting for year 2014. As indicated in Table 2, for Highland Park West entrance 34% of ridership growth is considered to calculate 2024 projected ridership.

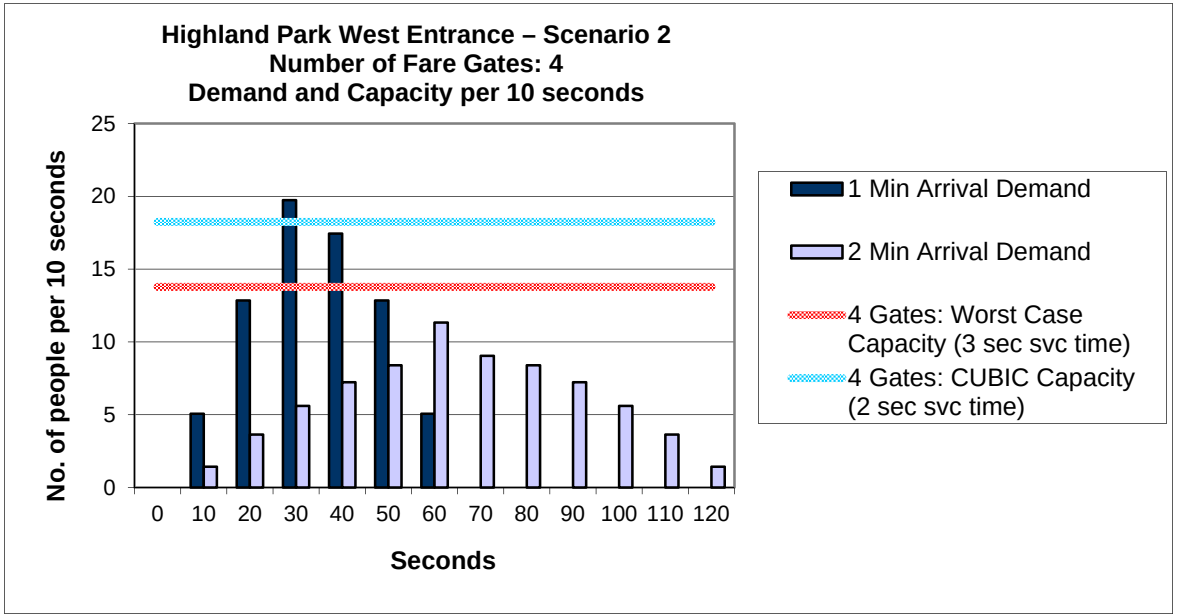
For Highland Park West, maximum total peak of the peak hour (5pm to 6pm) passenger boarding (207) and alighting (311) is 518 during year 2014. 34% ridership growth has been applied to 518 passengers to calculate year 2024 ridership projections at Highland Park West (694 passengers). Based on 12 Trains per Hour (TPH)/ 5 minute headway, it is assumed (as per Table 6) that 15% of peak one hour surge go through the fare gates during 1-minute surge. 70% of gate utilization is assumed at Highland Park West entrance. Therefore, **70**% of 1-minute passenger surge (**15**% **of 694** passengers = 104 passengers) utilize **Highland Park West** station entrance fare gates. 70% of 1-minute surge (104 passengers), **73** passengers utilize **Highland Park West** station entrance fare gates. Refer to **Table 8** for details.

Results:

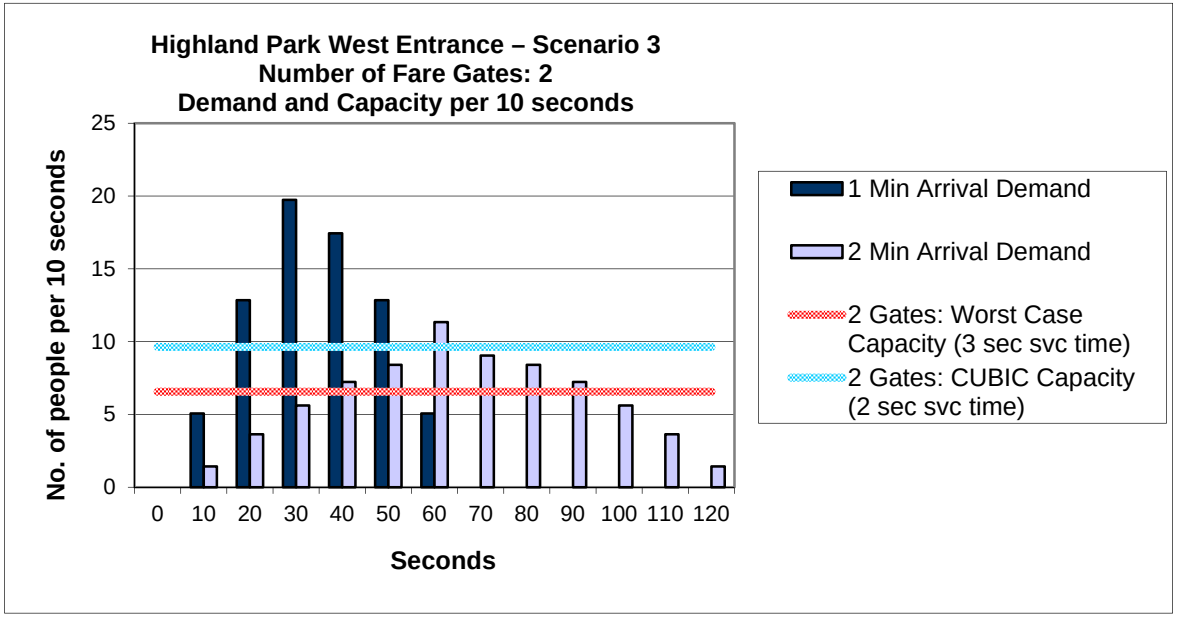
Scenario 1 – Planned number of fare gates station entrance can accommodate based on station plan drawings and infrastructure limitations / Number of Fare Gates: 2



Scenario 2 – Maximum Number of fare gates based on suggested Equipment Quantity Analysis (EQA) with 1-2 minute arrival surge/ Number of Fare Gates: 4



Scenario 3 – Minimum number of fare gates required to meet queuing design criteria (wait time less than 55 seconds) with 1-2 minute arrival surge/ Number of Fare Gates: 2



Metro Gold Line Highland Park West Station Entrance - Worst Case (3 second average service time)					
No. of Fare Gates	**Scenarios**	**Surge Time (seconds)**	**Maximum Wait (seconds)**	**Maximum Number of People in Queue**	**Maximum Queue Length Per Gate (feet)**
2	Scenario 1 and 3	60	53	34	34
2	Scenario 1 and 3	120	13	8	8
4	Scenario 2	60	8	8	4
4	Scenario 2	120	0	0	0

Metro Gold Line Highland Park West Station Entrance - CUBIC Estimate (2 second average service time)					
No. of Fare Gates	**Scenarios**	**Surge Time (seconds)**	**Maximum Wait (seconds)**	**Maximum Number of People in Queue**	**Maximum Queue Length Per Gate (feet)**
2	Scenario 1 and 3	60	29	23	23
2	Scenario 1 and 3	120	2	1	1
4	Scenario 2	60	1	2	1
4	Scenario 2	120	0	0	0

Metro Gold Line – Highland Park West Station Entrance Conclusions:

- Based on demand (2024 ridership projections and 1-2 minute surge) and station assumptions, summary of the model results. See tables on page 45 for reference:

  - **Scenarios 1, 2 and 3** do not show significant queues for 2 second and 3 second average service time. **Scenarios 1, 2 and 3** as specified above, maximum passengers wait time is less than 55 seconds (a maximum queuing time of 55-seconds during surge has been considered an acceptable service standard).

  - Per 2024 peak hour ridership projections, model iterations suggest that installing minimum **two (2) fare gates** could have 53 **seconds of maximum passenger wait time** (less than 55 seconds of design criteria for significant queues) and therefore **two (2) fare** gates could be sufficient for **Highland Park West** station entrance.

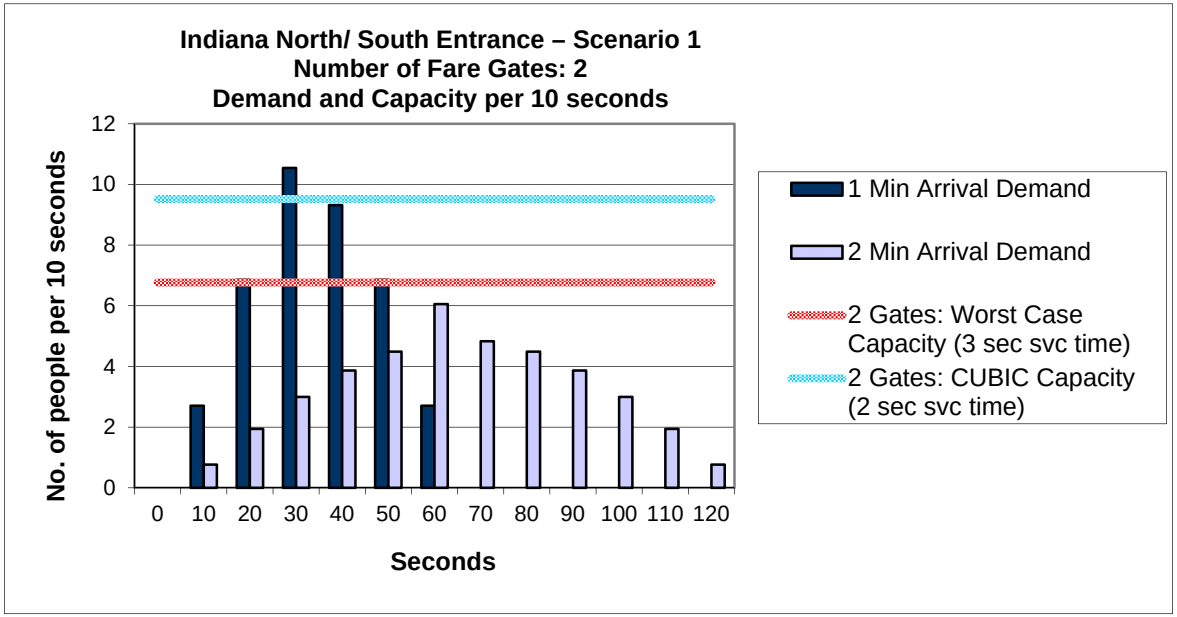
Metro Gold Line – Indiana North/ South Entrance	
Passengers per Peak Surge (1-2 minutes)	**39** (70% of 55 passengers for 1-minute surge utilize **Indiana North/ South** station entrance fare gates)
Scenario 1 - Planned number of fare gates station entrance can accommodate based on station plan and infrastructure limitations	2
Scenario 2 - Maximum number of fare gates based on suggested Equipment Quantity Analysis (EQA)	2
Scenario 3 - Minimum number of fare gates required to meet queuing design criteria (wait times less than 55 sec.)	2

Station assumptions:
Ridership demand is modeled based on year 2024 peak hour ridership projections. A demand model has been created to estimate the amount of passengers each station must service during a peak surge that lasts one or two minutes long. Peak of the peak hour ridership for Indiana North/ South includes maximum total of peak hour passenger boarding and alighting for year 2014. As indicated in Table 2, for Indiana North/ South entrance 34% of ridership growth is considered to calculate 2024 projected ridership.

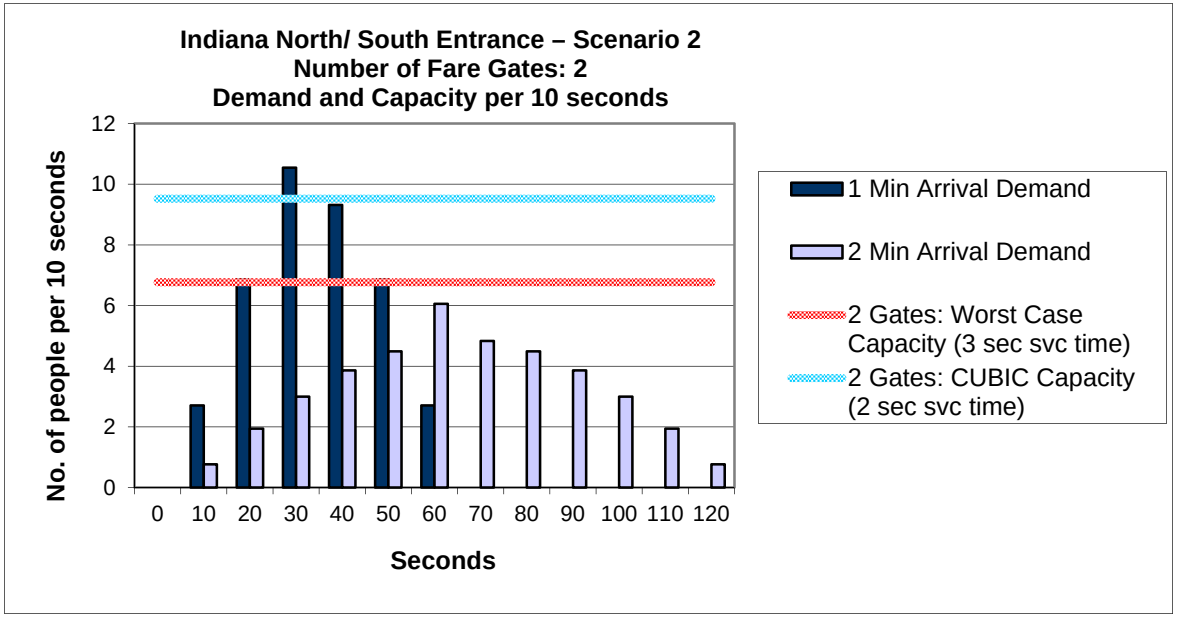
For Indiana North/ South, maximum total peak of the peak hour (3pm to 4pm) passenger boarding (115) and alighting (159) is 274 during year 2014. 34% ridership growth has been applied to 274 passengers to calculate year 2024 ridership projections at Indiana North/ South (367 passengers). Based on 12 Trains per Hour (TPH)/ 5 minute headway, it is assumed (as per Table 6) that 15% of peak one hour surge go through the fare gates during 1-minute surge. 70% of gate utilization is assumed at Indiana North/ South entrance. Therefore, **70**% of 1-minute passenger surge (**15**% **of 367** passengers = 55 passengers) utilize **Indiana North/ South** station entrance fare gates. 70% of 1-minute surge (55 passengers), **39** passengers utilize **Indiana North/ South** station entrance fare gates. Refer to **Table 8** for details.

Results:

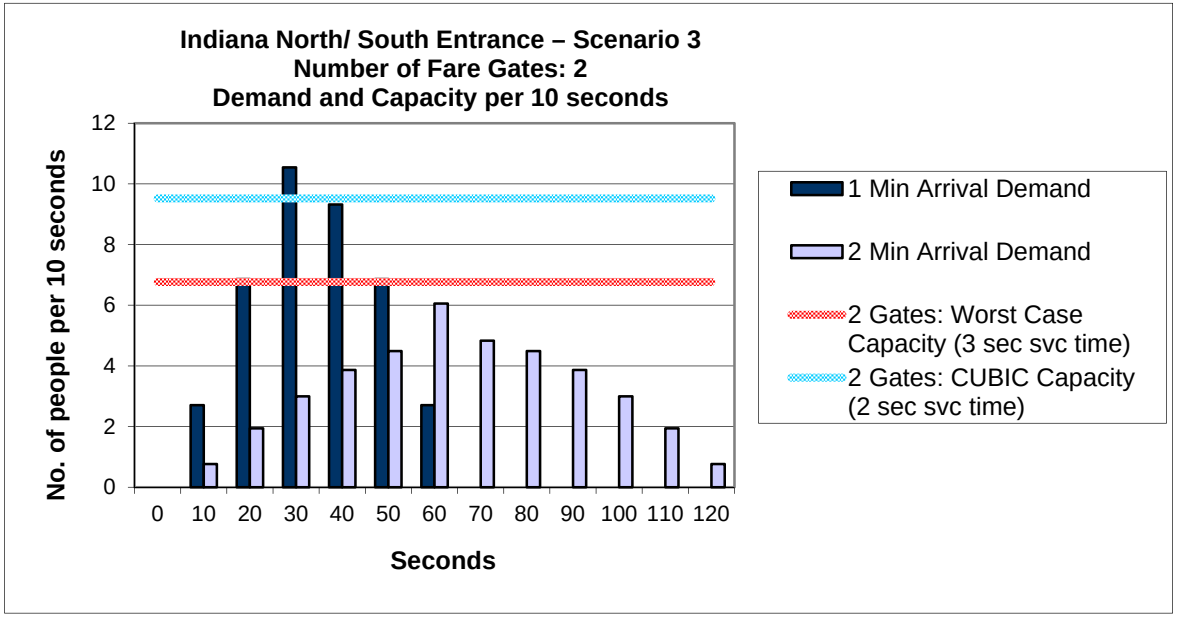
Scenario 1 – Planned number of fare gates station entrance can accommodate based on station plan drawings and infrastructure limitations / Number of Fare Gates: 2



Scenario 2 – Maximum Number of fare gates based on suggested Equipment Quantity Analysis (EQA) with 1-2 minute arrival surge/ Number of Fare Gates: 2



Scenario 3 – Minimum number of fare gates required to meet queuing design criteria (wait time less than 55 seconds) with 1-2 minute arrival surge/ Number of Fare Gates: 2



Metro Gold Line Indiana North/ South Station Entrance - Worst Case (3 second average service time)					
No. of Fare Gates	**Scenarios**	**Surge Time (seconds)**	**Maximum Wait (seconds)**	**Maximum Number of People in Queue**	**Maximum Queue Length Per Gate (feet)**
2	Scenario 1, 2 and 3	60	9	6	6
2	Scenario 1, 2 and 3	120	2	0	0

Metro Gold Line Indiana North/ South Station Entrance - CUBIC Estimate (2 second average service time)					
No. of Fare Gates	**Scenarios**	**Surge Time (seconds)**	**Maximum Wait (seconds)**	**Maximum Number of People in Queue**	**Maximum Queue Length Per Gate (feet)**
2	Scenario 1, 2 and 3	60	2	2	2
2	Scenario 1, 2 and 3	120	0	0	0

Metro Gold Line – Indiana North/ South Station Entrance Conclusions:

- Based on demand (2024 ridership projections and 1-2 minute surge) and station assumptions, summary of the model results. See tables above for reference:
  - **Scenarios 1, 2 and 3** do not show significant queues for 2 second and 3 second average service time. **Scenarios 1, 2 and 3** as specified above, maximum passengers wait time is less than 55 seconds (a maximum queuing time of 55-seconds during surge has been considered an acceptable service standard).
  - Per 2024 peak hour ridership projections, model iterations suggest that installing minimum **two (2) fare gates** could have 9 **seconds of maximum passenger wait time** (less than 55 seconds of design criteria for significant queues) and therefore **two (2) fare** gates could be sufficient for **Indiana North/ South** station entrance.

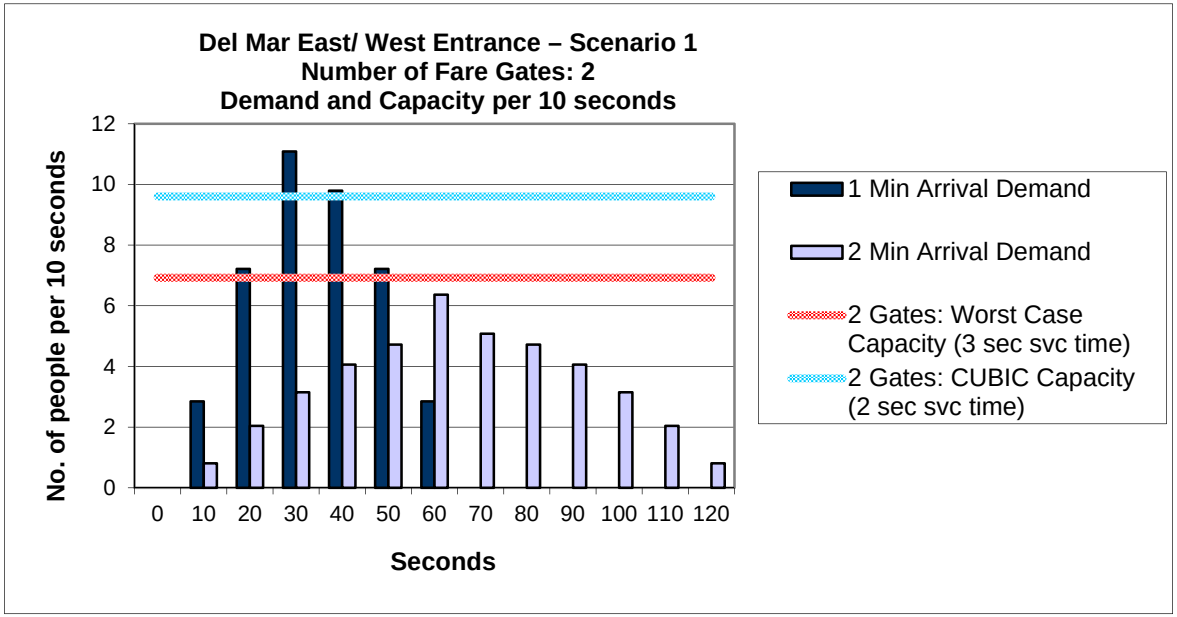
Metro Gold Line – Del Mar East/ West Entrance	
Passengers per Peak Surge (1-2 minutes)	**41** (70% of 58 passengers for 1-minute surge utilize **Del Mar East/ West** station entrance fare gates)
Scenario 1 - Planned number of fare gates station entrance can accommodate based on station plan and infrastructure limitations	2
Scenario 2 - Maximum number of fare gates based on suggested Equipment Quantity Analysis (EQA)	2
Scenario 3 - Minimum number of fare gates required to meet queuing design criteria (wait times less than 55 sec.)	2

Station assumptions:
Ridership demand is modeled based on year 2024 peak hour ridership projections. A demand model has been created to estimate the amount of passengers each station must service during a peak surge that lasts one or two minutes long. Peak of the peak hour ridership for Del Mar East/ West includes maximum total of peak hour passenger boarding and alighting for year 2014. As indicated in Table 2, for Del Mar East/ West entrance 34% of ridership growth is considered to calculate 2024 projected ridership.

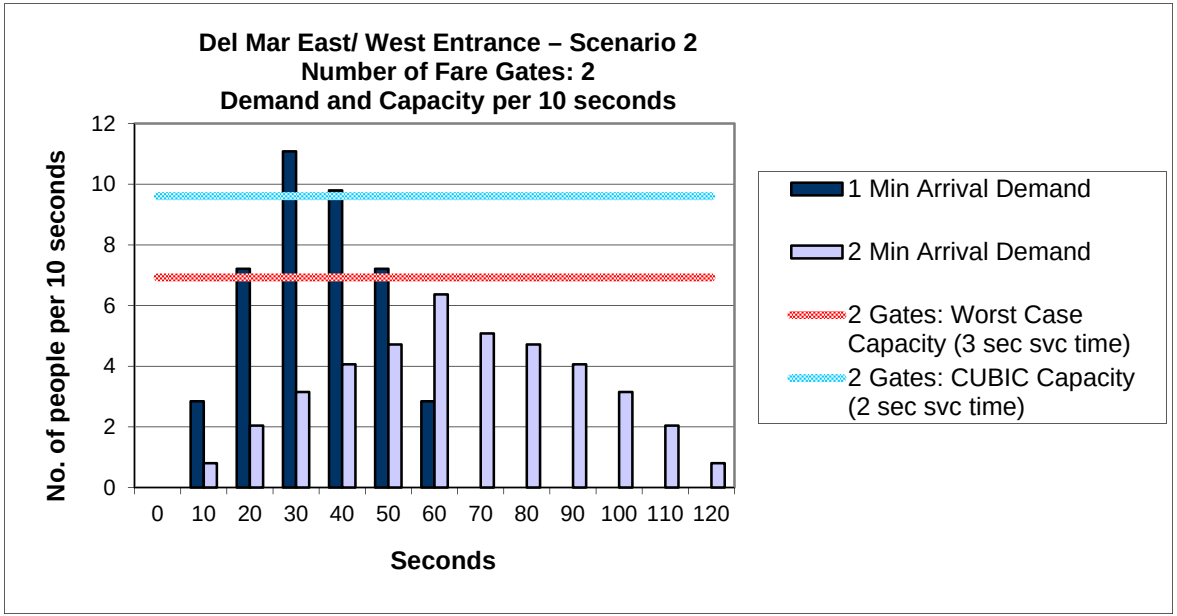
For Del Mar East/ West, maximum total peak of the peak hour (6pm to 7pm) passenger boarding (108) and alighting (181) is 289 during year 2014. 34% ridership growth has been applied to 289 passengers to calculate year 2024 ridership projections at Del Mar East/ West (387 passengers). Based on 12 Trains per Hour (TPH)/ 5 minute headway, it is assumed (as per Table 6) that 15% of peak one hour surge go through the fare gates during 1-minute surge. 70% of gate utilization is assumed at Del Mar East/ West entrance. Therefore, **70**% of 1-minute passenger surge (**15% of 387** passengers = 58 passengers) utilize **Del Mar East/ West** station entrance fare gates. 70% of 1-minute surge (58 passengers), **41** passengers utilize **Del Mar East/ West** station entrance fare gates. Refer to **Table 8** for details.

Results:

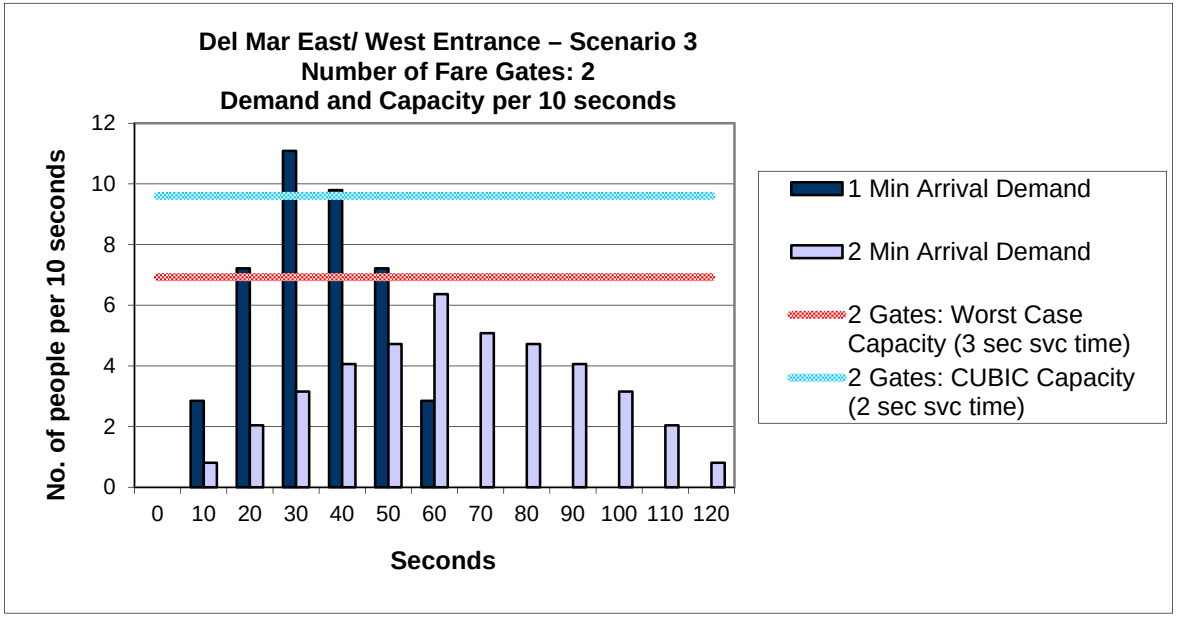
Scenario 1 – Planned number of fare gates station entrance can accommodate based on station plan drawings and infrastructure limitations / Number of Fare Gates: 2



Scenario 2 – Maximum Number of fare gates based on suggested Equipment Quantity Analysis (EQA) with 1-2 minute arrival surge/ Number of Fare Gates: 2



Scenario 3 – Minimum number of fare gates required to meet queuing design criteria (wait time less than 55 seconds) with 1-2 minute arrival surge/ Number of Fare Gates: 2



Metro Gold Line Del Mar East/ West Station Entrance - Worst Case (3 second average service time)					
No. of Fare Gates	**Scenarios**	**Surge Time (seconds)**	**Maximum Wait (seconds)**	**Maximum Number of People in Queue**	**Maximum Queue Length Per Gate (feet)**
2	Scenario 1, 2 and 3	60	10	7	7
2	Scenario 1, 2 and 3	120	0	0	0

Metro Gold Line Del Mar East/ West Station Entrance - CUBIC Estimate (2 second average service time)					
No. of Fare Gates	**Scenarios**	**Surge Time (seconds)**	**Maximum Wait (seconds)**	**Maximum Number of People in Queue**	**Maximum Queue Length Per Gate (feet)**
2	Scenario 1, 2 and 3	60	2	1	1
2	Scenario 1, 2 and 3	120	0	0	0

Metro Gold Line – Del Mar East/ West Station Entrance Conclusions:

- Based on demand (2024 ridership projections and 1-2 minute surge) and station assumptions, summary of the model results. See tables above for reference:
  - **Scenarios 1, 2 and 3** do not show significant queues for 2 second and 3 second average service time. **Scenarios 1, 2 and 3** as specified above, maximum passengers wait time is less than 55 seconds (a maximum queuing time of 55-seconds during surge has been considered an acceptable service standard).
  - Per 2024 peak hour ridership projections, model iterations suggest that installing minimum **two (2) fare gates** could have 10 **seconds of maximum passenger wait time** (less than 55 seconds of design criteria for significant queues) and therefore **two (2) fare** gates could be sufficient for **Del Mar East/ West** station entrance.

Appendix

- **04/01/15 email from Metro with input on Station layout and platform length and distance between midpoint of platform and planned fare gate locations**

Station Layout and distances assumptio

- **04/07/2015 email from Metro confirming assumptions and Input including projected ridership growth for 2024 ridership**

LACMTA Assumptions Riders

Parikh, Anip/NJO

From: Wasz, Gregory <WaszG@metro.net>
Sent: Wednesday, April 01, 2015 7:49 PM
To: Parikh, Anip/NJO; Preusser, Patrick
Cc: Simon, John/LAC; Comps, Pete/CHC; Arteaga, Mauro; Chu, Chaushie
Subject: RE: LACMTA - Gold Line Queuing Analysis Assumptions/Input Review
Attachments: MGL Fare Gates TVM's & Map Cases_Highland Park_West & East_100914.pdf; Gold-ChinatownDwgExtr.pdf

Anip,

As follow-up to our meeting discussion today:

- In regard to Highland station, attached is the mark-up drawing for proposed gated entrance at the East end of the station, which includes a single ADA fare gate aisle. As noted during the meeting, please disregard the arrangement shown on the West end of the station which an earlier revision

.

- In regard to Chinatown station, attached is scan of a few dimensioned Architectural drawings of the platform, mezzanine, and street levels to give you an idea of the distances involved from the mid-point of the platform to locations of each of the fare gate arrays that are reflected in the separate mark-ups for this station. As discussed, the horizontal distances from midpoint of platform are approx. 70 ft to the location of the proposed elevator fare barrier on the North Plaza; approx. 105 ft to the either of the two proposed are barriers on the mezzanine level; and approx. 150 feet to the proposed fare barrier at South end of platform over the South Plaza.

- In regard to Highland Park the distances from midpoint of platform to the proposed location of the East Entrance Fare barrier is approx. 225 ft

- In regard to Del Mar, the distance from midpoint of the East (EB) Platform is approx. 135 ft to the proposed fare barrier location; and from midpoint of the West (WB) Platform is approx. 140 ft, to the proposed fare barrier location

Hope that this helps clarify,

Thanks,

Parikh, Anip/NJO

From: Preusser, Patrick <PreusserP@metro.net>
Sent: Tuesday, April 07, 2015 6:14 PM
To: Parikh, Anip/NJO; Wasz, Gregory
Cc: Simon, John/LAC; Arteaga, Mauro; Chu, Chaushie; Li, Janice/NYC
Subject: RE: LACMTA - Gold Line Queuing Analysis Assumptions/Input Review

Hi Anip,

I apologize for the delay. Please use the following gate utilization assumptions at Chinatown:

1. South end of Platform – 70%
2. West side Mezzanine - 70%
3. East side Mezzanine - 30%
4. North Plaza (Elevator-Only) – 30%

Thanks,

Patrick Preusser
Deputy Executive Officer, Rail Operations
Los Angeles County Metropolitan Transportation Authority
☎ 213.922.7974 | ☎ 213.842.5936 (mobile) | ✉ preusserp@metro.net | http://www.metro.net/
Vision: *Safe, clean, reliable, on-time, courteous service dedicated to providing Los Angeles County with a world class transportation system.*

From: Anip.Parikh@ch2m.com [mailto:Anip.Parikh@ch2m.com]
Sent: Monday, April 06, 2015 7:03 AM
To: Wasz, Gregory; Preusser, Patrick
Cc: John.Simon@ch2m.com; Arteaga, Mauro; Chu, Chaushie; Janice.Li@ch2m.com
Subject: RE: LACMTA - Gold Line Queuing Analysis Assumptions/Input Review
Importance: High

Greg and Patrick,

Please see below revised assumptions/ input table for Gold Line Queuing Analysis. Table has been revised per our discussion last Wednesday and it is consistent with Greg's email below:

Text marked in red for Chinatown in the table below is yet to be confirmed by Metro. As discussed, Metro will discuss internally and provide the percentage passenger distribution at Chinatown. For example, at Rosa Parks (Blue Line), Metro Operations and Service

Summary of ROM Estimate Costs -
Conversion of 4 Gold Line Stations from SAVs to Fare Gates

SUMMARY OF TAP AND CONSTRUCTION ROM ESTIMATES AND COMBINED TOTALS BY STATION - 4 Stations Only

Conversion Cost - One Time

	A	B	C					
Station	***Infrastructure Work***	***ESGs and Installation, FG/TVM/SAV Installation, Removal, and Relocation***	***Faregate Console***	*Combined B and C:*	*Combined B and C with A:*	Civil and Electrical ROM (base)	Civil and Electrical ROM (with Contingencies/Other Costs)	**Combined TAP and Construction ROM Estimates**
Atlantic	$ 42,946.19	$ 449,934.46	$ 211,362.12	$ 661,296.57	$ 704,242.76	$ 671,543.00	$ 980,704.73	**$ 1,684,947.49**
Indiana	$ 42,946.19	$ 447,582.39	$ 211,362.12	$ 658,944.50	$ 701,890.69	$ 805,123.00	$ 1,175,781.65	**$ 1,877,672.34**
Chinatown	$ 270,869.66	$ 674,871.05	$ 340,626.96	$ 1,015,498.01	$ 1,286,367.67	$ 1,274,518.00	$ 1,861,274.46	**$ 3,147,642.13**
Del Mar	$ 66,451.42	$ 432,661.45	$ 211,362.12	$ 644,023.57	$ 710,474.99	$ 1,301,024.00	$ 1,899,983.16	**$ 2,610,458.15**
Totals:	**$ 423,213.46**	**$ 2,005,049.35**	**$ 974,713.31**	**$ 2,979,762.65**	**$ 3,402,976.11**	**$ 4,052,208.00**	**$ 5,917,744.00**	**$ 9,320,720.11**

Recurring Maintenance - Support Services (Per Year)

Station	***Fare Gates***	***Added TVMs***	***Removed SAVs (Credit)***
Atlantic	$ 29,697.84	$ -	$ 24,971.52
Indiana	$ 29,697.84	$ -	$ 18,728.64
Chinatown	$ 54,446.04	$ 14,356.80	$ 21,850.08
Del Mar	$ 29,697.84	$ -	$ 12,485.76
Totals:	**$ 143,539.56**	**$ 14,356.80**	**$ 78,036.00**

Summary

Station	Conversion Cost - One Time	Recurring Maintenance - Per Year (FareGates and TVMs)
4 Stations	$ 9,320,720.11	$ 157,896.36

Board Report

File #: 2015-1224, **File Type:** Program **Agenda Number:** 44.

SYSTEM SAFETY, SECURITY AND OPERATIONS COMMITTEE
SEPTEMBER 17, 2015

SUBJECT: MEMBERSHIP ON METRO SERVICE COUNCILS

ACTION: APPROVE NOMINEES FOR APPOINTMENT TO METRO SERVICE COUNCILS

RECOMMENDATION

APPROVING **nominees for membership on Metro's San Gabriel Valley, South Bay, and Westside Central Service Councils**.

ISSUE

Each Metro Service Council is comprised of nine Representatives that serve a term of three years; terms are staggered so that the terms of three of each Council's nine members expire annually on June 30. Incumbent Representatives can serve additional terms if re-nominated by the nominating authority and confirmed by the Metro Board.

DISCUSSION

Metro seeks to appoint Service Council members reflective of the demographics of each respective region. The 2010 Census demographics of each of the Service Council regions are as follows:

% Sector Total	Hispanic	White	Asian	Black	Other	Total Pop
SGV	50.0%	19.9%	24.9%	3.3%	2.0%	100.0%
SFV	41.0%	42.0%	10.7%	3.4%	2.9%	100.0%
South Bay	42.5%	23.8%	12.0%	18.3%	3.4%	100.0%
Westside/Central	43.5%	30.7%	13.0%	10.0%	2.8%	100.0%
Gateway Cities	63.9%	16.7%	8.5%	8.6%	2.3%	100.0%
Service Area Total	48.5%	26.8%	14.0%	8.2%	2.6%	100.0%

The individuals listed below have been nominated or re-nominated to serve by their respective Council's appointing authorities. If approved by the Board, these appointments will serve a three-year term or the remainder of the seat's three-year term as indicated. A brief listing of qualifications for new nominees is provided along with the nomination letter(s) from the nominating authorities for all

nominees:

A. Ben Wong, San Gabriel Valley Service Council, New Appointment
Nominated by: First District Supervisor Hilda L. Solis

Term Ending: June 30, 2018

The demographic makeup of the San Gabriel Valley Service Council with the appointment of these nominees will consist of five (5) White members, one (1) Hispanic member, two (2) Asian members, and one (1) Native/Other member as self-identified by the members in terms of racial/ethnic identity. The gender breakdown of the Council will be nine (9) men and zero (0) women.

A. Paula Faust, South Bay Service Council, New Appointment
Nominated by: South Bay Cities Council of Governments

Term Ending: June 30, 2016

The demographic makeup of the South Bay Service Council with the appointment of this nominee will consist of six (6) White members, one (1) Hispanic member, and two (2) Black members as self-identified by the members in terms of racial/ethnic identity. The gender breakdown of the Council will be six (6) men and three (3) women.

A. Martha Eros, Westside Central Service Council, New Appointment
Nominated by: Westside Cities Council of Governments

Term Ending: June 30, 2018

A. Jeremiah LaRose, Westside Central Service Council, New Appointment
Nominated by: Third District Supervisor Sheila Kuehl

Term Ending: June 30, 2017

The demographic makeup of the Westside Central Service Council with the appointment of these nominees will consist of two (2) Hispanic members, four (4) White members, one (1) Asian member, and two (2) Black members as self-identified by the members in terms of racial/ethnic identity. The gender breakdown of the Council will be six (6) men and three (3) women.

DETERMINATION OF SAFETY IMPACT

Maintaining the full complement of representatives on each Service Council to represent each service area is important. As each representative is to be a regular user of public transit, and each Council is composed of people from diverse areas and backgrounds, this enables each Council to better understand the needs of transit consumers including the need for safe operation of transit service and safe location of bus stops.

FINANCIAL IMPACT

There is no financial impact imparted by approving the recommended action.

ALTERNATIVES CONSIDERED

The alternative to approving these appointments would be for these nominees to not be approved for appointment. To do so would result in reduced effectiveness of the Service Councils, as it would increase the difficulty of obtaining the quorum necessary to allow the Service Councils to formulate and submit their recommendations to the Board. It would also result in each of the Service Councils having less diverse representation of their respective service areas.

NEXT STEPS

There is one (1) vacant Service Council seat on the San Fernando Valley Service Council for which no nomination has been received. Staff will continue to work closely with the Office of Los Angeles Mayor Eric Garcetti, the nominating authority, to identify candidates for the vacant position. Staff will also continue to monitor the major contributors to the quality of bus service from the customer's perspective, and share that information with the Service Councils for use in their work to plan, implement, and improve bus service in their areas and the customer experience using our bus service.

ATTACHMENTS

Attachment A - New Appointees Biographies and Listing of Qualifications
Attachment B - Appointing Authority Nomination Letters

Prepared by: Jon Hillmer, Executive Officer of Service Development, Scheduling & Analysis, (213) 922-6972

Questions: Christopher Reyes, Transportation Planning Manager III, Operations, (213) 922-4808

Reviewed by: James T. Gallagher, Chief Operations Officer

Phillip A. Washington
Chief Executive Officer

ATTACHMENT A

NEW APPOINTEE BIOGRAPHY AND LISTING OF QUALIFICATIONS

Ben Wong, Nominee for San Gabriel Valley Service Council

Ben Wong, former Mayor and three-term West Covina Councilmember, was recently appointed to the City Council to fill a vacancy until the November general election. Ben was first elected to the City Council on April 14, 1992, and was reelected to his second and third terms. A 57-year West Covina resident, Mr. Wong is the past president of the West Covina Chamber of Commerce and Executive Board president of Foothill Transit. He has also served on the boards of directors of numerous community and nonprofit organizations including West Covina Lions Club, Citrus Valley Medical Center Foundation, Mt. San Antonio College Foundation, San Gabriel Valley Economic Partnership, CAUSE (Center for Asian Americans United for Self-Empowerment), and the Institute for Local Government.

Mr. Wong currently works as a Local Public Affairs Region Manager with Southern California Edison, responsible for the utility's governmental and community relations with cities in the East San Gabriel Valley. His past experience includes: Regional Public Affairs Manager for the League of California Cities (2006 – 2007), Executive Director of the League of California Cities' Los Angeles County Division (2007 2010), and Assistant to California Board of Equalization Member John Chiang (2001-2006). For more than 20 years before that, Ben managed The Great Wall Restaurant, a West Covina family-owned business founded by Ben's immigrant parents in 1955. Mr. Wong is a graduate of Covina High School, and holds a Bachelor of Science degree in Biology and a Doctorate in Biochemistry from the University of Southern California (USC).

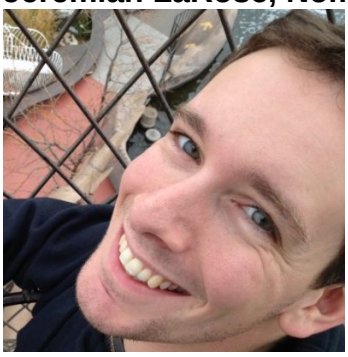
Paula Faust, Nominee for South Bay Service Council

Paula Faust has served as the Deputy Director of G-Trans, the City of Gardena's Municipal Bus Lines since 2010. Her responsibilities in that role include development and oversight of the Department's capital program, procurement and contract administration, scheduling and service development, and fare policy and agreements. Ms. Faust's career in transportation began with Montebello Bus Lines, where she served as Administration Division Manager. She then went on to work for Los Angeles County Metro as an Administration and Financial Services Manager for the San Gabriel Valley Sector. Ms. Faust holds a Bachelor of Arts degree in Political Science and a Master of Public Administration from Cal State Long Beach.

Martha Eros, Nominee for Westside Central Service Council

Martha Eros has worked with the City of Beverly Hills as a Transportation Planner since 2008. Her duties in that role include bicycle planning, local and regional transportation planning including Capital Assets projects and bus stop amenities, and management of the City's senior transit program. Prior to her employment with the City of Beverly Hills, Ms. Eros served as a Transportation Officer with the City of Arcadia from 2001-2007. Ms. Eros began her career in transportation as an Administrative Analyst with LACMTA, serving in that role from 1999-2001. Ms. Eros holds a Master of Public Administration as well as an urban Executive Management Graduate Certificate from Cal State Long Beach.

Jeremiah LaRose, Nominee for Westside Central Service Council



Jeremiah LaRose recently completed a Masters in Transportation Policy and Planning at UCLA's Luskin School of Public Affairs and is currently employed as a Transit and Transportation Consultant Fehr & Peers. Mr. LaRose began his career in transit at the University of New Hampshire as a Student Transit Coordinator. He also worked as a Manager of Operations and Planning for the Cooperative Alliance for Seacoast Transportation (COAST). Mr. LaRose is a regular user of public transportation and also holds a Bachelor of Arts degree in Music Teacher Education, with emphasis in technical writing, literature, and German.

ATTACHMENT B

APPOINTING AUTHORITY NOMINATION LETTERS

BOARD OF SUPERVISORS
COUNTY OF LOS ANGELES

856 Kenneth Hahn Hall of Administration / Los Angele, CA 90012
Phone: (213) 974 – 4111 / Fax: (213) 613 - 1739

Friday, July 17, 2015

Jon Hillmer
Los Angeles County Metropolitan Transportation Authority
One Gateway Plaza
Los Angeles, CA 90012

Re: San Gabriel Valley Service Council Appointment

Dear Mr. Hillmer,

It is my understanding that the San Gabriel Valley Service Council reserves one appointment for the First District of Los Angeles County.

I therefore invoke my authority to appoint West Covina Councilmember, Ben Wong as the First District appointee to the San Gabriel Valley Service Council. You may contact him directly to request all necessary documentation.

Ben Wong
Ben.Wong@sce.com
(626) 476-0363 (cell)

Given his experience in the San Gabriel Valley, Mr. Wong offers a wealth of knowledge and a balanced approach to achieve regional transportation goals. I have full confidence in his ability to represent the First District. Many thanks in advance.

Sincerely,

Hilda L. Solis
District One Supervisor
Los Angeles County

SOUTH BAY CITIES
COUNCIL OF GOVERNMENTS

20285 Western Avenue, Suite 100
Torrance, CA 90501
(310) 371-7222
sbccog@southbaycities.org
www.southbaycities.org

July 28, 2015

The Honorable Mark Ridley-Thomas, Chair
Members of the Metro Board of Directors
Los Angeles Metropolitan Transportation Authority
One Gateway Plaza
Los Angeles, CA 90012

Re: Nominations for the Members of the South Bay Service Council

The South Bay Service Council has been extremely successful since its inception. The dedicated people on our council have worked with Metro staff to make changes in service to improve efficiency and coordination of the transit services provided by the Metro in our sector.

The South Bay Cities Council of Governments (SBCCOG) takes its responsibility to nominate members to the council very seriously, and with this letter we are submitting a nominee to fill the seat that has been vacated by the retirement of G-Trans Transit Manager, Jack Gabig.

Recommended to continue to represent the South Bay Municipal Operators after receiving the approval of the SBCCOG Board of Directors at the meeting of July 23, 2015, is Paula Faust, G-Trans Deputy Transit Manager. This appointment is until July, 2016.

We request that you agendize this appointment as soon as possible so that Ms. Faust may be seated by September, 2015.

Please notify us when the appointment is confirmed, or if you have any questions. Thank you.

Sincerely,

Jim Gazeley
Chair, South Bay Cities Council of Governments
Mayor Pro Tem, City of Lomita

cc: Phil Washington, CEO

WESTSIDE CITIES
COUNCIL OF GOVERNMENTS

Date: July 16, 2015

To: Gary Spivack
Deputy Executive Officer, Metro

From: Cecilia Estolano and Katherine Perez-Estolano
Co-Executive Directors, WSCCOG

CC: Eric Geier, Community Relations Manager, Metro
Mike Bohlke, Transportation Deputy to Metro Board Director James Butts
Martha Eros, Transportation Planner, City of Beverly Hills
Winnie Fong, Project Director, WSCCOG

Subject: Westside Cities COG Appointment to the Metro Westside/Central Service Council

---

In May 2015, the Westside Cities Council of Governments (WSCCOG) received a request from Metro to a replacement nomination to fill the vacancy created by Art Ida's resignation. On May 21, 2015, the WSCCOG Board nominated Aaron Kunz from the City of Beverly Hills to fill the vacancy of one of the three WSCCOG appointed positions on the Westside/Central Service Council for a 3-year term from July 1, 2015 to June 30, 2018.

In late May, Mr. Kunz had notified WSCCOG staff that he is unable to serve on the council and recommended Martha Eros, Transportation Planner for the City of Beverly Hills to serve as the nominee for the position. WSCCOG recommends Ms. Eros as she holds 15 years of experience in the public transportation. Ms. Eros' current role in transportation for the City of Beverly Hills includes managing the senior transit program, planning for the Purple Line Extension, rolling out the city's bikeshare pilot program, and managing local transportation sales tax funding. Her previous experience also included working for the City of Arcadia's department of transportation and Metro's Transit Operations Division.

On July 16, 2015, the WSCCOG Board voted to approve Ms. Eros' nomination. If approved by he Metro Board, Ms. Eros will join the current WSCCOG appointees on the Westside/Central Service Council Perri Sloane Goodman from City of West Hollywood and David Feinberg from Santa Monica Big Blue Bus. Her term will begin effective immediately and end on June 30, 2018. Please accept this nomination on behalf of the WSCCOG Board. Ms. Eros can be reached by email at meros@beverlyhills.org. Should you have any questions regarding this matter, please contact the WSCCOG Project Director Winnie Fong at winnie@elpadvisors.com or at (213) 612-4545.

BOARD OF SUPERVISORS
COUNTY OF LOS ANGELES

821 KENNETH HAHN HALL OF ADMINISTRATION · LOS ANGELES, CALIFORNIA 90012
Tel: 213-974-4300 Fax: 213-626-7360 shula@bos.lacounty.gov

SHEILA KUEHL
SUPERVISOR, THIRD DISTRICT

August 21, 2015

Mr. Gary Spivack
Deputy Executive Officer
Metro Regional Service Councils
One Gateway Plaza MS 99-7-2
Los Angeles, CA 90012

Dear Mr. Spivack,

On behalf of Third District, I hereby submit the nomination of Jeremiah Larose to serve as the Third District representative on the Westside Central Service Council for the term of July 1, 2014 – June 30, 2017.

Please let me know if you need any additional information. Thank you for your consideration.

Sincerely,

SHEILA KUEHL
Supervisor, Third District

MM:bc

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

Metro

Board Report

File #: 2015-1097, **File Type:** Oral Report / Presentation **Agenda Number:** 46.

SYSTEM SAFETY, SECURITY AND OPERATIONS COMMITTEE
SEPTEMBER 17, 2015

RECEIVE **report on System Safety, Security and Operations.**

System Safety, Security and Operations Report

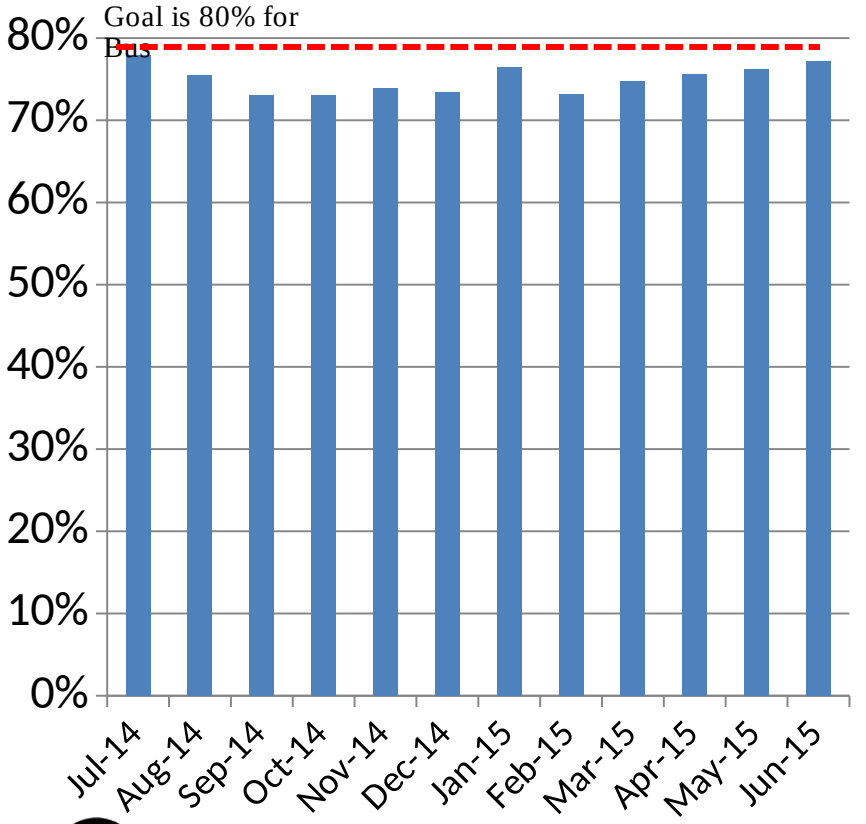
Jim Gallagher,
Chief Operations Officer

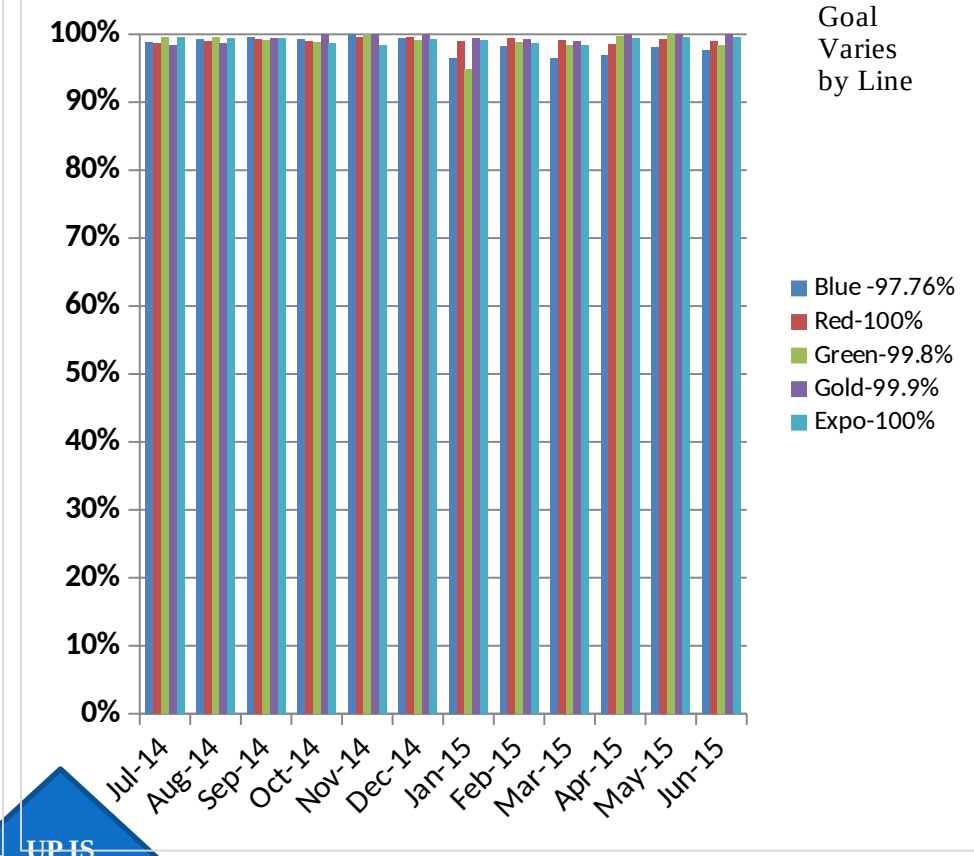
Metro

System Safety, Security and Operations Committee

September 17, 2015

Metro Bus & Rail On-Time Performance
July 2014 - June 2015

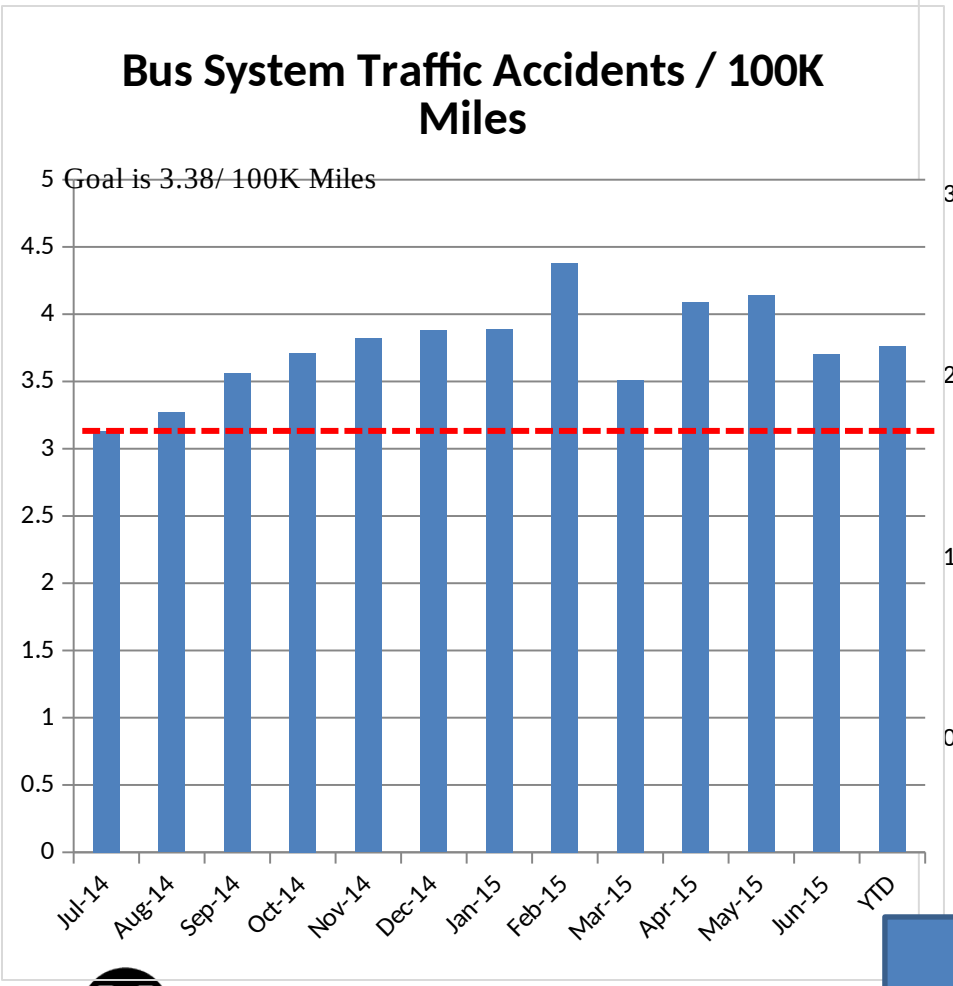


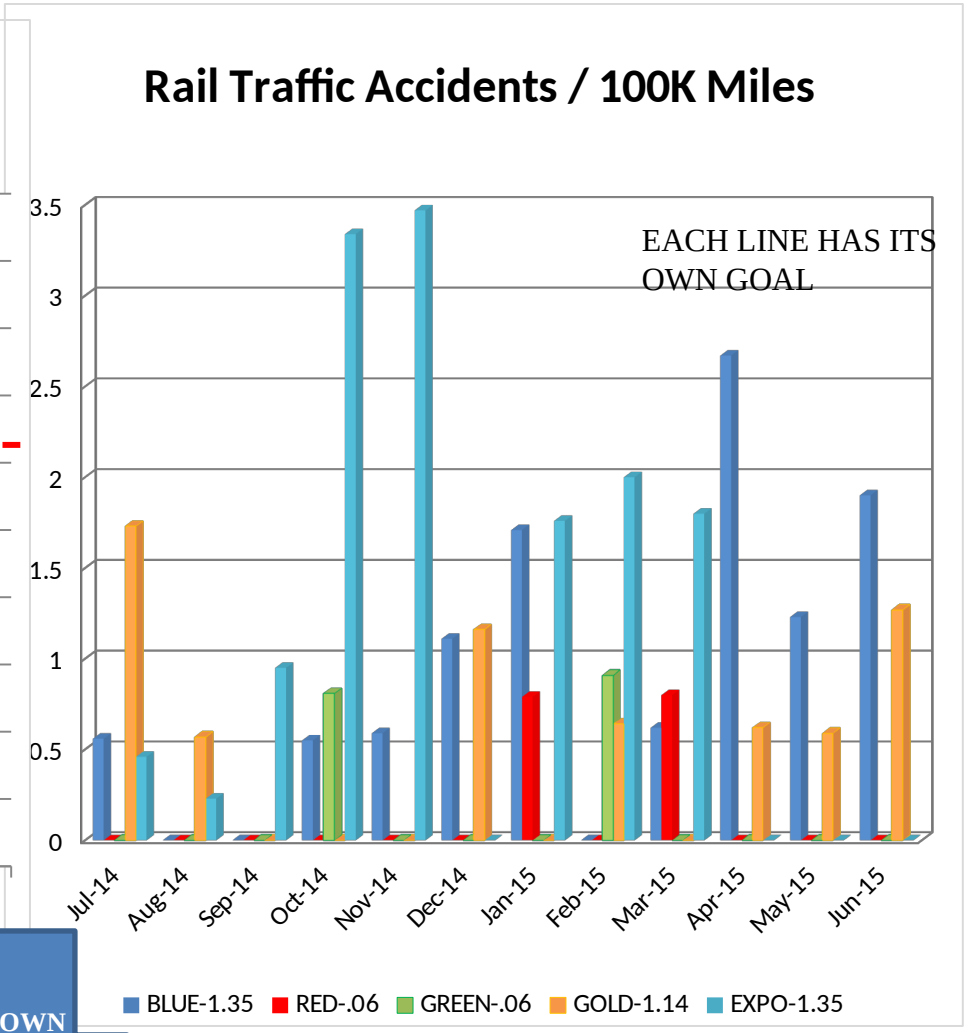


Metro

UP IS GOOD

Bus & Rail Traffic Accidents /100K Hub miles
July 2014 - June 2015

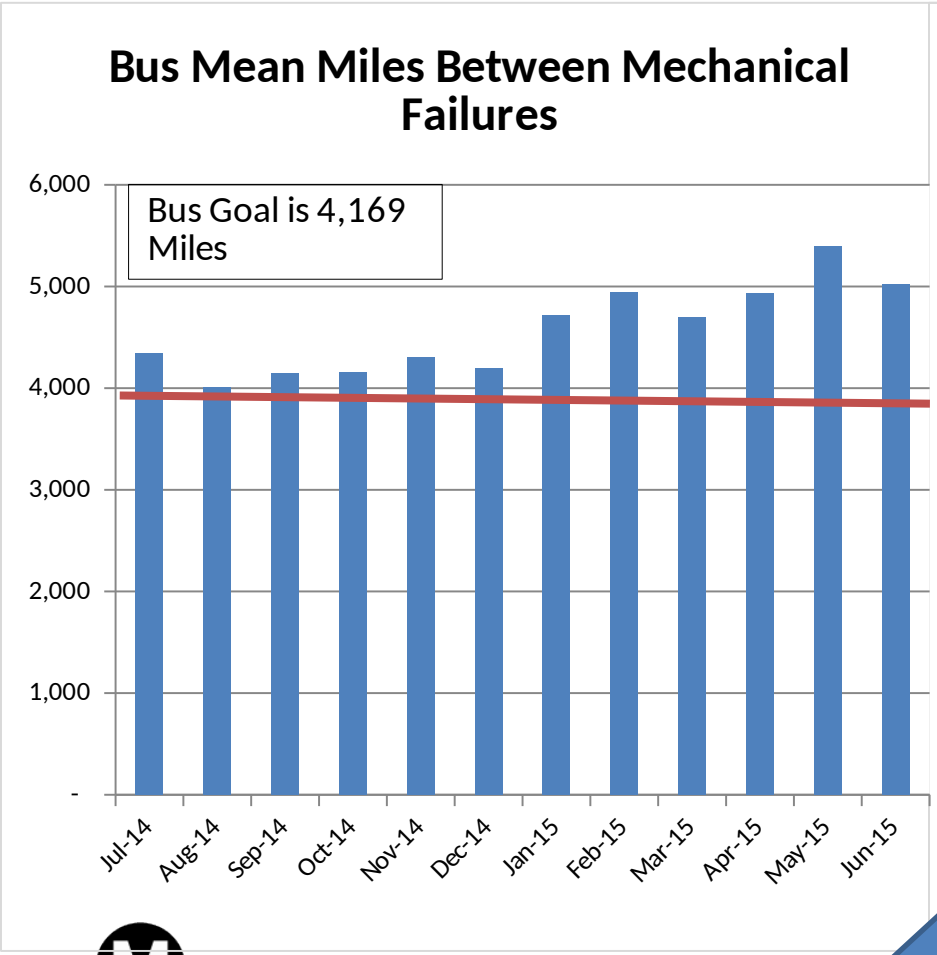


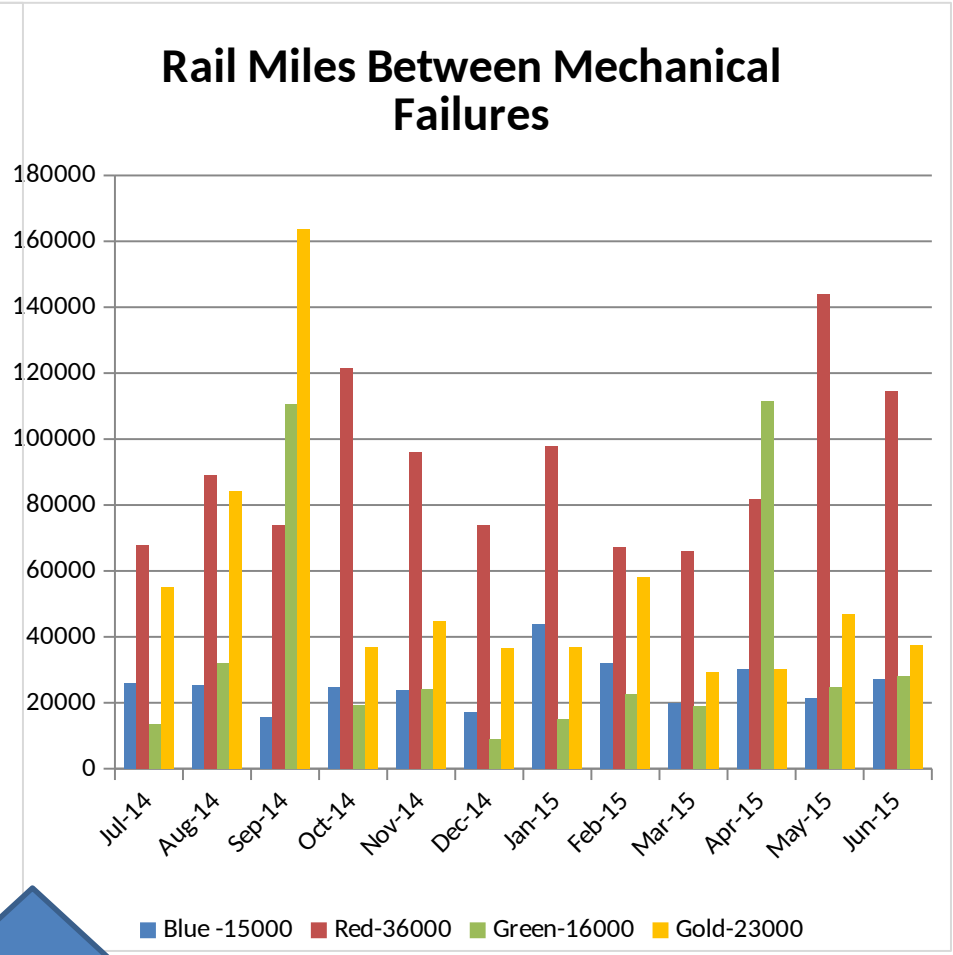


DOWN IS GOOD

Metro

Mean Miles Between Mechanical Road Calls
July 2014 - June 2015

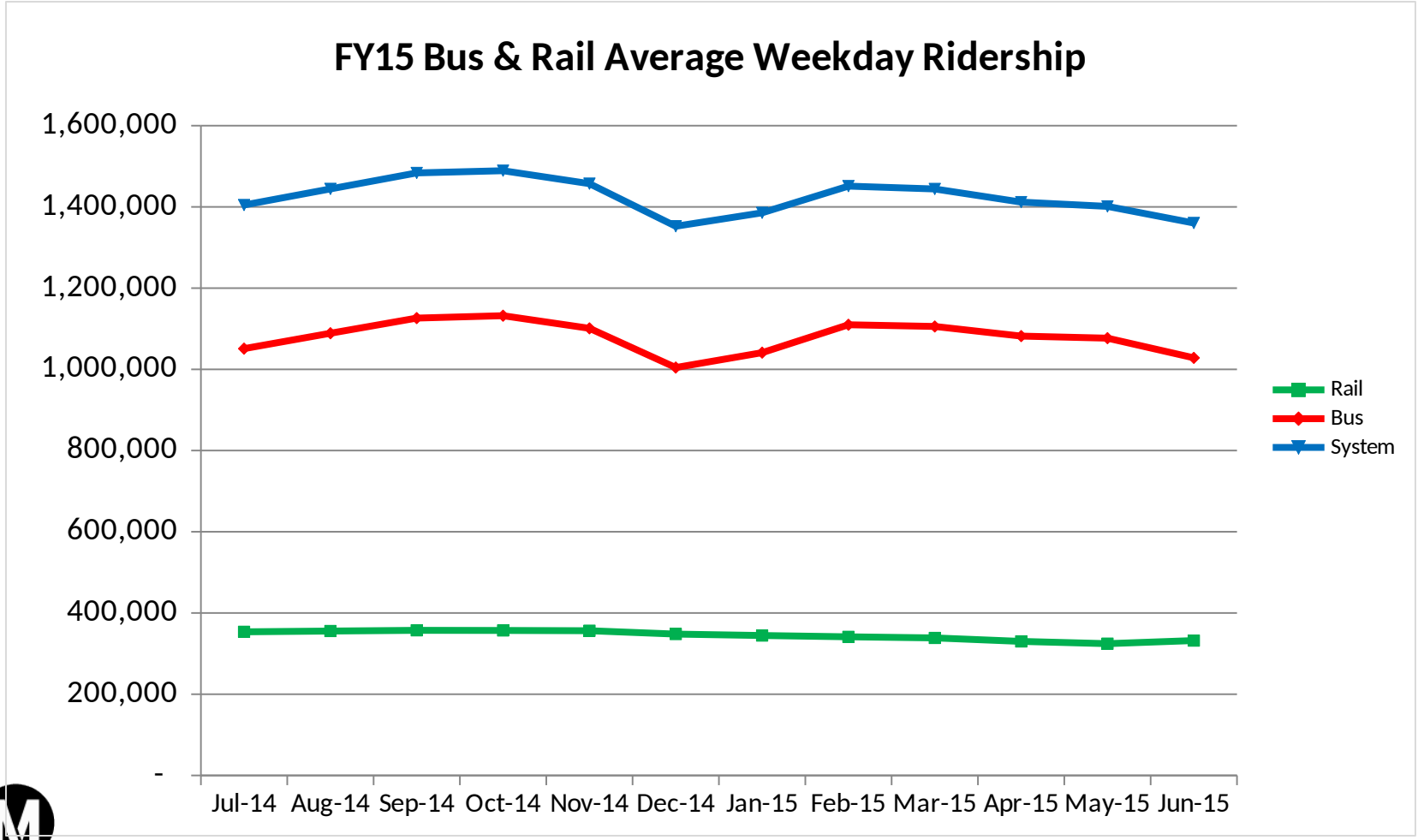




Metro

UP IS GOOD

Weekday Average Bus and Rail Ridership
July 2014 - June 2015



Metro

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

File #: 2015-1265, **File Type:** Contract **Agenda Number:** 47.

**SYSTEM SAFETY, SECURITY AND OPERATIONS COMMITTEE
SEPTEMBER 17, 2015**

SUBJECT: PRIVATE SECURITY CONTRACTOR SERVICES

ACTION: APPROVE CANCELLATION OF PRIVATE SECURITY SERVICES IFB AND APPROVE CONTRACT MODIFICATION

RECOMMENDATION

AUTHORIZING the Chief Executive Officer to:

A. **cancel the Private Security Services Invitation for Bid PS-14199**;

B. execute Contract Modification No. 16 to **extend Contract No. PS26102156 with RMI International, Inc. for up to 12 months** (October 1, 2015-September 30, 2016) in an amount not to exceed $8,119,674, thereby increasing the total contract value from $37,938,383 to $46,058,057; and

C. amend the FY16 Budget for System Security and Law Enforcement in the amount of $3,019,674.

ISSUE

Metro's Board adopted a Security Policy which identifies security as an integral element of Metro's overall operations. This policy is designed to provide the highest quality, most cost-effective, transit community-based security program possible. From this Security Policy, the Systems Security and Law Enforcement Department established their mission statement: "To provide the highest level of customer service by dedicating ourselves to the safety and security of the Metro community". The overall Metro Security Program consists of three main elements to support this mission:

1. Contract Security Guard (RMI International Inc.)
2. In-House Metro Security (Transit Security)
3. Contract Law Enforcement (Los Angeles County Sheriff's Department)

DISCUSSION

The contracted security guard component is designed and deployed as a fully integrated and mutually supportive part of the overall security program by providing dedicated fixed-post security protections to Metro properties, including employee parking facilities, Metro Rail and Metro Bus System parking lots, Metro support facilities, and for short-term assignments and special security operations, as necessary. Security guard services are deployed at Metro facilities and properties based on our analysis of overall risks, vulnerability assessments, area crime rates, configuration of facilities, and special identified needs. Consistent with financial constraints, not all Metro facilities are allocated security guard services. The security guard deployments are assigned by in-house Metro Security management to achieve the highest possible level of cost effectiveness.

Metro in-house Transit Security secure the Union Station Complex, support revenue protections and station closures; and for contract law enforcement to focus on “Quality of Life” crimes such as graffiti, fare evasion, vandalism, and disorderly conduct on or near the transit system.

Background

In August 2013, Metro began the procurement process in order to request a new contract award for security guard services to begin July 1, 2014.

In June 2014, Metro submitted the proposed contract award for Board approval. At the time, the Systems Safety and Operations Committee recommended a 60-day extension to the existing private security contract, deferring new award contract recommendation until that time. During the June 19, 2014 Board meeting, the approved extension was changed from 60 to 90 days due to no Board meeting being held in August 2014.

At the September 18, 2014 System Safety and Operations Committee, the Board approved a 90 day extension to the existing private security contract for the period of October 1, 2014 through January 31, 2015. In January 2015, the CEO authorized a two-month extension for the period covering February 1, 2015 through March 31, 2015.

At the March 19, 2015 System Safety, Security and Operations Committee, the contract was extended April 1, 2015 through September 30, 2015 to address the following:

- In April 24, 2014, the Board approved the Living Wage and Service Contract Worker Retention Policy. Due to Metro’s adoption of Living Wage and Service Contract Worker Retention Policy Applicability as of July 1, 2014, Metro, under the CEO authority, extended the current contract in order to ensure compliance of the policy on the new multi-year contract going forward. Each of the qualified firms was provided the opportunity to resubmit their Best-And-Final Offer (BAFO) in accordance to the Living Wage and Service Contract Worker Retention Policy. Staff received all final BAFOs and per the RFP terms, PS2610-3117 Living Wage and Service Contract Worker Retention BAFO price proposals were valid for 180 days from November 24, 2014.

- On February 10, 2015, Bazillio Cobb Associates (BCA) was retained by Metro to evaluate the proposed transit community policing models and provide Metro with recommendations to return to the Board for further discussion leading into the new Transit Community Policing contract.
- The BCA audits recommendation was for Metro to use the current model without specifics to the deployment level. As a result, the project manager for the private security contract reevaluated the private security deployment and adjusted based on the current needs.
- At the March 19, 2015 System Safety, Security and Operations Committee Meeting, staff requested the current private security procurement, Request for Proposals (RFP) PS2610-3117, be cancelled to incorporate these findings. Staff instead moved forward with an IFB because there were already qualified, viable firms, and an IFB was a more streamlined procurement method.

Due to the need for staff to review the BCA recommendations before developing a comprehensive security and law enforcement deployment plan, staff requests to cancel IFB PS-14199 and authorization to prepare a new Security Services RFP after the BCA recommendations have been reviewed.

DETERMINATION OF SAFETY IMPACT

The extension of this contract will provide a positive impact on the safety of our employees and patrons by deterring crimes on properties and facilities throughout our service area, including employee parking facilities, Metro Rail and Bus System parking lots, and supportive facilities.

FINANCIAL IMPACT

In FY16, Cost Center 2610 System Security and Law Enforcement was budgeted for $5,100,000 for Private Security Contract Services. Funding in the amount of $3,019,674 for executing this contract modification will amend and be added to the FY 16 budget in cost center 2610, System Security and Law Enforcement under multiple bus and rail projects, 50320-Contract Services.

Impact to Budget

The source of funds for contract Transit Community Policing Services is from Enterprise Fund revenues (fares, sales tax revenues, and TDA4). No other sources of funds were considered for these expenses because this is the appropriate fund source for activities that benefit bus and rail operations. Since this is a multi-year project, the cost center manager and the Managing Executive Officer of the program will be responsible for budgeting in future years.

ALTERNATIVES CONSIDERED

Staff considered the following alternatives:

- Complete the current private security IFB and return to the Board for contract award. This option is not recommended because staff would like to incorporate the recommendations from the current policing model study from the Office of the Inspector General. The recommendations from this study will have a financial impact to the private security contract by directly impacting the deployment level.

- Utilize in-house Security staff to perform these functions. Staff analyzed this option and does not recommend it. Although minor savings would be achieved in the first year, the costs would be higher in the following years due to step increases structured into the Teamsters contract. Additionally, the skill level required for most of the work assigned to the private security contractor staff does not warrant assignment of our well trained and higher level Metro Security Officers.

- Utilize contracted law enforcement to perform these functions. Staff does not recommend this alternative because the skill level required does not warrant sworn peace officers and their substantially higher costs.

NEXT STEPS

Metro staff will craft a new RFP after the BCA recommendations have been reviewed. BCA is expected to complete their review by the end of 2015.

Metro staff will continue to work with the private security contractor to ensure dedicated fixed-post security protections to Metro properties.

ATTACHMENTS

Attachment A - Procurement Summary
Attachment B - Contract Modification/Change Order Log

Prepared by: Alex Wiggins, EO System Security and Law Enforcement, (213) 922-4433
Duane Martin, DEO, Project Management, (213) 922-7460

Reviewed by: Stephanie Wiggins, Deputy Chief Executive Officer, (213) 922-1023

Phillip A. Washington
Chief Executive Officer

ATTACHMENT A

PROCUREMENT SUMMARY

PRIVATE SECURITY CONTRACTOR SERVICES/PS26102156

1.	**Contract Number**: PS26102156			
2.	**Contractor**: RMI International Inc.			
3.	**Mod. Work Description**: 12-month contract extension			
4.	**Contract Work Description**: Private Security Contractor Services			
5.	**The following data is current as of**: 08/26/15			
6.	**Contract Completion Status**		**Financial Status**	
	Contract Awarded:	09/01/08	**Contract Award Amount:**	$24,363,136
	Notice to Proceed (NTP):	09/01/08	**Total of Modifications Approved:**	$13,575,247
	Original Complete Date:	08/31/11	**Pending Modifications (including this action):**	$8,119,674
	Current Est. Complete Date:	09/30/15	**Current Contract Value (with this action):**	$46,058,057
7.	**Contract Administrator**: James Nolan		**Telephone Number**: (213) 922-7312	
8.	**Project Manager**: Duane Martin		**Telephone Number**: (213) 922-7460	

A. Procurement Background

This Board Action is to approve Modification No. 16 issued to RMI International Inc. in support of Private Security Contractor Services for Metro properties and facilities.

This contract modification will be processed in accordance with Metro's Acquisition Policy and the contract type is a Firm Fixed Unit Price.

A five-year firm fixed unit rate contract, Contract No. PS26102156, was awarded to RMI International for private security contractor services in an amount not-to-exceed $24,363,136, inclusive of two, one-year options effective September 1, 2008.

Several contract modifications have been executed under the authority of Chief Executive Officer and/or Metro Board authority.

Refer to Attachment B – Contract Modification/Change Order Log.

B. Cost/Price Analysis

The recommended price has been determined to be fair and reasonable based upon adequate competition and price analysis. The rates that were bid by RMI International for IFB PS14199 were determined fair and reasonable in that competitive process and will be included in this recommended contract modification to charge Metro during the extension period..

Proposed Amount	Metro ICE	Negotiated Amount
$8,119,674	$9,000,000	$8,119,674

C. Small Business Participation

RMI International, Inc. made a 30.50% Small Business Enterprise (SBE) commitment by listing one SBE subcontractor. RMI international, Inc. is exceeding their SBE commitment with a current SBE participation of 30.90%

SMALL BUSINESS COMMITMENT	30.50% SBE	SMALL BUSINESS PARTICIPATION	30.90% SBE

	SBE Subcontractors	% Committed	Current Participation[1]
1.	Security America, Inc.	30.50%	30.90%
	Total	**30.50%**	**30.90%**

[1]*Current Participation = Total Actual amount Paid-to-Date to DBE firms ÷Total Actual Amount Paid-to-date to Prime.*

D. Living Wage and Service Contract Worker Retention Policy Applicability

The Living Wage and Service Contract Worker Retention Policy is not applicable to this modification.

E. Prevailing Wage Applicability

Prevailing wage is not applicable to this modification.

ATTACHMENT B

CONTRACT MODIFICATION/CHANGE ORDER LOG

PRIVATE SECURITY CONTRACTOR SERVICES/PS26102156

Mod. No.	Original Contract (inclusive of options)	09/01/08	$24,363,136
1.	Added overtime rates and six paid holidays.	09/15/11	$0.00
2.	Clarifications on compensation payment schedule and as-needed additional security officers.	06/4/10	$0.00
3.	Exercised 1st Option Year effective September 1, 2011 through September 1, 2012.	09/01/11	$0.00
4.	Exercised 2nd Option Year effective September 1, 2012 through September 1, 2013.	09/01/12	$0.00
5.	Extended contract term through December 31, 2013.	08/28/13	$0.00
6.	Extended contract term through February 28, 2014 and added funding.	11/05/13	$500,000
7.	Extended contract term through March 31, 2014 and added funding.	12/26/13	$500,000
8.	Added funding to contract.	01/13/14	$500,000
9.	Added funding to contract.	01/31/14	$500,000
10.	Added funding to contract.	02/07/14	$436,314
11.	Extended contract term through June 30, 2014 and added funding.	03/17/14	$1,608,933
12.	Extended contract term through September 30, 2014 and added funding.	06/26/14	$2,670,000
13.	Extended contract term through January 31, 2015 and added funding.	09/26/14	$3,560,000

14.	Extended contract term through March 31, 2015.	12/15/14	$0.00
15.	Extended contract term through September 30, 2015 and added funding.	03/26/15	$3,300,000
16.	Extend contract term through September 30, 2016 and add funding	Pending	$8,119,674
	Total Contract Value		**$46,058,057**

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

File #: 2015-1166, **File Type:** Contract **Agenda Number:** 48.

SYSTEM SAFETY, SECURITY AND OPERATIONS COMMITTEE
SEPTEMBER 17, 2015

SUBJECT: UNIFORM RENTAL SERVICES

ACTION: APPROVE CONTRACT MODIFICATION

RECOMMENDATION

AUTHORIZING the Chief Executive Officer to execute Modification No. 8 to Contract OP30002227 for **Uniform Rental services with Prudential Overall Supply** in the amount of $780,000 increasing the contract value from $3,735,029 to $4,515,029. This modification also extends the period of performance through June 30, 2016.

This contract provides on-going uniform rental services, vehicle seat covers, and laundry services for hand towels and floor mats.

ISSUE

Per the current ATU and TCU Collective Bargaining units' agreements, Metro is required to provide each of the units' employees up to 11 uniforms per employee, as well as provide laundry services for such regulation uniforms.

The existing uniform rental services Contract OP30002227 with Prudential Overall Supply will expire on November 30, 2015. However, in March 2015, the scope of work was expanded to include 146 additional Metro represented labor employees to receive flame resistant (FR) garments to ensure compliance with safety requirements. Therefore, there are insufficient funds remaining within the current contract and additional funding is required to continue providing the necessary uniforms.

Although procurement actions were initiated months ago to replace the current contract and award a new contract, a single proposal was received that did not meet Metro's DBE goal or good faith efforts, and living wage requirements. Therefore, the proposal was deemed technically unacceptable and the procurement was cancelled. Considering the type of service being provided, a new modified solicitation is being issued in the near term in an effort to increase competition and attract more companies to do business with Metro.

To avoid uniform rental service interruption, a contract modification is required to extend the period of performance and increase contract expenditure authority while the new procurement processes are completed.

DISCUSSION

Beginning April 2011, 91 Metro represented labor employees were issued FR garments, as well as additional towels and mats were added to this contract. As of February 2013, the Metro uniform program location list was modified to add Metro's Expo Phase I Line and provide uniform rental services to Metro's represented labor employees supporting work along the Expo Line. Furthermore, as of March 2015, an additional 146 Metro represented labor employees were issued FR garments. These actions were taken to ensure compliance with safety requirements and provide a safe and clean working environment to Metro employees and the public.

Currently under this contract, uniform rental services are provided to over 2,300 Metro represented labor employees, as well as providing vehicle seat covers and laundry services for hand towels and floor mats.

To avoid service interruptions, continue providing the necessary uniform rental program and services, and allow sufficient time to perform all necessary administrative processes associated with contract closeout and changeover, a contract modification is required to extend the period of performance through June 30, 2016 and increase contract expenditure authority while all related procurement actions are completed.

DETERMINATION OF SAFETY IMPACT

The approval of this item will ensure the supply of uniforms that clearly identify Metro represented labor employees and continue delivering safe, quality, on-time and reliable services system-wide.

FINANCIAL IMPACT

Funding of $780,000 for this contract is included in the F16 budget in multiple maintenance cost centers, account - 50215 (F/B Uniforms), projects 306002 (Bus Operations), 300022 (Blue Line Operations), 300033 (Green Line Operations), 300044 (Red Line Operations), 300055 (Gold Line Operations), 301012 (Orange Line Operations), and 300066 (Expo Line).

Impact to Budget

The current year funding for this action will come from the Enterprise operating fund. The source of funds for this procurement will come from Federal, State and local funding sources that are eligible for Bus and Rail Operating or Capital Projects. These funding sources will maximize the use of funds for these activities. This activity is part of Metro's on-going maintenance costs.

ALTERNATIVES CONSIDERED

Staff considered purchasing uniforms, hand towels, mats, and vehicle seat covers, along with providing in-house laundry services. This would require the hiring and training of additional personnel, purchase of additional equipment, vehicles, and supplies to support the expanded responsibility. Staff's assessment indicates this is not a cost-effective option for Metro.

NEXT STEPS

Upon Board approval, staff will execute Modification No. 8 with Prudential Overall Supply under the current Contract OP30002227 to continue providing uniform rental and laundry program services until the replacement contract begins.

ATTACHMENTS

Attachment A - Procurement Summary
Attachment B - Contract Modification/Change Log

Prepared by: Brady Branstetter, Director, Facilities Maintenance, (213) 922-6767
Lena Babayan, Facilities Maintenance Manager, (213) 922-6765

Questions: Christopher Reyes, Transportation Planning Manager III, Operations (213) 922-4808

Reviewed by: James T. Gallagher, Chief Operations Officer, (213) 922-4424
Ivan Page, Interim Executive Director, Vendor/Contract Management, (213) 922-6383

Phillip A. Washington
Chief Executive Officer

ATTACHMENT A

PROCUREMENT SUMMARY

UNIFORM RENTAL SERVICES/OP30002227

1.	**Contract Number**: OP30002227			
2.	**Contractor**: Prudential Overall Supply			
3.	**Mod. Work Description**: Additional Funding and Extend the Period of Performance			
4.	**Contract Work Description**: Uniform Rental Services			
5.	**The following data is current as of**: August 5, 2015			
6.	**Contract Completion Status**		**Financial Status**	
	Contract Awarded:	11/19/08	**Contract Award Amount:**	$2,538,329
	Notice to Proceed (NTP):	N/A	**Total of Modifications Approved:**	$1,196,700
	Original Complete Date:	11/30/15	**Pending Modifications (including this action):**	$780,000
	Current Est. Complete Date:	6/30/16	**Current Contract Value (with this action):**	$4,515,029
7.	**Contract Administrator**: Rommel Hilario		**Telephone Number**: 213-922-4654	
8.	**Project Manager**: Matthew Rubi		**Telephone Number**: 213-922-6773	

A. Procurement Background

This Board Action is to approve Modification No. 8 to Contract OP30002227 for Uniform Rental Services with Prudential Overall Supply in the amount of $780,000 increasing the contract value from $3,735,029 to $4,515,029. This modification also extends the period of performance through June 30, 2016. In addition to providing on-going uniform rental services, the contract provides laundry services for uniforms, hand towels and floor mats.

A total of seven modifications have been executed to date. Refer to Attachment B – Contract Modification/Change Order Log.

The purpose of this modification is to allow staff sufficient time to issue another solicitation, as the most recent procurement did not result in an award recommendation, as detailed below.

Actions to competitively procure a new contract for Uniform Rental Services began on April 16, 2015 with the release of a Request for Proposal (RFP) – Best Value

Technical Trade-off, which was issued in accordance with Metro's Acquisition Policy and Procedure Manual and the contract type is Firm Fixed Unit Rate.

The RFP was released on April 16, 2015, as full and open public competition for services.

The Diversity & Economic Opportunity Department (DEOD) recommended an 8% goal for this solicitation, consisting of a 5% Small Business Enterprise (SBE) goal and a 3% Disabled Veteran Business Enterprise (DVBE) goal. The submission of SBE and DVBE commitments meeting the goals or Good Faith Efforts was a condition of contract award.

A pre-proposal conference was held on April 29, 2015, and was attended by eight participants representing three firms. There were 10 firms that downloaded the RFP and were included on Metro's planholders' list.

One proposal, submitted by Prudential Overall Supply (the incumbent), was received on June 15, 2015. Metro staff determined that the proposal from Prudential Overall Supply did not meet the SBE/DVBE and Living Wage requirements set forth in the RFP. Subsequently, on June 29, 2015, the proposal was deemed non-responsive and the procurement was cancelled.

Since Metro did not receive a responsive proposal, staff conducted a market survey of planholders to determine why there were no other proposers. The following is a summary of the market survey:

1. Potential proposer could not meet the SBE goal requirement. The proposer chose the non-SBE subcontractors that can handle the volume for the project. In addition, the proposer could not claim to be 100% in compliance with the Living Wage requirement.
2. Potential proposer felt that it was not in its financial best interest to submit a proposal.

Based on the market survey, Metro staff will reprocure the Uniform Rental Services program, modifying the solicitation in an effort to increase competition and attract more companies to do business with Metro.

B. Cost/Price Analysis

The extension pricing has been determined to be fair and reasonable. The rates offered for the extension are the existing fixed unit rates in the contract that were determined fair and reasonable as a result of the competitive procurement completed in 2008 with total of four firms submitting responsive bids and Prudential Overall Supply bid the lowest rates.

	PROPOSAL AMOUNT	METRO ICE	METRO NEGOTIATED AMT
1	$780,000	$780,000	$780,000

C. Small Business Participation

The Diversity and Economic Opportunity Department (DEOD) did not establish a Disadvantaged Business Enterprise Anticipated Level of Participation (DALP) for this contract. Laundry and dry cleaning services were listed as part of the scope of work; however, there are no DBE certified firms under the NAICS code 812320 Dry Cleaning and Laundry Services. The contract was awarded under Metro's race neutral DBE Program; Prudential Overall Supply did not make a DBE commitment. In August 2015, DEOD verified that there are currently no DBE firms identified under NAICS code 812320.

D. Living Wage and Service Contract Worker Retention Policy Applicability

The Living Wage and Service Contract Worker Retention Policy is not applicable to this modification.

E. Prevailing Wage Applicability

Prevailing wage is not applicable to this modification.

ATTACHMENT B

CONTRACT MODIFICATION/CHANGE ORDER LOG

UNIFORM RENTAL SERVICES/OP30002227

Mod. No.	Original Contract	11/19/08	$2,538,329
1	Revised SOW – Added uniform items	12/17/08	$0
2	Administrative Change	12/18/08	$0
3	Revised SOW – Added uniform items	4/14/11	$144,991
4	Revised SOW – Added uniform items	5/11/11	$68,498
5	Revised SOW – Added uniform items	2/1/13	$13,033
6	Pay Delinquent Invoices	8/30/14	$120,178
7	Period of Performance Extension	11/14/14	$850,000
8	Period of Performance Extension	**PENDING**	$780,000
	Total:		**$4,515,029**

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

File #: 2015-1290, **File Type:** Contract **Agenda Number:** 49.

**SYSTEM SAFETY, SECURITY, AND OPERATIONS COMMITTEE
SEPTEMBER 17, 2015**

SUBJECT: INCREASE THE LIFE OF PROJECT BUDGET

ACTION: AUTHORIZATION FOR LIFE OF PROJECT BUDGET AND CONTRACT MODIFICATION

RECOMMENDATION

INCREASING the life of project budget for the **Blue and Green Lines Transit Passenger Information System**, capital project 212010, by $3,842,533, increasing the life of project from $5,987,180 to $9,829,713 and amend the FY16 annual budget by $3,842,533.

ISSUE

Staff is requesting an increase in Life-Of-Project for Capital Project (CP) 212010-Blue & Green Lines Transit Passenger Information System (TPIS) to adopt the reprogramming of Department of Homeland Security Grant funding. By adopting this funding, it will allow staff to purchase additional equipment for the Transit Passenger Information System.

In Fiscal Year (FY) 2015, the California Transit Security Grant Program-California Transit Assistance Fund (CTSGP-CTAF) Proposition 1B authorized Metro to reprogram available grant funding from completed capital projects to CP 212010- Blue & Green Lines Transit Passenger Information System in the amount of $3,042,533.

Metro now has the opportunity to further improve the Blue & Green Lines TPIS by using the reprogrammed $3,042,533 grant funding authorized by the Department of Homeland Security to purchase additional TPIS equipment. This funding is only available as a reprogram on existing project(s), therefore, we are requesting an increase in Life-Of-Project for CP 212010 for Metro to use this available funding.

DISCUSSION

BACKGROUND

The Blue & Green Lines Transit Passenger Information System is a multi-phase Department of Homeland Security (DHS) funded project to provide information to passengers in the event of emergencies and educate the Metro ridership of potential hazards. CP212010 was authorized with a Life-Of-Project (LOP) in the amount of $5,987,180 to allow a multi-year funding source from

Department of Homeland Security Transit Security Grant Program (DHS TSGP) and the California Transit Security Grant Program-California Transit Assistance Fund (CTSGP-CTAF) Proposition 1B. Year-to-date, Metro has received $5,987,180 from Department of Homeland Security Grant Program to purchase and install TPIS equipment for Blue and Green Lines.

- The Blue and Green Line Transit Passenger (TPIS) project met the California Governor's Office of Emergency Services (Cal OES) eligible activities which include a capital project that provides increased protection against a security or safety threat. This project provides information to passengers in the event of emergencies. This system is used to alert passengers of potential threats and can even display pictures of individuals that are suspected of trying to do harm to the system and its riders. An added benefit of the TPIS is that it can be used to announce the arrival of the next train(s) and display Public Service Announcements when not addressing security or safety threats.

- Additional monitors will be available to replace the aging monitors on the Metro Red Line.

- Below identifies why the funds are available to be re-programmed and the completed capital projects the funding is left over from:

  ORIGINAL PROJECTS FUNDED IN THE FY08/09 PROP 1B GRANT

  March 5, 2009 - Cal OES (formerly California Emergency Management Administration - Cal EMA) approved eight projects for a total of $16.1 million in the FY08/09 Prop 1B grant cycle.

Metro Rail Gating	$4,900,000
Training Simulators- FATS Firearms Training Simulator	$200,000
Mobile Passenger Security - Multi-Sensor Array	$3,800,000
Mobile CNG Fueling Station to Support Major Evacuations & Back	$4,000,000
Enhancements for Hi-Rail Emergency Response Vehicle	$660,000
Metro Joint Operations Mobile Command Post	$1,430,000
Metro Rail Training Car (Heavy Rail)	$1,000,000
Three Wheel Electrical Patrol Vehicles (T3 Motion)	$113,000
	$16,103,000

  1st MODIFICATION

  March 22, 2010 - Due to the changes in the need/focus our contracted security: Los Angeles Sheriff's Department (LASD) directed Regional Grants Management to cancel seven of the approved projects by Cal OES in the amount of $11,203,043, and requested the reprogramming of the funds to the following two projects. March 22, 2010, Metro received approval to reprogram the funds to the following two projects:

Advanced Transit Management System - Narrowband Frequency*	$8,800,000

Metro Blue and Green Line Transit Passenger (TPIS)	$2,403,000
	$11,203,000

*The Federal Communications Commission (FCC) mandated that all 25 KHz radio channel frequencies (wideband) be migrated to 12.5 KHz radio channel frequencies (narrowband) by January 1, 2013. This ruling affects a vast majority of radio frequency (RF) users across the country and had the potential impact of rendering many users inoperable, including Metro, if they do not comply with the FCC mandate within the required deadline. From the $11.2 million still available in FY08/09 Prop 1B funds, Metro used $8.8 million to meet this FCC mandate. Capital Project: Advanced Transit Management System - Narrowband Frequency, was created to address the implementation of this FCC mandate.

2ND MODIFICATION

September 13, 2012 - The FCC released a notification that waived the mandate. With the removal of the short implementation period, this would allow Metro the much needed longer timeframe allowing for a comprehensive evaluation of the needed software, hardware, and equipment effectively make the changes in radio frequencies that would met the requirement established by the FCC. This evaluation and implementation would take a longer period time that did not match the grant performance period for this grant, so the project was removed from this grant making the $8.8 million available to reprogram to other needed safety and security projects within Metro.

Metro requested from Cal OES to reprogram of the $8.8 million to the current needed security projects and received approval from Cal OES to reprogram the funds

Listed below are the final approved projects and the award amounts:

Metro Blue and Green Line Transit Passenger (TPIS) **	$4,766,785
Metro Rail Gating (additional dollars to cover overrun)	$5,162,861
Metro Rail Gating/Security Kiosks	$5,100,000
Metro Command Post Vehicle	$1,073,3
FY08/09 Prop 1B Grant Award	$16,103,000

- The funding is only available for this project because the Blue and Green Line Transit Passenger (TPIS) project is part of a larger MTA project that includes the installing, enhancing, and upgrading the existing rail infrastructure and adding security equipment to areas that have been identified as security vulnerability to our rail system. The larger project includes the Red, Purple, and Gold lines in the installing, enhancing, and upgrading of the TPIS, which include cameras and other supporting security equipment. Metro has been using federal, state, and local funds to implement this project. The Transit Security Grant Program (TSGP) comes from U.S. Department of Homeland Security (DHS), with the Federal Emergency Management

Administration (FEMA) administrating the funds. California Transit Security Grant Program (Prop 1B) and local funds, such as: Prop A, C, and TDA. Below are the phases the TPIS that have been implemented and the future phases as funds become available:

Red Line received from fiscal year (FY) 2004 TSGP	$1,546,950
Gold Line received from FY 2006 TSGP	$1,790,564
Video Security System Enhancement in FY 2010 TSGP	$3,584,180
Blue & Green Line requesting in FY 2007-08 Prop 1B	$1,500,000
Blue & Green Line requesting in FY 2008-09 Prop 1B **	$2,403,043
Reprogram $2.5 million in FY 2008-09 Prop 1B **	$2,500,000
Funding still needed to implement this project	$6,675,263
Project Total	$20,000,000

**Funded from FY08/09 Prop 1B Grant

Below identifies current Life-Of-Project funding source for CP 212010-Blue & Green Lines TPIS:

FY 10 DHS TSGP	$	2,084,180
FY 07/08 CTSGP-CTAF Proposition 1B	$	1,500,000
FY 08/09 CTSGP-CTAF Proposition 1B	$	2,403,000
Total	**$**	**5,987,180**

Staff has fully expended and drawn down FY10 DHS TSGP and FY 07/08 CTSGP-CTAF Proposition 1B in the amount of $3,584,180 and $678,748 from FY08/09 CTSGP-CTAF Proposition 1B in the total amount of $4,262,928. This leaves an available funding of $1,724,252 from the FY08/09 CTSGP-CTAF Proposition 1B that can be used for this new scope of work. The equipment purchased and installed is listed below:

Blue Line TPIS

Number of Stations
- (21) Stations/Platforms

Number of TPIS Installed:
- (84) Double Sided Leader Board Sign-Strips
- (48) LCD Monitors

Green Line TPIS

Number of Stations
- (13) Stations/Platforms

Number of TPIS Installed:
- (52) Double Sided Leader Board Sign-Strips

The equipment is operational and staff is currently working to maintain and enhance the current TPIS equipment.

NEW SCOPE OF WORK

On May 6, 2015, the Governor's Office of Homeland Security authorized Metro to reprogram $3,042,533 of available funding from completed capital projects to CP 212010-Blue & Green Lines Transit Passenger Information System.

The new scope of work will seek to enhance system safety and security by purchasing and installing additional and/or replacing current TPIS equipment for the Blue and Green Lines. The scope of work will include, but not limited to the following:

- Enhanced Emergency Notifications Display
  The safety and security of our patrons is a primary concern of Metro. During an emergency, having the ability to "push" additional emergency notifications to each and/or all Blue and Green Line Stations to inform our patrons is critical. The current leader board signs are limited in the amount of the information it can display at a given time. The new TPIS monitors will replaced the existing leader board sign to allow more emergency information to be display at a given time.

- Enhanced Graphic Displays
  The enhanced TPIS monitors will provide Metro the opportunity to display graphics that are not available on the current TPIS. This enhanced feature will provide security and law enforcement to publish security and law enforcement graphics to inform our patrons.

- Display Public Service Announcements
  The enhanced TPIS monitors will provide Metro the ability to display additional public service announcements at each of the stations. This will allow Metro to further educate patrons of potential hazards and how to report any issues that may arise.

- Audio and Visual Inter-Operability
  The integration of visual and audio announcements with the TPIS monitors will enhance the customer's abilities to receive published information in different medium.

Staff is requesting authorization to revise the LOP for CP 212010 to include this additional funding in the amount $3,042,533 and $800,000 in Metro labor to implement this new scope of the work. The labor will adequately ensure the installation of TPIS equipment, as well as, make them fully operational on the Blue and Green Lines.

DETERMINATION OF SAFETY IMPACT

Capital Project 212010 will provide a positive safety impact for our employees and patrons by enhancing the Metro's digital signage to mitigate potential terrorist incidents and deterring crimes on our transit system, as well as provide more high quality viewing for situational awareness.

FINANCIAL IMPACT

The Blue & Green Lines Transit Passenger Information System-CP 212010 has an authorized Life-Of-Project in the amount of $5,987,180 funded by Department of Homeland Security for equipment and installation. The Year-To-Date Expenditures for this project are $4,262,928, thus leaving an available LOP balance of $1,724,252 from FY08/09 CTSGP-CTAF Proposition 1B. This available LOP balance will be included with the new authorized reprogramming of $3,042,533 and $800,000 for additional labor support (Attachment A - Funding Plan).

Staff is requesting to amend the FY16 budget; therefore, the funding for CP 212010 in the amount of $3,842,533 will be added to the FY16 budget in cost center 2610, System Security and Law Enforcement, $3,042,533 in Account 53102-Acquisition of Equipment, and $800,000 in Account 50151- Direct Labor ATU. All funding will be spent in FY16.

Impact on Bus and Rail Operating and Capital Budget

The FY16 funding of $3,842,533 for increasing the LOP for CP 212010 will come from TDA4 for $800,000 in labor and $3,042,533 from FY2008/2009 California Transit Security Grant Program-California Transit Assistance Fund (CTSGP-CTAF) Proposition 1B to support equipment purchases and installation. The grant funding is eligible for Rail Operations and the TDA4 funding is eligible for both operations and capital.

ALTERNATIVES CONSIDERED

An alternative option would be not to approve the increase in LOP for CP 212010. Staff does not recommend this alternative because it will prohibit Metro from continuing to advance the Transit Passenger Information System. Furthermore, this is the only eligible grant funded project authorized by DHS to utilize this additional funding.

NEXT STEPS

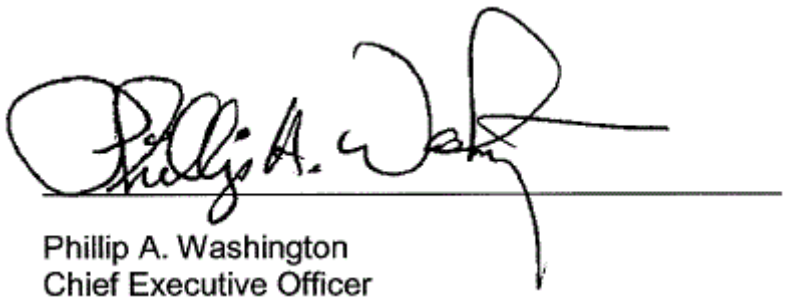
Upon approval of recommendation, Metro staff will revise the LOP and the FY16 annual budgets for CP 212010 and begin work. Attachment B contains the timeline for the TPIS installation.

ATTACHMENTS

A. Funding/Expenditure Plan
B. Timeline for TPIS Installation

Prepared by: Duane Martin, DEO Project Management, 213-922-7460
Alex Wiggins, EO System Security and Law Enforcement, (213) 922-4433

Reviewed by: Stephanie Wiggins, Deputy Chief Executive Officer, (213) 922-1023



Phillip A. Washington
Chief Executive Officer

ATTACHMENT A

FUNDING/EXPENDITURE PLAN

Blue & Green Line Transit Passenger Information System

Current Authorized LOP Funding Source and Expenditures

FY10 DHS TSGP	$2,084,180
FY07/08 CTSGP-CTAF Proposition 1B	1,500,000
FY08/09 CTSGP-CTAF Proposition 1B	2,403,000
Total Current Authorized LOP	**$5,987,180**
YTD Current Expenditures	4,262,928
Current Avalilable LOP Balance (Authorized LOP- Total YTD Current Expenditures)	**$1,724,252**

Request Life-Of-Project Increase

New Authorized Reprogramming Funds For FY08/09 CTSGP-CTAF Proposition 1B	$ 3,042,533
Request For Additional Labor	800,000
Total Requested Life-Of-Project Increase	**$ 3,842,533**

Grand Total Life-Of-Project Summary

Total Current Life-Of-Project	$5,987,180
Total Requested Life-Of-Project Increase	3,842,533
Revised Grand Total Life-Of-Project Summary	**$9,829,713**

ATTACHMENT B

Timeline for TPIS Installation

Rail Line	# of Stations	2016	2017	2018
Blue	21	12 MONTHS		
Green	14		12 MONTHS	
Red	16	12 MONTHS		

Procurement Timeline

Date	Action
July-August 2015	Statement of work complete
September 2015	Requesting LOP Board Authorization
October 2015	Contract Award
October-December 2015	Delivery of materials
January 2016	Installation Begins
January 2018	Est. Project Completion

File #: 2015-1226, **File Type:** Contract **Agenda Number:** 50.

SYSTEMS SAFETY, SECURITY AND OPERATIONS COMMITTEE
SEPTEMBER 17, 2015

SUBJECT: ATMS COUNTYWIDE BUS SIGNAL PRIORITY IMPLEMENTATION

ACTION: AWARD CONTRACT

RECOMMENDATION

AUTHORIZING the Chief Executive Officer to award a sole source firm fixed price Contract No. PS92403277 to **Xerox Transport Solutions, Inc. for the integration of a Countywide Signal Priority (CSP) software module into Metro's Advanced Transportation Management System (ATMS)** for an amount of $952,000.

ISSUE

In 1998, Metro initiated the Countywide Bus Signal Priority Pilot Project as part of an effort to design, develop, implement, and evaluate a multi-jurisdictional bus signal priority system as well as develop countywide signal priority guidelines for Los Angeles County. The CSP Pilot Project was a collaborative effort bringing together multiple jurisdictions and transit operators that resulted in the development of a wireless signal priority standard for Los Angeles County.

In 2005, Metro embarked on the Countywide Metro Rapid Signal Priority Expansion Project. This was a follow-up to the previous successful demonstration pilot and the first phase of an expansion effort to implement signal priority on seven Metro Rapid corridors traversing through 24 jurisdictions. In accordance with the Metro Rapid Five-Year Implementation Plan, the first phase focused on providing bus signal priority for four Metro Rapid corridors including, Pacific-Long Beach, Soto, Hawthorne, and Florence. In 2008, Metro initiated work on the second phase of the Countywide Metro Rapid Signal Priority Expansion Project to implement signal priority along the Manchester, Garvey-Chavez and Atlantic Metro Rapid corridors. Additional communication enhancements for Metro fleet operations have taken place as part of that phase.

Currently, on-bus technology is implemented utilizing a third-party vendor and requires dedicated fleet assignments. With the continuous changing fleet environment, this becomes a growing challenge to maintain for both bus operations and CSP deployments. The wireless standards deployed at the inception of the system specified similar communications protocol as the current proprietary ATMS system. Metro's ATMS computer system is the core system used to manage Metro's bus fleet. The ATMS system incorporates automated vehicle location (AVL), automated passenger counting (APC), automated voice annunciation (AVA) and interfaces with the various fleet

video, fare payment and headsign systems to better manage the overall effectiveness of the fleet on a 365/24/7 basis. Adding the recommended countywide signal priority module to the current ATMS suite of functionality allows the existing infrastructure to be leveraged in a way that no new additional hardware is needed to implement the signal priority solution, although it does require this sole source contract to be executed. Additionally, since Metro's ATMS system is already used countywide, this new software module will similarly be able to provide a one-size-fits-all solution for all of the various cities within the County that support the signal priority concept on Metro's fleet.

Status

Metro has partnered with various agencies throughout the county to deploy street infrastructure for communication. CSP infrastructures have been deployed on the following corridors:

- Crenshaw (Los Angeles, Inglewood, LA County, Gardena, & Hawthorne)
- Pacific-Long Beach (LA County, Huntington Park, South Gate, & Lynwood)
- Florence (LA County, Inglewood, Huntington Park, Bell, & Bell Gardens)
- Soto (LA County, Vernon, Huntington Park, South Gate,& Lynwood)
- Hawthorne (LA County, Inglewood & Lawndale)
- Manchester (LA County, Inglewood, & South Gate)
- Garvey-Chavez (LA County, Monterey Park, Rosemead, South El Monte, & El Monte)
- Atlantic (LA County, Alhambra, Bell, Compton, Cudahy, Long Beach, Lynwood, Maywood, Monterey Park, Pasadena, South Gate, South Pasadena, & Vernon)

DISCUSSION

The countywide signal priority solution requires a coordinated effort with the various cities throughout Los Angeles County. A general operational description of the signal priority solution is summarized below:

1. A Metro vehicle operating along a rapid line approaches a given intersection within a city boundary.

2. A pre-existing agreement between Metro and the "City" establishes the conditions under which the City would allow a given signal timing event (green light) to be extended to allow a Metro bus to obtain priority and proceed through the intersection. If a bus is early and/or on-time, or if a bus is not a rapid bus, or other special circumstances (e.g. pre-empted emergency vehicles), then the City would not trigger a change to the signal timing to allow priority.

3. Each City within the Rapid lines would have an agreement in place for signal priority. The intent is to establish a uniform set of conditions for countywide signal priority, but there may be some differences to account for certain infrastructure variations.

4. Each Rapid vehicle operating within the City would be processed under the same conditions to assess priority. Day of week, time of day, special events, maintenance periods and related variables would all be part of the decision conditions for allowing priority.

DETERMINATION OF SAFETY IMPACT

The countywide signal priority software helps to improve the efficiency and effectiveness of transit service along Metro's rapid lines. There is no specific safety related impact and/or improvement in the implementation of this software module.

FINANCIAL IMPACT

The funding for this project is budgeted under cost center 9210, Information Management - Transit Applications, Capital Project 207136, Countywide Signal Priority, account 50320 - Contracted Services. This capital project was approved and is funded by federal grant funds. Since this is a multi-year project, the project manager and the Chief Information Officer will be responsible for budgeting costs in future years.

Impact to Budget
The funding for this action will come from grant funds earmarked for signal priority. No other sources of funding were considered for this activity since the project is 100% funded with dedicated grant funds which are not available or eligible for general bus and rail operating and/or capital projects. This project will not impact on-going operating expenses.

ALTERNATIVES CONSIDERED

The Board may choose to not award or to postpone awarding this contract. However, this is not recommended as the proposed capital project LOP is fully grant funded and addresses a customer service improvement goal which, when fully operational, has the potential to improve service times across all rapid lines throughout the County of Los Angeles.

NEXT STEPS

Upon approval by the Board, staff will move forward with awarding the new contract.

ATTACHMENTS

Attachment A - Procurement Summary
Attachment B - DEOD Summary

Prepared by:
Al Martinez, Director, IT Transit Application (213) 922-2956

Reviewed by:
David C. Edwards, Chief Information Officer, (213) 922-5510
Ivan Page, Interim Executive Director, Vendor/Contract Management (213) 922-6383

Phillip A. Washington
Chief Executive Officer

ATTACHMENT A

PROCUREMENT SUMMARY

ATMS COUNTYWIDE BUS SIGNAL PRIORITY IMPLEMENTATION

1.	**Contract Number**: PS92403277	
2.	**Recommended Vendor**: Xerox Transport Solutions, Inc.	
3.	**Type of Procurement** (check one): ☐ IFB ☐ RFP ☐ RFP–A&E ☒ Non-Competitive ☐ Modification ☐ Task Order	
4.	**Procurement Dates**:	
	A. Issued: January 15, 2015	
	B. Advertised/Publicized: N/A	
	C. Pre-proposal/Pre-Bid Conference: N/A	
	D. Proposals/Bids Due: January 23, 2015	
	E. Pre-Qualification Completed: June 29, 2015	
	F. Conflict of Interest Form Submitted to Ethics: January 23, 2015	
	G. Protest Period End Date: N/A	
5.	**Solicitations Picked up/Downloaded**: 1	**Bids/Proposals Received**: 1
6.	**Contract Administrator**: Mark Lu	**Telephone Number**: (213) 922-4689
7.	**Project Manager**: Al Martinez	**Telephone Number**: (213) 922-2956

A. Procurement Background

This Board Action is to approve Contract No. PS92403277 for the integration of a Countywide Bus Signal Priority solution with Metro's Advanced Transportation Management System (ATMS). On January 15, 2015, Metro issued a non-competitive solicitation to Xerox Transport Solutions Inc. (Xerox) because Xerox is the original equipment manufacturer (OEM) of its proprietary ATMS system. Metro received the proposal on January 23, 2015.

The RFP was issued in accordance with Metro's Acquisition Policy. The contract type is a Firm Fixed Price.

B. Evaluation of Proposals/Bids

A Proposal Evaluation team (PET) consisting of staff from Metro's Information Technology Services (ITS) and Highway Planning departments conducted a comprehensive technical evaluation of the proposal received from Xerox.

C. Cost/Price Analysis

The Contractor's price proposal was evaluated in compliance with Metro's Acquisition Policy. The proposed price was determined to be fair and reasonable based on price analysis, technical evaluation, and negotiations. The Contractor demonstrated that the rate on which the firm fixed price was prepared and offered to Metro is the same rate offered to other government agencies. In addition, during negotiations, the statement of work was modified and clarified, which resulted in a significantly reduced price from the original price proposed.

	Bidder/Proposer Name	Proposal Amount	Metro ICE	Negotiated Amount
1.	Xerox	$1,721,540	$1,118,000	$952,000

D. Background on Recommended Contractor

Xerox is the OEM of Metro's ATMS. Metro's ITS and Operations departments have used ATMS to manage Metro bus fleet operation and maintenance activities since 2005.

Metro's ATMS computer system is the core system used to dispatch and manage Metro's bus fleet from the Bus Operations Center. The ATMS system incorporates automated vehicle location , automated passenger counting , automated voice annunciation and interfaces with the various fleet video, fare payment and headsign systems to better manage the overall effectiveness of the fleet on a 365/24/7 basis.

Xerox has provided satisfactory transportation related services to Metro for nearly 20 years, including the ATMS project and Photo Enforcement services.

In the last five years, Xerox has also provided the Bus Signal Priority upgrade services to other transit agencies including: Foothill Transit in San Gabriel Valley and San Diego Metropolitan Transit System in California; Capital Metropolitan Transportation Authority in Austin, Texas; Hillsborough Area Regional Transit in Tampa, Florida; and Montgomery County Department of Transportation in Maryland.

DEOD SUMMARY

ATMS COUNTYWIDE BUS SIGNAL PRIORITY IMPLEMENTATION

A. Small Business Participation

The Diversity & Economic Opportunity Department (DEOD) did not recommend a Race Conscious Disadvantaged Business Enterprise (DBE) goal for this sole source, non-competitive proprietary software project. The proposed Prime Consultant, Xerox Transport Solutions, Inc., is the proprietary vendor of Metro's bus fleet management system and does not license or contract to outside vendors for development, customization or adapting their software. It is expected that Xerox will provide all services, supplies, and/or equipment required.

Small Business Goal	**DBE 0%**	**Small Business Commitment**	**DBE 0%**

B. Project Labor Agreement/Construction Careers Policy (PLA/CCP)

PLA/CCP is not applicable to this contract.

C. All Subcontractors Included with Recommended Contractor's Proposal

NONE

D. Living Wage Service Contract Worker Policy

The Living Wage and Service Contract Worker Retention Policy is not applicable to this contract.

E. Prevailing Wage Applicability

Prevailing wage is not applicable to this contract.

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

Metro

Board Report

File #: 2015-0366, **File Type:** Contract **Agenda Number:** 51.

SYSTEM SAFETY, SECURITY AND OPERATIONS COMMITTEE
SEPTEMBER 17, 2015

SUBJECT: PARTS WASHER SERVICES FOR METRO MAINTENANCE FACILITIES

ACTION: AWARD PROFESSIONAL SERVICES CONTRACT

RECOMMENDATION

AUTHORIZING the Chief Executive Officer to award a 5-year firm fixed price Contract No. PS15360111323, to **FRS Environmental Inc., for parts washer services** in an amount not-to-exceed $1,223,820 for a 5-year period.

ISSUE

The existing parts washer services contract will reach the Board approved amount by November 2015. The new contract will continue to provide parts washer services to Metro Maintenance facilities. The parts washers are used to remove dirt, grime, and grease from parts, tools, and equipment using aqueous (water or solvent-based) solutions. These units support the diverse production requirements of Metro Central Maintenance Shops as well as bus and rail operating divisions.

To provide the required parts washer services in a timely manner, a new contract must be awarded by October 2015.

DISCUSSION

Forty-four of the seventy parts washers that require servicing are located at the Central Maintenance Facility (CMF). CMF is responsible for providing heavy bus maintenance support to the operating divisions including but not limited to: failed engine and transmission dismantling, rebuilding and replacement, major accident repair, complete bus painting, and the rebuilding of components for power plant assemblies. Operating divisions also utilize parts washer equipment to support their daily maintenance requirements.

The contracted services include the provision of contractor-owned parts washing equipment, refilling these machines to their optimal level and removing hazardous waste materials for proper disposal (off-site), and performing preventative maintenance on the units. These services are performed at various scheduled intervals dependent on specific location requirements/applications.

DETERMINATION OF SAFETY IMPACT

Award of contract will ensure that CMF and the operating divisions will have the maintained equipment and the cleaned parts needed to repair and maintain buses and trains according to Metro Maintenance standards.

FINANCIAL IMPACT

Funding of $165,000 for this contract is included in the FY16 budget in cost centers 3366- Central Maintenance Shops, 3790- Maintenance Administration, 5430- Central Maintenance Electronic Shops, 3601- Maintenance Division 1, 3503- Maintenance Division 3, 3805- Maintenance Division 5, 3815- Maintenance Division 15, 3818- Maintenance Division 18, account- 50308 (Service Contracts), project 306002; 3943- Rail Fleet Services Maintenance Green Line account 50308 (Service Contracts), project 300033; 3942 Rail Fleet Services Maintenance Red Line account 50308 (Service Contracts), project 300044.

Since this is a multi-year contract, the cost center manager, project managers, and Executive Director, Maintenance will ensure that the balance of funds is budgeted in future years.

Impact to Budget

The current year funding for this action will come from the Enterprise operating fund. No other sources of funds were considered for this activity because it supports bus and rail operations. This activity is part of Metro Operations on-going maintenance costs.

ALTERNATIVES CONSIDERED

The only alternative considered is the use of in-house personnel to perform these services. This alternative is not recommended for the following reasons: Metro would have to purchase the equipment, costing approximately $300,000, and maintain, as well as periodically repair, the equipment; the degreasing agents used in the parts washer units are considered hazardous materials that require specialized certification for handling and disposal; the removal and transportation of hazardous waste must be performed by a licensed transporter; the treatment and disposal of the waste can only be performed by a permitted Treatment, Storage and Disposal Facility.

Because Metro does not have the required licenses, permits or personnel to serve in this capacity, staff has determined that it is in the best interests of Metro to contract out these services.

NEXT STEPS

Upon Board approval, staff will execute Contract No. PS15360111323 with FRS Environmental Inc. for a 5-year period for parts washer services.

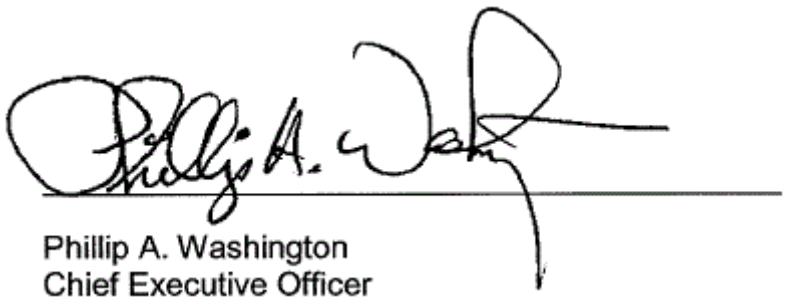
ATTACHMENT

Attachment A - Procurement Summary

Prepared by: Amy Romero, Director of Central Maintenance, (213) 922-5709

Questions: Christopher Reyes, Transportation Planning Manager III, Operations (213) 922-4808

Reviewed by: James T. Gallagher, Chief Operations Officer, (213) 922-4424
Ivan Page, Interim Executive Director, Vendor/Contract Management, (213) 922-6383



Phillip A. Washington
Chief Executive Officer

ATTACHMENT A

PROCUREMENT SUMMARY

PARTS WASHER SERVICES FOR METRO MAINTENANCE FACILITIES

1.	**Contract Number:** PS15360111323	
2.	**Recommended Vendor:** FRS Environmental, Inc.	
3.	**Type of Procurement (check one)**: ☒ IFB ☐ RFP ☐ RFP–A&E ☐ Non-Competitive ☐ Modification ☐ Task Order	
4.	**Procurement Dates**:	
	A. Issued: April 14, 2015	
	B. Advertised/Publicized: April 15, 2015	
	C. Pre-proposal/Pre-Bid Conference: N/A	
	D. Proposals/Bids Due: June 9, 2015	
	E. Pre-Qualification Completed: June 25, 2015	
	F. Conflict of Interest Form Submitted to Ethics: July 29, 2015	
	G. Protest Period End Date: September 24, 2015	
5.	**Solicitations Picked up/Downloaded**: 9	**Bids/Proposals Received**: 1
6.	**Contract Administrator**: Linda Rickert	**Telephone Number**: (213) 922-4186
7.	**Project Manager**: John Petres	**Telephone Number**: (213) 922-5743

A. Procurement Background

This Board Action is for an Invitation For Bids (IFB) procurement issued in support of parts washer services for maintenance facilities.

This is a race-neutral "Small Business Enterprise Set-Aside" project. Therefore, only bidders that are certified by Metro as an SBE were eligible to participate in this solicitation.

The IFB was issued in accordance with Metro's Acquisition Policy and the contract type is a Firm Fixed Unit Price.

One amendment was issued during the solicitation phase of this IFB. Amendment No. 1 issued on May 11, 2015, clarified the approval of the use of alternative equipment and extended the bid due date to June 9, 2015.

One bid was received on June 9, 2015. Parts washer services require special licensing and approval of chemicals through the Department of Toxic Substances Control. An internet survey indicates that FRS Environmental is the only vendor licensed to provide these services. Other vendors in the U.S. sell the equipment, but do not pick up and dispose of the black water created in the parts washer process in Los Angeles.

B. Evaluation of Proposals/Bids

The project manager determined that FRS Environmental, Inc. has the technical skills to perform the Statement of Work requirements in providing and servicing equipment for parts washing.

Qualifications Summary of Firm(s):

FRS ENVIRONMENTAL, INC.

FRS Environmental, Inc. is the incumbent and has provided the equipment and maintenance in prior contracts. FRS Environmental has the technical skills and the required licenses to provide equipment and remove the hazardous water created from washing parts.

C. Cost/Price Analysis

The recommended price has been determined to be fair and reasonable based upon historical pricing, a review and analysis of the cost required for new equipment, and departmental expertise.

	Bidder Name	Bid Amount	Metro ICE
1.	FRS Evironmental, Inc.	$1,223,820	$908,000

D. Background on Recommended Contractor

The recommended firm, FRS Environmental, Inc. started in Corona, California in 1996 and is a Metro certified SBE and DBE. Their prior work with Metro is satisfactory. They also service the Los Angeles Unified School District and Long Beach Transit. They are licensed through the Department of Toxic Substances Control to transport toxic waste products.

E. Small Business Participation

Effective June 2, 2014, per Metro's Board-approved policy, competitive acquisitions with three or more Small Business Enterprise (SBE) certified firms within the specified North American Industry Classification System (NAICS) as identified for the project scope shall constitute a Small Business Prime/Set-Aside procurement. Accordingly, the Contract Administrator advanced the solicitation, including posting the solicitation on Metro's website, advertising, and notifying certified small businesses as identified by NAICS code(s) that this solicitation was open to **SBE Certified Small Businesses Only**.

FRS Environmental is an SBE Prime that is performing 100% of the work with its own workforce.

	SBE Prime Contractor	SBE % Committed
1.	FRS Environmental (Prime)	100%
	Total	100%

F. Living Wage Service Contract Worker Policy

The Living Wage and Service Contract Worker Retention Policy is not applicable to this contract.

G. Prevailing Wage Applicability

Prevailing wage is not applicable to this contract.

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

File #: 2015-1228, **File Type:** Contract **Agenda Number:** 64.

REVISED
SYSTEM SAFETY, SECURITY AND OPERATIONS COMMITTEE
SEPTEMBER 17, 2015

SUBJECT: NEW FLYER BUSES

ACTION: APPROVE RETROFIT OF OPERATOR BARRIERS AND LIVE VIDEO MONITORS ON REMAINING NEW FLYER BUSES AND OPTION 1 PRICE ESCALATION

RECOMMENDATION

AUTHORIZING the Chief Executive Officer to:

A. Increase the Life of Project (LOP) budget for the **900 bus buy project to include funding for Option 1 price escalation; retrofit of operator safety barriers; and Live Video Monitoring System** (LVMS) in the amount of $3,617,152 from $503,442,500 to $507,059,652; and

B. Approve Contract Modifications 9 and 10 for Contract OP33202869 to New Flyer of America, in the amount of $6,043,492, for Option 1 price escalation and for retrofit of operator safety barriers and LVMS, increasing the total Contract value from $498,652,341 to $504,695,833.

ISSUE

Contract OP33202869 is a firm fixed price contract for the purchase of up to 900 forty-foot CNG transit buses. The Base Order Contract for 550 buses was executed on February 1, 2013. In February 2015, Metro's Board approved Contract Option 1 for 350 additional buses for a total of 900 buses. Base order buses purchased under this contract went into service in December 2013. Option 1 buses are currently being delivered to Metro at a rate of 5 buses per week with a delivery completion date of October 2016.

In response to increased operator assaults, Metro's CEO directed staff to retrofit all of Metro's bus fleet with protective operator barriers in order to provide additional protection to operators.

DISCUSSION

Operator Barriers & Live Video Monitoring System

In September 2014, New Flyer was directed to begin installation of LVMS during production on 618 buses. In February 2015, Metro directed New Flyer to begin installation of protective operator barriers on 473 buses during production.

The first phase of Metro CEO's directed fleet retrofit plan will include installation of operator barriers and LVMS on the base order New Flyer buses purchased under Contract OP33202869 that did not have this equipment installed during production. Currently, there are 427 New Flyer buses that do not have operator safety barriers installed, and there are 282 New Flyer buses that do not have the LVMS installed.

In the last couple years, several major U.S. transit operators are installing operator barriers to help reduce the number of bus operator assaults (Attachment D). The barriers are being installed as part of new bus procurements and continue to be in use. Metro will continue to monitor advancements in operator barriers and protective systems internally and within the transit industry. The information gathered from manufacturers and transit agencies only indicates who is using protective operator barriers, there is no current information available on their effectiveness against operator assaults.

Between April and August 2015 Metro conducted surveys and sent bus operators several pieces of communications to inform them and solicit their feedback regarding protective operator barriers and LVMS. The results of this survey found:

- 62% of operators surveyed expressed that they would use the barriers in the future
- 58% of operators surveyed felt that the barriers made their job easier or did not affect their job in a negative way
- 59% of operators surveyed reported that they felt safe or somewhat safe when operating a bus with a barrier
- 63% of operators surveyed felt safe or somewhat safe when operating a bus with the on-board video monitor

The total retrofit cost of the operator safety barriers is $2,512,726 and LVMS is $1,104,426. Once this project begins, it is estimated that barrier installations will be completed in 25 weeks, and video monitor installations will be completed in 15 weeks.

Escalation for 350 Bus Option

Option buses purchased under the Contract are subject to escalation based on the Producer Price Index (PPI) for bus and truck bodies. The Total Contract Value approved by the Board in February was based on projected escalation using the latest PPI figure (Dec '14) available at the time of board approval. Between January and March 2015, the PPI increased 1.33% or $2,426,340, increasing the Total Contract value for the 350 Option buses from $498,652,341 to $501,078,681, inclusive of sales tax. Staff recommends an increase to the Total Contract Value for Option 1 buses in the amount of $2,426,340 to cover the cost of escalation accrued between January and March 2015 for the 350 vehicle Option approved by the Board in February 2015.

DETERMINATION OF SAFETY IMPACT

Operator safety is at the forefront of Metro's priorities. The installation of protective barriers and

video monitors on the new fleet is expected to help reduce the rate of Operator assaults.

FINANCIAL IMPACT

Funding for this recommendation will be included in the FY16 capital program by an LOP increase to project 201056 550 40' Foot Bus Buy. Budget will be allocated to cost center 3320 in account 53105 - Vehicle Technology for $3,617,152 in the FY16 budget. The balance of the project shall be funded in accordance with the cashflow plan found in Attachment C. Should additional funds be identified or become available throughout the life of this action, project management will coordinate with funding staff to accelerate the bus delivery. Since this is a multi-year action, the cost center manager and project manager will be responsible for budgeting in future fiscal years.

Impact to Budget

The recommended action will be funded with Federal 5307, Federal 5339 and Local TDA-4 funds which are eligible for Bus and Rail Operations.

ALTERNATIVES CONSIDERED

Operator Barriers & LVMS
Staff considered conducting a new procurement for barriers and monitors for all Metro buses fleet-wide. This option is not recommended for the New Flyer buses because it would delay the installation and will compromise fleet uniformity for the New Flyer fleet and create additional inventory and training costs. If outside vendors (other than New Flyer) were to do this work it may void the warranty coverage on these buses.

Escalation for Option 1
Staff considered purchasing slightly fewer than the full 350 buses to stay within previously approved contracting authority limits. This action is not recommended because funding is already programmed that covers the cost of this increase, and all of these New Flyer buses are needed to replace older CNG buses that are scheduled to be retired.

NEXT STEPS

If this action is approved, staff will issue Contract Modification No. 9, and Contract Modification No. 10 to direct New Flyer to immediately begin a retrofit program for all 5600 series buses that do not already have protective operator safety barriers and/or video monitors. New Flyer will begin retrofitting buses within 30 days of the Notice-to-Proceed. The estimated completion timeline is 25 weeks for operator safety barriers and 15 weeks for LVMS.

While the operator barriers meet all Federal Motor Vehicle Safety Standards, Operations understands that the barriers are new to our environment. As concerns are raised, staff will review and work with the equipment suppliers to rectify any operational and safety concerns.

Staff also plans to issue a new competitive solicitation for the installation of operator safety barriers on approximately 1,500 other buses in Metro's fleet that do not already have this equipment.

Staff will continue to evaluate the effectiveness of the operator barriers. Operations will provide the Board with the information gained internally through Metro's usage of the barriers, and through partnerships with our peer agencies that utilize operator barriers.

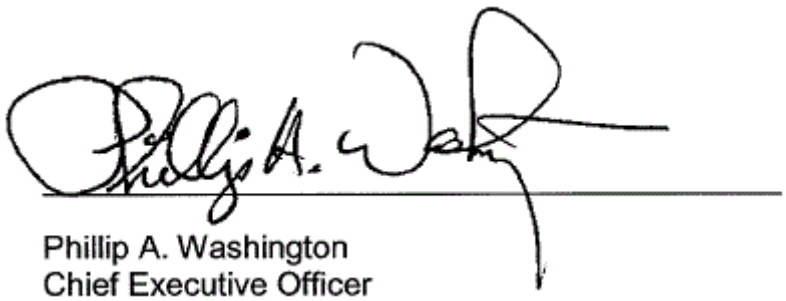
ATTACHMENTS

Attachment A - Procurement Summary
Attachment B - Contract Modification / Change Order Log
Attachment C - Funding / Expenditure Plan
Attachment D - Transit Agencies Using Operator Barriers

Prepared by: John Drayton, Director, Vehicle Technology (213) 617-6285

Questions: Christopher Reyes, Transportation Planning Manager III, Operations (213) 922-4808

Reviewed by: Ivan Page, Interim Executive Director, Vendor/Contract Management
James T. Gallagher, Chief Operations Officer



Phillip A. Washington
Chief Executive Officer

ATTACHMENT A

PROCUREMENT SUMMARY

NEW FLYER BUSES - UP TO 900 CNG BUS CONTRACT/ MODIFICATION NO. 9 & 10

1.	**Contract Number**: OP33202869			
2.	**Contractor**: New Flyer of America, Inc.			
3.	**Mod. Work Description**: Retrofit installation of Operator Barriers and Live Video Monitors, Option 1 escalation			
4.	**Contract Work Description**: Up to 900 Bus Buy			
5.	**The following data is current as of**: 8/7/15			
6.	**Contract Completion Status**		**Financial Status**	
	Contract Awarded:	2/1/13	**Contract Award Amount:**	$302,094,178
	Notice to Proceed (NTP):	2/1/13	**Total of Modifications Approved:**	$196,558,163
	Original Complete Date:	7/31/15	**Pending Modifications (including this action):**	$6,043,492
	Current Est. Complete Date (with this action):	10/30/16	**Current Contract Value (with this action):**	$504,695,833
7.	**Contract Administrator:** Joe Marzano		**Telephone Number:** (213) 922-7014	
8.	**Project Manager:** John Drayton		**Telephone Number:** (213) 922-5882	

A. Procurement Background

This Board Action is to approve contract modification no. 10 for $3,617,152 issued to New Flyer in support of a retrofit installation of a Live Video Monitoring System (LVMS) on 282 New Flyer buses and operator barriers on 427 New Flyer buses. This Board Action also includes approval of contract modification no. 9 for escalation accrued between January and March 2015 for Option 1 buses in the amount of $2,426,340. The total value for contract modification no. 9 and 10 is $6,043,492.

This contract modification will be processed in accordance with Metro's Acquisition Policy and the contract type is a Firm Fixed Price.

On January 24, 2013, Metro's Board of Directors approved board agenda item no. 54, to New Flyer of America, Inc., in the amount of $302,094,178, for manufacturing and delivery of 550 forty-foot CNG transit buses exclusive of contract options for up to 350 additional buses for a total of 900 buses. On February 26, 2015, Metro's Board of Directors approved board agenda item no. 23 in the amount of $193,979,571 to exercise Option 1 for 350 additional forty-foot CNG buses. Approval of this Board

recommendation item will increase the total value of the option purchase to $196,405,911.

On October 23, 2014, Metro's Board of Directors approved board agenda item no. 10 for the installation of a LVMS on the 128 production buses. On January 20, 2015, staff executed contract modification no. 8 for the installation of operator barriers on 123 production buses. The recommended contract modification no. 10 is to retrofit operator barriers and LVMS on the remaining New Flyer fleet that currently does not have this equipment installed. The value of the contract modification is for a firm fixed amount of $3,617,152 including, tax and delivery.

Attachment B shows that eight modifications have been issued to date for vehicle configuration changes, non-taxable ADA equipment tax adjustments, and corrections to Diagnostic Test Equipment pricing.

B. Cost/Price Analysis

Live Video Monitoring System & Operator Barriers
The recommended price for the LVMS and operator barriers has been determined to be fair and reasonable based upon an independent cost estimate, audit, cost analysis technical evaluation, fact finding and negotiations.

Item	Proposed Amount	Metro Independent Cost Estimate	Negotiated Amount
Live Video Monitoring System	$1,262,125	$1,258,961	$1,104,426
Operator Barriers	$2,781,358	$2,902,347	$2,512,726
Total	$4,043,483	$4,161,308	$3,617,152

Escalation for Option 1
The total contract value for Option 1 approved by the Board in February 2015 was based on projected escalation using the latest PPI figure (Dec '14) available at the time of board approval. The actual escalation costs for Option 1 are based on the March 2015 Producer Price Index for Truck and Bus Bodies, Series No. 1413. Between January and March 2015, the PPI increased 1.33% or $2,426,340. The firm fixed price for Option 1 is $196,405,911, including escalation, is determined to be fair and reasonable for the 350 option buses based upon adequate price competition for the base and option quantities, and a price analysis that included both base and option prices, including escalation prior to contract award.

C. Small Business Participation

The Diversity and Economic Opportunity Department did not recommend a Disadvantaged Business Enterprise (DBE) participation goal for this rolling stock procurement. Transit Vehicle Manufacturers (TVM), as a condition of authorization to bid or propose on FTA-assisted transit vehicle procurements, must certify that it has complied with the requirements of 49 Code of Federal Regulations (CFR) Part 26.49(a). Only those transit vehicle manufacturers listed on FTA's certified list of

Transit Vehicle Manufacturers at the time of solicitation are eligible to bid. In compliance with 49 CFR Part 26.49, TVMs report direct to FTA.

D. Living Wage Service Contract Worker Policy

The Living Wage and Service Contract Worker Retention Policy is not applicable to this contract.

E. Prevailing Wage Applicability

Prevailing wage is not applicable to this contract.

ATTACHMENT B

CONTRACT MODIFICATION AUTHORITY (CMA) SUMMARY

NEW FLYER BUSES - UP TO 900 CNG BUS CONTRACT

Request for Change. (RFC) No.	Description	Status	Estimated Cost
N/A	**Award Base Contract**	**Approved**	**$302,094,178**
1	Updated ADA Equipment and Safety Provisions	Approved	$2,936,786
1a	Correction to bus unit price for non-taxable ADA Equipment not accounted for in the proposal price	Approved	($717,994)
2	Period of Performance extension for the first 275 buses from June 30, 2014 to October 31, 2014	Approved	$0
3	PLC cover color change and two (2) additional stop request buttons per bus	Approved	$54,243
4	Change from 3 position bicycle rack to 2 position bicycle rack	Approved	($52,924)
5	Additions/reductions in quantities of special tools, diagnostic test equipment, training aids, and AMS server upgrade	Approved	($428,920)
5a	Correction to BAFO Pricing Form PF-4 Diagnostic Test Equipment, AMS Server Price	Approved	($692,075)
6	Installation of Live Video Monitoring System as a cut-in on remaining 128 production buses	Approved	$964,877
7	Change from 2 position bicycle rack to 3 position bicycle rack	Approved	$14,698
8	Installation of operator barriers on 123 production buses	Approved	$499,901
N/A	Exercise Option No.1 for up to 350 buses	Approved, Pending Execution	$193,979,571
9	Option 1 escalation	Pending Board Approval	$2,426,340
10	Retrofit Installation of Operator Barriers and Live Video Monitoring System on remaining New Flyer fleet	Pending Board Approval	$3,617,152
	Total – Approved Change Orders/Modifications (excluding Options)		**$2,578,592**
	Total – Pending Change Orders/Modifications		**$6,043,492**
	Total Amount – Option 1 including Escalation		**$196,405,911**
	Total Contact Value including Option 1 and Change Orders/Modifications		**$504,695,833**
	Increased CMA requested		**0**
	Total CMA including this action		**$30,209,418**
	Remaining CMA for Future Changes		**$21,587,334**

ATTACHMENT C

FUNDING/EXPENDITURE PLAN

NEW FLYER BUSES - UP TO 900 CNG BUS CONTRACT

In Thousands	**900 CNG Buses** (Forecast expenses thru FY15)[i]	**FY16**	**FY17**	**Total**	**% of Total**
Uses of Funds					
Bus Acquisition[1]	296,009.1	100,617.2	97,000.0	493,626.3	97.4%
Professional Services	855.1			855.1	0.2%
Labor	2,052.4	500	500	3,052.4	0.6%
Travel	940.7			940.7	0.2%
Spare Parts, Training, Service Manuals	5,094.6			5,094.6	1.0%
Contingency	3,490.6			3,490.6	0.7%
Total Project Cost	**$308,442.5**	**$101,117.2**	**$97,500.0**	**$507,059.7**	**100.0%**

In Thousands	**900 CNG Buses** (Forecast expenses thru FY15)	**FY16**	**FY17**	**Total**	**% of Total**
Sources of Funds					
BOS	4,000.0			**4,000.0**	0.8%
Prop C 40%	16,300.0			**16,300.0**	3.2%
TDA Article 4	63,230.0	16,217.2	12,800.0	**92,247.2**	18.2%
Measure R 35%	15,272.5			**15,272.5**	3.0%
Prop 1B PTMISEA	162,470.0			**162,470.0**	32.0%
CMAQ	22,170.0			**22,170.0**	4.4%
Federal Bus Capital	25,000.0			**25,000.0**	4.9%
Fed 5307		50,000.0	50,000.0	**100,000.0**	19.7%
Fed 5339		34,900.0	34,700.0	**69,600.0**	13.7%
Total Project Funding	**$308,442.5**	**$101,117.2**	**$97,500.0**	**$507,059.7**	**100%**

1

[i] Budget approved for New Flyer 900 bus contract in February 2015.

Transit Agencies Using Operator Barriors

ATTACHMENT D

Agency	City	Bus Type	# Buses Equiped	Barrier Type	Length of Service	Notes
CTA	Chicago, IL	Novabus	250	Full enclosure	1 year	Tempered glass fully enclosed operators compartment
CTA	Chicago, IL	New Flyer	1030	1/2 area glass	6 years	Originally designed as "snowball" barriers, now CTA is working to retrofit to full enclosure
CTA	Chicago, IL	New Flyer Xcelsior Electric	2	Full enclosure	1 year	OEM supplied by New Flyer, similar to LACMTA design
Metro	New York, NY	New Flyer		Full enclosure	3 years	First released in 2012
Metro	New York, NY	Orion NG Hybrid	852	Full enclosure	2 years	
Port Authority	Pittsburgh, PA	Gilllig LF Diesel	60	Full enclosure	1 year	
Port Authority	Pittsburgh, PA	Gilllig LF Diesel	90	Full enclosure		Current production
MTA	Baltimore, MD	New Flyer		Full enclosure	3 years	First released in 2012
MUNI	San Francisco, CA	New Flyer		Full enclosure	2 years	First relesased in 2013
WMATA	Washington DC	New Flyer		Full enclosure	2 years	First released in 2013
WMATA	Washington DC	NABI		Full enclosure		
GCRTA	Cleveland, OH	NABI		Full enclosure		
DART	Dallas, TX	NABI		Full enclosure		
MDTA	Miami, FL	NABI		Full enclosure		

Metro

Board Report

File #: 2015-1164, **File Type:** Contract **Agenda Number:** 65.

SYSTEM SAFETY, SECURITY AND OPERATIONS COMMITTEE
SEPTEMBER 17, 2015

SUBJECT: GRAFFITI ABATEMENT, LANDSCAPE AND IRRIGATION MAINTENANCE, AND TRASH AND VEGETATION REMOVAL SERVICES

ACTION: PART A - APPROVE CONTRACT AWARD FOR REGIONS 1- 4
PART B - AMEND FY16 BUDGET TO ADD FUNDS TO CC3367

RECOMMENDATION

AUTHORIZING the Chief Executive Officer to:

A. Award a firm fixed unit rate Contract under RFP No. PS11654, for Region 1 to **Woods Maintenance Services, Inc., the second lowest responsive and responsible proposer, to provide graffiti abatement, landscape and irrigation maintenance, and trash and vegetation removal services throughout Metro Red Line (MRL), Metro Purple Line, Metro Orange Line (MOL), Inactive rights-of-way (IROWs) and various bus and rail locations within the geographical area specified as Region 1**, for a not-to-exceed amount of $16,542,520 for the three-year base period, $5,462,340 for the first option year, and $5,462,340 for the second option year, for a combined total of $27,467,200, effective October 1, 2015 through September 30, 2020.

B. Award a firm fixed unit rate Contract under RFP No. PS11654, for Region 2 to **Parkwood Landscape Maintenance, Inc., the lowest responsive and responsible proposer, to provide graffiti abatement, landscape and irrigation maintenance, and trash and vegetation removal services throughout Pasadena Gold Line (PGL),IROWs and various bus and rail locations within the geographical area specified as Region 2**, for a not-to-exceed amount of $12,599,235 for the three-year base period, $4,352,459 for the first option year, and $4,568,300 for the second option year, for a combined not-to-exceed total of $21,519,994, effective October 1, 2015 through September 30, 2020.

C. Award a firm fixed unit rate Contract under RFP No. PS11654, for Region 3 to **Woods Maintenance Services, Inc., the second lowest responsive and responsible proposer, to provide graffiti abatement, landscape and irrigation maintenance, and trash and vegetation removal services throughout Metro Expo Line (Expo I), Metro Green Line (MGL), IROWs and various bus and rail locations within the geographical area specified as Region 3**, for a not-to-exceed amount of $16,863,892 for the three-year base period, $5,575,764 for the first option year, and $5,575,764 for the second option year, for a combined total of $28,015,420, effective October 1, 2015 through September 30, 2020.

D. Award a firm fixed unit rate Contract under RFP No. PS11654, for Region 4: **Parkwood Landscape Maintenance, Inc., the lowest responsive and responsible proposer, to provide graffiti abatement, landscape and irrigation maintenance, and trash and vegetation removal services throughout Metro Blue Line (MBL), Harbor Transitway (HTW), IROWs and various bus and rail locations within the geographical area specified as Region 4**. This contract amount consists of $11,996,937 for the three-year base period, $4,141,657 for the first option year, and $4,346,958 for the second option year, for a combined total of $20,485,552, effective October 1, 2015.

E. Amend the FY16 budget to add funds to CC3367 in the amount of $14,625,000 to ensure sufficient funding and service continuity for the four regions under RFP No. PS11654.

ISSUE

Maintenance of graffiti abatement, landscape and irrigation, and trash and vegetation removal services were historically provided as three separate services. Since the landscape and irrigation maintenance services contract expired on April 30, 2013, previous bids were received and rejected as none of the bidders were deemed responsive and responsible. In the interim, landscape and irrigation maintenance services are being provided under the existing trash and vegetation removal services contract. The two existing contracts for graffiti abatement and trash and vegetation removal services will expire on September 30, 2015.

Considering the significantly large service area throughout Los Angeles (LA) County, including approximately 180 miles of active and inactive Metro ROWs and over 300 Metro-owned bus and rail facilities, the service area has been divided into four regions. The three services listed above were combined to be performed under one contract per region. These actions were taken to enhance and increase competition and attract more companies to do business with Metro.

Under these new regional comprehensive services contracts, the contractors will provide graffiti abatement, landscape and irrigation, and trash and vegetation removal services throughout Metro-owned active and inactive ROWs and bus and rail facilities within LA County.

Prevailing Wage
As a recipient of state and federal funds, Metro is required to monitor and enforce contractor compliance with the State of California Department of Industrial Relations (DIR), California Labor Code, and the U.S. Department of Labor (DOL) Davis Bacon and Related Acts (DBRA) on Metro public works projects. Public works as defined by the California Labor Code is construction, alteration, demolition, installation, or repair work (including maintenance) done under contract and paid with public funds. Workers employed on public works projects must be paid the prevailing wage rates determined by the State DIR according to the trade classification used and the location of the project.

The federal DBRA applies to contractors and subcontractors performing on federally funded or assisted contracts for the construction, alteration, or repair (including painting and decorating) of

public buildings or public works. Like the DIR, DOL contractors and subcontractors must pay their workers no less than pre-determined prevailing wages for the classification used on the project.

The Living Wage Policy & Service Contract Worker Retention Policy was adopted by the Metro Board April 24, 2014 with an effective date of July 1, 2014. Pursuant to that policy, Metro now has three wage classifications: state prevailing wage, federal prevailing wage and living wage, which apply primarily to service contracts. The policy stipulates that if a contract is subject to a federal or state prevailing wage requirement, the highest of the three wage rates shall apply. Most employers in California are subject to both the federal and state wage laws. The rule in California is that the employer must follow the stricter standard, i.e., the one that is most beneficial to the employee, and in most cases, California prevailing wages are slightly higher than federal prevailing wages.

The initial funding source for this contract was through State and Federal funds. On May 12, 2015, an amendment to this contract was issued changing the funding source to State funding only. While the change in funding source resulted in applying Metro's living wage for the landscape and irrigation services, the rates determined by the DIR for graffiti abatement and trash and vegetation removal services remain significantly higher than Metro's living wage, as shown within the Table below.

FUNDING SOURCE APPLICABILITY	**METRO LIVING WAGE / STATE Rates Shown Below are Based on Using th Highest of the Two Wages**		
Service Type	Graffiti Abatement	Landscape & Irrigation	Trash & Vegetation Rem
State DIR Recommended Classification	DIR: Painter, Lead Abatement	Metro Living Wage: Landscape Laborer	DIR: Laborer Group 1
Non-Fully Burdened Hourly Rate	**$43.37**	**$16.04**	**$48.88**
FEDERAL WAGES (NOT APPLICABLE FOR THIS CONTRACT) SHOWN ONLY FOR COMPARISON PURPOSES			
Federal DOL Recommended Classification	DOL: Painter	DOL: Laborer Group 1	DOL: Laborer Group 1
Non-Fully Burdened Hourly Rate	**$42.55**	**$46.67**	**$46.67**

Providing the required graffiti abatement, landscape and irrigation maintenance and trash and vegetation removal services system-wide requires new contract awards along with an amendment of the FY16 budget, with an effective start date of October 1, 2015.

DISCUSSION

Under these new regional contracts, each contractor will provide regular maintenance services to abate graffiti, perform landscape and irrigation maintenance, and trash and vegetation removal

services within their defined locations.

Graffiti abatement services will be performed five days per week, removing any graffiti via chemical and/or pressure washing techniques throughout the system, within 24 hours and upon securing track allocation approval to access Metro restricted areas.

The contractors' crews are required to take before and after photos of the vandalized areas for law enforcement before removing graffiti from Metro transit stations, sound walls, retaining walls, bridges, poles, columns, and any other transit structures, five days a week within 24 hours, and in accordance with Metro's safety requirements.

Regular graffiti abatement service for Metro facilities is essential to ensure maintaining a safe, clean, and pleasant environment to our patrons. This service will continue our long standing practice of zero tolerance for graffiti system-wide and enhance the overall appearance and cleanliness of Metro facilities while mitigating criminal activities.

For landscape and irrigation maintenance services, the contractors will provide general maintenance and cleanup services of all landscaped areas system-wide, including trees under 13 feet height, shrubs, vines, groundcover, lawns, planter boxes, and routine irrigation system maintenance. Also, the contractors are required to provide optimal water management service to comply with State and local water agencies conservation ordinances. In addition, the contractors will provide as-needed maintenance services as directed by Metro, such as replacing damaged or lost plant material resulting from natural causes beyond the control of the contractor.

The contractors will also provide regular trash and vegetation removal services throughout Metro-owned bus and rail facilities and ROWs.

Beginning February 2012 and thereafter, graffiti abatement and trash and vegetation removal services were expanded to routinely service the Union Pacific (UP) ROW adjacent to MBL stations, 42 Caltrans Park-and-Ride lots, and provide as needed services for selective non-Metro owned adjacent facilities. These actions were taken to improve the cleanliness and appearance of facilities and ROWs that are often perceived by the public as Metro properties. Service continuity is contingent upon availability of funds.

To avoid service interruptions and continue providing the critical maintenance services described above, contract awards, along with an amendment of the FY16 budget, are required with an effective start date of October 1, 2015.

DETERMINATION OF SAFETY IMPACT

The approval of this item will ensure the continuity of maintenance services, mitigate vandalism activities, enhance Metro-owned ROWs and facilities' overall appearance and cleanliness, and provide a proactive approach to maintenance needs, to ensure delivery of safe, clean, on-time and reliable services system-wide.

FINANCIAL IMPACT

The total amount for regions 1 through 4 under RFP No. PS11654 is $97,488,166. Given that the contracts' period of performance for all four regions will start on October 1, 2015, an amendment of the FY16 budget is necessary to ensure sufficient funding combined amount of $14,625,000 for all four regions, under RFP No. PS11654. Funds are to be allocated under cost center 3367 - Facilities Property Maintenance, account 50308, Service Contract Maintenance, under various projects.

Since this is a multi-year contract, the cost center Manager, Project Managers, and Executive Director, Maintenance, are responsible for the balance of funds to be budgeted in future years.

Impact to Budget

The source of funds for this action will come from State and local funding sources that are eligible for Bus and Rail Operating Projects.

ALTERNATIVES CONSIDERED

Preliminary analysis has been initiated for alternatives providing some or all of these maintenance services through Metro in-house staff. Metro staff will continue to explore these alternatives and conduct a thorough study identifying operational and potential cost saving measures to determine the path forward that better serves Metro. However, such alternatives, if considered, may take 12-18 months due to administrative processes requiring discussions with Metro Collective Bargaining Units, the hiring procedure and training of additional personnel, purchase of additional equipment, vehicles, and supplies to support the expanded responsibilities.

NEXT STEPS

Upon approval by the Board, staff will execute contracts to the recommended contractors, to provide graffiti abatement, landscape and irrigation maintenance and trash and vegetation removal services, effective October 1, 2015, per the following:

Region 1, Woods Maintenance Services, Inc.
Region 2, Parkwood Landscape Maintenance, Inc.
Region 3, Woods Maintenance Services, Inc.
Region 4, Parkwood Landscape Maintenance, Inc.

ATTACHMENTS

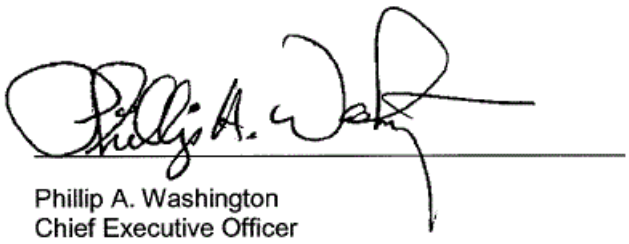
A. Procurement Summary
B. Four (4) Regions' Maps

Prepared by: Brady Branstetter, Director, Facilities Maintenance, (213) 922-6767
Lena Babayan, Facilities Maintenance Manager, (213) 922-6765

Questions: Christopher Reyes, Transportation Planning Manager III, Operations, (213) 922-4808

Reviewed by: Ivan Page, Interim Executive Director, Vendor/Contract Management, (213) 922-6383

James T. Gallagher, Chief Operations Officer



Phillip A. Washington
Chief Executive Officer

PROCUREMENT SUMMARY

GRAFFITI ABATEMENT, LANDSCAPE AND IRRIGATION MAINTENANCE, AND TRASH AND VEGETATION REMOVAL SERVICES

1.	**Contract Number**: PS11654	
2.	**Recommended Vendor(s)**: Parkwood Landscape Maintenance, Inc. (Regions 2 and 4); and Woods Maintenance Services, Inc. (Regions 1 and 3)	
3.	**Type of Procurement (check one):** ☐ **IFB** ☒ **RFP** ☐ **RFP–A&E** ☐ **Non-Competitive** ☐ **Modification** ☐ **Task Order**	
4.	**Procurement Dates**:	
	A. Issued: March 26, 2015	
	B. Advertised/Publicized: March 18, 2015	
	C. Pre-proposal/Pre-Bid Conference: April 7, 2015 and May 19, 2015	
	D. Proposals/Bids Due: June 11, 2015	
	E. Pre-Qualification Completed: August 12, 2015	
	F. Conflict of Interest Form Submitted to Ethics: June 17, 2015	
	G. Protest Period End Date: September 25, 2015	
5.	**Solicitations Picked up/Downloaded**: 47	**Bids/Proposals Received**: 3
6.	**Contract Administrator**: Jean Davis	**Telephone Number**: **(**213) 922-1041
7.	**Project Manager**: Shaunt Avanesian Janet Tubbs	**Telephone Number**: (213) 922-5931 (213) 922-6760

A. Procurement Background

This Board Action is to approve contract awards in response to RFP No. PS11654 issued in support of Facilities Maintenance to provide graffiti abatement, landscape and irrigation maintenance, and trash and vegetation removal services for Metro active and inactive ROW and Metro-owned Bus/Rail stations, various facilities and locations within the geographical area specified in four regions of Los Angeles County as outlined in the RFP.

The RFP was issued in accordance with Metro's Acquisition Policy and the contract type for each region is firm fixed price. The procurement method used for this RFP was Technically Acceptable, Lowest Price.

The RFP limited contract award for any one firm to no more than two regions. This limit was included in the RFP to expand competition and increase the number of prime firms and potential subcontractors.

Five amendments were issued during the solicitation phase of this RFP:

- Amendment No. 1, issued on April 16, 2015, provided the pre-proposal conference sign-in sheets, replaced corrected RFP and DEOD documents and special provisions, and included responses to questions received;
- Amendment No. 2, issued on April 24, 2015, notified firms of a change in funding from federal to non-federal, and extended the proposal due date;
- Amendment No. 3, issued on May 12, 2015, re-issued documents based on a change in funding source from federal to non-federal and extended the due date;
- Amendment No. 4, issued on May 29, 2015, clarified the technically acceptable criteria and included the questions received from the pre-proposal conference and Metro's responses;
- Amendment No. 5, issued on June 2, 2015 included a response to a question regarding the 3% DVBE goal.

A pre-proposal conference was held on April 7, 2015. A second pre-proposal conference was held on May 19, 2015, to address the funding change from federal to state/local. A total of 24 questions were addressed and were included with Amendment Nos. 1, 4, and 5. A total of three proposals were received on the due date, June 11, 2015.

B. Evaluation of Proposals

The Proposal Evaluation Committee (PET) consisting of staff from Metro Facilities Maintenance department, Caltrans, and the City of Los Angeles met to conduct a comprehensive review of the technical qualifications of the proposals received. The PET reviewed proposals based on the technically acceptable criteria consistent with the qualifications, contractor's licenses, years of experience providing similar services, and resources and equipment necessary to meet the requirements of the RFP.

Two proposers submitted separate proposals for Regions 1, 2, 3, and 4. The third proposer submitted proposals for Regions 1 and 2. Each proposal addressed the experience, work plans, staffing levels, and equipment requirements necessary to perform the services outlined in the statements of work. The proposals highlighted the firms' capabilities, and the roles of the proposer's team. Proposers responded to requests for clarifications in a timely manner.

The three proposers are listed below in alphabetical order:

1. Joshua Grading & Excavating
2. Parkwood Landscape Maintenance, Inc.
3. Woods Maintenance Services, Inc.

JOSHUA GRADING & EXCAVATING (Joshua)

Joshua submitted proposals for only Regions 1 and 2. However, the firm did not meet the SBE goal; therefore, they were found non-responsive in accordance with the RFP requirements. Consequently, Joshua could not be considered for an award recommendation. Note: Joshua's cost proposals were the highest of the three firms.

Qualifications Summary of Firms Within the Competitive Range:

PARKWOOD LANDSCAPE AND MAINTENANCE (Parkwood)

Parkwood submitted proposals for Regions 1 through 4. The PET determined that all proposal submissions met the technically acceptable criteria and met all the requirements of the statements of work. Parkwood met the SBE and DVBE participation goals. The firm's cost proposals for all four regions were the lowest priced.

WOODS MAINTENANCE SERVICES, INC. (Woods)

Woods submitted proposals for Regions 1 through 4. The PET determined that all proposal submissions met the technically acceptable criteria and met all the requirements of the statements of work. Woods met the SBE participation goals and passed Good Faith Efforts for the DVBE participation goal for all regions. Woods' cost proposals were the second lowest priced proposals for all regions.

Parkwood and Woods are responsive in all four regions.

The PET recommends award of Regions 1 and 3 to Woods, and Regions 2 and 4 to Parkwood. Based on the restriction of awarding no more than two regions per recommended firm, this recommendation represents the lowest overall pricing and best value to Metro. Any other scenario would result in higher pricing to Metro.

C. Cost/Price Analysis

The recommended pricing for the contracts are deemed fair and reasonable based on price analysis, technical evaluation, and fact finding. The price analysis compared the pricing of each of the cost proposals, Metro's cost estimate and current prevailing wage rates. Staff conducted discussions with both firms regarding the proposed pricing and both firms confirmed their best and final pricing met all requirements of the RFP. Note: Metro's independent cost estimate is based on the state prevailing wages and did not include other direct and indirect costs such as equipment, overhead, general and administrative expenses, or profit.

Region	Parkwood	Woods	Metro ICE	Recommended
1.	$24,022,805.29	$27,467,200.00	$22,914,813	$27,467,200.00
2.	$21,519,994.06	$25,264,480.00	$18,013,984	$21,519,994.06
3.	$24,337,696.15	$28,015,420.00	$20,480,602	$28,015,420.00
4.	$20,485,551.55	$24,572,260.00	$17,513,874	$20,485,551.55

Totals	$90,366,047.05	$105,319,360.00		**$97,488,165.61**

D. Background on Recommended Contractors

Parkwood, located in Van Nuys, has provided professional landscape services in the Los Angeles area for over 48 years. They currently have contracts with the City of Palmdale, City of Los Angeles, City of Moorpark and Port of Long Beach. The project management team, which includes two project managers and four field operations managers, each has over 20 years of experience in landscape services. Parkwood currently employs over 150 full time employees (FTEs) and their team possesses the required licenses and permits.

Woods has over 20 years of experience in the industry and is currently performing these services for Metro in a satisfactory manner. The firm started as a janitorial maintenance contractor in 1975 under the name of D & B Maintenance, Inc. Graffiti Control Systems was added for graffiti abatement services as a new division in 1980. Woods began to provide landscape and irrigation maintenance services in early 1990, and became a prime in these services, employing subcontractors in 2007. While continuing to expand their services with Metro, Woods has also held contracts with the L.A. County Department of Public Works, the City of Tustin and the City of Glendale. The firm employs over 140 technicians and has dedicated FTEs to each region proposed. Woods maintains all necessary licensing and permits to perform the services.

E. Small Business Participation

The Diversity and Economic Opportunity Department (DEOD) established a Small Business participation goal of 25% of the total price for this procurement with 22% Small Business Enterprise (SBE) and 3% Disabled Veteran Business Enterprise (DVBE) as components of the goal. To be responsive, proposers are required to meet or exceed the SBE/DVBE, if their participation is less than the established goals; Proposers were required to submit evidence of their good faith efforts to meet the goal. Proposers who meet GFE requirements are deemed responsive.

Woods Maintenance Services, Inc. made a 25.12% SBE commitment for Region 1 and 24.46% SBE commitment for Region 3, and a 0% DVBE commitment for Regions 1 & 3.

Wood Maintenance Services provided documentation of their good faith efforts to meet the DVBE goal. To be responsive to GFE requirements, Proposers were required to solicit DVBEs for select portions of work (including estimated values), to provide names and addresses of DVBEs solicited, include evidence of follow-up. Proposers needed to score a minimum of 75 out of a possible 100 points to meet GFE requirements. Woods Maintenance Services scored 85 points, and was deemed responsive.

Parkwood Landscape Maintenance, Inc. (Parkwood) met the SBE/DVBE goal with an SBE commitment of 22% and a DVBE commitment of 3% for Regions 2 and 4.

Region 1 – Metro Red/Purple Line, Metro Orange Line, Inactive ROWs & Various Locations

Woods Maintenance Services, Inc. ($27,467,200)

Small Business Goal	22% SBE 3% DVBE	Small Business Commitment	25.12% SBE 0% DVBE

	SBE/DVBE Subcontractors	% SBE Committed	% DVBE Commitment
1.	Briteworks, Inc. (SBE) Graffiti Abatement	6.57%	0%
2.	BJAG Group, LLC (SBE) Trash & Vegetation Removal Services	3.41%	0%
3.	Far East Landscape & Maintenance (SBE) Landscape and Irrigation Maintenance	15.14%	0%
	Total Commitment	**25.12%**	**Passed GFE**

Region 2 – Metro Gold Line, Inactive ROWs & Various Locations

Parkwood Landscape Maintenance, Inc. ($21,519,994)

Small Business Goal	22% SBE 3% DVBE	Small Business Commitment	22% SBE 3% DVBE

	SBE/DVBE Subcontractors	% SBE Committed	% DVBE Commitment
1.	Briteworks (SBE) Graffiti Abatement	11.00%	0%
2.	Far East Landscape & Maintenance (SBE) Landscape and Irrigation Maintenance	5.87%	0%
3.	Far East Landscape & Maintenance (SBE) Trash and Vegetation Removal Services	5.13%	0%
4.	IECLT, Inc. (DVBE) Landscape Maintenance		3.00%
	Total Commitment	**22.00%**	**3.00%**

Region 3 – Metro Expo Line, Metro Green Line, and Bus Facilities

Woods Maintenance Services, Inc. ($28,015,420)

Small Business Goal	22% SBE 3% DVBE	Small Business Commitment	24.46% SBE 0% DVBE

	SBE/DVBE Subcontractors	% SBE Committed	% DVBE Commitment
1.	Briteworks (SBE) Graffiti Abatement	4.88%	0%
2.	Briteworks (SBE) Trash & Vegetation Removal	10.67%	0%
3.	Far East Landscape & Maintenance (SBE) Landscape and Irrigation Maintenance	8.91%	0%
	Total Commitment	**24.46%**	**Passed GFE**

Region 4 – Metro Blue Line, Harbor Transit Way, Various Bus Locations

Parkwood Landscape Maintenance, Inc. ($20,485,552)

Small Business Goal	22% SBE 3% DVBE	Small Business Commitment	22% SBE 3% DVBE

	SBE/DVBE Subcontractors	% SBE Committed	% DVBE Commitment
1.	Briteworks (SBE) Graffiti Abatement	11.00%	0%
2.	Far East Landscape & Maintenance (SBE) Landscape and Irrigation Maintenance	5.87	0%
3.	Far East Landscape & Maintenance (SBE) Trash and Vegetation Removal Services	5.13%	0%
4.	IECLT, Inc. (DVBE) Landscape Maintenance		3.00%
	Total Commitment	**22.00%**	**3.00%**

F. Living Wage and Service Contract Worker Retention Policy Applicability

Metro's Living Wage will be applicable to the landscape maintenance portion of this contract. Metro's Living Wage supersedes the California's prevailing wage for Landscape Maintenance Laborer.

Metro staff will monitor and enforce the policy guidelines to ensure that workers are paid at minimum, the current Living Wage rate of $16.04 per hour ($11.17 base + $4.87 health benefits), including yearly increases. In addition, contractors will be

responsible for submitting the required reports for the Living Wage and Service Contract Worker Retention Policy and other related documentation to staff to determine overall compliance with the policy.

G. Prevailing Wage Applicability

Based on a review of the scope of work, Prevailing Wage requirements are applicable to this project.

The following prevailing wage classifications have been deemed applicable to this project:

Laborer Group 1
Laborer Group 2
Landscape Maintenance Tree Trimmer
Driver: Dump Trucks
Operating Engineer Group 2
Operating Engineer Group 6
Operating Engineer Group 8
Painter

DEOD will monitor contractors' compliance with the State of California Department of Industrial Relations (DIR), California Labor Code..

H. All Subcontractors Included with Recommended Contractors' Proposals

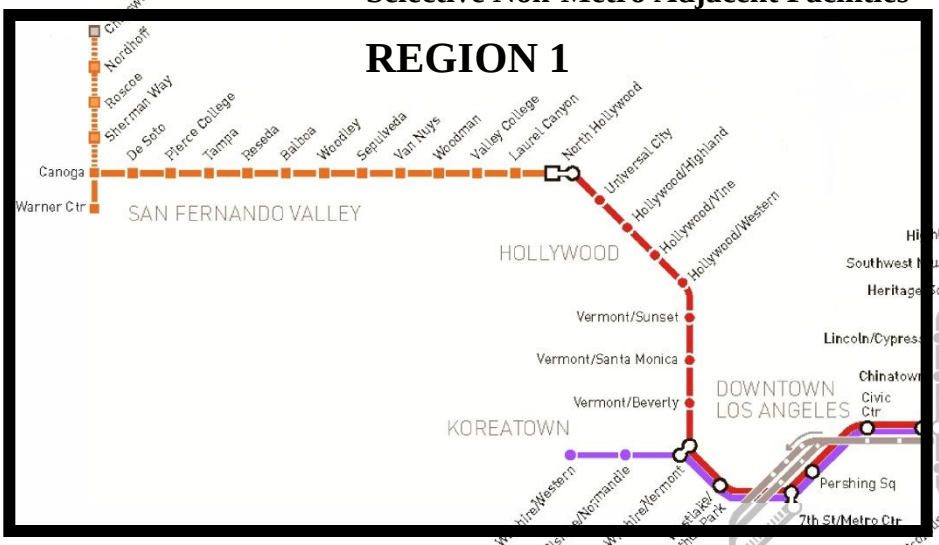
	Subcontractor	Services Provided
1.	BJAG Group, LLC	trash and vegetation removal services
2.	Briteworks, Inc.	graffiti abatement/landscape and irrigation maintenance/trash and vegetation removal
3.	Far East Landscape	landscape and irrigation maintenance/trash and vegetation removal services
4.	IECLT, Inc.	landscape maintenance

Go Metro

REGION 1

metro.net

- **Metro Red, Purple & Orange Line Stations & Active ROW**
- **Metro Inactive Rows within the Geographical Area**
- **Bus and Rail Facilities within the Geographical Area**
- **Caltrans P&R Lots within the Geographical Area**
- **Selective Non-Metro Adjacent Facilities**



Under Construction Lines and Stations
- Expo Line Phase 2
- Expo Line Phase 1
- Orange Line Extension
- Gold Line Foothill Extension

Metro Rail lines and stations
- Red Line
- Green Line
- Purple Line
- Gold Line
- Blue Line

Metro Liner lines and stations
- Orange Line
- Silver Line
- Street stop

Transfers

- Metrolink & Amtrak
- LAX FlyAway
- LAX Shuttle (free)

- Free parking
- Paid parking
- Bike parking

SEP 2011 Subject to change

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Metro

FUTURE FACILITIES

- Division 13
- Metro Purple Line Westside Extension

Go Metro

REGION 2

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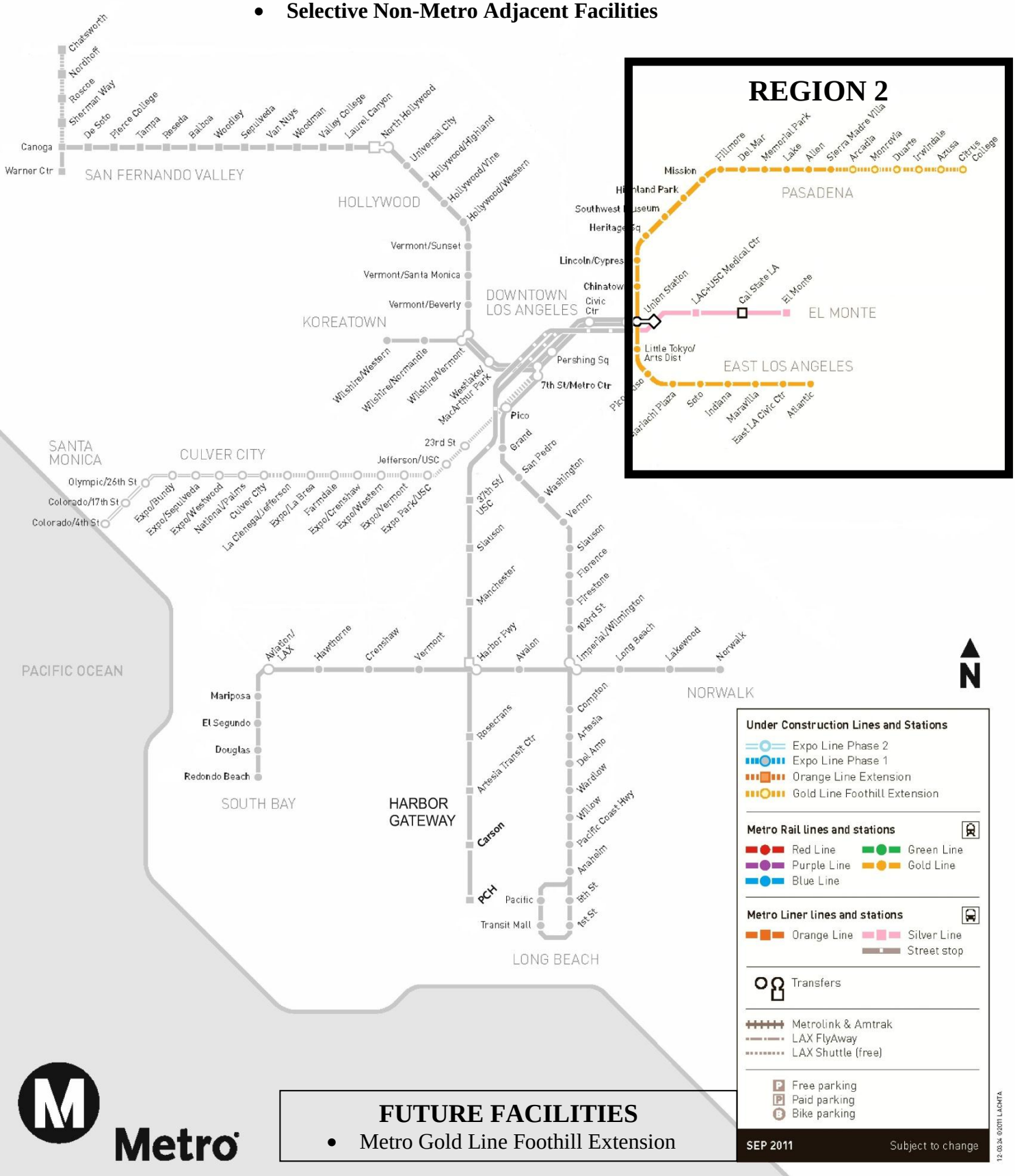
- **Metro Pasadena Gold Line Stations & Active ROW**
- **Metro Inactive ROWs within the Geographical Area**
- **Bus and Rail Facilities within the Geographical Area**
- **Caltrans P&R Lots within the Geographical Area**
- **Selective Non-Metro Adjacent Facilities**



Metro

FUTURE FACILITIES

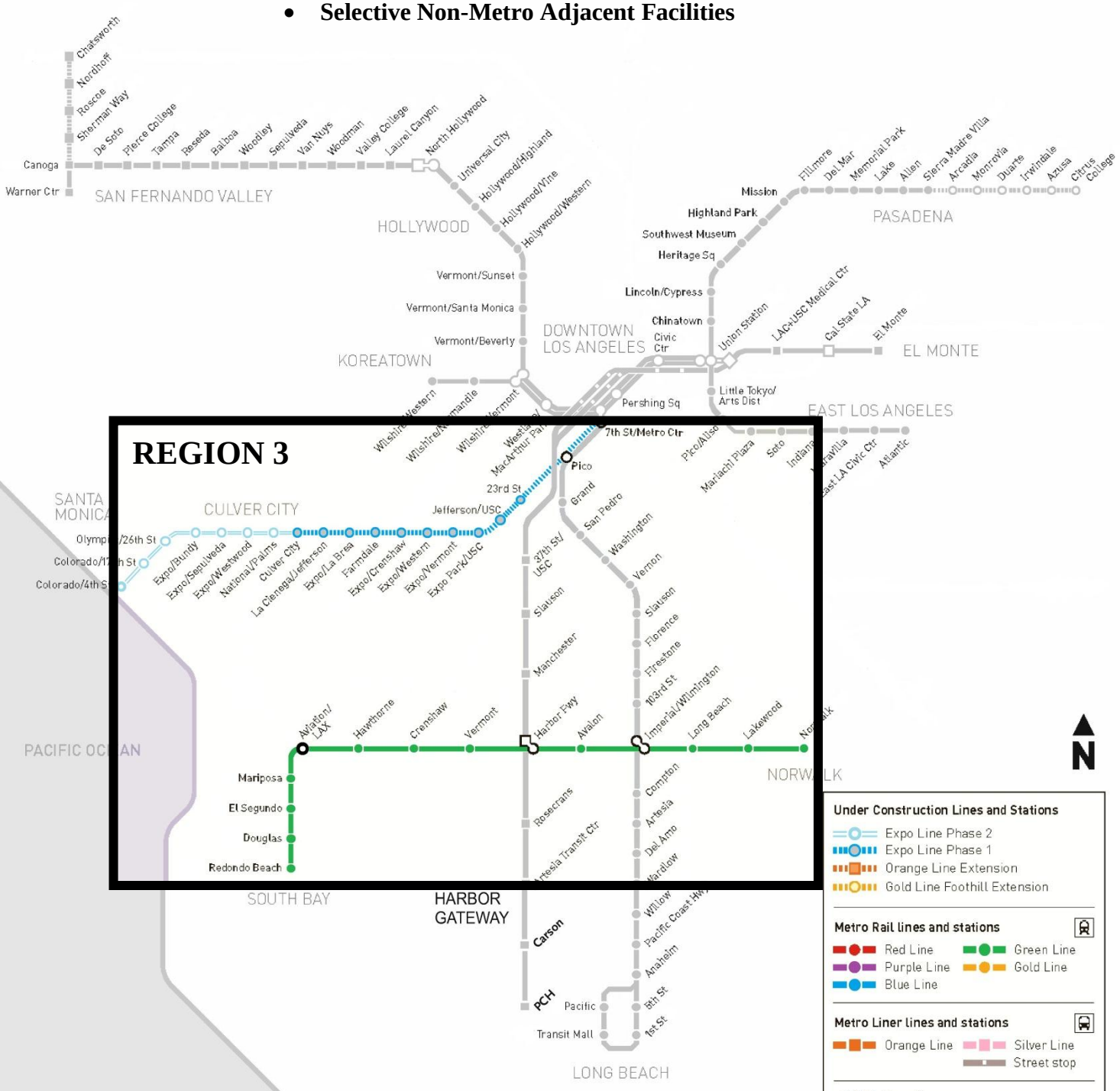
- Metro Gold Line Foothill Extension

REGION 3

Go Metro

metro.net

- **Metro Expo I & Green Line Stations & ROW**
- **Metro Inactive ROWs within the Geographical Area**
- **Bus and Rail Facilities within the Geographical Area**
- **Caltrans P&R Lots within the Geographical Area**
- **Selective Non-Metro Adjacent Facilities**



FUTURE FACILITIES

- Metro Crenshaw/LAX Transit Corridor
- Metro Expo II

Metro

Go Metro

REGION 4

metro.net

- **Metro Harbor Transitway & Blue Line Stations & ROW**
- **Metro Inactive ROWs within the Geographical Area**
- **Bus and Rail Facilities within the Geographical Area**
- **Caltrans P&R Lots within the Geographical Area**
- **Selective Non-Metro Adjacent Facilities (Including UP ROW)**