

# **Metro**

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



## **Agenda - Final**

**Thursday, October 19, 2017**

**11:30 AM**

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

### **Executive Management Committee**

*Eric Garcetti, Chair  
Sheila Kuehl, Vice Chair  
James Butts, 2nd Vice Chair  
Jacquelyn Dupont-Walker  
John Fasana  
Mark Ridley-Thomas  
Carrie Bowen, non-voting member*

*Phillip A. Washington, Chief Executive Officer*

## **METROPOLITAN TRANSPORTATION AUTHORITY BOARD RULES**

### **(ALSO APPLIES TO BOARD COMMITTEES)**

#### **PUBLIC INPUT**

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

Notwithstanding the foregoing, and in accordance with the Brown Act, this agenda does not provide an opportunity for members of the public to address the Board on any Consent Calendar agenda item that has already been considered by a Committee, composed exclusively of members of the Board, at a public meeting wherein all interested members of the public were afforded the opportunity to address the Committee on the item, before or during the Committee's consideration of the item, and which has not been substantially changed since the Committee heard the item.

The public may also address the Board on non-agenda items within the subject matter jurisdiction of the Board during the public comment period, which will be held at the beginning and/or end of each meeting. Each person will be allowed to speak for up to three (3) minutes per meeting and may speak no more than once during the Public Comment period. Speakers will be called according to the order in which the speaker request forms are received. Elected officials, not their staff or deputies, may be called out of order and prior to the Board's consideration of the relevant item.

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

**CONDUCT IN THE BOARD ROOM** - The following rules pertain to conduct at Metropolitan Transportation Authority meetings:

**REMOVAL FROM THE BOARD ROOM** The Chair shall order removed from the Board Room any person who commits the following acts with respect to any meeting of the MTA Board:

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

#### **INFORMATION RELATING TO AGENDAS AND ACTIONS OF THE BOARD**

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## LIMITED ENGLISH PROFICIENCY

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

**CALL TO ORDER****ROLL CALL**

16. **SUBJECT: FINANCIAL FORECAST UPDATE AND BASELINE  
FOR THE LONG RANGE TRANSPORTATION PLAN**

[2017-0550](#)**RECOMMENDATION**

RECEIVE AND FILE financial forecast update.

**Attachments:** [Attachment A - LRTP Update Financial Forecast Baseline.10.11.17](#)

**(ALSO ON PLANNING AND PROGRAMMING COMMITTEE)**

32. **SUBJECT: ALL-DOOR BOARDING EXPANSION STUDY**

[2017-0464](#)**RECOMMENDATION**

CONSIDER:

- A. RECEIVING AND FILING staff update on the All-Door Boarding (ADB) Expansion Feasibility Study in response to a Motion 10 (February 2017) approved at the Regular Board Meeting;
- B. APPROVING ADB expansion on the Metro Rapid Line 720 (Wilshire) and Metro Rapid Line 754 (Vermont);
- C. AUTHORIZING the Chief Executive Officer to execute Modification No. 148 to Contract No. OP02461010 with Cubic Transportation Systems, Inc. (Cubic) for the purchase of 405 Bus Mobile Validators and 480 Installation Kits in the amount of \$961,323 and maintenance support services in the amount of \$28,736 through June 30, 2019 for a total modification value of \$990,059. This Modification would increase the total contract value from \$259,959,813 to \$260,949,872; and
- D. ESTABLISHING a life-of-project budget of \$1,128,003 for the purchase of Bus Mobile Validators, installation costs, and services under Capital Project no. 203040.

**Attachments:** [Attachment A - Board Motion for All-Door Boarding](#)  
[Attachment B - All Door Boarding Feasibility Study](#)  
[Attachment C - Procurement Summary](#)  
[Attachment D - Contract ModificationsChange Order Log](#)  
[Attachment E - DEOD Summary](#)  
[Attachment F - LOP](#)

**33. SUBJECT: STATE AND FEDERAL REPORT**[2017-0662](#)**RECOMMENDATION**

RECEIVE AND FILE State and Federal Legislative Report.

**34. SUBJECT: CHIEF COMMUNICATIONS OFFICER QUARTERLY  
REPORT**[2017-0633](#)**RECOMMENDATION**

RECEIVE AND FILE quarterly report from the Chief Communications Officer.

**Adjournment**

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.



Metro

## Board Report

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

**File #:** 2017-0550, **File Type:** Informational Report

**Agenda Number:** 16.

### PLANNING AND PROGRAMMING COMMITTEE

OCTOBER 18, 2017

### EXECUTIVE MANAGEMENT COMMITTEE

OCTOBER 19, 2017

**SUBJECT: FINANCIAL FORECAST UPDATE AND BASELINE  
FOR THE LONG RANGE TRANSPORTATION PLAN**

**ACTION: RECEIVE AND FILE**

### **RECOMMENDATION**

RECEIVE AND FILE financial forecast update.

### **ISSUE**

This report provides an update of the Financial Forecast for the Long Range Transportation Plan (LRTP), providing a financial baseline for the pending update of that plan. Importantly, it illustrates how existing commitments - coupled with key assumptions regarding investment priorities - impacts Metro's estimated capacity to deliver transportation services, projects and programs. Attachment A provides more detailed financial information to support the findings in this report. Key among those is that while this baseline suggests that current commitments can be achieved-including operating the existing transit system, addressing state of good repair projected needs, and honoring all Measure R and M commitments as outlined in their respective Ordinances--, there are potential challenges should major assumptions shift in the future.

### **DISCUSSION**

#### **BACKGROUND**

The Financial Forecast (Forecast) provides a funding framework for operation and maintenance of the Metro transportation system, as well as new capital financial commitments. It includes assumptions for all available resources and is prepared in accordance with the funding and timing requirements in Metro's sales tax ordinances and Board policies, along with state and federal regulations. This Forecast is a part of the LRTP update and will provide a financial baseline for evaluating different assumptions and the resulting impacts on our financial capacity.

This Financial Baseline forecast covers the 40-year period from FY 2018 through FY 2057. It is important to note that long-range forecasts are exactly that - estimates based on the best available

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information at the time the forecast is produced. As such, it is expected to change as new information is obtained. The forecast does, however, provide valuable parameters to guide Board or other formal actions representing financial commitments - for example adopted capital investment programs, multiple or single year budgets, or grant approvals. A future recommended next step is to develop a 10-year term investment program that would be adopted by the Board, informed by the first 10 years of the long-range financial forecast.

### Prior Forecast

The Forecast is periodically updated and presented to the Board. The Forecast presents Metro's long-range financial outlook for existing LRTP priorities and other Board-approved costs, which supports the region's Regional Transportation Plan/Sustainable Communities Strategy, coordinated by SCAG (Southern California Association of Governments, the region's Metropolitan Planning Organization). The Forecast also supports the Transportation Improvement Program required for federal funding access, as well as federal grant applications, such as the Capital Investment Grants program (including New Starts).

The last Forecast update was presented to the Board in June 2016 (2016 Update), prior to the adoption of Measure M, as an assessment of the impacts of the then potential ballot measure. Since that time, in addition to the passage of Measure M, there have been significant changes to the assumptions included in the 2016 Update. One such change, in addition to the passage of Measure M, is the Road Repair and Accountability Act (2017, known as SB 1). SB 1 is the first state gas tax increase since 1994.

### Key Financial Assumptions

In order to provide a financial baseline to the LRTP, the Forecast is built on core financial assumptions, including priorities that align with the existing LRTP, as well as Metro policies related to those commitments. The LRTP priority commitments are summarized as follows: 1) Metro must fully fund its operations and maintenance; 2) Metro must ensure an appropriate level of State of Good Repair funding, especially as new federal regulations are still being implemented; and 3) Metro must meet all of the commitments it has under Measures R and M. Other commitments that need to be funded were discretionary, priority-setting decisions made by the Board up until this particular forecast was finalized (August 2017).

### Ten-Year Snapshot

Because any funding forecast becomes less accurate over time, staff has provided a more detailed assessment of financial capacity, for the first 10 years of the evaluation period. Over the next ten years, funding appears sufficient to meet all of our current, estimated system-wide operating and capital commitments, on their existing planned schedules. The Forecast assumes Metro will continue to operate the current level of bus service and an increasing level of rail and Bus Rapid Transit (BRT) service, as new rail and BRT lines are opened. It includes the wide range of capital projects and sub-regional programs specified under Metro's voter-approved ordinances. Further, it includes the cost to maintain and replace Metro's existing assets and future assets to support new rail and BRT lines. The cost of these commitments requires that Metro strategically utilize existing and expected future

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local, state, and federal funding resources. However, while SB 1 will help maintain these commitments, there are some existing and potential challenges to this plan. SB 1 is estimated to provide as much as \$5.9 billion of new funding for Metro over the next ten years. While the increase to state fuel taxes can offset estimated project and program costs, approximately half of the estimated revenues is competitive, and therefore less dependable than funds distributed by formula (Attachment A, page 9).

In this Forecast, there are no changes to federal funding assumptions, which currently estimate approximately \$11.9 billion in federal funds in the first ten years (page 11, Attachment A), almost half of which is discretionary. While this level of discretionary federal funding is consistent with Metro's past grant awards, the current Administration does not presently support the Capital Investments Grant programs (including Federal Transit Administration/FTA New Starts grants), which provides \$5.6 billion in the first ten years of the Forecast. Additionally, proposed congressional appropriation levels, while still pending, are lower than previously authorized under the FAST Act.

#### Ten-Year Snapshot - Costs

Since the 2016 Update, sales tax forecasts have been lowered due to slowing economic activity. In parallel, expanded commitments have been attached to Metro priority project and program areas. The cost of major Metro capital projects has increased compared to previous estimates, and additional capital projects have been approved. Staff also notes those cost considerations not yet included in the baseline, i.e., anticipated funding for potential large-scale projects currently under evaluation for this ten-year period, such as electrification of the bus system or proposed operational improvements to the Blue Line.

In addition to these capital expenses, there have been changes to the operating cost assumptions. Rightsizing of transit service and/or fare structure is assumed in the Forecast to improve fare revenue recovery.

#### State of Good Repair

The financial plan in the Forecast includes \$36.3 billion in “state of good repair” replacement and repair costs, based on the Metro Transit Asset Management database for existing assets in service, as well as estimates for new infrastructure that will be placed in service in the future (Attachment A, page 14). This amount does not include a contingency amount. A best practice is to provide for a contingency.

#### L RTP Financial Capacity

All combined revenues are used to fully fund the assumed priority expenditures, as noted previously, for the existing and expanded system (Attachment A, pages 16-17). There is limited unassigned fund and debt capacity in the baseline assumptions. Specifically, the Forecast includes \$41.0 billion of sales tax- and grant-backed debt financing over forty years. The future debt service is expected to increase steadily over time to match the aggressive, proscribed project delivery schedule. The Forecast's debt service is capped by Metro Debt Policy maximums.



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Using these assumptions, Measures R and M project and program delivery commitments can be fulfilled under baseline assumptions, including projected inflationary impacts. However, as there is limited funding capacity, any addition of new projects or acceleration of existing projects or programs will require one or more of the following trade-offs:

- Additional debt financing - if available;
- Cost offsets through innovations, scope changes, or delivery efficiencies;
- Reassessment of investment priorities; and/or
- New, unanticipated revenues.

## **FINANCIAL IMPACT**

The LRTP Financial Model is essential to the long-range planning activities of the agency to maximize funding for Los Angeles County transportation projects and to manage project and system costs over the 40-year planning horizon.

The Forecast's financial plan is predicated on: a stable sales tax growth; containment of operating and capital costs, including right-sized fare revenue; and reliable contributions from federal and state funding partners. Any significant loss in revenue or cost increases will likely require offsetting action, such as application of cost containment policies or delay to capital project(s).

### **Impact to Budget**

The LRTP Financial Model has no impact to the FY 2018 budget.

## **NEXT STEPS**

Staff will continue to monitor and update the Financial Forecast as actual data are realized and projections revised, including sales tax receipts; federal and state funding levels; any new Board-approved projects; operating results; and the annual budget.

As part of the LRTP update, staff recommends preparation of financial scenarios and sensitivity analyses that evaluate the impacts of alternative assumptions against the Forecast baseline.

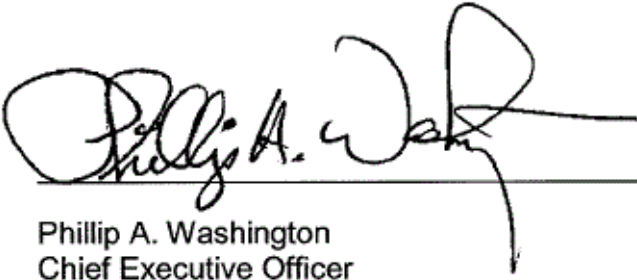
Metro Office of Management and Budget (OMB) is in the process of preparing a 10-year budget. Aligned with that effort, staff recommends a 10-year strategy (Short Range Transportation Plan/SRTP) for approval by the Metro Board in June 2018 as part of the series of actions related to the LRTP. The SRTP would refine investment priorities for the near term, which is the most restricted investment period as envisioned in the baseline forecast. It would also provide mechanisms to address the needs of unfunded or underfunded, large scale capital projects under consideration, as well as create a framework to assess application of the acceleration/deceleration policy before the Board for action next month.

## **ATTACHMENTS**

Attachment A - 2017 LRTP Update: The Baseline Financial Forecast

Prepared by: Craig Hoshijima, Senior Director, (213) 922-3982  
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Manjeet Ranu, Senior Executive Officer, (213) 928-3157

Reviewed by: Therese W. McMillan, Chief Planning Officer, (213) 922-7077



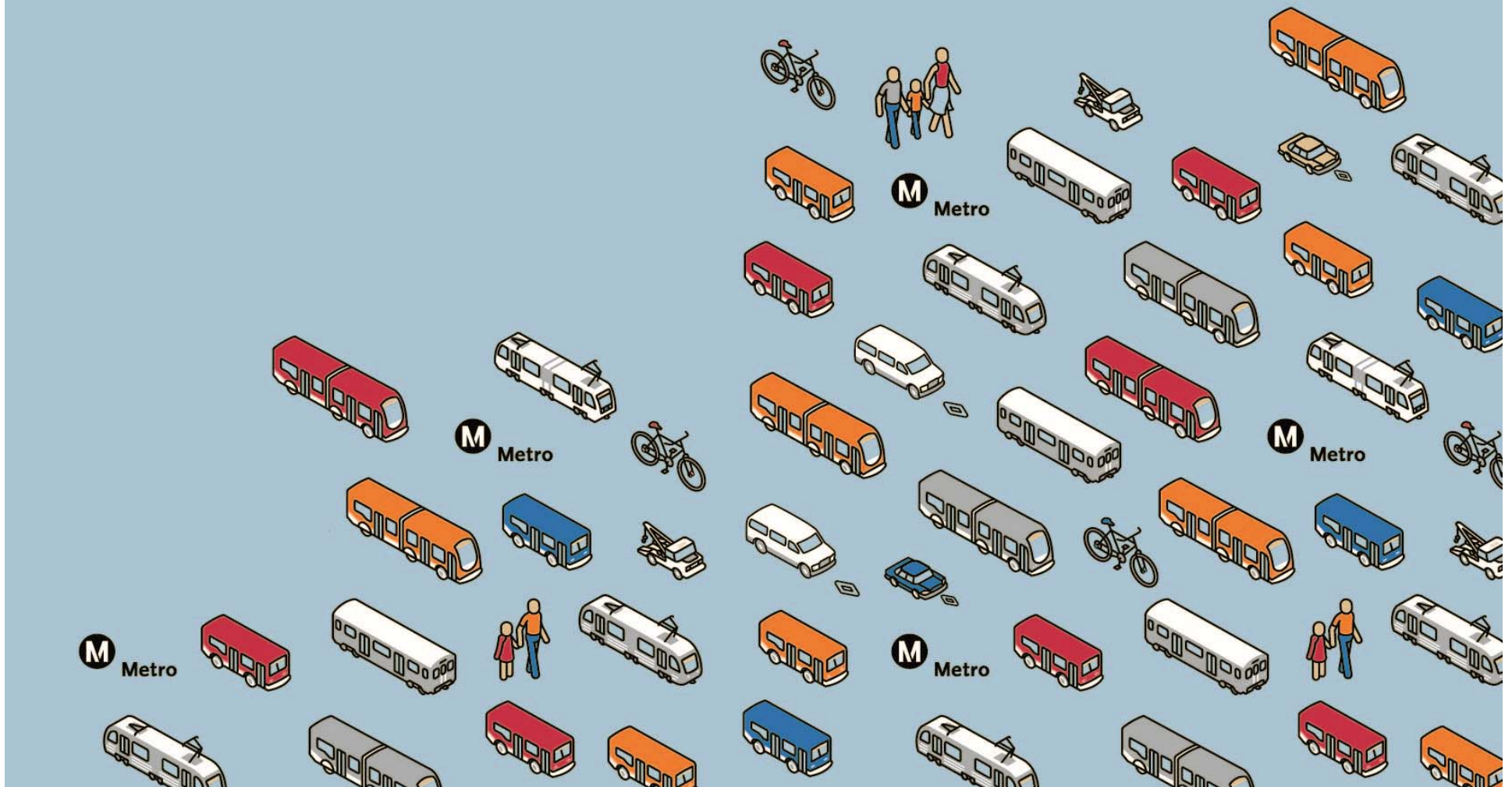
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Phillip A. Washington  
Chief Executive Officer

# ATTACHMENT A

## Long Range Transportation Plan

### 2017 Update – The Baseline Financial Forecast Details



## Purpose of the LRTP Financial Forecast

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- **Metro's long range financial outlook**
  - Guides LRTP development of long range investment plan for operation of transportation system and capital projects
  - Prepared in accordance with sales tax ordinances and Board policies and guidelines
- **Supports Transportation Improvement Program and Long Range Transportation Plan (LRTP)**



## L RTP Financial Baseline

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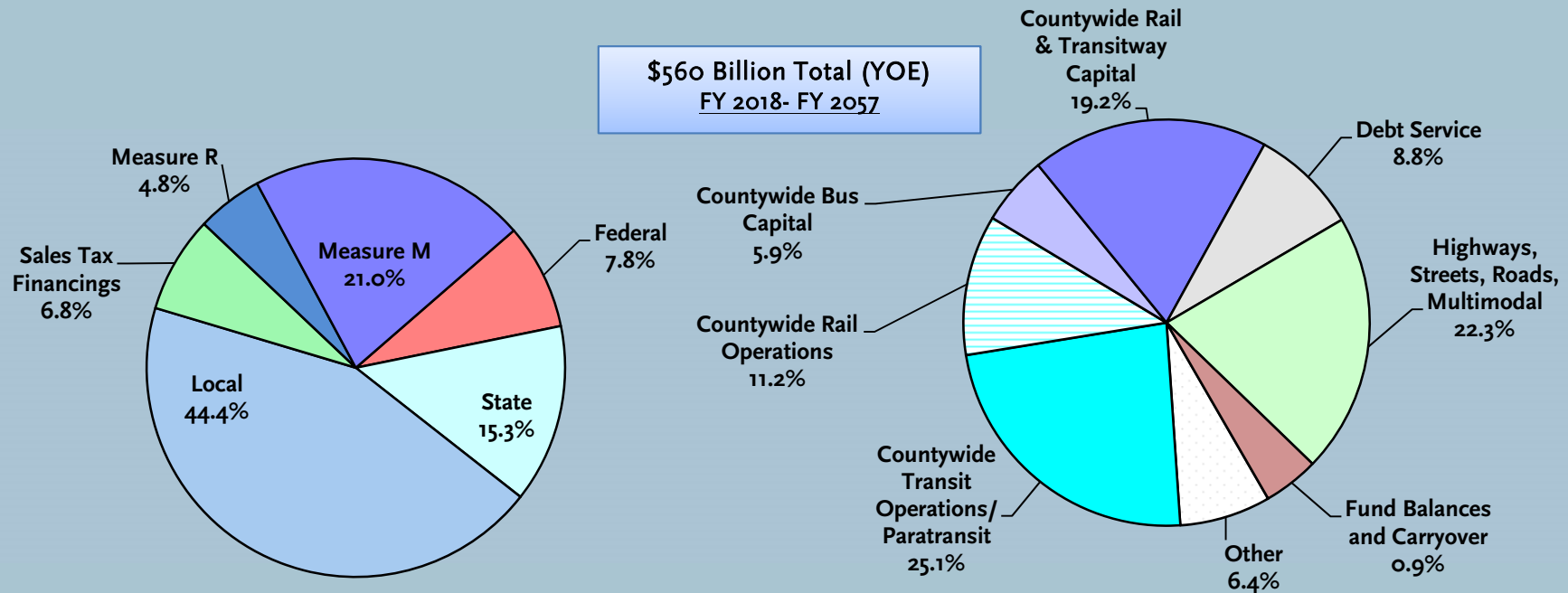
- This Financial Forecast provides the financial baseline for the L RTP Update
- Baseline refers to Metro's current and known future operations, maintenance, and capital financial commitments
  - Assumes these to be the priority investments for projected financial capacity
- Allows Metro to evaluate different assumptions regarding investment priorities, and subsequent impact on financial capacity



# Funding and Uses (40-year) - \$560B Total

Countywide Revenues FY 2018 – FY 2057

Countywide Expenditures FY 2018 – FY 2057



- Major Transit and Highway Capital Projects
- Capital Funding Programs
- Bus and Rail Revenue Service Hours
- State of Good Repair
- Metro Administrative Support



## 2017 Financial Baseline Key Assumptions

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- **Fully fund the following priorities:**
  - Operations
  - State of Good Repair (SGR) Needs
  - Prior Commitments (Measures R & M)
- **Debt Issued to Support Cash flow for Existing Commitments**



## 2017 Financial Snapshot: First 10 Years

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- Over the next 10 years, funding appears sufficient to meet estimated system-wide operating and capital costs (on planned schedule)
  - Lowered aggregate sales tax forecast due to slowing economic activity
  - Board-approved adjustments of \$2.4 billion – cost increases and new projects are addressed
  - Recent increase in State fuel taxes (SB1) will help offset lower local revenue and higher costs
  - Federal funding assumptions are relatively unchanged





## Board-Approved Adjustments Added to Baseline Expenditures (since June 2016 update)

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Category	Amount (millions)
1) Addition of Sub-regional Equity Program	\$1,196.0
2) Cost adjustments based on approved LOPs (aggregate)	428.7
3) New projects/Other (e.g., North San Fernando Valley BRT, Westside Purple Line Ext.3)	759.1
Total	\$2,383.8

## Potential Projects & Costs

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- The financial baseline does not include costs or funding for potential large-scale projects that are currently under evaluation as first 10-year investments (partial list)
  - Electrification of bus system
  - Link US redesign of Union Station
  - Wye improvements to Blue and Expo lines
  - Centinela Grade Separation
  - Additional Tier 1 Express Lanes
  - Rail Operations Center (ROC) expansion

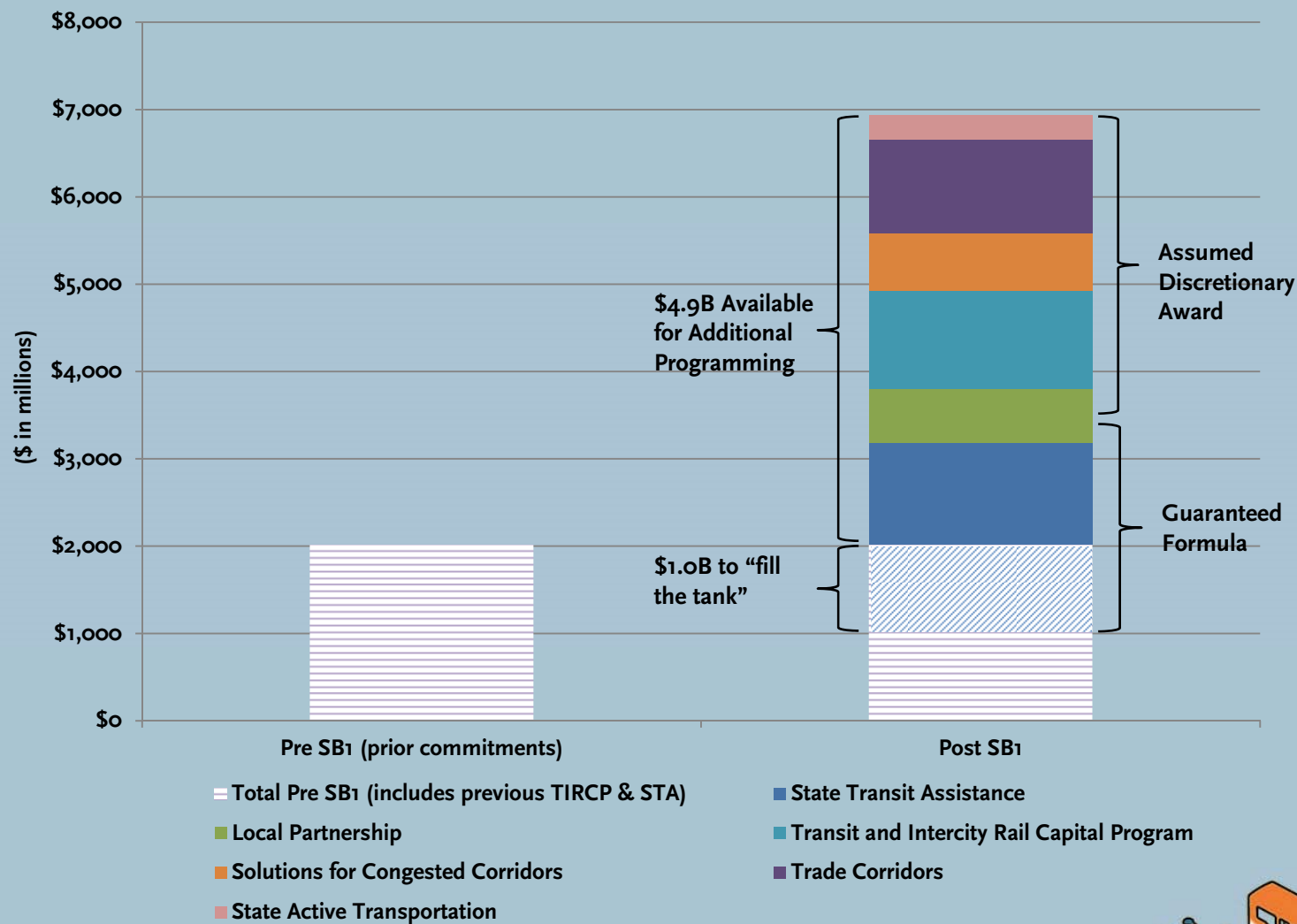
## SB1 Impact

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- The State-approved increase in fuel and other transportation taxes is expected to direct as much as \$5.9 billion for Metro over the next ten years (estimated from State-based forecasts)
  - Provides for both operating and capital investments
  - Formula share is \$2.5B; Competitive is assumed to be \$3.4B
    - Metro's capture of State discretionary programs is based on past performance & criteria
  - \$1.0B of SB1 anticipated capacity needed to “fill the tank” for prior State commitments

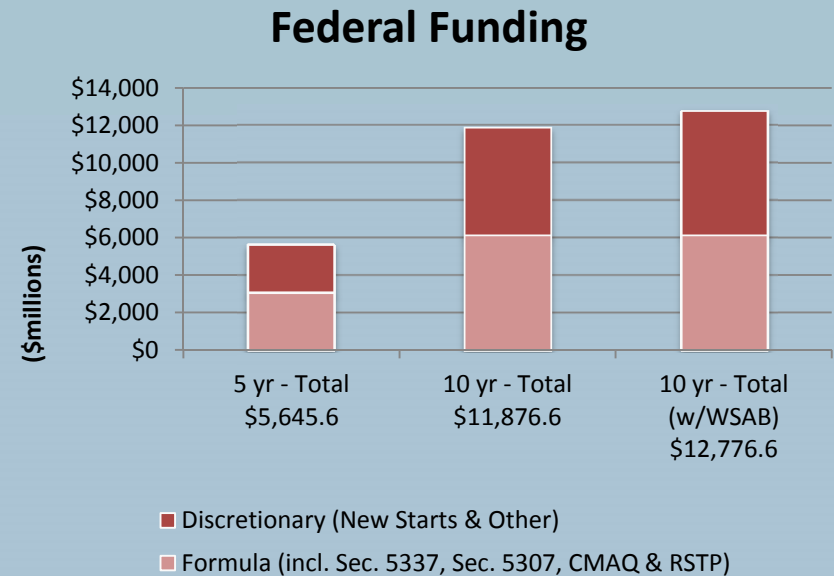


# SB1 Impact (10 years)



# Federal Funding Outlook (10 years)

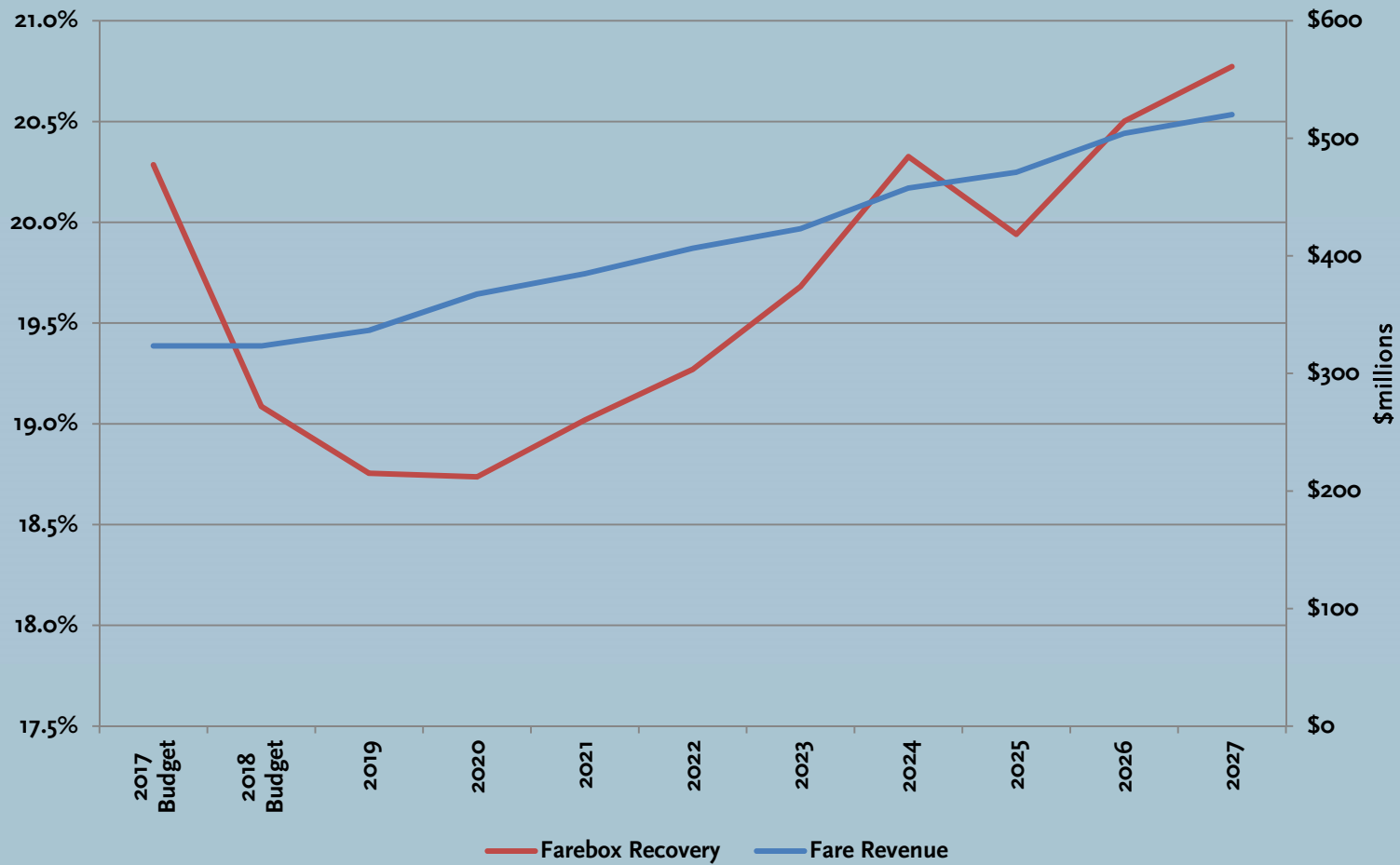
- Financial baseline includes \$2.0 billion New Starts funding in FY18-FY22 (5 years)
  - Regional Connector
  - Purple Line Section 1
  - Purple Line Section 2
  - New funding for Purple Line Section 3
- New Starts funding over ten years:
  - \$3.5 billion adding Sepulveda Pass Phase 2
  - Would be \$4.4 billion if adding accelerated West Santa Ana Branch (WSAB) Phase 2 gap closure schedule



\*Other includes TIGER & INFRA



# Fares and Farebox Recovery (10 years)



## Fares and Farebox Recovery (10 years)

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- Farebox recovery estimated at 19.1% in FY18 budget
- Fare revenues projected to grow from \$323 million to \$520 million over 10 years
  - Farebox recovery is related to both ridership and fare revenue
  - With regard to ridership, Metro has launched a Bus Reimagining Study to potentially restructure the system
  - “Right-sized” fare structure is assumed in order to track revenue growth

## State of Good Repair (40 years)

- Financial Forecast includes \$36.3 billion of “state of good repair” (i.e., replacement and repair) costs
  - Costs based on Metro Transit Asset Management (TAM) database (for existing assets in service)
  - SGR estimates attached to new infrastructure are extrapolations of TAM data

Category	(\$mil) FY18-FY57
Rail Facilities	\$49
Heavy Rail Vehicles	1,671
Light Rail Vehicles	6,141
Rail - Existing Lines	8,069
Rail - New Lines*	4,491
Bus Fleet	12,153
Bus Facilities	3,718
Total	\$36,292

\*includes vehicles & BRT lines





## Debt Financing

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- **Financial baseline includes \$41.0 billion of sales tax-and grant-backed debt financing over forty years**
  - Future debt service expected to increase steadily over time to match aggressive project delivery schedule
  - Debt service capped by Debt Policy maximums
  - Retirement of existing Prop A and Prop C debt offsets future cash flow impact

# **L RTP Baseline Forecast Assumptions (40 Years)**

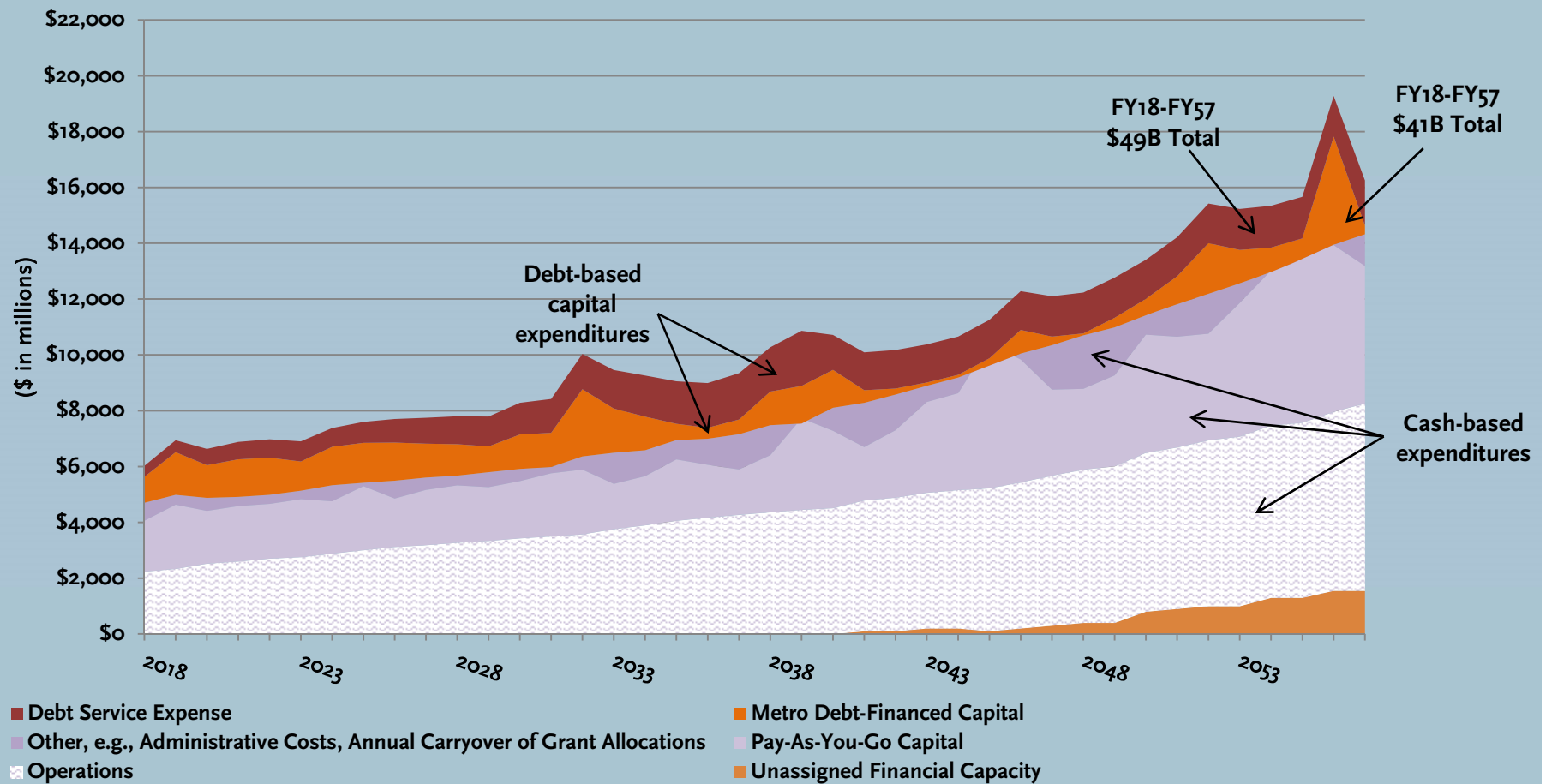
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**All combined revenues used to fully fund the following assumed priority expenditures:**

- **Operations associated with existing and expanded system**
- **Sustaining and maintaining existing system and SGR projects for expanded system**
- **Capital Programs attached to the following commitments:**
  - **Measure R Projects & Programs**
  - **Measure M Projects & Programs**

**There is very limited unassigned fund or debt capacity in the baseline assumptions**

# Long Range Baseline Expenditure Forecast



## Baseline Funding Capacity Takeaway

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- **All Measure R and M commitments can be fulfilled under baseline assumptions**
  - This includes inflationary impacts to costs over 40 year period



## Baseline Funding Capacity Takeaway

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- However, any addition of new projects or acceleration of existing projects or programs will require one or more of the following trade-offs:
  - Additional debt financing
  - Cost offsets through innovations, scope changes, or delivery efficiencies
  - Reassessment of investment priorities
  - New, unanticipated revenues



## Managing Risks

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- **Financial baseline is predicated on:**
  - Stable sales tax growth
  - Containment of operating and capital costs and right-sized fare revenue
  - Reliable contributions from Federal and State funding partners
- **Any significant loss in revenue or cost increases will require offsetting action**
  - Apply cost containment policies (Measure R and M)
  - Delay capital project start-up date



## Next Steps

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- **Metro staff will continue to monitor and update the long range financial forecast conditions**
  - Sales tax receipts
  - Federal and State grants
  - Board-approved changes
  - Annual budget
- **As part of the LRTP, staff will recommend financial scenarios and sensitivity analyses**
  - Evaluate alternative assumptions and their impacts against the baseline

## Next Steps (continued)

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- **Recommend a 10-year strategy that identifies and allocates funding consistent with the LRTP investment plan**
  - Refines priorities for most restricted investment period
  - Provides mechanisms to address currently unfunded, large scale capital projects under consideration
  - Creates framework to assess acceleration/deceleration policy





## Board Report

**File #:** 2017-0464, **File Type:** Contract

**Agenda Number:** 32.

### EXECUTIVE MANAGEMENT COMMITTEE OCTOBER 19, 2017

**SUBJECT: ALL-DOOR BOARDING EXPANSION STUDY**

**ACTION: APPROVE RECOMMENDATIONS**

#### **RECOMMENDATION**

CONSIDER:

- A. RECEIVING AND FILING staff update on the All-Door Boarding (ADB) Expansion Feasibility Study in response to a Motion 10 (February 2017) approved at the Regular Board Meeting;
- B. APPROVING ADB expansion on the Metro Rapid Line 720 (Wilshire) and Metro Rapid Line 754 (Vermont);
- C. AUTHORIZING the Chief Executive Officer to execute Modification No. 148 to Contract No. OP02461010 with Cubic Transportation Systems, Inc. (Cubic) for the purchase of 405 Bus Mobile Validators and 480 Installation Kits in the amount of \$961,323 and maintenance support services in the amount of \$28,736 through June 30, 2019 for a total modification value of \$990,059. This Modification would increase the total contract value from \$259,959,813 to \$260,949,872; and
- D. ESTABLISHING a life-of-project budget of \$1,128,003 for the purchase of Bus Mobile Validators, installation costs, and services under Capital Project no. 203040.

#### **ISSUE**

At the February 2017, Regular Board Meeting, the Board adopted Motion 10 (Attachment A) which directed staff to report back on the following items within 90-120 days:

- A. Prepare a plan evaluating alternatives to implement ADB on the Vermont Av Metro Rapid Line 754; and
- B. Prepare and report on a strategic plan to roll-out ADB to all lines which meet ADB criteria and include what other lines are heavily impacted.

This report responds to the Board directive outlined in the motion as adopted. Pursuant to completion of the feasibility study for ADB expansion, staff recommends that the Board approve expansion to

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two Metro Rapid Lines, and approve funding for the LOP expansion of ADB.

## **DISCUSSION**

### **Background**

February 2017, the Board directed staff to continue ADB indefinitely on the Metro Silver Line beyond the initial 6-month pilot period. At that time, a motion was introduced and approved directing staff to return within 90-120 days with a plan to implement ADB on the Vermont Av Metro Rapid Line 754. In addition, staff was to develop a strategic plan to implement ADB to other lines which meet the ADB criterion.

All-door boarding is a strategy for improving speed and reliability of transit service through faster boarding and efficient fare collection. Payment of bus fare in the traditional way (at the front door, with cash or tokens) can be time consuming and extend dwell time. Recent ADB implementation on the Metro Silver Line has shown to reduce boarding times and improve on time performance (from 69% to 81%). The benefits of implementing ADB will be realized on the busiest lines as they typically have transit demand, dedicated bus lanes and signal prioritization. The system's most heavily utilized lines are impacted by a slow and cumbersome boarding process. On lines that experience higher average daily boardings, slower boarding can affect service reliability and performance.

Staff initiated a study to:

1. Identify the routes where ADB policy could be implemented; and
2. Identify and define the project delivery strategy for the expansion of ADB.

### **1. All-Door Boarding Route Identification Process and Recommendation**

To identify potential routes for expansion, staff conducted a thorough review of existing service and the underlying markets served by specific routes.

In this study, Metro's entire bus network was analyzed to identify the route(s) with the highest potential for successful ADB expansion. To measure the success of potential expansion of ADB on routes in Metro's system, the following criteria were used as the basis for the study:

- Service Frequency - In order to maximize resource savings the amount of dwell time saved must equal or exceed the scheduled headway. Therefore, any future candidate for ADB should maintain a peak hour average headway of less than 10 minutes.
- Stop Activity - Maximum benefits of ADB are derived at stops with heavy passenger activity. Therefore, new ADB lines should have more than 10 boardings and alightings per trip at stops that account for at least 50% of the trip's total boardings and alightings.
- Transit Priorities - To minimize the external factors influencing dwell time, any near side stop at a signalized intersection on a candidate line should have transit priorities. In addition, utilization of an exclusive or partially exclusive Right of Way is preferable.
- Other Considerations - Other factors that would improve the candidacy of a line for ADB include high wheelchair boardings, articulated buses, and a high percentage of cash paying

customers.

As a result of the feasibility study the list of candidate routes was reduced to two initial ADB routes through the application of these criteria. Staff is recommending the Board approve expansion of the ADB program on Metro Rapid Lines 720 (Wilshire) and 754 (Vermont) as these routes best meet the criteria for ADB and maximized mobility, operational efficiency and customer convenience. The scoring results are outlined in the feasibility study (Attachment B).

## 2. Project Delivery Strategy for the Expansion of All-Door Boarding

The objective of ADB is to expedite boarding and reduce dwell time at bus stops, and thereby enhance convenience and reduce travel time for Metro customers. The expansion of ADB onto the Metro Rapid System involves the installation of bus mobile validator (BMV) devices at the front, middle and rear doors of the proposed lines to process TAP fare payments. Access to all doors means there may be a more even distribution of the passenger load, a reduction of boarding-related safety hazards and fewer opportunities for customer injuries.

Upon Board approval, Metro will roll out ADB to two (2) Rapid Lines utilizing BMVs. Staff anticipates starting ADB on the 754 Rapid Line in late June 2018 followed by the 720 Rapid Line at the end of 2018. To achieve the expansion schedule will require Metro to increase its BMV inventory and acquire additional installation kits. TAP will contract with Cubic to supply hardware and Metro's Bus Maintenance will prepare the vehicles.

ADB will require TAP only boardings. Transitioning customers from cash to TAP boardings will facilitate the program's objective to improve speed, reliability and fare compliance. Fareboxes will be programmed with capabilities to allow customers with cash or tokens to purchase TAP cards plus fare and add stored value to cards on board the bus at stops that are not near TAP Vending Machines (TVM) or TAP vendor outlets in addition to Metro's other efforts to expand the TAP vendor network.

Accompanying the rollout of ADB expansion will be a countywide public information campaign to communicate the changes in boarding and TAP only fare payment. Advertisements on shelters, vehicles, social media, billboards and traditional media will be used to convey the new boarding process and benefits of ADB. Blue Shirt Staff will assist with customer education and training component on an ongoing basis to guarantee customer satisfaction.

The following enhancements to the ADB program include:

- BMV Procurement and Installation
- Farebox Software Modifications
- Operator and Maintenance Employee Training
- Customer Education and Training

- Bus Service Adjustments

Staff anticipates the ADB expansion Lines will result in resource savings that can result in true dollar cost savings. The more significant benefit of ADB is the delivery of better service, which heavily influences the decision to use transit. Reduced variability in dwell time helps to improve the line's overall reliability and headway regularity. Based on previous customer feedback, the overwhelming majority were in favor of the program.

Also, Operator and Supervisor feedback indicates that they believe the ADB project is good for the system as it would help reduce:

- Dwell time at high usage stops
- Disputes regarding fares
- Assaults against operators

The perceived benefits of the program should be considered equally important, given its influence on service quality and ridership.

#### Title VI Review

The introduction of ADB on Lines 720 and 754 will require customers to use a TAP only method of fare payment. Operator supervision of fare payment is not possible for passengers that board through the rear doors. Therefore, a proof of payment method must be employed in conjunction with on vehicle fare compliance inspections. Customers will be asked to use a validated TAP card when boarding lines permitting all door boarding. Modifying fare payment to TAP only constitutes a fare change pursuant to Metro's Administrative Code Section 2-50-015.

In March 2016, a Title VI/Environmental Justice Fare Equity Analysis was received and filed by the Board of Directors. This document assessed the potential of an adverse disparate impact on minority passengers and/or a disproportionate burden on low-income customers arising from the change in acceptable fare payment methods. The findings of the Title VI analysis of TAP only fare payment are as follows:

- There would be no Disparate Impact to Minorities by changing the fare payment to TAP only; and
- There would be a Disproportionate Burden on low-income riders who currently use cash and/or tokens to pay their fare.

To mitigate the burden on cash and token customers and eliminate any barriers, staff has developed a number of options for customers to access TAP prior to and during the boarding process.

Customers may purchase and reload TAP cards via the mobile app, ticket vending machines at rail stations or utilize the "top-off" feature aboard the coach. Utilizing TAP will allow for quick boarding and accurate fare compliance checks. Since ADB allows boarding at front and rear doors, additional

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equipment will be purchased to accommodate the TAP method of fare payment on the prospective lines.

Customers may purchase TAP cards and fare products at 415 retail vendor locations, 93 Metro Rail stations, 18 Orange Line Stations, 10 Silver Line Stations, online at [taptogo.net](http://taptogo.net), by calling 866.TAPTOGO, onboard bus and at Metro Customer Centers.

TAP is working to expand TAP vendor locations throughout Los Angeles County to support ADB. Recently, 35 County Libraries were added and up to 52 additional county libraries may be added in the future. TAP is also working with 7-Eleven on a 16 location pilot. If this proves successful, 7-Eleven may choose to expand to hundreds of their stores in Los Angeles. TAP is also proposing new technology initiatives that will increase TAP card and fare media access within communities and along ADB corridors. These initiatives include a mobile fare payment app and distributing TAP cards at gift card kiosks in major chain stores.

### **FINANCIAL IMPACT**

Total LOP funding in the amount of \$1,128,003 will be included in Cost Center 3151- Service Planning & Scheduling in project 203040. For FY18 \$1,055,003 of the \$1,128,003 will be transferred from FY18 project cash flow reforecasts based on revised schedule and corresponding expenditure plans. After completing the capital project, staff currently estimates annual operating costs of \$253,948. This amount will fluctuate as implementation and ADB operation progresses. A schedule of capital and estimated operating costs are included in Attachment F of this report.

Because this is a multi-year project, the respective Cost Center Manager within Operations will be responsible for ensuring that the future year balance of capital funding, as well as operating funding is programmed and budgeted.

#### **Impact to budget**

The source of funds for this project will come from Federal, State and local funding sources including sales tax and fares that are eligible for Bus Operating or Capital Projects. They will maximize fund use given funding allocation provisions.

### **ALTERNATIVES CONSIDERED**

The alternative to the proposed staff recommendation is to not expand ADB on Lines 720 and 754. Not implementing ADB on these two lines is not recommended, as customers will not benefit from shorter dwell times, and Metro will not be able to attain improved on-time performance as quickly, without additional resources.

### **NEXT STEPS**

Upon Board approval, staff will prioritize the implementation of ADB expansion on Lines 720 and 754.

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Staff will initiate the implementation plan that will include the procurement and installation of equipment, revised schedules reflecting shorter dwell times, fare enforcement deployment plan, and public outreach. Staff will provide periodic updates to the Board on future plans for expanding ADB.

**ATTACHMENTS**

Attachment A - February 2017 Board Motion on Item #10

Attachment B - All-Door Boarding Feasibility Study

Attachment C - Procurement Summary

Attachment D - Contract Modification/Change Order Log

Attachment E - DEOD Summary

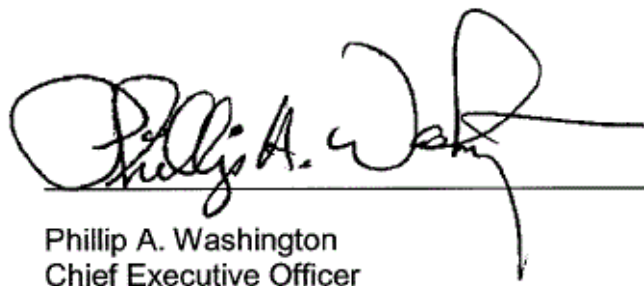
Attachment F - LOP and Operating Budget Summary

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Phillip A. Washington  
Chief Executive Officer



# Metro

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

## Board Report

**File #:**2017-0100, **File Type:**Motion / Motion  
Response

Agenda Number:10.1

**REVISED**  
**REGULAR BOARD MEETING**  
**FEBRUARY 23, 2017**

**Motion by:**

**Director Dupont-Walker  
As amended by Director Solis**

**Relating to Item 10; File ID 2016-0767  
All-Door Boarding Expansion**

Metro strives to be the nation's leader in transit innovation.

All-Door Boarding (ADB) pilot program intends to reduce bus stop dwell times and variability, by allowing customers with valid TAP cards to enter at all doors.

The 6 month Silver Line All-Door Boarding (ADB) pilot program has proven to be successful that results in faster boarding through more efficient fare collection.

The Silver Line All-Door Boarding pilot serves as a great example for innovation and evidence-based results throughout the agency.

With the evaluation from the pilot program, Metro now has the framework on expanding All-Door Boarding to new lines across Los Angeles County.

**CONSIDER Motion by Dupont-Walker as amended by Solis** that the Board direct the CEO to:

- A. Prepare a plan evaluating alternatives within 90 to 120 days to implement permanent all-door boarding on the Vermont Avenue Rapid 754, which is LA County's second highest-ridership bus corridor; and
- B. Prepare and report back in 120 days on a strategic plan to roll-out all-door boarding to all lines which meet all-door boarding criteria and include what other lines are heavily impacted.

# **Feasibility Analysis Methodology & Results**

## **All Door Boarding Expansion and Proposed Program August 2017**

Service Planning and Scheduling



## **Introduction**

Today, most Metro bus routes require front-door boarding and fare verification by the operator in order to increase fare compliance. However, front-door boarding also extends dwell times at stops with high passenger activity, lengthens overall travel times and uses already scarce resources less efficiently.

Previously available on Metro Rail and Metro Orange Line, Metro recently expanded all-door boarding (ADB) to the Silver Line. Customers with valid TAP cards may enter through any door of the bus at any time. TAP card customers must validate their cards by tapping bus mobile validators (BMV) which were adjacent to every door.

The general aim of this study is to determine the feasibility of expanding the ADB at the route-level. All-door boarding policy can be implemented in three ways:

1. System-level implementation - Applying ADB policy to all the routes in Metro's bus network
2. Route-level implementation - Applying ADB policy on individual routes
3. Stop-level implementation - Applying ADB policy at individual stops

A system-level policy would allow passengers to board any bus in the network through any door. This would allow for a consistent policy across all buses, and would be easiest for passengers to understand. Conversely, it is unlikely that all routes in the network would see sufficient running-time improvements to offset installing new fare-collection machines on all buses in the system. Prior to moving towards a system-level implementation, expanding the policy at the route-level is recommended to capture the most cost-efficient implementation scenario.

This study is not intended to be a detailed alternatives analysis, but rather seeks to evaluate the long-range feasibility for the proposed expansion of all-door boarding policy and to provide guidance to be used in the decision making process.

## **Route Selection**

In this section, the methodology used to determine which bus routes would benefit from ADB policy is explained. More specifically, this paper uses Metro bus data to develop a methodology which evaluates the performance of ADB policies at the route-level. Four quantitative methodologies are presented for selecting the routes that would perform best under route-level implementation. The list of candidate routes was filtered through the application of a 4-phase process. Each phase in the evaluation process focused the analysis on progressively fewer candidates. From this process emerged a picture of future ADB utilization and potential routes identified for service. To determine the viability of expanding the ADB program, the study considered service frequency, stop activity, and transit priorities amongst other criteria.

## Phase 1: Service Frequency

Metro analyzed each route in its bus network to identify the routes with the highest potential for successful ADB service. It was determined that the best time periods of focus were the AM and PM peaks (6:00am – 9:00am and 3:00pm – 6:00pm, respectively). Since these periods have the greatest number of passenger boardings, they will also stand to benefit the most from an ADB policy. Additionally, it was decided that both travel directions on a route (inbound and outbound) should be examined separately, as some routes might have a higher frequency in one direction, but not in the other. The ideal route would maintain average peak hour headways of less than 10 minutes in both peak periods and directions.

### Results of Phase 1

Based on the analysis of the transit criteria, routes highlighted in yellow demonstrated suitable service frequency and were considered viable candidates for ADB in a short timeframe. These routes were carried forward to Phase 2 of the selection process.

The table below summarizes the results of phase 1.

**Phase 1: High Frequency Lines** (based on average peak hour headway of less than 10 minutes in both directions)

Total	PM Peak		AM Peak		Line 2
	Outbound	Inbound	Outbound	Inbound	
3	●	●	●	●	Line 14
3	●	●	●	●	Line 16
4	●	●	●	●	Line 18
4	●	●	●	●	Line 20
3	●	●	●	●	Line 30
2	●	●	●	●	Line 33
1	●	●	●	●	Line 45
2	●	●	●	●	Line 51
4	●	●	●	●	Line 53
2	●	●	●	●	Line 55
1	●	●	●	●	Line 60
4	●	●	●	●	Line 66
2	●	●	●	●	Line 78
2	●	●	●	●	Line 81
3	●	●	●	●	Line 108
4	●	●	●	●	Line 115
1	●	●	●	●	Line 152
2	●	●	●	●	Line 165
1	●	●	●	●	Line 166
4	●	●	●	●	Line 200
1	●	●	●	●	Line 204
2	●	●	●	●	Line 212
1	●	●	●	●	Line 224
4	●	●	●	●	Rapid 720
2	●	●	●	●	Rapid 745
4	●	●	●	●	Rapid 754
2	●	●	●	●	Rapid 757

## Phase 2: Passenger Activity

Two main criteria were chosen to identify which routes would excel under route-level implementation. First, for ADB to result in significant dwell-time savings, high numbers of passenger must board at each stop; as such, the best routes will have a high average number of boardings across all stops. Secondly, in order to achieve significant time savings over the course of a day, a route must have a high number of total boardings. A high total boarding count can be attained by either having many stops on each bus trip, or by having many bus trips in a given time period.

It was also necessary to determine how often routes connect with the Metro Rail network. The most suitable routes would be ones that have significant connection(s). Regional connectivity was also considered in evaluating and selecting the routes to be part of Metro's ADB network.

### Results of Phase 2

The following table summarizes the results of Phase 2 analyses. A yellow highlight identifies routes with high transit demand and connects different sub-regions of Metro's service area.

**Phase 2:** Transit Demand and Stop Level Activity

	Line 14	Line 16	Line 30	Line 51	Line 60	Line 108	Line 200	Rapid 720	Rapid 754
Major Stops (Stops with avg. daily boardings greater than 10)		•		•				•	•
Corridor form important connection to regional fixed guide way transit system	•	•	•	•	•	•	•	•	•
High existing corridor transit demand offers opportunity for service improvement (Avg. daily boardings greater than 15,000)	•	•		•	•	•		•	•
Corridor serves large proportion of people who depend on transit	•	•	•	•		•	•	•	•
<b>Total</b>	<b>3</b>	<b>4</b>	<b>2</b>	<b>4</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>4</b>	<b>4</b>

### Phase 3: Transit Priorities

A route with many bus stops near side of an intersection with traffic lights can eliminate savings from faster passenger boarding. If a bus stop is at a traffic light, then there is the potential for boarding-time savings to be lost when the light turns red. Thus, ADB would work best when stops are on the far side of an intersection, past the traffic light. To minimize the external factors influencing dwell time, any near side stop at a signalized intersection on a candidate line should have transit priorities. The stops with an average of 300 or more weekday boardings were identified as major stops. In addition, planned roadway improvements or current use of an exclusive or partially exclusive Right of Way (ROW) for the majority of the line is preferable.

### Results of Phase 3

Based on ROW characteristics and transit signal priority utilization, it was determined that achieving travel time savings on Lines 16 and 51 would be a challenge for an ADB policy. These two routes were not carried forward for further evaluation. Based on ongoing Bus Rapid Transit (BRT) studies in the Vermont corridor, Line 754 transit service is expected to be enhanced and was carried forward as it planned to utilize the ADB policy once upgraded to a full BRT. Line 720 current ROW has no impediment for travel time savings and was also carried forward for further evaluation in Phase 4.

The table below summarizes the result of Phase 3.

**Phase 3:** Transit Priorities

	Line 16	Line 51	Rapid 720	Rapid 754
Major far side stop	•	•	•	•
Transit Signal Priority			•	•
Roadway configuration presents opportunity for travel time savings			•	
Planned roadway improvements offer potential for travel time savings				•
<b>Total</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>3</b>

#### Phase 4: Other Considerations

The two remaining routes were further evaluated in this phase of the study with the goal of selecting the appropriate route(s) for ADB policy. These routes were further evaluated by the following additional measures:

- Wheelchair boardings
- Cash boardings
- Vehicle assignment

Under the front-door boarding policy, this means that passengers must board buses via the front door only; the second doors of standard buses and the third doors of articulated buses are only to be used for alighting. Front-door boarding coupled with the “pay the operator” system slow boarding times.

Use of ADB, where passengers can board through any door of the bus with a valid TAP card allows for multiple passenger-boarding streams, which can not only reduce boarding time per passenger, but also reduce the total in-vehicle travel time for all passengers. Furthermore, reductions in boarding time can result in significant improvements to running times, in the overall efficiency of the bus route, and improved customer satisfaction.

With this in mind, the other factors to consider are routes with high numbers of wheelchair boardings and cash paying customers. Routes with articulated buses assigned to them were also identified as the additional door has the potential to generate additional time savings.

#### Results of Phase 4

Phase 4 concludes that the potential cost savings and related passenger-satisfaction improvements resulting from ADB on Lines 720 and 754 are significant, and are worth pursuing.

The table below summarizes the findings of Phase 4.

**Phase 4:** Customer Enhancements

	Rapid 720	Rapid 754
Wheelchair boardings	•	
Cash paying customers		•
Articulated bus assignment	•	•
<b>Total</b>	<b>2</b>	<b>2</b>

## PROCUREMENT SUMMARY

## ALL-DOOR BOARDING EXPANSION STUDY / OP02461010

1.	<b>Contract Number:</b> OP02461010		
2.	<b>Contractor:</b> Cubic Transportation Systems, Inc.		
3.	<b>Mod. Work Description:</b> Procurement, Installation, and Maintenance of Bus Mobile Validators (BMV)		
4.	<b>Contract Work Description:</b> Universal Fare System		
5.	<b>The following data is current as of:</b> September 22, 2017		
6.	<b>Contract Completion Status</b>		<b>Financial Status</b>
	<b>Contract Awarded:</b>		<b>Contract Award Amount:</b>
		2/20/2002	\$84,003,444
	<b>Notice to Proceed (NTP):</b>		<b>Total of Modifications Approved:</b>
		3/7/2002	\$175,956,369
	<b>Original Complete Date:</b>		<b>Pending Modifications (including this action):</b>
		9/1/2007	\$990,059
	<b>Current Est. Complete Date:</b>		<b>Current Contract Value (with this action):</b>
		12/31/2024	\$260,949,872
7.	<b>Contract Administrator:</b> Anush Beglaryan		<b>Telephone Number:</b> (213) 418-3047
8.	<b>Project Manager:</b> Mauro Arteaga		<b>Telephone Number:</b> (213) 922-2953

**A. Procurement Background**

This Board Action is to approve Contract Modification No. 148 with Cubic Transportation Systems for the procurement of 405 Bus Mobile Validators (BMV), 480 BMV installation kits, and maintenance of BMVs through June 30, 2019.

Upon Board approval, Metro will roll out All-Door Boarding (ADB) to two Rapid Lines, 720 and 754 utilizing BMVs. To achieve the expansion schedule, Metro is required to increase its BMV inventory and acquire additional installation kits and provide maintenance.

This Contract Modification will be processed in accordance with Metro's Acquisition Policy.

On February 20, 2002, Contract No. OP02461010 was awarded by the Metro Board to Cubic Transportation Systems, Inc. (Cubic). The Contract provides a countywide fare collection system to serve Metro's public transit customers. Cubic developed the NextFare software application and related databases which is the core technology managing the entire Transit Access Pass (TAP) network consisting of bus and rail equipment and devices. NextFare communicates with all of the fare collection

devices including BMVs which contain proprietary intellectual property. Therefore, Cubic is the only company that can provide the necessary BMVs as well as maintain them.

Please refer to Attachment E – Contract Modification/Change Order Log.

**B. Cost/Price Analysis**

The recommended price has been determined to be fair and reasonable based upon price analysis, technical evaluation, independent cost estimate, and negotiations. Negotiated amount is inclusive of a volume discount for BMVs.

<b>Proposal Amount</b>	<b>Metro ICE</b>	<b>Negotiated Amount</b>
\$990,059	\$1,363,504	\$990,059

# CONTRACT MODIFICATION/CHANGE ORDER LOG

## UNIVERSAL FARE SYSTEM / OP02461010

Mod. No.	Description	Status	Date	Amount
1	Table X-1 Milestone Changes	Approved	8/19/2002	\$0.00
2	Ticket Vending Machine Soft Keys	Approved	9/4/2002	\$0.00
3	San Fernando Valley BRT, Additional Quantities	Approved	4/13/2004	\$7,454,844
4	Modification to General Conditions	Approved	10/8/2002	\$0.00
5	TVM Third Coin Hopper	Approved	8/22/2003	\$416,858
6	Stand Alone Validator Video Clips	Approved	3/3/2003	\$0.00
7	Gold Line Functional Test Waiver	Approved	2/13/2003	\$0.00
8	Languages Supported	Approved	2/13/2004	\$0.00
9	Modifications to Compensation & Payment	Approved	2/20/2003	\$0.00
10	Smart Card to Smart Card Value Transfer	Approved	3/3/2003	\$0.00
11	SCADA Cable Installation on Gold Line	Approved	3/3/2003	\$48,476
12	Gold Line Functional Test Waivers	Approved	4/8/2003	\$0.00
13	Farebox Coin Dejam	Approved	4/8/2003	\$0.00
14	Change in Milestone Schedule	Approved	4/16/2003	\$0.00
15	Time Extension, Gold Line	Approved	7/1/2003	\$0.00
16	Change from Datastream MP5 to Express Metrix	Approved	7/1/2003	\$0.00
17	Final Design Review, changes in CDRLS	Approved	7/18/2003	\$0.00
18	Deletion of Printer from Hand Held Validator	Approved	1/6/2004	-\$35,252
19	Variable Message Sign	Approved	2/19/2004	\$243,828
20	Changes to Compensation and Payment	Approved	4/7/2004	\$0.00
21	PCMCIA Card Slot use for WAN	Approved	4/13/2004	\$0.00
22	Data Transmission System	Approved	6/22/2004	\$675,000
23	Mifare Card Initialization and Verification	Approved	6/8/2004	\$9,629
24	Farebox Mounting Adapter for NABI Buses	Approved	7/9/2004	\$32,485
25	Provide Regional CDCS	Approved	2/25/2005	\$5,348,335
25.01	Regional CDCS Overhead Rate Adjustment	Approved	1/17/2007	-\$31,621
25.02	Regional CDCS Acceptance Test Participants	Approved	8/7/2008	\$0.00
26	Remove Requirement for Focus Groups	Approved	12/20/2004	-\$111,704
27	Farebox Rotation	Approved	1/4/2005	\$74,967
28	Metro Gold Line Eastside Extension, Fare Equipment	Approved	7/25/2006	\$3,808,722



29	Stainless Steel Panels for TVM Alcoves	Approved	4/25/2005	\$45,521
30	Data Communication Cabling for Orange Line	Approved	6/10/2005	\$41,560
31	(Not Used)			
32	Additional Spare Part Quantities for Eastside Ext.	Approved	7/25/2005	\$15,480
33	Mifare Card Functionality on UFS	Approved	8/15/2005	\$33,105
34	Revisions to Project Schedule	Approved	10/26/2000	\$0.00
35	OCU Mount	Approved	11/15/2005	\$87,634
36	(Not Used)			
37	Deductive Change for Line 1.36	Approved	4/6/2007	-\$33,116
38	Installation of Third TVM and Relocation of Two SAVs and Blue Line Willow Station	Approved	7/6/2006	\$10,084
39	Upgrade the CDCS System from IB SSA Disk Storage Subsystem to Fiber Disk	Approved	10/2/2006	\$20,000
40	UFS Equipment for Expo Line	Approved	2/16/2007	\$5,197,204
41	(Not Used)			
42	(Not Used)			
43	HHV, PMOS and CPOS Interim Maintenance Deductive Change	Approved	2/16/2007	-\$162,628
44	UFS Additional Quantities for Contracted Services	Approved	2/16/2007	\$2,499,916
45	Replace Go-Cards with Mi-Fare Cards	Approved	2/16/2008	-\$1,157,850
46	Relocation of Data Probes and Receive Vaults at Division 7	Approved	4/9/2007	\$29,787
47	Revisions to US Base and Regional Manuals for Release to ACS	Approved	4/23/2007	\$46,000
48	Expo Line, Pico Station Infrastructure	Approved	7/18/2007	\$18,542
49	Relocation of UFS Lab Equipment	Approved	6/2/2008	\$106,905
50	Expo 7 <sup>th</sup> and Metro Additional Infrastructure	Approved	8/30/2007	\$81,719
50.01	Expo 7 <sup>th</sup> and Metro Infrastructure Deductive change	Approved	8/30/2007	-\$30,173
51	Handheld Validator Holster	Approved	10/16/2007	\$6,184
52	Installation and Testing of Farebox at Transportation Concepts	Approved	3/6/2008	\$16,091
53	Relocate OCUs on Ford Cutaways and MST Buses at Contracted Services	Approved	5/14/2008	\$79,170
54	Installation of one Farebox and Testing for two Fareboxes at Contracted Services	Approved	5/27/2008	\$18,842
55	UFS Quantity Adjustments	Approved	10/9/2008	\$0.00
56	Contracted Bus Service Equipment Change	Approved	12/3/2008	\$36,704
57	Installation and Acceptance Testing of One Farebox at First Transit	Approved	12/19/2008	\$3,040

58	Provide UFS Equipment for Expo from Culver City to Venice/Robertson Aerial Station	Approved	3/4/2009	\$304,246
59	Regional CDCS Electrical Power Reconfiguration	Approved	2/9/2009	\$17,186
60	Rail Equipment Warranty and Bus Equipment Warranty	Approved	2/19/2009	\$0.00
61	TAP Enables Turnstile Fare Gates for Rail Stations	Approved	4/9/2009	\$10,000,000
62	Provide UFS Equipment for Expo Truesdale Station	Approved	3/4/2009	\$284,167
63	System Support Services	Approved	6/8/2010	\$33,988,558
63.01	SSS, Additional Costs	Approved	3/22/2013	\$677,631
63.02	SSS, Orange Line Credits	Approved	3/22/2013	-\$58,243
63.03	SSS, One-year Extension	Approved	3/22/2013	\$8,148,263
64	\$5 Dollar Bill handling Unit for Fareboxes and TVMs	Approved	7/27/2009	\$304,658
65	Installation of Additional SAVs for Eastside Extension	Approved	1/4/2010	\$34,077
66	Relocation of Wing Gate at MRL Wilshire/Normandie Station	Approved	2/2/2010	\$18,905
67	(Not Used)	Approved		
68	UFS Equipment for Orange Line Extension	Approved	11/2/2010	\$2,749,476
68.01	Transfer Maintenance Dollars to 63.01	Approved	1/25/2013	-\$677,631
68.02	UFS Equipment for Orange Line Extension, Credits	Approved	3/22/2013	-\$10,982
69	Additional TVM at Aviation Greenline Station	Approved	4/2/2010	\$13,031
70	TAP Card Physical Testing	Approved	4/28/2010	\$41,844
70.01	TAP Card Physical Testing	Approved	3/22/2013	\$12,658
71	Concession Light Functionality	Approved	6/30/2010	\$96,726
72	(Not Used)	Approved		
73	API Test Server Imaging	Approved	9/9/2010	\$45,024
74	Contract Services Relocation	Approved	11/1/2010	\$33,854
75	Limited Function Sales Office Terminals, Increase Quantity	Approved	2/15/2011	\$993,795
76	CISCO ASA Acquisition and Implementation for API Test and Production Servers	Approved	2/28/2011	\$59,209
77	Cubic LU Key Installation	Approved	3/3/2011	\$69,097
78	Updates Farebox Configuration to Support ARUB Wireless Security Data Transfer	Approved	3/3/2011	\$40,204
79	Relocation of UFS Test Lab Equipment	Approved	4/25/2011	\$80,911
80	7 Byte UID Support	Approved	4/20/2011	\$362,069
81	Fare Gate Fencing Installation	Approved	4/25/2011	\$24,004

	Modifications, North Hollywood and Avalon Stations			
82	Additional TVM at Hollywood/Western Redline Station	Approved	4/25/2011	\$15,531
83	Purchase Drive Control Unit Light Validators DCU-LV	Approved	4/25/2011	\$363,492
84	Install TVMs at Three Metro customer Centers	Approved	6/6/2011	\$386,680
85	Cubic Modification to Gate Software/Locking Commands	Approved	6/29/2011	\$111,188
86	UFS Equipment for Expo Phase I Farmdale Station	Approved	7/26/2011	\$415,184
87	Relocation of TVMs at the Green Line Long Beach Station	Approved	8/25/2011	\$15,909
88	Mobile Validator Non-Recurring Engineering System Development	Approved	10/12/2011	\$611,677
89	Expo Pico Station North Platform TVM/SAV Work	Approved	3/5/2012	\$17,592
90	Deletion of Contract Line Items 1.03, 1.04 & 1.33	Approved	2/15/2012	-\$20,622
91	Orange Line Installation of 12 Metro Provided SAVs	Approved	2/15/2012	\$34,483
92	(Not Used)			
93	(Not Used)			
94	System Support Services, Six Year Extension	Approved	7/1/2013	\$55,000,000
94.01	(Not Used)			
94.02	System Support Services for Expo II and Foothill Extension	Approved	3/2/2015	\$1,152,749
94.03	Maintenance Support Services for 54 TVMs	Approved	4/14/16	\$838,211
95	UFS Equipment Storage Costs	Approved	6/13/2012	\$4,129
96	Faregating, Three Additional Swing Gates	Approved	2/4/2013	\$44,611
97	Green Line Faregating Additional Fire Key Switches at Vermont Station	Approved	4/1/2013	\$8,392
98	Emergency Swing Gate Upgrades	Approved	4/15/2013	\$252,145
99	Removal of TVM from Wilshire/LaBrea Customer Center	Approved	10/8/2013	\$4,883
100	Supplying and Supporting a Turn Key Mobile Validator System	Approved	7/1/2013	\$2,996,113
101	Bus Division Vault Relocation	Approved	8/1/2013	\$995,940
102	Install One TVM at East Portal Customer Service Center and One at Culver City Station	Approved	10/8/2013	\$252,905
103	El Monte Bus Facility TVMs	Approved	10/15/2013	\$474,753
104	Fare Gate Consoles for Expo 2,	Approved	5/26/2014	\$380,000

	Colorado/4 <sup>th</sup> Street Station			
105	TVM and SAV Relocations	Approved	12/16/2013	\$1,456,632
106	Modification to Nextfare to Allow For Segregation of Facility Specific Data	Approved	1/29/2014	\$647,869
107	Passback Modification	Approved	2/18/2014	\$70,301
108	UFS PCI Compliance	Approved	10/23/2014	\$9,015,319
109	Service Provider Support	Approved	6/14/2014	\$66,777
110	Autoload Segregation by Muni	Approved	6/30/2014	\$111,707
111	SAV Three Distinct Tones	Approved	8/4/2014	\$46,634
112	Modify TAP Vending Machine to Improve Purchases	Approved	8/4/2014	\$250,000
113	ADA TVM Upgrades for CN No. 162 and 150 Replacement TVMs	Approved	8/5/2014	\$416,815
114 A	UFS Equipment for Gold Line Foothill Extension	Approved	8/25/2014	\$1,878,756
114 B	UFS Equipment for Expo Phase	Approved	8/25/2014	\$3,783,200
115	FBX External Interface Spec Changes	Approved	8/19/2014	\$20,488
116	Willowbrook Station Blue Line SAVs	Approved	11/19/2014	\$62,882
117	TAP-In, TAP-In, Transfer Gate	Approved	11/19/2014	\$88,598
118	Virtual Gate Arrangement of SAVs at Gold Line Union Station Entrance	Approved	11/19/2014	\$84,964
119	Conversion of Expo 1 Aerial Stations to Fare Gates	Approved	3/2/2015	\$3,077,952
120	Change in Service Level Agreement for TVM & GC Network Additions at No Cost	Approved	3/2/2015	\$0
121	Emergency Swing Gate External Alarm Mode	Approved	11/19/2014	\$0
122	Installation of Colorado & 4 <sup>th</sup> Faregates & ESGs	Approved	3/2/2015	\$163,143
123	OCDC Replacement Equipment Software and Installation	Approved	5/12/2015	\$681,068
124	Expo One Claim No. 1 Settlement	Approved	5/26/2015	\$19,648
125	UFS Global Network, Change for Credit/Debit Processing at TVM	Approved	5/12/2015	\$52,735
126	Metrolink Integration Support	Approved	5/12/2015	\$56,073
127	Metro Network Assistance	Approved	5/12/2015	\$48,758
128	Division 13 Bus Operations TVMs	Approved	5/12/2015	\$99,401
129	Fare Equipment Changes at MRL North Hollywood Station	Approved	5/12/2015	\$577,401
130	Installation of Additional TVM at MRL Civic Center Station North Entrance	Approved	7/15/2015	\$21,593
131	Relocate One TVM From Hawthorne to Hollywood	Approved	9/2/2015	\$31,983
132	Service Provider Support – Deductive Change (Mod 109)	Approved	6/13/2015	-\$66,777
133	Additional Emergency Swing Gate for	Approved	6/3/2015	\$10,970

	Expo 2			
134	Metrolink Support for LU Encoding	Approved	10/7/2015	\$13,666
135	Emergency Swing Gate Hinge Post Substitution at Expo 2 Bundy Station – No Cost Change	Approved	10/21/2015	\$0
136	Relocation of TVMs at MGL Artesia Station	Pending		\$0
137	(Not Used)			
138	Vertiba Support (Salesforce – CRM)	Approved	8/20/2015	\$9,671
139	Regional Inter Agency Transfer Policy Change	Approved	1/21/2015	\$435,000
139.01	Regional Inter Agency Transfer (IAT) Policy Change	Approved	7/15/16	\$480,000
140	54 TVMs, purchase and install	Approved	4/14/16	\$5,194,834
141	(Not Used)			
142	Network, back office station configuration and IAT support	Approved	4/25/17	\$14,578
143	Reduction in monthly PM services	Approved	5/8/17	(\$404,550)
144	20 BMV Install Kits	Approved	5/8/17	\$10,310
145	Sales, Use, Activate, Initialize and read transactions into Nextfare	Approved	5/25/17	\$0
146	TVM Screen Flow Phase 2	Approved	6/30/17	\$475,000
147	Revisions to Mod 140/CN 185.03 TVM Deployment Scope of Work	Approved	8/28/17	\$0
148	<b>Procurement, Installation, and Maintenance of Bus Mobile Validators (BMVs)</b>	<b>Pending</b>	<b>-</b>	<b>\$990,059</b>
	<b>Modification Total:</b>			<b>\$175,956,369</b>
	<b>Original Contract:</b>			<b>\$84,003,444</b>
	<b>Total:</b>			<b>\$260,949,872</b>

## DEOD SUMMARY

## ALL-DOOR BOARDING EXPANSION STUDY / OP02461010

**A. Small Business Participation**

Cubic Transportation Systems, Inc. (Cubic) made a 5.65% Disadvantaged Business Enterprise (DBE) commitment. Cubic is exceeding their current commitment with a DBE participation of 8.81%.

<b>Small Business Commitment</b>	<b>5.65% DBE</b>	<b>Small Business Participation</b>	<b>8.81% DBE</b>
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	<b>DBE Subcontractors</b>	<b>Ethnicity</b>	<b>% Committed</b>	<b>Current Participation<sup>1</sup></b>
1.	American Alloy Fabrication	Caucasian Female	0.26%	0.37%
2.	J-Tec Metal Products	Hispanic American	0.15%	0.04%
3.	KLI, Inc.	Asian Pacific American	0.26%	0.11%
4.	Kormex Metal Craft, Inc.	Asian Pacific American	1.00%	0.30%
5.	Lows Enterprise, Inc.	African American	0.14%	0.04%
6.	Priority Manufacturing, Inc.	Caucasian Female	0.93%	0.05%
7.	Robnett Electric, Inc.	African American	2.49%	7.82%
8.	Techprose – The Natchez Group	Caucasian Female	0.42%	0.08%
<b>Total</b>			<b>5.65%</b>	<b>8.81%</b>

<sup>1</sup>Current Participation = Total Actual amount Paid-to-Date to DBE firms ÷ Total Actual Amount Paid-to-date to Prime.

**B. Living Wage and Service Contract Worker Retention Policy Applicability**

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

**C. Prevailing Wage Applicability**

Prevailing Wage requirements are applicable to this project. DEOD will continue to monitor contractors' compliance with the State of California Department of Industrial Relations (DIR), California Labor Code, and, if federally funded, the U S Department of Labor (DOL) Davis Bacon and Related Acts (DBRA).

**D. Project Labor Agreement/Construction Careers Policy**

The PLA/CCP is not applicable to this Project.

## LOP and Operating Expenditures

<b>LOP</b>	<b>FY18 (adopted)</b>	<b>FY 19</b>	<b>FY 20</b>	<b>Total</b>
<b>LABOR</b>				
Metro Non-Represented Labor (Training)	\$ 13,680	\$ -	\$ -	\$ 13,680
Metro Represented Labor	\$ 40,000	\$ 38,000	\$ -	\$ 78,000
<b>Labor Total</b>	<b>\$ 53,680</b>	<b>\$ 38,000</b>	<b>\$ -</b>	<b>\$ 91,680</b>
<b>NON-LABOR</b>				
Acquisition - Equipment & Parts	\$ 961,323	\$ -	\$ -	\$ 961,323
Professional & Technical Services	\$ 40,000	\$ 35,000	\$ -	\$ 75,000
<b>Non-Labor Total</b>	<b>\$ 1,001,323</b>	<b>\$ 35,000</b>	<b>\$ -</b>	<b>\$ 1,036,323</b>
<b>Total Project Cost</b>	<b>\$ 1,055,003</b>	<b>\$ 73,000</b>	<b>\$ -</b>	<b>\$ 1,128,003</b>

<b>Operating Expenditures</b>	<b>FY18 (adopted)</b>	<b>FY 19</b>	<b>FY 20*</b>	<b>Total</b>
<b>LABOR</b>				
Metro Non-Represented Labor	\$ -	\$ 177,840	\$ 177,840	\$ 355,680
<b>Labor Total</b>	<b>\$ -</b>	<b>\$ 177,840</b>	<b>\$ 177,840</b>	<b>\$ 355,680</b>
<b>NON-LABOR</b>				
Equipment Maintenace	\$ -	\$ 28,736	\$ 28,736	\$ 57,472
Equipment Mobile Cell Service (T-Mobile)	\$ -	\$ 42,372	\$ 42,372	\$ 84,744
Professional & Technical Services	\$ -	\$ 5,000	\$ 5,000	\$ 10,000
<b>Non-Labor Total</b>	<b>\$ -</b>	<b>\$ 76,108</b>	<b>\$ 76,108</b>	<b>\$ 152,216</b>