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

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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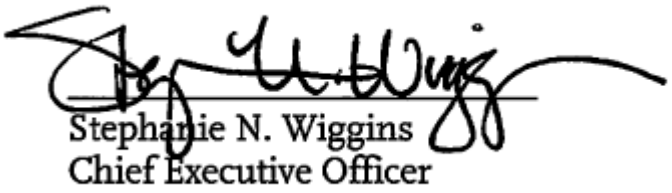

Stephanie N. Wiggins
Chief Executive Officer

PROCUREMENT SUMMARY

UNIVERSAL FARE SYSTEM / OP02461010

1.	**Contract Number**: OP02461010			
2.	**Contractor**: Cubic Transportation Systems, Inc.			
3.	**Mod. Work Description**: Upgrade existing Bus Mobile Validators (BMVs) for All Door Boarding			
4.	**Contract Work Description**: Universal Fare System			
5.	**The following data is current as of**: January 20, 2022			
6.	**Contract Completion Status**		**Financial Status**	
	Contract Awarded:	2/20/2002	**Contract Award Amount:**	$84,003,444
	Notice to Proceed (NTP):	3/7/2002	**Total of Modifications Approved:**	$289,822,455
	Original Complete Date:	9/1/2007	**Pending Modifications (including this action):**	$9,545,440
	Current Est. Complete Date:	12/31/2024	**Current Contract Value (with this action):**	$383,371,339
7.	**Contract Administrator**: Anush Beglaryan		**Telephone Number**: (213) 418-3047	
8.	**Project Manager**: Mauro Arteaga		**Telephone Number**: (213) 922-2953	

A. Procurement Background

This Board Action is to approve Contract Modification No. 165 for the procurement and upgrade of 2,900 Bus Mobile Validators (BMV).

Metro has successfully implemented All-Door Boarding (ADB) with first generation BMVs on a few Metro Rapid bus lines. Upon Board approval, Metro will install the latest generation BMVs on all Metro buses including replacing the existing BMVs with the new generation BMVs. Replacement is necessary due to obsolescence of the first generation BMVs. Additionally, 3G cellular communication of the first generation BMVs will no longer be supported by the Telephone Service Provider (TSP).

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 B – 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 (ICE), and negotiations. Metro's ICE includes a total of 2,586 BMVs, but an additional 314 BMVs are now required, which accounts for the difference between the ICE and the negotiated amount.

Proposal Amount	Metro ICE	Negotiated Amount
$9,545,440	$9,459,912	$9,545,440

ATTACHMENT B

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

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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 7th and Metro Additional Infrastructure	Approved	8/30/2007	$81,719
50.01	Expo 7th 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 Imagining	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 Modifications, North Hollywood and Avalon Stations	Approved	4/25/2011	$24,004
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, Colorado/4th Street Station	Approved	5/26/2014	$380,000
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 & 4th 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 Expo 2	Approved	6/3/2015	$10,970

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	405 BMVs and 480 Install Kits	Approved	11/20/17	$990,059
149	UFS Equipment for Crenshaw/LAX	Approved	12/1/2017	$5,920,997
150	CPA Change to Include Terminal ID	Approved	10/18/17	$45,487
151	UFS Equipment for Regional Connector	Approved	12/1/2017	$3,316,556
152	TAP System Patching	Approved	4/4/18	$165,337
153	Network Back Office Configuration	Approved	4/12/18	$37,222
154	TAP System Wide Upgrades	Approved	6/28/18	$22,104,750
155	TAP System Support Services	Approved	4/25/19	$68,220,642
156	Latitude/Longitude to A102 Reports	Approved	6/29/18	$14,994
157	Willowbrook/Rosa Parks Station Improvements	Approved	10/25/18	$2,622,560
158	Net Backup DPOO License & Support	Approved	6/7/2019	$55,281
159	Procure Additional BMVs	Approved	6/27/2019	$434,680
160	Q-Radar License Renewal	Approved	5/14/2020	$53,647
161	Additional ITS Network Equipment/Regional Connector Project	Approved	7/23/2021	$57,860
162	Additional ITS Network Equipment/CLAX Station	Approved	7/23/2021	$124,591
163/163.01	UFS Equipment for Purple Line Extension, Phase 1 Project	Approved	10/1/2021	$4,038,756
164	Fare Capping Project	Approved	10/22/2021	$5,662,667
165	Replacement of BMVs for All Door Boarding	**Pending**	**Pending**	$9,545,440
	Modification Total:			**$299,367,895**

Updated
01.2022
ab

	Original Contract:			**$84,003,444**
	Total Contract Value:			**$**383,371,339

DEOD SUMMARY

SECOND GENERATION BUS MOBILE VALIDATORS/OP02461010

A. Small Business Participation

Cubic Transportation Systems, Inc. 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%.

The Universal Fare System (UFS/TAP) Base Contract #OP-02-4610-10 was awarded in 2002 in the amount of $84,003,444 to Cubic Transportation System, Inc. The base contract requirements were for the design, manufacturing, site preparation, installation and testing of a turnkey fare collection system.

TAP has long since transitioned out of the development phase of the contract. TAP now manages the Operations and Maintenance (O&M) phase of the program. Under the O&M phase, Cubic continues to meet and exceed its DBE goals, notwithstanding many of the original subcontractors have completed their scope of work and are no longer part of the current phase.

Small Business Commitment	**DBE 5.65%**	**Small Business Participation**	**DBE 6.96%**

	DBE Subcontractors	**Ethnicity**	**% Committed**	**Current Participation[1]**
1.	American Alloy Fabrication	Caucasian Female	0.25%	0.28%
2.	Lows Enterprises	Black American	0.13%	0.03%
3.	TechProse	Caucasian Female	0.41%	0.05%
4.	Robnett Electrical	Black American	2.53%	6.24%
5.	Priority Manufacturing (GFI)	Caucasian Female	0.93%	0.03%
6.	J-Tec Metal Products	Hispanic American	0.13%	0.03%
7.	KLI, Inc.	Asian-Pacific American	0.25%	0.08%
8.	Kormex Metal Craft	Asian-Pacific American	1.02%	0.22%
		Total	**5.65%**	**6.96%**

[1]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 contract.

C. Prevailing Wage Applicability

Prevailing wage is not applicable to this contract.

D. Project Labor Agreement/Construction Careers Policy

Project Labor Agreement/Construction Careers Policy is not applicable to this Contract. Project Labor Agreement/Construction Careers Policy is applicable only to construction contracts that have a construction contract value in excess of $2.5 million.

CUBIC | Transportation Systems

Intelligent Travel Made Real®

Features

- Accepts EMV open payments with contactless bankcards and mobile wallets, account based payments, agency-branded smartcards, virtualized smartcards and barcode tickets
- EMVCo L1 certified with L2 certifications for Visa, Mastercard, Amex and Discover
- Ultimate in EMV open payment security, plus PCI PTS ready and full P2PE capability
- Bright, full color LCD display with audible alerts for clear passenger and driver feedback
- Vehicle wired connectivity, with options for wireless 4G LTE, Wifi, Bluetooth Classic and Bluetooth Low Energy
- Powerful 1.6GHz ARM Cortex Quad-Core processor with 2GB DRAM, and 16GB of memory for faster payment
- Touchscreen option where passenger input is required

Cubic Validator 3.0

The Cubic Validator 3 collects passenger payments on board buses and trams. Contactless bankcards and mobile wallets are accepted, with barcode tickets and agency-branded smartcards. Any media or credential, physical or virtual, can be used for account-based travel. With Cubic Validator 3, transportation operators deploy new and secure open payment schemes rapidly, in the knowledge that existing ticketing and payment schemes can be supported.

Success with open payments means a guarantee of payment security and a proven path to brand certification. The validator is EMV L1 certified with EMV L2 certifications for Visa, Mastercard, Amex and Discover, and will support PCI PTS certification on request. When deployed with a PCI DSS certified payments module such as the Cubic Payment Application, the validator offers proven P2PE certified payments for the ultimate in transaction security.

Fast boarding times are essential for on-time arrival, increasing ridership and driving revenue. The validator's powerful processor guarantees rapid and accurate validation, and with clear signage, a large screen, and built-in speaker for audible feedback, each passenger is guided quickly through boarding and payment.

Our customers also require flexibility. Options include a large touchscreen display, barcode reader, cellular 4G LTE communications, WiFI and Bluetooth Classic and Low Energy. The validator is also available in a range of colors to reinforce our customers' branding.

Cubic Validator 3.0

Specifications

PHYSICAL	
Dimensions	230 x 175 mm (H x W); < 100mm depth to pole
Weight	1kg
Material	Polycarbonate, vinyl decal, glass
Voltage	8 - 36 VDC
Power Over Ethernet (PoE)	Yes
Power Conditioning	Supports vehicle power, graceful shutdown, low voltage protection
Average Power Dissipation	< 11 W peak, approx. 7 W average
Operating Temperature	-27°C to 65°C
Storage Temperature	-30°C to 80°C
Relative Humidity	10-97% non-condensing
Protection	IP54 & IK08
CAPACITY	
Processor	Quad core 1.6 GHz Cortex
RAM	2 GB
Storage	32GB with 16GB available at a time (A/B side)
Expansion Ports	2 x USB 2.0 (not available while pole mounted); Serial RS232/RS485 (software selectable); Micro SD card for additional memory capacity
SAM Slot	2 from TR4 Secure Board, 2 from Application Board
Operating System	Linux OS kernel version 5.4
USER INTERFACES	
Display	Full color, 5” LCD, 800 nits, anti-reflective/anti-glare, 640 × 480 resolution
Touchscreen	Option
Speaker	Yes
INTERFACE OPTIONS	
Wired Interfaces	Ethernet 1000 Mbit RJ45
WiFi	WiFi: IEEE 802.11 a/b/g/n
Bluetooth	Bluetooth®: 4.1, Classic and Low Energy
WAN	4G cellular: LTE and LTE/HSPA (Optional)
GPS	Multi-constellation GNSS with untethered 3D inertial dead reckoning
FARE MEDIA ACCEPTANCE	
Media NFC Support	MIFARE® DESFire EV1, EV2 MIFARE® Ultralight C MIFARE® Classic, Ultralight, Plus
Open Payment Security	EMVCo L1 Certified EMVCo L2 Certified for: Visa® Contactless Payment Specification (VCPS) MasterCard® M/Chip Discover® Network D-PAS
Barcode	Linear and 2D barcodes, including QR Code and Aztec Code

In the interests of product improvement Cubic reserves the right to change the above specification without notice.

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cubic.com/transportation

ROAD REPAIR AND ACCOUNTABILITY ACT OF 2017
PROJECT BASELINE AGREEMENT
NextGen Bus Speed & Reliability Improvements

Resolution LPP-P-2122-03B
(will be completed by CTC)

1. FUNDING PROGRAM

- ☐ Active Transportation Program
- ☒ Local Partnership Program (Competitive)
- ☐ Solutions for Congested Corridors Program
- ☐ State Highway Operation and Protection Program
- ☐ Trade Corridor Enhancement Program

2. PARTIES AND DATE

2.1 This Project Baseline Agreement (Agreement) for the *NextGen Bus Speed & Reliability Improvements*, effective on, August 19, 2021 (will be completed by CTC), is made by and between the California Transportation Commission (Commission), the California Department of Transportation (Caltrans), the Project Applicant, *Los Angeles County Metropolitan Transportation Authority*, and the Implementing Agency, *Los Angeles County Metropolitan Transportation Authority*, sometimes collectively referred to as the "Parties".

3. RECITAL

3.2 Whereas at its December 2, 2020 meeting the Commission approved the Local Partnership Program (Competitive), and included in this program of projects the *NextGen Bus Speed & Reliability Improvements*, the parties are entering into this Project Baseline Agreement to document the project cost, schedule, scope and benefits, as detailed on the Project Programming Request Form attached hereto as Exhibit A and the Project Report attached hereto as Exhibit B, as the baseline for project monitoring by the Commission.

3.3 The undersigned Project Applicant certifies that the funding sources cited are committed and expected to be available; the estimated costs represent full project funding; and the scope and description of benefits is the best estimate possible.

4. GENERAL PROVISIONS

The Project Applicant, Implementing Agency, and Caltrans agree to abide by the following provisions:

4.1 To meet the requirements of the Road Repair and Accountability Act of 2017 (Senate Bill [SB] 1, Chapter 5, Statutes of 2017) which provides the first significant, stable, and on-going increase in state transportation funding in more than two decades.

4.2 To adhere, as applicable, to the provisions of the Commission:

- ☐ Resolution *Insert Number* , "Adoption of Program of Projects for the Active Transportation Program", dated
- ☒ Resolution # G-20-79, "Adoption of Program of Projects for the Local Partnership Program", dated December 2, 2020
- ☐ Resolution *Insert Number* , "Adoption of Program of Projects for the Solutions for Congested Corridors Program", dated
- ☐ Resolution *Insert Number* , "Adoption of Program of Projects for the State Highway Operation and Protection Program", dated
- ☐ Resolution *Insert Number* , "Adoption of Program of Projects for the Trade Corridor Enhancement Program", dated

4.3 All signatories agree to adhere to the Commission's Local Partnership Program (Competitive), Guidelines. Any conflict between the programs will be resolved at the discretion of the Commission.

4.4 All signatories agree to adhere to the Commission's SB 1 Accountability and Transparency Guidelines and policies, and program and project amendment processes.

4.5 The Los Angeles County Metropolitan Transportation Authority agrees to secure funds for any additional costs of the project.

4.6 The Los Angeles County Metropolitan Transportation Authority agrees to report to Caltrans on a quarterly basis; after July 2019, reports will be on a semi-annual basis on the progress made toward the implementation of the project, including scope, cost, schedule, outcomes, and anticipated benefits.

4.7 Caltrans agrees to prepare program progress reports on a quarterly basis; after July 2019, reports will be on a semi-annual basis and include information appropriate to assess the current state of the overall program and the current status of each project identified in the program report.

4.8 The Los Angeles County Metropolitan Transportation Authority agrees to submit a timely Completion Report and Final Delivery Report as specified in the Commission's SB 1 Accountability and Transparency Guidelines.

4.9 All signatories agree to maintain and make available to the Commission and/or its designated representative, all work related documents, including without limitation engineering, financial and other data, and methodologies and assumptions used in the determination of project benefits during the course of the project, and retain those records for four years from the date of the final closeout of the project. Financial records will be maintained in accordance with Generally Accepted Accounting Principles.

4.10 The Transportation Inspector General of the Independent Office of Audits and Investigations has the right to audit the project records, including technical and financial data, of the Department of Transportation, the Project Applicant, the Implementing Agency, and any consultant or sub-consultants at any time during the course of the project and for four years from the date of the final closeout of the project, therefore all project records shall be maintained and made available at the time of request. Audits will be conducted in accordance with Generally Accepted Government Auditing Standards.

5. SPECIFIC PROVISIONS AND CONDITIONS

5.1 Project Schedule and Cost
See Project Programming Request Form, attached as Exhibit A.

5.2 Project Scope
See Project Report or equivalent, attached as Exhibit B. At a minimum, the attachment shall include the cover page, evidence of approval, executive summary, and a link to or electronic copy of the full document.

5.3 Other Project Specific Provisions and Conditions
- The four project components have been revised to organize work by contract activity and to focus LPP-C funds on two components and local match funds on the other two components. The overall total project budget, match commitment and schedule has not changed.
- The proposed funding plan assumes non-proportional drawdown/expenditure of grant funds versus match (local) funds and will be requested at time of allocation.

Attachments:

Exhibit A: Project Programming Request Form
Exhibit B: Project Report

SIGNATURE PAGE
TO
PROJECT BASELINE AGREEMENT

NextGen Bus Speed & Reliability Improvements

Resolution LPP-P-2122-03B

Fanny Pan — Digitally signed by Fanny Pan Date: 2021.06.29 09:40:34 -07'00'

Stephanie N. Wiggins — Date

Chief Executive Officer

Project Applicant

Fanny Pan — Digitally signed by Fanny Pan Date: 2021.06.29 09:40:48 -07'00'

Stephanie N. Wiggins — Date

Chief Executive Officer

Implementing Agency

Tony Tavares — Digitally signed by Tony Tavares Date: 2021.07.19 13:21:20 -07'00'

Tony Tavares — July 19, 2021 — Date

District Director

California Department of Transportation

Toks Omishakin — 9.10.21 — Date

Director

California Department of Transportation

Mitchell Weiss — 9/28/21 — Date

Executive Director

California Transportation Commission

ROAD REPAIR AND ACCOUNTBILITY ACT OF 2017
LOCAL PARTNERSHIP COMPETITIVE PROGRAM
PROJECT BASELINE AGREEMENT
NextGen Bus Speed & Reliability Improvements

Exhibit A:
Project Programming Requests

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6065-2020-0002 v2

Amendment (Existing Project) ☒ YES ☐ NO						Date	08/03/2021 16:44:16
Programs ☐ LPP-C ☐ LPP-F ☐ SCCP ☐ TCEP ☐ STIP ☐ Other							
District	EA	Project ID	PPNO	Nominating Agency			
07			5755A	Los Angeles County Metropolitan Transportation Authority			
County	Route	PM Back	PM Ahead	Co-Nominating Agency			
Los Angeles							
				MPO	Element		
				SCAG	Mass Transit (MT)		
Project Manager/Contact			Phone	Email Address			
Vincent Lorenzo			213-418-3419	lorenzov@metro.net			

Project Title

NextGen LADOT Wireless Cloud-Based Transit Signal Priority Upgrade/Expansion

Location (Project Limits), Description (Scope of Work)

Original - Purchase and installation of 2,500 Transit signal priority transponders (TSP) on the undercarriage of buses to communicate with loop detectors at intersections in the City of Los Angeles Tier One corridors.

Revised - The development/implementation of an upgraded Wireless Cloud-Based Transit Signal Priority (TSP) system, the addition of 200 traffic signals to the wireless system with Ethernet communication on the NextGen Tier one Corridors in the City of Los Angeles and upgrade the software on over 2,500 Transit Metro buses to allow them to communicate with the Wireless Cloud-Based TSP systems along the NextGen Tier 1 Corridors within the City of Los Angeles.

Component	Implementing Agency
PA&ED	Los Angeles County Metropolitan Transportation Authority
PS&E	Los Angeles County Metropolitan Transportation Authority
Right of Way	Los Angeles County Metropolitan Transportation Authority
Construction	Los Angeles County Metropolitan Transportation Authority

Legislative Districts

Assembly: 50,51,53,54,39,43,59,45,46,62	Senate: 33,18,35,24,26,27,30	Congressional: 33,34,37,39,40,43,28,30

Project Milestone	Existing	Proposed
Project Study Report Approved	06/18/2021	
Begin Environmental (PA&ED) Phase	02/01/2021	01/01/2021
Circulate Draft Environmental Document Document Type CE	02/01/2021	05/01/2021
Draft Project Report	02/02/2021	05/02/2021
End Environmental Phase (PA&ED Milestone)	02/28/2021	06/30/2021
Begin Design (PS&E) Phase	03/01/2021	06/01/2022
End Design Phase (Ready to List for Advertisement Milestone)	03/15/2021	04/01/2023
Begin Right of Way Phase	03/01/2021	08/03/2021
End Right of Way Phase (Right of Way Certification Milestone)	03/02/2021	08/03/2021
Begin Construction Phase (Contract Award Milestone)	10/01/2021	06/01/2022
End Construction Phase (Construction Contract Acceptance Milestone)	09/30/2022	12/31/2025
Begin Closeout Phase	10/10/2022	01/01/2026
End Closeout Phase (Closeout Report)	12/31/2022	06/30/2026

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6065-2020-0002 v2

Date 08/03/2021 16:44:16

Purpose and Need

Original - The Los Angeles Department of Transportation has installed a loop-based transit signal priority (TSP) system on select corridors within the City of Los Angeles. This system requires buses to be equipped with transponders to trigger the signal to allow buses to proceed through intersections with priority. Currently, only Metro Rapid (Red) buses have these transponders. Based on the NextGen Transit First Service Plan, Metro is phasing out the Metro Rapid system in favor of a new high-frequency Tier One network that is more extensive than the Rapid system and will use all types of Metro buses. Therefore, all Metro buses need to have TSP transponders to benefit from signal priority.

Revision - LADOT has installed a loop-based transit signal priority (TSP) system on select corridors within the City of Los Angeles. Based on the NextGen Transit First Service Plan, Metro is phasing out the existing Metro Rapid system in favor of a new high-frequency Tier One network that is more extensive than the existing rapid system and will use all types of Metro buses. This project will upgrade the loop-based technology to GPS-Wireless technology using Internet Cloud Service TSP system to improve performance and reliability and reduce maintenance to the TSP system. Additionally this project will add an additional 200 intersections to the Internet Cloud Service TSP system along the NextGen Tier 1 Corridors, upgrade the Ethernet communication system for 200 intersections and install software on over 2,500 Metro buses to allow all those buses to use the Internet Cloud Service TSP system.

NHS Improvements ☐ YES ☒ NO	Roadway Class NA	Reversible Lane Analysis ☐ YES ☒ NO

Inc. Sustainable Communities Strategy Goals ☒ YES ☐ NO Reduce Greenhouse Gas Emissions ☒ YES ☐ NO

Project Outputs

Category	Outputs	Unit	Total
TMS (Traffic Management Systems)	Software and hardware systems	EA	2,500
TMS (Traffic Management Systems)	Traffic signal interconnect projects	EA	200

Additional Information

Original Benefits and Outputs:
Equipping all Metro buses with TSP transponders will reduce travel time for buses operating on high frequency corridors that have TSP within the City of Los Angeles, as they significantly reduce wait times for buses at signalized intersections. As Metro and LADOT expand TSP infrastructure, all Metro buses will be able to take advantage of the time savings provided by this infrastructure.

Revised Benefits and Outputs:
This project will provide Metro buses in the Tier 1 Corridors with the benefits of reduced travel time and increased schedule/headway adherence. The new Wireless Cloud-Based TSP Service will also reduce the maintenance efforts needed to keep the TSP up and running. Further, it would establish a platform in the future for all Metro buses to receive priority treatments at any of the signalized intersections within the City of Los Angeles.

Explanation of PPR revisions:
The NextGen Project consist of 4 components each with its own PPR. We revised the organization of the project work included in each of the 4 components of this project and have revised the PPR's to better clarify the project work to be completed by each project component. We did not increase the project budget but we moved $14 mil of LPP funds into this PPR and removed $500,000 in local money increasing this component budget from $1.5 mil to $15 mil. We did extend the end of the Construction and Closeout dates to accommodate the revised work. This component was revised to combine the City of LA signal priority elements with improvements to the communication software on the 2,500 Metro buses.

The PPR updates the project title & description and the category and outputs to better reflect the actual work to be completed in the component . Additionally, the project schedule was updated to reflect the actual environmental approval time line and the revised the design and construction timelines. We also note that this project component will have no ROW work completed.

We changed the project title from NextGen Transit Signal Priority transponders to NextGen LADOT's Wireless Cloud-Based Transit Signal Priority Upgrade/Expansion to better reflect work to be completed in this component.

Proposed Funding Plan assumes non-proportional drawdown/expenditure of grant funds versus match (local) funds and will be requested at time of allocation.

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6065-2020-0002 v2

Performance Indicators and Measures						
Measure	**Required For**	**Indicator/Measure**	**Unit**	**Build**	**Future No Build**	**Change**
Congestion Reduction	LPPF, LPPC, SCCP	Project Area, Corridor, County, or Regionwide VMT per Capita and Total VMT	Total Miles	412,853,000	0	412,853,000
			VMT per Capita	3.53	0	3.53
	LPPF, LPPC, SCCP	Person Hours of Travel Time Saved	Person Hours	8,761,000	0	8,761,000
			Hours per Capita	438,050	0	438,050
	LPPF, LPPC, SCCP	Daily Vehicle Hours of Delay	Hours	0	0	0
Throughput	Optional	Peak Period Person Throughput by Applicable Mode	# of Persons	124,413,300	118,394,000	6,019,300
	Optional	Passengers Per Vehicle Service Hour	# of Passengers	40.3	88.9	-48.6
System Reliability	LPPF, LPPC, SCCP	Peak Period Travel Time Reliability Index	Index	0	0	0
	LPPF, LPPC, SCCP	Transit Service On-Time Performance	% "On-time"	5.4	0	5.4
Air Quality & GHG	LPPF, LPPC, SCCP, TCEP	Particulate Matter	PM 2.5 Tons	0	2.52	-2.52
			PM 10 Tons	0	2.52	-2.52
	LPPF, LPPC, SCCP, TCEP	Carbon Dioxide (CO2)	Tons	0	179,808.75	-179,808.75
	LPPF, LPPC, SCCP, TCEP	Volatile Organic Compounds (VOC)	Tons	0	23.19	-23.19
	LPPF, LPPC, SCCP, TCEP	Sulphur Dioxides (SOx)	Tons	0	1.76	-1.76
	LPPF, LPPC, SCCP, TCEP	Carbon Monoxide (CO)	Tons	0	0	0
	LPPF, LPPC, SCCP, TCEP	Nitrogen Oxides (NOx)	Tons	0	49.5	-49.5
Safety	LPPF, LPPC, SCCP, TCEP	Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries	Number	1,039	1,128	-89
	LPPF, LPPC, SCCP, TCEP	Number of Fatalities	Number	171	176	-5
	LPPF, LPPC, SCCP, TCEP	Fatalities per 100 Million VMT	Number	0.99	1.02	-0.03
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries	Number	852	877	-25
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries per 100 Million VMT	Number	5.38	5.52	-0.14
	Optional	Accident Cost Savings	Dollars	61,638,760	0	61,638,760
Accessibility	LPPF, LPPC, SCCP	Number of Jobs Accessible by Mode	Number	0	0	0
	LPPF, LPPC, SCCP	Number of Destinations Accessible by Mode	Number	0	0	0
	LPPF, LPPC, SCCP	Percent of Population Defined as Low Income or Disadvantaged Within 1/2 Mile of Rail Station, Ferry Terminal, or High-Frequency Bus Stop	%	90	90	0
Economic Development	LPPF, LPPC, SCCP, TCEP	Jobs Created (Direct and Indirect)	Number	454	0	454

Performance Indicators and Measures						
Measure	**Required For**	**Indicator/Measure**	**Unit**	**Build**	**Future No Build**	**Change**
Cost Effectiveness	LPPF, LPPC, SCCP, TCEP	Cost Benefit Ratio	Ratio	5.03	0	5.03
System Preservation Pavement	LPPC, LPPF	Pavement Condition Index	Index	0	0	0
			Rating	NA	NA	
System Preservation Bridges	LPPF, LPPC	Bridge Deck Rating	Rating	NA	NA	
	LPPF, LPPC	Bridge Superstructure Rating	Rating	NA	NA	
	LPPF, LPPC	Bridge Substructure Rating	Rating	NA	NA	
Noise Level (Soundwalls Only)	LPPC, LPPF	Number of Receptors	Number	0	0	0
	LPPC, LPPF	Properties Directly Benefited	Number	0	0	0
	LPPC, LPPF	Number of Decibels	Number	0	0	0

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6065-2020-0002 v2

District	County	Route	EA	Project ID	PPNO
07	Los Angeles				5755A

Project Title

NextGen LADOT Wireless Cloud-Based Transit Signal Priority Upgrade/Expansion

Existing Total Project Cost ($1,000s)									
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Implementing Agency
E&P (PA&ED)									Los Angeles County Metropolitan Tra
PS&E									Los Angeles County Metropolitan Tra
R/W SUP (CT)									Los Angeles County Metropolitan Tra
CON SUP (CT)									Los Angeles County Metropolitan Tra
R/W									Los Angeles County Metropolitan Tra
CON		1,000						1,000	Los Angeles County Metropolitan Tra
TOTAL		1,000						1,000	
Proposed Total Project Cost ($1,000s)									Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		15,000						15,000	
TOTAL		15,000						15,000	

Fund #1:	State SB1 LPP - Local Partnership Program - Competitive program (Committed)								Program Code
Existing Funding ($1,000s)									30.10.724.200
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		500						500	
TOTAL		500						500	
Proposed Funding ($1,000s)									Notes
E&P (PA&ED)									LPP revenues funding this component will be matched by local revenues funding the NextGen Bus Priority Lanes on LA Streets component.
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		15,000						15,000	
TOTAL		15,000						15,000	

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6065-2020-0002 v2

Fund #2:	Local Funds - Local Measure (Committed)								Program Code
Existing Funding ($1,000s)									20.10.400.100
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									Los Angeles County Metropolitan Tra
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		500						500	
TOTAL		500						500	
Proposed Funding ($1,000s)									Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6065-2020-0002 v2

Complete this page for amendments only Date 08/03/2021 16:44:16

District	County	Route	EA	Project ID	PPNO
07	Los Angeles				5755A

SECTION 1 - All Projects

Project Background

Programming Change Requested

Reason for Proposed Change

If proposed change will delay one or more components, clearly explain 1) reason for the delay, 2) cost increase related to the delay, and 3) how cost increase will be funded

Other Significant Information

SECTION 2 - For SB1 Project Only

Project Amendment Request (Please follow the individual SB1 program guidelines for specific criteria)

Approvals

I hereby certify that the above information is complete and accurate and all approvals have been obtained for the processing of this amendment request.

Name (Print or Type)	Signature	Title	Date

SECTION 3 - All Projects

Attachments
1) Concurrence from Implementing Agency and/or Regional Transportation Planning Agency
2) Project Location Map

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6065-2020-0003 v2

Amendment (Existing Project)	☒ YES	☐ NO				Date	08/03/2021 16:45:32
Programs	☐ LPP-C	☐ LPP-F	☐ SCCP	☐ TCEP	☐ STIP	☐ Other	

District	EA	Project ID	PPNO	Nominating Agency	
07			5755B	Los Angeles County Metropolitan Transportation Authority	
County	**Route**	**PM Back**	**PM Ahead**	**Co-Nominating Agency**	
Los Angeles					
				MPO	**Element**
				SCAG	Mass Transit (MT)
Project Manager/Contact			**Phone**	**Email Address**	
Vincent Lorenzo			213-418-3419	lorenzov@metro.net	

Project Title

NextGen Bus Mobile Validators for All-Door Boarding

Location (Project Limits), Description (Scope of Work)

Purchase and installation of 2,900 bus mobile validators (BMV) on Metro buses that operate on Tier One and Two high frequency corridors in Los Angeles County to enable all-door boarding.

Component	Implementing Agency
PA&ED	Los Angeles County Metropolitan Transportation Authority
PS&E	Los Angeles County Metropolitan Transportation Authority
Right of Way	Los Angeles County Metropolitan Transportation Authority
Construction	Los Angeles County Metropolitan Transportation Authority

Legislative Districts

Assembly: 64,66,39,41,43,45,46,48,49,50,51,53 Senate: 32,33,18,35,22,24,25,26,27,30 Congressional: 33,34,37,40,43,28,44,29,30

Project Milestone	Existing	Proposed
Project Study Report Approved	06/18/2021	
Begin Environmental (PA&ED) Phase	02/28/2021	01/01/2021
Circulate Draft Environmental Document Document Type CE	03/01/2021	05/01/2021
Draft Project Report	03/02/2021	05/02/2021
End Environmental Phase (PA&ED Milestone)	03/03/2021	06/30/2021
Begin Design (PS&E) Phase	03/30/2021	10/15/2021
End Design Phase (Ready to List for Advertisement Milestone)	02/28/2023	02/28/2023
Begin Right of Way Phase	03/01/2023	08/03/2021
End Right of Way Phase (Right of Way Certification Milestone)	03/02/2023	08/03/2021
Begin Construction Phase (Contract Award Milestone)	03/30/2023	10/15/2021
End Construction Phase (Construction Contract Acceptance Milestone)	03/30/2024	03/30/2024
Begin Closeout Phase	04/01/2024	04/01/2024
End Closeout Phase (Closeout Report)	05/01/2024	05/01/2024

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6065-2020-0003 v2

Date 08/03/2021 16:45:32

Purpose and Need

Metro is proposing to expand All Door Boarding (ADB) to all buses that operate on the highest frequency Tier 1 and Tier 2 routes. ADB will expedite boarding and reduce dwell time at bus stops, and thereby enhance convenience and reduce travel time for Metro customers. The expansion of ADB involves the purchase and installation of bus mobile validator (BMV) devices by all doors of each bus to process TAP fare payments. 60-foot articulated buses will have three access points (front, middle, and rear) and 40 and 45-foot buses will have two access points (front and rear).

NHS Improvements ☐ YES ☒ NO	Roadway Class NA	Reversible Lane Analysis ☐ YES ☒ NO

Inc. Sustainable Communities Strategy Goals ☒ YES ☐ NO Reduce Greenhouse Gas Emissions ☒ YES ☐ NO

Project Outputs

Category	Outputs	Unit	Total
TMS (Traffic Management Systems)	Software and hardware systems	EA	2,900

Additional Information

Benefits and Outputs: All Door Boarding will expedite boarding and reduce dwell time at bus stops, thereby improving the speed of bus service on Metro bus routes. Access to all doors also means a more even distribution of the passenger load, a reduction of boarding-related safety hazards and fewer opportunities for customer injuries. Additionally, ADB allows passengers who use wheelchairs to board with ramp-assist in the front of the bus while other passengers board in the rear. Further, ADB will better enable social distancing between customers and between customers and bus operators.

Explanation of PPR Revisions:
Although we have revised the components of the NextGen project, this component and PPR only require one revision. We had to revise the Category and Output section because it was incorrectly stated as Rail-Multi modal and it should be TMS. The funding mix was revised to fund the component 100% with LPP funds and will be matched by other locally funded components.

Proposed Funding Plan assumes non-proportional drawdown/expenditure of grant funds versus match (local) funds and will be requested at time of allocation.

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6065-2020-0003 v2

Performance Indicators and Measures						
Measure	**Required For**	**Indicator/Measure**	**Unit**	**Build**	**Future No Build**	**Change**
Congestion Reduction	LPPF, LPPC, SCCP	Project Area, Corridor, County, or Regionwide VMT per Capita and Total VMT	Total Miles	412,853,000	0	412,853,000
			VMT per Capita	3.53	0	3.53
	LPPF, LPPC, SCCP	Person Hours of Travel Time Saved	Person Hours	8,761,000	0	8,761,000
			Hours per Capita	438,050	0	438,050
	LPPF, LPPC, SCCP	Daily Vehicle Hours of Delay	Hours	0	0	0
Throughput	Optional	Peak Period Person Throughput by Applicable Mode	# of Persons	124,413,300	118,394,000	6,019,300
	Optional	Passengers Per Vehicle Service Hour	# of Passengers	40.3	88.9	-48.6
System Reliability	LPPF, LPPC, SCCP	Peak Period Travel Time Reliability Index	Index	0	0	0
	LPPF, LPPC, SCCP	Transit Service On-Time Performance	% "On-time"	5.4	0	5.4
Air Quality & GHG	LPPF, LPPC, SCCP, TCEP	Particulate Matter	PM 2.5 Tons	0	2.52	-2.52
			PM 10 Tons	0	2.52	-2.52
	LPPF, LPPC, SCCP, TCEP	Carbon Dioxide (CO2)	Tons	0	179,808.75	-179,808.75
	LPPF, LPPC, SCCP, TCEP	Volatile Organic Compounds (VOC)	Tons	0	23.19	-23.19
	LPPF, LPPC, SCCP, TCEP	Sulphur Dioxides (SOx)	Tons	0	1.76	-1.76
	LPPF, LPPC, SCCP, TCEP	Carbon Monoxide (CO)	Tons	0	0	0
	LPPF, LPPC, SCCP, TCEP	Nitrogen Oxides (NOx)	Tons	0	49.5	-49.5
Safety	LPPF, LPPC, SCCP, TCEP	Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries	Number	1,039	1,128	-89
	LPPF, LPPC, SCCP, TCEP	Number of Fatalities	Number	171	176	-5
	LPPF, LPPC, SCCP, TCEP	Fatalities per 100 Million VMT	Number	0.99	1.02	-0.03
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries	Number	852	877	-25
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries per 100 Million VMT	Number	5.38	5.52	-0.14
	Optional	Accident Cost Savings	Dollars	61,638,760	0	61,638,760
Accessibility	LPPF, LPPC, SCCP	Number of Jobs Accessible by Mode	Number	0	0	0
	LPPF, LPPC, SCCP	Number of Destinations Accessible by Mode	Number	0	0	0
	LPPF, LPPC, SCCP	Percent of Population Defined as Low Income or Disadvantaged Within 1/2 Mile of Rail Station, Ferry Terminal, or High-Frequency Bus Stop	%	90	90	0
Economic Development	LPPF, LPPC, SCCP, TCEP	Jobs Created (Direct and Indirect)	Number	454	0	454

Performance Indicators and Measures						
Measure	**Required For**	**Indicator/Measure**	**Unit**	**Build**	**Future No Build**	**Change**
Cost Effectiveness	LPPF, LPPC, SCCP, TCEP	Cost Benefit Ratio	Ratio	5.03	0	5.03
System Preservation Pavement	LPPC, LPPF	Pavement Condition Index	Index	0	0	0
			Rating	NA	NA	
System Preservation Bridges	LPPF, LPPC	Bridge Deck Rating	Rating	NA	NA	
	LPPF, LPPC	Bridge Superstructure Rating	Rating	NA	NA	
	LPPF, LPPC	Bridge Substructure Rating	Rating	NA	NA	
Noise Level (Soundwalls Only)	LPPC, LPPF	Number of Receptors	Number	0	0	0
	LPPC, LPPF	Properties Directly Benefited	Number	0	0	0
	LPPC, LPPF	Number of Decibels	Number	0	0	0

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6065-2020-0003 v2

District	County	Route	EA	Project ID	PPNO
07	Los Angeles				5755B

Project Title

NextGen Bus Mobile Validators for All-Door Boarding

Existing Total Project Cost ($1,000s)								
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Implementing Agency
E&P (PA&ED)									Los Angeles County Metropolitan Tra
PS&E									Los Angeles County Metropolitan Tra
R/W SUP (CT)									Los Angeles County Metropolitan Tra
CON SUP (CT)									Los Angeles County Metropolitan Tra
R/W									Los Angeles County Metropolitan Tra
CON			10,000					10,000	Los Angeles County Metropolitan Tra
TOTAL			10,000					10,000	
Proposed Total Project Cost ($1,000s)									Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		10,000						10,000	
TOTAL		10,000						10,000	

Fund #1:	State SB1 LPP - Local Partnership Program - Competitive program (Committed)								Program Code
Existing Funding ($1,000s)									30.10.724.200
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON			5,000					5,000	
TOTAL			5,000					5,000	
Proposed Funding ($1,000s)									Notes
E&P (PA&ED)									LPP revenues funding this component will be matched by local revenues funding the NextGen Countywide Wireless Transit Signal Priority Upgrade Component.
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		10,000						10,000	
TOTAL		10,000						10,000	

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6065-2020-0003 v2

Fund #2:	Local Funds - Local Measure (Committed)								Program Code
Existing Funding ($1,000s)									20.10.400.100
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									Los Angeles County Metropolitan Tra
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON			5,000					5,000	
TOTAL			5,000					5,000	
Proposed Funding ($1,000s)									Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6065-2020-0003 v2

Complete this page for amendments only Date 08/03/2021 16:45:32

District	County	Route	EA	Project ID	PPNO
07	Los Angeles				5755B

SECTION 1 - All Projects

Project Background

N/A

Programming Change Requested

Reason for Proposed Change

N/A

If proposed change will delay one or more components, clearly explain 1) reason for the delay, 2) cost increase related to the delay, and 3) how cost increase will be funded

Other Significant Information

SECTION 2 - For SB1 Project Only

Project Amendment Request (Please follow the individual SB1 program guidelines for specific criteria)

N/A

Approvals

I hereby certify that the above information is complete and accurate and all approvals have been obtained for the processing of this amendment request.

Name (Print or Type)	Signature	Title	Date

SECTION 3 - All Projects

Attachments
1) Concurrence from Implementing Agency and/or Regional Transportation Planning Agency
2) Project Location Map

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6065-2020-0004 v2

Amendment (Existing Project) ☒ YES ☐ NO						Date	08/03/2021 17:29:03
Programs ☐ LPP-C	☐ LPP-F	☐ SCCP	☐ TCEP	☐ STIP	☐ Other		
District	EA	Project ID	PPNO	Nominating Agency			
07			5755D	Los Angeles County Metropolitan Transportation Authority			
County	Route	PM Back	PM Ahead	Co-Nominating Agency			
Los Angeles							
				MPO	Element		
				SCAG	Mass Transit (MT)		
Project Manager/Contact			Phone	Email Address			
Vincent Lorenzo			213-418-3419	lorenzov@metro.net			

Project Title

NextGen Bus Priority Lanes on LA Streets

Location (Project Limits), Description (Scope of Work)

Original -Design and implementation of bus priority lanes and other operational improvements on up to 80 lane miles of streets of LA Metro's Tier One network in the City of Los Angeles.

Revised - Design and implementation of bus priority lanes and other operational improvements to 80 lane miles of streets of LA Metro's Tier One network in Los Angeles county, with a majority of these streets within the City of Los Angeles.

Component	Implementing Agency
PA&ED	Los Angeles County Metropolitan Transportation Authority
PS&E	Los Angeles County Metropolitan Transportation Authority
Right of Way	Los Angeles County Metropolitan Transportation Authority
Construction	Los Angeles County Metropolitan Transportation Authority

Legislative Districts

Assembly: 50,51,53,54,39,43,59,45,46,62	Senate: 33,18,35,24,26,27,30	Congressional: 33,34,37,39,40,43,28,30

Project Milestone	Existing	Proposed
Project Study Report Approved	06/18/2021	
Begin Environmental (PA&ED) Phase	12/01/2020	01/01/2021
Circulate Draft Environmental Document Document Type CE	03/31/2021	05/01/2021
Draft Project Report	04/15/2021	05/02/2021
End Environmental Phase (PA&ED Milestone)	06/01/2021	06/30/2021
Begin Design (PS&E) Phase	06/30/2021	09/01/2021
End Design Phase (Ready to List for Advertisement Milestone)	10/01/2021	12/31/2022
Begin Right of Way Phase	10/01/2021	08/03/2021
End Right of Way Phase (Right of Way Certification Milestone)	10/02/2021	08/03/2021
Begin Construction Phase (Contract Award Milestone)	06/30/2021	01/02/2023
End Construction Phase (Construction Contract Acceptance Milestone)	12/31/2023	06/30/2024
Begin Closeout Phase	01/31/2024	07/01/2024
End Closeout Phase (Closeout Report)	03/30/2024	12/31/2024

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6065-2020-0004 v2

Date 08/03/2021 17:29:03

Purpose and Need

In recent years, the primary contributor to slow speeds and poor schedule reliability on Metro's bus system has been growing traffic congestion on city streets. This congestion directly increases Metro's operating costs and reduces the quality of the service that Metro can afford to provide. In response, Metro's NextGen Transit First Plan will reorganize bus corridors into four tiers of service standards. The Tier One corridors will have the highest frequency of service and will operate on transit priority streets. Converting curb lanes to bus priority lanes on some of these streets will improve service speed and reliability by allowing buses to bypass vehicular congestion.

NHS Improvements ☐ YES ☒ NO	Roadway Class NA	Reversible Lane Analysis ☐ YES ☒ NO

Inc. Sustainable Communities Strategy Goals ☒ YES ☐ NO Reduce Greenhouse Gas Emissions ☒ YES ☐ NO

Project Outputs

Category	Outputs	Unit	Total
Operational Improvement	Slow vehicle lanes	Miles	80

Additional Information

Benefits and Outputs:
Providing high-quality transit options with consistent, and competitive, travel times is the single most important step Metro can take to retain and grow ridership, increase the carrying capacity of local roadways, and shift regional travel patterns toward more efficient modes. Installing new bus lanes will allow Metro's highest frequency buses as well as municipal bus operators to move unencumbered through the core of the City of Los Angeles. Converting curb lanes to bus lanes has also been shown to improve safety through crash reduction.

Explanation of PPR revisions:
The NextGen Project consist of 4 components each with its own PPR. We revised the organization of the project work included in each of the 4 components of this project and have revised the PPR's to better clarify the project work to be completed by each project component. We have not increased the budget or asked for additional time to complete the project but we have moved out the construction completion date and end closeout date to reflect the time frame for the revised work being completed in this component. Additionally, we have revised the funding plan and programmed all of the funds for this work from Prior, FY21/22 and FY22/23 to FY 21/22 due to reflect program year instead of cashflow. We have removed $8 mil in LPP Funds and added an additional $7 mil in local funds to the current $8 mil in local funds. We have now reduced the budget from$16 mil to $15 mil and programed all $15 mil in local funds to 21/22 to serve as match to LPP funded components.

This PPR updates the project title, description and the category and outputs page to better reflect the work to be completed in this component. Additionally the project schedule was updated to reflect the actual environmental approval date and the revised design and construction timelines. We also note that this project component will have no ROW work completed.

Additionally, we changed the project title from NextGen Bus Speed Improvements for LA Streets to NextGen Bus Priority Lanes on LA Streets to reflect the activities to be implemented.

Proposed Funding Plan assumes non-proportional drawdown/expenditure of grant funds versus match (local) funds and will be requested at time of allocation.

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6065-2020-0004 v2

Performance Indicators and Measures						
Measure	**Required For**	**Indicator/Measure**	**Unit**	**Build**	**Future No Build**	**Change**
Congestion Reduction	LPPF, LPPC, SCCP	Project Area, Corridor, County, or Regionwide VMT per Capita and Total VMT	Total Miles	412,853,000	0	412,853,000
			VMT per Capita	3.53	0	3.53
	LPPF, LPPC, SCCP	Person Hours of Travel Time Saved	Person Hours	8,761,000	0	8,761,000
			Hours per Capita	438,050	0	438,050
	LPPF, LPPC, SCCP	Daily Vehicle Hours of Delay	Hours	0	0	0
Throughput	Optional	Peak Period Person Throughput by Applicable Mode	# of Persons	124,413,300	118,394,000	6,019,300
	Optional	Passengers Per Vehicle Service Hour	# of Passengers	40.3	88.9	-48.6
System Reliability	LPPF, LPPC, SCCP	Peak Period Travel Time Reliability Index	Index	0	0	0
	LPPF, LPPC, SCCP	Transit Service On-Time Performance	% "On-time"	5.4	0	5.4
Air Quality & GHG	LPPF, LPPC, SCCP, TCEP	Particulate Matter	PM 2.5 Tons	0	2.52	-2.52
			PM 10 Tons	0	2.52	-2.52
	LPPF, LPPC, SCCP, TCEP	Carbon Dioxide (CO2)	Tons	0	179,808.75	-179,808.75
	LPPF, LPPC, SCCP, TCEP	Volatile Organic Compounds (VOC)	Tons	0	23.19	-23.19
	LPPF, LPPC, SCCP, TCEP	Sulphur Dioxides (SOx)	Tons	0	1.76	-1.76
	LPPF, LPPC, SCCP, TCEP	Carbon Monoxide (CO)	Tons	0	0	0
	LPPF, LPPC, SCCP, TCEP	Nitrogen Oxides (NOx)	Tons	0	49.5	-49.5
Safety	LPPF, LPPC, SCCP, TCEP	Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries	Number	1,039	1,128	-89
	LPPF, LPPC, SCCP, TCEP	Number of Fatalities	Number	171	176	-5
	LPPF, LPPC, SCCP, TCEP	Fatalities per 100 Million VMT	Number	0.99	1.02	-0.03
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries	Number	852	877	-25
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries per 100 Million VMT	Number	5.38	5.52	-0.14
	Optional	Accident Cost Savings	Dollars	61,638,760	0	61,638,760
Accessibility	LPPF, LPPC, SCCP	Number of Jobs Accessible by Mode	Number	0	0	0
	LPPF, LPPC, SCCP	Number of Destinations Accessible by Mode	Number	0	0	0
	LPPF, LPPC, SCCP	Percent of Population Defined as Low Income or Disadvantaged Within 1/2 Mile of Rail Station, Ferry Terminal, or High-Frequency Bus Stop	%	90	90	0
Economic Development	LPPF, LPPC, SCCP, TCEP	Jobs Created (Direct and Indirect)	Number	454	0	454

Performance Indicators and Measures						
Measure	**Required For**	**Indicator/Measure**	**Unit**	**Build**	**Future No Build**	**Change**
Cost Effectiveness	LPPF, LPPC, SCCP, TCEP	Cost Benefit Ratio	Ratio	5.03	0	5.03
System Preservation Pavement	LPPC, LPPF	Pavement Condition Index	Index	0	0	0
			Rating	NA	NA	
System Preservation Bridges	LPPF, LPPC	Bridge Deck Rating	Rating	NA	NA	
	LPPF, LPPC	Bridge Superstructure Rating	Rating	NA	NA	
	LPPF, LPPC	Bridge Substructure Rating	Rating	NA	NA	
Noise Level (Soundwalls Only)	LPPC, LPPF	Number of Receptors	Number	0	0	0
	LPPC, LPPF	Properties Directly Benefited	Number	0	0	0
	LPPC, LPPF	Number of Decibels	Number	0	0	0

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6065-2020-0004 v2

District	County	Route	EA	Project ID	PPNO
07	Los Angeles				5755D

Project Title

NextGen Bus Priority Lanes on LA Streets

Existing Total Project Cost ($1,000s)								
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Implementing Agency
E&P (PA&ED)									Los Angeles County Metropolitan Tra
PS&E									Los Angeles County Metropolitan Tra
R/W SUP (CT)									Los Angeles County Metropolitan Tra
CON SUP (CT)									Los Angeles County Metropolitan Tra
R/W									Los Angeles County Metropolitan Tra
CON	5,600	5,200	5,200					16,000	Los Angeles County Metropolitan Tra
TOTAL	5,600	5,200	5,200					16,000	
Proposed Total Project Cost ($1,000s)									Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		15,000						15,000	
TOTAL		15,000						15,000	

Fund #1:	Local Funds - Local Measure (Committed)								Program Code
Existing Funding ($1,000s)									20.10.400.100
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									Los Angeles County Metropolitan Tra
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON	2,800	2,600	2,600					8,000	
TOTAL	2,800	2,600	2,600					8,000	
Proposed Funding ($1,000s)									Notes
E&P (PA&ED)									Local revenues funding this component will be used to match of the LPP revenues funding the NextGen LADOT Wireless Cloud-Based Transit Signal Priority Upgrade/Expansion Component.
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		15,000						15,000	
TOTAL		15,000						15,000	

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6065-2020-0004 v2

Fund #2:	State SB1 LPP - Local Partnership Program - Competitive program (Committed)								Program Code
Existing Funding ($1,000s)									30.10.724.200
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON	2,800	2,600	2,600					8,000	
TOTAL	2,800	2,600	2,600					8,000	
Proposed Funding ($1,000s)									Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6065-2020-0004 v2

Complete this page for amendments only Date 08/03/2021 17:29:03

District	County	Route	EA	Project ID	PPNO
07	Los Angeles				5755D

SECTION 1 - All Projects

Project Background

Programming Change Requested

Reason for Proposed Change

If proposed change will delay one or more components, clearly explain 1) reason for the delay, 2) cost increase related to the delay, and 3) how cost increase will be funded

Other Significant Information

SECTION 2 - For SB1 Project Only

Project Amendment Request (Please follow the individual SB1 program guidelines for specific criteria)

Approvals

I hereby certify that the above information is complete and accurate and all approvals have been obtained for the processing of this amendment request.

Name (Print or Type)	Signature	Title	Date

SECTION 3 - All Projects

Attachments
1) Concurrence from Implementing Agency and/or Regional Transportation Planning Agency
2) Project Location Map

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6065-2020-0006 v2

Amendment (Existing Project) ☒ YES ☐ NO						Date	08/03/2021 17:28:03
Programs ☐ LPP-C ☐ LPP-F ☐ SCCP ☐ TCEP ☐ STIP ☐ Other							
District	EA	Project ID	PPNO	Nominating Agency			
07			5755C	Los Angeles County Metropolitan Transportation Authority			
County	Route	PM Back	PM Ahead	Co-Nominating Agency			
Los Angeles							
				MPO	Element		
				SCAG	Mass Transit (MT)		
Project Manager/Contact			Phone	Email Address			
Vincent Lorenzo			213-418-3419	lorenzov@metro.net			

Project Title

NextGen Countywide Wireless Transit Signal Priority Upgrade

Location (Project Limits), Description (Scope of Work)

Original - Purchase, design and installation of transit signal priority infrastructure on at least 200 intersections and replace wireless transit signal priority infrastructure on at least 300 intersections in the Tier One Network in County of Los Angeles.

Revised - Purchase, design and installation of transit signal priority infrastructure on at least 300 intersections in the Tier One Network in the County of Los Angeles.

Component	Implementing Agency
PA&ED	Los Angeles County Metropolitan Transportation Authority
PS&E	Los Angeles County Metropolitan Transportation Authority
Right of Way	Los Angeles County Metropolitan Transportation Authority
Construction	Los Angeles County Metropolitan Transportation Authority

Legislative Districts

Assembly: 64,66,39,41,43,45,46,48,49,50,51,53 Senate: 32,33,18,35,22,24,25,26,27,30 Congressional: 33,34,37,40,43,28,44,29,30

Project Milestone	Existing	Proposed
Project Study Report Approved	06/18/2021	
Begin Environmental (PA&ED) Phase	02/01/2021	01/01/2021
Circulate Draft Environmental Document Document Type CE	02/02/2021	05/01/2021
Draft Project Report	02/15/2021	05/02/2021
End Environmental Phase (PA&ED Milestone)	03/01/2021	06/30/2021
Begin Design (PS&E) Phase	08/01/2021	09/01/2021
End Design Phase (Ready to List for Advertisement Milestone)	05/31/2022	08/31/2022
Begin Right of Way Phase	06/01/2022	08/03/2021
End Right of Way Phase (Right of Way Certification Milestone)	06/02/2022	08/03/2021
Begin Construction Phase (Contract Award Milestone)	06/03/2022	05/01/2022
End Construction Phase (Construction Contract Acceptance Milestone)	06/30/2024	06/30/2024
Begin Closeout Phase	07/01/2024	07/01/2024
End Closeout Phase (Closeout Report)	08/31/2024	08/31/2024

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6065-2020-0006 v2

Date 08/03/2021 17:28:03

Purpose and Need

Original -The Los Angeles Department of Transportation has installed a loop-based transit signal priority (TSP) system on select corridors within the City of Los Angeles, and Metro and other municipalities have installed a wireless transit signal priority system on select corridors outside of the City of Los Angeles. The NextGen Transit First Service Plan will introduce an expanded number of high-frequency bus corridors that will require transit signal priority at intersections to achieve increased service speeds. Depending on the municipal jurisdiction of the intersection, this infrastructure will be comprised of loop detectors embedded in the pavement or a wireless system.

Revised - Metro and other municipalities have installed a wireless transit signal priority system on select corridors outside of the City of Los Angeles. The NextGen Transit First Service Plan will introduce an expanded number of high-frequency bus corridors that will require transit signal priority at additional intersections to achieve increased service speeds.

NHS Improvements ☐ YES ☒ NO	Roadway Class NA	Reversible Lane Analysis ☐ YES ☒ NO

Inc. Sustainable Communities Strategy Goals ☒ YES ☐ NO Reduce Greenhouse Gas Emissions ☒ YES ☐ NO

Project Outputs

Category	Outputs	Unit	Total
TMS (Traffic Management Systems)	Traffic signal interconnect projects	EA	300

Additional Information

Benefits and outputs:
Increasing the number of intersections with transit signal priority on high-frequency corridors will reduce travel time for buses as they significantly reduce dwell times for buses at signalized intersections. This travel time savings will allow Metro and municipal bus operators to operate faster and more efficient service.

Explanation of PPR revisions:
The NextGen Project consist of 4 components each with its own PPR. We revised the organization of the project work included in each of the 4 components of this project and have revised the PPR's to better clarify the project work to be completed by each project component. We have not increased the project budget or asked for additional time to complete the project. We have revised the funding plan for this work to focus solely on signal improvement managed by the County of Los Angeles. We have removed $11.5 mil in LPP Funds and removed $1.5 mil in local funds. We have now reduced the budget for this component from$23 mil to $10 mil and programed all $10 mil in local funds in FY 21/22.

This PPR updates the project title & description and the category and outputs to better reflect the work to be completed in this component. Additionally, the project schedule was updated to reflect the actual environmental approval time line and revised Design and construction timelines. We also note that this project will have no ROW work to be completed. The outputs associated with the 200 LA City signals in the original version of this PPR were removed from this component and are now shown in the NextGen LADOT Wireless Cloud-Based Transit Signal Priority Upgrade/Expansion component.

Additionally, we changed the project title from NextGen Bus Speed Improvements for LA Streets to NextGen Countywide Wireless Transit Signal Priority Upgrade to better reflect work to be completed in this component.

Proposed Funding Plan assumes non-proportional drawdown/expenditure of grant funds versus match (local) funds and will be requested at time of allocation.

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6065-2020-0006 v2

Performance Indicators and Measures						
Measure	**Required For**	**Indicator/Measure**	**Unit**	**Build**	**Future No Build**	**Change**
Congestion Reduction	LPPF, LPPC, SCCP	Project Area, Corridor, County, or Regionwide VMT per Capita and Total VMT	Total Miles	412,853,000	0	412,853,000
			VMT per Capita	3.53	0	3.53
	LPPF, LPPC, SCCP	Person Hours of Travel Time Saved	Person Hours	438,050	0	438,050
			Hours per Capita	8,761,000	0	8,761,000
	LPPF, LPPC, SCCP	Daily Vehicle Hours of Delay	Hours	0	0	0
Throughput	Optional	Peak Period Person Throughput by Applicable Mode	# of Persons	124,413,300	118,394,000	6,019,300
	Optional	Passengers Per Vehicle Service Hour	# of Passengers	40.3	88.9	-48.6
System Reliability	LPPF, LPPC, SCCP	Peak Period Travel Time Reliability Index	Index	0	0	0
	LPPF, LPPC, SCCP	Transit Service On-Time Performance	% "On-time"	5.4	0	5.4
Air Quality & GHG	LPPF, LPPC, SCCP, TCEP	Particulate Matter	PM 2.5 Tons	0	2.52	-2.52
			PM 10 Tons	0	2.52	-2.52
	LPPF, LPPC, SCCP, TCEP	Carbon Dioxide (CO2)	Tons	0	179,808.75	-179,808.75
	LPPF, LPPC, SCCP, TCEP	Volatile Organic Compounds (VOC)	Tons	0	23.19	-23.19
	LPPF, LPPC, SCCP, TCEP	Sulphur Dioxides (SOx)	Tons	0	1.76	-1.76
	LPPF, LPPC, SCCP, TCEP	Carbon Monoxide (CO)	Tons	0	0	0
	LPPF, LPPC, SCCP, TCEP	Nitrogen Oxides (NOx)	Tons	0	49.5	-49.5
Safety	LPPF, LPPC, SCCP, TCEP	Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries	Number	1,039	1,128	-89
	LPPF, LPPC, SCCP, TCEP	Number of Fatalities	Number	171	176	-5
	LPPF, LPPC, SCCP, TCEP	Fatalities per 100 Million VMT	Number	0.99	1.02	-0.03
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries	Number	852	877	-25
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries per 100 Million VMT	Number	5.38	5.52	-0.14
	Optional	Accident Cost Savings	Dollars	61,638,760	0	61,638,760
Accessibility	LPPF, LPPC, SCCP	Number of Jobs Accessible by Mode	Number	0	0	0
	LPPF, LPPC, SCCP	Number of Destinations Accessible by Mode	Number	0	0	0
	LPPF, LPPC, SCCP	Percent of Population Defined as Low Income or Disadvantaged Within 1/2 Mile of Rail Station, Ferry Terminal, or High-Frequency Bus Stop	%	90	90	0
Economic Development	LPPF, LPPC, SCCP, TCEP	Jobs Created (Direct and Indirect)	Number	454	0	454

Performance Indicators and Measures						
Measure	**Required For**	**Indicator/Measure**	**Unit**	**Build**	**Future No Build**	**Change**
Cost Effectiveness	LPPF, LPPC, SCCP, TCEP	Cost Benefit Ratio	Ratio	5.03	0	5.03
System Preservation Pavement	LPPC, LPPF	Pavement Condition Index	Index	0	0	0
			Rating	NA	NA	
System Preservation Bridges	LPPF, LPPC	Bridge Deck Rating	Rating	NA	NA	
	LPPF, LPPC	Bridge Superstructure Rating	Rating	NA	NA	
	LPPF, LPPC	Bridge Substructure Rating	Rating	NA	NA	
Noise Level (Soundwalls Only)	LPPC, LPPF	Number of Receptors	Number	0	0	0
	LPPC, LPPF	Properties Directly Benefited	Number	0	0	0
	LPPC, LPPF	Number of Decibels	Number	0	0	0

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6065-2020-0006 v2

District	County	Route	EA	Project ID	PPNO
07	Los Angeles				5755C

Project Title

NextGen Countywide Wireless Transit Signal Priority Upgrade

Existing Total Project Cost ($1,000s)									
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Implementing Agency
E&P (PA&ED)									Los Angeles County Metropolitan Tra
PS&E									Los Angeles County Metropolitan Tra
R/W SUP (CT)									Los Angeles County Metropolitan Tra
CON SUP (CT)									Los Angeles County Metropolitan Tra
R/W									Los Angeles County Metropolitan Tra
CON		23,000						23,000	Los Angeles County Metropolitan Tra
TOTAL		23,000						23,000	
Proposed Total Project Cost ($1,000s)									Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		10,000						10,000	
TOTAL		10,000						10,000	

Fund #1:	State SB1 LPP - Local Partnership Program - Competitive program (Committed)								Program Code
Existing Funding ($1,000s)									30.10.724.200
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									Los Angeles County Metropolitan Tra
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		11,500						11,500	
TOTAL		11,500						11,500	
Proposed Funding ($1,000s)									Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6065-2020-0006 v2

Fund #2:	Local Funds - Local Transportation Funds (Committed)								Program Code
Existing Funding ($1,000s)									20.10.400.100
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									Los Angeles County Metropolitan Tra
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		11,500						11,500	
TOTAL		11,500						11,500	
Proposed Funding ($1,000s)									Notes
E&P (PA&ED)									Local revenues funding this component will be used to match LPP revenues funding the NextGen Mobile Validators for All-Door Boarding component.
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		10,000						10,000	
TOTAL		10,000						10,000	

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6065-2020-0006 v2

Complete this page for amendments only Date 08/03/2021 17:28:03

District	County	Route	EA	Project ID	PPNO
07	Los Angeles				5755C

SECTION 1 - All Projects

Project Background

NA

Programming Change Requested

Reason for Proposed Change

NA

If proposed change will delay one or more components, clearly explain 1) reason for the delay, 2) cost increase related to the delay, and 3) how cost increase will be funded

Other Significant Information

SECTION 2 - For SB1 Project Only

Project Amendment Request (Please follow the individual SB1 program guidelines for specific criteria)

NA

Approvals

I hereby certify that the above information is complete and accurate and all approvals have been obtained for the processing of this amendment request.

Name (Print or Type)	Signature	Title	Date

SECTION 3 - All Projects

Attachments
1) Concurrence from Implementing Agency and/or Regional Transportation Planning Agency
2) Project Location Map

NEXTGEN BUS SPEED AND RELIABILITY IMPROVEMENTS

LPP Funding Delivery Plan (Current Final as of 7/23/2021)

Project Component	Budget in $1,000	Scope of Work	Implement Agency	Procurement Method	Contract Award Date	Milestone
Bus Priority Lanes	$15,000* - Local Funds (Originally $16,000)	Design and install 80 lane-mile bus priority lanes (ePPR-6065-2020-0004)	LADOT (32 lane-mile)	Three Annual Work Programs to design and install using City forces	Sept. 1, 2021 July 1, 2022 July 3, 2023	Complete 10-11 lane-mile per year in FY22-24
			Metro (48 lane-mile)	Three Task Orders using IDIQ Design-Build Contract	Sept. 1, 2021 July 1, 2022 July 3, 2023	Complete 16 lane-mile per year in FY22-24
Countywide Wireless Transit Signal Priority Upgrade	$10,000 -Local Funds	Replace and upgrade Countywide Wireless TSP system on 300 signals (ePPR-6065-2020-0006)	Metro	One contract task order using highway on-call contract	Sep. 1, 2021	Complete design in FY22 and finish installation of 300 signals in FY24.
Bus Mobile Validators for All-Door Boarding (LPP Funds)	$10,000 -LPP Funds (Same as original budget)	Purchase and install 2900 Bus Mobile Validators (ePPR-6065-2020-0003)	Metro	Device purchase: One contract using competitive bid Installation: Metro staff	Nov. 1, 2021	Complete device purchase in FY23 & installation in FY24
LADOT Transit Signal Priority Expansion & Transponders in the City of Los Angeles (LPP Funds)	$15,000* -LPP Funds (Originally $14,000)	Design and install LADOT's TSP on 200 signals; Purchase and upgrade software on 2500 buses (ePPR-6065-2020-0002)	Metro	One design-build contract: TSP design & Implementation	June 1, 2022	Complete design in FY23 & finish system implementation in FY26

ROAD REPAIR AND ACCOUNTBILITY ACT OF 2017
LOCAL PARTNERSHIP COMPETITIVE PROGRAM
PROJECT BASELINE AGREEMENT
NextGen Bus Speed & Reliability Improvements

Exhibit B:
Project Report

METRO NEXTGEN SPEED AND RELIABILITY IMPROVMENTS

Project Report

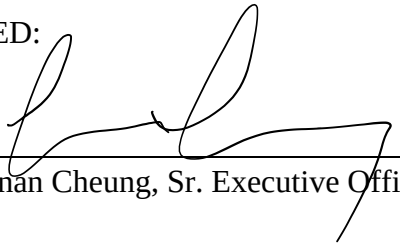
Metro

Project Report

APPROVAL RECOMMENDED:

Stephen Tu, Project Manager

PROJECT APPROVED:

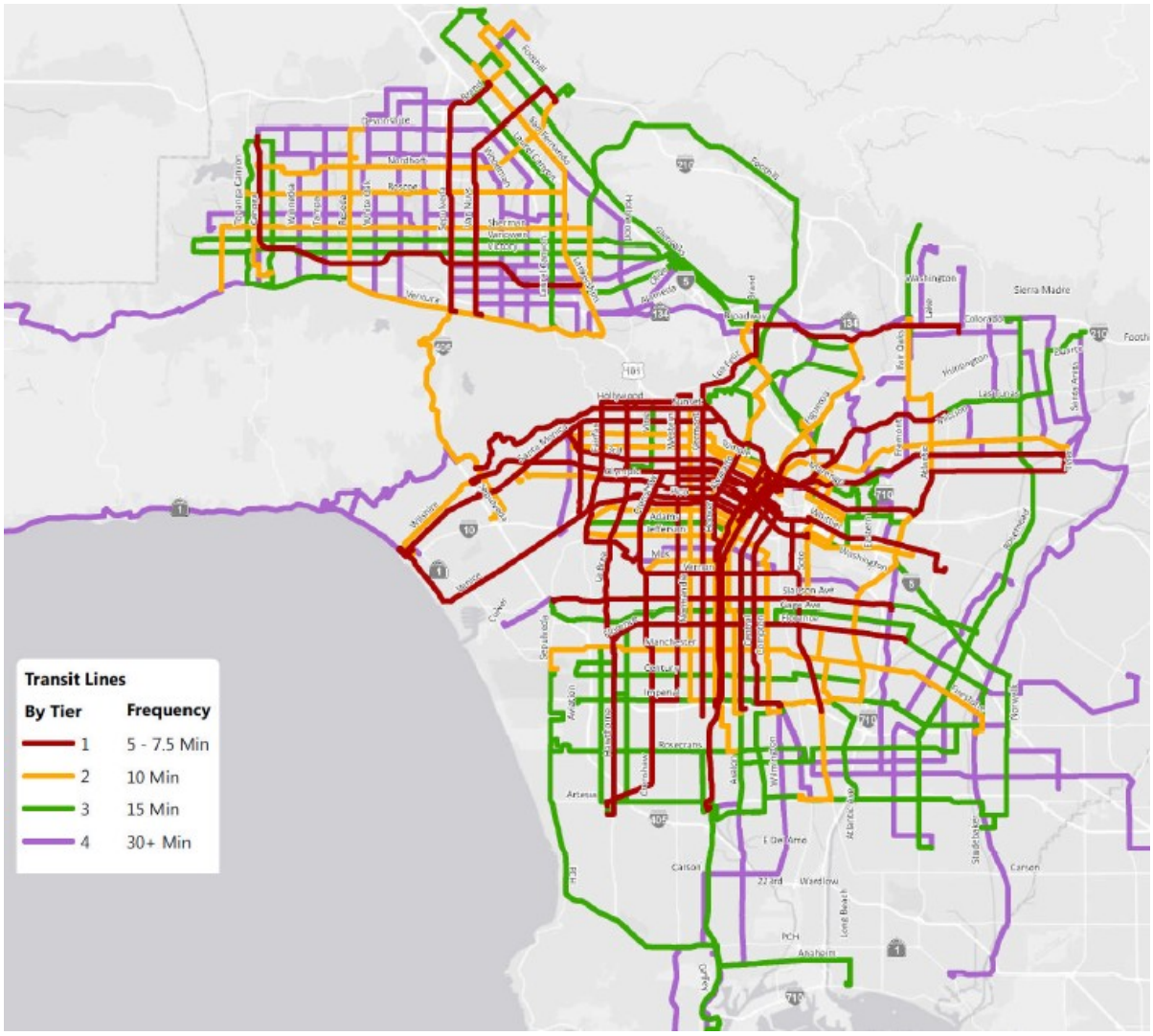


Conan Cheung, Sr. Executive Officer

6/18/21

Date

Vicinity Map
Project Location
Full Transit First Service Network



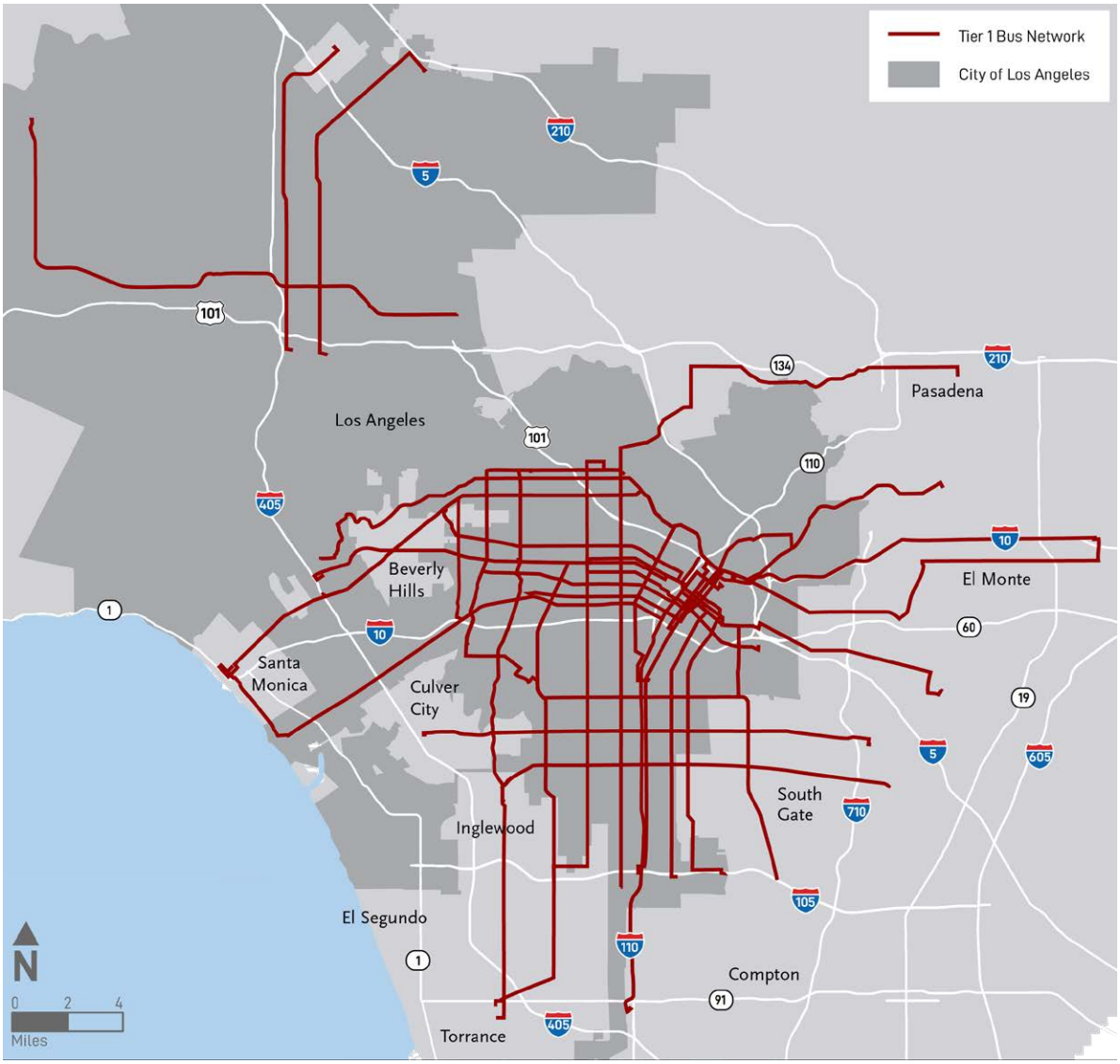
1. INTRODUCTION

Project Description:

The Los Angeles County Metropolitan is implementing the Bus Speed and Reliability Improvements identified in Metro's NextGen Transit First Service Plan. This project includes three major components: 1) the expansion of Transit Signal Priority (TSP) to cover all Tier One bus corridors through the installation of new TSP system and infrastructure on all Tier One bus corridors; 2) design and construction of new bus-only lanes and other transit priority improvements on up to 80 lane miles on the

highest frequency corridors in the City of Los Angeles and neighboring cities; 3) the purchase and installation of bus mobile validators for fare payment to enable all-door boarding on the Tier One and Two network.

Metro's Tier One Network



Purpose and Need:

Metro has begun implementing the NextGen Bus Plan, a totally redesigned bus system based on rigorous study and public involvement that will improve service for the more than 70 percent of Metro patrons who rely on the bus system, regain former patrons and attract new customers by being more competitive relative to other travel options. Based on robust public input and technical analysis, this redesigned bus system will provide faster, more frequent, and more reliable service, giving Los

Angeles residents and commuters an alternative to sitting in gridlock and improving transportation equity.

In recent years, the primary contributor to slow bus speeds and poor schedule reliability has been growing traffic congestion on city streets.This congestion reduces the quality of the service that Metro can afford to provide to Los Angeles County residents and disproportionately impacts low-income riders who depend on the bus to access jobs, healthcare, and other important destinations. Indeed, during the development of the NextGen Bus Study, the public clearly told Metro that improving bus speed and reliability is the single most important step Metro can take to retain, recapture and grow ridership, increase the people throughput capacity of local roadways, and shift regional travel patterns toward more sustainable modes.

Metro and municipal buses operate on streets controlled by the City of Los Angeles and neighboring cities. Metro and the City of Los Angeles Department of Transportation (LADOT) continue to partner closely to coordinate on delivering the infrastructure improvements on important bus corridors in the City of Los Angeles. In 2018, Metro began the process of reimagining the bus system to better meet the needs of current and future riders. The NextGen Bus Plan was approved by the Metro Board in October 2020 after extensive public outreach and reviews.

The Transit First Bus Service Plan divides Metro's countywide bus network into four tiers of service based on service frequency. The Tier One network is made up of transportation spines that will receive the highest investment in customer and operations infrastructure. Over half of today's bus riders use one of the top 25 corridors that make up this core network. The peak hour frequency of service on these lines is every 5 - 7.5 min. The Tier Two network, with 10 minute peak hour headways, completes the "spontaneous use" network. 3 in 10 Metro bus riders use the Tier Two network of 19 lines. Altogether, 8 in 10 Metro bus riders use a Tier One or Tier Two corridor.

Metro has started the implementation of key components of the Plan using the "Transit First" approach including projects that speed up buses including an expansion of bus lanes, transit signal priority, and all-door boarding; make bus stops more comfortable; and add more frequent services, among other improvements. The improvements in speed and reliability, which are the focus of this Project, will improve Metro's performance as well as the performance of municipal bus lines that use high-frequency bus corridors.

2. SCOPE

Transit Signal Priority

This Project includes the expansion of transit signal priority (TSP) throughout the Tier One network. TSP uses technology to reduce dwell time at traffic signals for transit vehicles by extending green lights, shortening red lights, or giving priority to

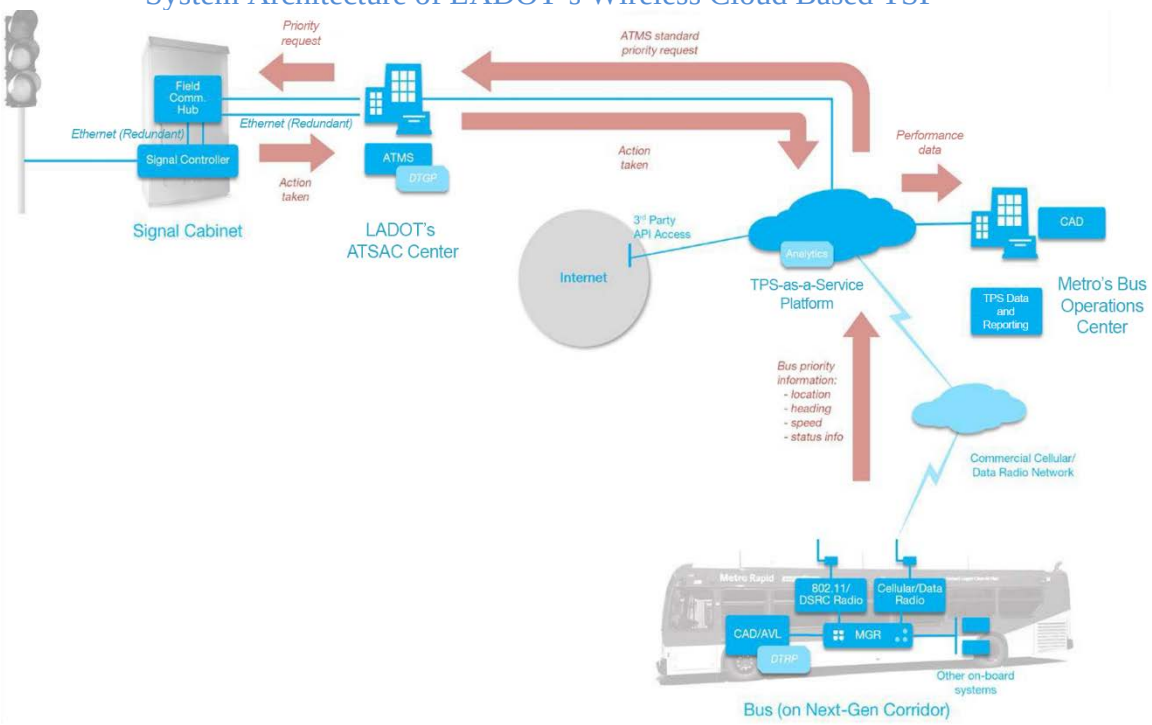
transit vehicles approaching an intersection. The TSP system can be either wireless or loop based. The wireless system typically includes bus routers and GPS units on board buses and transmit the bus ID and location information in near real-time to the Traffic Management Center (TMC) or the intersection controllers, which will then adjust traffic signal timing to reduce delays for buses. The loop based system consists of loop detectors under the roads that communicate with transponders under buses and transmit the information to TMC through the intersection traffic signal controllers for priority treatment. The central software at the TMC would confirm the bus routes and headway information before directing local controllers to implement the signal priority.

LADOT's existing TSP uses loop based technology with transponders on the previous Metro Rapid arterial network. The original scope for this Project was to expand the loop based technology to cover 200 more intersections and install transponders on all Metro buses. After further analyses, Metro in partnership with LADOT will instead implement a wireless cloud based TSP system within the City of Los Angeles. The revised scope will develop a new cloud-based software, install minor software upgrade on over 2,000 Metro buses to allow real-time update of bus locations to the cloud service and install Ethernet communication equipment at 200 traffic signals and communication hubs to enable the TSP function with a more resilient traffic control communication system. With the new cloud service, the entire Metro bus fleet of more than 2,000 vehicles will have the capability of requesting and receiving signal priority at all of the NextGen Tier 1 Corridors. The revised scope will eliminate the dilapidated maintenance needs for pavement loops, sensor cards and undercarriage transponders. As such, the revised scope will deliver greater overall efficiency and future proofing than the original scope.

The revised Project scope will include detail system design, cloud software development, minor software upgrade for the existing routers on all of Metro buses, and the purchase and installation of Ethernet communication equipment at a minimum of 200 intersections and their communication hubs. The advanced routers on-board Metro buses after a minor software upgrade would transmit the real-time bus location information to the cloud services, which will then process the priority requests in real-time and communicate with the ATCS software in the ATSAC Center. Once ATSAC receives priority request for a specific intersection, it will use the existing fiber optics communication backborne with Ethernet enhancement to direct the local controller for priority treatment. The proposd cloud service will also interface closely with LADOT's open source Mobility Data Specifications (MDS) to manage the mobility assets in the public right-of-way.

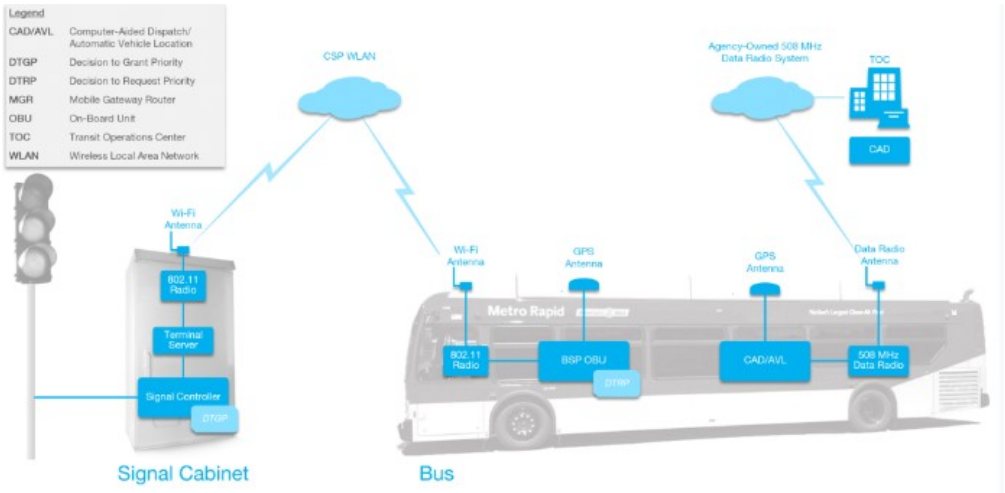
The overall system architecture for LADOT's wireless cloud based TSP is shown in the following figure.

System Architecture of LADOT's Wireless Cloud Based TSP



Furthermore, the Tier One network does cover many intersections outside of the City of Los Angeles. An existing wireless TSP system called Countywide Signal Priority (CSP) maintained by Metro is already in place for a portion of these intersections. The following figure shows the system architecture of the CSP. This Project will install, replace and upgrade the exisitng wireless transit signal priority infrastructure on at least 300 intersections in the Los Angeles County area outside of the City of Los Angeles. It will include engineering design services, intersection system hardware and installation services, jurisdictional coordination support expansion and upgrade of the CSP system.

System Architecture of the Countywide Signal Priority (CSP)



Bus Corridor Speed Improvements

This Project will continue the implementation of the first phase of bus speed improvements on Los Angeles streets called for in the NextGen Bus Plan. Metro has initiated this phase by beginning the construction of about 10 lane-miles of bus lanes and installation of other supportive infrastructure to improve bus speeds on three Downtown Los Angeles corridors (Flower Street, 5th/6th Streets, and Aliso Street), and this Project will expand this network by another 80 lane-mile to other corridors in Downtown Los Angeles and beyond along the highest-frequency Tier One network.

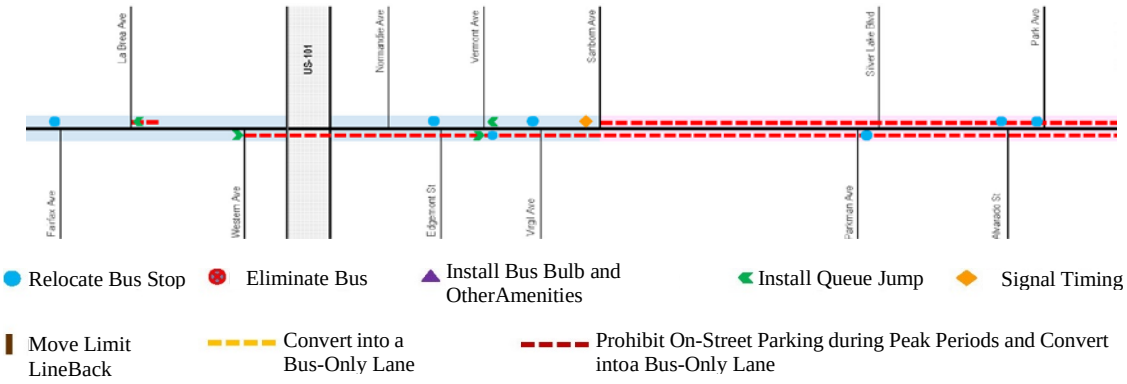
A bus lane is a full lane, usually on the curb, that is repurposed for buses and right turns only, resulting in faster bus speeds and reduced intersection delay. The end result of this first phase of street improvements will be up to 90 lane-miles of corridors with bus priority lanes and other bus speed-related improvements including stop relocation/removal, queue jumping, curb modifications, and supportive signage and markings on several corridors of the Tier One network. While the Tier One network is mostly concentrated in and around Downtown Los Angeles, there are many Tier One corridors outside of Downtown Los Angeles where transit supportive infrastructure could dramatically improve bus speed and reliability.

Metro and LADOT have much experience with installing bus priority lanes on Los Angeles streets. These include the Wilshire Boulevard Bus Lanes completed in 2015 and the Flower Street Bus Lane in Downtown Los Angeles, a pilot Project completed in 2019. Metro and LADOT successfully completed the design and implementation of 5th/6th Street and Aliso Street bus lanes in 2020.

The specific designs of the street improvements will vary by corridor based on stakeholder outreach, existing built environment and, where appropriate, traffic and parking assessments. All will include street markings such as paint or other pavement marking materials, and all will include every tool in the speed and reliability toolbox (bus lanes, relocated bus stops, curb modification where appropriate, queue jumping where appropriate, and new signage).

The following figure shows an example of the range of investments on the street to be undertaken on each corridor. This figure is provided for example only and is not indicative of specific treatments to be implemented on this corridor, but shows the various tools that may be used at different locations on all corridors to improve bus speed and reliability. These tools include converting on-street parking lanes to bus-only lanes during peak periods, some 24-hour bus lanes, stop relocation and rationalization, queue jumping, transit signal priority, and curb modifications. Only transit vehicles and emergency vehicles will be allowed to access the bus priority lanes during their operating hours. On some Tier One corridors, the curb lane of the entire corridor may be converted to a peak period bus lane. On other corridors, bus priority infrastructure may include queue jumping lane markings in some locations and full bus lanes in other locations depending on the need, level of congestion and context.

Example of Mix of Types of Bus Priority Treatments (for illustrative purposes)



The first 10 lane-miles of bus priority lane corridors are being implemented in 2020-2021, and the next 10 corridors of close to 80 lane-miles, which are the focus of this Project, will be implemented in FY 22 through FY24 following LADOT's procedures for installing lane reconfigurations using a design-build delivery approach. The specific Tier One corridors to receive these treatments will be determined with LADOT between summer 2021 and spring 2022, and Metro will complete the transportation analysis to inform the design of each project during that time.

Bus Mobile Validators for All-Door Boarding (ADB)

Metro is proposing to expand All Door Boarding (ADB) to all buses that operate on the Tier One and Tier Two high frequency routes. ADB will expedite boarding and reduce dwell time at bus stops, and thereby enhance convenience and reduce travel time for Metro customers. Metro has piloted ADB on its J Line (Silver) 910/950 and Metro Rapid Lines 720 and 754, which resulted in reduced bus stop delay and improved customer experience.

The expansion of ADB involves the purchase and installation of 2,900 bus mobile validator (BMV) devices on the rear doors of each bus to process Transit Access Pass card (TAP) fare payments. 60- foot articulated buses will have two additional boarding doors (middle and rear) while 40-foot and 45-foot buses will have one additional boarding door (rear). As compared to traditional bus boarding systems, where customers board and pay the fare at the front of the bus, adding bus mobile validators (BMV) at the entrance of each door will allow prepaid customers and passholders to board at different parts of the bus. Access to all doors means a more even distribution of the passenger load, a reduction of dwell times, and fewer crowding conflicts at the front door. Additionally, ADB allows passengers who use wheelchairs to board with ramp-assist in the front of the bus while other passengers board from the other doors. Further, ADB will better enable physical distancing between customers and between bus operators and customers, which has become imperative in the wake of COVID-19. The LPP grant will support the procurement of the design and installation of the BMVs on buses.

Transitioning customers from cash to TAP boardings will facilitate the program's objective to improve speed, reliability, data collection and fare compliance. Fareboxes will be programmed with capabilities to allow customers with cash 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.

3. PROJECT COST AND FUNDING

The Project's estimated total cost is $50 million, which includes $15 million for Bus Corridor Speed Improvements, $25 million for Transit Signal Priority and $10 million for All-Door Boading. Metro is committed to provide $25 million from revenue it has available at its discretion from the countywide voter-approved local sales tax measure (Proposition C). The remaining $25 million is expected to be from the state's Local Partnership Program (LPP) funds. The Project costs have been escalated to year of expenditure.

The Rough Order of Magnitude (ROM) cost breakdown is shown below:

Project Component	Item	ROM Cost	Subtotal
1. Transit Signal Priority	1a. LADOT Cloud Based System • Detail System Design • Bus Router Software Upgrade • Ethernet Equipment & Installation • Cloud Software Development • System Integration	 $2M $0.3M $4.5M $6.2M $2M	$15M

	1b. Countywide Wireless System • Detail System Design • Wireless Equipment & Installation • Signal Controller Software Upgrade • System Integration	 $1M $6M $2M $1M	$10M
2. Bus Corridor Speed Improvements	• Engineering Design • Public Outreach • Construction	$3M $1M $11M	$15M
3. Bus Mobile Validators	• Engineering Design • Validators Procurement • Installation	$0.7M $8.3M $1M	$10M
		TOTAL	$50M

4. PROJECT SCHEDULE

Key Milestones	Target Completion
Environmental Clearance (Statutory Exemption)	Spring 2021
Mobile Validators Contract Award	Fall 2021
Transit Signal Priority-Countywide Wireless System Contract Award	Fall 2021
Transit Signal Priority-LADOT Cloud System Contract Award	Summer 2022
Bus Corridor Speed Improvements Design	Winter 2023
Mobile Validators Installation	Spring 2024
Bus Corridor Speed Improvements Construction	Summer 2024
Transit Signal Priority System Integration	Winter 2025
Project Completion	Winter 2025

5. POTENTIAL RISK AREAS

- Project Cost Overrun
  Metro has a long history of successful delivery of State-funded projects. We have a breadth of experience in handling major infrastructure projects of this scale, and larger. We have the resources and expertise to deliver this Project using the awarded state funds. We are committed to using our own resources if necessaryto address any cost overruns in accordance with LPP Guidelines.

- Project Delay
  The Delivery Plan for all components of the Project is well defined. The Project is ready to be delivered beginning soon after funding award. Metro understands that all major transportation capital projects include a level of risk and takes pride in fully assessing and addressing any potential risks associated with its projects before it begins construction. Metro also understands the reporting requirements

and financial best practices associated with state grant funding. Furthermore, Metro has its own significant financial stake in the Project, and has taken necessary precautions to ensure that it is completed on-time and within budget. There are no risks to deliver the Project as there is no right-of-way acquisition required for the Project.

- System Integration
  The TSP requires system integration with the existing traffic signal control systems in the City of Los Angeles and neighboing cities. The cloud based wireless system in particular is a new technology and would have to be field tested before the full implementation, which will all be included in the design and build contract with strong consultant service support. Metro has extensive experience in managing and delivering these kinds of complicated system integration projects. We believe this risk would be well managed and controlled.

- Fareless System Initiative
  Metro is currently conducting a Fareless System Initiative (FSI) pilot study and a leading concept has emerged – an 18-month fareless pilot program that could provide free rides on Metro buses and rail service for low-income riders starting in January 2022, and expand to all K-12 students in August 2022. If FSI is expanded to the entire bus service for all passengers, then the mobile validators for ADB might not be needed. The current initiative is targeted at low-income riders and K-12 students and, at this time, not to cover all passengers. Nonetheless, the Project staff will monitor the progress of the FSI closely and make an informed decision as how to proceed to the procurement and installation of the mobile validators for the all-door boarding.

6. PROJECT BENEFITS

Together, these investments in infrastructure to improve the speed and reliability of the bus system will directly benefit the commutes of more than 50 percent of Metro's customers (buses carry more than 70 percent of Metro's riders systemwide and 53 percent of bus trips are on the Tier One network). Faster and more reliable bus service will save Metro customers valuable time. These improvements will benefit transportation equity by providing faster and more reliable bus service to current Metro customers, and will increase the competitiveness and attractiveness of the bus system for new users while freeing Metro's resources to focus on service enhancements.

The full completion of the Transit First Service Plan is expected to generate up to a 15%-20% increase in Metro ridership without any additional increases in revenue service hours and will benefit both Metro and municipal bus service such as LADOT's DASH and Commuter Express, and Santa Monica's Big Blue Bus (BBB) and other municipal routes that use the same streets. Additional ridership reduces vehicle miles traveled, thereby reducing air pollution and addressing traffic

congestion. The Project will optimize the use of existing streets through increased person throughput on Los Angeles County arterials.

The Project will promote safety, particularly for pedestrians and bicyclists through lane reconfigurations that will calm traffic and prohibit high speed vehicles from driving in the curb lane during peak hours. The Project will also improve passenger security through shorter wait times at bus stops and reduced crowding and dwell times from all-door boarding. The Project will promote safety, particularly for pedestrians and bicyclists through lane reconfigurations that will calm traffic and prohibit high speed vehicles from driving in the curb lane during peak hours. The Project will also improve passenger security through shorter wait times at bus stops and reduced crowding and dwell times from all-door boarding.

The end result of these service improvements would reduce bus travel times by an estimated 8.76 million person-hours, over a 20-year forecast period.

Attachment F – Bus Mobile Validators Life of Project Budget and Annual Operating Cost

Life of Project Budget:

	Bus Mobile Validator	16-port managed Switch	Total LOP Budget
Number of Units	2,900	2,210	
Equipment Cost	$ 9,378,580	$ 3,620,908	$ 12,999,488
Installation Labor (Metro and Cubic)	$ 3,495,222	$ 567,710	$ 4,062,932
Project management	$ 775,537	$ 262,043	$ 1,037,580
Total Life of Project Budget	**$ 13,649,339**	**$ 4,450,661**	**$ 18,100,000**

Annual Operating Cost:

		Operating Cost
Metro Operations	Labor Cost	$ 279,119
Cubic Contract	Maintenance Service	$ 21,629
	Total Operating Cost	**$ 300,748**