

**Board Report**

File #: 2021-0525, **File Type:** Contract**Agenda Number:** 19.

**OPERATIONS, SAFETY AND CUSTOMER EXPERIENCE COMMITTEE
FEBRUARY 17, 2022****SUBJECT: SECOND GENERATION BUS MOBILE VALIDATORS****ACTION: APPROVE RECOMMENDATION****RECOMMENDATION**

CONSIDER:

- A. ESTABLISHING capital project for the purchase and installation of the 2nd generation bus mobile validators and 16-port managed ethernet switches in order to support the All Door Boarding project;
- B. APPROVING and ADOPTING the life-of-project budget of \$18,100,000; and
- C. AUTHORIZING the Chief Executive Officer to execute Modification No. 165 to Contract No. OP02461010 with Cubic Transportation Systems, Inc. (Cubic) for the purchase of 2900 Second Generation Bus Mobile Validators (BMV's) and installation of BMVs and 16-port managed ethernet switches at Metro contract service locations in the amount of \$9,545,440 increasing the total contract value from \$373,825,899 to \$383,371,339.

ISSUE

All Door Boarding (ADB) is one of the key components in the NextGen Bus Plan to improve transit speed, reliability and customer experience. ADB was successfully piloted with BMVs installed on the J Line (Silver) 910/950 in 2016, Metro Rapid Lines 720 and 754 in 2018. However, these BMVs with 3G cellular technology are reaching obsolescence and will no longer be supported by cellular carriers that have moved to 4G and 5G technologies. The expansion of ADB to Tier One and Tier Two networks as outlined in the NextGen Bus Plan involves the purchase and installation of second generation BMVs by all doors of each bus to process Transit Access Pass (TAP) card fare payments. Metro requires funding authorization and additional contract authority for the acquisition, and installation, of the new BMVs to improve speed reliability and customer experience on these high-frequency bus service corridors.

Purchase and installation of the managed 16-port ethernet switch is a critical component for the implementation of ADB. The ethernet switch allows the new BMVs to connect to the farebox in order to transmit updated bus assignment data and fare tables to the BMVs remotely and instantly without

relying on manual configurations, providing greater operational flexibility to ensure buses can be assigned to different lines on a given service day. The ethernet switch will also allow the new BMVs and fareboxes to connect to the bus router for modern cellular communications. These 16-port managed switches will also be used for the expansion and upgrade of other on-board systems such as the automatic passenger counters (APC), SmartDrive, Vehicle Health Monitoring System HAM, and Hanover Headsign.

On August 19, 2021, the California Transportation Commission (CTC) approved Metro's NextGen Bus Speed & Reliability Improvements for a \$25 million award from the 2020 Local Partnership Program (LPP), plus the local match of \$25 million for a total of \$50 million. \$10 million of this LPP award is allocated for the procurement and installation of the second generation BMVs on the Metro buses assigned to the NextGen Tier One and Tier Two network. The Baseline Agreement with CTC is included in Attachment E.

BACKGROUND

Background

In June 2016, ADB was successfully piloted on the J Line (Silver) 910/950 and subsequently piloted on Metro Rapid Lines 720 and 754, which resulted in reduced bus stop delay and enhanced customer experience. Boarding access to all doors results in a more even distribution of the passenger loading, reduced passenger flow friction between passengers boarding and exiting the front door, particularly when a wheelchair ramps is deployed, and reduced passenger crowding around Metro bus operators.

In 2018, Metro began the process of redesigning the bus system to better meet the needs of current, former and future riders. The NextGen Bus Plan was authorized by the Metro Board in February 2020 for public review. The Plan proposed improvements that would speed up buses, double the number of frequent Metro bus lines and provide over 80% of current bus riders with all day, frequent service. The Plan would also ensure walking distance access to transit for 99% of current riders and improve the waiting experience. Based on the NextGen Bus Study, the primary benefits of All Door Boarding are estimated to be 2.5% travel time savings. ADB would expedite boarding and reduce dwell time at bus stops, and thereby enhancing convenience and reducing travel times for bus riders.

To facilitate ADB on the Tier One and Tier Two corridors outlined in the NextGen Bus Plan, staff applied for and received the allocation of \$817,000 for Bus Operations Subcommittee (BOS) 1% Federal grant in April 2021 for All Door Boarding activities including TAP validators and other speed and reliability improvements. Purchase and installation of new BMVs on Metro buses is one of the four components included in the LPP proposed project request.

DISCUSSION

BMVs are required to support the expansion of ADB, including the installation of BMVs on buses assigned to Tier One and Tier Two networks in order to expedite boarding, reduce dwell times at bus stops and reduce travel times thereby enhancing the customer experience. 60-foot articulated buses would have two BMVs, one in the middle door and one in the rear door while 40-foot and 45-foot buses would have one BMV in the rear door. Customers can also use the existing validator on the farebox by the front door or BMVs by the middle/rear doors as access points for All Door Boarding. Access to all doors also reduces crowding at the front of the bus addressing potential safety concerns raised by our customers and bus operators about maintaining social distancing due to COVID-19 and the latest Omicron variant. All door boarding has been very popular with riders throughout the COVID period for both enhanced safety and convenience.

The new BMVs are more reliable, utilize 4G LTE cellular communications and are open payment ready. The devices and back office can be programmed in the future to accept Visa, Mastercard, American Express and/or Discover. The new devices offer enhanced transaction security and are certified by the Payment Card Industry Data Security Standard (PCI DSS) and Europay, MasterCard, and Visa (EMV) global standard. Attachment D provides additional specifications on the new BMVs.

The new BMVs would also enhance new and equitable initiatives built on the TAP card platform, such as the Fareless System Initiative (FSI), Low Income Fare is Easy (LIFE) and Fare Capping programs as the new BMVs have expanded capacity to deliver over 50% more autoloads than the existing BMVs. The new BMVs also operate more quickly and reliably, thereby enhancing the customer experience as they board the bus.

Installation of the 16-port managed ethernet switch allows for automatic configuring of BMV's to support ADB and enables bus assignments to be uploaded to BMVs automatically without requiring manual configuration by the Maintenance staff at the daily rollout. The installation of ethernet switch would also allow the farebox and BMV to communicate with the back office via the bus router with modern cellular communications. This would result in eliminating the overlapping monthly cellular service fees for fareboxes and BMVs with an estimated savings of \$66,000 monthly or \$792,000 annually.

DETERMINATION OF SAFETY IMPACT

Boarding access to all doors means a more even distribution of the passenger load, reduced passenger flow friction between passengers boarding and exiting at the front door, particularly when a wheelchair ramp is deployed, and reduced passenger crowding around Metro bus operators.

FINANCIAL IMPACT

Total LOP funding in the amount of \$18,100,000 will be included in Cost Center 3151- Service Planning & Scheduling. After completing the capital project, staff currently estimates annual operating costs of \$307,330. This amount will fluctuate as implementation and ADB operation progresses. A summary of LOP capital budget and estimated operating costs is 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 comprises of the \$10 million in LPP, the \$1 million BOS grant included a 20% local match; the balance of the life of project budget will come from Federal, State, and local funds that are bus and rail eligible and available at the time of budget. Funds needed to initiate the system design phase of the project is available in FY2022 annual budget in cost center 3151.

EQUITY PLATFORM

Access to all doors means a more even distribution of the passenger load and fewer crowding conflicts at the front door. ADB also allows passengers who use wheelchairs to board with ramp-assist in the front of the bus while other passengers board from the other doors. Streamlining boarding due to ADB will reduce crowding on buses, which also can improve onboard security and safety. ADB will better enable physical distancing between customers and between bus operators and customers, which has become imperative in the wake of COVID-19. In addition, ADB will decrease wait times due to faster and more reliable transit service thereby limiting any perceived unsafe and security concerns.

Rear door boarding requires a TAP card for customers to validate their fares on the BMV's. Therefore, cash paying customers will have to board the bus through the front door to pay their fares on the fareboxes. In order to mitigate this limited access to board the bus for cash paying customers, accompanying the rollout of ADB expansion, Metro will implement a countywide public information campaign to communicate the improvement to boarding and TAP only fare payment. Advertisements on shelters, vehicles, social media, billboards and traditional media would be used to convey the new boarding process and benefits of ADB. Transitioning customers from cash to TAP cards will be facilitated through customer education, marketing and community outreach programs. The fareboxes are also programmed to allow customers to purchase TAP cards and add value to their cards.

These improvements in customer experience with the implementation of ADB would benefit transportation equity by providing faster and more reliable bus service to current Metro customers and would increase the competitiveness, and attractiveness of the bus system for new customers.

Additionally, this contract award has made a 5.65% Disadvantaged Business Enterprise (DBE) commitment. The project is 86% complete and the current DBE participation is 6.96%, exceeding the commitment by 1.31%.

IMPLEMENTATION OF STRATEGIC PLAN GOALS

The recommendation supports strategic plan Goal 1: Provide high quality mobility options that enable people to spend less time traveling and Goal 2: Deliver outstanding trip experience for all users of the

transportation system. This project will improve the speed and reliability of Metro Tier One and Tier Two bus service that runs through the heart of some of the most congested areas in the Los Angeles County with some of the most equity focused communities. Furthermore, this project would enhance transit customer experience in those areas by reducing dwell time and a more even distribution of passenger load to minimize overcrowding in the front of the bus.

ALTERNATIVES CONSIDERED

The alternative to the proposed staff recommendation is to not procure the new BMV's to support ADB Tier One and Tier Two corridors. However, this is not recommended since CTC has already approved funding for Metro's Speed and Reliability Improvements Program with \$25 million for BMVs to implement All Door Boarding (\$10 million) and NextGen Transit Signal Priority Project (\$15 million). Delay to purchase and install BMVs may jeopardize the awarded LLP grant in its entirety. Furthermore, the existing BMV's are obsolete with dilapidated 3G cellular technology no longer supported by cellular carriers and no longer available for purchase. Without the installation of the second generation BMV's on all doors, customers would not benefit from shorter dwell times, and Metro would not be able to transit speed and reliability as quickly, without additional resources.

NEXT STEPS

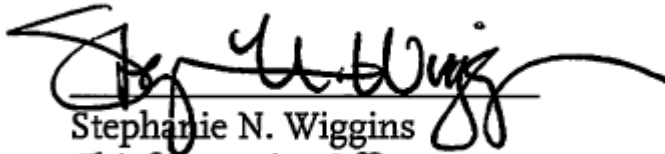
Upon Board approval, staff will execute Contract Modification No. 165 with Cubic Transportation Systems, Inc. and proceed with software design and development of the new BMV's and prioritize the installation on buses assigned to Tier One and Two corridors.

ATTACHMENTS

- Attachment A - Procurement Summary
- Attachment B - Contract Modification/Change Order Log
- Attachment C - DEOD Summary
- Attachment D - Cubic Bus Mobile Validator 3.0 Specifications
- Attachment E - LLP Project Baseline Agreement
- Attachment F - LOP and Operating Budget Summary

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