Metropolitan Transit System

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Agenda

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

September 17, 2020

9:00 a.m.

Meeting will be held via webinar

To request an agenda in an alternative format or to request accommodations to facilitate meeting participation, please call the Clerk of the Board at least two working days prior to the meeting. Meeting webinar/teleconference instructions can be accessed at the following link: https://www.sdmts.com/about-mts-meetings-and-agendas/board-meetings

		ACTION RECOMMENDED
1.	Roll Call	
2.	Approval of Minutes – July 30, 2020	Approve
3.	Public Comments - Limited to five speakers with three minutes per speaker. Others will be heard after Board Discussion items. If you have a report to present, please give your copies to the Clerk of the Board.	

Please SILENCE electronics during the meeting

Metropolitan Transit System (MTS) is a California public agency comprised of San Diego Transit Corp., San Diego Trolley, Inc. and San Diego and Arizona Eastern Railway Company (nonprofit public benefit corporations). MTS is the taxicab administrator for seven cities.

MTS member agencies include the cities of Chula Vista, Coronado, El Cajon, Imperial Beach, La Mesa, Lemon Grove, National City, Poway, San Diego, Santee, and the County of San Diego.

CONSENT ITEMS

6.	San Diego and Arizona Eastern (SD&AE) Railway Company Quarterly Reports and Ratification of Actions Taken by the SD&AE Board of Directors at its Meeting on July 28, 2020 Action would receive the San Diego and Imperial Valley Railroad (SD&IV), Pacific Southwest Railway Museum Association (Museum), and Desert Line quarterly reports for information and ratify any actions taken.	Receive/ Ratify
7.	Adoption of Amended 2020 Conflict of Interest Code Action would; 1) Adopt Resolution No. 20-17 amending the MTS Conflict of Interest Code pursuant to the Political Reform Act of 1974; 2) Adopt the amended 2020 MTS Conflict of Interest Code; and 3) Forward the amended 2020 MTS Conflict of Interest Code to the County of San Diego (the designated code-reviewing body).	Adopt/ Approve
8.	Fiscal Year (FY) 2019-2020 And FY 2020-2021 California Senate Bill (SB) 1 State of Good Repair (SGR) Funding Action would; approve Resolution No. 20-18 (in substantially the same format as Attachment A), in order to: 1) Authorize the use of, and application for, $4,955,508.00 in FY 2020-21 State of Good Repair funding to be used for the 40-foot Bus Replacement Project in FY 2021-22; and 2) Approve the acceptance of an additional $54,235.03 in FY 2019-20 SB1-SGR funding to bring the total FY 2019-20 allocation to $4,643,615.03	Approve
9.	Occupational Health Services - Contract Amendments Action would authorize the Chief Executive Officer (CEO) to reallocate contract capacity between contracts G1944.2-17 with Kaiser Permanente and G2069.2-18 with Concentra. The amended amounts for each contract are based on actual usage during the base period of these contracts, and will not exceed the original total contract dollar amount of $762,204.00.	Approve
10.	Investment Report – Quarter Ending June 30, 2020	Informational
11.	Printing Timetables – Contract Award Action would authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. G2381.0-20, with Southwest Offset Printing Co., Inc. (SOP), for printing services, in the amount of $1,440,751.59, for seven (7) years effective December 1, 2020.	Approve
12.	Engineering and Right of Way Services - Work Order Amendment Action would authorize the Chief Executive Officer (CEO) to execute WOA1947-AE-16.03 under MTS Doc. No. G1947.0-17 with HDR Engineering, Inc. (HDR) in the amount of $618,232.64 to increase the Work Order budget for the continued provision of engineering and right-of-way support services for the MTS Capital Projects Department.	Approve

13. Design Services for America Plaza and Kettner Blvd Track Replacement – Award Work Order Contract — Approve

Action would authorize the Chief Executive Officer (CEO) to execute Work Order WOA1947-AE-59 under MTS Doc. No. G1947.0-17 with HDR Engineering, Inc. (HDR), in the amount of $154,736.16 for design services for America Plaza and Kettner Blvd. Track Replacement.

14. Kearny Mesa Division (KMD) Bay Rollup Door Replacement Construction – Contract Award — Approve

Action would authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. PWB314.0-20, with Noble E&C Inc., a Small Business (SB), for procuring and installing KMD rollup doors in the amount of $98,400 plus a 30% contingency for change orders.

15. Closed-Circuit Television (CCTV) System Installation for the Mid-Coast Trolley Extension Project – Contract Award — Approve

Action would authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. PWL320.0-21, with Electro Specialty Systems (ESS) Corp., for procuring and installing a CCTV (video surveillance) system for the Mid-Coast Trolley Extension Project in the amount of $623,616.00 plus a 25% contingency.

16. Monitoring Well at Imperial Avenue Division (IAD) Project – Additional Design Services – Work Order Amendment — Approve

Action would; 1) Ratify Work Order WOA1951-AE-52 under MTS Doc No. G1951.0-17 with Mott MacDonald, LLC (MM) totaling $76,666.24, for environmental services; 2) Authorize the Chief Executive Officer (CEO) to execute Work Order amendment WOA1951-AE-52.01 under MTS Doc No. G1951.0-17, with MM totaling $30,959.53, for additional environmental services to abandon the temporary and permanent groundwater monitoring wells at IAD.

17. Managed Print Services and Canon Multi-Function Device (MFD) Purchase - Contract Award — Approve

Action would authorize the Chief Executive Officer (CEO) to execute MTS Doc. G2354.0-20 with Signa Digital Solutions, a Small Business, for four (4) years in the amount of $635,937.00.

18. Fare Collection (Rail Validator Masts Change Order) – Ratification and Approval of Amendments — Approve

Action would ratify Amendment 3 and authorize the Chief Executive Officer (CEO) to execute Amendment 4 to MTS Doc. No. G2091.0-18 with Innovations in Transportation, Inc. (INIT), for a total contract increase of $964,948.08.

19. Las Chollas Creek Bridge Repair Design - Work Order Amendment — Approve

Action would; 1) Ratify Work Order WOA1951-AE-58 under MTS Doc. No. G1951.0-17 with Mott MacDonald, LLC (MM) totaling $67,607.46, for Las Chollas Creek Bridge assessment services; and; 2) Authorize the Chief Executive Officer (CEO) to execute Work Order amendment WOA1951-AE-58.01 under MTS Doc. No. G1951.0-17, with MM totaling $80,187.49, for preparation of final construction documents for most immediate portions of the bridge repair work.

20. Old Town Transit Center (OTTC) West – Fund Transfer — Approve

Action authorize the Chief Executive Officer (CEO) to execute Addendum 17, Scope of Work 90.1 to the Memorandum of Understanding (MOU) between San Diego Associations of Governments (SANDAG) and MTS for the Construction of the Old Town Transit Center West Improvements project for an additional amount of $888,130 for a total not to exceed $5,492,130.

21. New Transit Facility – Fund Transfer for Initial Environmental Review — Approve

Action would authorize the Chief Executive Officer (CEO) to execute Addendum 17, Scope of Work 91 (in substantially the same format as Attachment A) to the Memorandum of Understanding (MOU) between San Diego Associations of Governments (SANDAG) and MTS to conduct initial environmental review to support acquisition of real property, for a total not to exceed $265,000.

CLOSED SESSION

24. a. CLOSED SESSION – CONFERENCE WITH LEGAL COUNSEL – EXISTING LITIGATION Pursuant to California Government Code Section 54956.9(d)(2) (Government Tort Claim from Claudia Isabel Hernandez for herself and as successor in interest to the Estate of Angel Zapata Hernandez) — Possible Action

b. CLOSED SESSION – CONFERENCE WITH LABOR NEGOTIATIONS Pursuant to California Government Code Section 54957.6 — Possible Action
Agencies: San Diego Transit Corporation ("SDTC"), San Diego Trolley, Inc. ("SDTI")
Employee Organization: International Brotherhood of Electrical Workers, Local 465 ("IBEW")
Employee Organization: International Association of Sheet Metal, Air, Rail, and Transportation Workers ("Smart")
Employee Organization: Transit Enforcement Officers Association ("TEOA")
Agency- Designated Representative: Jeffrey M. Stumbo, Chief Human Resources Officer (EEO Officer)

c. CLOSED SESSION – CONFERENCE WITH REAL PROPERTY NEGOTIATORS Pursuant to California Government Code Section 54956.8 — Possible Action
Property: The San Diego and Arizona Eastern Railway Company (SD&AE) Desert Line from approximate Mile Post 60 to approximate Mile Post 130 (Division to Plaster City) in San Diego and Imperial Counties
Agency Negotiators: Sharon Cooney, Chief Executive Officer; Karen Landers, General Counsel
Negotiating Parties: Baja California Railroad, Inc. (BJRR)
Under Negotiation: Price and Terms of Payment under Desert Line Lease and Operating Agreement
CLOSED SESSION – CONFERENCE WITH LEGAL COUNSEL – ANTICIPATED LITIGATION Pursuant to California Government Code Section 54959.9(d)(4) (One potential case – Baja California Railroad, Inc.)

NOTICED PUBLIC HEARINGS

25. None.

DISCUSSION ITEMS

30.	Zero Emission Bus Draft Rollout Plan and Transition Plan (Mike Wygant, Mark Olson, Denis Desmond & Larry Marinesi) Action would: 1) Approve the ZEB draft Rollout Plan for submittal to the California Air Resources Board (CARB) and 2) Approve the MTS ZEB draft Transition Plan.	Approve

REPORT ITEMS

45.	The 2020 Election (Michael Vu, Registrar of Voters)	Informational
46.	Sustainable Transportation Equity Project Grants (Denis Desmond)	Informational
47.	America Plaza Pedestrian Enhancements Design Update (Peter Casellini)	Informational

OTHER ITEMS

60.	Chair Report	Informational
61.	Chief Executive Officer's Report	Informational
62.	Board Member Communications	Informational
63.	Additional Public Comments Not on the Agenda If the limit of 5 speakers is exceeded under No. 3 (Public Comments) on this agenda, additional speakers will be taken at this time. If you have a report to present, please furnish a copy to the Clerk of the Board. Subjects of previous hearings or agenda items may not again be addressed under Public Comments.	
64.	Next Meeting Date: October 15, 2020	
65.	Adjournment	

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS
1255 Imperial Avenue, Suite 1000
San Diego, CA 92101

MINUTES

July 30, 2020

[Clerk's note: Except where noted, public, staff and board member comments are paraphrased. Note that the meeting was conducted via webinar to comply with public health orders].

1. Roll Call

Chair Fletcher called the Board meeting to order at 9:01 a.m. A roll call sheet listing Board member attendance is attached.

2. Approval of Minutes

Chair Fletcher moved to approve the minutes of the June 18, 2020, MTS Board of Directors meeting. Board Member Gomez seconded the motion, and the vote was 14 to 0 in favor with Board Member Arambula absent.

3. Public Comments

Toshi Ishihara – Ishihara is concerned about the future development of MTS stations that may further gentrify the communities surrounding those stations. Ishihara believes well-planned, transit-oriented development with a keen focus on equity will greatly help riders lives in many respects. Ishihara also notes all future transit-oriented developments in this region should become part of the solutions for social equity issues that MTS customers are facing. Ishihara requests that the Board prioritize MTS customers' needs, such as affordable housing for those that depend on transit services and ensure they will benefit from the transit-oriented developments at or near MTS stations.

John Brady – Brady experienced audio issues and was not able to address the Board.

Jo Barrett – Barrett would like to thank MTS for approving changes to the fare enforcement policies by providing new options for paying off citations. Barrett requested for Chair Fletcher to immediately implement the fare payment on the spot policy and look into withdrawing any current citations from the court system.

CONSENT ITEMS

6. Increased Authorization for Legal Services Contracts to Pay Projected Expenses in Fiscal Year 2021

Action would authorize the Chief Executive Officer (CEO) to execute amendments to the legal services contracts described herein increasing the dollar amounts of fifteen (15) legal services contracts by $2,185,000 to cover anticipated Fiscal Year 2021 (FY 21) expenses.

7. Fiscal Year 2021 Transportation Development Act Claim

Action would adopt Resolution Nos. 20-9, 20-10, and 20-11 approving Fiscal Year (FY) 2021 Transportation Development Act Article 4.0, 4.5, and 8.0 claims.

8. LiveScan Authorization for Drivers of For-Hire Vehicles

   Action would approve Resolution No. 20-12 authorizing staff to execute a request to the California Department of Justice to allow LiveScan fingerprinting as it relates to drivers of for-hire vehicles.

9. Building C – Wheel Truing Machine Removal, Reinstallation and Testing – Work Order Under a Job Order Contract (JOC) Award

   Action would authorize the Chief Executive Officer (CEO) to execute Work Order No. MTSJOC275-09, under MTS Doc. No. PWG275.0-19 with ABC Construction Co., Inc. (ABC) for the provision of labor, materials, equipment, and supplies for Building C – Wheel Truing Machine Removal, Reinstallation, and Testing in the amount of $371,330.00 plus the payment of applicable Job Order Contracting (JOC) administrative fees, for a total cost of $381,307.15.

10. Revisions to Taxicab Advisory Committee Guidelines

    Action would approve the proposed revisions to the Taxicab Advisory Committee Guidelines.

11. Davra Networks, RuBAN Software and Support for Trolley Public Announcement System Enhancement and Adding Natural Language Processing – Contract Amendment

    Action would authorize the Chief Executive Officer (CEO) to execute Amendment No. 3 to MTS Doc. No. G2071.0-18 with Davra Networks, increasing the contract value in the amount of $788,200.00, bringing the contract total to $1,550,000.00.

12. Task Order Contract Approval to Provide Design Services for Iris Rapid Route and Station Infrastructure Improvements

    Action would authorize the Chief Executive Officer (CEO) to execute Work Order WOA2075-AE-54 to MTS Doc. No. G2075.0-18 (in substantially the same format as Attachment A) with Dokken Engineering (Dokken) in the amount of $810,412.04 to provide design services for the Iris Rapid Route and Station Infrastructure Improvements.

13. Variable Message Signs (VMS) Display Assemblies for the Mid-Coast Trolley Extension Project – Contract Award

    Action would authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. L1543.0-20, with Nanov Display, Inc., for the supply of VMS Display Assemblies for the Mid-Coast Trolley Extension Project in the amount of $717,701.25.

14. Marketing and Community Outreach Services – Contract Award

    Action would authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. G2317.0-20 with Brown Marketing Strategies, Inc. (a Disadvantaged Business Enterprise (DBE)) for the provision of Marketing and Community Outreach Services for a period of three (3) base years and two (2) one-year options for a total of five (5) years in the amount of $295,172.74.

15. Old Town Transit Center (OTTC) West Improvements Projects – Additional Design Services – Task Order Amendment

    Action would: (1) Ratify Task Order 13.18.03 under MTS Doc No. G1493.0-13 with Kimley-Horn and Associates (KHA) totaling $98,973.47, for design revisions; and (2) Authorize the Chief

Executive Officer (CEO) to execute Task Order 13.18.04 under MTS Doc No. G1493.0-13, with KHA totaling $128,357.15, for preparation of construction and supporting documents as well as required coordination.

16. Janitorial Services – Ratification of Amendments

Action would ratify Amendments 14, 15 and 16 to MTS Doc. No. G1931.0-16 with NMS Management Inc., a Disadvantaged Business Enterprise (DBE), for janitorial services, increasing the contract total by $162,362.30 to a new not-to-exceed amount of $8,578,660.84.

17. Verizon Wireless Cellular Data Service for Paratransit Mobile Data Terminal/Automatic Vehicle Locator – Contract Award

Action would authorize the Chief Executive Officer (CEO) to execute MTS Doc. G2384.0-20, with Cellco Partnership dba Verizon Wireless, for Paratransit Cellular Data Services for five (5) years in the amount of $204,000.00

18. Conduent Transport Solutions, Inc. Single Sign On and Autonomous Tracking Mode Software Changes to Regional Transit Management System (RTMS) – Contract Amendment

Action would authorize the Chief Executive Officer (CEO) to execute Amendment No. 2 to MTS Doc No. G2260.0-19, with Conduent Transport Solutions, Inc., increasing the contract value by $466,248.00, bringing the total contract amount to $7,009,147.06.

19. Purchase of Polycarbonate Panels – Emergency Contract Ratification

Action would ratify a purchase order with MGM Plastics, Inc. in the amount of $108,747.77

20. Purchase of Bus Parts – Contract Awards

Action would: (1) Authorize the Chief Executive Officer (CEO) to execute Amendment No. 2 to MTS Doc. No. B0701.0-19, with The Aftermarket Parts Company, LLC, in the amount of $807,836.67; and (2) Execute MTS Doc. No. B0717.0-20, with Trolley Support LLC, for a four-year contract (2-year base with two 1-year options) for the provision of various replacement bus parts in the amount of $133,920.00.

21. Siemens Industry, Inc. (Siemens) Traction Power Substations (TPSS) Procurement – Contract Amendment

Action would authorize the Chief Executive Officer (CEO) to execute Amendment No. 18 to MTS Doc No. L1032.0-12 with Siemens Industry, Inc. not to exceed $160,257.31 for TPSS storage costs.

22. Update the List of San Diego Metropolitan Transit System (MTS) Employees Authorized to Transfer Funds to and from Local Agency Investment Fund (LAIF) Accounts

Action would approve Resolution No. 20-13 and Resolution No. 20-14 to update the list of MTS employees authorized to transfer funds to and from the MTS and San Diego Transit Corporation (SDTC) LAIF investment accounts, administered by the State Treasurer.

23. Resolution in Support of Transit-Oriented Development Housing Program Grant

Action would approve Resolution No. 20-15, which serves as a letter of support for Affirmed Housing Group's grant application for its Grantville project in Round 4 of the Transit-Oriented Development (TOD) Housing Program.

24. 2020 Transit and Intercity Rail Capital Program (TIRCP) Grant Award: El Cajon Third Track Project

Action would approve Resolution No. 20-16 authorizing the use of TIRCP funds for the El Cajon Third Track Project.

25. Contract Amendment for Regional Transit Management System (RTMS) Radio Hardware System Core and Console Upgrade

Action would authorize the Chief Executive Officer (CEO) to execute Amendment No. 2 to MTS Doc. No. PWG279.0-19, with Motorola Solutions, Inc. (Motorola), increasing the value by $294,487, bringing the total contract amount to $3,244,487.

26. San Diego Metropolitan Transit System (MTS) Agency Safety Plan

Action would approve the MTS Agency Safety Plan.

COMMENTS – CONSENT ITEMS

Board Member Gomez sought clarification for Consent Item 23 and the details of the grant application.

Denis Desmond, MTS Director of Planning, responded by explaining that the resolution supported the Transit Oriented Development (TOD) grant application which Affirmed housing submitted for the Grantville redevelopment project. The grant would target the affordable housing component of the project to replace ninety-six parking spaces and trolley shelter and platform renovations.

Sharon Cooney, MTS Chief Executive Officer, further explained that Greystar and Affirmed agreed to split the cost of replacing the parking for transit riders. Ms. Cooney clarified the grant would help Affirmed pay for its portion of replacement parking.

Board Member Moreno requested for Consent Item 14 to be pulled for further discussion.

Action on Recommended Consent Items, excluding No.14

Chair Fletcher moved to approve Consent Agenda Item Nos. 6 to 26, excluding No. 14. Board Member Moreno seconded the motion, and the vote was 14 to 0 in favor with Board Member Arambula absent.

COMMENTS – CONSENT ITEM 14

Mark Olson, MTS Manager of Public Relations, explained the procurement would supplement staffing capacities to accomplish wider community outreach efforts.

Ms. Cooney commented the procurement would assist in additional coverage of outreach, especially when there are overlapping events.

Mr. Olson explained this contract is specifically for outreach events in disadvantaged communities with bi-lingual support as part of the solicitation requirements. Brown Marketing has full time staff and ambassadors that could staff the events in Spanish.

Board Member Moreno stated that the contractor's bi-lingual abilities are extremely important. Board Member Moreno also commented that MTS, along with other agencies in the region, do a poor job at reaching out to the Latino community. Board Member Moreno asked what the contractor's experience was with marketing or outreach in the South Bay.

Mr. Olson replied that this was not their first time working with MTS customers. MTS previously used this contractor for Elevate SD 2020 outreach efforts, and the contractor understands the priorities and processes.

Board Member Moreno made their office available for questions, concerns or information related to outreach events.

Board Member Sandke stated that he has worked with this contractor at an event at City College and was very impressed by the contractor.

Action on Recommended Consent Items

Board Member Moreno moved to approve Consent Agenda Item No. 14. Board Member Sandke seconded the motion, and the vote was 14 to 0 in favor with Board Member Arambula absent.

NOTICED PUBLIC HEARINGS

28. None.

DISCUSSION ITEMS

30. Surplus Land and Joint Development: Assembly Bill (AB) 1486 Impacts (Karen Landers)

Karen Landers, General Counsel, presented on Surplus Land and Joint Development AB 1486 Impacts. Ms. Landers covered restrictions, notices and mandated negotiations, impacts, projects at risk and proposed solutions.

Board Member Gomez asked about declaration of surplus land, and stated this notion gives the appearance that MTS is selling the land when it is actually a joint development effort, which should exempt MTS from surplus land processes.

Ms. Landers responded that this was previously the case where MTS historically did not go through the surplus process. Ms. Landers explained there previously was a carve out for agency use of property, however, AB 1486 revised that definition. Under the former law, MTS was able to prioritize community enhancement and promote the transit system to generate ridership. The new bill took over that discretion and prioritized other uses and processes.

Board Member Gomez asked about the three types of uses MTS would have to notify under including affordable housing, open space and schools.

Ms. Landers responded MTS tends to gear its development towards affordable housing. However, if MTS would want to generate jobs for more commercial uses, the law would require

MTS to offer the property to affordable housing, open space and schools, even if MTS had a different plan in mind for that property.

Board Member Gomez commented that certain properties may not be zoned for some of those uses, which would create a conflict.

Ms. Landers responded those conflicts would be addressed through proposed future legislative fixes. She noted there are statements in the law where a notice must be sent regardless of the type of property zoning.

Board Member Salas voiced her disagreement with the bill. Board Member Salas noted there are weak areas in AB 1486 that do not support a holistic approach for local services and jobs that provide a balance in specific communities. She stated that they would support staff proposing legislative fixes to address these issues in the bill.

Board Member Galvez thanked Board Members and staff for understanding removing Chula Vista's E and H streets projects from the surplus notification list. Board Member Galvez also expressed gratefulness to advocate for substantial changes to the legislation.

Action Taken

Chair Fletcher moved to: (1) declare the properties listed in Attachment C as "surplus land" for purposes of Government Code sections 54220, et seq; and (2) authorize MTS representatives to seek clarifying or limiting language in subsequent legislation to preserve MTS's autonomy over its joint development program. Board Member Galvez seconded the motion, and the vote was 14 to 0 in favor with Board Member Arambula absent.

31. San Diego Transit Corporation (SDTC) Pension Plan Funding of Overpayments (Larry Marinesi)

Ms. Cooney introduced this item and provided a brief background of the presentation. In 2012, MTS changed the way the internal payment calculation was calculated for the SDTC pension plan in order to avoid pension spiking. In late 2019, the ATU requested the SDTC Pension Board to conduct an audit to determine if the calculations for retirement benefits were correct. Findings showed some retirees had been receiving overpayments of pension payments.

Larry Marinesi, MTS Chief Financial Officer, continued the presentation. Mr. Marinesi discussed the background of the issue, audit request, recalculations, actuarial impacts, overpayment options, future preventative measures and staff recommendation to fund the plan overpayments.

Board Member Sandke questioned why the fund had to be replenished if MTS would take financial responsibility and fund the overpayment costs for the plan.

Mr. Marinesi clarified the total plan balance covered ATU, IBEW and SDTC Management employees. An overpayment amount would need to be refunded in order to fully cover all the benefits under the three accounts.

Board Member Moreno agreed with staff's proposed recommendation. She asked when the plan was closed to management employees.

Mr. Marinesi responded the plan is currently not closed to management employees, with certain exceptions. The plan only allows for union employees currently vested in the plan to keep the

same plan if they are promoted into a management position. Any newly hired management employees would go into CalPERS pension plan.

Board Member Moreno asked if staff would engage external auditors to ensure all other pension payments were accurate.

Mr. Marinesi responded that all three pension plan documents and payment plans would be reviewed to ensure accuracy.

Board Member Moreno requested for staff to follow up on the outcome and whether there were additional payment errors.

Action Taken

Board Member Moreno moved to authorize the Chief Executive Officer (CEO) to fund a one-time payment to the SDTC Pension Plan relating to cumulative overpayments to respective pension members. Chair Fletcher seconded the motion, and the vote was 14 to 0 in favor with Board Member Arambula absent.

32. Palm Avenue Trolley Station Transit Oriented Development (Tim Allison)

Tim Allison, MTS Manager of Real Estate Assets, introduced John Seymour from National CORE and Andrew Malick from Malick Infill. Mr. Allison presented on the Palm Avenue Station Joint Development project, and reviewed the current land use and land description, developer background, and project proposal details.

Mr. Malick continued the presentation and reviewed the project location, project comparison, site plan solutions, livability vision, parks and open space, recreation, pedestrian and bike amenities, density adaptability, and schedule of performance.

Mr. Allison concluded the presentation by reviewing the staff recommendations and next steps for the project.

Board Member Aguirre stated enthusiasm for the project and commended staff on the design and amenities of the proposal. Board Member Aguirre asked if the amount of low-income units could be increased.

Mr. Seymour responded there are four total phases in the project. Three out of those four will be 100% affordable, representing approximately 300 units. The rent ranges will be 30% to 60% AMI, some being 80%, and 100 units will be middle income. Mr. Seymour believed the proposal represented a good blend of middle and moderate affordability, however was open to assessing more affordable options.

Board Member Aguirre asked if the project would incorporate bio-filters for vegetation.

Mr. Seymour responded that they are currently drafting a landscaping solicitation and would incorporate that in the site plan prior to submission of development services.

Board Member Aguirre commented that the South Bay and Otay Valley Regional Park area is a wild life refuge with wild life connectivity, and noted that using native plants would be great for the environment. Board Member Aguirre asked if bathroom amenities for riders would be incorporated in the design.

Mr. Malick replied they had not outlined that level of detail yet, but assured they could look into that request.

Board Member Aguirre voiced that riders needed restrooms and believed there were not enough at transit stations.

Board Member Gomez agreed with Board Member Aguirre and noted the vegetation incorporated in the design is important especially because of its proximity to the wildlife refuge. Board Member Gomez asked about the height of the buildings.

Mr. Seymour responded describing the 408-unit scheme, noting four stories of wood frame and one story of podium for the long building located at the entrance of the site. The other three buildings can accommodate higher densities and include stories of wood frame over one story of concrete, for a total of seven stories.

Board Member Gomez asked about the height limitations.

Mr. Seymour did not have an exact number, but stated the new laws they would be processing this project under allowed them to go thirty feet above the base height limit.

Board Member Gomez asked about the communication between the developer and the mobile home park residents.

Mr. Malick noted that he has shared the development plans with the owner of the adjacent property. He stated they have not reached out to the residents yet, as they have not started their public outreach program process. Mr. Malick stated that this was pre-mature before getting direction from the Board.

Mr. Seymour stated they need direction from Development Services Department as well as the Otay Mesa Nestor Community Planning Group once the plans are filed.

Board Member Gomez voiced support in adding public restrooms to the plans.

Board Member Moreno voiced enthusiasm for the project and agreed that the San Diego region is in need for affordable, low- and middle-income housing. Board Member Moreno acknowledged there were many infrastructure needs in the area. She asked the developers to add a sidewalk on the west side of Hollister Road. She is concerned that without this amenity there would be danger to pedestrians and transit riders. Board Member Moreno thanked the developer for initially reaching out to the Otay Mesa Nestor Community Planning Group and asked they resubmit the revised plans to the group. Board Member Moreno asked when the developer planned to solicit community feedback.

Mr. Seymour responded between November 2020 and January 2021.

Action Taken

Informational item only. No action taken.

REPORT ITEMS

45. The 2020 Election (Michael Vu, Registrar of Voters)

This item was moved to the September 17, 2020 Board meeting.

Action Taken

No action taken.

46. New Use of Force Policy (Scott Ybarrondo)

Scott Ybarrondo, Manager of Operations - Transit Enforcement, presented on MTS's New Use of Force Policy. Mr. Ybarrondo discussed the reassessment of the policy and compliance with 836.5 of the California Penal Code; California Assembly Bill 392; and California Senate Bill 230. Mr. Ybarrondo reviewed the details of the 8 Can't Wait campaign and highlighted the changes to the Use of Force Policy.

Board Member Montgomery stated she would like MTS to talk with the 8 Can't Wait representatives to review the policy. Board Member Montgomery noted the policy applies to Code Compliance employees but not the contracted security officers. She stated she would like to create a policy which would prohibit MTS from contracting with companies that refuse to abide by internal policies. Board Member Montgomery asked if there were legal requirements which would prohibit MTS from doing so.

Ms. Landers confirmed there were no legal impediments that would prevent contractors from abiding by MTS policy. She explained the new language in the policy reflected this concern and historically, MTS required Allied Universal have policies that were consistent with MTS.

Board Member Montgomery commented that the Board's intention is to outreach to the unsheltered population riding transit. She would like to note any policies interacting with those types of services be introduced into the conversation. Board Member Montgomery thanked staffed for the work and looks forward to further review of the policy. Board Member Montgomery expressed the importance of dignity and stated how she would like to avoid detention as part of protocol when issuing a citation. She believes this is an excessive measure while also acknowledging there are safety concerns for transit enforcement.

Board Member Gomez asked if MTS would be updating the contract standards with the current contractor in place.

Ms. Cooney explained MTS is currently soliciting proposals for the new Security contract and this policy is incorporated.

Ms. Landers also clarified the new Use of Force Policy is effective immediately to the current contractor and will be applicable to the new contractor.

Board Member Gomez asked how MTS makes sure this policy is implemented.

Ms. Landers explained the contract requires contractors to comply with policy and standard operating procedures (SOPs). Ms. Landers also stated the new policy has been presented to and agreed upon by Allied Universal.

Board Member Gomez asked what the consequences are for a contractor who does not obey the terms.

Mr. Ybarrondo replied the contractor is held accountable to the policy and the disciplinary process. Mr. Ybarrondo explained that staff has had conversations with Allied Universal and they support the policy change. MTS is co-developing training to create consistency with the

contracted security officers. MTS receives use of force reports from the contractor and if the contractor does not act in the proper manner, MTS has the authority to hold them accountable.

Board Member Gomez asked for further explanation. She asked if there was a trigger to terminate the contract based on a number of employees not following training requirements.

Ms. Landers responded that under the contract requirements, the contractor is required to follow policies. If MTS sees the contractor is consistently not doing so, MTS has the ability to terminate the contract.

Board Member Gomez asked at what point the Board would become aware that a contractor's agreement has been terminated.

Ms. Landers stated that in such a case, MTS would first present to the Executive Committee and then to the full Board.

Board Member Gomez suggested the committee create a threshold for accountability. She thanked staff and commented that she wants to ensure safety without harm to riders.

Board Member Goble asked for staff to clarify the shooting at a moving vehicle policy.

Mr. Ybarrondo clarified that shooting at moving vehicles is prohibited under the policy.

Board Member Moreno agreed the use of force policy is a step in the right direction. Board Member Moreno asked how MTS staff would update the procedures for Code Compliance employees.

Mr. Ybarrondo responded that MTS would be training all current officers and new employees on the policy.

Board Member Aguirre added on to Board Member Montgomery's comment regarding dignity. She stated excessive use of handcuffing can be demeaning to riders. Board Member Aguirre also wanted to revisit the strong hold policy and stated that a person's body weight can also cause injury or death. She would also like MTS to evaluate the implicit bias training in order to prevent any over-representation of minority riders being cited.

Mr. Ybarrondo noted with the new policy, if someone were handcuffed, a report would need to be generated so that management could evaluate the interaction. Mr. Ybarrondo also stated that body weight holds would be included in the training in order to minimize danger to individuals. Implicit bias training will continue to be an annual training requirement.

Board Member Gomez asked staff for a presentation of the population demographics who are being cited to make sure MTS is not targeting certain sectors of customers. Board Member Gomez asked if MTS had that data.

Ms. Cooney confirmed the data exists and that it would be given to the Public Security Committee for review.

Chair Fletcher asked when the new policy would be in effect.

Mr. Ybarrondo responded by saying implementation will be completed within the next few weeks.

Action Taken

Informational item only. No action taken.

47. Operations Budget Status Report for May 2020 (Gordon Meyer)

The Board waived the staff report for this item.

Action Taken

No action taken.

OTHER ITEMS

60. Chair Report

There was no Chair's report.

61. Chief Executive Officer's Report

There was no Chief Executive Officer's Report.

62. Board Member Communications

There were no Board Member communications.

63. Additional Public Comments on Items Not on the Agenda

There were no additional public comments.

CLOSED SESSION (TAKEN OUT OF ORDER)

27. Closed Session Items

The Board convened to Closed Session at 11:00 a.m.

a. CLOSED SESSION – CONFERENCE WITH REAL PROPERTY NEGOTIATORS PURSUANT TO CALIFORNIA GOVERNMENT CODE SECTION 54956.8
Property: Assessor's Parcel Number (APN) 618-010-26-01, 31-00, and 32-00; 676 Moss Street, Chula Vista, California
Agency Negotiators: Sharon Cooney, Chief Executive Officer; Karen Landers, General Counsel; and Tim Allison, Manager of Real Estate Assets
Negotiating Parties: SFL – Moss Street, LLC
Under Negotiation: Price and Terms of Payment

b. CLOSED SESSION – CONFERENCE WITH LEGAL COUNSEL – EXISTING LITIGATION Pursuant to California Government Code Section 54956.9(d)(2) (Government Tort Claim from Claudia Isabel Hernandez for herself and as successor in interest to the Estate of Angel Hernandez)

The Board reconvened to Open Session at 1:00 p.m.

Oral Report of Final Actions Taken in Closed Session

Karen Landers, General Counsel, reported the following:

a. The Board received a report and gave instructions to negotiators.

b. The Board received a report and gave instructions to legal counsel.

64. Next Meeting Date

The next regularly scheduled Board meeting is September 17, 2020.

65. Adjournment

Chair Fletcher adjourned the meeting at 1:01pm.

/s/ Nathan Fletcher
Chairperson
San Diego Metropolitan Transit System

Filed by:

/s/ Dalia Gonzalez
Clerk of the Board
San Diego Metropolitan Transit System

Approved as to form:

/s/ Karen Landers
General Counsel
San Diego Metropolitan Transit System

Attachment: Roll Call Sheet

SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS
ROLL CALL

MEETING OF (DATE): 7/30/2020 CALL TO ORDER (TIME): 9:00AM

RECESS: _____ RECONVENE: _____

CLOSED SESSION: 10:55AM RECONVENE: 1:00PM

PUBLIC HEARING: _____ RECONVENE: _____

ORDINANCES ADOPTED: _____ ADJOURN: 1:00PM

BOARD MEMBER		(Alternate)		PRESENT (TIME ARRIVED)	ABSENT (TIME LEFT)
AGUIRRE	☒	(Spriggs)	☐	9:03AM	1:00PM
ARAMBULA	☐	(Mendoza)	☐	--	--
FAULCONER	☐	(Moreno)	☒	9:03AM	12:00PM
				12:30PM	1:00PM
FLETCHER	☒	(Cox)	☐	9:00AM	1:00PM
FRANK	☒	(Mullin)	☐	9:00AM	1:00PM
GALVEZ	☒	(Diaz)	☐	9:00AM	1:00PM
GOMEZ	☒	(Campbell)	☐	9:00AM	1:00PM
HALL	☒	(McNelis)	☐	9:00AM	1:00PM
MCCLELLAN	☐	(Goble)	☒	9:10AM	1:00PM
MONTGOMERY	☒	(Bry)	☐	9:00AM	1:00PM
SALAS	☒	(Diaz)	☐	9:00AM	12:00PM
SANDKE	☒	(Donovan)	☐	9:00AM	1:00PM
SOTELO-SOLIS	☐	(Quintero)	☒	9:03AM	1:00PM
WARD	☒	(Kersey)	☐	9:00AM	12:00PM
WEBER	☒	(Arapostathis)	☐	9:00AM	12:00PM

SIGNED BY THE CLERK OF THE BOARD: /s/ Dalia Gonzalez

CONFIRMED BY THE GENERAL COUNSEL: /s/ Karen Landers

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101-7490
(619) 231-1466 • FAX (619) 234-3407

Agenda Item No. 6

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

September 17, 2020

SUBJECT:

SAN DIEGO AND ARIZONA EASTERN (SD&AE) RAILWAY COMPANY QUARTERLY REPORTS AND RATIFICATION OF ACTIONS TAKEN BY THE SD&AE BOARD OF DIRECTORS AT ITS MEETING ON JULY 28, 2020

RECOMMENDATION:

That the Board of Directors receive the San Diego and Imperial Valley Railroad (SD&IV), Pacific Southwest Railway Museum Association (Museum), and Desert Line quarterly reports (Attachment A) for information and ratify any actions taken.

Budget Impact

None.

DISCUSSION:

Pursuant to the Agreement for Operation of Freight Rail Services, SD&IV and Museum, have provided operations reports during the second quarter of 2020 (Attachment A).

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Julia Tuer, 619.557.4515, Julia.Tuer@sdmts.com

Attachment: A. Copy of Final Meeting Materials from 7/28/2020 SD&AE Meeting

Metropolitan Transit System (MTS) is a California public agency comprised of San Diego Transit Corp., San Diego Trolley, Inc. and San Diego and Arizona Eastern Railway Company (nonprofit public benefit corporations). MTS is the taxicab administrator for seven cities.

MTS member agencies include the cities of Chula Vista, Coronado, El Cajon, Imperial Beach, La Mesa, Lemon Grove, National City, Poway, San Diego, Santee, and the County of San Diego.

AGENDA

San Diego and Arizona Eastern (SD&AE)
Railway Company
Board of Directors Meeting

July 28, 2020

9:00 a.m.

****Meeting will be held via Webex****

This information will be made available in alternative formats upon request. To request an agenda in an alternative format, please call the Clerk of the Board at least five working days prior to the meeting to ensure availability. Assistive Listening Devices (ALDs) are available from the Clerk of the Board prior to the meeting and are to be returned at the end of the meeting. Meeting Webex/teleconference instructions can be accessed at the following link: https://www.sdmts.com/about-mts-meetings-and-agendas/sdae

SAN DIEGO & ARIZONA EASTERN RAILWAY COMPANY

A Nevada Nonprofit Corporation

1255 Imperial Avenue
Suite 1000
San Diego, CA
92101-7490
619.231.1466

BOARD OF DIRECTORS
Paul Jablonski, Chairperson
Matt Domen
Jared Gooch

OFFICERS
Paul Jablonski, President
Matt Domen, Secretary
Erin Dunn, Treasurer

LEGAL COUNSEL
Karen Landers

		ACTION RECOMMENDED
1.	Approval of the Minutes of January 14, 2020 Action would approve the SD&AE Railway Company Minutes of January 14, 2020.	Approve
2.	Statement of Railway Finances (Erin Dunn) Action would receive a report for information.	Informational
3.	Report on San Diego and Imperial Valley (SD&IV) Railroad Operations (Matt Domen) Action would receive a report for information.	Informational
4.	Report on Pacific Southwest Railway Museum (Diana Hyatt) Action would receive a report for information.	Informational
5.	Report on the Desert Line (Jorge Izquierdo) Action would receive a report for information.	Informational
6.	Real Property Matters (Tim Allison)	
a.	Summary of SD&AE Documents Issued Since January 14, 2020	Informational
b.	CLOSED SESSION - CONFERENCE WITH REAL PROPERTY NEGOTIATORS PURSUANT TO CALIFORNIA GOVERNMENT CODE SECTION 54956.8 Property: Railroad Easement Over Portions of Assessor's Parcel Numbers (APNs) 618-010-26-01, 31-00, and 32-00; 676 Moss Street, Chula Vista, California Agency Negotiators: Sharon Cooney, Chief Executive Officer; Karen Landers, General Counsel; and Tim Allison, Manager of Real Estate Assets Negotiating Parties: SFL – Moss Street, LLC Under Negotiation: Price and Terms of Payment	Possible Action

7. Board Member Communications

8. **Public Comments**

9. Next Meeting Date: October 6, 2020

MINUTES

BOARD OF DIRECTORS MEETING OF THE
SAN DIEGO & ARIZONA EASTERN RAILWAY COMPANY

January 14, 2020

A meeting of the Board of Directors of the San Diego & Arizona Eastern (SD&AE) Railway Company, a Nevada corporation, was held at 1255 Imperial Avenue, Suite 1000, San Diego, California 92101, on January 14, 2020, at 9:00 a.m.

The following persons, constituting the Board of Directors, were present: Wayne Terry (for Paul Jablonski who was absent), Jared Gooch, and Matt Domen.

Also in attendance were members from San Diego Metropolitan Transit System (MTS): Tim Allison, Erin Dunn, and Karen Landers.

1. Approval of Minutes

Mr. Domen moved to approve the Minutes of the October 8, 2019, SD&AE Railway Board of Directors meeting. Mr. Gooch seconded the motion, and it was unanimously approved.

2. Statement of Railway Finances

Ms. Dunn reviewed the Statement of Railway Finances for the period ending December 2019 (attached to the agenda item).

Ms. Landers reiterated that some legal expenses are anticipated in the future for litigation related to the removal of old tracks. Mr. Allison added that a check was received in the amount of $1,994,000 for the sale of property in San Ysidro, and the funds were added to the SD&AE budget.

Action Taken

Informational item only. No action taken.

3. Report on San Diego & Imperial Valley Railroad (SD&IV) Operations

Mr. Domen reviewed the SD&IV Periodic Report for activities for the fourth quarter of 2019 (attached to the agenda item).

Mr. Allison reported that the tenant at Moss Street (Kleen Blast) is leaving at the end of the year. There is an industry track spur that serves a parcel north of Moss Street in Chula Vista. There is an existing easement held by SD&AE that the property owner wants MTS to quit claim once the property is rezoned from industrial to residential. When the property entitlements are obtained from Chula Vista, the owner intends to terminate existing tenancies on the site. One of the tenants currently takes service from SD&IV. Once the tenant's lease is terminated, there will no longer be a need to service the property. The owner will need to remove the spur track to build the residential project, which will impact the existing freight siding where the spur connects to the siding by a railroad switch. That switch will need to be removed and rail repaired to finish the construction of the project.

Mr. Allison spoke with the property owner who anticipates having tenants through October. Engineering document review will likely take place over the next six months. The easement will need to be quit claimed and valued, which is an action that could go to the SD&AE Board in April or July.

Mr. Domen added that SD&IV has been helping to relocate Kleen Blast to a new location, as well as working with another company out of Oregon to supply the shipyards and conduct transload at the border. He clarified that the tenant on the L Street team track has relocated near the border.

Mr. Terry reported that the absolute block arrangement from the border to Palomar has been tested by the Federal Railroad Administration (FRA). FRA representative Chad Tisdale will be sending a letter to Mr. Terry with witness approvals. That letter will be submitted to Bill Mullins in Washington and added to the existing waiver. Once approved, Mr. Terry requested that the system be used monthly or bimonthly to ensure that it is working properly.

Action Taken

Informational item only. No action taken.

4. Report on Pacific Southwest Railway Museum Operations

Ms. Landers reported that she went to the Centennial celebration in November, and it was very well attended. Mr. Gooch was in attendance as well.

Action Taken

Informational item only. No action taken.

5. Report on the Desert Line

Ms. Landers revisited the status of the progress on building a new Customs facility near the border. During the site visit with California Border Patrol (CBP) and its NII equipment vendors, NII determined that it was feasible to build an NII machine at the proposed location at the border tunnel, which is CBP's preferred location. Two vendors submitted rough budget estimates to Baja Railroad (BJRR) in September 2019. The next steps are for BJRR to select a vendor and submit plans to CBP. So far to date, there has not been any work done by BJRR.

Ms. Landers informed the Board that BJRR did not make its January 1 payment to MTS; therefore, MTS sent BJRR a 10-day notice to cure letter by January 13. BJRR then requested an extension to January 31, which was granted by MTS. This issue is going as a closed session agenda item to the MTS Board of Directors at its January 16 meeting. BJRR has been informed that permission is being requested for the CEO to have the discretion to terminate the contract if payment is not received by January 31. Ms. Landers stated that the goal is to see this project happen and not to prematurely default; however, BJRR will need to start work on the project.

- Public Speaker: Reena Deutsch

  Ms. Deutsch stated that it is her understanding that BJRR has taken steps to discourage trespassers on the Carrizo Gorge section of the Desert Line by locking gates to block tunnels and arrange for periodic enforcement. Ms. Deutsch added that is easy to find ways around those blocked tunnels, and it is commonly known that security only issues warnings or they are often absent. She stated that hordes of people manage to get to the Goat Canyon trestle.

  Ms. Deutsch stated that her main concern is that one of the bypasses around the tunnels leads to the tracks beyond the tunnels, and this detour passes through a sensitive archeological site, which has been the target of damage and looting. Access to the shortcut is via railroad property.

  Ms. Deutsch stated that the railroad unwittingly contributes to the ongoing defilement of priceless historic resources and theft of artifacts by not better enforcing its own rules and regulations.

  Ms. Deutsch reported that presently, the Dos Caballos region of the Desert Line is one of the illegal track crossings. It is some distance from the site of the former Dos Caballos railroad station. Over the years, rocks and bricks have been manipulated by visitors to allow motor vehicles to cross over the tracks at the station site. After the illegal crossing, dirt roads lead to the tracks just west of Tunnel 20 thereby avoiding Tunnels 20 and 21, which are currently blocked by locked gates. This route goes through and to SD&AE's engineering and survey camp and to a construction camp. She added that there are fragile remnants of structures and artifacts worth saving.

  Ms. Deutsch has encountered many cars, trucks, and motorcycles using the route headed to the Goat Canyon trestle. During a hike last year, Ms. Deutsch's group was accosted by a man who had parked his truck in the survey camp, and they saw a large collection of artifacts on the hood of his truck.

  Ms. Deutsch suggested that a barrier be constructed that could block vehicles from illegally entering the short section of track crossing at Dos Caballos (Mile 109.7), which would be a simple low-cost measure to protect this area. It was agreed that Ms. Deutsch will give Ms. Landers a tour of the area.

Action Taken

Informational item only. No action taken.

6. Real Property Matters

a. Summary of SD&AE Documents Issued Since October 8, 2019

Mr. Allison reported that the following documents were processed since the October 8, 2019, SD&AE Board of Directors meeting.

- S200-19-700: Right of Entry Permit to Par Electric Contractors to install aerial electric facilities at and near the Palomar Trolley Station in the City of Chula Vista.

- S200-19-707: Right of Entry Permit to AT&T California to construct an aerial fiber-optic line near Hill Street in the City of El Cajon.

- S200-19-721: Right of Entry Permit to Brad L. Stoner Painting, Inc. to paint the side of an adjacent building at Anita Street in the City of Chula Vista.

Action Taken

Informational item only. No action taken.

7. Board Member Communications

Mr. Terry reported that there is an agenda item going to the MTS Board of Directors at its next meeting to remove catenary poles in the San Ysidro Yard.

Mr. Domen received an e-mail stating that the underground storage tanks at the San Ysidro Yard need to be removed by 2023. Mr. Allison added that the process to remove them should start immediately as it will take some time to complete.

8. Public Comments

There were no public comments.

9. Next Meeting Date

The next meeting of the SD&AE Railway Company Board of Directors is on Tuesday, April 7, 2020.

10. Adjournment

The meeting was adjourned at 9:20 a.m.

/s/ Wayne Terry
President

/s/ Karen Landers
General Counsel

Agenda Item No. 2

San Diego and Arizona Eastern (SD&AE)
Railway Company
Board of Directors Meeting

July 28, 2020

SUBJECT:

STATEMENT OF RAILWAY FINANCES

RECOMMENDATION:

That the SD&AE Railway Company Board of Directors receive a financial report for the period ending June 30, 2020.

Budget Impact

None.

DISCUSSION:

Attached are SD&AE's preliminary financial results for the period ending June 30, 2020. We will continue to accrue expenses for invoices that come in with services rendered prior to June 30, 2020. We expect a final report to be available at the October 6, 2020, meeting.

As of June 30, 2020, fiscal year-to-date revenues are $488,000 favorable to budget primarily due to the Desert Line Lease revenue not included in the budget.

Expenses are $165,000 favorable to budget primarily due to a favorable variance in both Outside Services and Risk Management.

The year-to-date Net Income as of June 30, 2020, was $557,000.

Attachment: SD&AE Operating Statement for period ending June 30, 2020

SD&AE Operating Statement FY2020-19

	FY 2020							FY 2019	
	Q1 Actual	Q2 Actual	Q3 Actual	Q4 Actual	YTD Actual	YTD Budget	Variance	YTD Actual	Variance
Revenues									
Right of Entry Permits	$ 12,750	$ 7,275	$ 11,063	$ 7,870	$ 38,958	$ 35,000	$ 3,958	$ 18,750	$ 20,208
Lease Income	19,533	19,983	19,488	19,539	78,542	85,000	(6,458)	85,270	(6,728)
Desert Line Lease Revenue	250,010	249,990	-	-	500,000	-	500,000	1,000,000	(500,000)
Operator Income - SD&IV 1% Freight Fee	10,000	10,000	1,647	9,000	30,647	40,000	(9,353)	35,156	(4,509)
Total Revenues	$ 292,293	$287,247	$ 32,198	$ 36,409	$ 648,147	$ 160,000	$488,147	$ 1,139,176	$(491,029)
Expenses									
Personnel Costs	$ 10,782	$ 13,343	$ 12,181	$ 5,086	$ 41,392	$ 47,500	$ 6,108	$ 36,288	$ (5,103)
Outside Services	-	-	680	4,626	5,306	110,000	104,694	48,486	43,180
Risk Management	3,600	5,648	6,161	7,253	22,661	69,301	46,640	57,700	35,039
Misc. Operating Expenses	3,433	17,857	25	150	21,464	29,200	7,736	25,896	4,432
Total Expenses	$ 17,815	$ 36,847	$ 19,047	$ 17,114	$ 90,823	$ 256,001	$165,178	$ 168,370	$ 77,547
Net Income/(Loss)	$ 274,479	$250,400	$ 13,151	$ 19,294	$ 557,324	$ (96,001)	$653,325	$ 970,806	$(413,482)

Reserve Balance July 1, 2019	**$ 372,897**
Allocated Interest Earnings - Estimated	10,000
Operating Profit/(Loss) - YTD	557,324
Gain on Sale of Property	1,994,000
Less Desert Line Lease Revenue	(500,000)
Estimated Reserve Balance as of June 30, 2020	**$2,434,221**

Agenda Item No. 3

San Diego and Arizona Eastern (SD&AE)
Railway Company
Board of Directors Meeting

July 28, 2020

SUBJECT:

REPORT ON SAN DIEGO AND IMPERIAL VALLEY (SD&IV) RAILROAD OPERATIONS (JARED GOOCH)

RECOMMENDATION:

That the SD&AE Board of Directors receive a report for information.

Budget Impact

None.

DISCUSSION:

An oral report will be given during the meeting.

Attachment: 2nd Quarter report for 2020

SD&AE Board
C/O MTS
1255 Imperial Avenue, Suite 1000
San Diego, California 92101

July 17, 2020

Periodic Report

In accordance with Section 20 of the Agreement for Operational Freight Service and Control through Management of the San Diego and Arizona Eastern Railway Company activities of interest for the 2nd Quarter of 2020 are listed as follows:

1. Labor

At the end of June 30, 2020, the San Diego & Imperial Railroad had 8 employees:

1 General Manager

1 Manager - Marketing & Sales

1 Office Manager

1 Mechanical Manager

1 Maintenance of Way Employee

3 Train Service Employees

2. Marketing

Volume in the 2nd Quarter had a 29% decrease as compared to the same quarter in 2019. Both bridge traffic into Mexico and traffic terminating on SDIY were down about the same amount. The Mexican volume decrease is primarily attributed to Covid related production decreases, especially among the packaging products. On the US side, volumes are down due to the completion of the border wall material transload and decreased ethanal demand due to Covid.

3. Reportable Injuries/Environmental

Days through year to date, June 30, 2020, there were no FRA Reportable injuries or Environmental incidents on the SDIV Railroad.

Days FRA Reportable Injury Free: **8487**

4. Summary of Freight

	2020	2019	2018
Total rail carloads that moved by SDIY Rail Service in the quarter.	**718**	**1011**	**904**
Total railroad carloads Terminating/Originating Mexico in the quarter.	**387**	**551**	**575**
Total railroad carloads Terminating/Originating El Cajon, San Diego, National City, San Ysidro, California in the quarter.	**331**	**460**	**329**
Total customers directly served by SDIY in the quarter	**9**	**12**	**12**
Regional Truck trips that SDIY Railroad Service replaced in the quarter	**2154**	**3033**	**2712**

Respectfully,

Matt Domen

General Manager

Agenda Item No. 4

San Diego and Arizona Eastern (SD&AE)
Railway Company
Board of Directors Meeting

July 28, 2020

SUBJECT:

REPORT ON PACIFIC SOUTHWEST RAILWAY MUSEUM

RECOMMENDATION:

That the SD&AE Board of Directors receive a report for information.

Budget Impact

None.

DISCUSSION:

An oral report will be given during the meeting.

Attachment: Quarterly report not submitted in time for the mail-out

Pacific Southwest Railway Museum
La Mesa Depot 4695 Nebo Drive La Mesa, CA 91941 619-465-7776

July 22, 2020

SD&AE Board
c/o Metropolitan Transit System
1255 Imperial Avenue, Suite 1000
San Diego, CA 92101

Re: Second Quarter 2020

Dear SD&AE Board:

During the second quarter of 2020 the Pacific Southwest Railway Museum operated zero trains and was open to the public zero days in response to the coronavirus lockdown and subsequent orders for non-essential businesses and museums. There were no FRA reportable accidents or injuries during the second quarter, 2020. Total revenue from SD&AE property for this time period was $0.

Passenger ridership during the second quarter of previous years has been:

2,607 passengers during the second quarter of 2019
1,866 passengers during the second quarter of 2018
2,315 passengers during the second quarter of 2017
1,185 passengers during the second quarter of 2016
2,197 passengers during the second quarter of 2015
2,794 passengers during the second quarter of 2014
1,901 passengers during the second quarter of 2013
2,882 passengers during the second quarter of 2012
2,434 passengers during the second quarter of 2011
1,977 passengers during the second quarter of 2010

PSRM continues to perform FRA mandated maintenance and keep current with electrical charges for both signalized railroad crossings within our right-of-way limits; PSRM signal maintainers perform the monthly, quarterly and annual inspections. Our Maintenance of Way

department began tie renewal and weeding efforts along the mainline towards the end of the quarter with plans for continued efforts through the summer months.

Efforts were underway for a planned re-opening of the facility compliant, with all mandated CDC regulations for July 25 but that has now been altered to an anticipated reopening date for Labor Day weekend, Saturday, September 5, 2020.

Thank you for allowing us the opportunity to interpret southern California railroading in a living history atmosphere. We are honored to be caretakers of the Campo Depot and the Desert Line and look forward to a renewed and prosperous year ahead.

Sincerely,

Diana Hyatt
President

Agenda Item No. 5

San Diego and Arizona Eastern (SD&AE)
Railway Company
Board of Directors Meeting

July 28, 2020

SUBJECT:

REPORT ON THE DESERT LINE

RECOMMENDATION:

That the SD&AE Board of Directors receive a report for information.

Budget Impact

None.

DISCUSSION:

A report will be presented during the meeting.

Attachment: Quarterly report not submitted in time for the mail-out

Agenda Item No. 6a

San Diego and Arizona Eastern (SD&AE)
Railway Company
Board of Directors Meeting

July 28, 2020

SUBJECT:

SUMMARY OF SD&AE DOCUMENTS ISSUED SINCE JANUARY 14, 2020

RECOMMENDATION:

That the SD&AE Railway Company Board of Directors receive a report for information.

Budget Impact

None.

DISCUSSION:

Since the January 14, 2020, SD&AE Railway Company Board of Directors meeting, the documents described below have been processed by staff.

- S200-20-728: Right of Entry Permit to Swinerton Builders to construct an at-grade crossing on the Coronado Branch at E Street in the City of Chula Vista.
- S200-20-729: Right of Entry Permit to Hal Hays Construction, Inc. to construct a water pipeline at Elm Street in the City of San Diego.
- S200-20-732: Right of Entry Permit to New Way Tree Service to perform landscape maintenance along the Orange Line in the City of La Mesa.
- S200-20-733: Right of Entry Permit to HP Communications, Inc. to construct an underground fiber-optic line at Moss Street in the City of Chula Vista.
- S200-20-734: Right of Entry Permit to Navy Region Southwest for the 34th Annual Bay Bridge Run/Walk event.
- S200-20-738: Right of Entry Permit to Level 10 Construction, LP, to construct a residential building at 14th Street and Commercial Avenue in the City of San Diego.
- S200-20-741: Right of Entry Permit to SDG&E to construct an underground electric crossing at E Street and an aerial electric crossing south of E Street on the Coronado Branch in the City of Chula Vista.

Public Speaker - Mitch Beauchamp 7/28/2020 SD&AE Meeting

Thank you for this opportunity to discuss the Desert Line contract. As you know, a group with which I am associated opened the rail line in 2006 and we were able to export from Mexico ri-bar, as well as massive exportation of sand to the Campo facility. Unfortunately, the effort was taken over by a cabal from Las Vegas which not only destroyed the corporate organization but also did similar damage on the Mexican portion of the rail line.

One of the major problems with the operation of the line is the interference by government agencies. The 20-year mess by the PAN administration on the Mexican portion of the line is due to the corruption of Mexican officials to exact tribute to support a bloated , parasitic and redundant organization that was established to manage the assignment of the line from the central government. The recent mis-accounting of the $20 million grant to upgrade the line is the latest of these fiascos.

The Desert line has been the red-headed stepchild of the MTDB/MTS system. When my group had control of the situation, under a reasonable contract with a minimum fee and percentage, the line was opened and operating. But the imposition of a $1 million minimum fee was a stupid attempt by the past MTS CEO to show some return for this constant burr in his saddle. Through the reams of litigation and bankruptcies, the present Desert Line contractor is stuck with the realty of now catching up with a $1 million payment, which it obviously does not have. Extensions of the 1 January due date for the first half-million; and now 1 July for the second half-million, are met with pleadings for extensions and what are obdurately disingenuous justifications. Clearly the contractor has no ability to pay this minimum fee, much less following through with the other pie-in-the-sky demands of the contract, based upon MTS's normal cost estimating under Davis-Bacon criteria. But seeing the potential to lose a million bucks seems like malfeasance by not running out the payment deadline in desperation.

But this fiasco must stop and this contract ended. It is unfortunate that the prior payments by the contractor have no recourse. But there seems to have been no plan in the first place, just great aspirations.

I ask the present MTS organization to terminate this contract and be prepared to sell the Desert line to a private party, so that the rail line can be opened, and real, 24-hour commerce returned to the region.

The acquisition of the line system from Southern Pacific had the obligation as a common carrier to keep the eastern freight railroad open. MTS has not done this. Having a single Class I carrier serving San Diego is not in the best interests of competition and movement of goods. The vulnerability of the coast rail line has been already seen at Del Mar and San Clemente.

Moreover, this line is a unique, international railroad and involved two nations, it is not some parochial, historic remnant.

R. Mitchel Beauchamp

28 July 2020

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101-7490
(619) 231-1466 • FAX (619) 234-3407

Agenda Item No. 7

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

September 17, 2020

SUBJECT:

ADOPTION OF AMENDED 2020 CONFLICT OF INTEREST CODE

RECOMMENDATION:

That the Board of Directors:

1) Adopt Resolution No. 20-17 (Attachment A) amending the MTS Conflict of Interest Code pursuant to the Political Reform Act of 1974;

2) Adopt the amended 2020 MTS Conflict of Interest Code (in substantially the same format as Attachment B); and

3) Forward the amended 2020 MTS Conflict of Interest Code to the County of San Diego (the designated code-reviewing body).

Budget Impact

None.

DISCUSSION:

The Political Reform Act (the "Act") requires all public agencies to adopt and maintain a Conflict of Interest Code containing the rules for disclosure of personal assets. Except for positions listed in Gov. Code § 87200, the Conflict of Interest Code must specifically designate all agency positions that make or participate in the making of decisions and assign specific types of personal assets to be disclosed that may be affected by the exercise of powers and duties of that position.

The Act further requires that an agency regularly review and update its Conflict of Interest Code as necessary when directed by the code-reviewing body or when change is necessitated by changed circumstances. (Gov. Code §§ 87306 and 87306.5.)

Metropolitan Transit System (MTS) is a California public agency comprised of San Diego Transit Corp., San Diego Trolley, Inc. and San Diego and Arizona Eastern Railway Company (nonprofit public benefit corporations). MTS is the taxicab administrator for seven cities.

MTS member agencies include the cities of Chula Vista, Coronado, El Cajon, Imperial Beach, La Mesa, Lemon Grove, National City, Poway, San Diego, Santee, and the County of San Diego.

Review of the Code was done as directed by the code-reviewing body and shows that the Conflict of Interest Code must be amended to include new positions that must be designated, revise titles of existing positions, delete positions that no longer exist and clarify real property disclosure requirements.

Attachment B contains a redline version of the proposed amended Code showing the proposed amendments.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Julia Tuer, 619.557.4515, Julia.Tuer@sdmts.com

Attachments: A. Resolution No. 20-17
B. Proposed Amended 2020 Conflict of Interest Code

SAN DIEGO METROPOLITAN TRANSIT SYSTEM

RESOLUTION NO. 20-17

A Resolution of the Board of Directors of the San Diego Metropolitan Transit System Adopting an Amended Conflict of Interest Code Pursuant to the Political Reform Act of 1974

WHEREAS, the State of California enacted the Political Reform Act of 1974, Government Code Section 81000 et seq. (the "Act"), which contains provisions relating to conflicts of interest which potentially affect all officers, employees and consultants of the San Diego Metropolitan Transit System ("MTS") and requires all public agencies to adopt and promulgate a Conflict of Interest Code; and

WHEREAS, the potential penalties for violation of the provisions of the Act are substantial and may include criminal and civil liability, as well as equitable relief which could result in MTS being restrained or prevented from acting in cases where the provisions of the Act may have been violated; and

WHEREAS, the Board of Directors adopted a Conflict of Interest Code (the "Code") which was amended on September 20, 2018, in compliance with the Act; and

WHEREAS, subsequent changed circumstances within MTS have made it advisable and necessary pursuant to Sections 87306 and 87307 of the Act to amend and update MTS's Code; and

WHEREAS, notice of the time and place of a public meeting on, and of consideration by the Board of Directors of, the proposed amended Conflict of Interest Code was provided each designated employee and publicly posted for review at the offices of MTS; and

WHEREAS, a public meeting was held upon the proposed amended Conflict of Interest Code at a regular meeting of the Board of Directors on September 17, 2020, at which all present were given an opportunity to be heard on the proposed amended Conflict of Interest Code.

NOW, THEREFORE, THE BOARD OF DIRECTORS OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM DOES HEREBY RESOLVE AS FOLLOWS:

SECTION 1. The Board of Directors does hereby adopt the proposed amended Conflict of Interest Code, a copy of which is attached hereto and shall be on file with the General Counsel and available to the public for inspection and copying during regular business hours.

SECTION 2. The said amended Conflict of Interest Code shall be submitted to the Board of Supervisors of the County of San Diego for approval.

SECTION 3. The said amended Conflict of Interest Code shall become effective immediately after the Board of Supervisors approves the proposed amended Code as submitted.

PASSED, APPROVED AND ADOPTED, by the Board of Directors this 17th day of September, 2020.

AYES:

NAYS:

ABSENT:

ABSTAIN:

Chairperson
San Diego Metropolitan Transit System

Filed by:

Clerk of the Board
San Diego Metropolitan Transit System

Approved as to form:

Office of the General Counsel
San Diego Metropolitan Transit System

Attachment: Amended Conflict of Interest Code

Resolution No. 20-17

CONFLICT OF INTEREST CODE

OF THE

SAN DIEGO METROPOLITAN TRANSIT SYSTEM

CONFLICT OF INTEREST CODE

OF THE

SAN DIEGO METROPOLITAN TRANSIT SYSTEM

(Amended September 17, 2020)

The Political Reform Act, (Government Code Sections 81000, et seq.) requires state and local government agencies to adopt and promulgate conflict of interest codes. The Fair Political Practices Commission has adopted a regulation (2 Cal. Code of Regs. 18730) that contains the terms of a standard model conflict of interest code, which can be incorporated by reference in an agency's code. After public notice and hearing Section 18730 may be amended by the Fair Political Practices Commission to conform to amendments in the Political Reform Act. Therefore, the terms of 2 California Code of Regulations section 18730 and any amendments to it duly adopted by the Fair Political Practices Commission are hereby incorporated by reference. This incorporation page, Regulation 18730 and the attached Appendix designating positions and establishing disclosure categories shall constitute the conflict of interest code of the **San Diego Metropolitan Transit System (MTS).**

All officials and designated positions shall file their statements of economic interests with MTS's **General Counsel** as MTS's Filing Officer. The **General Counsel** shall make and retain a copy of all statements filed by Members and Alternates of the Board of Directors, Chief Executive Officer and the Chief Financial Officer, and forward the originals of such statements to the Clerk of the Board of Supervisors of the County of San Diego. The **General Counsel** shall retain the originals of the statements filed by all other designated positions. The **General Counsel** will make all retained statements available for public inspection and reproduction during regular business hours (Gov. Code Section 81008).

APPENDIX

CONFLICT OF INTEREST CODE

OF THE

SAN DIEGO METROPOLITAN TRANSIT SYSTEM

(Amended September 17, 2020)

PART "A"

OFFICIALS WHO MANAGE PUBLIC INVESTMENTS

MTS Officials who manage public investments, as defined by 2 Cal. Code of Regs. § 18700.3, are NOT subject to MTS's Code, but must file disclosure statements under Government Code section 87200 et seq. [Regs. § 18730(b)(3)] These positions are listed here for informational purposes only.

It has been determined that the positions listed below are officials who manage public investments[1]:

Board of Directors and Alternates

Chief Executive Officer

Chief Financial Officer

Investment Consultant

[1] Individuals holding one of the above-listed positions may contact the Fair Political Practices Commission for assistance or written advice regarding their filing obligations if they believe that their position has been categorized incorrectly. The Fair Political Practices Commission makes the final determination whether a position is covered by § 87200.

DESIGNATED POSITIONS

GOVERNED BY THE CONFLICT OF INTEREST CODE

DESIGNATED POSITIONS' TITLE OR FUNCTION	DISCLOSURE CATEGORIES ASSIGNED
Administrative Assistant (Copy Center)	4
Applications Development & Support Manager	5
Assistant Manager of Maintenance	5
Assistant Manager of Stores	5
Business Systems Analyst (ALL)	5
Buyer	4
Chief Human Resources Officer	5
Chief Information Officer	5
Chief of Staff	1
Chief Operating Officer – Rail	1
Chief Operating Officer – Transit Services	1
Contract Administrator	4
Controller	1, 2
Creative Design Manager	5
Datacenter Operations Manager	5
Deputy Director of Transit Enforcement	5
Director of Capital Projects	1, 2
Director of Financial Planning & Analysis	1, 2
Director of Fleet and Facility Maintenance	5
Director of Human Resources	5

Director of Marketing & Communications	5
Director of Planning	1, 2
Director of Supply & Operations	4
Director of Support Services	2, 3, 5
Director of Transit System Security	5
Director of Transportation	1
Division Manager of Maintenance	5
Enterprise Business Solutions Manager	5
Environmental Health & Safety Specialist	5
Fare Systems Administrator	5
Financial Analyst	4
For-Hire Vehicle Administration Manager	5
General Counsel	1, 2
Graphic Designer III	5
Information Security & Intelligence Engineer	5
Information Security & Intelligence Manager	5
Internal Auditor	4
Liability Claims Supervisor	1, 2, 7
Manager of Advertising & Contracts	5
Manager of Benefits & Compensation	5
Manager of Capital Projects	1, 2

Manager of Contract Operations & Passenger Facilities	2, 4
Manager of Government Affairs	1
Manager of Human Resources	5
Manager of Inventory Operations	4
Manager of Paratransit & Mini Bus	5
Manager of Procurement	4
Manager of Real Estate Assets	1, 2
Manager of Risk and Claims	1, 2, 7
Manager of Scheduling	5
Manager of Service Quality – Rail Division	5
Network Operations Manager	5
Operating Budget Supervisor	1, 2
Procurement Specialist (ALL)	4
Project Engineer (Rail)	1, 2
Project Manager – Capital Projects	2, 3, 5
Regulatory Enforcement Supervisor	6
Report Development Analyst	5
Revenue Maintenance Supervisor	5
Revenue Supervisor	5
Right-of-Way Engineer	1, 2
SAP System Administrator	5

Senior Human Resources Analyst	5
Senior Transportation Planner	1, 2
Senior Worker's Compensation Analyst	7
Staff Attorney – Regulatory Compliance	2, 5, 6, 7
Superintendent of Facilities	5
Superintendent of LRV Maintenance	5
Superintendent of Transportation	5
Superintendent of Wayside Maintenance	5
Supervisor of Paratransit & Mini Bus	5
Supervisor of Revenue Operations	5
Systems Engineer (Rail)	1, 2
Talent Acquisition Manager	5
Transit Asset Management Program Manager	2, 4
Transportation Operations Specialist (ALL)	2, 5
Zero Emission Bus Project Specialist	5

Consultant and New Positions[2]

[2] Individuals serving as a Consultant defined in Regulation 18700.3, or in a new position created since this Code was last amended that makes or participates in making decisions shall disclose pursuant to the broadest disclosure category in this Code subject to the following limitation:

The Chief Executive Officer may determine that, due to the range of duties or contractual obligations, it is more appropriate to assign a limited disclosure requirement. A clear explanation of the duties and a statement of the extent of the disclosure requirements must be in a written document. (Gov. Code Sec. 82019; FPPC Regulations 18219 and 18734.). The Chief Executive

Officer’s determination is a public record and shall be retained for public inspection in the same manner and location as this Conflict of Interest Code. (Gov. Code Sec. 81008.)

PART "B"

DISCLOSURE CATEGORIES

The disclosure categories listed below identify the types of economic interests that the designated position must disclose for each disclosure category to which he or she is assigned.[3] "Investment" means financial interest in any business entity (including a consulting business, or other independent contracting business) and are reportable if they are either located in, doing business in, planning to do business in, or have done business during the previous two years in the jurisdiction of MTS.

Category 1: All investments and business positions in business entities, and sources of income, including gifts, loans and travel payments, that are located in, do business in or own real property within the jurisdiction of MTS.

Category 2: All interests in real property which is located in whole or in part within, or not more than two (2) miles outside, the jurisdiction of MTS, including any leasehold, beneficial or ownership interest or option to acquire property.

Category 3: All investments and business positions in business entities, and sources of income, including gifts, loans and travel payments, that are engaged in land development, construction or the acquisition or sale of real property within the jurisdiction of MTS.

Category 4: All investments and business positions in business entities, and sources of income, including gifts, loans and travel payments, that provide services, products, materials, machinery, vehicles or equipment of a type purchased or leased by MTS.

Category 5: All investments and business positions in business entities, and sources of income, including gifts, loans and travel payments, that provide services, products, materials, machinery, vehicles or equipment of a type purchased or leased by the designated position's department, unit or division.

[3] This Conflict of Interest Code does not require the reporting of gifts from outside this agency's jurisdiction if the source does not have some connection with or bearing upon the functions of the position. (Reg. 18730.1)

Category 6: All investments and business positions in business entities, and sources of income, including gifts, loans and travel payments, subject to the regulatory, permit, or licensing authority of the designated position's department, unit or division.

Category 7: All investments and business positions in business entities, and sources of income, including gifts, loans, and travel payments, if such entities or sources have filed claims against MTS in the past 2 years, or have a claim pending before MTS.

Category 8: Disclose investments and business positions in business entities, and sources of income, including gifts, loans and travel payments, that are located in, do business in, or own real property within the geographical area of, and within two miles of, the designated position's assigned project area.

LAW OFFICES OF
BEST BEST & KRIEGER LLP

LEGISLATIVE VERSION
(SHOWS CHANGES MADE)

CONFLICT OF INTEREST CODE

OF THE

SAN DIEGO METROPOLITAN TRANSIT SYSTEM

LAW OFFICES OF
BEST BEST & KRIEGER LLP

CONFLICT OF INTEREST CODE

OF THE

SAN DIEGO METROPOLITAN TRANSIT SYSTEM

(Amended September ~~20~~17, ~~2018~~2020)

The Political Reform Act, (Government Code Sections 81000, et seq.) requires state and local government agencies to adopt and promulgate conflict of interest codes. The Fair Political Practices Commission has adopted a regulation (2 Cal. Code of Regs. 18730) that contains the terms of a standard model conflict of interest code, which can be incorporated by reference in an agency's code. After public notice and hearing Section 18730 may be amended by the Fair Political Practices Commission to conform to amendments in the Political Reform Act. Therefore, the terms of 2 California Code of Regulations section 18730 and any amendments to it duly adopted by the Fair Political Practices Commission are hereby incorporated by reference. This incorporation page, Regulation 18730 and the attached Appendix designating positions and establishing disclosure categories shall constitute the conflict of interest code of the **San Diego Metropolitan Transit System (MTS).**

All officials and designated positions shall file their statements of economic interests with MTS's **General Counsel** as MTS's Filing Officer. The **General Counsel** shall make and retain a copy of all statements filed by Members and Alternates of the Board of Directors, Chief Executive Officer and the Chief Financial Officer, and forward the originals of such statements to the Clerk of the Board of Supervisors of the County of San Diego. The **General Counsel** shall retain the originals of the statements filed by all other designated positions. The **General Counsel** will make all retained statements available for public inspection and reproduction during regular business hours (Gov. Code Section 81008).

LAW OFFICES OF
BEST BEST & KRIEGER LLP

APPENDIX

CONFLICT OF INTEREST CODE

OF THE

SAN DIEGO METROPOLITAN TRANSIT SYSTEM

(Amended September ~~20~~17, ~~2018~~2020)[1]

PART "A"

OFFICIALS WHO MANAGE PUBLIC INVESTMENTS

MTS Officials who manage public investments, as defined by 2 Cal. Code of Regs. § 18700.3, are NOT subject to MTS's Code, but must file disclosure statements under Government Code section 87200 et seq. [Regs. § 18730(b)(3)] These positions are listed here for informational purposes only.

It has been determined that the positions listed below are officials who manage public investments[2]:

Board of Directors and Alternates

Chief Executive Officer

Chief Financial Officer

Investment Consultant

[1] ~~Nonsubstantive changes to titles made January, 2019.~~

[2] Individuals holding one of the above-listed positions may contact the Fair Political Practices Commission for assistance or written advice regarding their filing obligations if they believe that their position has been categorized incorrectly. The Fair Political Practices Commission makes the final determination whether a position is covered by § 87200.

LAW OFFICES OF
BEST BEST & KRIEGER LLP

DESIGNATED POSITIONS

GOVERNED BY THE CONFLICT OF INTEREST CODE

DESIGNATED POSITIONS' TITLE OR FUNCTION	DISCLOSURE CATEGORIES ASSIGNED
Administrative Assistant (Copy Center)	4
Applications Development & Support Manager	5
Assistant Manager of Maintenance	5
Assistant Manager of Stores	5
Business Systems Analyst (ALL)	5
Buyer	4
~~Capital Grants Supervisor~~Transit Asset Management Program Manager	2, 4
Chief Human Resources Officer	5
Chief Information Officer	5
Chief of Staff	1
Chief Operating Officer – Rail	1
Chief Operating Officer – Transit Services	1
Creative Design Manager	5
Contract Administrator	4
Controller	1, 2
Datacenter Operations Manager	5
Deputy Director of Transit Enforcement	5
Director of Capital Projects ~~and Real Estate~~	1, 2[3]
Director of Supply & Operations	4

[3] ~~Created through reorganization/reclassification of duties of existing positions – Manager of Capital Project, Manager of Real Estate Assets and Project Manager – Capital Projects.~~

DESIGNATED POSITIONS' TITLE OR FUNCTION	DISCLOSURE CATEGORIES ASSIGNED
Director of Financial Planning & Analysis	1, 2
Director of Fleet and Facility Maintenance	5
Director of Human Resources	5
Director of Marketing & Communications	5
Director of Planning	1, 2
Director of Transit System Security	5
Director of Transportation	1
Enterprise Business Solutions Manager	5
Environmental Health & Safety Specialist	5
Superintendent of Facilities ~~Manager~~	5
Fare Systems Administrator	5
Financial Analyst	4
General Counsel	1, 2
Graphic Designer III	5
Information Security & Intelligence Engineer	5
Information Security & Intelligence Manager	5
Internal Auditor	4
Liability Claims Supervisor	1, 2, 7
Manager of Contract Operations & Passenger Facilities	2, 4
Manager of Advertising & Contracts	5
Manager of Benefits & Compensation	5

LAW OFFICES OF
BEST BEST & KRIEGER LLP

DESIGNATED POSITIONS' TITLE OR FUNCTION	DISCLOSURE CATEGORIES ASSIGNED
Manager of Capital Projects ~~(duties reorganized)~~	1, 2
Manager of Government Affairs	1
Manager of Human Resources	5
Manager of Inventory Operations	4
Division Manager of Maintenance	5
Manager of Paratransit & Mini Bus	5
Manager of Procurement	4
Manager of Real Estate Assets ~~(duties reorganized)~~	1, 2
Manager of Risk and Claims	1, 2, 7
Manager of Scheduling	5
Manager of Service Quality – Rail Division	5
~~Manager~~ Director of Support Services	2, 3, 5
Network Operations Manager	5
Operating Budget Supervisor	1, 2
Procurement Specialist (ALL)	4
Project Engineer (Rail)	1, 2
Project Manager – Capital Projects ~~(duties reorganized)~~	2, 3, 5
Regulatory Enforcement Supervisor	6
Report Development Analyst	5
Revenue Maintenance Supervisor	5
~~Revenue Manager (ALL)~~Supervisor of Revenue Operations	5

DESIGNATED POSITIONS' TITLE OR FUNCTION	DISCLOSURE CATEGORIES ASSIGNED
Revenue Supervisor	5
Right-of-Way Engineer	1, 2
SAP System Administrator	5
Senior Human Resources Analyst	5
Senior Transportation Planner	1, 2
Staff Attorney – Regulatory Compliance	2, 5, 6, 7
Superintendent of LRV Maintenance	5
Superintendent of Transportation	5
Superintendent of Wayside Maintenance	5
Supervisor of Paratransit & Mini Bus	5
Systems Engineer (Rail)	1, 2
Talent Acquisition Manager	5
~~Taxicab~~ For-Hire Vehicle Administration Manager	5
Transportation Operations Specialist (ALL)	2, 5
Senior Worker's Compensation Analyst	7
~~ZEB Performance Analyst~~Zero Emission Bus Project Specialist	5

Consultant and New Positions[4]

[4] Individuals serving as a Consultant defined in Regulation 18700.3, or in a new position created since this Code was last amended that makes or participates in making decisions shall disclose pursuant to the broadest disclosure category in this Code subject to the following limitation:

The Chief Executive Officer may determine that, due to the range of duties or contractual obligations, it is more appropriate to assign a limited disclosure requirement. A clear explanation of the duties and a statement of the extent of the disclosure requirements must be in a written document. (Gov. Code Sec. 82019; FPPC Regulations 18219 and 18734.). The Chief Executive

DESIGNATED POSITIONS' TITLE OR FUNCTION	DISCLOSURE CATEGORIES ASSIGNED

Officer's determination is a public record and shall be retained for public inspection in the same manner and location as this Conflict of Interest Code. (Gov. Code Sec. 81008.)

PART "B"

DISCLOSURE CATEGORIES

The disclosure categories listed below identify the types of economic interests that the designated position must disclose for each disclosure category to which he or she is assigned.[3] "Investment" means financial interest in any business entity (including a consulting business, or other independent contracting business) and are reportable if they are either located in, doing business in, planning to do business in, or have done business during the previous two years in the jurisdiction of MTS.

Category 1: All investments and business positions in business entities, and sources of income, including gifts, loans and travel payments, that are located in, do business in or own real property within the jurisdiction of MTS.

Category 2: All interests in real property which is located in whole or in part within, or not more than two (2) miles outside, the jurisdiction of MTS, including any leasehold, beneficial or ownership interest or option to acquire property.

Category 3: All investments and business positions in business entities, and sources of income, including gifts, loans and travel payments, that are engaged in land development, construction or the acquisition or sale of real property within the jurisdiction of MTS.

Category 4: All investments and business positions in business entities, and sources of income, including gifts, loans and travel payments, that provide services, products, materials, machinery, vehicles or equipment of a type purchased or leased by MTS.

Category 5: All investments and business positions in business entities, and sources of income, including gifts, loans and travel payments, that provide services, products, materials, machinery, vehicles or equipment of a type purchased or leased by the designated position's department, unit or division.

Category 6: All investments and business positions in business entities, and sources of income, including gifts, loans and travel payments, subject to the

[3] This Conflict of Interest Code does not require the reporting of gifts from outside this agency's jurisdiction if the source does not have some connection with or bearing upon the functions of the position. (Reg. 18730.1)

regulatory, permit, or licensing authority of the designated position's department, unit or division.

Category 7: All investments and business positions in business entities, and sources of income, including gifts, loans, and travel payments, if such entities or sources have filed claims against MTS in the past 2 years, or have a claim pending before MTS.

Category 8: Disclose investments and business positions in business entities, and sources of income, including gifts, loans and travel payments, that are located in, do business in, or own real property within the geographical area of, and within two miles of, the designated position's assigned project area.

Metropolitan Transit System

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Agenda Item No. 8

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

September 17, 2020

SUBJECT:

FISCAL YEAR (FY) 2019-2020 AND FY 2020-2021 CALIFORNIA SENATE BILL (SB) 1 STATE OF GOOD REPAIR (SGR) FUNDING

RECOMMENDATION:

That the San Diego Metropolitan Transit System (MTS) Board of Directors approve Resolution No. 20-18 (in substantially the same format as Attachment A), in order to:

1) Authorize the use of, and application for, $4,955,508.00 in FY 2020-21 State of Good Repair funding to be used for the 40-foot Bus Replacement Project in FY 2021-22; and

2) Approve the acceptance of an additional $54,235.03 in FY 2019-20 SB1-SGR funding to bring the total FY 2019-20 allocation to $4,643,615.03

Budget Impact

The State Controller's Office estimates that MTS will receive $4,955,508.00 in FY 2020-21 SB1-SGR funding and does not require matching.

The State Controller's Office also allocated an additional $54,235.03 in FY 2019-2020 SB1-SGR funding that is available to MTS.

DISCUSSION:

The Road Repair and Accountability Act of 2017, SB 1 (Chapter 5, Statues of 2017), signed by the Governor on April 28, 2017, includes a program that will provide additional revenues for transit infrastructure repair and service improvements. This investment in public transit is referred to as the SGR program. This program provides funding of approximately $105 million annually to the State Transit Assistance (STA) Account.

Metropolitan Transit System (MTS) is a California public agency comprised of San Diego Transit Corp., San Diego Trolley, Inc. and San Diego and Arizona Eastern Railway Company (nonprofit public benefit corporations). MTS is the taxicab administrator for seven cities.

MTS member agencies include the cities of Chula Vista, Coronado, El Cajon, Imperial Beach, La Mesa, Lemon Grove, National City, Poway, San Diego, Santee, and the County of San Diego.

These funds are to be made available for eligible transit maintenance, rehabilitation, and capital projects.

The SGR Program is funded from a portion of a new Transportation Improvement Fee on vehicle registrations due on or after January 1, 2018. A portion of this fee will be transferred to the State Controller's Office (SCO) for the SGR Program. These funds will be allocated under the STA Program formula to eligible agencies pursuant to Public Utilities Code (PUC) section 99312.1. Half is allocated to population and half according to transit operator revenues.

The SGR funding program requires agencies to agree to comply with all conditions and requirements set forth in the STA, SGR Program Recipient Certifications and Assurances. The SGR program also requires that the agencies' governing body authorize the Chief Executive Officer (CEO) or designated representative to execute all required documents of the SGR program.

The SGR program requires that transit operators submit a list of all projects that will be funded with SGR funding by September 1, 2020. MTS staff has identified the 40-foot Bus Procurement Project in FY 2022 as a project meeting the SGR funding requirements. The project will replace 37 40-foot CNG buses in FY 2022. The total budget for this procurement is currently estimated at $21.8 million. This funding can be used to purchase either CNG or Zero Emission Buses. MTS will use a combination of Federal 5307, Federal 5339 and local funding (including $4.95 million from SGR) to fund this project. It will be included in the FY 2022 Capital Improvement Program (CIP).

Therefore, staff recommends that the MTS Board of Directors approve Resolution No. 20-18, in order to:

1) Authorize the use of, and application for, $4,955,508.00 in FY 2020-21 State of Good Repair funding to be used for the 40-foot Bus Replacement Project in FY 2021-22; and

2) Approve the acceptance of an additional $54,235.03 in FY 2019-20 SB1-SGR funding to bring the total FY 2019-20 allocation to $4,643,615.03

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Julia Tuer, 619.557.4515, Julia.Tuer@sdmts.com

Attachment: A. Resolution No. 20-18

SAN DIEGO METROPOLITAN TRANSIT SYSTEM

RESOLUTION NO. 20-18

Resolution Approving the Revised Fiscal Year (FY) 2019-2020 and FY 2020-2021 SB 1 State of Good Repair Claim

WHEREAS the San Diego Metropolitan Transit System (MTS) is an eligible project sponsor and may receive State Transit Assistance (STA) funding from the State of Good Repair Account (SGR) for transit projects; and

WHEREAS, the statutes related to state-funded transit projects require a local or regional implementing agency to abide by various regulations; and

WHEREAS, Senate Bill 1 (2017) named the Department of Transportation (Caltrans) as the administrative agency for the SB1-SGR program; and

WHEREAS, the Department has developed guidelines for the purpose of administering and distributing SGR funds to eligible project sponsors (local agencies); and

WHEREAS, MTS wishes to delegate authorization to execute these documents and any amendments there to the Chief Executive Officer; and

WHEREAS, in order to qualify for the SB1-SGR funding allocation, MTS is required to submit a proposed project list to Caltrans on an annual basis and for FY 2020-2021, MTS proposes to fund the 40-foot Bus Replacement Project; and

WHEREAS, MTS wishes to authorize the use of, and application for, $4,955,508 in FY 2020-2021 SB1-SGR funding to be used for the 40-foot Bus Replacement Project; and

WHEREAS, the State Controller's Office has informed MTS that it has an additional $54,235.05 in FY 2019-20 State of Good Repair Funding available, bringing the total 2019-20 allocation to $4,643,615.03.

NOW, THEREFORE, BE IT RESOLVED, DETERMINED, AND ORDERED that the MTS Board does hereby direct and empower MTS staff to prepare and transmit allocation instructions to the County Auditor to disburse to MTS the FY 2020-2021 SGR amounts totaling $4,955,508 for the 40-foot Bus Replacement Project, and authorize the acceptance of an additional $54,235.03 in FY 2019-2020 SGR funding.

PASSED AND ADOPTED, by the Board of Directors this 17th day of September 2020, by the following vote:

AYES:

NAYS:

ABSENT:

ABSTAINING:

_____
Chairperson
San Diego Metropolitan Transit System

Filed by:

_____
Clerk of the Board
San Diego Metropolitan Transit System

Approved as to form:

_____
Office of the General Counsel
San Diego Metropolitan Transit System

Resolution No. 20-18

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101-7490
(619) 231-1466 • FAX (619) 234-3407

Agenda Item No. 9

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

September 17, 2020

SUBJECT:

OCCUPATIONAL HEALTH SERVICES - CONTRACT AMENDMENTS

RECOMMENDATION:

That the San Diego Metropolitan Transit System (MTS) Board of Directors authorize the Chief Executive Officer (CEO) to reallocate contract capacity between contracts G1944.2-17 with Kaiser Permanente and G2069.2-18 with Concentra. The amended amounts for each contract are based on actual usage during the base period of these contracts, and will not exceed the original total contract dollar amount of $762,204.00.

Budget Impact

These services are locally funded through the Operating Budget account number 711010-571160 (Human Resources Department).

DISCUSSION:

On November 9, 2017, the MTS Board of Directors approved a contract award to the following firms for the provision of occupational health services:

Contract No.	Contractor	Contract Award (Base + Options)
G1944.0-17	Kaiser Permanente	$599,265.00
G2069.0-18	Concentra	$122,542.00
G2070.0-18	UCSD Health	$40,397.00

For the past three years, the three providers listed above have been providing occupational health services to MTS. These contracts are intended to fulfill MTS's need for qualified medical providers to conduct comprehensive pre-placement, second opinion and fit-for-duty medical examinations, as well as Department of Transportation mandated, post-accident and reasonable suspicion drug testing.

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Over the last three years, the actual usage of G1944.0-17 (Kaiser Permanente) and G2069.0-18 (Concentra) varied from the originally submitted contract amounts. The primary reason why there is additional usage of the Concentra contract is due to additional convenient locations and more flexibility with appointment options compared to Kaiser Permanente. Based on actual usage, MTS staff determined the following amounts are reflective of the actual authority needed for each contract through the base and option years.

Contract No.	Contractor	Revised Contract Award (Base + Options)	Modification
G1944.0-17	Kaiser Permanente	$339,265.00	($260,000.00)
G2069.0-18	Concentra	$382,542.00	+ $260,000.00
G2070.0-18	UCSD Health	$40,397.00	No change

Therefore, staff recommends that the MTS Board of Directors authorize the CEO to reallocate contract capacity between contracts G1944.2-17 with Kaiser Permanente and G2069.2-18 with Concentra. The amended amounts for each contract are based on actual usage during the base period of these contracts, and will not exceed the original total contract dollar amount of $762,204.00.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Julia Tuer, 619.557.4515, Julia.Tuer@sdmts.com

Attachments: A. Draft MTS Doc. No. G1944.2-17
B. Draft MTS Doc. No. G2069.2-18

Metropolitan Transit System

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Amendment 2

September 17, 2020 MTS Doc No. G1944.2-17

OCCUPATIONAL HEALTH SERVICES

Kaiser Permanente, Kaiser On-the-Job
Thomas W. Wang, MD
1800 Harrison, 9th Floor
Oakland CA, 94612

Dear Dr. Wang:

This shall serve as Amendment No.2 to the original agreement G1944.0-17 as further described below.

SCOPE

Kaiser Permanente has performed the contracted services successfully. There shall be no changes to the scope of work.

SCHEDULE

Under this Amendment, MTS hereby exercises Option Years 1-3 to extend the contract through November 30, 2023.

PAYMENT

Due to a decrease in the need for services under this agreement, the overall contract amount with Kaiser Permanente is hereby reduced by $260,000 for base and option years. The total not to exceed contract amount shall be $339,265 inclusive of base and option years.

Please sign and return the copy marked *original* to the Contract Specialist at MTS. All other terms and conditions shall remain the same and in effect. Retain the other copies for your records.

Sincerely,

Sharon Cooney, Chief Executive Officer

Agreed:

Thomas W. Wang, MD
Kaiser Permanente, Kaiser On-the-Job

Date: _____

DRAFT

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Amendment 2

September 17, 2020 MTS Doc No. G2069.2-18

OCCUPATIONAL HEALTH SERVICES

Occupational Health Centers of California
Dba Concentra Medical Centers
John R. Anderson, Vice President
5080 Spectrum Drive, Suite 1200W
Addison TX, 75001

Dear Mr. Anderson:

This shall serve as Amendment No.2 to the original agreement G2069.0-18 as further described below.

SCOPE

Occupational Health Centers of California has performed the contracted services successfully. There shall be no changes to the scope of work.

SCHEDULE

Under this Amendment, MTS hereby exercises Option Years 1-3 to extend the contract through November 30, 2023.

PAYMENT

Due to an increase in the need for services under this agreement, the overall payment amount to Occupational Health Centers of California is hereby increased by $160,000 for base and option years. The total not to exceed contract amount shall be $382,542 inclusive of base and option years.

Please sign and return the copy marked *original* to the Contract Specialist at MTS. All other terms and conditions shall remain the same and in effect. Retain the other copies for your records.

Sincerely,

Sharon Cooney, Chief Executive Officer

Agreed:

John R. Anderson, Vice President
Occupational Health Centers of San Diego

Date: _____

DRAFT

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Agenda Item No. 10

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

September 17, 2020

SUBJECT:

INVESTMENT REPORT – QUARTER ENDING JUNE 30, 2020

INFORMATIONAL ONLY

Budget Impact

None.

DISCUSSION:

Attachment A comprises a report of the San Diego Metropolitan Transit System (MTS) investments as of June 30, 2020. The combined total of all investments has increased quarter to quarter from $115.4 million to $124.2 million. This $8.8 million increase is attributable to $16.1 million in capital expenditures subsidy reimbursement from San Diego Association of Governments (SANDAG) relating to the Light-Rail Vehicle (LRV) procurement, $8.4 million in Compressed Natural Gas (CNG) rebate revenue, $8.2 million in State Transit Assistance (STA) funding, partially offset by $24.1 million in capital expenditures, as well as normal timing differences in other payments and receipts.

The first column provides details about investments restricted for capital improvement projects.

The second column, unrestricted investments, reports the working capital for MTS operations allowing payments for employee payroll and vendors' goods and services.

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MTS remains in compliance with Board Policy 30 and is able to meet expenditure requirements for a minimum of the next six months as required.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Julia Tuer, 619.557.4515, julia.tuer@sdmts.com

Attachment: A. Investment Report for the Quarter Ending June 30, 2020.

San Diego Metropolitan Transit System
Investment Report
June 30, 2020

Institution / Issuer	Function	Investment Type	Restricted	Unrestricted	Total	Avg. Rate of Return		Benchmark
J.P. Morgan Chase	Operating Funds	Depository Bank	-	34,986,339	34,986,339	0.04%	*	0.260% WSJ Money Market
U.S. Bank - Retention Trust Account	Restricted for Capital Support	Depository Bank	7,735,565	-	7,735,565	N/A	**	-
San Diego County Treasurer's Office	Prop 1B TSGP Grant Funds	Investment Pool	12,391,884	-	12,391,884	1.874%		1.295% S&P US T-Bill 0-3 Mth Index
Subtotal: Restricted for Capital Support			**20,127,450**	-	**20,127,450**			
Local Agency Investment Fund (LAIF)	Investment of Surplus Funds	Investment Pool	-	42,722,737	42,722,737	1.217%		1.295% S&P US T-Bill 0-3 Mth Index
San Diego County Treasurer's Office	Investment of Surplus Funds	Investment Pool	-	26,410,577	26,410,577	1.874%		1.295% S&P US T-Bill 0-3 Mth Index
Subtotal: Investment Surplus Funds			-	**69,133,314**	**69,133,314**			
Grand Total Cash and Investments			**$ 20,127,450**	**$ 104,119,652**	**$ 124,247,102**			

*-The .04% is an annual percentage yield on the average daily balance that exceeds $22 million
** - Per trust agreements, interest earned on retention account is allocated to trust beneficiary (contractor)

Metropolitan Transit System

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Agenda Item No. 11

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

September 17, 2020

SUBJECT:

PRINTING TIMETABLES – CONTRACT AWARD

RECOMMENDATION:

That the San Diego Metropolitan Transit System (MTS) Board of Directors authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. G2381.0-20 (in substantially the same format as Attachment A), with Southwest Offset Printing Co., Inc. ("SOP"), for printing services, in the amount of $1,440,751.59, for seven (7) years effective December 1, 2020.

Budget Impact

The total budget for this project shall not exceed $1,440,751.59 and is funded through the MTS Operating account number 902010-571220.

DISCUSSION:

MTS Bus Operations, ACCESS & ADA Service and Trolley Operations connect people to work, school, shopping, medical appointments, cultural sites and various events. Timetables inside each mode of service are an important piece of the information customers need to ride each day.

The Contractor, SOP, will print timetables for distribution to bus and trolley riders. The services include providing all the necessary labor, equipment, printing materials and supplies and delivering the timetables to various designated MTS locations (in substantially the same format as Attachment B).

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On May 22, 2020 MTS issued a Request for Proposals (RFP) for printing services. Five (5) proposals were received by the due date of July 6, 2020 from:

1. DPI Direct, Poway, CA 92064
2. House of Ideas, San Diego, CA 92115
3. International Security Products (ISP), Paso Robles, CA 93446
4. Neyenesch Printers Inc. (Small Business), San Diego, CA 92101
5. Southwest Offset Printing Co., Inc. (SOP), Gardena, CA 90249

House of Ideas and Neyenesch were deemed non-responsive for only submitting costs and no technical proposals, and their proposals were rejected.

A selection committee consisting of representatives from MTS Bus, Finance and Marketing met and scored the proposals based on the following criteria:

1. Staffing, Organization, and Management Plan	15%
2. Contractor Responsiveness and Flexibility	15%
3. Qualifications of the Firm or Individual	20%
4. Work Plan	25%
5. Cost	25%
	Total 100%

The following table represents the proposer's scores and rankings following the initial evaluations:

Proposer	Technical Score	Cost Score	Total	Ranking
SOP	65.33	25.00	90.33	1
ISP	60.17	22.10	82.27	2
DPI Direct	45.67	19.15	64.82	3

The initial costs are shown below:

Proposer	Initial Cost
SOP	$1,440,751.59
ISP	$1,629,909.00
DPI Direct	$1,880,723.17

After the initial review, the evaluation team determined that SOP and ISP's proposals were top ranked and agreed it would be in MTS's best interest to obtain revised proposals for clarifications and revised costs (in substantially the same format as Attachment C).

On July 27, 2020, MTS received revised proposals and on July 29, 2020 the selection committee rescored the revised proposals.

Neither proposer revised their costs, and the following table represents the proposers' scores and rankings following the revised proposals evaluations:

Proposer	Technical Score	Cost Score	Total	Ranking
SOP	71.00	25.00	96.00	1
ISP	63.67	22.10	85.77	2

The selection committee determined that SOP remained the top ranked firm and invited them to interview. At the interview on August 4, 2020, SOP further discussed their experience and staffing, and presented their online portal that MTS would use to submit print jobs.

After the interview, the selection committee concluded that SOP's offer presented the best value to MTS, and it would be in MTS's best interest to proceed with them as the selected proposer.

Comparing SOP's total cost at $1,440,751.59 to the MTS Independent Cost Estimate (ICE) at $1,564,511.30 is a cost that staff deems to be fair and reasonable.

Therefore, staff recommends that the MTS Board of Directors authorize the CEO to execute MTS Doc. No. G2381.0-20 (in substantially the same format as Attachment A), with SOP, for printing services, in the amount of $1,440,751.59, for seven (7) years effective December 1, 2020.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Julia Tuer, 619.557.4515, Julia.Tuer@sdmts.com

Attachments: A. Draft Standard Procurement Agreement MTS Doc. No. G2381.0-20
B. Scope of Work
C. Costs

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101
Tel 619.231.1466 Fax 619.234.3407

STANDARD AGREEMENT

FOR

MTS DOC. NO. G2381.0-20

PRINTING TIMETABLES

THIS AGREEMENT is entered into this _____ day of _____, 2020 in the State of California by and between San Diego Metropolitan Transit System ("MTS"), a California public agency, and the following, hereinafter referred to as "Contractor":

Name: Southwest Offset Printing Co., Inc

Address: 13650 Gramercy Place

Gardena CA 90249
City State Zip

Form of Business: Corporation
(Corporation, Partnership, Sole Proprietor, etc.)

Email : b.jarrin@southwestoffset.com

Telephone: (310) 965-9102

Authorized person to sign contracts Bruce Jarrin (Name) Sales Executive (Title)

The Contractor agrees to provide goods and services as specified in the conformed Scope of Work/Technical Specification (Exhibit A), Contractor's Cost/Pricing Form (Exhibit B), and in accordance with the Standard Agreement, including Standard Conditions (Exhibit C) and Forms (Exhibit D).

The contract term is for up to (7) years effective December 1, 2020 through November 30, 2027.

Payment terms shall be net 30 days from invoice date. The total cost of this contract shall not exceed $1,440,751.59 without the express written consent of MTS.

SAN DIEGO METROPOLITAN TRANSIT SYSTEM	SOUTHWEST OFFSET PRINTING CO., INC
By: _____ Sharon Cooney, Chief Executive Officer	By _____
Approved as to form:	
By: _____ Karen Landers, Office of General Counsel	Title: _____

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SCOPE OF WORK/TECHNICAL SPECIFICATIONS

5.1. INTRODUCTION

MTS on behalf of San Diego Transit Corp., (which is MTS's Bus division) and San Diego Trolley Inc., (which is MTS's Trolley division), is soliciting proposals from qualified firms to print timetables for distribution to its customers.

Bus and trolley services connect people to work, school, shopping, medical appointments, cultural sites and events. The timetables are an important piece of the information customers need to ride the bus and trolley.

Contractor will provide timetable printing services including but not limited to the necessary labor, equipment, materials, supplies, press cleaning and set up for the following:

A. MTS Bus Operations
B. MTS ACCESS & ADA Service
C. MTS Trolley Operations

The agreement will be for seven (7) years effective December 1, 2020 to November 31, 2027.

5.2. TASKS TO BE PERFORMED

Contractor shall be responsible for the following tasks:

A. Upon receipt of artwork from MTS, Contractor shall prepare proofs and plates necessary for the printing of timetables within specified time frame.

B. Print with proofs, fold, package, and deliver timetables to the locations shown in this scope of work.

5.3. ALL-INCLUSIVE COSTS

The cost proposal shall be all-inclusive (with the exception of sales tax), including but not limited to labor, printing costs, supplies, press cleaning and setup, and all other production costs.

The unit cost shall include the production of "blue line" quality proofs (clean, crisp, press quality proofs) following any changes to art, map, or copy for approval by MTS. There shall be no additional charge for subsequent blue lines, which are required for approval unless they are required as the result of changes by MTS. All plate/proof charges shall be incorporated into the cost proposal.

If MTS has a requirement to produce a new timetable, for a route not included in the annual quantities section of the specifications, the unit price for production of that timetable shall be consistent with routes of equivalent function and scale.

The cost shall include courier service and/or delivery of all printed items to the locations specified by MTS.

MTS will not pay additional costs.

5.4. COST PROPOSAL FORMS INSTRUCTIONS

Proposers shall use the cost proposal forms provided in this RFP. Proposers are required to submit firm fixed pricing for all seven (7) years. A “sample” completed cost form is provided herein for reference only.

There are two (2) sections/tables for each year on the cost proposal forms. Proposers are required to fill out and formulate the cost forms for all years by following the instructions below:

A. Price Break per Timetables via Quantities

In this section/table, Proposers are required to fill in each cell with the cost of each timetable size being ordered at the specific quantity range. This will be the firm fixed price charged to MTS when ordering timetables during the year within that range.

B. Quantity Ordered

In this next section/table, MTS included the estimated quantities of timetables that are anticipated to be ordered each year by the number ordered at a given time. The total value of the contract and your proposal will be based on these tables. With the “Price Break per Timetables via Quantities” section filled in this table will auto populate those given values. Do not change the “Yearly Quantity” listed in this section.

Yearly Quantity: Please note that the stated quantity in this section is more than the actual range.

For example: 8.5” x 11” paper size, yearly quantity listed is 25,000 timetables under range >9,999. This means that there were multiple orders made of less than >9,999 during the year. Total quantity ordered ultimately equaled 25,000 timetables for the year for the 8.5” x 11” paper size.

To calculate the yearly quantity, please use the formula below:
Unit Price x Yearly Quantity = Total

Be sure to subtotal each section if there are multiple paper sizes being ordered within the range and provide a total for each year.

Note: The estimated yearly quantities are for proposing purposes only, and do not reflect actual amounts to be printed. The estimated quantities do not commit MTS to authorize any printing services. Amounts may be more or less than indicated and will depend on MTS actual needs.

MTS TIMETABLE SPECIFICATIONS			YEAR ONE (1/1/14 through 12/31/14) Price Break per Timetable via Quantities						
ROUTE	PAPER SIZE	No. of Colors	> 9,999	< 19,999	20,000-24,999	25,000 - 34,999	35,000 - 49,999	50,000 - 74,999	75,000 <
Trolley	14.5" x 21.25"	4	$ 0.1600	$ 0.1570	$ 0.1568	$ 0.1567	$ 0.1557	$ 0.1501	$ 0.1471
Bus Route	11" x 21"	1	$ 0.0610	$ 0.0589	$ 0.0570	$ 0.0520	$ 0.0490	$ 0.0480	$ 0.0455
MTS ADA	11" x 17"	2	$ 0.0500	$ 0.0489	$ 0.0479	$ 0.0465	$ 0.0460	$ 0.0458	$ 0.0455
Bus Route	11" x 17"	1	$ 0.0511	$ 0.0478	$ 0.0467	$ 0.0457	$ 0.0447	$ 0.0440	$ 0.0430
Bus Route	8.5 x 11"	1	$ 0.0416	$ 0.0316	$ 0.0316	$ 0.0302	$ 0.0300	$ 0.0298	$ 0.0292

SAMPLE

YEAR ONE (1/1/14 through 12/31/14)														
Paper Size	# of Colors	Quantity Ordered > 9,999			10,000 - 19,999			20,000 - 24,999			25,000 - 34,999			
		Unit Price	Yearly Quantity	Total	Unit Price	Yearly Quantity	Total	Unit Price	Yearly Quantity	Total	Unit Price	Yearly Quantity	Total	
14.5" x 21.25"	4													
11" x 21"	1													
11" x 17"	2													
11" x 17"	1				0.04784	300,000	$ 14,352.00				0.04565	640,000	$ 29,216.00	
8.5" x 11"	1	0.04160	25,000	$ 1,040.00	0.03160	905,000	$ 28,598.00	0.03160	400,000	$ 12,640.00	0.03016	995,000	$ 30,009.20	
Totals				$ 1,040.00			$ 42,950.00			$ 12,640.00			$ 59,225.20	

Paper Size	# of Colors	Quantity Ordered 35,000 - 49,999			50,000 - 74,999			75,000 +				
		Unit Price	Yearly Quantity	Total	Unit Price	Yearly Quantity	Total	Unit Price	Yearly Quantity	Total		
14.5" x 21.25"	4							0.14707	250,000	$ 36,767.50		
11" x 21"	1				0.04800	25,000	$ 1,200.00				CA Sales Tax 8.00%	$ 15,221.16
11" x 17"	2	0.04600	25,000	$ 1,150.00								
11" x 17"	1	0.04469	420,000	$ 18,769.80	0.04400	375,500	$ 16,522.00					
8.5" x 11"	1										Base Year 1 Grand Total	$ 205,485.66
Totals				$ 19,919.80			$ 17,722.00			$ 36,767.50		

* The quantities on this bid form are for bidding purposes only. MTS estimates this to be its usage but does not guarantee this quantity. The actual quantity ordered may be more or less than estimated on the form and is dictated by MTS's actual usage.

5.5. TRIM SIZE SPECIFICATIONS

A. MTS Bus Timetables

Bus schedules are printed in three (3) different sizes:

i. 11" x 17";
ii. 8.5” x 11”; and
iii. 11” x 21”

Approximately thirty-one routes trim to 11” x 17” and thirty-eight trim to 8.5” x 11”. Route #7 trims to 11” x 21”. All timetables must be folded to a size of 3.625" x 4.25".

B. MTS ACCESS/ADA Brochures

This brochure trims at 11” x 17” and folds down to 3.625" x 4.25”.

C. MTS Trolley Timetables

The trolley timetables trim down to 14.5” x 21.25” and folds down to 3.625" x 4.25”.

FOLDING NOTE: All of the above pieces, A, B, & C, fold down to 3.625”w x 4.25”h so they can all be displayed in uniform display rack together.

5.6. PAPER REQUIREMENTS

A. MTS Bus Timetables

All bus timetables will be printed on 50 lb., Standard Recycled White Offset Uncoated paper.

The stock needs to have decent opacity so there is little to no show through as they print 2-sided, and fold with a clean line.

B. MTS ACCESS/ADA Brochures

This piece is printed on a 50 lb. Standard Recycled White Offset Uncoated paper. The stock must have an opacity rating of at least 93% so there is little to no show through as they print 2-sided, and fold with a clean line.

C. MTS Trolley Timetables

The trolley timetables print on a 40 lb. white (bright white if possible) Accent Opaque Offset, uncoated stock. The stock must have an opacity rating of at least 93% so there is little to no show through as they print 2-sided, and fold with a clean line.

5.7. INK

A. MTS Bus Timetables

MTS bus timetables will be printed on a white paper using Solid PMS Uncoated ink colors to be determined by MTS. All timetables will print (1/1).

B. MTS ACCESS/ADA Brochures

This brochure prints on white paper using one Solid PMS Uncoated color + 2/2. Ink coverage would be considered “medium”.

C. MTS Trolley Timetables

The trolley timetables print on white paper using four (4) color process printing; 4/4. ***Registration is critical on this piece***. Ink coverage would be considered “medium”.

5.8. STORAGE AND RETENTION

Secure digital art/negatives/plates storage and care must be maintained at all times. Digital art/negatives/plates may not be destroyed until the particular route has been reprinted with copy changes, a minimum of two (2) times. In cases of emergencies, MTS may have a need to make a schedule change that can be handled by telephone instructions and, because of digital art/negatives/plates availability; the changes can be put into effect immediately. All digital art/negatives/plates will remain the property of MTS.

5.9. ORDERING

A. Service Changes

MTS conducts three (3) scheduled system service changes per year (January, June and September). During these periods, MTS introduces new Trolley and Bus route and schedule changes to passengers. Newly designed timetables are required to communicate and market these changes. During these scheduled service change periods, MTS will require that all ordered timetables be delivered two (2) weeks or ten (10) business days prior to the effective service change date. It is imperative that schedules arrive on time to adequately provide passengers the necessary information.

B. Reorders

Not all MTS Trolley and Bus routes change every scheduled service change. Routes that do not change may require reorders of existing timetables when the current inventory is depleted. The lead time for these orders is two (2) weeks or ten (10) business days from the time the order is placed by MTS.

5.10. SPECIAL ORDERS

When and if service changes occur, MTS reserves the right to request different size schedules with different color combinations. With written notice, MTS may request an emergency order to print timetables and delivery within five (5) business days.

5.11. QUANTITY OF ORDERS

A master list of each route and estimated amount of printed copies required will be sent with each order. The schedules change approximately three (3) times per year and major change periods could entail changes from 0 to 94 routes. Reasonable notice will be given in cases where large quantities of paper are to be ordered.

5.12. PACKAGING

All MTS Bus, MTS Trolley, and MTS Access/ADA timetables or brochures must be packaged in bundles of fifty (50) copies in bust proof bands, string, or rubber bands. All boxes used for the packaging of schedules must be the standard size of 18" x 12" x 8" or 11” x 9” x 8” in order to fit in existing storage bins. Packaging of timetables shall not exceed 1,000 timetables per box.

Each box must be identified with a taped-on sample of the schedule and quantity. Each box must be clearly labeled with the following information below:

A. Specific timetable

B. Delivery location

C. Delivery date

5.13. DELIVERIES

Deliveries must be made between the hours of 7:30 a.m. and 4:00 p.m., Monday through Friday, to destinations in San Diego County as specified by MTS. Below is the current list of delivery locations which MTS reserves the right to add or subtract locations at any time.

San Diego Trolley Warehouse
Attn: Storeroom Manager
1341 Commercial Street
San Diego, CA 92113

San Diego Transit – Kearny Mesa Division (KMD)
Attn: Bobby Franklin
4630 Ruffner Street
San Diego, CA 92111

San Diego Transit – Imperial Avenue Division (IAD)
Attn: Ben Stallman
100 16th Street
San Diego, CA 92101

San Diego Transit – Telephone Information
Attn: Robinaire Ruiz
100 16th Street
San Diego, CA 92101

San Diego Transit – Contract Services
Attn: Ben Stallman
100 16th Street
San Diego, CA 92101

Metropolitan Transit System (MTS)
Attn: Melinda Patterson
1255 Imperial Avenue, Suite 1000
San Diego, CA 92101

Transdev South Bay Division
Attn: Juan Silva
3620 Main Street
Chula Vista, CA 91911

Transdev East County Division
Attn: Norma Lahti
544 Vernon Way
El Cajon, CA 92020

First Transit
Attn: Rafael Villegas
7490 Copley Park Place
San Diego, CA 92111

Transit Store
Attn: Adrian Paniagua
1255 Imperial Ave., Ste 100A
San Diego, CA 92101

5.14. PAYMENT TERMS

Unless otherwise stated in the specifications or cost forms, one hundred (100%) of the contract price for each unit or units of material or equipment furnished and delivered under these specifications, will be paid to the Contractor within thirty (30) days after delivery to and acceptance by MTS of the unit or units ordered, as herein provided, and after the statements covering the unit or units have been presented to MTS by the Contractor.

Cash discounts as shown on the bid form shall be accepted at the option of MTS. Otherwise the terms will be Net thirty (30) from acceptance. Payment terms less than ten (10) days from acceptance will not be considered. ***Advanced Payment is Not Allowable***

5.15. INVOICES

Invoices must be sent to the MTS Accounting Department, via email at ap@sdmts.com. All invoices must have the Purchase Order and contract number clearly displayed to ensure timely payment. MTS will not pay on packing slips, receiving documents, delivery documents, or other similar documents. Invoices must be submitted for payment.

Contractors must also indicate if any of the invoiced amount is for service or work provided by a subcontractor and indicate the amount that will be paid to the subcontractor. Contractors must

also comply with the prompt payment requirements in Section 16 Prompt Progress Payments of the Standard Conditions.

PRINTING TIMETABLES: MTS DOC. NO. G2381.0-20

REQUEST FOR REVISED PROPOSALS

NAME OF FIRM: SOUTHWEST OFFSET PRINTING CO., INC.

COST/PRICING FORM

Refer to Attachment: ATT 1 Cost Pricing Form

Read attached General Provisions carefully. They are a part of your proposal. Unit prices will prevail regardless of extensions submitted by the Proposer.

Proposer shall submit pricing for all the work described in the Scope of Work section. In preparing a cost proposal, Proposers are requested to provide a total all-inclusive cost for each year of service. Estimated quantities are for proposal purposes only. The quantities do not reflect guaranteed usage by MTS and may be more or less than indicated.

Pricing should not include sales tax.

Proposer accepts responsibility for accuracy and presentation of the numbers included in the cost form.

Submit the proposal following instructions as specified in Submission Requirements section. All proposers must complete proposal forms as provided, failure to do so will deem the proposal non-responsive.

TOTAL COST SUMMARY FROM ATTACHMENT 1:

YEAR 1 TOTAL COSTS: $190,893.00

YEAR 2 TOTAL COSTS: $195,665.33

YEAR 3 TOTAL COSTS: $200,556.96

YEAR 4 TOTAL COSTS: $205,570.88

YEAR 5 TOTAL COSTS: $210,710.15

YEAR 6 TOTAL COSTS: $215,977.91

YEAR 7 TOTAL COSTS: $221,377.36

7 YEAR TOTAL: $1,440,751.59

Printing Timetables 2020 (ADDENDUM NO. 1) **SOUTHWEST OFFSET**

MTS TIMETABLE SPECIFICATIONS			Year One Price Break per Timetable via Quantities						
ROUTE	PAPER SIZE	No. of Colors	1-9,999	10,000-19,999	20,000-24,999	25,000 - 34,999	35,000 - 49,999	50,000 - 74,999	75,000 +
Trolley	14.5" x 21.25"	4	0.1767	0.1165	0.1049	0.0911	0.0815	0.0718	0.0675
Bus Route	11" x 21"	1	0.1493	0.0972	0.0082	0.0774	0.0697	0.0620	0.0587
MTS ADA	11" x 17"	4	0.0428	0.0428	0.0428	0.0428	0.0428	0.0428	0.0428
Bus Route	11" x 17"	1	0.0428	0.0428	0.0428	0.0428	0.0428	0.0428	0.0428
Bus Route	8.5 x 11"	1	0.0296	0.0296	0.0296	0.0296	0.0296	0.0296	0.0296

Year One

Paper Size	# of Colors	Quantity Ordered: 1- 9,999			10,000 - 19,999			20,000 - 24,999			25,000 - 34,999		
		Unit Price	Yearly Quantity	Total	Unit Price	Yearly Quantity	Total	Unit Price	Yearly Quantity	Total	Unit Price	Yearly Quantity	Total
14.5" x 21.25"	4												
11" x 21"	1										0.08	80,000	$ 6,192.00
11" x 17"	4							0.04	35,000	$ 1,498.00			
11" x 17"	1				0.04	550,000	$ 23,540.00	0.04	650,000	$ 27,820.00	0.04	400,000	$ 17,120.00
8.5" x 11"	1	0.03	40,000	$ 1,184.00	0.03	775,000	$ 22,940.00	0.03	700,000	$ 20,720.00	0.03	400,000	$ 11,840.00
Totals				$ 1,184.00			$ 46,480.00			$ 50,038.00			$ 35,152.00

Paper Size	# of Colors	Quantity Ordered: 35,000 - 49,999			50,000 - 74,999			75,000 +				
		Unit Price	Yearly Quantity	Total	Unit Price	Yearly Quantity	Total	Unit Price	Yearly Quantity	Total		
14.5" x 21.25"	4	0.08	250,000	$ 20,375.00								
11" x 21"	1											
11" x 17"	4											
11" x 17"	1	0.04	505,000	$ 21,614.00	0.04	375,000	$ 16,050.00					
8.5" x 11"	1										Year 1 Total	$ 190,893.00
Totals				$ 41,989.00			$ 16,050.00			$ -		

MTS TIMETABLE SPECIFICATIONS			Year Two Price Break per Timetable via Quantities						
ROUTE	PAPER SIZE	No. of Colors	1-9,999	10,000-19,999	20,000-24,999	25,000 - 34,999	35,000 - 49,999	50,000 - 74,999	75,000 +
Trolley	14.5" x 21.25"	4	$ 0.1811	$ 0.1194	$ 0.1075	$ 0.0934	$ 0.0835	$ 0.0736	$ 0.0692
Bus Route	11" x 21"	1	$ 0.1530	$ 0.0996	$ 0.0084	$ 0.0793	$ 0.0714	$ 0.0636	$ 0.0602
MTS ADA	11" x 17"	4	$ 0.0439	$ 0.0439	$ 0.0439	$ 0.0439	$ 0.0439	$ 0.0439	$ 0.0439
Bus Route	11" x 17"	1	$ 0.0439	$ 0.0439	$ 0.0439	$ 0.0439	$ 0.0439	$ 0.0439	$ 0.0439
Bus Route	8.5 x 11"	1	$ 0.0303	$ 0.0303	$ 0.0303	$ 0.0303	$ 0.0303	$ 0.0303	$ 0.0303

Year Two

Paper Size	# of Colors	Quantity Ordered											
		1- 9,999			10,000 - 19,999			20,000 - 24,999			25,000 - 34,999		
		Unit Price	Yearly Quantity	Total	Unit Price	Yearly Quantity	Total	Unit Price	Yearly Quantity	Total	Unit Price	Yearly Quantity	Total
14.5" x 21.25"	4												
11" x 21"	1										0.08	80,000	$ 6,346.80
11" x 17"	4							0.04	35,000	$ 1,535.45			
11" x 17"	1				0.04	550,000	$ 24,128.50	0.04	650,000	$ 28,515.50	0.04	400,000	$ 17,548.00
8.5" x 11"	1	0.03	40,000	$ 1,213.60	0.03	775,000	$ 23,513.50	0.03	700,000	$ 21,238.00	0.03	400,000	$ 12,136.00
Totals				$ 1,213.60			$ 47,642.00			$ 51,288.95			$ 36,030.80

Paper Size	# of Colors	Quantity Ordered										
		35,000 - 49,999			50,000 - 74,999			75,000 +				
		Unit Price	Yearly Quantity	Total	Unit Price	Yearly Quantity	Total	Unit Price	Yearly Quantity	Total		
14.5" x 21.25"	4	0.08	250,000	$ 20,884.38								
11" x 21"	1											
11" x 17"	4											
11" x 17"	1	0.04	505,000	$ 22,154.35	0.04	375,000	$ 16,451.25					
8.5" x 11"	1										Year 2 Total	$ 195,665.33
Totals				$ 43,038.73			$ 16,451.25			$ -		

MTS TIMETABLE SPECIFICATIONS			Year Three Price Break per Timetable via Quantities						
ROUTE	PAPER SIZE	No. of Colors	1-9,999	10,000-19,999	20,000-24,999	25,000 - 34,999	35,000 - 49,999	50,000 - 74,999	75,000 +
Trolley	14.5" x 21.25"	4	$ 0.1856	$ 0.1224	$ 0.1102	$ 0.0957	$ 0.0856	$ 0.0754	$ 0.0709
Bus Route	11" x 21"	1	$ 0.1569	$ 0.1021	$ 0.0086	$ 0.0813	$ 0.0732	$ 0.0651	$ 0.0617
MTS ADA	11" x 17"	4	$ 0.0450	$ 0.0450	$ 0.0450	$ 0.0450	$ 0.0450	$ 0.0450	$ 0.0450
Bus Route	11" x 17"	1	$ 0.0450	$ 0.0450	$ 0.0450	$ 0.0450	$ 0.0450	$ 0.0450	$ 0.0450
Bus Route	8.5 x 11"	1	$ 0.0311	$ 0.0311	$ 0.0311	$ 0.0311	$ 0.0311	$ 0.0311	$ 0.0311

Year Three														
Paper Size	# of Colors	Quantity Ordered												
		1- 9,999			10,000 - 19,999			20,000 - 24,999			25,000 - 34,999			
		Unit Price	Yearly Quantity	Total	Unit Price	Yearly Quantity	Total	Unit Price	Yearly Quantity	Total	Unit Price	Yearly Quantity	Total	
14.5" x 21.25"	4													
11" x 21"	1										0.08	80,000	$ 6,505.47	
11" x 17"	4							0.04	35,000	$ 1,573.84				
11" x 17"	1				0.04	550,000	$ 24,731.71	0.04	650,000	$ 29,228.39	0.04	400,000	$ 17,986.70	
8.5" x 11"	1	0.03	40,000	$ 1,243.94	0.03	775,000	$ 24,101.34	0.03	700,000	$ 21,768.95	0.03	400,000	$ 12,439.40	
Totals				$ 1,243.94			$ 48,833.05			$ 52,571.17			$ 36,931.57	

Paper Size	# of Colors	Quantity Ordered										
		35,000 - 49,999			50,000 - 74,999			75,000 +				
		Unit Price	Yearly Quantity	Total	Unit Price	Yearly Quantity	Total	Unit Price	Yearly Quantity	Total		
14.5" x 21.25"	4	0.09	250,000	$ 21,406.48								
11" x 21"	1											
11" x 17"	4											
11" x 17"	1	0.04	505,000	$ 22,708.21	0.04	375,000	$ 16,862.53					
8.5" x 11"	1										Year 3 Total	$ 200,556.96
Totals				$ 44,114.69			$ 16,862.53			$ -		

MTS TIMETABLE SPECIFICATIONS			Year Four Price Break per Timetable via Quantities						
ROUTE	PAPER SIZE	No. of Colors	1-9,999	10,000-19,999	20,000-24,999	25,000 - 34,999	35,000 - 49,999	50,000 - 74,999	75,000 +
Trolley	14.5" x 21.25"	4	$ 0.1903	$ 0.1255	$ 0.1130	$ 0.0981	$ 0.0878	$ 0.0773	$ 0.0727
Bus Route	11" x 21"	1	$ 0.1608	$ 0.1047	$ 0.0088	$ 0.0834	$ 0.0751	$ 0.0668	$ 0.0632
MTS ADA	11" x 17"	4	$ 0.0461	$ 0.0461	$ 0.0461	$ 0.0461	$ 0.0461	$ 0.0461	$ 0.0461
Bus Route	11" x 17"	1	$ 0.0461	$ 0.0461	$ 0.0461	$ 0.0461	$ 0.0461	$ 0.0461	$ 0.0461
Bus Route	8.5 x 11"	1	$ 0.0319	$ 0.0319	$ 0.0319	$ 0.0319	$ 0.0319	$ 0.0319	$ 0.0319

Year Four														
Paper Size	# of Colors	Quantity Ordered												
		1- 9,999			10,000 - 19,999			20,000 - 24,999			25,000 - 34,999			
		Unit Price	Yearly Quantity	Total	Unit Price	Yearly Quantity	Total	Unit Price	Yearly Quantity	Total	Unit Price	Yearly Quantity	Total	
14.5" x 21.25"	4													
11" x 21"	1										0.08	80,000	$ 6,668.11	
11" x 17"	4							0.05	35,000	$ 1,613.18				
11" x 17"	1				0.05	550,000	$ 25,350.01	0.05	650,000	$ 29,959.10	0.05	400,000	$ 18,436.37	
8.5" x 11"	1	0.03	40,000	$ 1,275.04	0.03	775,000	$ 24,703.87	0.03	700,000	$ 22,313.17	0.03	400,000	$ 12,750.39	
Totals				$ 1,275.04			$ 50,053.88			$ 53,885.45			$ 37,854.86	
Paper Size	# of Colors	Quantity Ordered												
		35,000 - 49,999			50,000 - 74,999			75,000 +						
		Unit Price	Yearly Quantity	Total	Unit Price	Yearly Quantity	Total	Unit Price	Yearly Quantity	Total				
14.5" x 21.25"	4	0.09	250,000	$ 21,941.65										
11" x 21"	1													
11" x 17"	4													
11" x 17"	1	0.05	505,000	$ 23,275.91	0.05	375,000	$ 17,284.09							
8.5" x 11"	1										Year 4 Total		$ 205,570.88	
Totals				$ 45,217.56			$ 17,284.09			$ -				

MTS TIMETABLE SPECIFICATIONS			Year Five Price Break per Timetable via Quantities						
ROUTE	PAPER SIZE	No. of Colors	1-9,999	10,000-19,999	20,000-24,999	25,000 - 34,999	35,000 - 49,999	50,000 - 74,999	75,000 +
Trolley	14.5" x 21.25"	4	$ 0.1950	$ 0.1286	$ 0.1158	$ 0.1006	$ 0.0900	$ 0.0793	$ 0.0745
Bus Route	11" x 21"	1	$ 0.1648	$ 0.1073	$ 0.0091	$ 0.0854	$ 0.0769	$ 0.0684	$ 0.0648
MTS ADA	11" x 17"	4	$ 0.0472	$ 0.0472	$ 0.0472	$ 0.0472	$ 0.0472	$ 0.0472	$ 0.0472
Bus Route	11" x 17"	1	$ 0.0472	$ 0.0472	$ 0.0472	$ 0.0472	$ 0.0472	$ 0.0472	$ 0.0472
Bus Route	8.5 x 11"	1	$ 0.0327	$ 0.0327	$ 0.0327	$ 0.0327	$ 0.0327	$ 0.0327	$ 0.0327

Year Five

Paper Size	# of Colors	Quantity Ordered: 1- 9,999			10,000 - 19,999			20,000 - 24,999			25,000 - 34,999		
		Unit Price	Yearly Quantity	Total	Unit Price	Yearly Quantity	Total	Unit Price	Yearly Quantity	Total	Unit Price	Yearly Quantity	Total
14.5" x 21.25"	4												
11" x 21"	1										0.09	80,000	$ 6,834.81
11" x 17"	4							0.05	35,000	$ 1,653.51			
11" x 17"	1				0.05	550,000	$ 25,983.76	0.05	650,000	$ 30,708.07	0.05	400,000	$ 18,897.28
8.5" x 11"	1	0.03	40,000	$ 1,306.91	0.03	775,000	$ 25,321.47	0.03	700,000	$ 22,871.00	0.03	400,000	$ 13,069.14
Totals				$ 1,306.91			$ 51,305.22			$ 55,232.59			$ 38,801.23

Paper Size	# of Colors	Quantity Ordered: 35,000 - 49,999			50,000 - 74,999			75,000 +				
		Unit Price	Yearly Quantity	Total	Unit Price	Yearly Quantity	Total	Unit Price	Yearly Quantity	Total		
14.5" x 21.25"	4	0.09	250,000	$ 22,490.19								
11" x 21"	1											
11" x 17"	4											
11" x 17"	1	0.05	505,000	$ 23,857.81	0.05	375,000	$ 17,716.20					
8.5" x 11"	1										Year 5 Total	$ 210,710.15
Totals				$ 46,348.00			$ 17,716.20			$ -		

MTS TIMETABLE SPECIFICATIONS			Year Six Price Break per Timetable via Quantities						
ROUTE	PAPER SIZE	No. of Colors	1-9,999	10,000-19,999	20,000-24,999	25,000 - 34,999	35,000 - 49,999	50,000 - 74,999	75,000 +
Trolley	14.5" x 21.25"	4	$ 0.1999	$ 0.1318	$ 0.1187	$ 0.1031	$ 0.0922	$ 0.0812	$ 0.0764
Bus Route	11" x 21"	1	$ 0.1689	$ 0.1100	$ 0.0093	$ 0.0876	$ 0.0789	$ 0.0701	$ 0.0664
MTS ADA	11" x 17"	4	$ 0.0484	$ 0.0484	$ 0.0484	$ 0.0484	$ 0.0484	$ 0.0484	$ 0.0484
Bus Route	11" x 17"	1	$ 0.0484	$ 0.0484	$ 0.0484	$ 0.0484	$ 0.0484	$ 0.0484	$ 0.0484
Bus Route	8.5 x 11"	1	$ 0.0335	$ 0.0335	$ 0.0335	$ 0.0335	$ 0.0335	$ 0.0335	$ 0.0335

Year Six

Paper Size	# of Colors	Quantity Ordered											
		1- 9,999			10,000 - 19,999			20,000 - 24,999			25,000 - 34,999		
		Unit Price	Yearly Quantity	Total	Unit Price	Yearly Quantity	Total	Unit Price	Yearly Quantity	Total	Unit Price	Yearly Quantity	Total
14.5" x 21.25"	4												
11" x 21"	1										0.09	80,000	$ 7,005.68
11" x 17"	4							0.05	35,000	$ 1,694.85			
11" x 17"	1				0.05	550,000	$ 26,633.35	0.05	650,000	$ 31,475.78	0.05	400,000	$ 19,369.71
8.5" x 11"	1	0.03	40,000	$ 1,339.59	0.03	775,000	$ 25,954.50	0.03	700,000	$ 23,442.78	0.03	400,000	$ 13,395.87
Totals				$ 1,339.59			$ 52,587.85			$ 56,613.40			$ 39,771.26

Paper Size	# of Colors	Quantity Ordered										
		35,000 - 49,999			50,000 - 74,999			75,000 +				
		Unit Price	Yearly Quantity	Total	Unit Price	Yearly Quantity	Total	Unit Price	Yearly Quantity	Total		
14.5" x 21.25"	4	0.09	250,000	$ 23,052.44								
11" x 21"	1											
11" x 17"	4											
11" x 17"	1	0.05	505,000	$ 24,454.26	0.05	375,000	$ 18,159.10					
8.5" x 11"	1										Year 6 Total	$ 215,977.91
Totals				$ 47,506.70			$ 18,159.10			$ -		

MTS TIMETABLE SPECIFICATIONS			Year Seven Price Break per Timetable via Quantities						
ROUTE	PAPER SIZE	No. of Colors	1-9,999	10,000-19,999	20,000-24,999	25,000 - 34,999	35,000 - 49,999	50,000 - 74,999	75,000 +
Trolley	14.5" x 21.25"	4	$ 0.2049	$ 0.1351	$ 0.1217	$ 0.1056	$ 0.0945	$ 0.0833	$ 0.0783
Bus Route	11" x 21"	1	$ 0.1731	$ 0.1127	$ 0.0095	$ 0.0898	$ 0.0808	$ 0.0719	$ 0.0681
MTS ADA	11" x 17"	4	$ 0.0496	$ 0.0496	$ 0.0496	$ 0.0496	$ 0.0496	$ 0.0496	$ 0.0496
Bus Route	11" x 17"	1	$ 0.0496	$ 0.0496	$ 0.0496	$ 0.0496	$ 0.0496	$ 0.0496	$ 0.0496
Bus Route	8.5 x 11"	1	$ 0.0343	$ 0.0343	$ 0.0343	$ 0.0343	$ 0.0343	$ 0.0343	$ 0.0343

Year Seven

Paper Size	# of Colors	Quantity Ordered											
		1- 9,999			10,000 - 19,999			20,000 - 24,999			25,000 - 34,999		
		Unit Price	Yearly Quantity	Total	Unit Price	Yearly Quantity	Total	Unit Price	Yearly Quantity	Total	Unit Price	Yearly Quantity	Total
14.5" x 21.25"	4												
11" x 21"	1										0.09	80,000	$ 7,180.82
11" x 17"	4							0.05	35,000	$ 1,737.22			
11" x 17"	1				0.05	550,000	$ 27,299.18	0.05	650,000	$ 32,262.67	0.05	400,000	$ 19,853.95
8.5" x 11"	1	0.03	40,000	$ 1,373.08	0.03	775,000	$ 26,603.37	0.03	700,000	$ 24,028.85	0.03	400,000	$ 13,730.77
Totals				$ 1,373.08			$ 53,902.55			$ 58,028.74			$ 40,765.54

Paper Size	# of Colors	Quantity Ordered										
		35,000 - 49,999			50,000 - 74,999			75,000 +				
		Unit Price	Yearly Quantity	Total	Unit Price	Yearly Quantity	Total	Unit Price	Yearly Quantity	Total		
14.5" x 21.25"	4	0.09	250,000	$ 23,628.75								
11" x 21"	1											
11" x 17"	4											
11" x 17"	1	0.05	505,000	$ 25,065.61	0.05	375,000	$ 18,613.08					
8.5" x 11"	1										Year 7 Total	$ 221,377.36
Totals				$ 48,694.37			$ 18,613.08			$ -		

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101-7490
(619) 231-1466 • FAX (619) 234-3407

Agenda Item No. 12

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

September 17, 2020

SUBJECT:

ENGINEERING AND RIGHT OF WAY SERVICES - WORK ORDER AMENDMENT

RECOMMENDATION:

That the San Diego Metropolitan Transit System (MTS) Board of Directors authorize the Chief Executive Officer (CEO) to execute WOA1947-AE-16.03 under MTS Doc. No. G1947.0-17 (in substantially the same format as Attachment A) with HDR Engineering, Inc. (HDR) in the amount of $618,232.64 to increase the Work Order budget for the continued provision of engineering and right-of-way support services for the MTS Capital Projects Department.

Budget Impact

Today's action will bring the total value of the HDR Work Order No. WOA1947-AE-16 to $1,037,600.38 per the table below:

Work Order No.	Purpose	Amount	Board Approval Date
WOA1947-AE-16	Original Work Order	$419,367.74	05/10/18, Item 17
WOA1947-AE-16.01	Annual Rate Increase	$0.00	n/a
WOA1947-AE-16.02	Annual Rate Increase	$0.00	n/a
WOA1947-AE-16.03	Budget Increase	$618,232.64	Today's Proposed Action
		$1,037,600.38	

HDR Work Order WOA1947-AE-16.03 is funded through MTS Operating account 791010-571140. MTS costs associated with engineering support are reimbursed by permittees / applicants requesting MTS engineering input as part of our standard permit process.

Metropolitan Transit System (MTS) is a California public agency comprised of San Diego Transit Corp., San Diego Trolley, Inc. and San Diego and Arizona Eastern Railway Company (nonprofit public benefit corporations). MTS is the taxicab administrator for seven cities.

MTS member agencies include the cities of Chula Vista, Coronado, El Cajon, Imperial Beach, La Mesa, Lemon Grove, National City, Poway, San Diego, Santee, and the County of San Diego.

DISCUSSION:

Under this work order, the consultant shall provide general engineering and right-of-way services, including: a) general right-of-way coordination, b) technical reviews of right-of-way permit request and plan reviews, c) technical reviews of right-of-entry permit applications and project plans from other agencies, and/or developers, and d) other general engineering and right-of-way related services, such as developing engineering drawings, as-builts, engineering proposals, calculations, material selection, and/or reports for miscellaneous projects within the MTS right-of-way as requested by staff on an as-needed basis.

These services are necessary to assist MTS in providing specific technical expertise and efficient responses to third party project plans on MTS property, and ensure that these project plans do not negatively impact MTS infrastructure and/or assets.

On May 10, 2018, the MTS Board of Directors approved the Worker Order No. WOA1947-AE-16 under MTS Doc. No. G1947.0-17 with HDR in the amount of $419,367.74 to perform approximately 2,777 hours of engineering and right-of-way services for the period of four (4) years. The original Work Order value and hours was an estimate based on 2017-2018 trends.

In the two years following the issuance of the Work Order, MTS has seen an increase in the amount of construction immediately surrounding and within MTS's operating right-of-way. This has resulted in a much larger number of permits requested and an accelerated use of the hours available under the original Work Order. In the first year (June 2018-2019) of the Work Order, the average plan reviews were approximately five plan sets a month. The following year (July 2019-2020) the average plan reviews went up to 13 plan sets per month, or nearly triple the rate at the beginning of the contract. Staff is estimating an additional 2,888 hours of engineering support will be needed to account for the continued level of construction and for the integration of the Mid-Coast trolley extension.

On January 12, 2016, San Diego Association of Governments (SANDAG) and MTS issued a joint Request for Statement of Qualifications (RFSQ) for On-Call Architectural and Engineering (A&E) Design Consulting services. The RFSQ resulted in the approval of eight (8) firms qualified to perform A&E services. Tasks are assigned to the firms through a work order process. MTS selects the most qualified firm based on the scope of work to be performed.

On January 11, 2018, MTS staff issued a Request for Proposals (RFP) to approved A&E firms. On February 13, 2018, MTS received a sole proposal from HDR. MTS staff evaluated HDR's proposal and determined that both HDR and their subconsultant have the engineering experience to fulfill the requirements of this task order.

Staff subsequently negotiated with HDR in an effort to reduce their respective pricing. HDR agreed to cap their administrative hours for the duration of the contract to 8% of the total hours billed by their sub-consultant for the duration of the work order.

Therefore, staff recommends that the MTS Board of Directors authorize the CEO to execute WOA1947-AE-16.03 under MTS Doc. No. G1947.0-17 (in substantially the same format as Attachment A) with HDR in the amount of $618,232.64 to increase the Work Order budget for the continued provision of engineering and right-of-way support services for the MTS Capital Projects Department.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Julia Tuer, 619.557.4515, Julia.Tuer@sdmts.com

Attachment: A. Draft Work Order WOA1947-AE-16.03, MTS Doc. No. G1947.0-17

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101
Tel 619.231.1466 Fax 619.234.3407

September 17, 2020

MTS DOC No. G1947.0-17
Work Order WOA1947-AE-16.03

Mr. Thomas K. Kim
Senior Vice President
HDR Engineering, Inc.
401 B Street, Suite 110
San Diego, CA 92101

Dear Mr. Kim:

Subject: AMENDMENT NO. 3 TO WORK ORDER WOA1947-AE-16, MTS DOC. NO. G1947.0-17; AS-NEEDED ENGINEERING PLAN REVIEW SUPPORT FOR MTS RIGHT-OF-WAY (ROW)

This letter shall serve as Amendment 3 to our agreement for professional services, Work Order WOA1947-AE-16, under the General Engineering Consultant Agreement, MTS Doc. No. G1947.0-17, as further described below.

SCOPE OF SERVICES

There shall be no change to the Scope of Services. This Amendment shall increase the total budget amount of the Work Order.

SCHEDULE

There shall be no change to the Schedule, as a result of this Amendment. The Scope of Services shall remain in effect through May 31, 2022.

PAYMENT

This Amendment shall increase the value of the Work Order by $618,232.64. Payment shall be based on actual costs. The revised total value of the Work Order shall not exceed $1,037,600.38 without prior authorization of MTS.

Sincerely,

Sharon Cooney
Chief Executive Officer

Accepted:

Thomas K. Kim
HDR Engineering, Inc.

Date:_____

DRAFT

Metropolitan Transit System (MTS) is a California public agency comprised of San Diego Transit Corp., San Diego Trolley, Inc. and San Diego and Arizona Eastern Railway Company (nonprofit public benefit corporations). MTS is the taxicab administrator for seven cities. MTS member agencies include the cities of Chula Vista, Coronado, El Cajon, Imperial Beach, La Mesa, Lemon Grove, National City, Poway, San Diego, Santee, and the County of San Diego.

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
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Agenda Item No. 13

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

September 17, 2020

SUBJECT:

DESIGN SERVICES FOR AMERICA PLAZA AND KETTNER BLVD TRACK REPLACEMENT – AWARD WORK ORDER CONTRACT

RECOMMENDATION:

That the San Diego Metropolitan Transit System (MTS) Board of Directors authorize the Chief Executive Officer (CEO) to execute Work Order WOA1947-AE-59 under MTS Doc. No. G1947.0-17 (in substantially the same format as Attachment A) with HDR Engineering, Inc. (HDR), in the amount of $154,736.16 for design services for America Plaza and Kettner Blvd. Track Replacement.

Budget Impact

The value of this Work Order will not exceed $154,736.16, and is funded under the MTS Capital Improvement Program (CIP) Project number 2005112201 - Rail Replacement - America Plaza & Kettner.

DISCUSSION:

This project is for design services necessary to replace the existing rail at America Plaza Trolley Station, and the adjacent grade crossing located at Kettner Boulevard on the Blue Line. The current rail at America Plaza Trolley Station, and the existing grade crossing at Kettner Boulevard are at the end of useful service life and require replacement. Once the Mid-Coast project is complete, this section of the Blue Line will have increased trolley service, therefore, increasing the need for the project.

Once the design is complete, it is anticipated the construction for this project will be funded through the fiscal year (FY) 2022 Capital Improvement Project budget.

Metropolitan Transit System (MTS) is a California public agency comprised of San Diego Transit Corp., San Diego Trolley, Inc. and San Diego and Arizona Eastern Railway Company (nonprofit public benefit corporations). MTS is the taxicab administrator for seven cities.

MTS member agencies include the cities of Chula Vista, Coronado, El Cajon, Imperial Beach, La Mesa, Lemon Grove, National City, Poway, San Diego, Santee, and the County of San Diego.

On January 12, 2016, San Diego Association of Governments (SANDAG) and MTS issued a joint Request for Statement of Qualifications (RFSQ) for On-Call Architectural and Engineering (A&E) Design Consulting services. The RFSQ resulted in the approval of 8 firms qualified to perform A&E services. Tasks are assigned to the firms through a work order process. MTS selects the most qualified firm based on the scope of work (SOW) to be performed.

MTS staff reviewed the approved A&E firms and utilizing a direct award process, selected HDR to perform the requisite services. HDR had previously completed design work for track replacement along the Blue Line and therefore they are uniquely qualified to complete this portion of work.

HDR's initial proposed amount was $160,008.53. Through negotiations with HDR, staff was able to reduce the Work Order amount by $5,272.37. HDR's revised proposal of $154,736.16 was $43.84 less than MTS's Independent Cost Estimate (ICE). Thus, MTS determined that HDR's pricing was fair and reasonable.

Therefore, staff recommends that the MTS Board of Directors authorize the CEO to execute Work Order WOA1947-AE-59 under MTS Doc. No G1947.0-17 (in substantially the same format as Attachment A) with HDR, in the amount of $154,736.16 for design services for America Plaza and Kettner Blvd. Track Replacement.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Julia Tuer, 619.557.4515, Julia.Tuer@sdmts.com

Attachment: A. Draft Work Order WOA1947-AE-59, MTS Doc. No. G1947.0-17

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101
Tel 619.231.1466 Fax 619.234.3407

September 17, 2020

MTS DOC No. G1947.0-17
Work Order WOA1947-AE-59

Mr. Thomas K. Kim
Senior Vice President
HDR Engineering, Inc.
401 B Street, Suite 110
San Diego, CA 92101

Dear Mr. Kim:

Subject: MTS DOC. NO. G1947.1-17, WORK ORDER WOA1947-AE-59; DESIGN SERVICES FOR AMERICA PLAZA AND KETTNER BLVD. TRACK REPLACEMENT

This letter shall serve as our agreement for professional services, Work Order WOA1947-AE-59, under the General Engineering Consultant Agreement, MTS Doc. No. G1947.0-17, as further described below.

SCOPE OF SERVICES

Provide design services for America Plaza and Kettner Blvd. Track Replacement. Work provided under this Work Order will be performed in accordance with the attached Scope of Services (Attachment A)

SCHEDULE

The Scope of Services, as described above, shall remain in effect for a period of eight (8) months from the date of the Notice to Proceed.

PAYMENT

Payment shall be based on actual costs in the amount not to exceed $154,736.16 without prior authorization of MTS.

Sincerely,

Sharon Cooney
Chief Executive Officer

Accepted:

_____
Thomas K. Kim
HDR Engineering, Inc.

Date:_____

Attachments: Attachment A, Scope of Services
Attachment B, Negotiated Fee Proposal

Metropolitan Transit System (MTS) is a California public agency comprised of San Diego Transit Corp., San Diego Trolley, Inc. and San Diego and Arizona Eastern Railway Company (nonprofit public benefit corporations). MTS is the taxicab administrator for seven cities. MTS member agencies include the cities of Chula Vista, Coronado, El Cajon, Imperial Beach, La Mesa, Lemon Grove, National City, Poway, San Diego, Santee, and the County of San Diego.

ATTACHMENT A
SCOPE OF SERVICES

Metropolitan Transit System

MTS Doc. No. G1957.0-17 **Work Order No. WOA1947-AE-59**

WORK ORDER TITLE: Rail Replacement - America Plaza & Kettner

I. PROJECT DESCRIPTION

This project is for the design services required to replace the existing rail at America Plaza Trolley Station, and the replacement of the adjacent grade crossing located at Kettner Boulevard. The work for this project includes the following task items:

- The existing curved rail, rail boot, and other track material within the America Plaza station limits will be removed and replaced in kind.
- The existing grade crossing west of America Plaza station limits on Kettner Boulevard will be removed and be replaced in accordance to MTS design criteria.
- The stock rails and switch points at two (2) existing RH #6 turnouts west of the Kettner Boulevard grade crossing will be removed and replaced.

II. EXPECTED RESULTS

The work order will provide 100 percent construction documents which includes plans, specifications, and cost estimate for the construction of the improvements as described herein.

III. SCOPE OF WORK

The scope of work shall consist of the following tasks and deliverables:

TASK 1 - WORK ORDER MANAGEMENT

This task includes project management services associated with this work order, including the requirements for progress reports, invoicing, meetings, quality assurance/quality control, and administration of the Consultant's and subconsultant's work. It is anticipated that monthly team meetings will be established and attended by three (3) consultant team members. Each meeting is assumed to be 1 hour, with 1 additional hour for meeting preparation. In addition, design review meetings will be held follow each milestone submittal to address comment resolution. Each review meeting will be attended by three (3) consultant team members, and assumed to be 1 hour.

1.1 Progress Reports and Invoices

At the end of each month, Consultant shall report on work progress consistent with MTS's reporting and invoicing formats in the form of a progress report with each invoice indicating work completed (WBS subtask) by Consultant. Progress will be based on the physical percentage complete of individual subtasks or actual progress toward completion. Consultant shall submit one copy of a monthly progress report consisting of a written narrative to the MTS PM.

1.2 Inter-Agency and Project Coordination

Consultant shall coordinate meetings and deliverables, and assist the MTS PM on coordination with MTS departments, and other governing agencies, for all deliverables to ensure consistency among stakeholders.

TASK 2 - DESIGN SUPPORT SERVICES

Consultant shall develop final design documents that include Plans, Specifications, and Estimates for the project. The anticipated milestone submittals are 50%, 95%, and 100%.

2.1 Field Survey

i) Collect topographic survey for design work in subsequent tasks within the project limits.

ii) The topographic mapping limits consists of full topographic survey covering the width of MTS's maintenance responsibility within the boundary of Kettner Blvd. to India Street, including the existing turnouts west of Kettner Blvd.

iii) A Digital Terrain Model (DTM) will be prepared based on the survey data collected.

2.2 50% Design Submittal

Develop site and track design to produce plans for the Contract Document package. The modifications to the existing site and trackage will include component replacement to two existing turnouts, track removal and replacement to include plan and profiles, IJ removal and reinstallation, wheel counter removal and replacement, fastener and/or fastener component repair/replacement, areas of pavement removal and replacement, and new crossing panels. All project elements will be designed to meet the requirements of MTS and the SANDAG LRT design standards. The Consultant shall;

i) Review the available project data developed to date by MTS and SANDAG.

ii) Collaborate with MTS to establish project specific design criteria.

iii) Complete crossing design accordance to MTS/SANDAG design criteria.

iv) Coordinate with MTS to confirm any modifications to the existing signal system equipment at wheel counter locations are to be incorporated.

v) Development of drawings, specifications, and estimates to detail removal and replacement of existing insulated joints, TWC loops, and wheel counters; and testing requirements to return them to service. Testing details will be coordinated and provided by MTS.

vi) Develop draft technical specifications and estimates for site improvements, and track design.

For Task Deliverables, see Section V – Deliverables

Assumptions & Key Understandings

i) Contract Plans will be completed per MTS CADD standards.

ii) Track Plans will be completed per MTS and AREMA design standards.

iii) Plans will be designed in a MicroStation/AutoCAD environment.

iv) Track design and top of rail modeling will be performed using InRoads software.

v) Track profile design will generally follow the existing track profile.

vi) HDR will provide MTS with a PDF set of the PS&E package at each major submittal.

Meetings

i) One design review meeting and one field visit to review 50% plans.

2.3 95% Design Submittal

The purpose of this task is to incorporate MTS comments into the Contract Documents and provide additional details to the drawings to complete the plan set. Contract specifications will also be updated and completed including the cost estimate. The Consultant shall;

i) Incorporate non-conflicting 50% submittal comments.

ii) Continue to coordinate with MTS and update the plan set according to the agreed upon changes.

iii) Update the construction estimate and specifications.

Meetings

i) One design review meeting and one field visit to review 95% plans.

2.4 100% Plans, Specifications and Estimate

The Consultant shall;

i) Incorporate non-conflicting 95% submittal comments.

ii) Finalize the construction plans, specifications, and estimate in preparation for bidding.

Meetings

i) One design review meeting to review 100% plans.

IV. PERIOD OF PERFORMANCE

The period of service shall be a duration of 8 months from the Notice to Proceed.

V. DELIVERABLES

50%, 95%, and 100% Plans, Specifications, and Estimate. Provide five 11” x 17” hard copy sets and PDF of each document included for submission to MTS.

Drawing	No. of Sheets
Title Sheet/Index	1
MTS General Notes	1
General Abbreviations	1
Survey Control Plan	1
Track Geometry Plan	1
Demolition Plan	1
Improvement Plan	1

Track Profile	1
Grade Crossing Plan	1
Typical Sections	1
Construction Details	2
Erosion Control Plan	1
Roadway Striping Plan	1
Special Trackwork Plan	1
Phasing Concept Plans	2
Signaling Plans and Details	3
Total Sheet Count	20

VI. SCHEDULE OF SERVICES/MILESTONES/DELIVERABLES

A. Tasks Schedule

Task	Begin/End Dates
Project Management and Coordination	NTP/NTP + 8 months
Field Survey	NTP/NTP + 1 month
50% submittal	NTP/NTP + 3 months
95% submittal	NTP/NTP + 5 months
100% submittal	NTP/NTP + 7 Months

B. Milestones/Deliverables Schedule

Milestone/Deliverable	Due Date
Field Survey (If Necessary)	1 month following NTP
ROM Estimate	3 months following NTP
50% Submittal	3 months following NTP
95% Submittal	5 months following NTP
100% Submittal	7 months following NTP

VII. MATERIALS TO BE PROVIDED BY MTS AND/OR THE OTHER AGENCY

1. As-builts of existing track and signaling infrastructure and any available CAD files.

VIII. SPECIAL CONDITIONS

Any condition listed below applies solely to this Work Order and does not otherwise alter the Agreement or other Work Orders.

1. Consultant shall not be responsible for costs associated with MTS flag protection for all onsite activities performed as necessitated by the design process.
2. No Right-of–Entry is required to be processed by Consultant.
3. MTS shall be responsible for all review/permit costs associated with obtaining city approvals.
4. MTS shall provide right of way information.

IX. MTS ACCEPTANCE OF SERVICES:

Contractor shall not be compensated at any time for unauthorized work outside of this Work Order. Contractor shall provide notice to MTS' Project Manager upon 100% completion of this Work Order. Within five (5) business days from receipt of notice of Work Order completion, MTS' Project Manager shall review, for acceptance, the 100% completion notice. If Contractor provides final service(s) or final work product(s) which are found to be unacceptable due to Contractors and/or Contractors subcontractors negligence and thus not 100% complete by MTS' Project Manager, Contractor shall be required to make revisions to said service(s) and/or work product(s) within the Not to Exceed (NTE) Budget. MTS reserves the right to withhold payment associated with this Work Order until the Project Manager provides written acceptance for the 100% final completion notice. Moreover, 100% acceptance and final completion will be based on resolution of comments received to the draft documents and delivery of final documentation which shall incorporate all MTS revisions and comments.

Monthly progress payments shall be based on hours performed for each person/classification identified in the attached Fee Schedule and shall at no time exceed the NTE. Contractor shall only be compensated for actual performance of services and at no time shall be compensated for services for which MTS does not have an accepted deliverable or written proof and MTS acceptance of services performed.

X. DEFICIENT WORK PRODUCT:

Throughout the construction management and/or implementation phases associated with the services rendered by the Contractor, if MTS finds any work product provided by Contractor to be deficient and the deficiently delays any portion of the project, Contractor shall bear the full burden of their deficient work and shall be responsible for taking all corrective actions to remedy their deficient work product including but not limited to the following:

- Revising provided documents,

At no time will MTS be required to correct any portion of the Contractors deficient work product and shall bear no costs or burden associated with Contractors deficient performance and/or work product.

XI. DELIVERABLE REQUIREMENTS

Contractor will be required to submit any and all documentation required by the Scope of Work. The deliverables furnished shall be of a quality acceptable to MTS. The criteria for acceptance shall be a product of neat appearance, well-organized, and procedurally, technically and grammatically correct. MTS reserves the right to request a change in the format if it doesn't satisfy MTS's needs. All work products will become the property of MTS. MTS reserves the right to disclose any reports or material provided by the Contractor to any third party.

Contractor shall provide with each task, a work plan showing the deliverables schedule as well as other relevant date needed for Contractor's work control, when and as requested by MTS.

Contractor's computer data processing and work processing capabilities and data storage should be compatible with Windows compatible PC's, text files readable in Microsoft Word, and standard and customary electronic storage. Contractor shall maintain backup copies of all data conveyed to MTS.

Contractor shall provide MTS with hard copy or electronic versions of reports and/or other material as requested by MTS.

XII. PRICING

Pricing shall be firm and fixed for the duration of the Work Order and any subsequent Change Orders/Amendments to the Work Order. There shall be no escalation of rates or fees allowed.

XIII. ADDITIONAL INFORMATION

List additional information as applicable to the specific Work Order scope of services.

XIV. PREVAILING WAGE

Prevailing wage rates apply to certain personnel for these services? ☒ Yes ☐ No

If yes, please list classification subject to prevailing wage rates:

Party Chief
Chainman

ATTACHMENT B
NEGOTIATED FEE PROPOSAL

Work Order Estimate Summary

MTS Doc. No.	**G1947.0-17**
Work Order No.	**WOA1947-AE-59**
Attachment:	**B**

Work Order Title: **Rail Replacement - America Plaza & Kettner**

Project No:

Table 1 - Cost Codes Summary (Costs & Hours)

Item	Cost Codes	Cost Codes Description	Total Costs
1			$154,736.16
2			
		Totals =	**$154,736.16**

Table 2 - TASKS/WBS Summary (Costs & Hours)

Item	TASKS/WBS	TASKS/WBS Description	Labor Hrs	Total Costs
1		Work Order Management	69.0	$12,152.03
2		Design Support Services	835.0	$142,584.13
3				
4				
5				
		Totals =	**904.0**	**$154,736.16**

Table 3 - Consultant/Subconsultant Summary (Costs & Hours)

(If Applicable, Select One)				Consultant	Labor Hrs	Total Costs
DBE	DVBE	SBE	Other			
				HDR Engineering, Inc.	765.0	$131,748.63
				Aguirre & Associates	139.0	$22,987.53
				Totals =	**904.0**	**$154,736.16**

Work Order Estimate Summary

Consultant/Subconsultant: **HDR Engineering, Inc.**

MTS Doc. No.: **G1947.0-17**

Work Order No.: **WOA1947-AE-59**

Total Hours = **765**

Total Costs = **$131,748.63**

Work Order Title: **Rail Replacement - America Plaza & Kettner**

Attachment: B

Item	TASKS/WBS	TASKS/WBS Description	ODCs (See Attachment)	Sr. Project Manager	Project Engineer	Engineer II	Designer II	Engineer I	Group Director/ Systems	Engineer III	Project Manager II/ Railroad	Sr. Project Manager/ Railroad	Document Control Specialist	Total Hours	Totals
				$ 328.96	$ 161.44	$ 121.51	$ 149.39	$ 110.22	$ 237.01	$ 139.37	$ 275.97	$ 326.91	$ 107.33		
1	**Task 1**	**Work Order Management**													
	Progress Report and Invoices			2						7			24	33	$4,209.43
	Inter-Agency and Project Coordination			16						16			4	36	$7,922.60
		ODCs	$20.00												$20.00
		Subtotals (Hours) =	N/A	18						23			28	69	$12,152.03
		Subtotals (Costs) =	$20.00	$5,921.28						$3,205.51			$3,005.24	**69**	**$12,152.03**
2	**Task 2**	**Design Support Services**													
	Field Survey			2		4	8							14	$2,339.08
	Design Support														
	50% Submittal														
	Plans			8		40	44	24	24	40				180	$27,973.56
	Specifications			8	24				12	8				52	$10,465.32
	Estimate			2		20	16	10						48	$6,580.56
	95% Submittal														
	Plans			8		24	40	10	12	32				126	$19,929.68
	Specifications			8	32				16	16				72	$13,819.84
	Estimate			2		14	8	8						32	$4,435.94
	100% Submittal														
	Plans			4		16	16	8	4	8				56	$8,595.00
	Specifications			4	8				2	8				22	$4,196.34
	Estimate			1		8	2	4						15	$2,040.70
	Comment Reviews/Responses			2		8	8		4	8				30	$4,888.12
	Quality Control - Detail Check and Reviews				16							16		32	$7,813.60
	Design Review Meetings (3 Total)			3		2			2	2				9	$1,982.66
	Field Meetings (2 Total)			2		2			2	2				8	$1,653.70
		ODCs	$2,882.50												$2,882.50
		Subtotals (Hours) =	N/A	54	80	138	142	64	78	124		16		696	$119,596.60
		Subtotals (Costs) =	$2,882.50	$17,763.84	$12,915.20	$16,768.38	$21,213.38	$7,054.08	$18,486.78	$17,281.88		$5,230.56		**696**	**$119,596.60**
		Totals (Summary) =												**765**	**$131,748.63**
		Total (Hours) =	N/A	72	80	138	142	64	78	147		16	28	765	
		Total (Costs) =	$2,902.50	$23,685.12	$12,915.20	$16,768.38	$21,213.38	$7,054.08	$18,486.78	$20,487.39		$5,230.56	$3,005.24		$131,748.63
		Percentage of Total (Hours) =	N/A	9%	10%	18%	19%	8%	10%	19%		2%	4%	100%	
		Percentage of Total (Costs) =	2%	18%	10%	13%	16%	5%	14%	16%		4%	2%		100%

Work Order Estimate Summary

Consultant/ Subconsultant: **HDR Engineering, Inc.**

Contract No: **G1947.0-17**

Task Order No. **WOA1947-AE-59**

Work Order Title: **Rail Replacement - America Plaza & Kettner**

Attachment: **B**

TASKS/WBS (1-5)

ODC Item	Description	Unit	Unit Cost	Task 1		Task 2		Task 3		Task 4		Task 5	
				Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total
1	Mileage	Mile	$0.575			500	$287.50						
2	Reproduction	LS	$10.00	2	$20.00	10	$100.00						
3	ROW Training	EA	$165.00			3	$495.00						
4	Utility Locating	LS	$2,000.00			1	$2,000.00						
5													
6													
7													
8													
9													
10													
			Subtotal =		**$20.00**	Subtotal =	**$2,882.50**	Subtotal =		Subtotal =		Subtotal =	

TASKS/WBS (6-10)

ODC Item	Description	Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total	Totals Quantity	Totals Total
1	Mileage											**500**	**$287.50**
2	Reproduction											**12**	**$120.00**
3	ROW Training											**3**	**$495.00**
4	Utility Locating											**1**	**$2,000.00**
5													
6													
7													
8													
9													
10													
		Subtotal =		Subtotal =		Subtotal =		Subtotal =		Subtotal =		**Totals =**	**$2,902.50**

Work Order Estimate Summary

Consultant/Subconsultant: **Aguirre & Associates**

MTS Doc. No.: **G1947.0-17**

Total Hours = **139**

Work Order No.: **WOA1947-AE-59**

Total Costs = **$22,987.53**

Work Order Title: **Rail Replacement - America Plaza & Kettner**

Attachment: **B**

Item	TASKS/WBS	TASKS/WBS Description	ODCs (See Attachment)	Principal Land Surveyor	Project Land Surveyor	Party Chief (PW)*	Chainman (PW)*	Survey Technician						Total Hours	Totals
				$190.55	$152.11	$206.15	$208.31	$104.68							
2	**Task 2**	**Design Support Services**													
	Field Survey		$60.00	4	8	32	32	16						92	$16,976.68
	Design Support														
	50% Submittal				10			10						20	$2,567.90
	95% Submittal				8			8						16	$2,054.32
	100% Submittal				5			6						11	$1,388.63
		Subtotals (Hours) =	N/A	4	31	32	32	40						139	$22,987.53
		Subtotals (Costs) =	$60.00	$762.20	$4,715.41	$6,596.80	$6,665.92	$4,187.20						**139**	**$22,987.53**
		Totals (Summary) =												**139**	**$22,987.53**
		Total (Hours) =	N/A	4	31	32	32	40						139	
		Total (Costs) =	$60.00	$762.20	$4,715.41	$6,596.80	$6,665.92	$4,187.20							$22,987.53
		Percentage of Total (Hours) =	N/A	3%	22%	23%	23%	29%						100%	
		Percentage of Total (Costs) =	0%	3%	21%	29%	29%	18%							100%

Work Order Estimate Summary

Consultant/ Subconsultant: **Aguirre & Associates**

Contract No: **G1947.0-17**

Task Order No. **WOA1947-AE-59**

Work Order Title: **Rail Replacement - America Plaza & Kettner**

Attachment: **B**

TASKS/WBS (1-5)

ODC Item	Description	Unit	Unit Cost	2 Cores		Additional Core							
				Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total
1	Reference Maps	LS	$60.00			1	$60.00						
2													
3													
4													
5													
6													
7													
8													
9													
10													
				Subtotal =		Subtotal =	**$60.00**	Subtotal =		Subtotal =		Subtotal =	

TASKS/WBS (6-10)

ODC Item	Description	Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total	Totals	
												Quantity	Total
1	Reference Maps											**1**	**$60.00**
2													
3													
4													
5													
6													
7													
8													
9													
10													
		Subtotal =		Subtotal =		Subtotal =		Subtotal =		Subtotal =		**Totals =**	**$60.00**

Metropolitan Transit System

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Agenda Item No. 14

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

September 17, 2020

SUBJECT:

KEARNY MESA DIVISION (KMD) BAY ROLLUP DOOR REPLACEMENT CONSTRUCTION – CONTRACT AWARD

RECOMMENDATION:

That the San Diego Metropolitan Transit System (MTS) Board of Directors authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. PWB314.0-20 (in substantially the same format as Attachment A), with Noble E&C Inc., a Small Business (SB), for procuring and installing KMD rollup doors in the amount of $98,400 plus a 30% contingency for change orders.

Budget Impact

The total budget for this project shall not exceed $127,920, including contingency and is funded by MTS Capital Improvement Project (CIP) account 3006112601.

DISCUSSION:

This project consists of the removal and replacement of ten maintenance bay rollup doors and two shipping and receiving rollup doors. The project was funded through the annual CIP process because the existing doors, installed in 1988, have exceeded their useful life and need to be replaced. These doors are necessary to secure the bus maintenance facility and equipment located inside the facility.

On June 23, 2020, staff issued an Invitation for Bids (IFB). The following bids were received:

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Proposer Name	Overall Total Amount
Noble E&C (SB)	$98,400.00
Mckendry Door Sales (SB)	$99,169.78
Singh Group (Disadvantaged Business Enterprise)	$135,000.00
Alvand Construction	$137,000.00
MTS Independent Cost Estimate (ICE)	*$102,669.00*

Based on bids received, and in comparison, with the ICE, Noble E&C's price of $98,400 was determined to be fair and reasonable.

The contingency amount of 30% was selected due to the fact that the mechanical door lifts are also at the end of their useful life; however, are still functioning normally and the original project did not include the replacement. The lifts will be replaced as needed and full replacement of all the lifts will not exceed the contingency amount.

Therefore, staff recommends that the MTS Board of Directors authorize the CEO to execute MTS Doc. No. PWB314.0-20 (in substantially the same format as Attachment A), with Noble E&C Inc., for procuring and installing Kearny Mesa Division (KMD) rollup doors in the amount of $98,400 plus 30% contingency for a total not to exceed amount of $127,920.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Julia Tuer, 619.557.4515, Julia.Tuer@sdmts.com

Attachments: A. Draft Standard Construction Agreement MTS Doc. No. PWB314.0-20
B. Bid Price Form

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101
Tel 619.231.1466 Fax 619.234.3407

STANDARD CONSTRUCTION AGREEMENT

FOR

MTS DOC. NO. PWB314.0-20

KMD ROLLUP DOOR REPLACEMENT CONSTRUCTION

THIS AGREEMENT is entered into this _____ day of _____ 2020, in the State of California by and between San Diego Metropolitan Transit System ("MTS"), a California public agency, and the following, hereinafter referred to as "Contractor":

Name: Noble E&C

Address: 21643 Birch Hill Dr.
Diamond Bar, CA 91765

Form of Business: Corp.
(Corporation, Partnership, Sole Proprietor, etc.)

Email : nobleencinfo@gmail.com

Telephone: 714-334-0002

Authorized person to sign contracts Joo w. Kim (Name) Project Manager (Title)

The specified Contract Documents are part of this Agreement. The Contractor agrees to furnish to MTS services and materials, as follows:

Contractor shall furnish all necessary management, supervision, labor, materials, tools, supplies, equipment, plant, services, engineering, testing and/or any other act or thing required to diligently and fully perform and complete the Project as specified in accordance with the Standard Agreement and General Conditions (Exhibit A), Scope of Work, Special Conditions and Attachments (Exhibit B), Bid Price Form (Exhibit C), and Federal Requirements (Exhibit D) and Forms (Exhibit D) Forms (Exhibit E)

SCOPE OF WORK

Contractor, for and in consideration of the payment to be made to Contractor as hereinafter provided, shall furnish all plant, labor, technical and professional services, supervision, materials and equipment, other than such materials and equipment as may be specified to be furnished by MTS, and perform all operations necessary to complete the Work in strict conformance with the Contract Documents (defined below) for the following public work of improvement:

KMD ROLLUP DOOR CONSTRUCTION

Contractor is an independent contractor and not an agent of MTS. The Contractor and its surety shall be liable to MTS for any damages arising as a result of the Contractor's failure to comply with this obligation.

CONTRACT TIME.

Time is of the essence in the performance of the Work. The Work shall be commenced by the date stated in MTS's Notice to Proceed. The Contractor shall complete all Work required by the

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Contract Documents within **98 calendar days** from the commencement date stated in the Notice to Proceed. By its signature hereunder, Contractor agrees the Contract Time is adequate and reasonable to complete the Work.

CONTRACT PRICE.

MTS shall pay the Contractor as full compensation for the performance of the Contract, subject to any additions or deductions as provided in the Contract Documents, and including all applicable taxes and costs, the sum of Ninety eight thousand four hundred Dollars ($ 98,400). Payment shall be made as set forth in the General Conditions.

PROVISIONS REQUIRED BY LAW.

Each and every provision of law required to be included in these Contract Documents shall be deemed to be included in these Contract Documents. The Contractor shall comply with all requirements of the California Labor Code applicable to this Project.

INDEMNIFICATION.

Contractor shall provide indemnification as set forth in the General Conditions.

PREVAILING WAGES.

Contractor shall be required to pay the prevailing rate of wages in accordance with the Labor Code which such rates shall be made available at MTS's Administrative Office or may be obtained online at http://www.dir.ca.gov and which must be posted at the job site.

SAN DIEGO METROPOLITAN TRANSIT SYSTEM	NOBLE E&C
By: _____ Sharon Cooney, Chief Executive Officer	By _____
Approved as to form:	
By: _____ Karen Landers, General Counsel	Title: _____

ATT 2 BID PRICE FORM - KMD ROLLUP DOOR REPLACEMENT CONSTRUCTION

BID ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL COST
1	Mobilization	1	LS	$ 20,000.00	$ 20,000.00
2	Maintenance Bay Door Demo	10	EA	$ 1,000.00	$ 10,000.00
3	Maintenance Bay Door Mat'l	10	EA	$ 3,000.00	$ 30,000.00
4	Maintenance Bay Door Install Labor	10	EA	$ 1,000.00	$ 10,000.00
5	Receiving Door Demo	2	EA	$ 1,000.00	$ 2,000.00
6	Receiving Door Mat'l	2	EA	$ 5,000.00	$ 10,000.00
7	Receiving Door Install Labor	2	EA	$ 1,500.00	$ 3,000.00
8	Door Operator Integration	12	EA	$ 700.00	$ 8,400.00
9	**Bid Bond**				$ 1,500.00
10	**Payment / Performance Bond**				$ 3,500.00
GRAND TOTAL (BASIS OF AWARD)					**$ 98,400.00**

Metropolitan Transit System

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Agenda Item No. 15

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

September 17, 2020

SUBJECT:

CLOSED-CIRCUIT TELEVISION (CCTV) SYSTEM INSTALLATION FOR THE MID-COAST TROLLEY EXTENSION PROJECT – CONTRACT AWARD

RECOMMENDATION:

That the San Diego Metropolitan Transit System (MTS) Board of Directors authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. PWL320.0-21 (in substantially the same format as Attachment A), with Electro Specialty Systems (ESS) Corp., for procuring and installing a CCTV (video surveillance) system for the Mid-Coast Trolley Extension Project in the amount of $623,616.00 plus a 25% contingency.

Budget Impact

The total budget for this project shall not exceed $779,520.00, including contingency and is funded by MTS Capital Improvement Project (CIP) account 2002010601, which will be reimbursed by the San Diego Association of Governments (SANDAG) Mid-Coast Light Rail Transit Project number 1257001.

DISCUSSION:

The Mid-Coast Trolley Extension Project will extend the UC San Diego Blue Line service from Santa Fe Depot in Downtown San Diego to the University City community, serving major activity centers such as Old Town, Mission Bay, the University of California, San Diego (UC San Diego), and Westfield UTC.

The route begins just north of the Old Town Transit Center, travels in existing railroad right-of-way, and alongside Interstate 5, to serve UC San Diego and University City. The extension will serve nine new stations: Tecolote Road, Clairemont Drive, Balboa Avenue, Nobel Drive, VA Medical Center, Pepper Canyon (serving UC San Diego west

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campus), Voigt Drive (serving UC San Diego east campus), Executive Drive, and the terminus station at the Westfield UTC transit center.

To keep MTS passengers, employees, equipment and infrastructure safe and secure, MTS has video surveillance cameras and Network Video Recorders throughout the system. This project will provide cameras and recorders to the new Mid-Coast Trolley Extension and ensure the new system is compatible with the MTS current video surveillance system platform. Beyond security, video surveillance also helps MTS improve efficiency and enhance the overall passenger experience. The video surveillance is considered essential to monitor and capture clear incident images from MTS Operation Control Center and keep operations running smoothly.

On July 20, 2020, staff issued an Invitation for Bids (IFB). The following bids were received;

Proposer Name	Overall Total Amount
ESS	$623,616.00
Baker Electric	$884,339.48
IES Communication	$980,180.50
Bergelectric	$1,094,155.00
Inter-Pacific Inc.	$1,343,175.55
MTS Independent Cost Estimate (ICE)	*$1,095,252.04*

Based on the bids received, and in comparison with the MTS Independent Cost Estimate (ICE), Electro Specialty Systems price of $623,616 was determined to be fair and reasonable.

Therefore, staff recommends that the MTS Board of Directors authorize the CEO to execute MTS Doc. No. PWL320.0-21 (in substantially the same format as Attachment A), with Electro Specialty Systems, for procuring and installing CCTV system for the Mid-Coast Trolley Extension Project in the amount of $623,616 plus a 25% contingency.

/s/ Sharon Cooney

Sharon Cooney
Chief Executive Officer

Key Staff Contact: Julia Tuer, 619.557.4515, Julia.Tuer@sdmts.com

Attachments: A. Draft Standard Construction Agreement MTS Doc. No. PWL320.0-21
B. Bid Price Form

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101
Tel 619.231.1466 Fax 619.234.3407

STANDARD CONSTRUCTION AGREEMENT

FOR
MTS DOC. NO. PWL320.0-21
MIDCOAST CCTV EQUIPMENT AND CONSTRUCTION

THIS AGREEMENT is entered into this _____ day of _____ 2020, in the State of California by and between San Diego Metropolitan Transit System ("MTS"), a California public agency, and the following, hereinafter referred to as "Contractor":

Name: Electro Specialty Systems Address: 7940 Convoy Ct.
San Diego CA, 92111

Form of Business: Corp.
(Corporation, Partnership, Sole Proprietor, etc.)

Email : dan@ess4.net

Telephone: 858-571-7746

Authorized person to sign contracts Daniel (Name) Brault (Title)

The specified Contract Documents are part of this Agreement. The Contractor agrees to furnish to MTS services and materials, as follows:

Contractor shall furnish all necessary management, supervision, labor, materials, tools, supplies, equipment, plant, services, engineering, testing and/or any other act or thing required to diligently and fully perform and complete the Project as specified in accordance with the Standard Agreement and General Conditions (Exhibit A), Scope of Work, Special Conditions and Attachments (Exhibit B), Bid Price Form (Exhibit C), and Federal Requirements (Exhibit D) and Forms (Exhibit D) Forms (Exhibit E)

SCOPE OF WORK

Contractor, for and in consideration of the payment to be made to Contractor as hereinafter provided, shall furnish all plant, labor, technical and professional services, supervision, materials and equipment, other than such materials and equipment as may be specified to be furnished by MTS, and perform all operations necessary to complete the Work in strict conformance with the Contract Documents (defined below) for the following public work of improvement:

MIDCOAST CCTV EQUIPMENT AND CONSTRUCTION

Contractor is an independent contractor and not an agent of MTS. The Contractor and its surety shall be liable to MTS for any damages arising as a result of the Contractor's failure to comply with this obligation.

CONTRACT TIME.

Time is of the essence in the performance of the Work. The Work shall be commenced by the date stated in MTS's Notice to Proceed. The Contractor shall complete all Work required by the Contract Documents within **the specified schedule for each location** from the

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commencement date stated in the Notice to Proceed. By its signature hereunder, Contractor agrees the Contract Time is adequate and reasonable to complete the Work.

Item	Station	Quantity	Start Date	End Date	Duration (Calendar Days)
1	Tecolote	LS	11/5/2020	11/11/2020	6
2	Clairemont	LS	11/5/2020	11/11/2020	6
3	Balboa	LS	11/5/2020	11/11/2020	6
4	Nobel	LS	2/2/2021	2/8/2021	6
5	Nobel Parking Structure	LS	12/7/2020	12/18/2020	11
6	VA Medical	LS	12/15/2020	12/21/2020	6
7	Pepper Canyon	LS	11/5/2020	11/11/2020	6
8	Voigt	LS	2/26/2021	3/11/2021	13
9	Executive	LS	1/28/2021	2/10/2021	13
10	UTC	LS	1/7/2021	1/13/2021	6
11	UTC Parking Structure	LS	10/1/2021	10/12/2021	11

CONTRACT PRICE.

MTS shall pay the Contractor as full compensation for the performance of the Contract, subject to any additions or deductions as provided in the Contract Documents, and including all applicable taxes and costs, the sum of Six hundred twenty three thousand six hundred sixteen Dollars ($ 623,616). Payment shall be made as set forth in the General Conditions.

PROVISIONS REQUIRED BY LAW.

Each and every provision of law required to be included in these Contract Documents shall be deemed to be included in these Contract Documents. The Contractor shall comply with all requirements of the California Labor Code applicable to this Project.

INDEMNIFICATION.

Contractor shall provide indemnification as set forth in the General Conditions.

PREVAILING WAGES.

Contractor shall be required to pay the prevailing rate of wages in accordance with the Labor Code which such rates shall be made available at MTS's Administrative Office or may be obtained online at http://www.dir.ca.gov and which must be posted at the job site.

SAN DIEGO METROPOLITAN TRANSIT SYSTEM	ELECTRO SPECIALTY SYSTEMS
By: _____ Sharon Cooney, Chief Executive Officer	By _____
Approved as to form:	
By: _____ Karen Landers, General Counsel	Title: _____

BID PRICE FORM

Mid Coast Stations CCTV

Item	Station	Quantity	Unit Price	Total
BASE CONSTRUCTION				
1	Tecolote	LS	$77,100	$77,100
2	Clairemont	LS	$19,200	$19,200
3	Balboa	LS	$85,300	$85,300
4	Nobel	LS	$20,400	$20,400
5	Nobel Parking Structure	LS	$84,900	$84,900
6	VA Medical	LS	$20,900	$20,900
7	Pepper Canyon	LS	$35,100	$35,100
8	Voigt	LS	$49,600	$49,600
9	Executive	LS	$86,600	$86,600
10	UTC	LS	$38,200	$38,200
11	O&M Manual and Training	LS	$1,500	$1,500
12	UTC Parking Structure	LS	$95,600	$95,600
SUBTOTAL - BASE CONSTRUCTION				$614,400
13	Payment and Performance Bond	LS	$9,216.00	$9,216
14	Bid Bond	LS	$0	$0
GRAND TOTAL BASIS OR AWARD				$623,616

Metropolitan Transit System

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Agenda Item No. 16

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

September 17, 2020

SUBJECT:

MONITORING WELL AT IMPERIAL AVENUE DIVISION (IAD) PROJECT – ADDITIONAL DESIGN SERVICES – WORK ORDER AMENDMENT

RECOMMENDATION:

That the San Diego Metropolitan Transit System (MTS) Board of Directors:

1) Ratify Work Order WOA1951-AE-52 under MTS Doc No. G1951.0-17 (in substantially the same format as Attachment A) with Mott MacDonald, LLC (MM) totaling $76,666.24, for environmental services

2) Authorize the Chief Executive Officer (CEO) to execute Work Order amendment WOA1951-AE-52.01 under MTS Doc No. G1951.0-17 (in substantially the same format as Attachment B), with MM totaling $30,959.53, for additional environmental services to abandon the temporary and permanent groundwater monitoring wells at IAD.

Budget Impact

Today's action will bring total value of the MM Work Order No. WOA1951-AE-52 to $107,625.77.

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MTS Doc No.	Purpose	Amount	Board Approval Date
WOA1951-AE-52	Original Task Order	$76,666.24	CEO approval 02/12/20 per Board Policy No. 41
WOA1951-AE-52.01	Additional environmental services to abandon the permanent groundwater monitoring wells	$30,959.53	Today's Proposed Action
	Total	**$107,625.77**	

MM Work Order WOA1951-AE-52 is funded through the MTS Operating Budget account number 122010-571250.

DISCUSSION:

In February 2020, MTS contracted with MM to perform an assessment of the source, nature and extent of "free product" (hydrocarbons still in the soil and have not dissolved into the groundwater) in soil and groundwater at the MTS IAD, in support of Regional Water Quality Control Board (RWQCB) Case No. 9UT260. The project involved installation of seven (7) temporary groundwater monitoring wells, two (2) rounds of groundwater monitoring and sampling, and preparation of a summary report to the RWQCB. The property also has eight (8) permanent groundwater wells which were installed at various points during the time this case has been open under separate site assessment contracts. Two (2) of these wells (MW-4 and MW-14) are being monitored monthly for the presence of free product.

Based on the results of the assessment conducted, the Consultant recommended to discontinue the monthly monitoring of MW-4 and MW-14 and to abandon the temporary and permanent groundwater monitoring wells in accordance with applicable regulations. Approval of the report, and case closure was granted by the RWQCB on August 3, 2020.

This Amendment is necessary to satisfy abandoning all eight (8) of the permanent groundwater monitoring wells and complete case closure for the property.

On January 12, 2016, San Diego Association of Governments (SANDAG) and MTS issued a joint Request for Statement of Qualifications (RFSQ) for On-Call Architectural and Engineering (A&E) Design Consulting services. The RFSQ resulted in the approval of 8 firms qualified to perform A&E services. Tasks are assigned to the firms through a work order process. MTS selects the most qualified firm based on the scope of work to be performed.

The initial work order was selected by MTS staff after a review of the approved A&E firms and utilizing a direct award process. MTS staff selected MM to perform the requisite services, as they had the subcontractor Ninyo & Moore, a Minority Owned Business Enterprise, on their bench, who had specific knowledge of the wells. The amendment is additional work related to the initial task order.

The proposed amount of the amendment was $30,959.53, which was $760.47 less than MTS's Independent Cost Estimate (ICE) of $31,720.00.

Today's proposed action would do the following:

1) Ratify Work Order WOA1951-AE-52 under MTS Doc No. G1951.0-17 (in substantially the same format as Attachment A) with MM totaling $76,666.24, for environmental services

2) Authorize the CEO to execute Work Order amendment WOA1951-AE-52.01 under MTS Doc No. G1951.0-17 (in substantially the same format as Attachment B), with MM totaling $30,959.53 for additional environmental services to abandon the temporary and permanent groundwater monitoring wells at IAD.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Julia Tuer, 619.557.4515, Julia.Tuer@sdmts.com

Attachments: A. Executed Work Order WOA1951-AE-52, MTS Doc. No. G1951.0-17
B. Draft Work Order WOA1951-AE-52.01, MTS Doc. No. G1951.0-17

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101-7490
(619) 231-1466

January 30, 2020

MTS Doc. No. G1951.0-17
Work Order No. WOA1951-AE-52

Mr. Dan Tempelis
Senior Vice President
Mott MacDonald, LLC
401 B Street, Suite 1520
San Diego, CA 92101

Dear Mr. Tempelis:

Subject: MTS DOC. NO. G1951.0-17, WORK ORDER WOA1951-AE-52, GENERAL ENGINEERING SERVICES FOR A MONITORING WELL AT IAD

This letter shall serve as our agreement for Work Order WOA1951-AE-52 to MTS Doc. No. G1951.0-17, for engineering services for a monitoring well at IAD.

SCOPE OF SERVICES

Provide engineering services for engineering services for a monitoring well at IAD. Work provided under this Work Order will be performed in accordance with the attached Scope of Services (Attachment A).

SCHEDULE

The Scope of Services, as described above, shall remain in effect through June 29, 2020.

PAYMENT

Payment shall be based on actual costs in the amount not to $76,666.24 exceed without prior authorization of MTS.

Please sign below, and return the document to the Contracts Specialist at MTS. All other terms and conditions shall remain the same and in effect.

Sincerely,

Paul C. Jablonski
Chief Executive Officer

Accepted:

Dan Tempelis, Senior Vice President
Mott MacDonald, LLC

Date: February 12, 2020

Attachments: Attachment A, Scope of Services
Attachment B, Negotiated Fee Proposal

Metropolitan Transit System (MTS) is a California public agency comprised of San Diego Transit Corp., San Diego Trolley, Inc. and San Diego and Arizona Eastern Railway Company (nonprofit public benefit corporations). MTS is the taxicab administrator for seven cities.

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ATTACHMENT A
SCOPE OF SERVICES

MTS Doc. No. G1951.0-17 **Work Order No. WOA1951-AE-52**

WORK ORDER TITLE: IAD MONITORING WELL

I. PROJECT DESCRIPTION

These services are to investigate free product at the San Diego Transit Corporation (SDTC) Imperial Avenue Division Bus Yard located at 100 16th Street, in San Diego, California (site). In August 2019, Ninyo & Moore submitted a Work Plan to perform additional assessment at Area 1 in response to the Regional Water Quality Control Board, San Diego Region (RWQCB) email dated July 6, 2017, which requested assessment of the source, nature, and extent of free product in Area 1. In August 2019, the RWQCB requested updates to Section 8.5, Groundwater Sampling, and Section 12, Proposed Work Schedule. This work order incorporated the RWQCB's requested revisions. In an October 16, 2019 email, the RWQCB caseworker also requested two rounds of groundwater monitoring prior to requesting approval to abandon the wells. The proposed scope of services, fee, and schedule are provided below.

II. SCOPE OF WORK

The scope of work shall consist of the following tasks and deliverables:
The proposed scope of services is intended to assess the presence of free product in Area 1 by evaluating the lateral extent of free product in the vicinity of MW-4 and potential on- and off-site sources. Work will be conducted in accordance with the RWQCB-approved Work Plan and County of San Diego Department of Environmental Health (DEH) Site Assessment Manual (SAM) guidelines. All work will be overseen by a California-registered Professional Geologist.

Task 1 – Project Management and Coordination

- Provide project management and coordination.
- Coordinate with the client, San Diego Metropolitan Transit System (MTS) staff, the RWQCB caseworker, and subcontractors.

Task 2 – Pre-Field Activities

- Update the existing site-specific Health and Safety Plan.
- Obtain a soil boring / groundwater well permit from the DEH to install seven temporary groundwater monitoring wells.
- Mark the proposed drilling locations and notify Underground Service Alert and MTS a minimum of 72 hours prior to field work.
- Contract a private utility locator to evaluate the seven drilling locations in an attempt to locate underground structures in the vicinity of the drilling locations.

Task 3 – Field Activities – Temporary Well Installation

- Concrete core the seven drilling locations.
- Contract a licensed driller to advance seven soil borings to a depth of approximately 30 feet below ground surface (bgs) using a hollow-stem auger (HSA) drilling rig equipped with 8-inch diameter augers.
- Collect soil samples every 5 feet until termination of each boring. The soil will be logged by field personnel in accordance with the Unified Soil Classification System (USCS) and

will be screened using a photoionization detector (PID). If evidence of groundwater is encountered during drilling activities (i.e., wet or saturated soil), a temporary 2-inch
- diameter groundwater monitoring well will be installed in the borehole. If evidence of groundwater is not observed, the boring will be abandoned.
- Submit soil samples to a California-certified laboratory for analysis of total petroleum hydrocarbons (TPH) as gasoline (TPH-g), as diesel (TPH-d), and as motor oil (TPH-o) by United States Environmental Protection Agency (EPA) Method 8015B (M). The soil sample with the highest TPH concentration from each boring will be additionally analyzed for volatile organic compounds (VOCs) by EPA Method 8260B. If TPH is not detected, VOC analyses will not be conducted.
- Following installation of the temporary groundwater monitoring wells, the wells will be protected with traffic-rated covers.
- If evidence of groundwater is not encountered during drilling, the boring will be backfilled with bentonite grout/cement via a tremie pipe from the total depth to approximately 3 feet bgs. After the grout/cement has set, a bentonite seal of bentonite chips will be placed in the annulus from approximately 1 to 3 feet bgs and hydrated using potable water. The boring will then be capped with concrete to approximately match the existing surface grade.
- Temporarily store soil cuttings and decontamination fluid in 55-gallon drums at the site pending waste profiling.

Task 4 – Field Activities – Well Development and Sampling

This task will be performed if water is present in the groundwater monitoring wells. If the wells are dry (i.e., no water present), performance of this task will be subject to consultation with the RWQCB case worker and the MTS Project Manager.

- Develop each of the temporary wells using a surge block, bailer, and/or pump. The groundwater temperature, pH, electrical conductivity, and turbidity will be measured in the field, and recorded during well development.
- Sample the temporary wells a minimum of 72 hours after well development. Prior to sampling, an interface probe will be used to measure the depth to groundwater and check for the presence of free product in each of the wells. If measurable free product is not observed, groundwater sampling will be performed using low flow sampling techniques. During purging, water quality indicator parameters will be measured in accordance with the DEH SAM Manual. Once parameters have stabilized, samples will be collected.
- Analyze groundwater samples for TPH-g, TPH-d, and TPH-o by EPA Method 8015B (M) and VOCs by EPA Method 8260B.
- Temporarily store purged water and decontamination fluid in 55-gallon steel drums at the site pending waste profiling.
- Two to four weeks after the initial sampling event, conduct a second round of groundwater monitoring and sampling following the protocols listed above.

Task 5 – Field Activities – Temporary Well Abandonment / Investigative-Derived Waste Management

- After approval from the RWQCB, abandon the temporary groundwater monitoring wells by overdrilling to remove the well construction materials. Backfill each boring with bentonite grout/cement via a tremie pipe from the total depth to approximately 3 feet bgs. After the grout/cement has set, a bentonite seal of bentonite chips will be placed in

the annulus from approximately 1 to 3 feet bgs and hydrated using potable water. Each boring will be capped with concrete to approximately match the existing surface grade.
- Contract a waste transportation and disposal contractor to dispose of the investigative-derived waste (soil cuttings, decontamination fluid, purged water).

Task 6 – Data Analysis and Reporting

- Prepare a report summarizing the investigation activities. The report will include boring logs, sampling data, tabulated analytical data, and analytical report(s) accompanied with chain of custody and quality assurance/quality control documentation, and figures. The report will be uploaded to GeoTracker for RWQCB review / approval.
- Submit a 60-day well permit report including boring logs and figures to the DEH to fulfill the permit requirements.

Optional Task 7 – Conversion to Permanent Wells

- An optional fee is provided to convert up to seven temporary groundwater wells to a permanent well (in the event free product is encountered and the RWQCB requests additional monitoring from the well).

III. SCHEDULE OF SERVICES/MILESTONES/DELIVERABLES

A. Tasks Schedule

- Site access and permitting – February 14, 2020 (14 days)
- Well installation and development – March 6, 2020 (21 days)
- Groundwater Sampling Event 1 – March 13, 2020 (7 days)
- Groundwater Sampling Event 2 – March 27, 2020 (14 days)
- Report submission – April 28, 2020 (28 days)
- Temporary Well Abandonment (To be determined and after approval from the Water Board)

IV. ASSUMPTIONS

This proposal assumes the following:

- Access to the site will be granted by MTS during regular business hours (7 am to 6 pm).
- The estimated fee is based on the following schedule of field work.
    - Geophysical survey – 1 day to complete
    - Drilling activities – 3 days
    - Well development – 2 days
    - Groundwater monitoring and sampling – 2 events (1 day each)
    - Well abandonment – 2 days
- For the purposes of this estimate, it is assumed that 28 drums of non-hazardous soil / groundwater will be generated. If, based on the analytical data, the soil is profiled as hazardous waste, additional costs for soil disposal will apply.
- MTS will sign a property owner consent form for the well permit application and waste disposal manifests for disposal of the IDW.
- Laboratory analytical testing will be performed on a standard turnaround time basis (7 to 10 business days).
- The drilling method is capable of achieving the maximum depth of exploration.
- The RWQCB approves the revised Work Plan (Ninyo & Moore, 2019). If the RWQCB requests changes to the scope of services, Ninyo & Moore will prepare a revised proposal.
- The temporary wells will be abandoned within the lifetime of the well installation permit (120 days); otherwise, a new permit will be required and additional fees will apply.

V. MTS ACCEPTANCE OF SERVICES:

Contractor shall not be compensated at any time for unauthorized work outside of this Work Order. Contractor shall provide notice to MTS' Project Manager upon 100% completion of this Work Order. Within five (5) business days from receipt of notice of Work Order completion, MTS' Project Manager shall review, for acceptance, the 100% completion notice. If Contractor provides final service(s) or final work product(s) which are found to be unacceptable due to Contractors and/or Contractors subcontractors negligence and thus not 100% complete by MTS' Project Manager, Contractor shall be required to make revisions to said service(s) and/or work product(s) within the Not to Exceed (NTE) Budget. MTS reserves the right to withhold payment associated with this Work Order until the Project Manager provides written acceptance for the 100% final completion notice. Moreover, 100% acceptance and final completion will be based on resolution of comments received to the draft documents and delivery of final documentation which shall incorporate all MTS revisions and comments.

Monthly progress payments shall be based on hours performed for each person/classification identified in the attached Fee Schedule and shall at no time exceed the NTE. Contractor shall only be compensated for actual performance of services and at no time shall be compensated for services for which MTS does not have an accepted deliverable or written proof and MTS acceptance of services performed.

VI. DEFICIENT WORK PRODUCT:

Throughout the construction management and/or implementation phases associated with the services rendered by the Contractor, if MTS finds any work product provided by Contractor to be deficient and the deficiently delays any portion of the project, Contractor shall bear the full burden of their deficient work and shall be responsible for taking all corrective actions to remedy their deficient work product including but not limited to the following:

- Revising provided documents,

At no time will MTS be required to correct any portion of the Contractors deficient work product and shall bear no costs or burden associated with Contractors deficient performance and/or work product.

VII. DELIVERABLE REQUIREMENTS

Contractor will be required to submit any and all documentation required by the Scope of Work. The deliverables furnished shall be of a quality acceptable to MTS. The criteria for acceptance shall be a product of neat appearance, well-organized, and procedurally, technically and grammatically correct. MTS reserves the right to request a change in the format if it doesn't satisfy MTS's needs. All work products will become the property of MTS. MTS reserves the right to disclose any reports or material provided by the Contractor to any third party.

Contractor shall provide with each task, a work plan showing the deliverables schedule as well as other relevant date needed for Contractor's work control, when and as requested by MTS.

Contractor's computer data processing and work processing capabilities and data storage should be compatible with Windows compatible PC's, text files readable in Microsoft Word, and standard and customary electronic storage. Contractor shall maintain backup copies of all data conveyed to MTS.

Contractor shall provide MTS with hard copy or electronic versions of reports and/or other material as requested by MTS.

VIII. PRICING

Pricing shall be firm and fixed for the duration of the Work Order and any subsequent Change Orders/Amendments to the Work Order. There shall be no escalation of rates or fees allowed.

IX. ADDITIONAL INFORMATION

List additional information as applicable to the specific Work Order scope of services.

X. PREVAILING WAGE

Prevailing wage rates apply to certain personnel for these services? X Yes ☐ No

If yes, please list classification subject to prevailing wage rates:

Drilling - Laborers Group 1 & 5
Geophysical Survey - Laborer (Eng. const) Group 1
Waste Transportation / Disposal – Driver: Dump Truck

ATTACHMENT B
NEGOTIATED FEE PROPOSAL

Work Order Estimate Summary

MTS Doc. No.	**G1951.0-17**
Work Order No.	**WOA1951-AE-52**
Attachment:	**B**

Work Order Title: **IAD Monitoring Well**

Project No:

Table 1 - Cost Codes Summary (Costs & Hours)

Item	Cost Codes	Cost Codes Description	Total Costs
1		IAD Monitoring Well	$76,666.24
2			
		Totals =	**$76,666.24**

Table 2 - TASKS/WBS Summary (Costs & Hours)

Item	TASKS/WBS	TASKS/WBS Description	Labor Hrs	Total Costs
1		Project Management and Coordination	59.0	$7,970.81
2		Pre-Field Activities	23.0	$6,672.26
3		Field Activities	47.0	$23,687.19
4		Field Activities - Well Development/Sampling	58.0	$13,463.22
5		Field Activities - Temporary Well Abandment/Investigative de	26.0	$16,191.34
6		Data Analysis and Reporting	36.0	$4,928.41
7		Optional Task - Conversion to Permanent Wells	9.0	$3,753.01
		Totals =	**258.0**	**$76,666.24**

Table 3 - Consultant/Subconsultant Summary (Costs & Hours)

(If Applicable, Select One)				Consultant	Labor Hrs	Total Costs
DBE	DVBE	SBE	Other			
				Mott MacDonald	59.0	$8,171.55
				Ninyo and Moore	199.0	$68,494.69
				Totals =	**258.0**	**$76,666.24**

Work Order Estimate

Consultant/Subconsultant: **Mott MacDonald**

MTS Doc. No.: **G1951.0-17**

Work Order No.: **WOA1951-AE-52**

Total Hours = **59**

Total Costs = **$8,171.55**

Work Order Title: **IAD Monitoring Well**

Attachment: **B**

Item	TASKS/WBS	TASKS/WBS Description	ODCs (See Attachment)	Contract Manager	Senior Project Engineer - Rail and Transit	Engineer 4 (QA/QC)	Engineer 4 (Planner)	Engineer 2 (Planner)	CAD	Senior Project Engineer - Rail and Transit	Engineer 4	Accounting / Admin	N/A	Total Hours	Totals
				$ 289.21	$ 182.97	$ 119.52	$ 119.52	$ 93.99	$ 115.10	$ 182.97	$ 119.52	$ 85.58			
1	**Task 1**	**Project Management and Coordination**													
	Project Management and Coordination														
	Subcontract administration			4								12		16	$2,183.80
	TO Coordination			4								12		16	$2,183.80
	Monthly reporting and invoicing			4								16		20	$2,526.12
		Subtotals (Hours) =	N/A	12								40		52	$6,893.72
		Subtotals (Costs) =		$3,470.52								$3,423.20		**52**	**$6,893.72**
2	**Task 2**	**Pre-Field Activities**													
	Pre-Field Activities														
	Readiness review			2		2						1		5	$903.04
		Subtotals (Hours) =	N/A	2		2						1		5	$903.04
		Subtotals (Costs) =		$578.42		$239.04						$85.58		**5**	**$903.04**
3	**Task 3**	**Field Activities**													
	Field Activities														
		Subtotals (Hours) =	N/A												
		Subtotals (Costs) =													
4	**Task 4**	**Field Activities - Well Development/Sampling**													
	Field Activities - Well Development/Sampling														
		Subtotals (Hours) =	N/A												
		Subtotals (Costs) =													
5	**Task 5**	**Field Activities - Temporary Well Abandment/Investigative de**													
	Field Activities - Temporary Well Abandment/Investigative de														
		Subtotals (Hours) =	N/A												
		Subtotals (Costs) =													
6	**Task 6**	**Data Analysis and Reporting**													
	Data Analysis and Reporting			1								1		2	$374.79
		Subtotals (Hours) =	N/A	1								1		2	$374.79
		Subtotals (Costs) =		$289.21								$85.58		**2**	**$374.79**
7	**Task 7**	**Optional Task - Conversion to Permanent Wells**													
	Optional Task - Conversion to Permanent Wells														
		Subtotals (Hours) =	N/A												
		Subtotals (Costs) =													
		Totals (Summary) =											Totals =	**59**	**$8,171.55**
		Total (Hours) =	N/A	15		2						42		59	
		Total (Costs) =		$4,338.15		$239.04						$3,594.36			$8,171.55
		Percentage of Total (Hours) =	N/A	25%		3%						71%		100%	
		Percentage of Total (Costs) =		53%		3%						44%			100%

Work Order Estimate Summary

Consultant/ Subconsultant: **Mott MacDonald**

Contract No: **G1951.0-17**

Task Order No. **WOA1951-AE-52**

Work Order Title: **IAD Monitoring Well**

Attachment: **B**

TASKS/WBS (1-5)

ODC Item	Description	Unit	Unit Cost	Task 1		Task 2		Task 3		Task 4		Task 5	
				Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
				Subtotal =		Subtotal =		Subtotal =		Subtotal =		Subtotal =	

TASKS/WBS (6-10)

ODC Item	Description	Task 6		Task 7 (Optional)								Totals	
		Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
		Subtotal =		Subtotal =		Subtotal =		Subtotal =		Subtotal =		Totals =	

Work Order Estimate Summary

Total Hours = **199**

Total Costs = **$68,494.69**

Consultant/Subconsultant: **Ninyo and Moore**

Work Order Title: **IAD Monitoring Well**

MTS Doc. No.: **G1951.0-17**

Work Order No.: **WOA1951-AE-52**

Attachment: **B**

Item	TASKS/WBS	TASKS/WBS Description	ODCs (See Attachment)	Prinicpal Engineer/ Geoligist/ Environmental Scientist	Senior Engineer/ Geologist/ Environmental Scientist	Data Processing, Technical Editing or Reproduction	Field Tester	Senior Staff Engineer/ Geoligist/ Environmental Scientist	GIS Analyst					Total Hours	Totals
				$ 201.24	$ 148.19	$ 81.85	$ 143.96	$ 92.54	$ 118.40						
1	**Task 1**	**Project Management and Coordination**													
	Project Management and Coordination			2	4	1								7	$1,077.09
		Subtotals (Hours) =	N/A	2	4	1								7	$1,077.09
		Subtotals (Costs) =		$402.48	$592.76	$81.85								**7**	**$1,077.09**
2	**Task 2**	**Pre-Field Activities**													
	Pre-Field Activities		$3,663.50	2	4			12						18	$5,769.22
		Subtotals (Hours) =	N/A	2	4			12						18	$5,769.22
		Subtotals (Costs) =	$3,663.50	$402.48	$592.76			$1,110.48						**18**	**$5,769.22**
3	**Task 3**	**Field Activities**													
	Field Activities		$18,759.50		3		8	36						47	$23,687.19
		Subtotals (Hours) =	N/A		3		8	36						47	$23,687.19
		Subtotals (Costs) =	$18,759.50		$444.57		$1,151.68	$3,331.44						**47**	**$23,687.19**
4	**Task 4**	**Field Activities - Well Development/Sampling**													
	Field Activities - Well Development/Sampling		$7,762.00		6			52						58	$13,463.22
		Subtotals (Hours) =	N/A		6			52						58	$13,463.22
		Subtotals (Costs) =	$7,762.00		$889.14			$4,812.08						**58**	**$13,463.22**
5	**Task 5**	**Field Activities - Temporary Well Abandment/Investigative de**													
	Field Activities - Temporary Well Abandment/Investigative de		$13,674.00		2			24						26	$16,191.34
		Subtotals (Hours) =	N/A		2			24						26	$16,191.34
		Subtotals (Costs) =	$13,674.00		$296.38			$2,220.96						**26**	**$16,191.34**
6	**Task 6**	**Data Analysis and Reporting**													
	Data Analysis and Reporting			4	16	2		8	4					34	$4,553.62
		Subtotals (Hours) =	N/A	4	16	2		8	4					34	$4,553.62
		Subtotals (Costs) =		$804.96	$2,371.04	$163.70		$740.32	$473.60					**34**	**$4,553.62**
7	**Task 7**	**Optional Task - Conversion to Permanent Wells**													
	Optional Task - Conversion to Permanent Wells		2,864.50		1			8						9	$3,753.01
		Subtotals (Hours) =	N/A		1			8						9	$3,753.01
		Subtotals (Costs) =	$2,864.50		$148.19			$740.32						**9**	**$3,753.01**
	Totals (Summary) =												Totals =	**199**	**$68,494.69**
	Total (Hours) =		N/A	8	36	3	8	140	4					199	
	Total (Costs) =		$46,723.50	$1,609.92	$5,334.84	$245.55	$1,151.68	$12,955.60	$473.60						$68,494.69
	Percentage of Total (Hours) =		N/A	4%	18%	2%	4%	70%	2%					100%	
	Percentage of Total (Costs) =		68%	2%	8%	0%	2%	19%	1%						100%

Work Order Estimate Summary

Consultant/ Subconsultant: **Fehr and Peers**

Contract No: **G1951.0-17**

Task Order No. **WOA1951-AE-52**

Work Order Title: **IAD Monitoring Well**

Attachment: B

TASKS/WBS (1-5)

ODC Item	Description	Unit	Unit Cost	Task 1		Task 2		Task 3		Task 4		Task 5	
				Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total
1	Mileage	mile	$0.58			25	$14.50	75	$43.50	100	$58.00	50	$29.00
2	DEH Well permit fee	LS	$1,799.00			1	$1,799.00						
3	Sub - Utility Clearance	LS	$1,850.00			1	$1,850.00						
4	Concrete Coring Equipment	HR	$80.00					8	$640.00				
5	PID Usage	Days	$100.00					3	$300.00				
6	Sub - Drilling	LS	$15,200.00					1	$15,200.00				
7	Sub - Analytic Testing - TPH	EA	$53.00					42	$2,226.00				
8	Subcontractor - Analytical Testing - VOCs (8260B) (Task4)	EA	$50.00					7	$350.00	14	$700.00		
9	Interface Probe Usage	Days	$50.00							4	$200.00		
10	Bonded Tubing (200 ft)	LS	$350.00							1	$350.00		
11	QED Sample Pro 1.75" Pump (3 Pumps)	Days	$162.00							2	$324.00		
12	QED MP50 Controller/Compressor	Days	$92.00							2	$184.00		
13	Horiba U-53-2	Days	$125.00							2	$250.00		
14	Bladders	EA	$11.00							14	$154.00		
15	Sub - Well Development	LS	$4,800.00							1	$4,800.00		
16	Subcontractor - Analytical Testing - TPH (8015B[M]) (Task 4)	Unit	$53.00							14	$742.00		
17	Sub - Well Abandonment	LS	$9,940.00									1	$9,940.00
18	Sub - IDW Disposal	LS	$3,705.00									1	$3,705.00
19	Subcontractor - Surface Completion / Well Box Installation	Unit	$350.00										
20	Subcontractor - Mob / Demob	Days	$400.00										
				Subtotal =		Subtotal =	**$3,663.50**	Subtotal =	**$18,759.50**	Subtotal =	**$7,762.00**	Subtotal =	**$13,674.00**

TASKS/WBS (6-10)

ODC Item	Description	Task 6		Task 7 (Optional)								Totals	
		Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total
1	Mileage			25	$14.50							**275**	**$159.50**
2	DEH Well permit fee											**1**	**$1,799.00**
3	Sub - Utility Clearance											**1**	**$1,850.00**
4	Concrete Coring Equipment											**8**	**$640.00**
5	PID Usage											**3**	**$300.00**
6	Sub - Drilling											**1**	**$15,200.00**
7	Sub - Analytic Testing - TPH											**42**	**$2,226.00**
8	Subcontractor - Analytical Testing - VOCs (8260B) (Task4)											**21**	**$1,050.00**
9	Interface Probe Usage											**4**	**$200.00**
10	Bonded Tubing (200 ft)											**1**	**$350.00**
11	QED Sample Pro 1.75" Pump (3 Pumps)											**2**	**$324.00**
12	QED MP50 Controller/Compressor											**2**	**$184.00**
13	Horiba U-53-2											**2**	**$250.00**
14	Bladders											**14**	**$154.00**
15	Sub - Well Development											**1**	**$4,800.00**
16	Subcontractor - Analytical Testing - TPH (8015B[M]) (Task 4)											**14**	**$742.00**
17	Sub - Well Abandonment											**1**	**$9,940.00**
18	Sub - IDW Disposal											**1**	**$3,705.00**
19	Subcontractor - Surface Completion / Well Box Installation			7	$2,450.00							**7**	**$2,450.00**
20	Subcontractor - Mob / Demob			1	$400.00							**1**	**$400.00**
		Subtotal =		Subtotal =	**$2,864.50**	Subtotal =		Subtotal =		Subtotal =		**Totals =**	**$46,723.50**

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101
Tel 619.231.1466 Fax 619.234.3407

September 17, 2020

MTS Doc. No. G1951.0-17
Work Order No. WOA1951-AE-52.01

Mr. Dan Tempelis
Senior Vice President
Mott MacDonald, LLC
401 B Street, Suite 1520
San Diego, CA 92101

Dear Mr. Tempelis:

Subject: AMENDMENT NO. 1 TO WORK ORDER WOA1951-AE-52, UNDER MTS DOC. NO. G1951.0-17, GENERAL ENGINEERING SERVICES FOR A MONITORING WELL AT IAD

This letter shall serve as Amendment No. 1 to Work Order WOA1951-AE-52 under MTS Doc. No. G1951.0-17, for engineering services for a monitoring well at IAD.

.

SCOPE OF SERVICES

This Amendment shall provide additional environmental services to abandon the temporary and permanent groundwater monitoring wells at IAD. Work provided under this Work Order will be performed in accordance with the attached Scope of Services (Attachment A).

SCHEDULE

This Amendment shall extend the Scope of Services, as described above, for an additional six (6) weeks from the execution date of this Amendment.

PAYMENT

This Amendment shall increase the value of the Work Order by $30.959.53. The revised total value of the Work Order shall not exceed $107,625.77 without prior authorization of MTS.

Please sign below, and return the document to the Contracts Specialist at MTS. All other terms and conditions shall remain the same and in effect.

Sincerely,

Sharon Cooney
Chief Executive Officer

Accepted:

_____
Dan Tempelis, Senior Vice President
Mott MacDonald, LLC

Date: _____

Attachments: Attachment A, Scope of Services
Attachment B, Negotiated Fee Proposal

Metropolitan Transit System (MTS) is a California public agency comprised of San Diego Transit Corp., San Diego Trolley, Inc. and San Diego and Arizona Eastern Railway Company (nonprofit public benefit corporations). MTS is the taxicab administrator for seven cities. MTS member agencies include the cities of Chula Vista, Coronado, El Cajon, Imperial Beach, La Mesa, Lemon Grove, National City, Poway, San Diego, Santee, and the County of San Diego.

ATTACHMENT A
SCOPE OF SERVICES

MTS Doc. No. G1951.0-17 **Work Order No. WOA1951-AE-52.01**

WORK ORDER TITLE: IAD MONITORING WELL

I. PROJECT DESCRIPTION

These services are to investigate free product at the San Diego Transit Corporation (SDTC) Imperial Avenue Division Bus Yard located at 100 16th Street, in San Diego, California (site). In August 2019, Ninyo & Moore submitted a Work Plan to perform additional assessment at Area 1 in response to the Regional Water Quality Control Board, San Diego Region (RWQCB) email dated July 6, 2017, which requested assessment of the source, nature, and extent of free product in Area 1. In August 2019, the RWQCB requested updates to Section 8.5, Groundwater Sampling, and Section 12, Proposed Work Schedule. This work order incorporated the RWQCB's requested revisions. In an October 16, 2019 email, the RWQCB caseworker also requested two rounds of groundwater monitoring prior to requesting approval to abandon the wells. The additional scope of services, and schedule are provided below.

II. SCOPE OF WORK

The proposed scope of services is intended to abandon the permanent site wells, which is a condition for case closure. Work will be conducted after approval from RWQCB and in accordance with County of San Diego Department of Environmental Health (DEH) Site Assessment Manual (SAM) guidelines. All work will be overseen by a California-registered Professional Geologist.

Task 7 – Field Activities – Well Abandonment of Permanent Wells

- Provide additional coordination with the client, MTS, and RWQCB.
- Obtain a well abandonment permit from the DEH to abandon the eight permanent groundwater monitoring wells.
- Notify Underground Service Alert and MTS a minimum of 72 hours prior to field work.
- Abandon the permanent groundwater monitoring wells by overdrilling to remove the well construction materials. Backfill each boring with bentonite grout/cement via a tremie pipe from the total depth to approximately 3 feet bgs. After the grout/cement has set, a bentonite seal of bentonite chips will be placed in the annulus from approximately 1 to 3 feet bgs and hydrated using potable water. Each boring will be capped with concrete to approximately match the existing surface grade.
- Contract a waste transportation and disposal contractor to dispose of the investigative-derived waste (soil cuttings and decontamination fluid).
- Submit a 60-day well permit report including boring logs and figures will be submitted to the DEH to fulfill the permit requirements.

III. SCHEDULE OF SERVICES/MILESTONES/DELIVERABLES

A. Tasks Schedule

We anticipate requiring approximately 6 weeks to complete the scope of services.

IV. ASSUMPTIONS

This proposal assumes the following:

- Access to the site and well locations will be granted by MTS during regular business hours (7 am to 6 pm).

- Field work will be conducted concurrently with the abandonment of the temporary wells. Well abandonment of the permanent wells is anticipated to take 3 days.

- For the purposes of this estimate, it is assumed that 20 drums of non-hazardous soil / decontamination water will be generated. If, based on the analytical data, the soil is profiled as hazardous waste, additional costs for soil disposal will apply.

- MTS will sign a property owner consent form for the well permit application and waste disposal manifests for disposal of the IDW.

- Laboratory analytical testing will be performed on a standard turnaround time basis (7 to 10 business days).

- Prevailing wages apply.

ATTACHMENT B
NEGOTIATED FEE PROPOSAL

Work Order Estimate Summary

MTS Doc. No.	**G1951.0-17**
Work Order No.	**WOA1951-AE-52.01**
Attachment:	**B**

Work Order Title: **Monitoring Well Abandonment**

Project No:

Table 1 - Cost Codes Summary (Costs & Hours)

Item	Cost Codes	Cost Codes Description	Total Costs
1		Monitoring Well Abandonment	$30,959.53
2			
		Totals =	**$30,959.53**

Table 2 - TASKS/WBS Summary (Costs & Hours)

Item	TASKS/WBS	TASKS/WBS Description	Labor Hrs	Total Costs
1	Task 1	Project Management and Coordination	13.0	$1,971.43
2	Task 2	Pre-Field Activities		
3	Task 3	Field Activities		
4	Task 4	Field Activities - Well Development/Sampling		
5	Task 5	Field Activities - Temporary Well Abandment/Investigative de		
6	Task 6	Data Analysis and Reporting		
7	Task 7	Well Abandonment of Permanent Wells	88.0	$28,988.10
		Totals =	**101.0**	**$30,959.53**

Table 3 - Consultant/Subconsultant Summary (Costs & Hours)

(If Applicable, Select One)				Consultant	Labor Hrs	Total Costs
DBE	DVBE	SBE	Other			
				Mott MacDonald	13.0	$1,971.43
				Ninyo and Moore	88.0	$28,988.10
				Totals =	**101.0**	**$30,959.53**

Work Order Estimate Summary

Total Hours =	13	Mott MacDonald	MTS Doc. No.: G1951.0-17
Total Costs =	$1,971.43	Monitoring Well Abandonment	Work Order No.: WOA1951-AE-52.01
			Attachment: B

Item	TASKS/WBS	TASKS/WBS Description	ODCs (See Attachment)	Contract Manager	Accounting/ Admin	N/A	Total Hours	Totals
				$ 295.87	$ 87.55			
1	Task 1	Project Management and Coordination						
		Project Management and Coordination		1			1	$295.87
		Subcontract administration		0.5	1		2	$235.49
		TO Coordination		1			1	$295.87
		Monthly reporting and invoicing		1.5	8		10	$1,144.21
		Subtotals (Hours) =	N/A	4	9		13	$1,971.43
		Subtotals (Costs) =		$1,183.48	$787.95		**13**	**$1,971.43**
2	Task 2	Pre-Field Activities						
		Pre-Field Activities						
		Readiness review						
		Subtotals (Hours) =	N/A					
		Subtotals (Costs) =						
3	Task 3	Field Activities						
		Field Activities						
		Subtotals (Hours) =	N/A					
		Subtotals (Costs) =						
4	Task 4	Field Activities - Well Development/Sampling						
		Field Activities - Well Development/Sampling						
		Subtotals (Hours) =	N/A					
		Subtotals (Costs) =						
5	Task 5	Field Activities - Temporary Well Abandment/Investigative de						
		Field Activities - Temporary Well Abandment/Investigative de						
		Subtotals (Hours) =	N/A					
		Subtotals (Costs) =						
6	Task 6	Data Analysis and Reporting						
		Data Analysis and Reporting						
		Subtotals (Hours) =	N/A					
		Subtotals (Costs) =						
7	Task 7	Well Abandonment of Permanent Wells						
		Well Abandonment of Permanent Wells						
		Subtotals (Hours) =	N/A					
		Subtotals (Costs) =						
		Totals (Summary) =				Totals =	**13**	**$1,971.43**
		Total (Hours) =	N/A	4	9		13	
		Total (Costs) =		$1,183.48	$787.95			$1,971.43
		Percentage of Total (Hours) =	N/A	31%	69%		100%	
		Percentage of Total (Costs) =		60%	40%			100%

Work Order Estimate Summary

Consultant/ Subconsultant: **Mott MacDonald**

Contract No: **G1951.0-17**

Task Order No. **WOA1951-AE-52.01**

Work Order Title: **Monitoring Well Abandonment**

Attachment: B

TASKS/WBS (1-5)

ODC Item	Description	Unit	Unit Cost	Task 1		Task 2		Task 3		Task 4		Task 5	
				Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
			Subtotal =			Subtotal =		Subtotal =		Subtotal =		Subtotal =	

TASKS/WBS (6-10)

ODC Item	Description	Task 6		Task 7 (Optional)								Totals	
		Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
		Subtotal =		Subtotal =		Subtotal =		Subtotal =		Subtotal =		**Totals =**	

Work Order Estimate Summary

Consultant/Subconsultant: **Ninyo and Moore** Doc. No.: **G1951.0-17**

Total Hours = **88** Work Order No.: **WOA1951-AE-52.01**

Total Costs = **$28,988.10** Work Order Title: **Monitoring Well Abandonment** Attachment: **B**

Item	TASKS/WBS	TASKS/WBS Description	ODCs (See Attachment)	Principal Engineer / Geologist / Environmental Scientist	Senior Engineer / Geologist / Environmental Scientist	Senior Staff Engineer / Geologist / Environmental Scientist	GIS Specialist	Administrative / Word Processor / Office Assistant	Total Hours	Totals
				$205.86	$151.60	$94.67	$121.12	$83.73		
1	Task 1	Project Management and Coordination								
		Subtotals (Hours) =	N/A							
		Subtotals (Costs) =								
2	Task 2	Pre-Field Activities								
		Subtotals (Hours) =	N/A							
		Subtotals (Costs) =								
3	Task 3	Field Activities								
		Subtotals (Hours) =	N/A							
		Subtotals (Costs) =								
4	Task 4	Field Activities - Well Development/Sampling								
		Subtotals (Hours) =	N/A							
		Subtotals (Costs) =								
5	Task 5	Field Activities - Temporary Well Abandment/Investigative de								
		Subtotals (Hours) =	N/A							
		Subtotals (Costs) =								
6	Task 6	Data Analysis and Reporting								
		Subtotals (Hours) =	N/A							
		Subtotals (Costs) =								
7	Task 7	Well Abandonment of Permanent Wells								
	Well Abandonment of Permanent Wells		17,894.50	12	24	44	4	4	88	$28,988.10
		Subtotals (Hours) =	N/A	12	24	44	4	4	88	$28,988.10
		Subtotals (Costs) =	$17,894.50	$2,470.32	$3,638.40	$4,165.48	$484.48	$334.92	**88**	**$28,988.10**
		Totals (Summary) =							**88**	**$28,988.10**
		Total (Hours) =	N/A	12	24	44	4	4	88	
		Total (Costs) =	$17,894.50	$2,470.32	$3,638.40	$4,165.48	$484.48	$334.92		$28,988.10
		Percentage of Total (Hours) =	N/A	14%	27%	50%	5%	5%	100%	
		Percentage of Total (Costs) =	62%	9%	13%	14%	2%	1%		100%

Work Order Estimate Summary

Consultant/ Subconsultant: **Fehr and Peers**

Contract No: **G1951.0-17**

Task Order No. **WOA1951-AE-52.01**

Work Order Title: **Monitoring Well Abandonment**

Attachment: B

TASKS/WBS (1-5)

ODC Item	Description	Unit	Unit Cost	Task 1		Task 2		Task 3		Task 4		Task 5	
				Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total
1	Mileage	mile	$0.58										
2	PID Usage	Days	$100.00										
3	DEH Well permit fee	LS	$1,321.00										
4	Subcontractor - Well Abandonment (Permanent Wells)	LS	$14,060.00										
5	Subcontractor - IDW Disposal	LS	$1,730.00										
6	Subcontractor - Analytical Testing - TPH (8015B[M])	Unit	$63.00										
7	Subcontractor - Analytical Testing - VOCs (8260B)	Unit	$69.00										
8	Subcontractor - Analytical Testing - Title 22 metals	Unit	$88.00										
9													
10													
				Subtotal =		Subtotal =		Subtotal =		Subtotal =		Subtotal =	

TASKS/WBS (6-10)

ODC Item	Description	Task 6		Task 7 (Optional)								Totals	
		Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total
1	Mileage			75	$43.50							**75**	**$43.50**
2	PID Usage			3	$300.00							**3**	**$300.00**
3	DEH Well permit fee			1	$1,321.00							**1**	**$1,321.00**
4	Subcontractor - Well Abandonment (Permanent Wells)			1	$14,060.00							**1**	**$14,060.00**
5	Subcontractor - IDW Disposal			1	$1,730.00							**1**	**$1,730.00**
6	Subcontractor - Analytical Testing - TPH (8015B[M])			2	$126.00							**2**	**$126.00**
7	Subcontractor - Analytical Testing - VOCs (8260B)			2	$138.00							**2**	**$138.00**
8	Subcontractor - Analytical Testing - Title 22 metals			2	$176.00							**2**	**$176.00**
9													
10													
		Subtotal =		Subtotal =	**$17,894.50**	Subtotal =		Subtotal =		Subtotal =		**Totals =**	**$17,894.50**

Metropolitan Transit System

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Agenda Item No. 17

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

September 17, 2020

SUBJECT:

MANAGED PRINT SERVICES AND CANON MULTI-FUNCTION DEVICE (MFD) PURCHASE - CONTRACT AWARD

RECOMMENDATION:

That the San Diego Metropolitan Transit System (MTS) Board of Directors authorize the Chief Executive Officer (CEO) to execute MTS Doc. G2354.0-20 (in substantially the same format as Attachment A) with Signa Digital Solutions, a Small Business, for four (4) years in the amount of $635,937.00.

Budget Impact

Funding for the capital purchases will be dependent upon the annual Capital Improvement (CIP) budgetary process. Maintenance and repair services will be funded through the Operating budgeting account number 902010-536500. The total capital and operating cost of this agreement will not exceed $635,937.00

Estimated Purchase (CIP):	$381,700.00
4 Years Maintenance and Repair:	$254,237.00

DISCUSSION:

In 2015, MTS standardized all existing copiers, or MFD, to the Canon brand. Standardization allowed MTS to increase efficiency and permitted the consolidation of multiple pieces of equipment into one central network environment for copying, printing, scanning, emailing and faxing. MTS currently has a total of 35 active Canon devices.

The standard useful life for MFDs is five to seven years. Staff has combined this benchmark useful life with historical data on service calls and downtime to develop a replacement plan to ensure reliability of the devices, parts availability, and reduced

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MTS member agencies include the cities of Chula Vista, Coronado, El Cajon, Imperial Beach, La Mesa, Lemon Grove, National City, Poway, San Diego, Santee, and the County of San Diego.

maintenance costs. Based on the replacement plan, MTS plans to replace 28 copiers in Year 1 of the contract (subject to funding approval in the Fiscal Year (FY) 2022 CIP), six (6) copiers in Year 2 of the contract (subject to funding approval in the FY 2023 CIP), and one (1) copier in Year 4 of the contract (subject to funding approval in the FY 2025 CIP). The total estimated need for copier replacement is $381,700 over the four-year contract term.

MTS intends to utilize the State of Colorado Agreement (Master Agreement Number 140595) with the Contractor (Canon USA., Inc) under the National Association of State Procurement Officers (NASPO) Value point Cooperative Purchasing Program effective August 8, 2019 for this procurement. The State of California signed a participating addendum which allows MTS, as local agency, to benefit from the competitive pricing offered through NASPO. A strategic procurement practice is to obtain better pricing through larger purchases of goods and services, which is obtained through the use of cooperative purchases. This cooperative approach achieves cost-effectiveness and efficiency and takes advantage of volume pricing achieved through competition.

Signa Digital Solutions (Signa) is an authorized dealer to sell/resell Canon MFDs and provide maintenance services on Canon devices. Signa has access to purchase genuine Canon products, supplies and accessories; has authorized dealer access to specialized Canon administrative support services; and has access to authorized repair facilities and comprehensive support for Canon product warranties throughout the duration of the contract.

Signa also has certified technicians authorized to work on Canon MFDs and access to ongoing product training from Canon USA. As additional models are purchased, Signa will ensure that its technicians are certified in order to fulfill MTS needs and requests.

MTS compared the negotiated rates under the NASPO agreement to the Independent Cost Estimate (ICE) prepared by staff, and the pricing offered through NASPO will result in approximately a 24% savings from the original ICE amount for the repair and maintenance services. The unit pricing for the multi-function device purchases and related equipment was competitive as compared to the pricing negotiated in the 2015 contract.

Therefore, the staff recommends that the MTS Board of Directors authorize the CEO to execute MTS Doc. G2354.0-20 (in substantially the same format as Attachment A) with Signa Digital Solutions, Inc., for a four (4) year period in the amount of $635,937.00.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Julia Tuer, 619.557.4515, Julia.Tuer@sdmts.com

Attachment: A. Draft Amendment MTS Doc. No. G2354.0-20

Metropolitan Transit System

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STANDARD SERVICES AGREEMENT
FOR
CANON MULTI-FUNCTION DEVICES (MFDs) PURCHASE, MAINTENANCE AND REPAIR SERVICES
MTS DOC NO. G2354.0-20

THIS AGREEMENT is entered into this _____ day of _____ 2020, in the State of California by and between San Diego Metropolitan Transit System ("MTS"), a California public agency, and the following, hereinafter referred to as "Contractor":

Name: Signa Digital Solutions
Form of Business: Corporation
(Corporation, partnership, sole proprietor, etc.)

Address: 7350 Opportunity Road
San Diego CA 92111

Telephone: 858-790-8272

Email Address: skibry@gosigna.com

Authorized person to sign contracts: Shannon Kirby (Name) President (Title)

The attached Standard Conditions are part of this Agreement. The Contractor agrees to furnish to MTS services and materials, as follows:

Canon multi-function devices purchase, maintenance and repair services, as specified in the Scope of Work (attached as Exhibit A), Cost Proposal Form (attached as Exhibit B), and in accordance with the Standard Services Agreement, and Standard Conditions Services (attached as Exhibit C).

The contract term is for a total of five years, effective October 1, 2020 through September 30, 2024. Contract shall not exceed $635,937.00 without prior authorization.

Payment terms shall be net 30 days from invoice date.

SAN DIEGO METROPOLITAN TRANSIT SYSTEM	SIGNA DIGITAL SOLUTIONS
By: _____ Sharon Cooney, Chief Executive Officer	By _____
Approved as to form:	
By: _____ Karen Landers, General Counsel	Title: _____

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Metropolitan Transit System

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Agenda Item No. 18

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

September 17, 2020

SUBJECT:

FARE COLLECTION (RAIL VALIDATOR MASTS CHANGE ORDER) – RATIFICATION AND APPROVAL OF AMENDMENTS

RECOMMENDATION:

That the San Diego Metropolitan Transit System (MTS) Board of Directors ratify Amendment 3 and authorize the Chief Executive Officer (CEO) to execute Amendment 4 to MTS Doc. No. G2091.0-18 (in substantially the same format as Attachment A) with Innovations in Transportation, Inc. (INIT), for a total contract increase of $964,948.08.

Budget Impact

The amendments shall not exceed $964,948.08 and are funded by Capital Improvement Program (CIP) account number 1009004902. The amendments summary is shown in the table below:

Date Issued	Document	Amount
5/29/20	Amendment # 3 (Ratify)	$57,681.00
9/17/20	Amendment # 4 (Approve)	$907,267.08
	Total Amendments	$964,948.08

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The total value approved by the MTS Board will now be $39,726,407.14 as shown in the table below:

Date Issued	Board Approval Date	Document	Description	Amount
1/1/19	12/13/18	Agreement	Account based fare collection system	$37,667,727.57
12/12/19	12/13/18	AM 1	Commence work on options previously approved on 12/13/18	Included in approved agreement
12/18/19	12/12/19	AM 2	Commence work on NEW options	$1,093,731.49
5/26/20	*9/17/20*	*AM 3*	*Change Order - Integrate Conduent's CAD/AVL solution*	*$57,681.00*
TBD	*9/17/20*	*AM 4*	*Change Order - Rail Validator Masts*	*$907,267.08*
			Total Board Approved Amount	**39,726,407.14**

DISCUSSION:

On December 13, 2018, the MTS Board of Directors approved MTS Doc. No. G2091.0 for the design and implementation of a new fare collection system. A major change for MTS passengers is the Trolley Validator, which will incorporate a new design and will make validating fares easier and more flexible. Customers will simply tap their PRONTO card on the validator or scan a barcode from their PRONTO mobile application. In the future, customers will be able to charge fares directly to their contactless credit card by simply tapping on a validator. These validators also support near-field communication (NFC) ensuring MTS is future-proof as new validation features are introduced into the marketplace by the mobile device industry.

In the original fare system procurement, MTS requested 282 Fare Validator masts for the Trolley stations. The original design provided by INIT included masts equipped with one validator and ready to support Power over Ethernet connections. Upon further review from MTS staff, it was determined the design should be improved to achieve the following:

1. All masts should be interchangeable and support Fiber connections in addition to Power over Ethernet.

2. All masts should be Dual-Validator capable.

3. The service door should be modified to facilitate maintenance.

In addition to the Validator mast design enhancement, MTS is requesting the purchase of an additional 86 masts and 128 validators to be placed at key high ridership stations. Although the proposal was slightly higher than the MTS Independent Cost Estimate (ICE) of $904,689.84, staff compared the average cost of procuring the equivalent number of rail validators through other fare system integrators based on previously received proposals. INIT's proposed costs are 10% below the average cost of three other fare system vendors, making INIT's proposal fair and reasonable.

Amendment 3

In the original fare system procurement, MTS requested that the CAD/AVL solution currently provided by Conduent would integrate with the fare system. The integration requested would allow for single sign on, ability to capture trip information with the fare transaction inclusive of route, run and block as well as the door opening. INIT proposed to integrate with the Conduent CAD/AVL system via INIT's ISI programming protocol.

Conduent is the sole supplier of CAD/AVL services to MTS and NCTD. There is a major CAD/AVL upgrade underway for the entire regional bus fleet. Conduent requires third party integrations to utilize the J1587 UDP specification. This is especially needed due to a large portion of the bus fleet not being able to support INIT's ISI protocol due to hardware discrepancies amongst the fleet. This discrepancy remains even after the CAD/AVL upgrade that is currently underway. As a result, INIT will need to conform their programming to Conduent's specification hence incurring the additional costs. These are regional costs for which NCTD will pay a share to be determined.

Therefore, staff recommends that the MTS Board of Directors ratify Amendment 3 and authorize the CEO to execute Amendment 4 to MTS Doc. No. G2091.0-18 (in substantially the same format as Attachment A) with Innovations in Transportation, Inc. (INIT), a total contract increase of $964,948.08.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Julia Tuer, 619.557.4515, Julia.Tuer@sdmts.com

Attachments: A. Draft Amendment G2091.4-18
B. Executed Amendment G2091.3-18

Metropolitan Transit System

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Amendment 4

Effective Date: September 17, 2020 MTS Doc No. G2091.4-18

ACCOUNT BASED FARE COLLECTION SYSTEM

INIT Innovations in Transportation, Inc.
Roland Staib
President and CEO
424 Network Station
Chesapeake, VA 23320

This shall serve as Amendment No.4 to the original agreement G2091.0-18 as further described below.

SCOPE

MTS has requested a change to the trolley validator masts, a wider, more water-resistant single-head and dual-head masts along with options, including exotic screw heads, secure nuts, and media converters. With these wider masts, MTS will benefit from reduced maintenance time as the maintenance opening is wider. Additionally, the new masts will make it possible to house a media converter for fiber optic connections. The detailed changes are shown in Exhibit A – INIT's Proposal.

SCHEDULE

There are no changes to the schedule provision of the agreement. The contract termination date remains December 31, 2028.

PAYMENT

This contract amendment authorizes additional costs not to exceed $907,267.08. The total value of the exercised services/options shall be in the amount of $26,630,558.60. This amount shall not be exceeded without prior written approval from MTS.

Please sign and return the copy marked *original* to the Contract Specialist at MTS. All other terms and conditions shall remain the same and in effect. Retain the other copies for your records.

Sincerely,

Sharon Cooney, Chief Executive Officer

Agreed:

Roland Staib, President and CEO
INIT Innovations in Transportation, Inc.

Date: _____

Attachment: A. INIT's Proposal

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Metropolitan Transit System

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Amendment 3

Effective Date: May 29, 2020 MTS Doc No. G2091.3-18

ACCOUNT BASED FARE COLLECTION SYSTEM

INIT Innovations in Transportation, Inc.
Roland Staib
President and CEO
424 Network Station
Chesapeake, VA 23320

This shall serve as Amendment No.3 to the original agreement G2091.0-18 as further described below.

SCOPE

MTS has requested a change to the data exchange between the PROXmobil3 and Conduent VLU from INIT's ISI protocol to Conduent's protocol (Conduent J1587 UDP Interface Specification: See "IVU J1587_UDP_ICD" included as Attachment A).

This amendment reflects the additional changes and costs that will be incurred by Contractor under this change order to integrate Conduent's CAD/AVL solution.

SCHEDULE

There are no changes to the schedule provision of the agreement. The contract termination date remains December 31, 2028.

PAYMENT

This contract amendment authorizes additional costs not to exceed $57,681.00 ($31,428.00 for One-time Interface Integration Fare-CAD + $ 26,253.00 for Ongoing Software Maintenance for 10 years) as detailed in Attachment B. The total value of this contract including this amendment shall be in the amount of $25,723,291.52. This amount shall not be exceeded without prior written approval from MTS.

Note: As noted in the Original Agreement, Operations and Maintenance at $11,004,315.94 will be exercised at a later date.

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Please sign and return the copy marked *original* to the Contract Specialist at MTS. All other terms and conditions shall remain the same and in effect. Retain the other copies for your records.

Sincerely,

Sharon Cooney, Chief Executive Officer

Agreed:

Roland Staib, President and CEO
INIT Innovations in Transportation, Inc.

Date: 6/5/2020

Attachment: A. Conduent J1587 UDP Interface Specification
B. Conduent Interface Protocol

Metropolitan Transit System

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Agenda Item No. 19

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

September 17, 2020

SUBJECT:

LAS CHOLLAS CREEK BRIDGE REPAIR DESIGN - WORK ORDER AMENDMENT

RECOMMENDATION:

That the San Diego Metropolitan Transit System (MTS) Board of Directors:

1) Ratify Work Order WOA1951-AE-58 under MTS Doc. No. G1951.0-17 (in substantially the same format as Attachment A) with Mott MacDonald, LLC (MM) totaling $67,607.46, for Las Chollas Creek Bridge assessment services; and

2) Authorize the Chief Executive Officer (CEO) to execute Work Order amendment WOA1951-AE-58.01 under MTS Doc. No. G1951.0-17 (in substantially the same format as Attachment B), with MM totaling $80,187.49, for preparation of final construction documents for most immediate portions of the bridge repair work.

Budget Impact

Today's action will bring total value of the MM Doc. No. G1951.0-17-AE-58 to $147,794.95, and will be funded through the MTS Capital Improvement Project (CIP) Project No. 2005111101 - Las Chollas Creek Bridge Repair

MTS Doc No.	Purpose	Amount	Board Approval Date
WOA1951-AE-58	Original Bridge Assessment Work Order	$67,607.46	CEO approval 6/19/20 per Board Policy No. 41
WOA1951-AE-58.01	Construction Documents for Pile and Pile Cap Repair	$80,187.49	Today's Proposed Action
	Total	**$147,794.95**	

Metropolitan Transit System (MTS) is a California public agency comprised of San Diego Transit Corp., San Diego Trolley, Inc. and San Diego and Arizona Eastern Railway Company (nonprofit public benefit corporations). MTS is the taxicab administrator for seven cities.

MTS member agencies include the cities of Chula Vista, Coronado, El Cajon, Imperial Beach, La Mesa, Lemon Grove, National City, Poway, San Diego, Santee, and the County of San Diego.

DISCUSSION:

In March 2010, the Federal Railroad Administration (FRA), in Code of Federal Regulations (CFR) 49 Part 237, mandated all rail operators to conduct bridge inspections. In response, MTS contracted Jacobs Engineering, a licensed bridge inspector (Inspector), to perform in-depth bridge inspections and evaluations every twelve (12) months on seventy-three (73) significant bridge structures on its Blue, Orange, and Green Trolley Lines.

On May 5, 2020, the Las Chollas Creek Bridge was inspected. The Inspector identified concerns with the condition of the bridge, and recommended a follow-up inspection of the bridge under freight rail loads. The subsequent inspection occurred on May 19, 2020, and recommended a special inspection every three (3) months on the eastbound track until repairs were completed. Furthermore, if the bridge condition changes are discovered during the special inspections, freight traffic may be required to be moved to the westbound track until repairs are completed.

As a result of the aforementioned bridge inspections, MTS staff contracted with MM to perform a detailed assessment of the bridge condition, and immediately begin to develop 50% design drawings for repair of the bridge. This amendment is necessary to provide funds to bring the design to 100% and allow MTS to solicit construction contractors for the repair.

On January 12, 2016, San Diego Association of Governments (SANDAG) and MTS issued a joint Request for Statement of Qualifications (RFSQ) for On-Call Architectural and Engineering (A&E) Design Consulting services. The RFSQ resulted in the approval of eight firms qualified to perform A&E services. Tasks are assigned to the firms through a work order process. MTS selects the most qualified firm based on the scope of work to be performed.

The initial work order was selected by MTS staff after a review of the approved A&E firms and utilizing a direct award process. MTS staff selected MM to perform the requisite services, as they were able to subcontract with Collins Engineers, Inc., a firm that specializes in design-level underwater inspection and hydrographic survey work, necessary for this project. The amendment is additional work related to the initial task order.

The proposed amount of the amendment was $80,187.49, which was $2,207.51 less than MTS's Independent Cost Estimate (ICE) of $82,395.00.

Therefore, staff recommends that the MTS Board of Directors:

1) Ratify Work Order WOA1951-AE-58 under MTS Doc. No. G1951.0-17 (in substantially the same format as Attachment A) with Mott MacDonald, LLC (MM) totaling $67,607.46, for Las Chollas Creek Bridge assessment services; and

2) Authorize the Chief Executive Officer (CEO) to execute Work Order amendment WOA1951-AE-58.01 under MTS Doc. No. G1951.0-17 (in substantially the same format as Attachment B), with MM totaling $80,187.49, for preparation of final construction documents for most immediate portions of the bridge repair work.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Julia Tuer, 619.557.4515, Julia.Tuer@sdmts.com

Attachments: A. Executed Work Order WOA1951-AE-58, MTS Doc. No. G1951.0-17
B. Draft Work Order WOA1951-AE-58.01, MTS Doc. No. G1951.0-17

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101
Tel 619.231.1466 Fax 619.234.3407

June 16, 2020

MTS Doc. No. G1951.0-17
Work Order No. WOA1951-AE-58

Mr. Dan Tempelis
Senior Vice President
Mott MacDonald, LLC
401 B Street, Suite 1520
San Diego, CA 92101

Dear Mr. Tempelis:

Subject: MTS DOC. NO. G1951.0-17, WORK ORDER WOA1951-AE-58, GENERAL ENGINEERING SERVICES FOR LAS CHOLLAS CREEK BRIDGE ASSESSMENT

This letter shall serve as our agreement for Work Order WOA1951-AE-58 to MTS Doc. No. G1951.0-17, for engineering services for Las Chollas Creek Bridge Assessment.

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SCOPE OF SERVICES

Provide engineering services for Las Chollas Creek Bridge Assessment. Work provided under this Work Order will be performed in accordance with the attached Scope of Services (Attachment A)

SCHEDULE

The Scope of Services, as described above, for a period of four (4) months from the date of the Notice to Proceed.

PAYMENT

Payment shall be based on actual costs in the amount not to exceed without prior authorization of $67,607.46.

Please sign below, and return the document to the Contracts Specialist at MTS. All other terms and conditions shall remain the same and in effect.

Sincerely,

Sharon Cooney
Chief Executive Officer

Accepted:

Dan Tempelis, Senior Vice President
Mott MacDonald, LLC

Date: June 22, 2020

Attachments: Attachment A, Scope of Services
Attachment B, Negotiated Fee Proposal

Metropolitan Transit System (MTS) is comprised of the Metropolitan Transit Development Board (MTDB) a California public agency, San Diego Transit Corp., and San Diego Trolley, Inc., in cooperation with Chula Vista Transit and National City Transit. MTS is Taxicab Administrator for eight cities. MTDB is owner of the San Diego and Arizona Eastern Railway Company.
MTDB Member Agencies include: City of Chula Vista, City of Coronado, City of El Cajon, City of Imperial Beach, City of La Mesa, City of Lemon Grove, City of National City, City of Poway, City of San Diego, City of Santee, and the County of San Diego.

ATTACHMENT A
SCOPE OF SERVICES

MTS Doc. No. G1951.0-17 **Work Order No. WOA1951-AE-58**

WORK ORDER TITLE: Las Chollas Creek Bridge Assessment

I. PROJECT DESCRIPTION

This project is to support San Diego Metropolitan Transit System (MTS) with structure condition assessment, detailed design of repairs and remediation of piles and pile caps and determination of causes of scour and remediation design at the abutments of Chollas Creek Bridges. Periodic inspections of the bridge have shown a progressive deterioration of the bridge abutment and piles to a condition that requires intervention to preserve the structural condition of the bridge. Deterioration includes cracking and spalling to concrete members and scour and potential undermining of the creek bank abutment structures.

II. EXPECTED RESULTS

Provide assessment, detailed design of repairs and remediation of piles and pile caps and determination of causes of scour and remediation design at the abutments of Chollas Creek Bridges.

III. SCOPE OF WORK

The scope of work shall consist of the following tasks and deliverables:
Please see Mott MacDonald Proposal (Exhibit A).

IV. MTS ACCEPTANCE OF SERVICES:

Contractor shall not be compensated at any time for unauthorized work outside of this Work Order. Contractor shall provide notice to MTS' Project Manager upon 100% completion of this Work Order. Within five (5) business days from receipt of notice of Work Order completion, MTS' Project Manager shall review, for acceptance, the 100% completion notice. If Contractor provides final service(s) or final work product(s) which are found to be unacceptable due to Contractors and/or Contractors subcontractors negligence and thus not 100% complete by MTS' Project Manager, Contractor shall be required to make revisions to said service(s) and/or work product(s) within the Not to Exceed (NTE) Budget. MTS reserves the right to withhold payment associated with this Work Order until the Project Manager provides written acceptance for the 100% final completion notice. Moreover, 100% acceptance and final completion will be based on resolution of comments received to the draft documents and delivery of final documentation which shall incorporate all MTS revisions and comments.

Monthly progress payments shall be based on hours performed for each person/classification identified in the attached Fee Schedule and shall at no time exceed the NTE. Contractor shall only be compensated for actual performance of services and at no time shall be compensated for services for which MTS does not have an accepted deliverable or written proof and MTS acceptance of services performed.

V. DEFICIENT WORK PRODUCT:

Throughout the construction management and/or implementation phases associated with the services rendered by the Contractor, if MTS finds any work product provided by Contractor to be deficient and the deficiently delays any portion of the project, Contractor shall bear the full burden of their deficient work and shall be responsible for taking all corrective actions to remedy their deficient work product including but not limited to the following:

- Revising provided documents,

At no time will MTS be required to correct any portion of the Contractors deficient work product and shall bear no costs or burden associated with Contractors deficient performance and/or work product.

VI. DELIVERABLE REQUIREMENTS

Contractor will be required to submit any and all documentation required by the Scope of Work. The deliverables furnished shall be of a quality acceptable to MTS. The criteria for acceptance shall be a product of neat appearance, well-organized, and procedurally, technically and grammatically correct. MTS reserves the right to request a change in the format if it doesn't satisfy MTS's needs. All work products will become the property of MTS. MTS reserves the right to disclose any reports or material provided by the Contractor to any third party.

Contractor shall provide with each task, a work plan showing the deliverables schedule as well as other relevant date needed for Contractor's work control, when and as requested by MTS.

Contractor's computer data processing and work processing capabilities and data storage should be compatible with Windows compatible PC's, text files readable in Microsoft Word, and standard and customary electronic storage. Contractor shall maintain backup copies of all data conveyed to MTS.

Contractor shall provide MTS with hard copy or electronic versions of reports and/or other material as requested by MTS.

VII. PRICING

Pricing shall be firm and fixed for the duration of the Work Order and any subsequent Change Orders/Amendments to the Work Order. There shall be no escalation of rates or fees allowed.

VIII. ADDITIONAL INFORMATION

List additional information as applicable to the specific Work Order scope of services.

IX. PREVAILING WAGE

Prevailing wage rates apply to certain personnel for these services? X Yes ☐ No

If yes, please list classification subject to prevailing wage rates:

Diver
Stand By Diver
Tender

Attachments: Exhibit A, Mott MacDonald Proposal

Exhibit A
Mott MacDonald Proposal

Las Chollas Creek Bridge Assessment

Scope of Work

June 1, 2020

San Diego Metropolitan Transit System

Contents

1 SCOPE OF WORK 2

1.1 Bridge Repair Design Level Inspection and Data Collection 2

2 SCHEDULE 3

3 FEE 3

4 ASSUMPTIONS AND EXCLUSIONS 3

Las Chollas Creek Bridge Assessment

The scope of this Work Order is to support San Diego Metropolitan Transit System (MTS) with structure condition assessment, detailed design of repairs and remediation of piles and pile caps and determination of causes of scour and remediation design at the abutments of Chollas Creek Bridges. Periodic inspections of the bridge have shown a progressive deterioration of the bridge abutment and piles to a condition that requires intervention to preserve the structural condition of the bridge. Deterioration includes cracking and spalling to concrete members and scour and potential undermining of the creek bank abutment structures. The most recent draft inspection by Jacobs, dated 5 May 2020, has documented concerns for deterioration and stability of the piles that support the bridge.

MTS requested Mott MacDonald (MM) to develop an approach and scope of work for planning, engineering, and design for repairs and rehabilitation of the existing concrete girder bridge structure. MM will subcontract with Collin Engineers to perform a repair design level inspection to support the design strategies that will be developed for a bid set of documents to procure construction services to extend the life of the existing structure.

Approach

Based on conversations with the MTS and concerns documented in the most recent inspection report by Jacobs, MM proposes developing two separate repair design packages. The first package (Phase 1) will include pile jacketing repairs based on recommendations included in the Jacobs inspection report and MM's design level inspection. The second design package (Phase 2) will focus on repairs that address the long-term durability of the bridge (e.g. scour protection and pile cap repairs) and will be completed after the first package. The bridge improvement planning and design work is anticipated to occur in two phases as follows.

- Phase 1 Field Investigation, Pile Repair Final Design Package & Comprehensive Repair Package Schematic Design.
  Develop a recommended bridge improvement plan. Conduct detailed data collection and inspection of the structure for the purpose of developing design level recommendations for repair and rehabilitation. The field work will include hydrographic surveying to assess scour. Repair Package 1 will be developed into a set of contract documents to address emergency pile repairs. Evaluate alternatives, determine construction costs and schedule for implementation of Repair Package 2.

- Phase 2a Engineering Design & Regulatory Permitting for Comprehensive Repair Package.
  Develop a final design documents for regulatory permitting and bidding for the second repair package which includes more comprehensive repairs to address long term durability of the pier. Finalize designs for the preferred alternative and develop technical specifications, final cost estimates and permit application documents needed for Phase 2b bidding and construction.

- Phase 2b Bidding and Construction
  Conduct bidding phase to select a qualified contractor to perform bridge improvement works.

This scope of work described herein focuses on the Phase 1 services. Phase 2a and 2b will be outlined at the conclusion of the Phase 1 work and will be authorized under a future contract amendment.

1 SCOPE OF WORK

1.1 Bridge Repair Design Level Inspection and Data Collection

A repair design level inspection and data collection effort will be conducted to aid in developing an assessment of the bridge condition in accordance with ASCE Underwater Investigations Standard Practice Manual. This will be the basis for the recommended rehabilitation and repair plan developed in Task 1.2 and help with determining suitable pile repairs developed as a part of this task (Task 1.1). It will include the following:

- Existing Data Compilation. Compile existing data from MTS database and summarize for use in conducting the condition assessment work.
- Bridge Inspection. Conduct an underwater and above water condition assessment of the bridge structure with a focus on below deck and piers and abutments, in accordance with ASCE. Assessment will be a combination of underwater and above water inspection. The inspection will be a repair design level inspection to better define the conditions for the purpose of developing recommendations and schematic design drawings in Task 1.2 and 1.3. Previous inspection reports do not provide enough detail as to the extent of deterioration sufficient to estimate all repair quantities. Inspection work will be conducted utilizing qualified engineer dive inspectors under the direction of a CA licensed engineer. All members of the inspection team will be equipped and trained, and all diving operations will be conducted in accordance with the Occupational Safety and Health Administration Commercial Diving Operations Standard (29 CFR 1910, Subpart T) and Collins Engineers' Manual of Safe Dive Practices. The design-level inspection will consist of a visual and tactile inspection of the exposed surfaces of the substructure units with particular attention given to any observed areas of deterioration or apparent distress. Photographs will be taken as necessary to document general conditions and observed deficiencies. Observations of the channel adjacent to the substructure units will be made to determine the channel bottom material, the presence or extent of scour, the presence or extent of riprap, and the presence or extent of drift and debris.
- Hydrographic Survey. Conduct a comprehensive survey of the creek bed around the bridge including upstream and downstream of the bridge. It will be conducted to aid in the assessment of the scour. Hydrographic data will be collected 150ft upstream and downstream of the bridge.
- Structural Condition Assessment. Assessment of the bridge structure will be developed in a summary report and will provide recommendations for repair, rehabilitation, and maintenance.
- Scour Assessment. A FHWA level 1 qualitative assessment of the creek channel scour and hydraulic (fluvial and tidal) processes will be conducted based on a combination of new hydrographic survey data, review of creek discharge and tidal information and review of historical surveys.
- Geotechnical Assessment. Review results of the hydrographic survey, scour assessment, and existing geotechnical data to assess geotechnical stability of the abutment relative to the scoured channel conditions.
- Condition Assessment Report. Provide a summary of the results of the condition assessment work and basic repair recommendations.
- Meetings. Attend 2 teleconference progress meetings using MS Teams. (approximately 2 hrs. each)

Deliverable: Condition assessment technical memorandum and inspection report including detailed summary of results of inspection, hydrographic survey, and structural and scour assessments. Meeting notes for each meeting.

2 SCHEDULE

This Work Order will be completed based on the assumed NTP per the below schedule.

TASK 1.1	Schedule	Notes
Field Inspection	2-3 weeks after NTP	To be completed in June 2020
Draft Condition Assessment Report[1]	8 weeks after Field Inspection	For MTS Review (2 weeks)
Final Condition Assessment Report	2 weeks after MTS comments received	

3 FEE

Mott MacDonald proposes to complete task 1.1 described for the fees shown below on a time and materials, not-to-exceed amount of **$67,607.46** . See Attachment B for a detailed breakdown of costs and subconsultant proposal. Other tasks are deferred to a later date.

4 ASSUMPTIONS AND EXCLUSIONS

Assumptions for Phase 1 Work

- MTS to provide records of design plans, geotechnical investigations, as-builts, design reports, land surveys and prior inspection reports in electronic format for use by Mott MacDonald in conducting the work.
- Repairs to bridge will not affect the as-built load carrying capacity of the bridge
- Commercially available pile repair systems can be used to address issues noted in past inspection reports.
- As-built design load of the bridge has not been exceeded.
- MTS will facilitate communication with train operations during field and inspection work.
- MTS will provide requirements for train operations during potential repairs.
- Existing creek flood studies are available for use in conducting the assessment and conceptual design phase work.
- Numerical modeling for scour assessment is not required for Phase 1 work; need for more detailed hydrodynamic numerical analysis and modeling will be determined in Phase 1 that would be conducted during Phase 2.
- Coordination of site access and site use restrictions will be provided to the Mott MacDonald team by MTS.
- Field work will be conducted in one day delays due to train operations or other potential delays not included.

- One round of comments from MTS on each deliverable. Review comments will be compiled by MTS's review team and sent to MM. MM will submit final deliverables after all comments have been addressed.
- MTS specific safety training not required.
- MM team's standard dive/inspection safety plan is acceptable for the project.
- California Prevailing Wages are applicable only for the field work portion of the project for the dive inspection team.
- MTS will obtain necessary permits and facilitate communication of field work with stakeholders.
- MM team will be granted uninhibited access to the bridge substructures and superstructure for the duration of the inspection.

Exclusions for Phase 1 Work

- Final engineering design and development of plans, specifications and estimates for bidding.
- Standalone CSI specifications for Repair Package 1 (specifications will be on the repair drawings).
- Regulatory permitting and application development.
- Bidding, procurement and support to construction phase(s).
- Legal surveys and other work associated with property acquisition, temporary easements.
- No new geotechnical borings.
- Traffic planning, engineering and preparation of traffic management plans, traffic control plans.
- Detailed seismic analysis (per AREMA) for the proposed structural maintenance and repairs.
- Seismic retrofit for the bridge structure assumed to not be applicable.
- Legal, financial or other non-technical professional services except as required by Mott MacDonald to fulfill its obligations under the contract.

ATTACHMENT B
NEGOTIATED FEE PROPOSAL

Work Order Estimate Summary

MTS Doc. No.	**G1951.0-17**
Work Order No.	**WOA1951-AE-58**
Attachment:	**B**

Work Order Title: **CHOLLAS CREEK BRIDGE REPAIR PROJECT**

Project No:

Table 1 - Cost Codes Summary (Costs & Hours)

Item	Cost Codes	Cost Codes Description	Total Costs
1		Condition Assessment	$67,607.46
2			
		Totals =	**$67,607.46**

Table 2 - TASKS/WBS Summary (Costs & Hours)

Item	TASKS/WBS	TASKS/WBS Description	Labor Hrs	Total Costs
1	1.1	Condition Assessment	410.0	$67,607.46
2				
3				
4				
5				
		Totals =	**410.0**	**$67,607.46**

Table 3 - Consultant/Subconsultant Summary (Costs & Hours)

(If Applicable, Select One)				Consultant	Labor Hrs	Total Costs
DBE	DVBE	SBE	Other			
				Mott MacDonald	200.0	$32,156.90
				Collins Engineers	210.0	$35,450.56
				Totals =	**410.0**	**$67,607.46**

Work Order Estimate Summary

Consultant/Subconsultant: **Mott MacDonald**

MTS Doc. No.: **G1951.0-17**

Work Order No.: **WOA1951-AE-58**

Total Hours = **200**

Total Costs = **$32,156.90**

Work Order Title: **CHOLLAS CREEK BRIDGE REPAIR PROJECT**

Attachment: **B**

Item	TASKS/WBS	TASKS/WBS Description	ODCs (See Attachment)	Contract Manager	Senior Project Engineer - Rail and Transit	Engineer 4 (QA/QC)	Engineer 4 (Rail / Systems)	Engineer 2 (Track)	Engineer 3 (Structural)	Senior Project Engineer - Rail / Systems	CAD	Engineer 2 (Planner)	Accounting/ Admin		Total Hours	Totals
				$ 295.87	$ 187.18	$ 122.27	$ 150.20	$ 96.16	$ 104.16	$ 235.49	$ 117.74	$ 96.16	$ 87.55			
1	**Task 1.1**	**Condition Assessment**														
	Compile and Review Existing Data			1	4	8									13	$2,022.75
	Bridge Inspection and Hydro Survey (Preparation and Field Visit)		$426.90	1	12						8				21	$3,910.85
	Structural Condition Assessment			4	16	24					8				52	$8,054.76
	Scour Assessment (FHWA Level 1)			4	4	30					6				44	$6,306.74
	Geotechnical Assessment			2	6	18									26	$3,915.68
	Condition Assessment Report			4	4	8					4				20	$3,381.32
	Meetings			6	8										14	$3,272.66
	Reporting and coordination			2									8		10	$1,292.14
		Subtotals (Hours) =	N/A	24	54	88					26		8		200	$32,156.90
		Subtotals (Costs) =	$426.90	$7,100.88	$10,107.72	$10,759.76					$3,061.24		$700.40		**200**	**$32,156.90**
2	**Task 1.2**	**Pile Repair Design**														
	Pile Repair Bid Drawings															
	Pile Repair Cost Estimate															
		Subtotals (Hours) =	N/A													
		Subtotals (Costs) =														
3	**Task 3**	**Schematic Design**														
	Basis of Design															
	Repair/Rehab Alternatives Evaluation															
	Constructability Assessment															
	Scour Analysis															
	Life Cycle Assessment															
	Schematic Level Design Plans															
	Cost Estimate and Schedule															
	Meetings															
		Subtotals (Hours) =	N/A													
		Subtotals (Costs) =														
	Totals (Summary) =														**200**	**$32,156.90**
		Total (Hours) =	N/A	24	54	88					26		8		200	
		Total (Costs) =	$426.90	$7,100.88	$10,107.72	$10,759.76					$3,061.24		$700.40			$32,156.90
		Percentage of Total (Hours) =	N/A	12%	27%	44%					13%		4%		100%	
		Percentage of Total (Costs) =	1%	22%	31%	33%					10%		2%			100%

Work Order Estimate Summary

Consultant/ Subconsultant: **Mott MacDonald**

Contract No: **G1951.0-17**

Task Order No. **WOA1951-AE-58**

Work Order Title: **CHOLLAS CREEK BRIDGE REPAIR PROJECT**

Attachment: B

TASKS/WBS (1-5)

ODC Item	Description	Unit	Unit Cost	Task 1.1		Task 1.2		Task 3		Task 4		Task 5	
				Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total
1	Taxi fare/ car service	Day	$71.30	3	$213.90								
2	Per Diem - site visit days	Day	$71.00	3	$213.00								
3	Airfare Round trip from Seattle	Each	$250.00										
4	Hotel (per night per person)	Day	$173.00										
5													
6													
7													
8													
9													
10													
				Subtotal =	**$426.90**	Subtotal =		Subtotal =		Subtotal =		Subtotal =	

TASKS/WBS (6-10)

ODC Item	Description	Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total	Totals	
												Quantity	Total
1	Taxi fare/ car service											**3**	**$213.90**
2	Per Diem - site visit days											**3**	**$213.00**
3	Airfare Round trip from Seattle												
4	Hotel (per night per person)												
5													
6													
7													
8													
9													
10													
		Subtotal =		Subtotal =		Subtotal =		Subtotal =		Subtotal =		**Totals =**	**$426.90**

Work Order Estimate Summary

Consultant/Subconsultant: **Collins Engineers** Doc. No.: **G1951.0-17**

Total Hours = **210** Work Order No.: **WOA1951-AE-58**

Total Costs = **$35,450.56** Work Order Title: **CHOLLAS CREEK BRIDGE REPAIR PROJECT** Attachment: **B**

Item	TASKS/WBS	TASKS/WBS Description	ODCs (See Attachment)	Prevailing Wage Diver	Prevailing Wage Standby Diver	Prevailing Wage Tender	Engineer 7	Engineer 4	Engineer 2	Engineer 1	Designer 3	Total Hours	Totals
				$ 304.99	$ 179.89	$ 172.10	$ 296.86	$ 154.61	$ 109.72	$ 86.55	$ 104.61		
1	**Task 1.1**	**Bridge Assessment**											
	Planning						2	2	4			8	$1,341.82
	Mob/Demob		$5,599.00				16		32		16	64	$15,533.56
	Field Work (Inspection and Hydro Survey)			8	8	8						24	$5,255.84
	Data Post processing and inspection report						6	10	34	24	40	114	$13,319.34
		Subtotals (Hours) =	N/A	8	8	8	24	12	70	24	56	210	$35,450.56
		Subtotals (Costs) =	$5,599.00	$2,439.92	$1,439.12	$1,376.80	$7,124.64	$1,855.32	$7,680.40	$2,077.20	$5,858.16	**210**	**$35,450.56**
	Totals (Summary) =											**210**	**$35,450.56**
	Total (Hours) =		N/A	8	8	8	24	12	70	24	56	210	
	Total (Costs) =		$5,599.00	$2,439.92	$1,439.12	$1,376.80	$7,124.64	$1,855.32	$7,680.40	$2,077.20	$5,858.16		$35,450.56
	Percentage of Total (Hours) =		N/A	4%	4%	4%	11%	6%	33%	11%	27%	100%	
	Percentage of Total (Costs) =		16%	7%	4%	4%	20%	5%	22%	6%	17%		100%

Work Order Estimate Summary

Consultant/ Subconsultant: **Mott MacDonald**

Contract No: **G1951.0-17**

Task Order No. **WOA1951-AE-58**

Work Order Title: **CHOLLAS CREEK BRIDGE REPAIR PROJECT**

Attachment: B

TASKS/WBS (1-5)

ODC Item	Description	Unit	Unit Cost	Task 1.1		Task 1.2		Task 3		Task 4		Task 5	
				Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total
1	Aire fare	Each	$600.00	2	$1,200.00								
2	Mileage - Boise to San Diego	Miles	$0.58	2,000	$1,160.00								
3	Parking, Tolls, etc	Day	$15.00	5	$75.00								
4	Tax/ Car service	Each	$40.00	4	$160.00								
5	Lodging	Night	$173.00	8	$1,384.00								
6	Pier Diem (Meals)	Day	$71.00	11	$781.00								
7	Expendable Field Equipment	Each	$294.00	1	$294.00								
8	Dive Equipment Rental	Day	$40.00	3	$120.00								
9	Boat and Motor	Day	$75.00	1	$75.00								
10	Equipment Shipping	Each	$350.00	1	$350.00								
				Subtotal =	**$5,599.00**	Subtotal =		Subtotal =		Subtotal =		Subtotal =	

TASKS/WBS (6-10)

ODC Item	Description	Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total	Totals Quantity	Totals Total
1	Aire fare											**2**	**$1,200.00**
2	Mileage - Boise to San Diego											**2,000**	**$1,160.00**
3	Parking, Tolls, etc											**5**	**$75.00**
4	Tax/ Car service											**4**	**$160.00**
5	Lodging											**8**	**$1,384.00**
6	Pier Diem (Meals)											**11**	**$781.00**
7	Expendable Field Equipment											**1**	**$294.00**
8	Dive Equipment Rental											**3**	**$120.00**
9	Boat and Motor											**1**	**$75.00**
10	Equipment Shipping											**1**	**$350.00**
		Subtotal =		Subtotal =		Subtotal =		Subtotal =		Subtotal =		**Totals =**	**$5,599.00**

DRAFT

September 17, 2020

MTS Doc. No. G1951.0-17
Work Order No. WOA1951-AE-58.01

Mr. Dan Tempelis
Senior Vice President
Mott MacDonald, LLC
401 B Street, Suite 1520
San Diego, CA 92101

Dear Mr. Tempelis:

Subject: AMENDMENT NO. 1, TO WORK ORDER WOA1951-AE-58, TO MTS DOC. NO. G1951.0-17, GENERAL ENGINEERING SERVICES FOR LAS CHOLLAS CREEK BRIDGE ASSESSMENT

This letter shall serve as Amendment No. 1 to our agreement for Work Order WOA1951-AE-58 to MTS Doc. No. G1951.0-17, for engineering services for Las Chollas Creek Bridge Assessment.
.

SCOPE OF SERVICES

This Amendment shall provide preparation of construction documents for immediate portions of the bridge repair work for Las Chollas Creek Bridge Assessment. Work provided under this Work Order will be performed in accordance with the attached Scope of Services (Attachment A)

SCHEDULE

This Amendment shall add four (4) months to the Schedule. The Scope of Services, as described above, for a period of eight (8) months from the date of the Notice to Proceed.

PAYMENT

This Amendment shall increase the Work Order amount by $80,187.49. Payment shall be based on actual costs in the amount not to exceed $147,794.95 without prior authorization of MTS.

Please sign below, and return the document to the Contracts Specialist at MTS. All other terms and conditions shall remain the same and in effect.

Sincerely,

Sharon Cooney
Chief Executive Officer

Accepted:

_____
Dan Tempelis, Senior Vice President
Mott MacDonald, LLC

Date: _____

Attachments: Attachment A, Scope of Services
Attachment B, Negotiated Fee Proposa

ATTACHMENT A
SCOPE OF SERVICES

Las Chollas Creek Bridge Assessment – Amendment 1

Scope of Work

August 26, 2020

San Diego Metropolitan Transit System

Contents

1 SCOPE OF WORK 2

2 SCHEDULE 5

3 FEE 5

4 ASSUMPTIONS AND EXCLUSIONS 5

5 ATTACHMENT B – COST PROPOSAL **Error! Bookmark not defined.**

Las Chollas Creek Bridge Assessment

The scope of this Work Order Amendment is to support San Diego Metropolitan Transit System (MTS) with detailed design, permitting, and bid support of repairs and remediation of piles and pile caps and determination of causes of scour and remediation design at the abutments of Chollas Creek Bridges. Periodic inspections of the bridge have shown a progressive deterioration of the bridge abutment and piles to a condition that requires intervention to preserve the structural condition of the bridge. Deterioration includes cracking and spalling to concrete members and scour and potential undermining of the creek bank abutment structures.

MTS requested Mott MacDonald (MM) to develop an approach and scope of work for planning, engineering, design, and permitting for repairs and rehabilitation of the existing concrete girder bridge structure. MM will subcontract with HELIX Environmental Planning to develop a permitting strategy and support the regulatory permitting process.

Approach

Based on conversations with the MTS and concerns documented in the most recent design level inspections report by MM and Collins Engineers, MM proposes developing two separate repair design packages. The first package will include pile jacketing repairs and concrete spall repairs based on recommendations included in the inspection report. The second design package will focus on repairs that address scour protection and slope stability and will be completed after the first package. The main elements of this effort are summarized below.

- **Field Investigation, Condition Assessment, Structural Repair Preliminary Design Package** Develop a recommended bridge improvement plan. Conduct detailed data collection and inspection of the structure for the purpose of developing design level recommendations for repair and rehabilitation. The field work will include hydrographic surveying to assess scour. Repair Package 1 will be developed into a set of contract documents to address emergency pile repairs and other substructure concrete repairs.

- **Structural Repair Final Design Package & Regulatory Permitting**
- Develop a recommended regulatory permitting strategy, submit permit applications for Repair Package 1, produce a bid ready set of drawings and specifications for Repair Package 1, update the cost estimate.

- **Scour Protection Engineering Design & Regulatory Permitting** (To be addressed in future phase)

  Develop design documents for regulatory permitting and bidding for the second repair package which includes scour protection and slope stability. Finalize designs for the preferred alternative and develop technical specifications, final cost estimates and permit application documents needed for bidding and construction.

- **Bid Phase Support**

  Provide bid phase to select a qualified contractor to perform bridge improvement works.

1 SCOPE OF WORK

Task 1.1 - Bridge Repair Design Level Inspection and Data Collection (Provided under current approved work order)

A repair design level inspection and data collection effort will be conducted to aid in developing an assessment of the bridge condition in accordance with ASCE Underwater Investigations Standard Practice Manual. This will be the basis for the recommended rehabilitation and repair plan developed in Task 1.2 and help with determining suitable pile repairs developed as a part of this task (Task 1.1). It will include the following:

- Existing Data Compilation. Compile existing data from MTS database and summarize for use in conducting the condition assessment work.
- Bridge Inspection. Conduct an underwater and above water condition assessment of the bridge structure with a focus on below deck and piers and abutments, in accordance with ASCE. Assessment will be a combination of underwater and above water inspection. The inspection will be a repair design level inspection to better define the conditions for the purpose of developing recommendations and schematic design drawings in Task 1.2 and 1.3. Previous inspection reports do not provide enough detail as to the extent of deterioration sufficient to estimate all repair quantities. Inspection work will be conducted utilizing qualified engineer dive inspectors under the direction of a CA licensed engineer. All members of the inspection team will be equipped and trained, and all diving operations will be conducted in accordance with the Occupational Safety and Health Administration Commercial Diving Operations Standard (29 CFR 1910, Subpart T) and Collins Engineers' Manual of Safe Dive Practices. The design-level inspection will consist of a visual and tactile inspection of the exposed surfaces of the substructure units with particular attention given to any observed areas of deterioration or apparent distress. Photographs will be taken as necessary to document general conditions and observed deficiencies. Observations of the channel adjacent to the substructure units will be made to determine the channel bottom material, the presence or extent of scour, the presence or extent of riprap, and the presence or extent of drift and debris.
- Hydrographic Survey. Conduct a comprehensive survey of the creek bed around the bridge including upstream and downstream of the bridge. It will be conducted to aid in the assessment of the scour. Hydrographic data will be collected 150ft upstream and downstream of the bridge.
- Structural Condition Assessment. Assessment of the bridge structure will be developed in a summary report and will provide recommendations for repair, rehabilitation, and maintenance.
- Scour Assessment. A FHWA level 1 qualitative assessment of the creek channel scour and hydraulic (fluvial and tidal) processes will be conducted based on a combination of new hydrographic survey data, review of creek discharge and tidal information and review of historical surveys.
- Geotechnical Assessment. Review results of the hydrographic survey, scour assessment, and existing geotechnical data to assess geotechnical stability of the abutment relative to the scoured channel conditions.
- Condition Assessment Memo. Provide a brief summary of the results of the condition assessment work and basic repair recommendations.
- Meetings. Attend 2 teleconference progress meetings using MS Teams. (approximately 2 hrs. each)

Deliverable: Condition assessment technical memorandum and inspection report including detailed summary of results of inspection, hydrographic survey, and structural and scour assessments. Meeting notes for each meeting.

[Note change from a report to a brief memo for the Conditions Assessment to allow addition of Task 1.2 below within existing budget]

Task 1.2 Repair Package 1 Piles, Pile Caps, and Concrete Repairs Preliminary Design (Updated scope under Task 1 provided under original budget)

The original scope was modified to allow repairs to the piles and pile caps to be addressed more quickly, while reducing the detail included in the technical memo of Task 1.1.This task will develop Repair Package 1 to a 50% design level of detail. Design will be limited to pile repair, pile cap repair, and abutment concrete repair details and draft specifications on a set of drawings. It will include the following.

- Preliminary Design Drawings and Draft Specifications. Identify appropriate pile repair based on commercially available pile repair systems. Concrete repair details for pile caps and abutment concrete spall repairs. Drawing package will include a plan identifying location of repairs, typical pile elevation/detail, typical pile cap detail, and typical concrete spall repair detail, general notes and specifications on drawings. MTS will develop and provide the applicable Division 00 and 01 specifications.

Deliverable: Preliminary (50% level) set of 11x17 set of design drawings.

Task 2.0 Project Management and Coordination

Consultant to provide project management services including the requirements for invoicing, scheduling, monthly project progress reports, and administration of the Consultant's team.

Task 2.1 Regulatory Permitting Strategy

HELIX Environmental Planning will be subcontracted to assist with regulatory permitting. The repairs likely qualify for an emergency exemption under Section 10 Rivers and Harbors Act and fall under a Nationwide Permit. Permitting agencies need to be consulted with to describe urgency of the pile repairs to confirm the proper permitting requirements for the repairs described. While the permitting process may be abbreviated, it is still possible that several permits will be required. This task will develop a permitting strategy for both repair projects and include the following.

Deliverables: Memo describing the recommended permitting path, meeting minutes

Task 2.2 Regulatory Permitting Application Design Package 1

Based on the consultation with permitting agencies the proper studies and permit applications will be completed. While this task assumes a conservative approach, the team will work will MTS and the permitting agencies to expedite the required permits.

Once permit applications and/ or emergency notifications are submitted to the appropriate regulatory agencies, HELIX will provide project management and support to the project team during agency processing. HELIX will serve as the primary point of contact for the regulatory agencies and will lead coordination efforts on behalf of the project team. Specific support tasks expected to be provided by HELIX include performing outreach to the agencies via phone and e- mail correspondence; coordinating with the project team regarding additional information needs during processing; preparing additional information in response to agency comments; and attendance at meetings and hearings.

- Biological Resources Technical Study. This study Is required to support California Environmental Quality Act (CEQA) review. This will include a general biological survey/jurisdictional delineation and biological resources report. If potential jurisdictional aquatic resources are confirmed present, HELIX will conduct a formal jurisdictional aquatic resources delineation in accordance with current methodologies and regulatory guidance provided by the U.S. Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), California Department of Fish and Wildlife (CDFW), and California Coastal

Commission (CCC). The biological resources report will describe the survey methods employed, present the results of the fieldwork, assess the potential for additional sensitive resources to occur on the site, identify regulatory issues related to the resources on the site, calculate project impacts (including fire clearing), and recommend potential mitigation measures in accordance with CEQA requirements.

- Agency Pre-Application Meetings. The team will assist in in coordinating and attending pre-application meetings with the USACE, CDFW, RWQCB and/or CCC to discuss the urgency and details of the repair project, present the jurisdictional delineation findings, and establish the most appropriate course for project permitting.
- Aquatic Resources Delineation Report. Prepare an Aquatic Resources Delineation Report as needed or requested by the resource agencies to facilitate the regulatory permitting process. The report will document the results of the aquatic resources delineation from Task 1 and generally follow the reporting format and content recommended in the USACE's 2017 Minimum Standards for the Acceptance of Aquatic Resources Delineation Reports.
- CWA Section 404 Permit/Section 10. Prepare the following draft materials as part of the coordination effort: cover letter, Pre- Construction Notification, Aquatic Resource Delineation Report, mitigation proposal (if required), and supporting project information.
- CWA Section 401 Request for Water Quality Certification. Prepare the following draft materials as part of the notification to the RWQCB, Request for Water Quality Certification application form (if required), Aquatic Resource Delineation Report, mitigation proposal (if required), and supporting information.
- California Fish and Game Code Section 1602 Notification of Lake or Streambed Alteration. Prepare the following draft materials as part of the 1602 agreement request: cover letter, Notification of Lake or Streambed Alteration application form, Aquatic Resource Delineation Report, mitigation proposal, and supporting information.
- Coastal Development Permit. Prepare the following draft materials as part of the CDP request: cover letter, CDP application form, coastal consistency analysis, public noticing documentation, mitigation proposal, and supporting information.

Deliverables: Permit Drawings (8.5x11), Biological Resources Technical Study, Permit Applications, and Meeting Minutes.

Task 2.3 Repair Package 1 Piles, Pile Caps, and Concrete Repairs Final Design

Complete Repair Package 1 for bid by a Contractor.

- Final Design Drawings and Specifications.
- Constructability Assessment. Assess site access and phasing with respect to ongoing train operations.
- Cost Estimate. Provide basic unit costs for the repair types included in the design drawings and an Opinion of Probable Construction Cost for the repair work.

Deliverables: PDF set of 11x17 set of design drawings, technical memo detailing the constructability assessment and phasing, updated cost estimate.

Task 3.1 Repair Package 1 Bid Support

- Participation in (1) pre-bid meeting (1 person from MM).
- Responses to question from bidders.
- Clarification or interpretation of the bidding documents
- Assist with bid evaluation.
- Deliverable: RFI responses in email format.

2 SCHEDULE

This Work Order will be completed based on the assumed NTP per the below schedule.

TASK	Schedule	Notes
Task 1.2 Repair Package 1 Preliminary Design	11 September 2020	For MTS Review (2 weeks)
Task 2.1 Permitting Strategy Memo	3 weeks after NTP	For MTS Review (2 weeks)
Task 2.2 Repair Package 1 Regulatory Permit Application	TBD based on Task 2.1 Outcome	
Task 2.3 Repair Package 1 Final Design Plans and Specifications	4 weeks after Task 1.2 comments received from MTS	For MTS Review (2 weeks)

3 FEE

Mott MacDonald proposes to complete the tasks described for the fees shown below on a time and materials, not-to-exceed amount of **$80,187.49**. See Attachment B for a detailed breakdown of costs and subconsultant proposal. Other tasks are deferred to a later date.

4 ASSUMPTIONS AND EXCLUSIONS

Assumptions for Work

- MTS to provide records of design plans, geotechnical investigations, as-builts, design reports, land surveys and prior inspection reports in electronic format for use by Mott MacDonald in conducting the work.
- Repairs to bridge will not affect the as-built load carrying capacity of the bridge
- Commercially available pile repair systems can be used to address issues noted in past inspection reports.
- As-built design load of the bridge has not been exceeded. Mott MacDonald assumes the bridge substructure (pile foundations) do not need re-evaluation and the ground conditions provide the rated bearing capacity identified on the original construction drawings.
- MTS will provide requirements for train operations during potential repairs.
- Existing creek flood studies are available for use in conducting the assessment and conceptual design phase work.
- One round of comments from MTS on each deliverable. Review comments will be compiled by MTS's review team and sent to MM. MM will submit final deliverables after all comments have been addressed.
- MTS will obtain necessary permits and facilitate communication of field work with stakeholders.

- Regulatory permitting is an abbreviated process due to the nature of the pile repairs. Standalone CSI specifications for Repair Package 1 (specifications will be on the repair drawings).

Exclusions

- Construction support for Repair Package 1.
- Legal surveys and other work associated with property acquisition, temporary easements.
- No new geotechnical borings.
- Traffic planning, engineering and preparation of traffic management plans, traffic control plans.
- Detailed seismic analysis (per AREMA) for the proposed structural maintenance and repairs.
- Seismic retrofit for the bridge structure assumed to not be applicable.
- Legal, financial or other non-technical professional services except as required by Mott MacDonald to fulfill its obligations under the contract.
- Mitigation plans for proposed repairs. If required by permitting agencies, MM can provide a proposed scope.

ATTACHMENT B
NEGOTIATED FEE PROPOSAL

Work Order Estimate Summary

MTS Doc. No.	**G1951.0-17**
Work Order No.	**WOA1951-AE-58.01**
Attachment:	**B**

Work Order Title: **CHOLLAS CREEK BRIDGE REPAIR PROJECT - PILES AND CONCRETE**

Project No:

Table 1 - Cost Codes Summary (Costs & Hours)

Item	Cost Codes	Cost Codes Description	Total Costs
1			$80,187.49
2			
		Totals =	**$80,187.49**

Table 2 - TASKS/WBS Summary (Costs & Hours)

Item	TASKS/WBS	TASKS/WBS Description		Total Costs
1	2.0	Project Management and Coordination	33.0	$5,352.75
2	2.1	Regulatory Permitting Strategy Development	42.0	$9,292.92
3	2.2	Repair Package 1 Regulatory Permitting Application	178.0	$31,869.58
4	2.3	Repair Package 1 Final Design	156.0	$26,099.74
5	3.1	Repair Package 1 Bid Support	44.0	$7,572.50
		Totals =	**453.0**	**$80,187.49**

Table 3 - Consultant/Subconsultant Summary (Costs & Hours)

(If Applicable, Select One)				Consultant	Labor Hrs	Total Costs
DBE	DVBE	SBE	Other			
				Mott MacDonald	341.0	$58,718.33
				Helix Environmental Planning	112.0	$21,469.16
				Totals =	**453.0**	**$80,187.49**

Work Order Estimate Summary

Total Hours = **341**

Total Costs = **$58,718.33**

Consultant/Subconsultant: **Mott MacDonald**

MTS Doc. No.: **G1951.0-17**

Work Order No.: **WOA1951-AE-58.01**

Work Order Title: **CHOLLAS CREEK BRIDGE REPAIR PROJECT - PILES AND CONCRETE**

Attachment: **B**

Item	TASKS/WBS	TASKS/WBS Description	ODCs (See Attachment)	Contract Manager	Senior Project Engineer - Rail and Transit	Engineer 4 (QA/QC)	Engineer 4 (Coastal)	Engineer 2 (Track)	Engineer 3 (Structural)	Senior Project Engineer - Rail / Systems	Senior CAD	Engineer 2 (Planner)	Accounting/ Admin	Total Hours	Totals
				$ 295.87	$ 187.18	$ 122.27	$ 150.20	$ 96.16	$ 104.16	$ 235.49	$ 132.84	$ 96.16	$ 87.55		
1	**Task 2.0**	**Project Management and Coordination**													
	Project Management and Coordination			4	4								5	13	$2,369.95
	Project Administration and Reporting (4 months)			4	4								12	20	$2,982.80
		Subtotals (Hours) =	N/A	8	8								17	33	$5,352.75
		Subtotals (Costs) =		$2,366.96	$1,497.44								$1,488.35	**33**	**$5,352.75**
1	**Task 2.1**	**Regulatory Permitting Strategy Development**													
	Meetings with MTS and Regulatory Agencies			4	6									10	$2,306.56
	Permit Strategy Memo			2	4									6	$1,340.46
		Subtotals (Hours) =	N/A	6	10									16	$3,647.02
		Subtotals (Costs) =		$1,775.22	$1,871.80									**16**	**$3,647.02**
2	**Task 2.2**	**Repair Package 1 Regulatory Permitting Application**													
	Bio Study and Report Review and Coordination			1	6									7	$1,418.95
	Permit Application Review			1	6		4							11	$2,019.75
	Project Description Input			1	8		4							13	$2,394.11
	Permit Figures			1	8		12				24			45	$6,783.87
	Meetings			4	12									16	$3,429.64
		Subtotals (Hours) =	N/A	8	40		20				24			92	$16,046.32
		Subtotals (Costs) =		$2,366.96	$7,487.20		$3,004.00				$3,188.16			**92**	**$16,046.32**
2	**Task 2.3**	**Repair Package 1 Final Design**													
	100% Design Plans			4	8	16					24			52	$7,825.40
	Address MTS review comments			2	4	4					4			14	$2,360.90
	Cost Estimate Updates			4	4	8								16	$2,910.36
	Bi Weekly Meetings (4 total)			4	6	6								16	$3,040.18
	Construction Phasing Assessment			2	4	8								14	$2,318.62
	Specifications			4	16		16				8			44	$7,644.28
		Subtotals (Hours) =	N/A	20	42	42	16				36			156	$26,099.74
		Subtotals (Costs) =		$5,917.40	$7,861.56	$5,135.34	$2,403.20				$4,782.24			**156**	**$26,099.74**
4	**Task 3.1**	**Repair Package 1 Bid Support**													
	Review Div 0 and 1 (Produced by MTS)			2	4	4								10	$1,829.54
	Prebid Meeting and Presentation (1 from MM)			1	4	4								9	$1,533.67
	Answer RFIs and Issue Amendments			2	4	8					4			18	$2,849.98
	Assist Bid Evaluation			1	2	4								7	$1,159.31
			$200.00												$200.00
		Subtotals (Hours) =	N/A	6	14	20					4			44	$7,572.50
		Subtotals (Costs) =	$200.00	$1,775.22	$2,620.52	$2,445.40					$531.36			**44**	**$7,572.50**
	Totals (Summary) =													**341**	**$58,718.33**
	Total (Hours) =		N/A	48	114	62	36				64	17	341		
	Total (Costs) =		$200.00	$14,201.76	$21,338.52	$7,580.74	$5,407.20				$8,501.76	$1,488.35			$58,718.33
	Percentage of Total (Hours) =		N/A	14%	33%	18%	11%				19%	5%	100%		
	Percentage of Total (Costs) =		0%	24%	36%	13%	9%				14%	3%			100%

Work Order Estimate Summary

Consultant/ Subconsultant: **Mott MacDonald**

Contract No: **G1951.0-17**

Task Order No. **WOA1951-AE-58.01**

Work Order Title: **CHOLLAS CREEK BRIDGE REPAIR PROJECT - PILES AND CONCRETE**

Attachment: B

TASKS/WBS (1-5)

ODC Item	Description	Unit	Unit Cost	Task 1.1		Task 1.2		Task 3		Task 4		Task 5	
				Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total
1	Taxi fare/ car service	Day	$71.30										
2	Per Diem - site visit days	Day	$71.00										
3	Airfare Round trip from Seattle	Each	$250.00										
4	Hotel (per night per person)	Day	$173.00										
5	Purchase/repro of geotechnical reports from City of San Diego	Each	$200.00					1	$200.00				
6													
7													
8													
9													
10													
				Subtotal =		Subtotal =		Subtotal =	**$200.00**	Subtotal =		Subtotal =	

TASKS/WBS (6-10)

ODC Item	Description											Totals	
		Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total
1	Taxi fare/ car service												
2	Per Diem - site visit days												
3	Airfare Round trip from Seattle												
4	Hotel (per night per person)												
5	Purchase/repro of geotechnical reports from City of San Diego											**1**	**$200.00**
6													
7													
8													
9													
10													
		Subtotal =		Subtotal =		Subtotal =		Subtotal =		Subtotal =		**Totals =**	**$200.00**

Work Order Estimate Summary

Consultant/Subconsultant: **HELIX Environmental Planning** | S Doc. No.: **G1951.0-17**

Total Hours = **112** | Work Order No.: **WOA1951-AE-58.01**

Total Costs = **$21,469.16** | Work Order Title: **CHOLLAS CREEK BRIDGE REPAIR PROJECT - PILES AND CONCRETE** | Attachment: **B**

Item	TASKS/WBS	TASKS/WBS Description	ODCs (See Attachment)	Principal $ 290.53	Principal Biologist $ 224.43	Senior Env Specialist $ 176.14	Snr GIS Specialist $ 134.08	Graphics $ 132.14	Technical Editor $ 82.89		Total Hours	Totals
1	**Task 2.1**	**Regulatory Permitting Strategy Development**										
	Meetings with MTS and Regulatory Agencies		$258.00	1	6	6					13	$2,951.95
	Permit Strategy Memo			1	6	6					13	$2,693.95
		Subtotals (Hours) =	N/A	2	12	12					26	$5,645.90
		Subtotals (Costs) =	$258.00	$581.06	$2,693.16	$2,113.68					**26**	**$5,645.90**
2	**Task 2.2**	**Repair Package 1 Regulatory Permitting Application**										
	Bio Study and Report			2	8	16	4	4	4		38	$6,591.18
	Permit Prep, JD prep and processing of permits			8	12	16	4	4	4		48	$9,232.08
		Subtotals (Hours) =	N/A	10	20	32	8	8	8		86	$15,823.26
		Subtotals (Costs) =		$2,905.30	$4,488.60	$5,636.48	$1,072.64	$1,057.12	$663.12		**86**	**$15,823.26**
	Totals (Summary) =										**112**	**$21,469.16**
	Total (Hours) =		N/A	12	32	44	8	8	8		112	
	Total (Costs) =		$258.00	$3,486.36	$7,181.76	$7,750.16	$1,072.64	$1,057.12	$663.12			$21,469.16
	Percentage of Total (Hours) =		N/A	11%	29%	39%	7%	7%	7%		100%	
	Percentage of Total (Costs) =		1%	16%	33%	36%	5%	5%	3%			100%

Work Order Estimate Summary

Consultant/ Subconsultant: **HELIX Environmental Planning**

Contract No: **G1951.0-17**

Task Order No. **WOA1951-AE-58.01**

Work Order Title: **CHOLLAS CREEK BRIDGE REPAIR PROJECT - PILES AND CONCRETE**

Attachment: B

TASKS/WBS (1-5)

ODC Item	Description	Unit	Unit Cost	Task 2.1		Task 2.2		Task 2.3					
				Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total
1	mileage	Miles	$0.575	240	$138.00								
2	GPS	Ea	$60.00	2	$120.00								
3													
4													
5													
6													
7													
8													
9													
10													
			Subtotal =		**$258.00**	Subtotal =		Subtotal =		Subtotal =		Subtotal =	

TASKS/WBS (6-10)

ODC Item	Description											Totals	
		Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total
1	mileage											**240**	**$138.00**
2	GPS											**2**	**$120.00**
3													
4													
5													
6													
7													
8													
9													
10													
		Subtotal =		Subtotal =		Subtotal =		Subtotal =		Subtotal =		**Totals =**	**$258.00**

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101-7490
(619) 231-1466 • FAX (619) 234-3407

Agenda Item No. 20

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

September 17, 2020

SUBJECT:

OLD TOWN TRANSIT CENTER (OTTC) WEST – FUND TRANSFER

RECOMMENDATION:

That the San Diego Metropolitan Transit System (MTS) Board of Directors authorize the Chief Executive Officer (CEO) to execute Addendum 17, Scope of Work 90.1 (in substantially the same format as Attachment A) to the Memorandum of Understanding (MOU) between San Diego Associations of Governments (SANDAG) and MTS for the Construction of the Old Town Transit Center West Improvements project for an additional amount of $888,130 for a total not to exceed $5,492,130.

Budget Impact

There will be no change to the overall Capital Improvement Project (CIP) budget. The fund transfer provides SANDAG authorization to spend the full contract value of the work, which will be reimbursed from MTS CIP 30060077 for a total not exceed $5,492,130.

SANDAG Admin	$70,000
SANDAG CM	$550,000
SANDAG VISSIM Modeling	$50,000
Construction Cost	$4,560,600
Project Contingency	$261,530
Agreement Total	**$5,492,130**

Metropolitan Transit System (MTS) is a California public agency comprised of San Diego Transit Corp., San Diego Trolley, Inc. and San Diego and Arizona Eastern Railway Company (nonprofit public benefit corporations). MTS is the taxicab administrator for seven cities.

MTS member agencies include the cities of Chula Vista, Coronado, El Cajon, Imperial Beach, La Mesa, Lemon Grove, National City, Poway, San Diego, Santee, and the County of San Diego.

DISCUSSION:

The bus facilities on the west side of the OTTC West are constrained by limited capacity and in need of refurbishment after over 20 years of service. The project will add four bus bays and provide additional shelters and variable message signs at the transit center.

MTS staff began coordinating with SANDAG in mid-2019 on the OTTC West project. Both SANDAG and MTS were aware of future Mid-Coast Transit Constructors (MCTC) work in Pacific Highway, immediately adjacent to the transit center, with some elements of the Mid-Coast and OTTC project overlapping. In order to mitigate conflicts between two contractors working in a small area, to improve construction efficiency, and to minimize MTS customer inconvenience at the OTTC, SANDAG will contract with MCTC to complete the OTTC West on MTS's behalf.

In October 2019, the MTS Board of Directors approved the execution of the Addendum 17 with SANDAG for a major update to OTTC West. At the time, the expected cost of the work was $4,604,000, and the October 2019 authorization allowed the SANDAG team to begin the environmental, permit, and construction negotiation process. During the initial project discussions between MTS and SANDAG, budget concerns were identified by SANDAG. Due to these concerns, MTS requested additional project funding through the FY21 CIP, which was approved by the Board of Directors in April 2020.

In the last 10 months, SANDAG has negotiated the final change order value with MCTC for the MTS portion of the project. The budget concerns raised by SANDAG last fall have been validated through three of MTS-SANDAG-MCTC negotiation sessions and an additional $888,130 is needed to fully fund the project. Task Order 90.1 has been drafted to transfer these funds to SANDAG.

Therefore, staff recommends that the MTS Board of Directors authorize the CEO to execute Addendum 17, Scope of Work 90.1 to the MOU between SANDAG and MTS for the Construction of the OTTC West Improvements project for an additional amount of $888,130 for a total not to exceed $5,492,130.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Julia Tuer, 619.557.4515, Julia.Tuer@sdmts.com

Attachment: A. Draft Addendum 17, Task Order 90.1.

Addendum 17 Project Scope of Work

MTS File No	G0930.17- 04.**90.1**	SANDAG Reference No.	5000710 SOW **90.1**
CIP Title:	Old Town Transit Center		
MTS CIP No. SANDAG CIP No.	**3006007702 - Old Town Transit Center 1147200**	Project Managers:	MTS-Eli Belknap SANDAG - John Dorow
Lead Agency	MTS	Operating Agency	SANDAG
Estimated Start Date:	9/03/19	SOW **90** Budget	**$4,604,000**
Estimated Completion Date:	6/4/21	Additional SOW **90.1** Budget	**$888,130**
Total CIP Budget	**$6,528,000**	Total SOW Budget (value of work to be invoiced between SANDAG/MTS)	**$5,492,130**

Intended Source of Funds:

This project is funded with a combination of State funding that includes TDA and TransNet and TIRCP funds.

Describe Any Necessary Transfer of Project Funds Between the Parties:

SANDAG shall submit detailed invoices for all expenditures to MTS, invoices shall meet TIRCP requirements. MTS will reimburse SANDAG based on these invoices.

Exhibit A, the SOW Budget, is the estimated amount for construction, environmental, design and construction management services to be provided by SANDAG and its contractors and consultants. SANDAG will not expend or contract to exceed the total SOW Budget amount without a prior approved amendment for additional funding to this SOW.

The previously approved SOW Budget was $4,604,000 as part of Task Order 90 of Addendum 17. This updated Task Order 90.1 of Addendum 17 includes an additional $888,130, which was funded out of the MTS FY21 CIP (WBSE 3006007702). The revised total SOW budget after this adjustment will not exceed $5,492,130.

Project Description:

The Mid-Coast Corridor Transit (Mid-Coast) Project includes work at the Old Town Transit Center and Pacific Highway. This work includes utility relocation, concrete sidewalk improvements, street asphalt improvement, traffic striping and turning lane modifications. At the same time, MTS has an Old Town Transit Center (OTTC) West Improvements Project to improve the bus facilities at the at the transit center including a designated bus turnout along Pacific Highway, new bike lane striping, sidewalk work, bus entrance modification from Pacific Highway, new bus bays and restriping within the OTTC parking lot. Since both Projects are projected to be constructed around the same time and are in the same area, the most efficient

and expeditious way to construct the OTTC West work is via contract change order to the Mid-Coast project.

This updated Task Order 90.1 of Addendum 17 includes the transfer of an additional $888,130 adjusting the total SOW budget not to exceed $5,492,130.

Scope of Work to be Performed by MTS:

- Develop 100% complete Design Plans for MTS OTTC West Improvement Project along Pacific Highway and within the OTTC parking lot.
- Provide consultant Design Support to coordinate the interface and merge the designs between the Mid-Coast and OTTC West projects.
- Provide consultant Design Support During Construction
- Provide Staff Support for Construction
- Assist in obtaining permits necessary for access or construction from Caltrans, State Parks and City of San Diego.
- All activities performed by MTS or its consultants shall comply with local, state and federal law, including but not limited to all requirements included in the Mid-Coast Full Funding Grant Agreement (FFGA).
- MTS will reimburse SANDAG for all costs associated with the Scope of Work performed by SANDAG (set forth below). The agreed budget, with contingency, is set forth in Exhibit A.

Scope of Work to be Performed by SANDAG:

- Conduct VISSIM modeling and prepare environmental documentation related to the ultimate buildout of the Old Town Transit Center, based on both the Mid-Coast improvements and the MTS OTTC West improvements.
- Provide Independent Cost Estimating services to support Change Order negotiations.
- Provide Staff Support for Construction.
- Obtain permits necessary for access or construction from Caltrans, State Parks and City of San Diego.
- Provide Construction Management Services, including construction schedule updates.
- Provide Geotechnical Engineering Services for testing during construction.
- Construct the OTTC West Improvements Project.

Hasan Ikhrata	Sharon Cooney
Date:	Date:
Executive Director or Designee	Chief Executive Officer

Exhibit A- Revised SOW Budget

SANDAG Admin	$	70,000
SANDAG CM	$	550,000
SANDAG VISSIM Modeling	$	50,000
Construction Cost	$	4,560,600
Project Contingency	$	261,530
Agreement Total	**$**	**5,492,130**

Metropolitan Transit System

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Agenda Item No. 21

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

September 17, 2020

SUBJECT:

NEW TRANSIT FACILITY – FUND TRANSFER FOR INITIAL ENVIRONMENTAL REVIEW

RECOMMENDATION:

That the San Diego Metropolitan Transit System (MTS) Board of Directors authorize the Chief Executive Officer (CEO) to execute Addendum 17, Scope of Work 91 (in substantially the same format as Attachment A) to the Memorandum of Understanding (MOU) between San Diego Associations of Governments (SANDAG) and MTS to conduct initial environmental review to support acquisition of real property, for a total not to exceed $265,000.

Budget Impact

There will be no change to the overall Capital Improvement Project (CIP) amount. SANDAG will be reimbursed for the project from MTS CIP 3004100801 for a total not exceed $265,000.

DISCUSSION:

MTS is in need of a new bus maintenance facility to accommodate future transit needs. Potential sites have been identified for the new facility and in order to proceed with this project, including the acquisition of real property, an environmental (CEQA/NEPA), Title VI and Environmental Justice review needs to be conducted in compliance with state and federal law. In coordination with MTS, SANDAG shall complete the reviews necessary to certify the project.

Metropolitan Transit System (MTS) is a California public agency comprised of San Diego Transit Corp., San Diego Trolley, Inc. and San Diego and Arizona Eastern Railway Company (nonprofit public benefit corporations). MTS is the taxicab administrator for seven cities.

MTS member agencies include the cities of Chula Vista, Coronado, El Cajon, Imperial Beach, La Mesa, Lemon Grove, National City, Poway, San Diego, Santee, and the County of San Diego.

Therefore, staff recommends that the MTS Board of Directors authorize the CEO to execute Addendum 17, Scope of Work 91 to the MOU between SANDAG and MTS to conduct initial environmental review to support acquisition of real property, for a total not to exceed $265,000.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Julia Tuer, 619.557.4515, Julia.Tuer@sdmts.com

Attachment: A. Draft Addendum 17, Task Order 91

Addendum 17 Project Scope of Work

MTS File No	G0930.17- 04.91	SANDAG Reference No.	5000710 SOW **91**
CIP Title:	New Transit Facility (MTS Division 6 Bus Maintenance Facility)		
MTS CIP No. SANDAG CIP No.	**3004100801** **1147500**	Project Managers:	MTS- Heather Furey SANDAG – Keith Greer
Lead Agency	MTS	Operating Agency	SANDAG
Estimated Start Date:	9/30/2020	SOW 91 Budget	**$265,000**
Estimated Completion Date:	3/01/2021	Additional SOW 91 Budget	N/A
Total CIP Budget	**$30,368,000**	Total SOW Budget (value of work to be invoiced between SANDAG/MTS)	**$265,000**

Intended Source of Funds:

This project is funded with a combination of State and local funding that includes TDA, STA and other local funds. Future stages of the project may include federal funds.

Describe Any Necessary Transfer of Project Funds Between the Parties:

SANDAG shall submit detailed invoices for all expenditures to MTS. MTS will reimburse SANDAG based on these invoices. This SOW will be amended and the budget increased once consultant contracts have been bid by SANDAG and an itemized budget is identified. The initial funding under this SOW is intended to cover SANDAG staff time and other expenses related to initiating the project work.

Project Description:

MTS is in need of a new bus maintenance facility to accommodate future transit needs. A potential site has been identified for the new facility: Approximately 350,000 SF of industrial buildings situated on and including approximately 17.59 acres in multiple parcels with a main address of 1348 47th St., San Diego, CA and Assessor Parcel #'s 541-611-08, 09, 10, 11, 12, 13, 14, 15, 16, 27.

In order to proceed with this project, including the acquisition of real property, an environmental (CEQA/NEPA), Title VI and Environmental Justice review needs to be conducted in compliance with state and federal law. In coordination with MTS, SANDAG shall complete the reviews necessary to certify the project.

Scope of Work to be Performed by MTS:

- MTS will contract for and provide outside legal counsel services to assist with the project reviews.
- MTS will provide SANDAG's consultants with necessary data and information to complete the project reviews.
- MTS will reimburse SANDAG for all costs associated with the Scope of Work performed by SANDAG (set forth below).

Scope of Work to be Performed by SANDAG:

- Prepare an environmental (CEQA/NEPA), Title VI and Environmental Justice review sufficient to support acquisition of the real property and construction of the project in compliance with state and federal law, as applicable.

Hasan Ikhrata Executive Director or Designee	Sharon Cooney Chief Executive Officer
Date:	Date:

Metropolitan Transit System

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Agenda Item No. 30

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

September 17, 2020

SUBJECT:

ZERO EMISSION BUS DRAFT ROLLOUT PLAN AND TRANSITION PLAN (MIKE WYGANT, MARK OLSON, DENIS DESMOND & LARRY MARINESI)

RECOMMENDATION:

That the San Diego Metropolitan Transit System (MTS) Board of Directors:

1) Approve the ZEB draft Rollout Plan for submittal to the California Air Resources Board (CARB) (in substantially the same format as Attachment A); and

2) Approve the MTS ZEB draft Transition Plan (in substantially the same format as Attachment B).

Executive Committee Recommendation

The Executive Committee voted 5 to 0 (Board Members Arambula, Fletcher, Salas, Sotelo-Solis, and Ward in favor) to recommend that the Board include the following considerations in the draft Rollout Plan and Transition Plan for final approval:

- Prioritizing deployment of ZEB's in disadvantaged communities
- Workforce development and certification language
- Accelerated transition option #1 (25% purchase requirements 2020-2022), transitioning to 100% ZEB by 2040
    - This option includes the purchase of five battery electrics buses (BEBs) instead of five CNG buses in 2021, for a 13% total annual purchase, as well as the purchase of 12 articulated BEBs in 2022, for a 25% total annual purchase
- Annual review of the Transition Plan by the Board of Directors beginning in February 2021

Metropolitan Transit System (MTS) is a California public agency comprised of San Diego Transit Corp., San Diego Trolley, Inc. and San Diego and Arizona Eastern Railway Company (nonprofit public benefit corporations). MTS is the taxicab administrator for seven cities.

MTS member agencies include the cities of Chula Vista, Coronado, El Cajon, Imperial Beach, La Mesa, Lemon Grove, National City, Poway, San Diego, Santee, and the County of San Diego.

Budget Impact

None at this time.

DISCUSSION:

The Innovative Clean Transit (ICT) rule passed in December of 2018 by the CARB mandated purchase requirement of ZEBs for transit operators with fleets larger than 100 buses starting in 2023. The ICT requires transit agencies to submit a Rollout Plan to CARB to indicate compliance with the ZEB purchase mandate.

In preparation for completion of the Rollout Plan, MTS and its consultant, Center for Transportation and the Environment (CTE), prepared a draft Transition Plan. The Rollout Plan was due to CARB on June 30, 2020, but CARB agreed to allow for delayed submissions in recognition of the challenges in gaining public and Board input during the COVID-19 pandemic.

On June 18, 2020, MTS staff provided a presentation on the draft Transition Plan and requested approval from the Board of Directors to file an extension with CARB in submitting MTS's ZEB Rollout Plan.

At the September 10, 2020 Executive Committee meeting, the Committee received a report on the feedback received from the ZEB Public Outreach conducted on July 21, 2020, as well as additional feedback collected during and after the June 18, 2020 Board of Directors meeting. Incorporated in the staff report were considerations for amending the draft Rollout Plan and Transition Plan to include:

- Prioritizing deployment of ZEB's in disadvantaged communities
- Workforce development and certification language
- Consideration of two new scenarios: accelerated transition option #1 (25% purchase requirements 2020-2022) and accelerated transition option #2 (100% ZEB by 2030)

The Executive Committee unanimously voted to move a recommendation to the Board to include the following considerations in the draft Rollout Plan and Transition Plan for final approval by the Board:

- Prioritizing deployment of ZEB's in disadvantaged communities
- Workforce development and certification language
- Accelerated transition option #1 (25% purchase requirements 2020-2022), transitioning to 100% ZEB by 2040
    - This option includes the purchase of five battery electrics buses (BEBs) instead of five CNG buses in 2021, for a 13% total annual purchase, as well as the purchase of 12 articulated BEBs in 2022, for a 25% total annual purchase
- Annual review of the Transition Plan by the Board of Directors beginning in February 2021

Staff has amended the ZEB draft Rollout Plan and Transition Plan to reflect the Executive Committee direction provided at its September 10, 2020 meeting. Therefore, staff recommends that the MTS Board of Directors: (1) approve the ZEB draft Rollout Plan for submittal to CARB; and (2) Approve the MTS ZEB draft Transition Plan.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Julia Tuer, 619.557.4515, Julia.Tuer@sdmts.com

Attachments: A. Draft ZEB Rollout Plan
B. Draft ZEB Transition Plan
C. ZEB Presentation

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Section A: Transit Agency Information

1. **Transit agency's name (required)**
   San Diego Metropolitan Transit System (MTS)

2. **Mailing address (number, street, city, county, Zip Code) (optional)**
   1255 Imperial Avenue, San Diego, CA 92101

3. **Name of transit agency's air district(s) (optional)**
   San Diego County Air Pollution Control District

4. **Name of transit agency's air basin(s) (optional)**
   San Diego Air Basin

5. **Total number of buses in Annual Maximum Service (optional)**
   823 buses

6. **Population of the urbanized area a transit agency is serving as last published by the Census Bureau before December 31, 2017 (optional)**
   Population = 3,000,000 for service area

7. **Contact information of the general manager, chief operating officer, or equivalent (optional)**
   a. *Wygant, Michael*
   b. *Chief Operating Officer*
   c. *(619) 238-0100 ext. 6400*
   d. Michael.Wygant@sdmts.com
8. **Is your transit agency part of a Joint Group5 (13 CCR § 2023.1(d)(3))? (Yes/No) (required)**
   No

Section B: Rollout Plan General Information

1. **Does your transit agency's Rollout Plan have a goal of full transition to zero-emission technologies by 2040 that avoids early retirement of conventional transit buses (13 CCR § 2023.1(d)(1)(A))? (Yes/No) (required)**
   *No, MTS transition analysis does not indicate that 100% can be completed by 2040 based on our technological advancement assumption (every two years 5% energy density increase for battery technology) by 2040 with depot charging. MTS estimates **94%** of the fleet blocks scheduled could be operated by battery electric technology, with depot charging only and fuel cell, with hydrogen fueling. (breakdown by bus type below).*

   Additionally, outlined in the MTS fleet replacement plan, there will be some conventional buses that won't be replaced until just after 2040 based on vehicles reaching the end of their service life.

Bus type - Block schedules (%) that electric bus technology can meet by 2040:*

- *Cutaway (32' Buses) = **45%** by 2040*
- *40' Buses = **94%** by 2040*
- *45' Buses (Coaches) = **100%** by 2040*
- *60' Buses (Artics) = **76%** by 2040*

**With the adding fuel cell vehicles in the Mixed Fleet scenario, MTS transition will meet 94% at 2040 and 100% in 2042.*

2. **The ICT regulation requires 100% ZEB purchase in 2029. Conventional transit buses that are purchased in 2028 could be delivered in or after 2029. Please explain how your transit agency plans to avoid potential early retirement of conventional buses in order to meet the 2040 goal. (optional)** *MTS intends to purchase vehicle at or ahead of the purchasing mandate, allowing for vehicles complete their minimal lifecycle ahead of the 2040 goal assuming infrastructure, range and funding is available. There may be a small amount of vehicles that are not replaced prior to 2040 based on service life and OEM construction schedules.*

3. **When did your transit agency's board or governing body approve the Rollout Plan?**
   a. Board Approval Date? *06/18/2020*
   b. Resolution #? (optional) *Tentative 9/17/20*
   c. Is a copy of the board approved resolution attached to the Rollout Plan submitted to CARB (13 CCR § 2023.1(d)(2))? (Yes/No) (required)

4. **Please provide contact information for CARB to follow up on details of the Rollout Plan, if needed. (optional)**
   a. *Kyle Whatley*
   b. *Zero Emissions Project Specialist*
   c. *619-446-4046*
   d. Kyle.whatley@sdmts.com

5. **Who has created the Rollout Plan? (transit agency / consultant) (optional)**
   San Diego Metropolitan Transit System (MTS)/Center for Transportation & Environment (CTE)
   a. If it was created by a consultant, please identify the consulting company's name.
   CTE created MTS's Transition Plan (attached) that is a guidance document for transitioning conventional fleet to 100% zero-emission fleet.

6. **What was the cost for the creation of the Rollout Plan? (optional)**
   This includes, Center for Transportation & Environment consulting cost for MTS's battery electric bus pilot deployment (data collected from the pilot supports direction of the Transition Plan) and the main objective to develop a roadmap/transition plan for MTS.
   - *CTE cost - $497,951*
   - *MTS Staff – $182,458*

7. **How many person-hours did it take to create the Rollout Plan? (optional)**
   - *CTE hours – 3,438*
   - *MTS hours – 3,304*

Section C: Technology Portfolio

1. **What type(s) of zero-emission bus technologies (e.g. battery electric and fuel cell electric buses) does your transit agency plan to deploy through 2040? (13 CCR § 2023.1(d)(1)(B)) (required)**
   MTS plans to deploy battery electric bus and fuel cell technology with depot charging only, and hydrogen station. With our initial analysis and assumption of 5% technological advancement only 94% blocks will be met by 2040.

   Bus type - Block schedules (%) that electric bus technology can meet by 2040:*
   - *Cutaway (32' Buses) = **45%** by 2040*
   - *40' Buses = **94%** by 2040*
   - *45' Buses (Coaches) = **100%***
   - *60' Buses (Artics) = **76%** by 2040*

**With the adding fuel cell vehicles in the Mixed Fleet scenario, MTS transition will meet 94% at 2040 and 100% in 2042.*

Section D: Current Bus Fleet Composition and Future Bus Purchases

1. **Please complete Table 1 with information on each individual bus in your current bus fleet. Please identify the fuel type of each individual conventional bus as diesel, compressed natural gas (CNG), liquefied natural gas (LNG), diesel hybrid (dHEB), gasoline hybrid (gHEB), propane, or gasoline. For zero-emission technologies, identify the fuel type as hydrogen or electricity and indicate which charging technology (depot, wireless, and/or on-route) will be used. Bus types include standard, articulated, over-the-road, double decker, and cutaway buses. For ease of use, you can group the bus information based on a parameter that makes the most sense for your transit agency. For example, California-Heritage Transit has 12 standard diesel buses that are 2017 bus model year with 2016 model year engines. In addition, this transit agency has 3 articulated diesel buses that are 2011 bus model year with 2010 model year engine. (optional)**

Table 1: Individual Bus Information of Current Bus Fleet (optional)

Number of Buses	Engine Model Year	Bus Model Year	Fuel Type	Bus Type
23	*2015*	*2015*	*CNG*	*Standard 40'*
50	*2008*	*2008*	*CNG*	*Standard 40'*
7	*2005*	*2005*	*CNG*	*Standard 40'*
26	*2011*	*2011*	*CNG*	*Standard 40'*
31	*2012*	*2012*	*CNG*	*Standard 40'*

26	*2013*	*2013*	*CNG*	*Standard 40'*
12	*2014*	*2014*	*CNG*	*Standard 40'*
26	*2008*	*2008*	*CNG*	*Artic 60'*
29	*2013*	*2013*	*CNG*	*Rapid Artic 60'*
18	*2014*	*2014*	*CNG*	*Rapid Artic 60'*
13	*2015*	*2015*	*CNG*	*Artic 60'*
10	*2017*	*2017*	*CNG*	*Standard 40'*
14	*2015*	*2015*	*CNG*	*Standard 40'*
36	*2017*	*2017*	*CNG*	*Standard 40'*
15	*2013*	*2013*	*CNG*	*Standard 40'*
38	*2015*	*2015*	*CNG*	*Standard 40'*
7	*2018*	*2018*	*CNG*	*Standard 40'*
73	*2009*	*2009*	*CNG*	*Standard 40'*
22	*2012*	*2012*	*CNG*	*Standard 40'*
5	*2008*	*2008*	*CNG*	*Standard 40'*
2	*2009*	*2009*	*CNG*	*Standard 40'*
10	*2017*	*2017*	*CNG*	*Artic 60'*
17	*2018*	*2018*	*CNG*	*Rapid Artic 60'*
9	*2013*	*2013*	*CNG*	*Standard 40'*
6	*2019*	*2019*	*CNG*	*Standard 40'*
13	*2015*	*2015*	*CNG*	*Standard 40'*
38	*2016*	*2016*	*CNG*	*Standard 40'*
24	*2007*	*2007*	*CNG*	*Coach 45'*
3	*2018*	*2018*	*Gasoline*	*Cutaway*
31	*2016*	*2016*	*LPG*	*Cutaway*
6	*2013*	*2013*	*Gasoline*	*Cutaway*
26	*2011*	*2011*	*LPG*	*Cutaway*
46	*2012*	*2012*	*LPG*	*Cutaway*
3	*2012*	*2012*	*Gasoline*	*Cutaway*
3	*2014*	*2014*	*Gasoline*	*Cutaway*
37	*2015*	*2015*	*Gasoline*	*Cutaway*
55	*2016*	*2016*	*Gasoline*	*Cutaway*
5	*2015*	*2015*	*Gasoline*	*Cutaway*
6	*2019*	*2019*	*Electric*	*Standard 40'*
2	*2020*	*2020*	*Electric*	*Standard 40'*
TOTAL = 823				

2. **Please complete Table 2 regarding expected future bus purchases,6 including the number of buses in total expected to be purchased or leased in the year of purchase. Identify the number and percentage of zero-emission buses of the total bus purchases each year, as well as bus types and fuel types. Identify the same type of information for purchases of conventional buses. Bus types include standard, articulated, over-the-road, double decker, and cutaway buses. For zero-emission technologies, please identify the fuel type as hydrogen or electricity indicate which charging technology (depot, wireless, and/or on-route). For conventional**

technologies, identify the fuel type as diesel, compressed natural gas (CNG), liquefied natural gas (LNG), diesel hybrid (dHEB), gasoline hybrid (gHEB), propane, or gasoline.

Table 2*:* Future Bus Purchases (required)

Timeline (year)	Total Number of Buses to Purchase	Number of ZEB Purchases	Percentage of Annual ZEB Purchases	ZEB Bus Type(s)	ZEB Fuel Type(s)	Number of Conv. Bus Purchases	Percentage of Annual Conv. Bus Purchases	Type(s) of Conv. Buses	Fuel Type(s) of Conv. Buses
2020	*95*	*2*	*2%*	*Standard*	*Elec – Depot*	*93*	*98%*	*Standard* *Artic* *Commuter*	*CNG* *CNG* *CNG*
2021	*37*	*5*	*14%*	*Standard*	*Elec – Depot*	*32*	*86%*	*Standard*	*CNG*
2022	*76*	*12*	*25%**	*Artic*	*Elec – Depot*	*38* *26*	*75%*	*Standard* *Cutaway*	*CNG* *Propane*
2023	*78*	*13*	*25%**	*Standard*	*Elec – Depot*	*53* *25*	*75%*	*Standard* *Cutaway*	*CNG* *Propane*
2024	*104*	*10*	*26%**	*Standard*	*Elec – Depot*	*28* *66*	*74%*	*Standard* *Cutaway*	*CNG* *Propane*
2025	*106*	*13*	*26%**	*Standard*	*Elec – Depot*	*37* *18* *35* *3*	*74%*	*Standard* *Artic* *Cutaway* *Cutaway*	*CNG* *CNG* *Propane* *Gas*
2026	*115*	*28* *15* *15*	*50%*	*Standard* *Artic* *Cutaway*	*Elec – Depot* *Elec – Depot* *Elec – Depot*	*22* *14* *21*	*50%*	*Standard* *Artic* *Cutaway*	*CNG* *CNG* *Propane*
2027	*87*	*27* *17*	*51%*	*Standard* *Artic*	*Elec – Depot* *Elec – Depot*	*16* *27*	*49%*	*Standard* *Cutaway*	*CNG* *Propane*
2028	*51*	*13* *13*	*51%*	*Standard* *Cutaway*	*Elec – Depot* *Elec – Depot*	*12* *13*	*49%*	*Standard* *Cutaway*	*CNG* *Propane*
2029	*68*	*25* *5* *13* *25*	*100%*	*Standard* *Standard* *Artic* *Cutaway*	*Elec – Depot* *Hydrogen* *Elec – Depot* *Hydrogen*	*0*	*0%*	*NA*	*NA*
2030	*115*	*49* *31* *35*	*100%*	*Standard* *Cutaway* *Cutaway*	*Elec – Depot* *Elec – Depot* *Hydrogen*	*0*	*0%*	*NA*	*NA*
2031	*69*	*6* *25* *31* *7*	*100%*	*Standard* *OTR* *Cutaway* *Cutaway*	*Elec – Depot* *Elec – Depot* *Elec – Depot* *Hydrogen*	*0*	*0%*	*NA*	*NA*
2032	*103*	*57* *10* *36*	*100%*	*Standard* *Artic* *Cutaway*	*Elec – Depot* *Elec – Depot* *Hydrogen*	*0*	*0%*	*NA*	*NA*

2033	*64*	*37*	*58%*	*Standard*	*Elec – Depot*	*27*	*42%*	*Cutaway*	*Propane*
2034	*76*	*38* *12* *11* *15*	*100%*	*Standard* *Artic* *Cutaway* *Cutaway*	*Elec – Depot* *Elec – Depot* *Elec – Depot* *Hydrogen*	*0*	*0%*	*NA*	*NA*
2035	*66*	*41* *25*	*100%*	*Standard* *Cutaway*	*Elec – Depot* *Hydrogen*	*0*	*0%*	*NA*	*NA*
2036	*117*	*38* *13* *31* *35*	*100%*	*Standard* *Artic* *Cutaway* *Cutaway*	*Elec – Depot* *Elec – Depot* *Elec – Depot* *Hydrogen*	*0*	*0%*	*NA*	*NA*
2037	*128*	*37* *13* *27* *13* *31* *7*	*100%*	*Standard* *Standard* *Artic* *Artic* *Cutaway* *Cutaway*	*Elec – Depot* *Hydrogen* *Elec – Depot* *Hydrogen* *Elec – Depot* *Hydrogen*	*0*	*0%*	*NA*	*NA*
2038	*86*	*43* *7* *36*	*100%*	*Standard* *Standard* *Cutaway*	*Elec – Depot* *Hydrogen* *Hydrogen*	*0*	*0%*	*NA*	*NA*
2039	*87*	*39* *17* *4*	*69%*	*Standard* *Artic* *Standard*	*Elec – Depot* *Elec – Depot* *Hydrogen*	*27*	*31%*	*Cutaway*	*Propane*
2040	*51*	*25* *21* *5*	*100%*	*Standard* *Cutaway* *Cutaway*	*Elec – Depot* *Elec – Depot* *Hydrogen*	*0*	*0%*	*NA*	*NA*

*Denotes that percentage of ZEBs based on vehicles that have not been exempted from purchase requirements prior to 2026 (Standard vehicles only)

Table 3: Range and Estimated Costs of Future ZEB Purchases (optional)

Timeline (Year)	Number of ZEBs	Bus Type(s)	Required BEB Range on-board H2 Storage	Estimated Cost of Each Bus
2020	*2*	*Standard – Elec*	*450 kwh*	*$950,000*
2021	*5*	*Standard – Elec*	*450 kwh*	*$950,000*
2022	*12*	*Artic – Elec*	*473 kWh*	*$1,375,000*
2023	*13*	*Standard – Elec*	*496 kWh*	*$950,000*
2024	*10*	*Standard – Elec*	*521 kWh*	*$950,000*
2025	*13*	*Standard – Elec*	*521 kWh*	*$950,000*
2026	*28* *15* *15*	*Standard - Elec* *Artic - Elec* *Cutaway – Elec*	*547 kWh* *547 kWh* *122 kWh*	*$950,000* *$1,375,000* *$250,000*
2027	*27* *17*	*Standard - Elec* *Artic – Elec*	*547 kWh* *547 kWh*	*$950,000* *$1,375,000*
2028	*13*	*Standard - Elec*	*574 kWh*	*$950,000*

	13	*Cutaway – Elec*	*128 kWh*	*$250,000*
2029	*25*	*Standard - Elec*	*574 kWh*	*$950,000*
	5	*Standard - Hyd*	*43 kg*	*$1,150,000*
	13	*Artic - Elec*	*574 kWh*	*$1,375,000*
	25	*Cutaway - Hyd*	*22 kg*	*$375,000*
2030	*49*	*Standard - Elec*	*603 kWh*	*$950,000*
	31	*Cutaway - Elec*	*134 kWh*	*$250,000*
	35	*Cutaway – Hyd*	*23 kg*	*$375,000*
2031	*6*	*Standard - Elec*	*603 kWh*	*$950,000*
	25	*OTR - Elec*	*603 kWh*	*$950,000*
	31	*Cutaway - Elec*	*134 kWh*	*$250,000*
	7	*Cutaway – Hyd*	*23 kg*	*$375,000*
2032	*57*	*Standard - Elec*	*633 kWh*	*$950,000*
	10	*Artic - Elec*	*633 kWh*	*$1,375,000*
	36	*Cutaway - Hyd*	*25 kg*	*$375,000*
2033	*37*	*Standard – Elec*	*633 kWh*	*$950,000*
2034	*38*	*Standard - Elec*	*665 kWh*	*$950,000*
	12	*Artic - Elec*	*665 kWh*	*$1,375,000*
	11	*Cutaway - Elec*	*148 kWh*	*$250,000*
	15	*Cutaway – Hyd*	*26 kg*	*$375,000*
2035	*41*	*Standard - Elec*	*665 kWh*	*$950,000*
	25	*Cutaway – Hyd*	*26 kg*	*$375,000*
2036	*38*	*Standard - Elec*	*698 kWh*	*$950,000*
	13	*Artic - Elec*	*698 kWh*	*$1,375,000*
	31	*Cutaway - Elec*	*155 kWh*	*$250,000*
	35	*Cutaway – Hyd*	*27 kg*	*$375,000*
2037	*37*	*Standard - Elec*	*698 kWh*	*$950,000*
	13	*Standard - Hyd*	*53 kg*	*$1,150,000*
	27	*Artic - Elec*	*698 kWh*	*$1,375,000*
	13	*Artic - Hyd*	*86 kg*	*$1,632,000*
	31	*Cutaway - Elec*	*155 kWh*	*$250,000*
	7	*Cutaway – Hyd*	*27 kg*	*$375,000*
2038	*43*	*Standard - Elec*	*733 kWh*	*$950,000*
	7	*Standard - Hyd*	*56 kg*	*$1,150,000*
	36	*Cutaway – Hyd*	*29 kg*	*$375,000*
2039	*39*	*Standard - Elec*	*733 kWh*	*$950,000*
	17	*Artic - Elec*	*733 kWh*	*$1,375,000*
	4	*Standard – Hyd*	*56 kg*	*$1,150,000*
2040	*25*	*Standard - Elec*	*770 kWh*	*$950,000*
	21	*Cutaway - Elec*	*171 kWh*	*$250,000*
	5	*Cutaway – Hyd*	*30 kg*	*$375,000*

3. **Is your transit agency considering converting some of the conventional buses in service to zero-emission buses (13 CCR § 2023.1(d)(1)(E))? (Yes/No) (required)**
   No, not at this time.
   a. **If yes, please complete Table 4a with your transit agency's schedule to convert the conventional buses to zero-emission technologies. (required)**
   b. **Please identify the estimated cost of converting each bus, the required battery capacity or on-board hydrogen storage, and the estimated range in Table 4b. (optional)** *N/A*

Table 4a: Schedule of Converting Conventional Buses to Zero-Emission Buses (required) *N/A*

Timeline (Year)	Number of Buses	Bus Type(s)	Removed Propulsion System	New Propulsion System

Table 4b 1: Range and Estimated Costs for Converting Conventional Buses to Zero- Emission Buses (optional) *N/A*

Estimated Cost per Bus	Battery Capacity/ H2 Storage	Range

Section E: Facilities and Infrastructure Modifications

- **Please complete Table 5 with names, locations, and main functions of transit agency divisions or facilities that would be involved in deploying and maintaining zero-emission buses. Please limit the facilities to bus yards and facilities with maintenance, fueling, and charging functions, and exclude other operational functions like training centers, information and trip planning offices, and administrative buildings. Please identify which facility(s) require construction, infrastructure modifications, or upgrades to support your transit agency's long-term transition to zero-emission technologies and the estimated timeline for such an upgrade. Please also specify the type(s) of infrastructure planned in each division or facility and provide their service capacities (e.g. on-route high-power charging system) to deploy 20 BEB in 2025). (required)**

Table 5: Facilities Information and Construction Timeline (required)

Division/Facility Name	Address	Main Function(s)	Type(s) of Infrastructure	Service Capacity	Needs Upgrade (Yes/ No)	Estimated Construction Timeline
Imperial Avenue	*100 16th Street, San Diego, CA 92101*	*Operations, Maintenance, Fueling/Charging , Cleaning*	*Maintenance Bays, Fuel Service Lanes, CNG Station, Electric Chargers, Bus Wash*	*170*	*Yes*	*2021 – 2023 2023 – 2025 2025 - 2027 2027 - 2029 2030 – 2032 2033 – 2036*
Kearny Mesa	*4630 Ruffner rd. San Diego, CA 92111*	*Operations, Maintenance, Fueling/Charging , Cleaning*	*Maintenance Bays, Fuel Service Lanes, CNG Station, Electric Chargers, Bus Wash*	*100*	*Yes*	*2024 – 2026 2025 – 2027 2035 - 2037*
East County	*544 Vernon Way El Cajon, CA 92020*	*Operations, Maintenance, Fueling/Charging , Cleaning*	*Maintenance Bays, Fuel Service Lanes, CNG Station, Electric Chargers, Bus Wash*	*88*	*Yes*	*2025 – 2028 2028 – 2030*
South Bay	*3650 Main St Chula Vista, CA 91911*	*Operations, Maintenance, Fueling/Charging , Cleaning*	*Maintenance Bays, Fuel Service Lanes, CNG Station, Electric Chargers, Bus Wash*	*239*	*Yes*	*2020 – 2022 2022 – 2024 2023 – 2025 2024 – 2026 2025 – 2027 2027 – 2029 2028 – 2030 2031 - 2033*
Copley	*7490 Copley Park Pl San Diego, CA 92111*	*Operations, Maintenance, Fueling Cleaning*	*Maintenance Bays, Fuel Service Lanes, CNG Station, Electric Chargers, Bus Wash*	*178*	*Yes*	*2024 – 2026 2025 – 2027 2027 – 2028 2028 – 2030 2030 – 2032 2032 – 2035 2035 – 2037 2037 - 2039*
New Facility						

- **Regarding the information provided in Table 5, please explain the types of necessary upgrades or infrastructure modifications each facility or division need to support your transit agency's long-term transition to ZEB. Please also provide the specification of each infrastructure in the related facility or division before and after the upgrades or modifications. For example, Division Blue Sky has a parking capacity of 150 buses in 2020. In 2025, after parking rearrangement and installation of 30 depot fast chargers with power of 150 kW, this facility is expected to accommodate 120 buses; or Division Enchanting Waterfalls will deploy 20 fuel cell electric buses (FCEBs) in 2025 with trucked-in liquid hydrogen for 1,500 kg of storage capacity and will expand to 120 FCEBs in 2035 with trucked-in liquid hydrogen for 9,000 kg of storage capacity; or Division Evergreen will deploy 20 BEBs in 2025 using an on-route high-power charging system (500 kW) with 10 chargers and will expand to 200 BEBs in 2040 using the same charging method with 15 MW of on-site power. (optional)**

    - *Imperial Avenue Division: has a bus capacity of 154 buses in 2020. In 2040, after installation of approximately 19 overhead gantry systems and approximately 80 depot fast chargers with at least 150 kW rate of charge, this facility is expected to accommodate 129 ZEBs based on route block schedules this technology can meet. In addition, 3 new locations for utility transformers will need to be installed on-site to accommodate power demand for charging infrastructure.*
    - *Kearny Mesa Division: has as a capacity of 127 buses in 2020. In 2040, after installation of approximately 15 overhead gantry systems, and approximately 50 depot fast chargers with at least 150 kW rate of charger, this facility is expected to accommodate 98 ZEBs based on route block schedules that this technology can meet . In addition, 5 new locations for utility transformers will need to be installed on-site to accommodate power demand for charging infrastructure.*
    - *East County Division: has as a capacity of 77 buses in 2020. In 2040, after installation of approximately 11 overhead gantry systems, and approximately 31 depot fast chargers with at least 150 kW rate of charger, this facility is expected to accommodate 71 ZEBs based on route block schedules that this technology can meet. In addition, 5 new locations for utility transformers will need to be installed on-site to accommodate power demand for charging infrastructure.*
    - *South Bay Division: has as a capacity of 260 buses in 2020. In 2040, after installation of approximately 37 overhead gantry systems, and approximately 104 depot fast chargers with at least 150 kW rate of charger, this facility is expected to accommodate 253 ZEBs based on route block schedules that this technology can meet. In addition, 6 new locations for utility transformers will need to be installed on-site to accommodate power demand for charging infrastructure.*
    - *Copley Division: has as a capacity of 260 buses in 2020. In 2040, after installation of approximately 37 overhead gantry systems, and approximately 104 depot fast chargers with at least 150 kW rate of charger, this facility is expected to accommodate 253 ZEBs based on route block schedules that this technology can meet. In addition, 6 new*

locations for utility transformers will need to be installed on-site to accommodate power demand for charging infrastructure.

- *New Facility: will have at least a similar capacity as the South Bay division.*

- **Do you expect to make any modifications to your bus parking arrangements? Explain the modifications and why they are needed. (optional)** *Yes, the following divisions include:*
  - *Imperial Avenue Division: with 19 overhead gantry systems installed, and 6 islands that will secure the gantry foundations and potentially charger equipment, the bus parking arrangement will change by adding 27 bus parking spots where it is existing bus operator parking stalls to accommodate charger equipment installation including gantry system.*
  - *Kearny Mesa Division: with 15 overhead gantry systems installed, 8 islands that will secure the gantry foundation and potentially charger equipment, the bus parking arrangement could lose approximately 8 bus parking stalls to accommodate charger equipment installation including gantry system.*
  - *East County Division: with 11 overhead gantry systems installed, and 3 islands that will secure the gantry foundations and potentially charger equipment, the bus parking arrangement could lose approximately 5 Coach 45' bus parking spots, and 6 standard 40' bus parking spots, where it is existing bus operator parking stalls to accommodate charger equipment installation including gantry system.*
  - *South Bay Division: with 37 overhead gantry systems installed, and 10 islands that will secure the gantry foundations and potentially charger equipment, the bus parking arrangement will change by approximately adding 47 bus parking spots where it is an existing building structure today, that would need to be demolished in order to accommodate the additional bus parking spaces.*
  - *New Facility: will have a similar capacity as the South Bay division.*

- **Do you expect to need additional parking spaces for completing the transition to zero-emission technologies? Explain why. (optional)**
  Yes, with overhead gantry systems, charger equipment, and utility equipment installed, at least 2 sites (Imperial Ave & South Bay Divisions) will need to add additional parking to accommodate a battery electric bus fleet at those two sites.

- **In the Table 6, please identify the propulsion system (e.g. diesel, CNG, battery electric, fuel cell) of all buses that will be dispatched from the facilities identified on the Table 5. Are any of these facilities located in NOx-exempt areas? (optional)**
  As of today.

Table 6: NOx-Exempt Area and Electric Utilities' Territories (optional)

Division's Name	Type(s) of Bus Propulsion System	Located in NOx-Exempt Area? (Yes/No)
Imperial Avenue Division	*Low NOx combustion engine (RNG) & transmission, traction motor*	*No*
Kearny Mesa Division	*Low NOx combustion engine (RNG) & transmission*	*No*
East County Division	*Low NOx combustion engine (RNG), diesel combustion engine, gasoline combustion engine & transmission*	*No*
South Bay Division	*Low NOx combustion engine (RNG) & transmission*	*No*
Copley Division	*Liquid propane combustion engine, gasoline combustion engine & transmission*	*No*

6. **Please identify the electric utilities in your transit agency's service area (optional)**

San Diego Gas & Electric

Section F: Providing Service in Disadvantaged Communities

1. **Does your transit agency serve one or more disadvantaged communities, as listed in the latest version of CalEnviroScreen? Yes/ No (required)**

Yes. Per the June 2018 update to CalEnviroscreen, all of the SB 535 Disadvantaged Communities Census tracts (DACs) in San Diego County are located within the MTS service area. MTS provides either bus transit service, zero-emission all-electric light rail transit service, or both to every DAC within our service area.

If yes, please describe how your transit agency is planning to deploy zero-emission buses in disadvantaged communities (13 CCR § 2023.1(d)(1)(F)). (required)

MTS plans to prioritize deployment of BEBs in DACs during the fleet conversion years. We currently operate full-size (40'-60') buses out of four divisions. As a primary step, MTS must install charging infrastructure for electric buses in each of these divisions. Electrification will happen in phases by

division, due to available funding, optimized fleet management and maintenance, and to incorporate progressive infrastructure improvements with each installation. Implementation of the charging equipment will be prioritized based on the amount of service provided to DACs that operates out of each division, in order to ensure availability of BEBs on routes in these tracts. An analysis showed that the South Bay Division operates the most service in DAC communities, as measured by number of routes or number of passengers served. Any other metrics are expected to follow a similar pattern:

40'/60' Bus Division	*% of Routes Serving DACs*	*% of Riders on Routes Serving DACs*
South Bay Division	*69%*	*56%*
Imperial Ave./Kearny Mesa Divisions	*58%*	*16%*
East County Division	*41%*	*10%*

Imperial Ave. and Kearny Mesa divisions are combined because a large number of their routes are operated from both divisions simultaneously. This analysis included any route with at least one stop in a DAC to be a "DAC-serving route" but a methodology that includes only routes with a certain number of stops in a DAC, or percentage of riders originating in a DAC, could also be used. MTS expects the relative results among the three locations would be the same. Based on this information, MTS intends to prioritize installation of electrical charging infrastructure at the four full-size bus divisions as follows:

1. *South Bay*
2. *Imperial Ave.*
3. *Kearny Mesa*
4. *East County*

Following the installation of charging infrastructure at each division, the daily bus assignments will prioritize the deployment of BEBs on to routes serving DACs within each division. The MTS Planning Department will keep its operations divisions updated with a current list of DAC-serving routes, as the routes (and CalEnviroscreen itself) will be updated and adjusted over time. Buses are assigned to individual blocks on a daily basis by the maintenance and operations teams at the division. Each facility will have ready lanes specific to BEBs (versus mixed-parking) so that a BEB can always be pulled independently to fill a DAC-serving block. Bus assignments by power type (BEB and natural gas) will be recorded and regularly made available to the public for transparency and accountability.

Aside from which bus routes serve DACs, there are other issues considered for assigning BEBs. These include range limitations (versus block lengths) and the bus size needed and available (40' or 60'). Also, many blocks are interlined for efficiency and include routes that serve DACs and routes that don't serve DACs. Lastly, unplanned events require some flexibility, and standby buses may be either BEB or natural gas, depending on availability at the time of assignment. Note also that MTS received a California Transit and Intercity Rail Capital Program (TIRCP) grant for the implementation of a new MTS Rapid route, Iris Rapid, for which the state is requiring the purchase and use of BEBs. These new BEBs will be dedicated to Iris Rapid, though it does not serve any SB 535 DACs. However, the route still serves several areas that are communities of concern due to population characteristics and economic burdens.

In summary, MTS will:

- *Utilize CalEnviroscreen to identify SB 535 communities disadvantaged by high pollution burden and vulnerable population characteristics*
- *Identify bus routes serving SB 535 DACs and prioritize charging infrastructure to serve these routes*
- *Prioritize bus assignments on routes serving SB 535 DACs during fleet transition years*

Please complete Table 7 with the estimated number of zero-emission buses your transit agency is planning to deploy in disadvantaged communities and the estimated timeline.

Table 7: Service in Disadvantaged Communities (DAC) (optional)

Timeline (Year)	Number of ZEBs	Location of DAC
2020	*8*	*6073002501, 6073002502, 6073003301, 6073003303, 6073003305, 6073003403, 6073003404, 6073003501, 6073003502, 6073003601, 6073003602, 6073003603, 6073003800, 6073003901, 6073003902, 6073004000, 6073004100, 6073004700, 6073004800, 6073004900, 6073005000, 6073005100, 6073005200, 6073005300, 6073005700, 6073010009, 6073011601, 6073011602, 6073011700, 6073011801, 6073012501, 6073012502, 6073012600, 6073013205, 6073015901, 6073016202, 6073021900, 6073022000*
2021	*8*	*6073002501, 6073002502, 6073003301, 6073003303, 6073003305, 6073003403, 6073003404, 6073003501, 6073003502, 6073003601, 6073003602, 6073003603, 6073003800, 6073003901, 6073003902, 6073004000, 6073004100, 6073004700, 6073004800, 6073004900, 6073005000, 6073005100, 6073005200, 6073005300,*

		6073005700, 6073010009, 6073011601, 6073011602, 6073011700, 6073011801, 6073012501, 6073012502, 6073012600, 6073013205, 6073015901, 6073016202, 6073021900, 6073022000
2022	*8*	*6073002501, 6073002502, 6073003301, 6073003303, 6073003305, 6073003403, 6073003404, 6073003501, 6073003502, 6073003601, 6073003602, 6073003603, 6073003800, 6073003901, 6073003902, 6073004000, 6073004100, 6073004700, 6073004800, 6073004900, 6073005000, 6073005100, 6073005200, 6073005300, 6073005700, 6073010009, 6073011601, 6073011602, 6073011700, 6073011801, 6073012501, 6073012502, 6073012600, 6073013205, 6073015901, 6073016202, 6073021900, 6073022000*
2023	*11*	*6073002501, 6073002502, 6073003301, 6073003303, 6073003305, 6073003403, 6073003404, 6073003501, 6073003502, 6073003601, 6073003602, 6073003603, 6073003800, 6073003901, 6073003902, 6073004000, 6073004100, 6073004700, 6073004800, 6073004900, 6073005000, 6073005100, 6073005200, 6073005300, 6073005700, 6073010009, 6073011601, 6073011602, 6073011700, 6073011801, 6073012501, 6073012502, 6073012600, 6073013205, 6073015901, 6073016202, 6073021900, 6073022000*

2024	*10*	*6073002501, 6073002502, 6073003301, 6073003303, 6073003305, 6073003403, 6073003404, 6073003501, 6073003502, 6073003601, 6073003602, 6073003603, 6073003800, 6073003901, 6073003902, 6073004000, 6073004100, 6073004700, 6073004800, 6073004900, 6073005000, 6073005100, 6073005200, 6073005300, 6073005700, 6073010009, 6073011601, 6073011602, 6073011700, 6073011801, 6073012501, 6073012502, 6073012600, 6073013205, 6073015901, 6073016202, 6073021900, 6073022000*
2025	*13*	*6073003301, 6073003303, 6073003305, 6073003403, 6073003404, 6073003501, 6073003502, 6073003601, 6073003602, 6073003603, 6073003800, 6073003901, 6073003902, 6073004000, 6073004100, 6073004700, 6073004800, 6073004900, 6073005000, 6073005100, 6073005200, 6073005300, 6073005700, 6073010009, 6073011601, 6073011602, 6073011700, 6073011801, 6073012501, 6073012502, 6073012600, 6073013205, 6073015901, 6073016202, 6073021900, 6073022000*
2026	*58*	*6073003301, 6073003303, 6073003305, 6073003403, 6073003404, 6073003501, 6073003502, 6073003601, 6073003602, 6073003603, 6073003800, 6073003901, 6073003902, 6073004000, 6073004100, 6073004700, 6073004800, 6073004900,*

		6073005000, 6073005100, 6073005200, 6073005300, 6073005700, 6073010009, 6073011601, 6073011602, 6073011700, 6073011801, 6073012501, 6073012502, 6073012600, 6073013205, 6073015901, 6073016202, 6073021900, 6073022000
2027	*44*	*6073003301, 6073003303, 6073003305, 6073003403, 6073003404, 6073003501, 6073003502, 6073003601, 6073003602, 6073003603, 6073003800, 6073003901, 6073003902, 6073004000, 6073004100, 6073004700, 6073004800, 6073004900, 6073005000, 6073005100, 6073005200, 6073005300, 6073005700, 6073010009, 6073011601, 6073011602, 6073011700, 6073011801, 6073012501, 6073012502, 6073012600, 6073013205, 6073015901, 6073016202, 6073021900, 6073022000*
2028	*34*	*6073003301, 6073003303, 6073003305, 6073003403, 6073003404, 6073003501, 6073003502, 6073003601, 6073003602, 6073003603, 6073003800, 6073003901, 6073003902, 6073004000, 6073004100, 6073004700, 6073004800, 6073004900, 6073005000, 6073005100, 6073005200, 6073005300, 6073005700, 6073010009, 6073011601, 6073011602, 6073011700, 6073011801, 6073012501, 6073012502, 6073012600, 6073013205, 6073015901, 6073016202, 6073021900, 6073022000*

2029	*68*	*6073003301, 6073003303, 6073003305, 6073003403, 6073003404, 6073003501, 6073003502, 6073003601, 6073003602, 6073003603, 6073003800, 6073003901, 6073003902, 6073004000, 6073004100, 6073004700, 6073004800, 6073004900, 6073005000, 6073005100, 6073005200, 6073005300, 6073005700, 6073010009, 6073011601, 6073011602, 6073011700, 6073011801, 6073012501, 6073012502, 6073012600, 6073013205, 6073015901, 6073016202, 6073021900, 6073022000*
2030	*115*	*6073003301, 6073003303, 6073003305, 6073003403, 6073003404, 6073003501, 6073003502, 6073003601, 6073003602, 6073003603, 6073003800, 6073003901, 6073003902, 6073004000, 6073004100, 6073004700, 6073004800, 6073004900, 6073005000, 6073005100, 6073005200, 6073005300, 6073005700, 6073010009, 6073011601, 6073011602, 6073011700, 6073011801, 6073012501, 6073012502, 6073012600, 6073013205, 6073015901, 6073016202, 6073021900, 6073022000*
2031	*69*	*6073003301, 6073003303, 6073003305, 6073003403, 6073003404, 6073003501, 6073003502, 6073003601, 6073003602, 6073003603, 6073003800, 6073003901, 6073003902, 6073004000, 6073004100, 6073004700, 6073004800, 6073004900, 6073005000, 6073005100,*

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Section G: Workforce Training

Please describe your transit agency's plan and schedule for the training of bus operators and maintenance and repair staff on zero-emission bus technologies (13 CCR § 2023.1(d)(1)(G)). (required)

CARB Regulation (13 CCR § 2023.1(d)(1)(G) Requirements:

Describe transit agency's plan and schedule for the training of bus operators, maintenance and repair staff on zero-emission bus technologies

Training

Initial training is provided by bus manufacturers and sub-contractors and commences once first bus arrives. Bus manufacturer training is usually one week, and depending on how many sub-contractor manufacturers there are it can take another 2 weeks for this training. Typically, each OEM is required to provide no less than 80 hours or vehicle specific training. This training is focused on safety, familiarity and basic trouble shooting. All training for employees will be scheduled in advance of vehicle deliveries or the necessary repairs where practicable in order to avoid a safety issue or slowdown of work for our employees during the transition.

- *With Zero Emission Bus (ZEB) purchases, MTS requires an additional, 80 hours of training for a total of 160 hours to cover the additional complexities of the vehicles*
- *Because of the limited ZEB's during the start of the transition, initially a focused group of trained MTS employees will be performing the scheduled and unscheduled maintenance on the ZEB's*
- *As the fleet grows, work will be expanded to the complete work force after they have completed the training and certifications*

MTS currently has a California State Accredited training program to develop mechanics. The program is administered by MTS's two (2) fulltime trainers and a local community college. The program was developed in partnership with the International Brotherhood of Electrical Workers (IBEW). This program is administered over a four (4) year period moving from apprentices or entry level mechanics to Journeyman. MTS is integrating ZEB technology into this program. The program will not only cover the safety, familiarity and basic trouble shooting, but also more in-depth procedures and troubleshooting.

ZEB specific training modules include:

- *High-voltage safety*
- *Personal protective equipment (PPE)*
- *EV major component familiarization*
- *Power conversion*
- *Inverters*
- *Drive and traction motors*
- *Battery systems*
- *Preventative maintenance inspection procedure*
- *Charging familiarization and troubleshooting*

In addition to MTS maintenance staff training, non-maintenance employees receive ZEB specific training as outlined below:

- *Bus operator training includes, electric bus familiarization; regenerative braking technique; high voltage safety & personal protective equipment*
- *New hire bus operator orientation programs include the BEB training module, as well as reemphasized during the annual verification of transit training (VTT) program*

— *Bus Operators:*

Prior to MTS bus operators operating a ZEB, they must successfully accomplish the following additional training requirements, which are also reemphasized during the annual VTT program:

- *Electric bus familiarization; regenerative braking technique; high voltage safety & personal protective equipment*

Once MTS constructs the proposed overhead charging system, bus operators will also be trained on the associated process and procedures to safely park and secure the vehicle in preparation for charging.

— *Facilities Maintenance Staff and Maintenance:*
- *Electrical Safety, basic visual charging system inspections as required for FTA assets (preventive maintenance and repairs will be performed by OEM)*

— *First Responders (Local Police & Fire Agencies):*
- *High voltage safety, personal protective equipment (PPE) and bus familiarization*

— *Tow Truck Service Providers:*
- *High voltage safety, PPE, and bus familiarization*

— *Body Repair Technicians:*
- *High voltage safety, PPE, and bus familiarization*

— *Instructors/Trainers:*
- *Bus Operations Training and Instruction staff receive OEM operations, high voltage safety, including PPE, bus familiarization, and regenerative braking technique*

- *Maintenance Training Staff will receive all OEM training including, high voltage safety, PPE, bus & EV major component familiarization, and charger familiarization & troubleshooting*

— *Service Attendants*

- *Knowledge of proper charging and servicing protocols and procedures that are ZEB-specific, and receive high voltage safety/PPE*

— *Fleet Management Staff*

- *All staff (Foreman/Division Managers) will be familiarized with ZEB operations and safety procedures, high voltage safety, PPE, bus & EV major component familiarization, and charger familiarization*

— *Quality Assurance Department*

- *Staff will receive all OEM training including high voltage safety, PPE, bus & EV major component familiarization, regenerative braking technique, BEB operations, and charger familiarization & troubleshooting*

Facility (Charging Systems)

— *Infrastructure Construction, Installation and Maintenance*

- *Unless performed by employees of the local regulated investor-owned utility, all construction and installation of electric vehicle chargers and supporting charging infrastructure not owned by the investor-owned utility, shall be performed by Licensed C-10 Electrical Contractors and electricians who have Electric Vehicle Infrastructure Training Program (EVITP) certification and who shall be paid the prevailing wage as defined in Labor Code section 1720, et seq.*
- *Unless performed by employees of the local regulated investor-owned utility, all maintenance, repair or modification of electric vehicle chargers and supporting charging infrastructure not owned by the investor-owned utility, shall be performed by Licensed C-10 Electrical Contractors and electricians who have Electric Vehicle Infrastructure Training Program (EVITP) certification and who shall be paid the prevailing wage as defined in Labor Code section 1720, et seq.*
- *These requirements apply to work included in Construction Specifications Institute (CSI) Format Division 26 – Electrical (exhibit A) and to work covered in the EVITP curriculum that relates to the construction, installation and maintenance of electric vehicle chargers and supporting charging infrastructure. All other CSI divisions are exempt. CSI Format Divisions are provided as Exhibit A to this plan.*

- *Exempt from these requirements are maintenance, repair or modifications to the charging station software/firmware performed by the Original Equipment Manufacturer (OEM) or a certified OEM vendor.*

Vehicle Maintenance

- *Currently MTS performs the vast majority of scheduled and unscheduled vehicle repairs with a combination of in-house and contracted union-represented employees. MTS intends to continue this practice for all routine maintenance and repairs for ZEB vehicles.*
- *Curriculums of joint apprenticeship training programs will be updated to train apprentices on new ZEB technology, consistent with past practice.*
- *Currently there are a limited amount of systems and subsystems that are not repaired by in-house or contracted employees due to technical capacity, parts availability, workload capacity and warranty provisions, among other reasons.*
    - *The systems typically not repaired by staff, include but are not limited to: engines, transmissions, pumps, electric motors and controllers*
    - *MTS intends to continue the practice of contracting out repairs when necessary with ZEB vehicles, to include but not limited to battery overhaul or repair, traction motor overhaul, Battery Management System overhaul or repair and drive motor overhaul or repair*
    - *MTS expectation is in-house or contracted staff will be required to trouble shoot, remove and replace these types of systems and subsystems when there is no warranty exclusion or technical capacity prohibiting it, as they do today.*
    - *In the event of reduced labor hours as a result of the ZEB transition, MTS will endeavor to use in-house union-represented employees to perform repairs of the systems not typically maintained by in-house staff, including but not limited to: engines, transmissions, pumps, electric motors controllers, battery overhaul or repair, traction motor overhaul, Battery Management System overhaul or repair and drive motor overhaul or repair when economically feasible and operationally prudent.*
    - *If the introduction of the ZEB technology leads to a reduction in union represented mechanics or maintenance employees, MTS will meet with the relevant union over the potential for job re-training in order to prevent or reduce layoffs, in accordance with terms of relevant collective bargaining agreements.*

EXHIBIT A: MASTERSPEC – Construction Specification Institute (CSI)

Please complete Table 8. (optional)

Table 8: Workforce Training Schedule (optional)

Timeline (Year)	Training Program/Class	Purpose of Training	Name of Provider	Number of Trainees	Trainee Positions	Training Hours	Training Frequency	Estimated costs per Class
2019/2020	*BEB Driver*	*Familiarize operators with BEB technology including high voltage safety and regenerative braking techniques*	*Initial training was from New Flyer*	*666*	*Bus Operators, Managers, Supervisors, & Training staff*	*133*	*Training was conducted daily (20 minutes per employee)*	
2019/2020	*Maintenance*	*Major component overview, PMIs, high voltage safety, and charging overview*	*Initial training was from 82New Flyer, Siemens (motor), & Xalt (battery*	*82*	*Trainers, Foreman & Service workers, Emergency Responders*	*64.75*	*Initial training was one time familiarization/ safety over a 5 month period. This included First Responders.*	

Section H: Potential Funding Sources

1. **Please identify all potential funding sources your transit agency expects to use to acquire zero-emission technologies (both vehicles and infrastructure) (13 CCR § 2023.1(d)(1)(H)). (required)**
    - *Low Carbon Transit Operations Program (LCTOP) – Battery electric buses/Infrastructure*
    - *Transit Development Act (TDA) – Infrastructure*

- *Hybrid and Zero Emission Truck and Bus Voucher Incentive Project (HVIP) – 6 Battery electric buses & 6 electric chargers*
- *Transit Intercity Rail Capital Program (TIRCP) – 12 Artic 60' battery electric buses & 6 chargers/dispensers & overhead gantry systems*
- *Low or No Emission Grant*

2. **In Table 9, please describe how the identified potential funding sources could support your transit agency to execute the Rollout Plan as currently designed by describing how each fund is planned to be used over time (e.g. to purchase a zero-emission bus, maintain a zero-emission bus, upgrade the charging/fueling infrastructure, construct or upgrade a maintenance facility). Please also identify how many zero-emission buses and/or which type(s) of infrastructure might be purchased, installed, or maintained with each funding source. (optional)**

Table 9: Potential Funding Sources (optional)

Timeline (Year)	Name of Funding Source	How Each Fund is Planned to be Used	Estimated Amount(s) of Each Funding Source ($)	Number of ZEBs to Purchase or Type(s) of Infrastructure to Install or Upgrade
2019	*VW Mitigation Fund*	*Battery electric buses & infrastructure*	*$2.3 million*	*13 40' battery electric buses and depot charger equipment*
2020	*Low/No*	*Onsite energy generation*	*$2.5 million*	*Two 1 MW RNG gensets and equipment to energize 6 - 150 kW depot chargers*
2020	*CEC – MD/HD ZEV Infrastructure for Transit Fleets*	*For battery electric bus charging infrastructure & equipment*	*?*	*Depot charging equipment and infrastructure including gantry systems*
2022	*TIRCP*	*battery electric buses & charging infrastructure*	*$22 million*	*12 60' battery electric buses, and some funding for at least 6 depot chargers/12 dispensers, and an overhead gantry system*
2022	*HVIP*	*Battery electric*	*$2.1 million*	*12 60' battery*

		buses		*electric buses*

Section I: Start-up and Scale-up Challenges

1. **Please describe any major challenges your transit agency is currently facing in small scale zero-emission bus deployment. (optional)**

    a. *Bus & charger communication protocol. Issues with charger and bus "handshake" causing either bus and/or charger to produce a fault error. In addition, with two chargers paired together to provide an option for higher rate of charge, there have been issues with a couple of the paired settings provided with the conjoined units.*
    b. *With a range limitation on battery electric buses, we have had to select certain schedules that are 150 miles or less identifying the battery electric buses as a sub-fleet, whereas CNG doesn't have any concern with range and can run any schedule.*
    c. *Integrating bus & telematics systems into MTS's existing regional management system.*

    How might CARB assist you to overcome these challenges? Please share your recommendations. (optional)

    i. *A) If there was a standardization with communication between bus & chargers this may help mitigate some of the communication issues between bus's battery management system (charger controller), and chargers current output.*
    ii. *B) Not sure how this can be influenced by CARB, but more of an OEM technological advancement process. Maybe if axle weight limits were lessoned bus OEMs could potentially add more energy storage on electric buses.*
    iii. C**)** *CARB may be able to help influence California State bus procurement contracts to include a telematics open integration language to allow agencies for more cohesive integration process with existing systems in their network.*

2. **Please describe any challenges your transit agency may face in scaling up zero-emission bus deployment. (optional)**

    i. *Find funding to mitigate as much of the incremental cost associated with transitioning to a battery electric fleet.*
    ii. *Installing battery electric infrastructure designed for a site constrained bus maintenance yard.*
    iii. *Transitioning period with CNG fuel and installation of electric chargers*

iv. *Charging schedule, especially near full ZEB deployment may be a challenge at getting all buses charged to meet pull out schedule. And, to try avoid charging during on-peak pricing times.*
v. *Smart charging and how it will work with large battery electric fleets, and managing time-of-use charge sessions.*
vi. *Utility providing the necessary power demand for full deployment battery electric bus scenario.*
vii. *Redundant power for electric chargers.*
viii. *Battery electric bus training and high voltage safety training.*
ix. *Extended range electric buses not meeting the top 25% of MTS block schedules.*

b. How might CARB assist you to overcome these challenges? Please share your recommendations. (optional)

i. *The most integral need for assistance will be with providing funding to assist agencies with covering as much or all incremental cost when transitioning to zero emission technology. And, potentially some operating cost if more manpower is required.*
ii. *More infrastructure funding to assist agencies with adding additional equipment/structures to help mitigate site constrained sites (examples: adding overhead gantry systems, parking structures, or a new facility).*
iii. *Funding assistance could assist with mitigation measure(s) with this.*
iv. *CARB could work/influence the CPUC to provide the local utilities the tools to provide transit specific rate cases (example: eliminating demand charges)*
v. *Same as above – to assist influence CPUC to provide transit specific rates and potentially to work with charger manufacturers in developing a cohesive charging management systems.*
vi. *CARB to continue to work with the CPUC in developing Transit Electrification programs that could assist with funding and specifications on project build outs within these programs*
vii. *Working with CPUC to include power redundancy/resiliency for programs for Transit Electrification.*
viii. *To assist with State Standard for training in battery electric and fuel cell bus technology, especially in high voltage safety.*
ix. *Promote and influence zero-emission bus technology advancement for range. Potentially, influencing to loosen axle weight restriction for zero emission buses. Range limitation with battery technology buses can have leniency clause that allows agencies to accommodate top 25% of long-ranged routes that BEBs can't meet be supplemented by conventional buses*

c. *Some additional items CARB may be able to assist with:*
i. *Assist with minimizing hydrogen fuel costs (kg), and electricity rates, and how to manage these systems such as charging management systems.*

ii. *The need for zero-emission standardization protocols such as charging interoperability including inductive systems, and electric charging redundant systems.*
iii. *Influence bus and charging manufacturers to standardize communication protocols between bus management systems and charging systems.*

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DIVISION 00 - PROCUREMENT AND CONTRACTING REQUIREMENTS													
U 000101	Project Title Page	●	●	●	●	●	●	●	●	●	●		Project Manual title page.
U 000107	Seals Page	●	●	●	●	●	●	●	●	●	●		For seals of design professionals on Project Manual.
U 000115	List of Drawing Sheets	●	●	●	●	●	●	●	●	●	●		List of Drawings.
U 000120	List of Schedules	●	●	●	●	●	●	●	●	●	●		For a list of separately bound schedules.
U 001113	Advertisement for Bids	●	●	●	●	●	●	●	●	●	●		For use on public projects.
U 001115	Advertisement for Prequalification of Bidders	●	●	●	●	●	●	●	●	●	●		For use on public projects.
U 001116	Invitation to Bid	●	●	●	●	●	●	●	●	●	●		For use on private projects.
U 001153	Request for Qualifications	●	●	●	●	●	●	●	●	●	●		For use on public projects.
U 002113	Instructions to Bidders	●	●	●	●	●	●	●	●	●	●		Incorporates AIA A701 by reference.
U 002213	Supplementary Instructions to Bidders	●	●	●	●	●	●	●	●	●	●		For use with AIA A701.
U 002513	Prebid Meetings	●	●	●	●	●	●	●	●	●	●		Sets date, time, place, and terms for prebid meetings.
U 002600	Procurement Substitution Procedures	●	●	●	●	●	●	●	●	●	●		Substitution procedures during bidding.
U 003113	Preliminary Schedules	●	●	●	●	●	●	●	●	●	●		Preliminary schedules.
U 003119	Existing Condition Information	●	●	●	●	●	●	●	●	●	●		References documents for survey and as-built information.
U 003126	Existing Hazardous Material Information	●	●	●	●	●	●	●	●	●	●		References documents for existing hazardous materials.
U 003132	Geotechnical Data	●	●	●	●	●	●	●	●	●	●		References documents for geotechnical data.
U 003143	Permit Application	●	●	●	●	●	●	●	●	●	●		Indicates responsibility for building permit application.
U 004113	Bid Form - Stipulated Sum (Single-Prime Contract)	●	●	●	●	●	●	●	●	●	●		Fixed price, single prime.
U 004116	Bid Form - Stipulated Sum (Multiple-Prime Contract)	●	●	●	●	●	●	●	●	●	●		Fixed price, multiple prime.
U 004123	Bid Form - Construction Management (Single-Prime Contract)	●	●	●	●	●	●	●	●	●	●		Fixed price, construction management, single prime.
U 004126	Bid Form - Construction Management (Multiple-Prime Contract)	●	●	●	●	●	●	●	●	●	●		Fixed price, construction management, multiple prime.
U 004133	Bid Form - Cost-Plus-Fee (Single-Prime Contract)	●	●	●	●	●	●	●	●	●	●		Cost plus, with or without guaranteed maximum.
U 004313	Bid Security Forms	●	●	●	●	●	●	●	●	●	●		References AIA A310.
U 004321	Allowance Form	●	●	●	●	●	●	●	●	●	●		Attachment for Bid Form.
U 004322	Unit Prices Form	●	●	●	●	●	●	●	●	●	●		Attachment for Bid Form.
U 004323	Alternates Form	●	●	●	●	●	●	●	●	●	●		Attachment for Bid Form.
U 004373	Proposed Schedule of Values Form	●	●	●	●	●	●	●	●	●	●		Attachment for Bid Form.
U 004393	Bid Submittal Checklist	●	●	●	●	●	●	●	●	●	●		Attachment for Bid Form.
U 005100	Notice of Award	●	●	●	●	●	●	●	●	●	●		For notifying successful bidder.
U 006000	Project Forms	●	●	●	●	●	●	●	●	●	●		References Agreement, General Conditions, and administrative forms.
009113	Addenda	●	●	●	●	●	●	●	●	●	●		For notifying bidders of changes.
DIVISION 01 - GENERAL REQUIREMENTS													
010000	General Requirements	●	●	●	●	●	●	●	●	●	●		Evaluations: Role of Division 1 Sections, their preparation and coordination.

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	011200	Multiple Contract Summary	●	●	●	●	●	●	●	●	●	●		Responsibilities of each contract for the Work, coordination, and temporary facilities and controls.
	012100	Allowances	●	●	●	●	●	●	●	●	●	●		Provisions for cash allowances including lump-sum, unit cost, contingency, and testing and inspecting allowances.
	012200	Unit Prices	●	●	●	●	●	●	●	●	●	●		Provisions for unit prices.
	012300	Alternates	●	●	●	●	●	●	●	●	●	●		Provisions for change-of-scope and cost-comparison type alternates.
	012500	Substitution Procedures	●	●	●	●	●	●	●	●	●	●		Procedural requirements for requests for substitutions during construction.
	012600	Contract Modification Procedures	●	●	●	●	●	●	●	●	●	●		Procedural requirements for changes to the Contract.
	012900	Payment Procedures	●	●	●	●	●	●	●	●	●	●		Administrative requirements for Contractor's Applications for Payment.
	013100	Project Management and Coordination	●	●	●	●	●	●	●	●	●	●		Administrative requirements for project meetings; preconstruction, preinstallation, and project closeout conferences; RFIs; and project Web sites.
	013200	Construction Progress Documentation	●	●	●	●	●	●	●	●	●	●		Contractor's Construction Schedule including Gantt charts and CPM schedules; and web-based project software.
	013233	Photographic Documentation	●	●	●	●	●	●	●	●	●	●		Construction photographs, video recordings, and web-based photographic documentation.
	013300	Submittal Procedures	●	●	●	●	●	●	●	●	●	●		Procedures for Action and Informational Submittals including Delegated-Design Submittals and Submittals Schedule.
	013513.16	Special Project Procedures for Detention Facilities	●				●				●	●		Special requirements for detention work including responsibilities of a detention specialist.
	013516	Alteration Project Procedures	●		●	●	●	●	●	●	●	●		General protection and work procedures for remodeling, renovation, repair, and maintenance work.
	013591	Historic Treatment Procedures		●							●			General protection and treatment of historic spaces.
	014000	Quality Requirements	●	●	●	●	●	●	●	●	●	●		Quality-assurance and -control requirements, special tests and inspections, and Contractor's quality-control plan.
U	014200	References	●	●	●	●	●	●	●	●	●	●		Common definitions and terms; and acronyms and trade names of associations, government agencies, and other entities referenced in MasterSpec.
	015000	Temporary Facilities and Controls	●	●	●	●	●	●	●	●	●	●		Temporary utilities and facilities for construction support, security, and protection.
	015639	Temporary Tree and Plant Protection	●						●	●	●	●		Construction-phase tree and plant protection, trimming, protection- zone fencing, and pruning.
	015723	Temporary Storm Water Pollution Control	●							●	●	●		Requirements for compliance with EPA's Stormwater Pollution Prevention Plan (SWPPP).
	016000	Product Requirements	●	●	●	●	●	●	●	●	●	●		Administrative and procedural requirements for product, material, and equipment selection and handling; warranties; and comparable products.
	017300	Execution	●	●	●	●	●	●	●	●	●	●		General requirements for product installation, cutting and patching, protection, field engineering, and progress cleaning.

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017419	Construction Waste Management and Disposal	●	●	●	●	●	●	●	●	●	●		Salvaging, recycling, and disposing of non-hazardous demolition and construction waste.
017700	Closeout Procedures	●	●	●	●	●	●	●	●	●	●		Contract closeout including Substantial Completion and Final Completion procedures, warranties, and final cleaning.
017823	Operation and Maintenance Data	●	●	●	●	●	●	●	●	●	●		Emergency, operation, and maintenance manuals for products and equipment.
017839	Project Record Documents	●	●	●	●	●	●	●	●	●	●		Record record Drawings, Specifications, and Product Data.
017900	Demonstration and Training	●	●	●	●	●	●	●	●	●	●		Administrative and procedural requirements for instructing Owner's personnel in operation and maintenance.
018113.13	Sustainable Design Requirements - LEED 2009 for New Construction and Major Renovations	●	●	●	●	●	●	●	●	●	●		General requirements and procedures for LEED 2009 for New Construction and Major Renovations.
018113.14	Sustainable Design Requirements - LEED v4 BD+C	●	●	●	●	●	●	●	●	●	●		General requirements and procedures for LEED v4 BD+C.
018113.16	Sustainable Design Requirements - LEED 2009 for Commercial Interiors	●		●	●	●	●	●	●	●	●		General requirements and procedures for LEED 2009 for Commercial Interiors.
018113.17	Sustainable Design Requirements - LEED v4 ID+C	●		●	●	●	●	●	●	●	●		General requirements and procedures for LEED v4 ID+C.
018113.19	Sustainable Design Requirements - LEED 2009 for Core and Shell Development	●		●	●	●	●	●	●	●	●		General requirements and procedures for LEED 2009 for Core and Shell Development.
018113.23	Sustainable Design Requirements - LEED 2009 for Schools	●		●	●	●	●	●	●	●	●		General requirements and procedures for LEED 2009 for Schools.
018113.33	Sustainable Design Requirements - IgCC	●	●	●	●	●	●	●	●	●	●		General requirements and procedures for IgCC.
018113.43	Sustainable Design Requirements - ASHRAE 189.1	●	●	●	●	●	●	●	●	●	●		General requirements and procedures for ASHRAE 189.1.
018113.53	Sustainable Design Requirements - Green Globes	●	●	●	●	●	●	●	●	●	●		General requirements and procedures for Green Globes.
019113	General Commissioning Requirements									●		●	Administrative requirements and procedures for commissioning all systems.
019119.43	Exterior Enclosure Commissioning									●		●	Requirements for testing building enclosure systems and assemblies as part of the commissioning process.
DIVISION 02 - EXISTING CONDITIONS													
024116	Structure Demolition	●			●	●	●		●	●	●		Demolition of existing buildings, structures, and associated site improvements.
024119	Selective Demolition	●		●	●	●	●	●	●	●	●		Demolition of selected portions of existing buildings, structures, and associated site improvements.
024296	Historic Removal and Dismantling		●							●			Special types of selective demolition work for historic spaces and surfaces.
028716.13	Bird Excrement Removal		●							●			Removal of bird excrement in historic or nonhistoric buildings.
DIVISION 03 - CONCRETE													
030130	Maintenance of Cast-In-Place Concrete	●					●		●	●	●		Concrete patching and repair, epoxy crack injection, corrosion inhibiting surface treatment, polymer overlays and sealers, and composite structural performance.
031000	Concrete Forming and Accessories	●					●			●	●		General building and structural applications; concrete formwork and waterstops.
032000	Concrete Reinforcing	●					●			●	●		General building and structural applications; concrete reinforcing.
033000	Cast-In-Place Concrete	●					●	●	●	●	●		General building and structural applications; concrete mixtures, finishing, and curing.

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	033300	Architectural Concrete	●					●			●	●		Specially formed, placed, and finished architectural concrete.
	033543	Polished Concrete Finishing	●		●						●	●		Ground and polished concrete floor slabs, including stained and polished concrete.
	033713	Shotcrete	●					●	●		●	●		Pneumatically applied concrete, dry- and wet-mix processes.
	033816	Unbonded Post-Tensioned Concrete	●					●		●	●	●		Post-tensioning reinforcement, encapsulated and non-encapsulated.
	034100	Precast Structural Concrete	●					●		●	●	●		Conventional precast structural concrete units.
	034500	Precast Architectural Concrete	●						●		●	●		Precast concrete cladding units, insulated units, and masonry-faced units.
	034713	Tilt-Up Concrete	●					●			●	●		Wall panels and insulated sandwich panels.
	034900	Glass-Fiber-Reinforced Concrete (GFRC)	●					●			●	●		GFRC cladding panels; panel framing.
	035113	Cementitious Wood Fiber Decks	●					●			●	●		Monolithic, composite, and insulated composite units for roof and form decks.
	035216	Lightweight Insulating Concrete	●					●			●	●		Aggregate and cellular types.
	035300	Concrete Topping	●								●	●		High-strength concrete slab toppings for heavy-duty, industrial-type applications.
U	035413	Gypsum Cement Underlayment	●		●						●	●		Self-leveling, gypsum-cement-based underlayment.
U	035416	Hydraulic Cement Underlayment	●		●						●	●		Self-leveling, hydraulic-cement-based underlayment.
DIVISION 04 - MASONRY														
	040110	Masonry Cleaning	●								●	●		Nonhistoric applications for unit masonry and stone surfaces.
	040120.63	Brick Masonry Repair	●								●	●		Nonhistoric applications for clay brick masonry.
	040120.64	Brick Masonry Repointing	●								●	●		Nonhistoric applications for clay brick masonry.
	040140.61	Stone Repair	●								●	●		Nonhistoric applications for stone masonry.
	040140.62	Stone Repointing	●								●	●		Nonhistoric applications for stone masonry.
	040310	Historic Masonry Cleaning		●							●			Cleaning and removing paint from clay and stone masonry.
	040322	Historic Brick Unit Masonry Repair		●							●			Repairing, patching, and replacing brickwork.
	040323	Historic Brick Unit Masonry Repointing		●							●			Repointing mortar and sealant joints in brickwork.
	040326	Historic Terra Cotta Unit Masonry Repair		●							●			Repairing, patching, and replacing terra cotta.
	040327	Historic Terra Cotta Unit Masonry Repointing		●							●			Repointing mortar and sealant joints in terra cotta.
	040336	Historic Treatment of Adobe Masonry		●							●			Repairing and replacing adobe units, plaster, and paint.
	040342	Historic Stone Masonry Repair		●							●			Repairing, patching, and replacing stone.
	040343	Historic Stone Masonry Repointing		●							●			Repointing mortar and sealant joints in stonework.
	040345	Historic Stone Consolidation Treatment		●							●			Chemical consolidation to strengthen stone.
	042000	Unit Masonry	●		●			●	●		●	●		CMU, brick, structural-clay facing tile, and stone trim units.
	042200	Concrete Unit Masonry	●		●			●			●	●		Single-wythe CMU including decorative units.
	042300	Glass Unit Masonry	●		●						●	●		Glass block installed with mortar, glass block installed with spacers and sealant, and glass-block grid systems.
	042613	Masonry Veneer	●					●	●		●	●		Brick veneer over wood- or metal-stud backup.

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	044200	Exterior Stone Cladding	●					●			●	●		Exterior stone panels.
	044313.13	Anchored Stone Masonry Veneer	●						●		●	●		Stone laid in mortar and anchored to backup with masonry veneer anchors.
	044313.16	Adhered Stone Masonry Veneer	●						●		●	●		Stone adhered to backup with mortar; not anchored.
	047200	Cast Stone Masonry	●					●	●		●	●		Architectural features, facing, trim, and site accessories.
DIVISION 05 - METALS														
	050170.51	Decorative Metal Cleaning	●								●	●		Cleaning and removing paint.
	050170.61	Decorative Metal Repair	●								●	●		Repairing, patching, and replacing components.
	050170.63	Decorative Metal Refinishing	●								●	●		Integral metal finishes and clear protective coatings.
	050371	Historic Decorative Metal Cleaning		●							●			Cleaning and removing paint.
	050372	Historic Decorative Metal Repair		●							●			Repairing, patching, and replacing decorative metals, other than cast iron and sheet metal.
	050373	Historic Decorative Metal Refinishing		●							●			Integral metal finishes, metallic-plated finishes, and clear protective coatings.
	050374	Historic Decorative Metal Replication		●							●			Replicating and installing items and assemblies.
	050383	Historic Cast Iron Repair		●							●			Filling defects, pinning, metal stitching, replacing components, and refinishing.
	050385	Historic Treatment of Decorative Formed Metal		●							●			Patching, replacing components, and refinishing formed sheet metal.
	050387	Historic Treatment of Metal Sculpture		●							●			Patching, repairing, and refinishing copper-alloy and cast-iron sculpture.
	051200	Structural Steel Framing	●					●			●	●		Structural steel framing for buildings.
	051213	Architecturally Exposed Structural Steel Framing	●					●			●	●		Architecturally exposed structural steel framing for buildings.
	052100	Steel Joist Framing	●					●			●	●		Standard manufactured open-web units, including steel joists, long-span steel joists, and joist girders.
U	053100	Steel Decking	●					●			●	●		Roof, floor, and form steel deck.
U	054000	Cold-Formed Metal Framing	●					●			●	●		Load-bearing and exterior non-load-bearing wall studs; floor, ceiling, and roof joists; and rafters.
	054400	Cold-Formed Metal Trusses	●					●			●	●		Cold-formed steel trusses for roofs and floors.
	055000	Metal Fabrications	●		●	●	●	●	●	●	●	●		Metal items (not sheet metal) made from iron and steel shapes, stainless steel, and non-ferrous metals.
	055113	Metal Pan Stairs	●		●			●			●	●		Steel stairs with either metal pan or abrasive-finished metal treads.
	055116	Metal Floor Plate Stairs	●		●			●			●	●		Steel stairs with metal floor plate treads.
	055119	Metal Grating Stairs	●		●			●			●	●		Steel stairs with steel-bar-grating treads.
	055213	Pipe and Tube Railings	●		●				●	●	●	●		Railings fabricated from aluminum, stainless-steel, and steel pipe and tubing.
	055313	Bar Gratings	●		●	●		●			●	●		Metal bar gratings and frames.
	055316	Plank Gratings	●		●	●		●			●	●		Metal plank gratings and frames.
	055319	Expanded Metal Gratings	●		●	●		●			●	●		Expanded metal gratings and frames.

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055813	Column Covers	●		●						●	●		Spackled-seam and snap-together types, including those intended to be painted and those made form made from decorative metals, such as stainless steel, bronze, and brass.
055819	Heating/Cooling Unit Covers	●		●						●	●		Heating-cooling unit enclosures shop fabricated from steel sheet to custom designs.
055963	Detention Enclosures	●								●	●		Bar-grille and woven-rod-mesh assemblies, and security grilles and vents.
057000	Decorative Metal	●		●						●	●		Custom fabrications from nonferrous and ferrous metals.
057100	Decorative Metal Stairs	●		●	●		●			●	●		Architectural steel stairs.
057113	Fabricated Metal Spiral Stairs	●		●						●	●		Steel and aluminum units with center column and radiating treads.
057300	Decorative Metal Railings	●		●						●	●		Ornamental metal railings assembled from either standard or custom components and shapes. Also included are illuminated railings.
057313	Glazed Decorative Metal Railings	●		●						●	●		Glass- and plastic-supported railings, and post-supported railings with glass infill, both assembled from either standard or custom decorative metal components and shapes.
057500	Decorative Formed Metal	●		●						●	●		Miscellaneous decorative formed metal items that are shop fabricated from metal sheet to custom designs.
DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES													
060312	Historic Wood Repair		●							●			Repairing, patching, and replacing wood components.
061000	Rough Carpentry	●		●	●	●	●	●		●	●		Wood framing, furring, frounds, nailers, and blocking.
061053	Miscellaneous Rough Carpentry	●		●	●	●				●	●		Minor wood framing, furring, grounds, nailers, and blocking.
061063	Exterior Rough Carpentry	●					●	●		●	●		Wood fences and other exterior wood construction.
061300	Heavy Timber Construction	●					●			●	●		Solid timber framing.
061516	Wood Roof Decking	●					●			●	●		Solid and laminated T & G decking.
061533	Wood Patio Decking	●					●	●		●	●		Elevated decks.
061600	Sheathing	●					●			●	●		Roof and wall sheathing, subflooring, and underlayment. Includes wood, non-wood, and composite products.
061753	Shop-Fabricated Wood Trusses	●					●			●	●		Metal-plate-connected members.
061800	Glued-Laminated Construction	●					●	●		●	●		Glued-laminated structural framing.
062013	Exterior Finish Carpentry	●		●						●	●		Exposed and nonstructural.
062023	Interior Finish Carpentry	●		●						●	●		Exposed and nonstructural.
064013	Exterior Architectural Woodwork	●		●						●	●		Trim, door frames, shutters, and ornamental items.
064023	Interior Architectural Woodwork	●		●						●	●		Trim, cabinets, tops, paneling, stairs, and ornamental items.
064113	Wood-Veneer-Faced Architectural Cabinets	●		●						●	●		Custom-made veneer-faced cabinets.
064116	Plastic-Laminate-Clad Architectural Cabinets	●		●						●	●		Custom-made plastic-laminate cabinets.
064214	Stile and Rail Wood Paneling	●		●						●	●		Solid-wood and veneered stile and rail paneling; transparent finished and opaque finished.
064216	Flush Wood Paneling	●		●						●	●		Veneer-faced flush panels.
064219	Plastic-Laminate-Faced Wood Paneling	●		●						●	●		Plastic-laminate-faced flush panels.

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	064400	Ornamental Woodwork	●		●						●	●		Miscellaneous shop-assembled woodwork items.
	066400	Plastic Paneling	●		●						●	●		Plastic paneling for utilitarian applications.
	067413	Fiberglass Reinforced Gratings	●		●	●		●			●	●		Fiberglass bar gratings and frames.
DIVISION 07 - THERMAL AND MOISTURE PROTECTION														
	070150.19	Preparation for Reroofing	●								●	●		Preparation for low-slope reroofing - tear-off and re-cover situations.
	071113	Bituminous Dampproofing	●						●	●	●	●		Cold-applied, cut-back- (solvent-based) and emulsified- (water-based) asphaltic dampproofing.
	071326	Self-Adhering Sheet Waterproofing	●						●	●	●	●		Self-adhering, positive-side sheet waterproofing; drainage panels; pedestal-supported concrete pavers.
	071353	Elastomeric Sheet Waterproofing	●							●	●	●		Butyl and EPDM sheet; drainage panels; pedestal-supported concrete pavers.
	071354	Thermoplastic Sheet Waterproofing	●							●	●	●		PVC sheet; drainage panels; pedestal-supported concrete pavers.
	071413	Hot Fluid-Applied Rubberized Asphalt Waterproofing	●							●	●	●		Hot, rubberized-asphalt waterproofing for plaza deck and below-grade walls.
	071416	Cold Fluid-Applied Waterproofing	●							●	●	●		Polyurethane, polyester, and rubber types; drainage panels and plaza-deck pavers.
	071613	Polymer Modified Cement Waterproofing	●								●	●		Polymer-modified cementitious waterproofing.
	071616	Crystalline Waterproofing	●								●	●		Crystal-forming, reactive cementitious waterproofing.
	071619	Metal Oxide Waterproofing	●								●	●		Expanding iron-oxide, cementitious waterproofing.
	071700	Bentonite Waterproofing	●								●	●		Bentonite sheet membrane and panel waterproofing systems.
	071800	Traffic Coatings	●								●	●		Cold liquid-applied water-resistant coatings with integral wearing surface.
	071900	Water Repellents	●								●	●		Clear and pigmented, penetrating, and film-forming, and MPI-approved types.
U	072100	Thermal Insulation	●								●	●		General building insulation installed at project site, excluding roof insulation.
	072119	Foamed-In-Place Insulation	●								●	●		Spray-applied polyurethane foam insulation.
	072413	Polymer-Based Exterior Insulation and Finish System (EIFS)	●								●	●		Composite flexible coating and inner layer of rigid, cellular thermal insulation.
	072419	Water-Drainage Exterior Insulation and Finish System (EIFS)	●								●	●		Composite flexible coating and inner layer of extruded-polystyrene board insulation with water drainage.
	072500	Weather Barriers	●								●	●		Building paper and building wrap water-resistive barriers, drainage materials, and flexible flashing.
	072600	Vapor Retarders	●								●	●		Interior sheet vapor retarders used in framed construction and in crawl spaces.
	072713	Modified Bituminous Sheet Air Barriers	●								●	●		Vapor-retarding, modified bituminous sheet type.
	072715	Nonbituminous Self-Adhering Sheet Air Barriers	●								●	●		Vapor-retarding and vapor-permeable nonbituminous sheet type.
	072726	Fluid-Applied Membrane Air Barriers	●								●	●		Vapor-retarding and vapor-permeable high-build, medium-build, and low-build types.
U	073113	Asphalt Shingles	●								●	●		Glass-fiber-reinforced asphalt shingles.
U	073116	Metal Shingles	●								●	●		Shingle panels and individual shingles for roofing and siding.

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U 073126	Slate Shingles	●								●	●		Natural-slate roof shingles, underlayments, flashing, and accessories.
U 073129	Wood Shingles and Shakes	●								●	●		Wood shingles and shakes used as roof covering.
U 073213	Clay Roof Tiles	●								●	●		Clay tile roofing, underlayments, flashing, and accessories.
U 073216	Concrete Roof Tiles	●								●	●		Concrete tile roofing, underlayments, flashing, and accessories.
074113.13	Formed Metal Roof Panels	●								●	●		Standard-profile exposed-fastener, lap-seam panels, and horizontal-seam (Bermuda-type) panels.
074113.16	Standing-Seam Metal Roof Panels	●								●	●		Standard-profile pans with upturned edges.
074113.19	Batten-Seam Metal Roof Panels	●								●	●		Standard-profile pans with upturned edges covered by separate battens.
074116	Insulated Metal Roof Panels	●								●	●		Panels with foamed-insulation cores.
074213.13	Formed Metal Wall Panels	●								●	●		Standard-profile exposed- and concealed-fastener, lap-seam wall and liner panels.
074213.16	Metal Plate Wall Panels	●								●	●		Aluminum plates secured to buildings with specialized attachment systems.
074213.19	Insulated Metal Wall Panels	●								●	●		Panels with foamed-insulation, laminated-insulation, and honeycomb cores.
074213.23	Metal Composite Material Wall Panels	●								●	●		Panels with metal facings and thin plastic cores secured to buildings with specialized attachment systems.
074293	Soffit Panels	●								●	●		Concealed-fastener, lap-seam, metal panels, with and without perforations.
074616	Aluminum Siding	●								●	●		Aluminum siding and soffit.
074619	Steel Siding	●								●	●		Steel siding and soffit.
074624	Wood Shingle and Shake Siding	●								●	●		Wood shingles, shakes and wood-shingle-clad panels used as exterior wall cladding (siding).
074633	Plastic Siding	●								●	●		Vinyl siding and soffit.
074646	Fiber-Cement Siding	●								●	●		Fiber-cement siding and soffit.
075113	Built-Up Asphalt Roofing	●								●	●		Hot built-up asphalt roofing; roofing insulation.
075116	Built-Up Coal Tar Roofing	●								●	●		Hot built-up coal-tar roofing; roofing insulation.
075213	Atactic-Polypropylene (APP) Modified Bituminous Membrane Roofing	●								●	●		APP-modified bituminous membrane roofing; roofing insulation.
075216	Styrene-Butadiene-Styrene (SBS) Modified Bituminous Membrane Roofing	●								●	●		SBS-modified bituminous membrane roofing; roofing insulation.
075316	Chlorosulfonate-Polyethylene (CSPE) Roofing	●								●	●		Adhered, mechanically fastened, and loosely laid CSPE systems.
075323	Ethylene-Propylene-Diene-Monomer (EPDM) Roofing	●								●	●		Adhered, self-adhered, mechanically fastened, and loosely laid EPDM systems.
075416	Ketone Ethylene Ester (KEE) Roofing	●								●	●		Adhered, mechanically fastened, and loosely laid KEE systems.
075419	Polyvinyl-Chloride (PVC) Roofing	●								●	●		Adhered, mechanically fastened, and loosely laid PVC systems.
075423	Thermoplastic-Polyolefin (TPO) Roofing	●								●	●		Adhered, self-adhered, mechanically fastened, and loosely laid TPO systems.

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	075552.13	Atactic-Polypropylene (APP) Modified Bituminous Protected Membrane Roofing	●								●	●		Atactic-polypropylene (APP)-modified protected membrane roofing systems, including roofing membrane, roof insulation, base flashings, aggregate and roof paver ballast, and auxiliary roofing materials.
	075552.16	Styrene-Butadiene-Styrene (SBS) Modified Bituminous Protected Membrane Roofing	●								●	●		Styrene-butadiene-styrene (SBS)-modified bituminous protected membrane roofing systems, including roofing membrane, roof insulation, base flashings, vapor retarders, aggregate and roof paver ballast, and auxiliary roofing materials.
	075556	Fluid-Applied Protected Membrane Roofing	●								●	●		Ballasted, insulated, hot rubberized-asphalt protected roof membrane.
	075700	Coated Foamed Roofing	●								●	●		Spray polyurethane foam insulation with elastomeric protective coating for roofing applications.
	076100	Sheet Metal Roofing	●								●	●		Custom-fabricated, shop- or field-brake-formed, sheet metal roofing.
	076200	Sheet Metal Flashing and Trim	●			●	●				●	●		Custom-fabricated roof and wall flashings and roof-drainage systems, and manufactured through-wall flashing and reglets.
	077100	Roof Specialties	●								●	●		Manufactured copings, roof-edge flashings and drainage systems, and counter flashings.
	077129	Manufactured Roof Expansion Joints	●								●	●		Factory-fabricated, bellows-type, and aluminum roof-expansion-joint assemblies.
	077200	Roof Accessories	●			●	●				●	●		Roof curbs, equipment supports, roof hatches, heat and smoke vents, gravity ventilators, pipe supports, roof walkways, and preformed flashing sleeves.
	077253	Snow Guards	●								●	●		Pad- and rail-type, flat- or seam-mounted snow guards.
	077273	Vegetated Roof Systems	●						●		●	●		Vegetated roof assemblies for rooftop or plaza installation over roofing membrane.
	078100	Applied Fire Protection	●					●			●	●		Cementitious and mineral-fiber fire-resistive materials classified as SFRM.
	078123	Intumescent Fire Protection	●					●			●	●		Mastic and intumescent fire-resistive coatings.
	078200	Board Fire Protection	●								●	●		Mineral-fiber and calcium silicate boards.
U	078413	Penetration Firestopping	●			●	●				●	●		Systems installed in fire-resistance-rated walls, horizontal assemblies, and smoke barriers.
	078443	Joint Firestopping	●								●	●		Systems installed in or between fire-rated construction, at exterior curtain wall/floor intersections, and in smoke barriers.
	079100	Preformed Joint Seals	●								●	●		Expandable foam joint seals, and precured, extruded-silicone joint seals.
	079200	Joint Sealants	●		●	●					●	●		Elastomeric joint sealants including, silicone, urethane, STPE, polysulfide, butyl, and latex.
	079219	Acoustical Joint Sealants	●		●						●	●		For use in interior sound-rated construction.
	079513.13	Interior Expansion Joint Cover Assemblies	●								●	●		Expansion joint cover assemblies for interior floors, walls, and ceilings.
	079513.16	Exterior Expansion Joint Cover Assemblies	●								●	●		Expansion joint cover assemblies for exterior building walls, soffits, and parapets.
	079513.19	Parking Deck Expansion Joint Cover Assemblies	●								●	●		Expansion joint cover assemblies subject to vehicular traffic.

DIVISION 08 - OPENINGS

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	Section No.	Section Title	Architectural			Building Eng.			Sitework		Multidiscipline			Description
			Arch	Hist	Int	Mech	Elec	Str	Lan	SC	Comp	AE	CX	
	080152.61	Wood Window Repairs	●								●	●		Repairing, patching, reglazing, and replacing window components, storm windows, shutters, insect screens, and trim.
	080314	Historic Treatment of Wood Doors		●							●			Repairing, patching, and replacing primary door components, storm doors, storm vestibules, screen doors, and trim.
	080351.23	Historic Treatment of Steel Windows		●							●			Repairing, patching, reglazing, and replacing window components and insect screens; new storm windows.
	080351.33	Historic Treatment of Aluminum Windows		●							●			Including in-place, on-site or off-site repair and custom-fabricated, replacement work matching the existing.
	080352	Historic Treatment of Wood Windows		●							●			Repairing, patching, reglazing, and replacing window components, storm windows, shutters, insect screens, and trim.
	081113	Hollow Metal Doors and Frames	●		●						●	●		Hollow-metal doors and frames for commercial and residential use.
	081119	Stainless-Steel Doors and Frames	●								●	●		Stainless-steel units for aesthetic, cleanliness, or corrosive applications.
	081173	Sliding Metal Fire Doors	●		●						●	●		Horizontally sliding doors of composite, hollow-metal, and tubular -frame construction.
	081213	Hollow Metal Frames	●		●						●	●		Hollow-metal frames for commercial and residential use.
	081216	Aluminum Frames	●		●						●	●		Interior frames for wood or aluminum doors and glazing in gypsum-board partitions.
	081316.13	Aluminum Terrace Doors	●								●	●		For terrace or balcony access; aluminum, inward or outward swing.
	081416	Flush Wood Doors	●		●						●	●		Wood-veneer, hardboard, and plastic-laminate-faced flush wood doors.
	081433	Stile and Rail Wood Doors	●		●						●	●		Stock and custom stile and rail wood doors, included fire-rated doors.
	081433.13	Wood Terrace Doors	●								●	●		For exterior locations; aluminum or vinyl clad or unclad.
	083113	Access Doors and Frames	●		●	●	●				●	●		Wall and ceiling units.
	083113.53	Security Access Doors and Frames	●			●	●				●	●		Medium-, high-, and maximum-security units for walls and ceilings.
	083213	Sliding Aluminum-Framed Glass Doors	●								●	●		For exterior locations.
	083219	Sliding Wood-Framed Glass Doors	●								●	●		For exterior locations.
U	083313	Coiling Counter Doors	●		●						●	●		Overhead-coiling galvanized-steel, stainless-steel, and aluminum curtain assemblies.
	083323	Overhead Coiling Doors	●		●						●	●		Galvanized-steel, stainless-steel, and aluminum curtain assemblies.
	083326	Overhead Coiling Grilles	●		●						●	●		Open-curtain and closed-curtain assemblies.
	083459	Vault Doors and Day Gates	●								●	●		Vault and file-room doors and gates for protecting records from fire.
	083463	Detention Doors and Frames	●								●	●		Hollow-metal detention doors and frames, including swinging and sliding doors.
	083473.13	Metal Sound Control Door Assemblies	●		●	●					●	●		Assemblies consisting of steel doors, steel frames, and sound control seals.
	083473.16	Wood Sound Control Door Assemblies	●		●	●					●	●		Assemblies consisting of wood doors, steel frames, and sound control seals.

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			Arch	Hist	Int	Mech	Elec	Str	Lan	SC	Comp	AE	CX	
U	083483	Floor Doors	●								●	●		For interior and exterior locations.
	083513	Folding Doors	●		●						●	●		Accordion and panel folding doors, metal bifold doors, bifold mirror doors, and fire-rated folding doors.
	083613	Sectional Doors	●								●	●		Manual and electric garage-type overhead doors with steel, wood, aluminum, and translucent sections.
U	084113	Aluminum-Framed Entrances and Storefronts	●		●						●	●		Aluminum storefront systems, entrance doors, and hardware.
	084126	All-Glass Entrances and Storefronts	●		●						●	●		All-glass entrance doors and hardware, sidelights, and storefronts.
U	084213	Aluminum-Framed Entrances	●		●						●	●		Aluminum entrance doors and hardware.
	084226	All-Glass Entrances	●		●						●	●		All-glass entrance doors and hardware, and sidelights.
	084229.13	Folding Automatic Entrances	●								●	●		Power-operated one-side opening and biparting units.
	084229.23	Sliding Automatic Entrances	●								●	●		Power-operated single, biparting, and telescoping units.
	084229.33	Swinging Automatic Entrances	●								●	●		Power-operated power-assist and low-energy swinging units.
	084233	Revolving Door Entrances	●								●	●		Manual, automatic, and access-control units.
	084243	Intensive Care Unit/Critical Care Unit (ICU/CCU) Entrances	●		●						●	●		Manual sliding, swinging, and swinging/folding entrance assemblies primarily for individual special-care rooms.
U	084313	Aluminum-Framed Storefronts	●								●	●		Aluminum storefront systems; also used for window walls, ribbon walls, strip windows, and punched openings.
U	084413	Glazed Aluminum Curtain Walls	●								●	●		Curtain wall framing; also used for window walls, ribbon walls, strip windows, and punched openings.
U	084423	Structural-Sealant-Glazed Curtain Walls	●								●	●		2- and 4-sided, structural-sealant-glazed curtain walls.
U	084433	Sloped Glazing Assemblies	●								●	●		Glazed framing assemblies sloped more than 15 degrees from vertical.
	084513	Structured-Polycarbonate-Panel Assemblies	●								●	●		Aluminum-framed assemblies glazed with structured polycarbonate panels.
	084523	Fiberglass-Sandwich-Panel Assemblies	●								●	●		Aluminum-framed assemblies glazed with fiberglass sandwich panels.
	085113	Aluminum Windows	●								●	●		Stock aluminum windows; most standard types.
U	085119	Stainless Steel Windows	●								●	●		Cold-rolled windows fabricated from formed stainles- steel sheet.
U	085123.13	Hot-Rolled Steel Windows	●								●	●		Hot-rolled windows.
U	085123.23	Cold-Rolled Steel Windows	●								●	●		Cold-rolled windows fabricated from formed sheet metal.
	085200	Wood Windows	●								●	●		Stock wood windows; most standard types.
	085313	Vinyl Windows	●								●	●		Stock vinyl windows; most standard types.
	085413	Fiberglass Windows	●								●	●		Stock fiberglass windows; most standard type.
	085653	Security Windows	●								●	●		Vision and transaction windows that are forced-entry and ballistics resistant.
	085663	Detention Windows	●								●	●		Windows for applications where persons are forcibly retained.
	086100	Roof Windows	●								●	●		Wood, aluminum, and vinyl flat-glass units.
	086200	Unit Skylights	●								●	●		Standard factory-assembled units, with or without integral curbs.
	086300	Metal-Framed Skylights	●								●	●		Standard- or custom-designed aluminum-framed units with insulating glass or plastic lites.

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			Arch	Hist	Int	Mech	Elec	Str	Lan	SC	Comp	AE	CX	
	087100	Door Hardware	●		●						●	●		For specifying door hardware by using a schedule that names products or indicates BHMA designations.
U	087111	Door Hardware (Descriptive Specification)	●		●						●	●		For specifying door hardware by using a schedule that includes nonproprietary product descriptions.
	087113	Automatic Door Operators	●								●	●		Power operators, low-energy power operators, and low-energy power-assist door operators for swinging doors; furnished separately from doors and frames.
	087163	Detention Door Hardware	●								●	●		For swinging and sliding detention doors.
	088000	Glazing	●		●						●	●		Plain, laminated, and insulating glass.
	088113	Decorative Glass Glazing	●		●						●	●		Patterned, enameled, acid-etched, sandblasted, and laminated glass with integral decoration, and glass with film overlay.
	088300	Mirrors	●		●						●	●		Unframed, silvered flat glass mirrors including annealed monolithic, film-backed, laminated, and tempered.
	088400	Plastic Glazing	●								●	●		Acrylic and polycarbonate glazing sheets.
	088813	Fire-Rated Glazing	●		●						●	●		Special tempered glass, film-faced and laminated ceramic glazing, laminated glass with intumescent layers, and gel-filled units.
	088853	Security Glazing	●								●	●		Glazing resistant to ballistic attacks, forced entry, detention-security threats, and explosive blast.
	089116	Operable Wall Louvers	●			●					●	●		Operable (adjustable) metal louvers including those with insulated blades.
	089119	Fixed Louvers	●			●					●	●		Fixed metal louvers.
	089516	Wall Vents	●								●	●		Wall vents, also called brick or foundation vents.
DIVISION 09 - FINISHES														
	090190.52	Maintenance Repainting	●								●	●		Surface preparation; removing paint; and repainting, staining, and varnishing for redecoration or appearance.
	090320	Historic Treatment of Plaster		●							●			Repairing, replacing, and replicating lime and gypsum plasters and cast plaster fabrications.
	090353	Historic Treatment of Metal Ceilings		●							●			Repairing and replacing damaged components of nail-up, stamped metal ceilings.
	090391	Historic Treatment of Plain Painting		●							●			Surface preparation, removing paint, and painting with historic or modern paints; staining and varnishing.
	090394	Historic Treatment of Decorative Painting		●							●			Graining, marbleizing, stenciling, and striping applied over painted or bare substrates.
	090395	Historic Treatment of Artistic Painting		●							●			Freehand painting and trompe l'oeil applied over painted or bare substrates.
	090398	Historic Treatment of Gilding		●							●			Metallic leaf applied over painted or bare substrates.
	090561.13	Moisture Vapor Emission Control	●		●						●	●		Membrane-forming systems that reduce the rate of moisture vapor emission through interior concrete.
	092116.23	Gypsum Board Shaft Wall Assemblies	●								●	●		Fire-resistance-rated vertical shaft and horizontal enclosures, including metal framing.
	092216	Non-Structural Metal Framing	●		●						●	●		Steel framing for gypsum board and plaster partitions and ceilngs.
	092300	Gypsum Plastering	●		●						●	●		Gypsum plaster on expanded-metal lath, unit masonry, and concrete.

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			Arch	Hist	Int	Mech	Elec	Str	Lan	SC	Comp	AE	CX	
	092400	Cement Plastering	●								●	●		Portland cement plaster (stucco) on metal lath, unit masonry, and concrete; exterior and interior.
	092613	Gypsum Veneer Plastering	●		●						●	●		Applied on gypsum base panels, unit masonry, or monolithic concrete.
	092713	Glass-Fiber-Reinforced Gypsum Fabrications	●		●						●	●		Factory-molded GRFG units for interior use.
U	092900	Gypsum Board	●		●						●	●		Interior gypsum board, exterior gypsum board for ceilings and soffits, and tile backing boards.
	093013	Ceramic Tiling	●		●						●	●		Ceramic mosaic, quarry, pressed floor, porcelain, and glazed wall tile.
	093023	Glass Mosaic Tiling	●		●						●	●		Cast glass, fused glass, and low temperature coated glass tile.
	093033	Stone Tiling	●		●						●	●		Thin, modular, cut stone units.
	093500	Chemical-Resistant Tiling	●								●	●		Quarry tile set in portland cement mortar, water-cleanable epoxy, or furan mortar.
	095113	Acoustical Panel Ceilings	●		●						●	●		Mineral-base, glass-fiber-base, and ceramic- and mineral-base panels with exposed suspension systems.
	095123	Acoustical Tile Ceilings	●		●						●	●		Mineral-base tile with concealed suspension systems, and directly attached acoustical tile.
	095133	Acoustical Metal Pan Ceilings	●		●						●	●		Lay-in, clip-in, snap-in, and torsion-spring-hinged metal pans with exposed suspension systems.
	095423	Linear Metal Ceilings	●		●						●	●		Strip, decorative metal systems.
	095436	Suspended Decorative Grids	●		●						●	●		Rigid, open-frame, suspended grid, ceiling systems.
	095443	Stretched-Fabric Ceiling Systems	●		●						●	●		Site-assembled and -upholstered fabric systems for ceilings.
	095446	Fabric-Wrapped Ceiling Panels	●		●						●	●		Shop-fabricated, fabric-wrapped panels applied to ceilings or suspended.
	095753	Security Ceiling Assemblies	●								●	●		Downward-locking-panel and security-plank systems.
	096229	Cork Flooring	●		●						●	●		Cork tile, cork engineered tile, and cork rubber tile; cork floating floor system.
	096313	Brick Flooring	●		●						●	●		Interior applications only.
	096313.35	Chemical-Resistant Brick Flooring	●								●	●		Chemical-resistant mortars, grouts, and brick.
	096340	Stone Flooring	●		●				●		●	●		Exterior and interior stone flooring; does not include stone tile.
	096400	Wood Flooring	●		●						●	●		Solid- and engineered-wood flooring, field- and factory-finished.
	096466	Wood Athletic Flooring	●		●						●	●		Maple flooring and shock-absorbing subfloor assemblies.
	096513	Resilient Base and Accessories	●		●						●	●		Resilient base, stair accessories, and molding accessories.
	096516	Resilient Sheet Flooring	●		●						●	●		Vinyl and rubber sheet floor coverings.
	096519	Resilient Tile Flooring	●		●						●	●		Solid vinyl, rubber, vinyl composition, and resilient terrazzo floor tiles.
	096536	Static-Control Resilient Flooring	●		●						●	●		Static-dissipative and static-conductive tile and sheet products.
	096543	Linoleum Flooring	●		●						●	●		Linoleum tile and sheet flooring.
	096566	Resilient Athletic Flooring	●								●	●		Resilient floor coverings designed for sports-activity areas.
	096613	Portland Cement Terrazzo Flooring	●		●						●	●		Poured-in-place portland cement terrazzo and rustic terrazzo flooring, and precast terrazzo units.

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096623	Resinous Matrix Terrazzo Flooring	●		●						●	●		Thin-set, epoxy-resin terrazzo flooring and precast terrazzo units.
096723	Resinous Flooring	●								●	●		Fluid-applied monolithic flooring including decorative epoxy and urethane resins.
096766	Fluid-Applied Athletic Flooring	●								●	●		Polyurethane flooring for athletic activity areas.
096813	Tile Carpeting	●		●						●	●		Modular carpet tile for commercial applications.
096816	Sheet Carpeting	●		●						●	●		Tufted and woven commercial carpet and carpet cushion.
096900	Access Flooring	●		●						●	●		Modular floor panels and support systems.
096933	Low-Profile Fixed Height Access Flooring	●		●						●	●		Flooring designed to accommodate power and data wiring beneath the flooring surface.
097200	Wall Coverings	●		●						●	●		Vinyl, textile, and woven glass-fiber wall coverings, and wallpaper.
097513	Stone Wall Facing	●		●						●	●		Dimension stone paneling on interior walls and columns, including units with carving or inscriptions.
097519	Stone Trim	●		●						●	●		Dimension stone interior trim, including stone base and window stools.
097713	Stretched-Fabric Wall Systems	●		●						●	●		Site-assembled and -upholstered fabric systems for walls.
097723	Fabric-Wrapped Panels	●		●						●	●		Shop-fabricated, fabric-wrapped, decorative and tackable wall panels not tested for acoustical performance.
098433	Sound-Absorbing Wall Units	●		●						●	●		Shop-fabricated, fabric-wrapped, sound-absorbing, sound-diffusing, and sound-reflecting wall panels tested for acoustical performance.
098436	Sound-Absorbing Ceiling Units	●		●						●	●		Shop-fabricated, fabric-wrapped, sound-absorbing, sound-diffusing, and sound-reflecting panels and sound-absorbing baffle panels applied to ceilings or suspended.
099113	Exterior Painting	●			●	●	●	●		●	●		Exterior painting.
099123	Interior Painting	●		●	●	●				●	●		Interior painting.
099300	Staining and Transparent Finishing	●		●				●		●	●		For interior and exterior wood: includes solid-color stains.
099419	Multicolor Interior Finishing	●		●						●	●		Polychromatic paint systems for use on interior vertical surfaces.
099423	Gilding	●		●						●	●		Interior and exterior oil gilding.
099600	High-Performance Coatings	●		●	●	●	●			●	●		Tile-like coatings for use on exterior and interior substrates.
099633	High-Temperature-Resistant Coatings	●			●					●	●		Heat-resistant coatings for use on exterior and interior substrates.
099646	Intumescent Painting	●								●	●		Fire-retardant Intumescent paint for combustible substrates reducing flame-spread index of combustible surfaces.
099653	Elastomeric Coatings	●								●	●		Pigmented, water-based, elastomeric coatings for use over concrete, masonry, and stucco.
099726	Cementitious Coatings	●								●	●		Polymer-modified cementitious coatings on masonry and concrete; exterior and interior.
DIVISION 10 - SPECIALTIES													
101100	Visual Display Units	●		●						●	●		Chalkboards, markerboards, tackboards, floor-to-ceiling assemblies and support systems, sliding units, and conference units.
101146	Visual Display Fabrics	●		●						●	●		Fabric-backed-vinyl dry-erase wall coverings.
101200	Display Cases	●		●						●	●		Illuminated and nonilluminated types.

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		Arch	Hist	Int	Mech	Elec	Str	Lan	SC	Comp	AE	CX	
101300	Directories	●		●						●	●		Illuminated and nonilluminated types with changeable message strips or changeable letters.
101416	Plaques	●		●				●		●	●		One-piece, cast or etched, solid-metal plaques.
101419	Dimensional Letter Signage	●		●				●		●	●		Individually mounted dimensional characters and illuminated dimensional characters that are combined to form signs.
101423	Panel Signage	●		●				●		●	●		Panel signs, illuminated panel signs, and field-applied, vinyl-character signs.
101423.16	Room-Identification Panel Signage	●								●	●		Panel signs and sign systems used specifically for room identification; sometimes called "ADA Signs."
101426	Post and Panel/Pylon Signage	●						●		●	●		Illuminated and nonilluminated, freestanding panel signs that are supported by posts or configured as pylons.
101429	Modular Signage	●								●	●		Signs with multiple removable sections, containing text or graphics, attached to a base frame.
101473	Painted Signage	●		●						●	●		Field-lettered signs that are painted directly on substrates.
101700	Telephone Specialties	●		●						●	●		Telephone booths, enclosures, housings, outdoor boxes, kiosks, and directory storage units.
102113.13	Metal Toilet Compartments	●		●						●	●		Painted steel toilet enclosures, entrance screens, and urinal screens.
102113.14	Stainless-Steel Toilet Compartments	●		●						●	●		Stainless-steel toilet enclosures, entrance screens, and urinal screens.
102113.16	Plastic-Laminate-Clad Toilet Compartments	●		●						●	●		Plastic-laminate-clad toilet enclosures, entrance screens, and urinal screens.
102113.17	Phenolic-Core Toilet Compartments	●		●						●	●		Phenolic-core toilet enclosures, entrance screens, and urinal screens.
102113.19	Plastic Toilet Compartments	●		●						●	●		Solid-polymer toilet enclosures, entrance screens, and urinal screens.
102113.40	Stone Toilet Compartments	●		●						●	●		Marble, granite, and engineered stone toilet enclosures, entrance screens, and urinal screens; plastic-laminate, stainless-steel, and wood doors.
102116.13	Metal Shower and Dressing Compartments	●								●	●		Painted-steel shower and dressing compartments and prefabricated shower receptors.
102116.14	Stainless-Steel Shower and Dressing Compartments	●								●	●		Stainless-steel shower and dressing compartments and prefabricated shower receptors.
102116.17	Phenolic-Core Shower and Dressing Compartments	●								●	●		Phenolic-core shower and dressing compartments and prefabricated shower receptors.
102116.19	Plastic Shower and Dressing Compartments	●								●	●		Solid-plastic shower and dressing compartments and prefabricated shower receptors.
102123	Cubicle Curtains and Track	●		●						●	●		Curtains, tracks, and carriers for hospital cubicles.
102213	Wire Mesh Partitions	●		●						●	●		Standard- and heavy-duty partitions, ceilings, railing insert panels, and equipment barriers.
102219	Demountable Partitions	●		●						●	●		Reusable, site-assembled or unitized-panel demountable partition systems, including solid panels, door panels and doors, glazed panels, and all-glass systems.
102233	Accordion Folding Partitions	●		●						●	●		Acoustically and fire-rated, manually and electrically operated accordion folding partitions.

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102239	Folding Panel Partitions	●		●						●	●		Manually and electrically operated panel partitions supported from overhead track; acoustically rated, fire rated, and non-rated; for interior use.
102239.13	Folding Glass-Panel Partitions	●		●						●	●		Manually operated glass-panel partitions supported from an overhead track, for interior use.
102600	Wall and Door Protection	●		●						●	●		Predominantly plastic products and assemblies that protect surfaces of walls, corners, and doors from damage.
102800	Toilet, Bath, and Laundry Accessories	●		●						●	●		Standard commercial, institutional, and residential units.
102813.63	Detention Toilet Accessories	●								●	●		Safety hooks, shelves, combination shelves with safety hooks, and stainless-steel mirrors.
102819	Tub and Shower Enclosures	●		●		●				●	●		Framed and frameless shower doors and enclosures.
104413	Fire Protection Cabinets	●		●	●					●	●		Fire-protection cabinets and security fire-protection cabinets.
104416	Fire Extinguishers	●		●	●					●	●		Portable and wheeled fire extinguishers.
104513	Photoluminescent Egress Path Markings	●								●	●		Luminous egress path markings, used in stairs and exit enclosures, to help occupants exit in an emergency.
105113	Metal Lockers	●		●						●	●		Corridor, athletic, and open-front athletic metal lockers.
105113.13	Coin-Operated Metal Lockers	●		●						●	●		Coin-operated lockers used in public facilities for temporary storage of personal belongings.
105116	Wood Lockers	●		●						●	●		Wood-faced wood lockers.
105123	Plastic-Laminate-Clad Lockers	●		●						●	●		Plastic-laminate-clad wood lockers.
105143	Wire Mesh Storage Lockers	●				●				●	●		Woven wire mesh storage cubicles.
105500.13	Usps-Delivery Postal Specialties	●		●						●	●		United States Postal Service (USPS)-approved postal-delivery and collection equipment.
105500.16	Private-Delivery Postal Specialties	●		●						●	●		Postal-delivery and collection equipment for facilities not serviced by the United States Postal Service (USPS).
105613	Metal Storage Shelving	●		●						●	●		Freestanding case-type, four-post, and post-and-beam shelving designed to be loaded by hand.
105626	Mobile Storage Shelving	●		●						●	●		Shelving units mounted on wheeled carriages on tracks.
107313	Awnings	●						●		●	●		Fixed and retractable awnings.
107343	Transportation Stop Shelters	●								●	●		Freestanding, modular shelters used for transit passengers, smoking shelters, and other applications.
107516	Ground-Set Flagpoles	●						●		●	●		Aluminum, bronze, stainless-steel, steel, and fiberglass ground-set flagpoles.
107523	Wall-Mounted Flagpoles	●						●		●	●		Aluminum, bronze, stainless-steel, and fiberglass wall-mounted flagpoles.
107526	Roof-Mounted Flagpoles	●						●		●	●		Aluminum, bronze, stainless-steel, steel, and fiberglass roof-mounted flagpoles.
107529	Plaza-Mounted Flagpoles	●						●		●	●		Aluminum, bronze, stainless-steel, and fiberglass plaza-mounted flagpoles.
108316	Banners	●		●				●		●	●		Suspended or tensioned fabrics and films for exterior or interior use, with or without applied graphics.

DIVISION 11 - EQUIPMENT

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	Section No.	Section Title	Architectural			Building Eng.			Sitework		Multidiscipline			Description
			Arch	Hist	Int	Mech	Elec	Str	Lan	SC	Comp	AE	CX	
	110513	Common Motor Requirements for Equipment	●		●		●		●	●	●	●		Universal default values for small and medium, ac motors.
	111200	Parking Control Equipment	●								●	●		Automatic barrier gates, vehicle detectors, traffic controllers, ticket dispensers, exit terminals, pay stations, fee computers, management software, and access control units.
	111313	Loading Dock Bumpers	●				●				●	●		Laminated-tread, molded- and extruded-rubber, and steel-face dock bumpers.
	111316	Loading Dock Seals and Shelters	●				●				●	●		Foam-pad and inflatable dock seals, rigid- and flexible-frame dock shelters, inflatable dock shelters, and transparent curtains.
	111319	Stationary Loading Dock Equipment	●								●	●		Built-in recessed, edge-of-dock, top-of-dock, and vertical storing dock levelers, truck restraints, truck levelers, and light-communication systems.
	111323	Portable Dock Equipment	●				●				●	●		Built-in, scissors-type, single-leg, hydraulic dock lifts.
	111916	Detention Gun Lockers	●								●	●		Secure compartment for storage of firearms.
	113013	Residential Appliances	●		●						●	●		Major kitchen and laundry appliances.
	113200	Unit Kitchens	●		●						●	●		Standard metal, plastic-laminate, and wood types.
	114000	Foodservice Equipment	●		●						●	●		Commercial foodservice equipment.
	115123	Library Stack Systems	●								●	●		Steel-bracket, steel four-post, steel-case, and wood-case shelving.
U	115213	Projection Screens	●		●						●	●		Front projection screens.
U	115213.19	Rear Projection Screens	●		●						●	●		Rear projection screens.
	115313	Laboratory Fume Hoods	●		●	●	●				●	●		Hoods and hood stands, including work tops.
	116123	Folding and Portable Stages	●		●						●	●		Portable stage platforms, seating-platform risers, standing choral risers, and acoustical shells for interior use.
	116143	Stage Curtains	●		●						●	●		Stage curtain fabrics, draw-curtain tracks, and rigging accessories.
	116623	Gymnasium Equipment	●								●	●		Indoor badminton, basketball, volleyball, and exercise equipment, and safety pads.
	116653	Gymnasium Dividers	●								●	●		Gymnasium divider curtains.
	116800	Play Field Equipment and Structures	●						●		●	●		Public playground equipment for children aged two through 12.
	117300	Patient Care Equipment	●								●	●		Ceiling-mounted patient-lift systems; intravenous tracks, carriers, and bottle holders; patient-bed locators; and patient-bed service walls.
	118226	Facility Waste Compactors	●								●	●		Commercial, wet- and dry-waste compactor units.
DIVISION 12 - FURNISHINGS														
	122113	Horizontal Louver Blinds	●		●						●	●		Manually and motor-operated horizontal louver blinds.
	122116	Vertical Louver Blinds	●		●						●	●		Manually and motor-operated vertical louver blinds.
	122200	Curtains and Drapes	●		●						●	●		Draperies and manually operated and motorized drapery tracks.
	122413	Roller Window Shades	●		●						●	●		Manually and motor-operated roller shades installed vertically or at skylights.
	122416	Pleated Window Shades	●		●						●	●		Manually and motor-operated pleated shades operated from the top down.
	123213	Manufactured Wood-Veneer-Faced Casework	●		●						●	●		Standard manufactured wood-veneer-faced casework.
	123216	Manufactured Plastic-Laminate-Clad Casework	●		●						●	●		Standard manufactured plastic-laminate-clad casework.

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	123530	Residential Casework	●		●						●	●		Stock manufactured kitchen and vanity cabinets.
	123553.13	Metal Laboratory Casework	●		●						●	●		Metal laboratory cabinets including countertops, accessories, and service fittings.
	123553.16	Plastic-Laminate-Clad Laboratory Casework	●		●						●	●		Plastic-laminate-clad laboratory cabinets including countertops, accessories, and service fittings.
	123553.19	Wood Laboratory Casework	●		●						●	●		Wood laboratory cabinets including countertops, accessories, and service fittings.
	123570	Healthcare Casework	●		●						●	●		Stainless- and enameled-steel healthcare casework.
	123616	Metal Countertops	●		●						●	●		Stainless steel countertops, including integral sinks and shelves.
	123619	Wood Countertops	●		●						●	●		Wide-width solid-wood, butcher-block, and veneered tops.
	123623.13	Plastic-Laminate-Clad Countertops	●		●						●	●		Plastic-laminate countertops.
	123640	Stone Countertops	●		●						●	●		Countertops made from dimension stone slabs.
	123661.13	Cultured Marble Countertops	●		●						●	●		Cultured marble countertops including integral sinks.
	123661.16	Solid Surfacing Countertops	●		●						●	●		Solid surface countertops and sinks.
	123661.19	Quartz Agglomerate Countertops	●		●						●	●		Quartz agglomerate countertops.
	124813	Entrance Floor Mats and Frames	●		●						●	●		Roll-up (removable) rail mats as well as resilient entrance mats. Frames are also included.
	124816	Entrance Floor Grilles	●		●						●	●		Rigid assembly of rail treads set in recessed frames in the floor.
	125500	Detention Furniture	●								●	●		Bunks, mattresses, desks, tables, and seating.
	126100	Fixed Audience Seating	●		●						●	●		Upholstered and unupholstered assembly-space seating for interior or exterior applications; also continuous lecture-hall tables.
	126313	Stadium and Arena Bench Seating	●						●		●	●		Fixed, continuous bench- or plank-type metal seating.
	126600	Telescoping Stands	●								●	●		Standard interior systems; manually or automatically operated.
	129200	Interior Planters and Artificial Plants	●		●				●		●	●		Freestanding planters, self-contained subirrigation, and manufactured interior plants.
DIVISION 13 - SPECIAL CONSTRUCTION														
	132416	Saunas	●		●						●	●		Modular and precut saunas, with heaters and accessories.
	132700	Vaults	●		●						●	●		Factory-fabricated and site-assembled modular vaults; vault doors.
	133419	Metal Building Systems	●					●			●	●		Systems consisting of structural framing, roofing and siding panels, and standard components.
U	133423.16	Fabricated Control Booths	●								●	●		Freestanding steel and aluminum control booths.
	134713	Cathodic Protection					●				●	●		Passive corrosion protection for steel and iron pipes and tanks.
U	134900	Radiation Protection	●								●	●		X-ray, gamma ray, and neutron shielding construction.
DIVISION 14 - CONVEYING EQUIPMENT														
	141000	Dumbwaiters	●		●						●	●		Preengineered, hand- and power-operated types.
U	142100	Electric Traction Elevators	●								●	●		Passenger and service elevators, traction drive, including machine -room-less type.
U	142113	Electric Traction Freight Elevators	●								●	●		Freight elevators, traction drive, except machine-room-less type.

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		Arch	Hist	Int	Mech	Elec	Str	Lan	SC	Comp	AE	CX	
U 142123.16	Machine Room-Less Electric Traction Passenger Elevators	●								●	●		Passenger and service elevators, traction drive, machine-room-less type.
U 142400	Hydraulic Elevators	●								●	●		Passenger and service elevators, direct hydraulic and roped hydraulic units.
U 142413	Hydraulic Freight Elevators	●								●	●		Freight elevators, direct hydraulic and roped hydraulic units.
U 142600	Limited-Use/Limited-Application Elevators	●								●	●		LU/LA elevators, hydraulic and roped-hydraulic units.
143100	Escalators	●								●	●		Standard and high-traffic, interior and exterior units.
143200	Moving Walks	●								●	●		Interior and exterior, horizontal or inclined, pallet- or belt-type units.
144119	Stairway Chairlifts	●		●						●	●		Inclined type for public and private-residence use.
144200	Wheelchair Lifts	●								●	●		Vertical and inclined types for public, courtroom, and private-residence use.
149133	Laundry and Linen Chutes	●								●	●		Gravity-type metal chutes for soiled linens.
149182	Trash Chutes	●								●	●		Gravity-type metal chutes and diverters for waste materials.
DIVISION 21 - FIRE SUPPRESSION													
210513	Common Motor Requirements for Fire Suppression Equipment				●					●	●		Universal default values for small and medium, ac motors.
210517	Sleeves and Sleeve Seals for Fire-Suppression Piping				●					●	●		Sleeves and sleeve seals for piping at floor and wall penetrations.
210518	Escutcheons for Fire-Suppression Piping				●					●	●		Escutcheons and floor plates for piping at ceiling, floor, and wall penetrations.
210523	General-Duty Valves for Fire Protection Piping				●					●	●		Valves common to most fire-protection piping.
210529	Hangers and Supports for Fire Supression Piping and Equipment				●					●	●		Single and multiple hangers, framing systems, and stands and supports.
210533	Heat Tracing for Fire-Suppression Piping				●					●	●		Electric cables for freeze protection.
210548	Vibration and Seismic Controls for Fire-Suppression Piping and Equipment				●					●	●		Vibration isolation devices and seismic restraints.
210548.13	Vibration Controls for Fire-Suppression Piping and Equipment				●					●	●		Vibration isolation devices.
210553	Identification for Fire-Suppression Piping and Equipment				●					●	●		Labels, stencils, and tags.
210700	Fire-Suppression Systems Insulation				●					●	●		Equipment and pipe insulation.
210800	Commissioning of Fire Suppression									●		●	Requirements and procedures for commissioning fire supression systems.
211100	Facility Fire-Suppression Water-Service Piping				●					●	●		Fire suppression piping and specialties outside the building.
211116	Facility Fire Hydrants				●					●	●		AWWA and UL listed dry- and wet-barrel fire hydrants.
211119	Fire Department Connections				●					●	●		Exposed-, flush-, and yard-type fire-department connections.
211200	Fire-Suppression Standpipes				●					●	●		Piping, specialties, valves, hose valves, and hose stations.
211213	Fire-Suppression Hoses and Nozzles				●					●	●		Hoses, reels, and racks for rack- and reel-type hose stations; and fire-suppression monitors.
211313	Wet-Pipe Sprinkler Systems				●					●	●		Piping, specialties, valves, and sprinklers for wet-pipe sprinkler systems.
211316	Dry-Pipe Sprinkler Systems				●					●	●		Piping, specialties, valves, and sprinklers for dry-pipe and preaction sprinkler systems.

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			Arch	Hist	Int	Mech	Elec	Str	Lan	SC	Comp	AE	CX	
	211339	Foam-Water Systems				●					●	●		Fixed, low-expansion, AFFF systems for flammable-liquid fires.
U	212113.13	High-Pressure, Carbon-Dioxide Fire-Extinguishing Systems				●					●	●		Piping, fittings, and specialties for sytems that deliver carbon dioxide for fire extinguishing and suppression.
U	212113.16	Low-Pressure, Carbon-Dioxide Fire-Extinguishing Systems				●					●	●		Piping, fittings, and specialties for systems that deliver carbon dioxide for fire extinguishing and suppression.
	212200	Clean-Agent Fire-Extinguishing Systems				●					●	●		Piping, containers, detection and alarms, and controls for clean-agent systems.
	213113	Electric-Drive, Centrifugal Fire Pumps				●					●	●		End-suction, in-line, and split-case fire pumps; accessories, specialties, and flowmeter systems.
	213116	Diesel-Drive, Centrifugal Fire Pumps				●					●	●		End-suction, in-line, and split-case fire pumps; accessories, specialties, and flowmeter systems.
	213213	Electric-Drive, Vertical-Turbine Fire Pumps				●					●	●		Fire pumps, accessories, specialties, and flowmeter systems.
	213216	Diesel-Drive, Vertical-Turbine Fire Pumps				●					●	●		Fire pumps, accessories, specialties, and flowmeter systems.
	213413	Pressure-Maintenance Pumps				●					●	●		Multistage, regenerative turbine, submersible, and vertical-turbine pumps; pump controllers.
DIVISION 22 - PLUMBING														
	220513	Common Motor Requirements for Plumbing Equipment				●					●	●		Universal default values for small and medium, ac motors.
	220516	Expansion Fittings and Loops for Plumbing Piping				●					●	●		Expansion joints and expansion-compensation devices for plumbing piping.
	220517	Sleeves and Sleeve Seals for Plumbing Piping				●					●	●		Sleeves and sleeve seals for piping at floor and wall penetrations.
	220518	Escutcheons for Plumbing Piping				●					●	●		Escutcheons and floor plates for piping at ceiling, floor, and wall penetrations.
	220519	Meters and Gages for Plumbing Piping				●					●	●		Temperature, pressure, and flow.
	220523.12	Ball Valves for Plumbing Piping				●					●	●		Ball valves common to multiple systems.
	220523.13	Butterfly Valves for Plumbing Piping				●					●	●		Butterfly valves common to multiple systems.
	220523.14	Check Valves for Plumbing Piping				●					●	●		Check valves common to multiple systems.
	220523.15	Gate Valves for Plumbing Piping				●					●	●		Gate valves common to multiple systems.
	220529	Hangers and Supports for Plumbing Piping and Equipment				●					●	●		Single and multiple hangers, framing systems, and stands and supports.
	220533	Heat Tracing for Plumbing Piping				●					●	●		Electric cables for freeze protection, snow and ice melting, and temperature maintenance.
	220548	Vibration and Seismic Controls for Plumbing Piping and Equipment				●					●	●		Vibration isolation devices and seismic restraints.
	220548.13	Vibration Controls for Plumbing Piping and Equipment				●					●	●		Vibration isolation devices.
	220553	Identification for Plumbing Piping and Equipment				●					●	●		Labels, stencils, and tags.
	220716	Plumbing Equipment Insulation				●					●	●		Insulation materials, jackets, and installation accessories for plumbing equipment.
	220719	Plumbing Piping Insulation				●					●	●		Insulation materials, jackets, and installation accessories for plumbing piping.
	220800	Commissioning of Plumbing									●		●	Requirements and procedures for commissioning plumbing systems.

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			Arch	Hist	Int	Mech	Elec	Str	Lan	SC	Comp	AE	CX	
	221113	Facility Water Distribution Piping	●			●			●	●	●	●		Utility service, domestic, and fire-protection water, specialties, and valves.
	221116	Domestic Water Piping				●					●	●		Potable-water distribution within the building.
	221117	Gray-Water Piping				●					●	●		Non-potable water piping.
	221119	Domestic Water Piping Specialties				●					●	●		Specialties, valves, and fittings for domestic water piping.
	221123.13	Domestic-Water Packaged Booster Pumps				●					●	●		Water-pressure boosters, simplex and multi-plex; constant- and variable speed pumps.
	221123.21	Inline, Domestic-Water Pumps				●					●	●		In-line separately coupled, close-coupled, centrifugal pumps.
	221216	Facility Elevated, Potable-Water Storage Tanks	●			●				●	●	●		Above-ground water storage.
	221219	Facility Ground-Mounted, Potable-Water Storage Tanks	●			●				●	●	●		Surface-mounted water storage.
	221223.11	Facility Indoor Potable-Water Storage Tanks				●					●	●		Water storage; compression and diaphragm.
	221313	Facility Sanitary Sewers	●			●				●	●	●		Sanitary sewerage and underground structures outside the building.
	221316	Sanitary Waste and Vent Piping				●					●	●		Soil, waste, and vent piping within the building.
U	221319	Sanitary Waste Piping Specialties	●			●					●	●		Backwater and air admittance valves, cleanouts, sanitary assemblies, FOG systems, and sanitary drainage specialties.
	221319.13	Sanitary Drains				●					●	●		Floor and trench drains, and channel drain systems.
U	221323	Sanitary Waste Interceptors	●			●				●	●	●		Grease, oil, and sand interceptors for sewerage systems outside the building.
	221329	Sanitary Sewerage Pumps				●					●	●		Effluent pumps; automatic, packaged; basins and covers.
	221343	Facility Packaged Sewage Pumping Stations	●			●				●	●	●		Pump, compressor, tank, and controls.
	221353	Facility Septic Tanks	●			●				●	●	●		Tank, distribution box, and drainage pipe.
	221363	Facility Gray-Water Storage Tanks				●					●	●		Above-ground gray-water storage.
	221413	Facility Storm Drainage Piping	●			●			●	●	●	●		Stormwater piping within the building.
	221423	Storm Drainage Piping Specialties	●			●			●	●	●	●		Roof drains, cleanouts, trench drains, channel drains, and piping specialties.
	221429	Sump Pumps				●					●	●		Submersible, wet-pit volute, and package drainage-pump units; basins and covers.
	221463	Facility Storm-Water Retention Tanks				●					●	●		Above-ground storm-water storage.
	221513	General-Service Compressed-Air Piping				●					●	●		Nonmedical piping, equipment, and accessories.
	221519	General-Service Packaged Air Compressors and Receivers				●					●	●		Nonmedical air compressors, filters, and dryers.
	223100	Domestic Water Softeners				●					●	●		Domestic and general use, not treatment.
	223200	Domestic Water Filtration Equipment				●					●	●		Separators; and bag, cartridge, carbon, sand, and greensand filters.
	223300	Electric, Domestic-Water Heaters				●					●	●		Household and commercial; tankless, instantaneous, and storage types.
	223400	Fuel-Fired, Domestic-Water Heaters				●					●	●		Household and commercial; gas and oil fired; instantaneous and storage types.
	223500	Domestic-Water Heat Exchangers				●					●	●		Steam and hot-water heat exchangers; instantaneous and storage types.

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	224100	Residential Plumbing Fixtures	●		●	●					●	●		Residential water closets, lavatories, sinks, bathtubs, and shower receptors and basins.
	224213.13	Commercial Water Closets	●		●	●					●	●		Commercial water closets, supports, flushometer valves, and supplies.
	224213.16	Commercial Urinals	●		●	●					●	●		Commercial urinals, supports, and flushometer valves.
	224216.13	Commercial Lavatories	●		●	●					●	●		Commercial lavatories, supports, faucets, traps, and supplies.
	224216.16	Commercial Sinks	●		●	●					●	●		Commercial sinks, supports, faucets, traps, and supplies.
	224223	Commercial Showers	●		●	●					●	●		Shower receptors, basins, enclosures, faucets, and heads.
	224233	Wash Fountains	●		●	●					●	●		Stone, metal, and plastic wash fountains.
U	224300	Healthcare Plumbing Fixtures	●			●					●	●		Plumbing fixtures for healthcare facilities.
	224500	Emergency Plumbing Fixtures	●			●					●	●		Individual and combination emergency eyewash and shower units.
	224600	Security Plumbing Fixtures	●			●					●	●		Detention facility plumbing fixtures.
	224713	Drinking Fountains	●		●	●					●	●		Pedestal, antifreeze pedestal, wheelchair accessible, wall mounted.
	224716	Pressure Water Coolers	●		●	●					●	●		Freestanding, wall mounted, and wheelchair accessible.
	224723	Remote Water Coolers	●		●	●					●	●		Remote water chillers.
	226113	Compressed-Air Piping for Laboratory and Healthcare Facilities				●					●	●		Piping for nonmedical laboratory air, medical air, dental air, instrument air, and medical laboratory air.
	226119	Compressed-Air Equipment for Laboratory and Healthcare Facilities				●					●	●		Compressors, filters, and dryers for laboratory and healthcare facilities.
	226213	Vacuum Piping for Laboratory and Healthcare Facilities				●					●	●		Piping for laboratory vacuum, medical surgical vacuum, waste anesthetic gas, dental vacuum, oral evacuation, and healthcare laboratory vacuum.
	226219	Vacuum Equipment for Laboratory and Healthcare Facilities				●					●	●		Vacuum producers and accessories for laboratory and healthcare facilities.
	226313	Gas Piping for Laboratory and Healthcare Facilities				●					●	●		Piping for CO2, helium, NO2, and O2.
	226400	Medical Gas Alarms				●					●	●		Alarms for medical gas systems.
	226600	Chemical-Waste Systems for Laboratory and Healthcare Facilities				●					●	●		Single- and double-wall piping and specialties, neutralization tanks, and leak detection.
	226700	Processed Water Systems for Laboratory and Healthcare Facilities				●					●	●		Pipe, fittings, and specialties for deionized, distilled, and reverse osmosis water.
	226713	Processed Water Piping for Laboratory and Healthcare Facilities				●	●				●	●		Pipe, fittings, and valves for reagent, deionized, distilled, and reverse osmosis water.
	226719	Processed Water Equipment for Laboratory and Healthcare Facilities				●	●				●	●		Equipment for reagent, deionized, distilled, and reverse osmosis water.
DIVISION 23 - HEATING, VENTILATING, AND AIR CONDITIONING (HVAC)														
	230130.52	Existing HVAC Air Distribution System Cleaning				●					●	●		Cleaning existing HVAC air-distribution equipment, ducts, plenums, air outlets and inlets, and duct accessories.
	230513	Common Motor Requirements for HVAC Equipment				●					●	●		Universal default values for small and medium, ac motors.
	230516	Expansion Fittings and Loops for HVAC Piping				●					●	●		Expansion joints and expansion-compensation devices for HVAC piping.

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230517	Sleeves and Sleeve Seals for HVAC Piping				●					●	●		Sleeves and sleeve seals for piping at floor and wall penetrations.
230518	Escutcheons for HVAC Piping				●					●	●		Escutcheons and floor plates for piping at ceiling, floor, and wall penetrations.
230519	Meters and Gages for HVAC Piping				●					●	●		Temperature, pressure, and flow.
230523.11	Globe Valves for HVAC Piping				●					●	●		Globe valves common to multiple systems.
230523.12	Ball Valves for HVAC Piping				●					●	●		Ball valves common to multiple systems.
230523.13	Butterfly Valves for HVAC Piping				●					●	●		Butterfly valves common to multiple systems.
230523.14	Check Valves for HVAC Piping				●					●	●		Check valves common to multiple systems.
230523.15	Gate Valves for HVAC Piping				●					●	●		Gate valves common to multiple systems.
230523.16	Plug Valves for HVAC Piping				●					●	●		Plug valves common to multiple systems.
230529	Hangers and Supports for HVAC Piping and Equipment				●					●	●		Single and multiple hangers, framing systems, and stands and supports.
230533	Heat Tracing for HVAC Piping				●					●	●		Electric cables for freeze protection.
230546	Coatings for HVAC				●					●	●		Antimicrobial UV-C lamp systems for mounting inside HVAC equipment, for treatment of HVAC surfaces.
230548	Vibration and Seismic Controls for HVAC				●					●	●		Vibration isolation devices and seismic restraints.
230548.13	Vibration Controls for HVAC				●					●	●		Vibration isolation devices.
230553	Identification for HVAC Piping and Equipment				●					●	●		Labels, stencils, and tags.
230566	Antimicrobial Ultraviolet Lamp Systems for HVAC												Antimicrobial ultraviolet lamp systems for mounting in air-handling units, fan coil units, and packaged unitary HVAC equipment.
230593	Testing, Adjusting, and Balancing for HVAC				●					●	●		Air distribution and hydronic systems.
230713	Duct Insulation				●					●	●		Insulation materials, jackets, and installation accessories for HVAC ducts.
230716	HVAC Equipment Insulation				●					●	●		Insulation materials, jackets, and installation accessories for HVAC equipment.
230719	HVAC Piping Insulation				●					●	●		Insulation materials, jackets, and installation accessories for HVAC piping.
230800	Commissioning of HVAC									●		●	Requirements and procedures for commissioning HVAC systems.
230923	Direct Digital Control (DDC) System for HVAC				●					●	●		Direct digital control system for monitoring and controlling HVAC systems.
230923.11	Control Valves				●					●	●		Control valves and actuators that connect to direct digital control systems.
230923.12	Control Dampers				●					●	●		Control dampers and actuators that connect to direct digital control systems.
230923.13	Energy Meters				●					●	●		Thermal and electric power energy meters that connect to direct digital control systems.
230923.14	Flow Instruments				●					●	●		Airflow and liquid flow sensors, switches and transmitters, and water meters that connect to direct digital control systems.
230923.16	Gas Instruments				●					●	●		Carbon dioxide, oxygen, a nd VOC gas detection instruments and control devices that connect to direct digital control systems.

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230923.17	Level Instruments				●					●	●		Liquid level switches, sensors, and transmitters that connect to direct digital control systems.
230923.18	Leak Detection Instruments				●					●	●		Leak detection switches (point type) and leak detector switches (cable type) that connect to direct digital control systems.
230923.19	Moisture Instruments				●					●	●		Humidity and moisture sensors and transmitters that connect to direct digital control systems.
230923.21	Motion Instruments				●					●	●		PIR, ultrasonic, and dual-technology type motion detection instruments that connect to direct digital control systems.
230923.22	Position Instruments				●					●	●		Limit switches that connect to direct digital control systems.
230923.23	Pressure Instruments				●					●	●		Air and liquid pressure sensors, switches, and transmitters that connect to direct digital control systems.
230923.24	Speed Instruments				●					●	●		Speed switches that connect to direct digital control systems.
230923.27	Temperature Instruments				●					●	●		Air, liquid, and steam temperature sensors, switches, transmitters and thermotats that connect to direct digital control systems.
230923.33	Vibration Instruments				●					●	●		Vibration switches that connect to direct digital control systems.
230923.43	Weather Stations				●					●	●		Weather stations that connect to direct digital control systems.
230993.11	Sequence of Operations for HVAC DDC				●					●	●		Direct digital control sequences for HVAC systems.
231113	Facility Fuel-Oil Piping	●			●					●	●		Fuel-oil piping, valves, specialties; leak-detection and monitoring systems for No. 2 fuel oil.
231123	Facility Natural-Gas Piping	●			●				●	●	●		Natural gas piping and specialties.
231126	Facility Liquefied-Petroleum Gas Piping	●			●				●	●	●		LP gas piping, specialties, and storage equipment.
231213	Facility Fuel-Oil Pumps				●					●	●		Simplex, duplex, and triplex transfer pumps; submersible storage tank pumps; and fuel-oil maintenance systems.
231313	Facility Underground Fuel-Oil Storage Tanks				●					●	●		Steel and FRP UST; accessories; liquid-level gage system; and leak-detection systems.
231323	Facility Aboveground Fuel-Oil Storage Tanks				●					●	●		Vertical, horizontal, containment-dike, insulated, and concrete vaulted steel AST.
232113	Hydronic Piping				●					●	●		Pipes, tubes, and fittings for heating and cooling water piping.
232113.13	Underground Hydronic Piping				●					●	●		Underground piping outside the building.
232113.33	Ground-Loop Heat-Pump Piping	●			●				●	●	●		Horizontal and vertical, direct-buried, ground-loop piping.
232116	Hydronic Piping Specialties				●					●	●		Specialties and special-duty valves for heating and cooling water piping.
232123	Hydronic Pumps				●					●	●		Base mounted and in-line; close coupled and separately coupled.
232213	Steam and Condensate Heating Piping				●					●	●		Pipes, tubes, and fittings for LP and HP steam piping.
232216	Steam and Condensate Heating Piping Specialties				●					●	●		Specialties and special-duty valves for LP and HP steam piping.
232223	Steam Condensate Pumps				●					●	●		Electric driven and pressure powered; single and duplex pumps with receivers.
232300	Refrigerant Piping				●					●	●		Piping, specialties, and refrigerant.
232500	HVAC Water Treatment				●					●	●		Auto and manual systems for hydronic systems and steam feedwater systems.
232513	Water Treatment for Closed-Loop Hydronic Systems				●					●	●		Auto and manual systems for closed-loop hydronic systems.
232516	Water Treatment for Open-Loop Hydronic Systems				●					●	●		Auto and manual systems for open-loop hydronic systems.

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	232519	Water Treatment for Steam System Feedwater				●					●	●		Auto and manual systems for steam feedwater systems.
	232523	Water Treatment for Humidification Steam System Feedwater				●					●	●		Automatic systems for humidification steam feedwater systems.
	232533	HVAC Makeup-Water Filtration Equipment				●					●	●		Water filtration systems for HVAC makeup water systems.
	233113	Metal Ducts				●					●	●		Rectangular and round, single- and double-wall ducts, including hangers and supports.
	233116	Nonmetal Ducts				●					●	●		Fibrous-glass, PVC, and FRP ducts, hangers, and supports. Does not include fabric.
	233119.13	Shop-Fabricated HVAC Casings					●				●	●		Shop-fabricated, single- and double-wall casings used as equipment enclosures and plenums.
	233119.16	Manufactured HVAC Casings					●				●	●		Factory-fabricated, double-wall casings used as equipment enclosures and plenums.
	233300	Air Duct Accessories				●					●	●		Volume dampers, fire and smoke dampers, vanes, duct silencers, and hardware.
	233346	Flexible Ducts				●					●	●		Non-insulated and insulated flexible ducts and flexible duct connectors.
	233413	Axial HVAC Fans				●					●	●		Tubeaxial and vaneaxial fans.
	233416	Centrifugal HVAC Fans				●					●	●		BI & FC indoor type; tubular and in-line units.
	233423	HVAC Power Ventilators				●					●	●		Roof, wall, and ceiling-mounting ventilators.
	233433.13	Commercial Air Curtains				●					●	●		Commercial air curtain fans over entranceways, with and without heating.
	233433.16	Industrial Air Curtains				●					●	●		Industrial air curtain fans over entranceways, with and without heating.
	233439	High-Volume, Low-Speed Fans				●					●	●		Large diameter, high-volume, low-speed ceiling fans.
	233533	Listed Kitchen Ventilation System Exhaust Ducts				●					●	●		Listed grease ducts.
U	233600	Air Terminal Units				●					●	●		Single-duct, dual-duct, fan-powered, induction, and diffuser types.
	233713.13	Air Diffusers				●					●	●		Round, rectangular, perforated, and linear diffusers.
	233713.23	Registers and Grilles				●					●	●		Fixed and adjustable registers and grilles.
	233713.43	Security Registers and Grilles				●					●	●		Security registers and grilles.
	233716	Fabric Air-Distribution Devices				●					●	●		Continuous tubular fabric air diffusers, connectors, and accessories.
	233723	HVAC Gravity Ventilators				●					●	●		Unpowered ventilators and louver penthouses.
U	233813	Commercial-Kitchen Hoods				●					●	●		Type I and Type II, Standard and Listed hoods.
	234100	Particulate Air Filtration				●					●	●		Disposable, extended surface, and roll types.
	234133	High-Efficiency Particulate Air Filtration				●					●	●		High-efficiency particulate air filters, ultralow-penetration air (ULPA) filters, filter frames, and filter gages.
	234200	Gas-Phase Air Filtration				●					●	●		Gas adsorbent and rechargeable media, trays and housings, frames, and filter gages.
	234300	Electronic Air Cleaners				●					●	●		Electronic air cleaners, access housings, service frames, and filter gages.
	235113.11	Draft Control Fans				●					●	●		Induced-draft fans.
	235113.16	Vent Dampers				●					●	●		Barometric dampers.

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	235116	Fabricated Breechings and Accessories				●					●	●		Refractory-lined breechings and field-fabricated breechings.
	235123	Gas Vents				●					●	●		Listed double-wall vents.
	235133	Insulated Sectional Chimneys				●					●	●		Double-wall and refractory-lined chimneys; fabricated chimneys.
	235213	Electric Boilers				●					●	●		HW and steam; HP and LP.
	235216	Condensing Boilers				●					●	●		Packaged condensing boilers for small applications.
	235223	Cast-Iron Boilers				●					●	●		HW and steam; gas and oil fired.
	235233	Water-Tube Boilers				●					●	●		HW and steam; gas and oil fired.
	235239	Fire-Tube Boilers				●					●	●		HW and steam; gas and oil fired.
	235313	Boiler Feedwater Pumps				●					●	●		Condensate and vacuum pumps and receivers.
	235316	Deaerators				●					●	●		Spray, packed column, and package tray.
	235413	Electric-Resistance Furnaces				●					●	●		Electric furnaces.
	235416.13	Gas-Fired Furnaces				●					●	●		Gas-fired furnaces.
	235416.16	Oil-Fired Furnaces				●					●	●		Oil-fired furnaces.
	235513.16	Gas-Fired Duct Heaters				●					●	●		Natural gas and propane, duct-mounted units.
	235523.13	Low-Intensity, Gas-Fired, Radiant Heaters				●					●	●		Low intensity, gas-fired, indoor and outdoor radiant heaters.
	235523.16	High-Intensity, Gas-Fired, Radiant Heaters				●					●	●		High-intensity, gas-fired, indoor and outdoor radiant heaters and patio heaters.
	235533.13	Oil-Fired Unit Heaters				●					●	●		Fuel-oil unit heaters with propeller and centrifugal fans.
	235533.16	Gas-Fired Unit Heaters				●					●	●		Natural gas and propane unit heaters with propeller and centrifugal fans.
	235613.13	Heating, Flat-Plate, Solar Collectors				●					●	●		Liquid-type, medium-temperature, glazed solar panels.
	235613.19	Heating, Solar, Vacuum-Tube Collectors				●					●	●		Liquid-type, vacuum-tube solar collectors, accessories, and mountings.
	235700	Heat Exchangers for HVAC				●					●	●		Steam to water and water to water; shell-and-tube and flat-plate types.
	236200	Packaged Compressor and Condenser Units				●					●	●		Air and water cooled.
U	236313	Air-Cooled Refrigerant Condensers				●					●	●		Remote forced-air, condenser, and fan units.
	236333	Evaporative Refrigerant Condensers				●					●	●		Induced- and forced-draft evaporative refrigerant condensers.
	236413.13	Direct-Fired Absorption Water Chillers				●					●	●		Natural-gas, propane, and oil fired; water cooled; two stages; and a brush-cleaning system.
	236413.16	Indirect-Fired Absorption Water Chillers				●					●	●		Steam and hot-water generated; one and two stage.
	236416	Centrifugal Water Chillers				●					●	●		Hermetic and open; direct and gear drives; water and air cooled.
	236423.13	Air-Cooled, Scroll Water Chillers				●					●	●		Packaged, air-cooled, scroll water chillers.
	236423.16	Water-Cooled, Scroll Water Chillers				●					●	●		Packaged, water-cooled, scroll water chillers.
	236426.13	Air-Cooled, Rotary-Screw Water Chillers				●					●	●		Packaged, air-cooled indoor and outdoor rotary-screw water chillers.
	236426.16	Water-Cooled, Rotary-Screw Water Chillers				●					●	●		Water-cooled, single- and multiple-compressor units.
	236513.13	Open-Circuit, Forced-Draft Cooling Towers				●					●	●		Factory-assembled, open-circuit, forced-draft, towers.
	236513.16	Closed-Circuit, Forced-Draft Cooling Towers				●					●	●		Factory-assembled, closed-circuit, forced-draft, towers.

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236514.13	Open-Circuit, Induced-Draft, Counterflow Cooling Towers				●					●	●		Factory-assembled, open-circuit, induced-draft, counterflow towers.
236514.14	Open-Circuit, Induced-Draft, Crossflow Cooling Towers				●					●	●		Factory-assembled, open-circuit, induced-draft, crossflow towers.
236514.16	Closed-Circuit, Induced-Draft, Counterflow Cooling Towers				●					●	●		Factory-assembled, closed-circuit, induced-draft, counterflow towers.
236514.17	Closed-Circuit, Induced-Draft, Combined-Flow Cooling Towers				●					●	●		Factory-assembled, closed-circuit, induced-draft, combined-flow towers.
237213	Heat Wheel Air-To-Air Energy Recovery Units				●					●	●		Rotary heat wheel, sensible-only or total heat transfer heat exchangers.
237216	Heat Pipe Air-To-Air Energy Recovery Units				●					●	●		Heat pipe, sensible heat, heat exchangers utilizing passive-refrigerant heat transfer.
237219	Fixed Plate Air-To-Air Energy Recovery Units				●					●	●		Fixed plate, sensible and total heat transfer heat exchangers.
237223.13	Packaged Indoor Heat Wheel Energy Recovery Units				●					●	●		Heat wheel heat exchangers in packaged, indoor, energy-recovery units.
237223.19	Packaged Indoor Fixed Plate Energy Recovery Units				●					●	●		Sensible and total heat, fixed-plate heat exchangers in packaged, indoor, energy-recovery units.
237223.23	Packaged, Outdoor, Heat Wheel Energy Recovery Units				●					●	●		Heat wheel in outdoor packaged, sensible heat and total heat, energy-recovery units.
237223.29	Packaged, Outdoor, Fixed Plate Energy Recovery Units				●					●	●		Fixed-plate heat exchanger in outdoor packaged, sensible and total heat, energy-recovery units.
237313.13	Indoor, Basic Air-Handling Units				●					●	●		Units consisting of fans, coils, dampers, filters, control devices, and accessories.
237313.16	Indoor, Semi-Custom Air-Handling Units				●					●	●		Units consisting of fans, coils, dampers, filters, control devices, and accessories.
237313.19	Indoor, Custom Air-Handling Units				●					●	●		Indoor custom units consisting of fans, coils, dampers, filters, control devices, and accessories.
237333.16	Indoor, Indirect, Gas-Fired Heating and Ventilating Units				●					●	●		Indirect, gas-fired H&V units mounted inside the building.
237339	Indoor, Direct-Fired Heating and Ventilating Units				●					●	●		Indoor, direct gas-fired H&V units.
237343.16	Outdoor, Semi-Custom Air-Handling Units				●					●	●		Units consisting of fans, coils, dampers, filters, control devices, and accessories.
237343.19	Outdoor, Custom Air-Handling Units				●					●	●		Outdoor custom units consisting of fans, coils, dampers, filters, control devices, and accessories.
237416.11	Packaged, Small-Capacity, Rooftop Air-Conditioning Units				●					●	●		Packaged, air-cooled, rooftop HVAC, 6 tons and smaller.
237416.13	Packaged, Large-Capacity, Rooftop Air-Conditioning Units				●					●	●		Packaged, air-cooled, rooftop HVAC 7.5 tons and greater.
237423.13	Packaged, Direct-Fired, Outdoor, Heating-Only Makeup-Air Units				●					●	●		Outdoor, direct gas-fired H&V units.
237423.16	Packaged, Indirect-Fired, Outdoor, Heating-Only Makeup-Air Units				●					●	●		Outdoor, indirect gas-fired H&V units.
237433	Dedicated Outdoor-Air Units				●					●	●		Units capable of 100 percent outdoor air with heating and cooling.
238113.11	Packaged Terminal Air-Conditioners, Through-Wall Units				●					●	●		Through-the-wall; cooling only; heat pump; cooling plus hot-water heating, electric heating, and gas-fired heating.
238113.12	Packaged Terminal Air-Conditioners, Freestanding Units				●					●	●		Freestanding or through-the-wall; cooling only; heat pump; cooling plus hot-water heating, electric heating, and gas-fired heating.

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	238113.13	Packaged Terminal Air-Conditioners, Outdoor, Wall-Mounted Units				●					●	●		Outdoor, wall-mounted; cooling only; heat pump; cooling plus hot -water heating, electric heating, and gas-fired heating.
	238119	Self-Contained Air-Conditioners				●					●	●		Packaged cooling, heating, filters, and controls; cabinet suitable for exposed installations.
	238123.11	Small Capacity (6 Tons (21 kW) and Smaller), Computer-Room Air-Conditioners, Floor-Mounted Units				●					●	●		Floor-mounted water and air cooled, air conditioning systems for data centers.
	238123.12	Large Capacity (7 Tons (25 kW) and Larger), Computer-Room Air-Conditioners, Floor-Mounted Units				●					●	●		Floor-mounted water and air cooled, air conditioning systems for data centers.
	238123.13	Computer-Room Air-Conditioners, Ceiling-Mounted Units				●					●	●		Ceiling-mounted water and air cooled, air conditioning systems for data centers.
	238123.14	Computer-Room Air-Conditioners, Console Units				●					●	●		Console water and air cooled, air conditioning systems for data centers.
	238123.18	Computer-Room, Rack-Cooling Equipment				●					●	●		Water and air cooled, pumped-refrigerant, air conditioning systems for data centers.
	238126	Split-System Air-Conditioners				●					●	●		Air-distribution equipment separate from refrigeration equipment; cabinet suitable for exposed installations.
	238129	Variable-Refrigerant-Flow HVAC Systems				●					●	●		Variable-refrigerant-flow HVAC systems, components, and operations, including delegated design.
	238146	Water-Source Unitary Heat Pumps				●					●	●		Concealed horizontal and vertical units.
	238146.13	Water-To-Air Heat Pumps				●					●	●		Concealed horizontal and vertical units; vertical-stack; and exposed-console units.
	238213	Valance Heating and Cooling Units				●					●	●		Electric and hot water radiant heaters and heating and cooling panels.
	238214	Chilled Beams				●					●	●		Passive and active units.
U	238216.11	Hydronic Air Coils				●					●	●		Hydronic coils not integral to AHUs.
U	238216.12	Steam Air Coils				●					●	●		Steam coils not integral to AHUs.
U	238216.13	Refrigerant Air Coils				●					●	●		Refrigerant coils not integral to AHUs.
U	238216.14	Electric-Resistance Air Coils				●					●	●		Electric-resistance coils not integral to AHUs.
	238219	Fan Coil Units				●					●	●		Hot water, steam, and electric heating; chilled or DX cooling.
	238223	Unit Ventilators				●					●	●		Hot water, steam, and electric heating; chilled or DX cooling.
	238229	Radiators				●					●	●		Flat-pipe steel radiators for hot-water, steam, and electric heating systems.
	238233	Convectors				●					●	●		Convectors for hot-water, steam, and electric heating systems.
	238236	Finned-Tube Radiation Heaters				●					●	●		HW, steam, and electric baseboard and finned-tube radiation heaters.
	238239.13	Cabinet Unit Heaters				●					●	●		Cabinet unit heaters with hot-water, steam, and electric-resistance coils.
	238239.16	Propeller Unit Heaters				●					●	●		Propeller unit heaters with hot-water, steam, and electric-resistance coils.
	238239.19	Wall and Ceiling Unit Heaters				●					●	●		Wall and ceiling electric unit heaters.
	238313	Radiant-Heating Electric Cables				●					●	●		Electric cables for ceilings and floors, snow and ice melting, and freezer-floor frost prevention.

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238316	Radiant-Heating Hydronic Piping				●					●	●		Embedded pipes, tubes, manifolds, fittings, piping specialties, and controls.
238323	Radiant-Heating Electric Panels				●					●	●		Factory-fabricated panels.
238413.16	Wetted-Element Humidifiers				●					●	●		Water-pressure atomizing humidifiers.
238413.19	Atomizing Humidifiers				●					●	●		Water-pressure or compress-air types.
238413.23	Direct-Steam-Injection Humidifiers				●					●	●		Externally-supplied steam.
238413.29	Self-Contained Steam Humidifiers				●					●	●		Electric resistance, electrode cylinder, and gas-fired steam generator humidifiers.
238413.36	Heat Exchanger Humidifiers				●					●	●		Steam-to-steam humidifiers.
238416.13	Outdoor, Mechanical Dehumidification Units				●					●	●		Outdoor, refrigerant-type mechanical dehumidification equipment.
238416.16	Indoor, Mechanical Dehumidification Units				●					●	●		Indoor, refrigerant-type mechanical dehumidification equipment.
DIVISION 26 - ELECTRICAL													
260513	Medium-Voltage Cables					●				●	●		Cables, splices, terminations, connectors, and fault indicators for 2001 to 35,000 V.
260519	Low-Voltage Electrical Power Conductors and Cables					●				●	●		Building wires, cables, connectors, splices, and terminations rated 2000 V and less.
260523	Control-Voltage Electrical Power Cables					●				●	●		Optical-fiber, twisted pair, low-voltage control cabling; and control -circuit conductors.
260526	Grounding and Bonding for Electrical Systems					●				●	●		Methods and materials for grounding systems and equipment.
260529	Hangers and Supports for Electrical Systems					●				●	●		Hangers, supports, and concrete bases.
260533	Raceways and Boxes for Electrical Systems					●				●	●		Conduit; pull, junction, and outlet boxes; and electrical cabinets.
260536	Cable Trays for Electrical Systems					●				●	●		Ladder, trough, and single-rail types; steel, aluminum, stainless steel, and fiberglass.
260539	Underfloor Raceways for Electrical Systems					●				●	●		Ducts, boxes, fittings, and accessories.
260543	Underground Ducts and Raceways for Electrical Systems	●				●			●	●	●		Manholes, handholes, and underground ducts.
260544	Sleeves and Sleeve Seals for Electrical Raceways and Cabling					●				●	●		Sleeves and seals for penetrations through floors and walls.
260548.16	Seismic Controls for Electrical Systems					●				●	●		Seismic criteria and seismic restraints and supports.
260553	Identification for Electrical Systems					●				●	●		Labels, markers, tags, ties, tape, bands, and signs.
260573.13	Short-Circuit Studies					●				●	●		Fault-current and protective device short-circuit studies.
260573.16	Coordination Studies					●				●	●		Fault-current and protective device coordination studies.
260573.19	Arc-Flash Hazard Analysis					●				●	●		Fault-current and protective device arc-flash studies.
260800	Commissioning of Electrical Systems									●		●	Requirements and procedures for commissioning electrical systems.
260913	Electrical Power Monitoring and Control					●				●	●		Remote and local monitoring, metering, and control of individual circuits.
260923	Lighting Control Devices					●				●	●		Time switches, photoelectric relays, occupancy sensors, and multipole lighting controls.
260933	Central Dimming Controls					●				●	●		Control network and stations, dimmer cabinets, and dimmers.
260936	Modular Dimming Controls					●				●	●		Wall-box multiscene and multipreset modular dimming controls.

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Section No.	Section Title	Architectural			Building Eng.			Sitework		Multidiscipline			Description
		Arch	Hist	Int	Mech	Elec	Str	Lan	SC	Comp	AE	CX	
260943.16	Addressable-Luminaire Lighting Controls					●				●	●		Controls based on digital addressable lighting interface (DALI) technology.
260943.23	Relay-Based Lighting Controls					●				●	●		Panels using relays for switching; panels networked BAS.
261116.11	Secondary Unit Substations with Switchgear Secondary					●				●	●		Indoor and outdoor units, with metal-clad and metal-enclosed switchgear primary, m-v transformers, metal-clad switchgear secondary sections.
261116.12	Secondary Unit Substations with Switchboards Secondary					●				●	●		Indoor and outdoor units; with metal-enclosed switchgearm-v transformers, metal-enclosed switchboard secondary.
261116.13	Secondary Unit Substations with Motor Control Center Secondary					●				●	●		Indoor and outdoor units; with m-v transformers, and motor-control center secondary.
261213	Liquid-Filled, Medium-Voltage Transformers					●				●	●		MV, substation transformers, with primary and secondary bushings within or without air-terminal enclosures.
261216	Dry-Type, Medium-Voltage Transformers					●				●	●		MV transformers with primary and secondary bushings within or without air-terminal enclosures.
261219	Pad-Mounted, Liquid-Filled, Medium-Voltage Transformers					●				●	●		Liquid-filled, MV transformers, with primary and secondary bushings within or without air-terminal enclosures.
261323	Medium-Voltage, Metal-Enclosed Switchgear					●				●	●		Indoor and outdoor, MV, metal-enclosed switchgear rated more than 1000 V through 38,000 V.
261326	Medium-Voltage, Metal-Clad Switchgear					●				●	●		Indoor and outdoor, MV, metal-clad switchgear rated more than 1000 V through 38,000 V.
261329	Medium-Voltage, Pad-Mounted Switchgear					●				●	●		Indoor and outdoor, dead front, remotely controlled insulated vacuum load and fault interrupting switchgear rated to 25,000 V.
262213	Low-Voltage Distribution Transformers					●				●	●		Single- and three-phase distribution dry-type rated 600 V or less and up to 1500 Kva.
262216	Low-Voltage Buck-Boost Transformers					●				●	●		Buck-boost dry-type transformers.
262300	Low-Voltage Switchgear					●				●	●		Metal-enclosed, circuit-breaker type; 1000V and less.
262313	Paralleling Low-Voltage Switchgear					●				●	●		Low-voltage type, 1000V and less; medium-voltage type, 5 to 15 kV; for multiple generator operation.
262413	Switchboards					●				●	●		Service and distribution switchboards, 600 V and less.
262416	Panelboards					●				●	●		Distribution, branch circuit, and surge-suppression panel boards and load centers.
262416.16	Electronically Operated Circuit-Breaker Panelboards					●				●	●		Manual and programmable panelboards with electronically operated circuit breakers using low-voltage or digital control circuits to control equipment.
262419	Motor-Control Centers					●				●	●		Full-reduced-voltage; for constant-, variable-, and multiple-speed motors; 600 V.
262500	Enclosed Bus Assemblies					●				●	●		Plug in & feeder (600 V or less).
262713	Electricity Metering					●				●	●		Energy and demand metering by utility and Owner.
262726	Wiring Devices					●				●	●		Switches, receptacles, lighting-control devices, and plates.
262733	Power Distribution Units					●				●	●		Voltage regulators, static electronic voltage regulators, and power distribution units.
262743	Electric-Vehicle Service Equipment - AC Level 1 and Level 2					●				●	●		Charging equipment for AC Level 1 and 2.
262746	Electric Vehicle Service Equipment - DC Level 1 and Level 2					●				●	●		Charging equipment for DC Level 1 and 2.

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262813	Fuses					●				●	●		Cartridge type (600 V and less); plug type (125 V and less); fuse adapters; spare-fuse cabinet.
262816	Enclosed Switches and Circuit Breakers					●				●	●		Fusible, nonfusible, receptacle, shunt trip, and molded-case switches; molded-case circuit breakers; enclosures.
262913.03	Manual and Magnetic Motor Controllers					●				●	●		Manual, reduced- and full-voltage start magnetic motor controllers.
262913.06	Soft-Start Motor Controllers					●				●	●		Reduced-voltage start motor controllers.
262923	Variable-Frequency Motor Controllers					●				●	●		Solid-state, pulse-width modulated, constant- and variable-torque; VFCs; rated 600 V and less.
262933	Controllers for Fire-Pump Drivers				●	●				●	●		Full- and limited-service, electric-driver controllers; and diesel-driver controllers.
263100	Photovoltaic Collectors					●				●	●		Photovoltaic laminates, modules, charge controllers, inverters, and mounting structures.
263213.13	Diesel Emergency Engine Generators					●				●	●		Diesel-driven emergency and standby generators.
263213.14	Diesel Engine Generators					●				●	●		Diesel-driven non-emergency (prime and industrial) generators.
263213.16	Gaseous Emergency Engine Generators					●				●	●		Natural gas and liquified petroleum (LP)-driven emergency and standby generators.
263213.17	Gaseous Engine Generators					●				●	●		Natural gas and liquifield petroleum (LP)-driven non-emergency (prime and industrial) engine generators.
263213.19	Bi-Fuel Emergency Engine Generators					●				●	●		Diesel start, natural gas powered emergency and standby generators.
263213.20	Bi-Fuel Engine Generators					●				●	●		Diesel start, natural gas powered prime and industrial engine generators.
263223.13	Horizontal-Axis Wind Turbines					●				●	●		Horizontal-axis, small-scale wind turbines.
263223.16	Vertical-Axis Wind Turbines					●				●	●		Vertical-axis, small-scale wind turbines.
263323.11	Central Battery Equipment for Emergency Lighting					●				●	●		Central battery equipment for standby power to emergency lighting circuits.
263343	Battery Chargers					●				●	●		Battery chargers used to automatically control and maintain the charge on emergency engine generator start batteries.
263353	Static Uninterruptible Power Supply					●				●	●		3-phase, on-line, double conversion units rated 5 to 750 kVA for systems (600 V and less).
263533	Power Factor Correction Equipment					●				●	●		Capacitors and automatic power-factor correction units for 600 V and less.
263600	Transfer Switches					●				●	●		Automatic, nonautomatic, and bypass/isolation.
264113	Lightning Protection for Structures					●				●	●		Protection for buildings and site components.
264313	Surge Protection for Low-Voltage Electrical Power Circuits					●				●	●		Field-mounted surge protective devices (SPDs) 1000-V and less.
265113	Incandescent Interior Lighting					●				●	●		Interior incandescent luminaires and lamps.
265116	Fluorescent Interior Lighting					●				●	●		Interior fluorescent cove, down, flood, wall, linear and track lighting.
265119	Led Interior Lighting					●				●	●		Interior chandelier, cove, down, flood, highbay/lowbay/industrial, wall mount, linear, step and track LED lighting systems.
265123	Hid Interior Lighting					●				●	●		Interior highbay, lowbay and industrial HID fixtures.

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		Arch	Hist	Int	Mech	Elec	Str	Lan	SC	Comp	AE	CX	
265213	Emergency and Exit Lighting					●				●	●		Emergency lighting, except for combination LED sign/halogen fixtures.
265561	Theatrical Lighting					●				●	●		Dimmer racks; control console and devices; distribution components; lighting fixtures.
265613	Lighting Poles and Standards					●		●		●	●		Standards and lowering devices for suspension of lighting fixtures and other accessories.
265617	Fluorescent Exterior Lighting					●		●		●	●		Exterior fluorescent luminaires, including bollards, boarder, canopy, and decorative post top lighting.
265619	Led Exterior Lighting					●		●		●	●		Exterior LED luminaires, including bollards, boarder, canopy, and decorative post top lighting.
265621	Hid Exterior Lighting					●		●		●	●		Exterior HID luminaires, including area and site, bollards, boarder, canopy, decorative post top, and roadway lighting.
265668	Exterior Athletic Lighting					●		●		●	●		Outdoor lighting for sports fields.
DIVISION 27 - COMMUNICATIONS													
270526	Grounding and Bonding for Communications Systems					●				●	●		Grounding for communications systems and equipment; for reliable signal reference.
270528	Pathways for Communications Systems					●				●	●		Conduits, wireways, surface pathways, boxes and enclosures, and handholes and boxes.
270529	Hangers and Supports for Communications Systems					●				●	●		Hangers, supports, and concrete bases.
270536	Cable Trays for Communications Systems					●				●	●		Ladder, trough wire basket, and single-rail type; steel, aluminum, stainless steel, and fiberglass.
270543	Underground Pathways and Structures for Communication Systems					●				●	●		Ducts, pathways, handholes, manholes, and accessories for OSP and CO-OSP.
270544	Sleeves and Sleeve Seals for Communications Pathways and Cabling					●				●	●		Sleeves and seals for penetrations through floors and walls.
270548.16	Seismic Controls for Communications Systems					●				●	●		Seismic criteria and seismic restraints and supports.
270553	Identification for Communications Systems					●				●	●		Labels, markers, tags, ties, tape, bands, and signs.
271100	Communications Equipment Room Fittings					●				●	●		Telecommunications backboards, boxes, and enclosures
271116	Communications Racks, Frames, and Enclosures					●				●	●		19- and 23-inch wide and OpenRack compliant IT racks.
271313	Communications Copper Backbone Cabling					●				●	●		Copper backbone cables, connecting hardware, and cable identification systems.
271323	Communications Optical Fiber Backbone Cabling					●				●	●		Optical fiber backbone cables, connecting hardware, and cable identification systems.
271333	Communications Coaxial Backbone Cabling					●				●	●		Coaxial backbone communications cabling and fittings.
271513	Communications Copper Horizontal Cabling					●				●	●		Copper horizontal cables, connecting hardware, and cable identification systems.
271523	Communications Optical Fiber Horizontal Cabling					●				●	●		Optical fiber horizontal cables, connecting hardware, and cable identification systems.
271533	Communications Coaxial Horizontal Cabling					●				●	●		Coaxial horizontal communications cabling and fittings.
271611	Communications Hybrid Cabling					●				●	●		Combined copper and fiber optic cabling.
274133	Master Antenna Television System					●				●			MATV with options for off-air antennas, CATV, or broadcast satellite service.

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Section No.	Section Title	Architectural			Building Eng.			Sitework		Multidiscipline			Description
		Arch	Hist	Int	Mech	Elec	Str	Lan	SC	Comp	AE	CX	
275116	Public Address Systems					●				●			Amplifiers, speakers, and microphones.
275119.11	Sound Masking Systems					●				●			Electronic noise generators, amplifiers, speakers, and controls.
275123.20	Commercial Intercommunications and Program Systems					●				●			Manually and Microprocessor-switched intercommunications and program systems.
275123.31	Residential Intercommunications and Access Control Systems					●				●			Manually and microprocessor-switched intercommunications and access control.
275123.50	Educational Intercommunications and Program Systems					●				●	●		Manually and microprocessor-switched systems.
275223	Nurse Call/Code Blue Systems					●				●			Visual/tone; and microprocessor-based, addressable, audiovisual/voice system.
275313	Clock Systems					●				●			Master and secondary clocks and signal devices; interface with intercom and public address systems.
DIVISION 28 - ELECTRONIC SAFETY AND SECURITY													
281300	Access Control Software and Database Management					●				●			Computer controlled, with interface to other facility management systems.
281500	Access Control Hardware Devices					●				●	●		Push buttons, card readers, and other security hardware.
282000	Video Surveillance					●				●	●		Cameras, data transmission wiring, monitors, and control equipment.
283100	Intrusion Detection					●				●	●		Detection devices, controls, and alarms.
283121	Area and Perimeter Intrusion Detection					●				●	●		Detection devices, controls, and alarms on the site perimeter.
284400	Refrigerant Detection and Alarm				●	●				●	●		Monitors, alarms, breathing apparatus, and ventilation equipment interlocks.
284621.11	Addressable Fire-Alarm Systems					●				●	●		Systems with addressable initiating devices and conventional or addressable notification appliances.
284621.13	Conventional Fire-Alarm Systems				●	●				●	●		Small systems for buildings relying on zoned fire-alarm concept.
284700	Mass Notification Systems					●				●	●		Mass notification systems for single buildings, multiple buildings on a small campus, arenas, athletic or entertainment fields, or other local-area facilities.
285211	Detention Monitoring and Control Systems					●				●	●		Monitoring and control of doors, gates, and related items for detention facilities.
DIVISION 31 - EARTHWORK													
311000	Site Clearing	●			●	●		●	●	●	●		Clearing, grubbing, vegetation protection, stripping and stockpiling topsoil and rock, and disconnecting utilities.
312000	Earth Moving	●			●	●	●	●	●	●	●		Excavating, filling and backfilling, compacting, and grading.
312319	Dewatering	●			●				●	●	●		Temporary construction dewatering requirements for ground-water control.
313116	Termite Control	●						●		●	●		Chemical soil treatment, borate wood treatment, bait stations, and permanent metal mesh barriers.
315000	Excavation Support and Protection	●					●		●	●	●		Temporary systems; soldier piles and lagging, sheet piling, tiebacks, and bracing.
316213	Concrete Piles	●					●			●	●		Driven precast, prestressed concrete piles.
316216	Steel Piles	●					●			●	●		Driven steel H-section piles.
316219	Timber Piles	●					●			●	●		Driven preservative-treated round timber piles.

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	Section No.	Section Title	Architectural			Building Eng.			Sitework		Multidiscipline			Description
			Arch	Hist	Int	Mech	Elec	Str	Lan	SC	Comp	AE	CX	
	316223	Composite Piles	●					●			●	●		Driven concrete-filled steel shell and steel pipe piles.
	316316	Auger Cast Grout Piles	●					●			●	●		Piles excavated by auger drilling and filled with grout.
	316329	Drilled Concrete Piers and Shafts	●					●			●	●		Dry-installed and slurry-displacement-installed types.
DIVISION 32 - EXTERIOR IMPROVEMENTS														
	321216	Asphalt Paving	●			●	●		●	●	●	●		Paving, overlays, surface treatments, asphalt curbs, asphalt traffic-calming devices, cold milling, and hot-mix patching.
	321223	Imprinted Asphalt	●			●	●		●	●	●	●		Embossing patterns in new or existing asphalt pavement.
	321313	Concrete Paving	●			●	●		●	●	●	●		Concrete curbs and gutters, walks, driveways, parking lots, and miscellaneous paving.
	321316	Decorative Concrete Paving	●						●	●	●	●		Surface-imprinted, stamped, stencil-patterned, or stained finish concrete paving.
	321373	Concrete Paving Joint Sealants	●						●	●	●	●		Sealants for concrete and asphalt pavement joints.
U	321400	Unit Paving	●						●	●	●	●		Brick, asphalt, concrete, and stone pavers on aggregate, mortar, and bituminous setting beds.
U	321443	Porous Unit Paving	●						●	●	●	●		Concrete, grid-type and interlocking type with openings between units.
	321713	Parking Bumpers	●			●	●		●	●	●	●		Wheel stops applied to asphalt or concrete pavement.
	321716	Manufactured Traffic-Calming Devices	●			●	●			●	●	●		Preformed rubber or plastic traffic-calming devices applied to asphalt or concrete pavement.
	321723	Pavement Markings	●			●	●		●	●	●	●		Painted markings applied to asphalt or concrete pavement.
	321726	Tactile Warning Surfacing	●						●	●	●	●		Detectable warning tiles and mats located in concrete walkways; detectable warning pavers.
	321813	Synthetic Grass Surfacing	●						●		●	●		Synthetic grass surfacing, or artificial turf, intended for use in sports.
	321816.13	Playground Protective Surfacing	●						●		●	●		Impact-attenuating, protective surfacing for use under public playground equipment.
	323113	Chain Link Fences and Gates	●			●	●		●	●	●	●		Standard chain-link fencing systems with swing or horizontal-slide gates and gate operators.
	323113.53	High-Security Chain Link Fences and Gates	●							●	●	●		High-security chain-link fencing systems with swing or horizontal-slide gates and gate operators.
	323116	Welded Wire Fences and Gates	●						●		●	●		Metallic-coated-steel, welded-wire fences and gates.
	323119	Decorative Metal Fences and Gates	●						●		●	●		Manufactured and custom-designed fences and gates made from steel, aluminum, or metallic-coated steel.
	323119.53	Decorative Metal Security Fences and Gates	●						●		●	●		Metallic-coated-steel security fences and gates.
	323223	Segmental Retaining Walls	●					●	●	●	●	●		Dry-laid concrete masonry unit retaining walls.
	323300	Site Furnishings	●						●		●	●		Seating, tables, bicycle racks and lockers, trash and ash receptacles, planters, and bollards for outdoor locations.
	328400	Planting Irrigation	●			●			●	●	●	●		Heads, pipes, and controls.
	329113	Soil Preparation	●						●	●	●	●		Planting soils specified according to quantities of amendments (compost, lime, sulfur, fertilizer, etc.); layered soil assemblies.

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	Section No.	Section Title	Architectural			Building Eng.			Sitework		Multidiscipline			Description
			Arch	Hist	Int	Mech	Elec	Str	Lan	SC	Comp	AE	CX	
	329115	Soil Preparation (Performance Specification)	●						●	●	●	●		Planting soils specified according to tested performance requirements (particle size, organic matter percentage, pH, CEC, fertility, etc.); layered soil assemblies.
U	329200	Turf and Grasses	●						●	●	●	●		Seeded, sodded, plugged, and sprigged turf and meadows; pesticides; erosion-control materials; turf renovation; and grass paving.
U	329300	Plants	●						●	●	●	●		Nursery-grown trees and other plants, pesticides, tree stabilization, tree watering devices, landscape edgings, and tree grates.
	329600	Transplanting	●						●	●	●	●		Transplanting non-nursery-grown trees; tree stabilization; watering devices.
DIVISION 33 - UTILITIES														
	330500	Common Work Results for Utilities	●			●			●	●	●	●		Basic piping materials and methods.
	331113	Potable Water Supply Wells				●	●				●	●		Drilled and driven wells and well pumps.
	334200	Stormwater Conveyance				●				●	●	●		Gravity and forced storm piping, underground structures, and specialties.
	334600	Subdrainage	●			●			●	●	●	●		Drainage for foundations, underslabs, plaza decks, retaining walls, and landscaped areas.
	334713	Pond and Reservoir Liners	●						●	●	●	●		Geomembrane liners and covers.
	336313	Underground Steam and Condensate Distribution Piping				●					●	●		Underground piping serving one or more buildings.
	337149.13	Overhead Medium-Voltage Wiring					●				●	●		Medium and secondary voltage (up to 35 kV).
	337753	Medium-Voltage Utility Reclosers					●				●	●		Overhead, automatic circuit reclosers.

Legend:

Arch = Architecture Library
Hist = Historic Preservation Library
Int = Interiors Library

Mech = Mechanical Library
Elec = Electrical Library
Str = Structural Library

Lan = Landscape Architecture Library
SC = Site Civil Library

Comp = Comprehensive Library
AE = Building A/E Library
CX = Commissioning Library

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Zero-Emission Bus Fleet Transition Study

DRAFT

September 2020

Prepared by:



AECOM



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Executive Summary

MTS engaged the Center for Transportation and the Environment (CTE) to perform a zero-emission bus (ZEB) transition study in March 2018. The study's goal is to create a plan for a 100% zero-emission fleet by 2040 to be in compliance with the Innovative Clean Transit (ICT) regulation enacted by the California Air Resources Board (CARB). The results of the study will be used to inform MTS Board members and educate MTS staff of estimated costs, benefits, constraints, and risks to guide future planning and decision making. In addition to the ZEB transition study, MTS has initiated a pilot program to test ZEB technology in their service to better understand the technology and inform decision making. In 2019, MTS installed six (6) 62.5-kilowatt (kW) ChargePoint vehicle chargers at the Imperial Avenue Division (Imperial Ave) and deployed six (6) 40-foot New Flyer battery-electric buses (BEBs). In 2020, MTS installed an additional two (2) ChargePoint chargers each at South Bay Bus Maintenance Facility (South Bay), Kearny Mesa Division (Kearney Mesa), and the East County Bus Maintenance Facility (East County) to facilitate BEB pilot operations throughout the service area. Finally, two (2) 40-foot Gillig BEBs are scheduled for deployment in late 2020.



Zero-emission technologies considered in this study include BEBs and hydrogen fuel cell-electric buses (FCEBs). BEBs and FCEBs have similar electric drive systems that feature a traction motor powered by a battery. The primary difference between BEBs and FCEBs, however, is the amount of battery storage and how the batteries are recharged. The energy supply in a BEB comes from electricity provided by an external source, typically the local utility's grid, which is used to recharge the batteries. The energy supply for an FCEB is completely on-board, where hydrogen is converted to electricity using a fuel cell. The electricity from the fuel cell is used to recharge the batteries to extend the range. The electric drive components and energy source for a BEB and FCEB are illustrated in **Figure 1.**

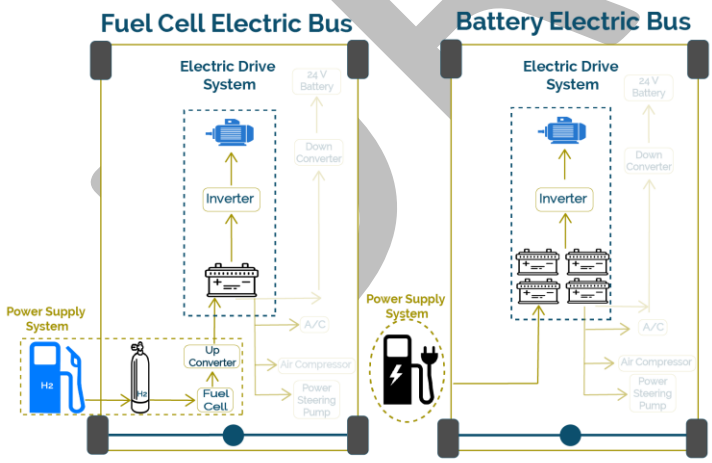


Figure ES-1 – Battery and Fuel Cell Bus Schematic

On December 14, 2018, CARB enacted the ICT regulation with a state wide goal, requiring all California public transit agencies to gradually transition to a 100 percent (%) zero-emission bus (ZEB) fleet. The ruling specifies the timeline for the required annual percentage of new bus procurements that must be zero-emission, starting with 25% of new bus purchases in 2023 and ramping up to 100% of new bus purchase in 2029. Following this schedule is intended to lead to a 100% zero-emission fleet in 2040. However, there are some waivers that allow for purchase deferrals in the event of economic hardships or if the technology has not matured to meet the service requirements of a given route. These concessions recognize that the technologies may cost more than current technologies on a life cycle basis and the technology may not currently meet all service requirements.

CTE worked closely with MTS staff throughout the project to develop the approach, define the assumptions, and confirm the results. The approach for the study is based on analysis of five (5) scenarios:

1. Baseline
2. BEB Depot-Only Charging
3. BEB Depot and On-Route Charging
4. FCEB Only
5. Mixed BEB and FCEB

A primary assumption for the transition analysis is that MTS is unable to increase fleet size as a strategy to overcome BEB range limitations to achieve a 100% ZEB transition due to space constraints present at the current MTS depots. The Baseline scenario assumes that there are no changes to the current technology for bus procurements (e.g. compressed natural gas [CNG], gasoline, diesel, propane) and is used for comparison to the other ZEB transition scenarios. The BEB Depot-Only Charging and FCEB Only scenarios are used as the 'bookends' to help identify potential constraints or risks in scaling to fleetwide adoption of ZEBs that may not be readily apparent from pilot-bus deployments.

The BEB Depot-Only Charging scenario assumes that vehicles are charged only at the depot when they are not in-service. In the BEB Depot-Only scenario, BEBs are only deployed in-service where analysis determines that they can complete specified service blocks (e.g. meet the daily mileage requirements). The BEB Depot-Only Charging scenario meets the requirements of the CARB ICT regulation in that BEBs will be utilized for all service that meet the daily mileage requirements. The BEB Depot and On-Route Charging scenario was developed to mitigate the potential need for additional bus purchases when a one-for-one replacement with a depot-charged BEB was not possible. Finally, a Mixed BEB and FCEB scenario was developed with the underlying assumption that neither technology is suitable for 100% of the fleet replacement due to inherent constraints.

Improvements in technology beyond the current state are expected, but there is no indication of when we may see the BEB technology improve to the point of one-for-one replacement of internal combustion engine vehicles or when the cost of FCEB or hydrogen fuel will decrease to cost competitive levels. As a result, when considering all the various scenarios, this study can be used to develop an understanding of the range of costs that may be expected for MTS' ZEB transition.

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The underlying basis for the assessment is CTE's ZEB Transition Planning Methodology, which is a complete set of analyses used to inform agencies in converting their fleets to zero-emission that has been developed over the last decade. The methodology consists of data collection, analysis, and assessment stages; these stages are sequential and build upon findings in previous steps. The assessment allows CTE to develop engineering estimates for vehicle efficiency and energy consumption to project the range of given vehicle technologies in MTS service. CTE collected sample data from sixteen (16) MTS routes and used current ZEB specifications to estimate range and energy consumption on all MTS routes and blocks under varying environmental and passenger loading conditions. Once this information was established, CTE completed the following assessment to develop cost estimates for each transition scenario.

1. Fleet Assessment
2. Fuel Assessment
3. Facilities Assessment
4. Maintenance Assessment
5. Total Cost of Ownership Assessment

These assessments result in a total cost of ownership, inclusive of capital investments (ZEBs and fueling infrastructure) and operating expenses (fuel and maintenance) over the transition period (2019 – 2040) for each transition scenario. The table and figure below provide a side-by-side comparison of the cumulative transition costs for each scenario.

Table ES-1 – Total Cost of Ownership, by Scenario

	Baseline	BEB Depot Only	BEB Depot + On-Route	FCEB Only	Mixed BEB and FCEB
Fleet	$ 808,294,000	$ 1,086,465,000	$ 1,105,467,000	$ 1,355,484,000	$ 1,181,414,000
Fuel	$ 252,569,000	$ 298,234,000	$ 314,657,000	$ 462,731,000	$ 323,380,000
Infrastructure	-----	$ 120,305,000	$ 131,489,000	$ 73,394,000	$ 164,915,000
Maintenance	$ 762,263,000	$ 773,287,000	$ 782,339,000	$ 812,484,000	$ 804,691,000
Total	**$ 1,823,126,000**	**$ 2,278,291,000**	**$ 2,333,952,000**	**$ 2,704,093,000**	**$ 2,474,400,000**
Incremental Cost Over Baseline		**$ 455,165,000**	**$ 510,826,000**	**$ 880,967,000**	**$ 651,274,000**
% ZEB in 2040	**2%**	**77%**	**84%**	**95%**	**95%**

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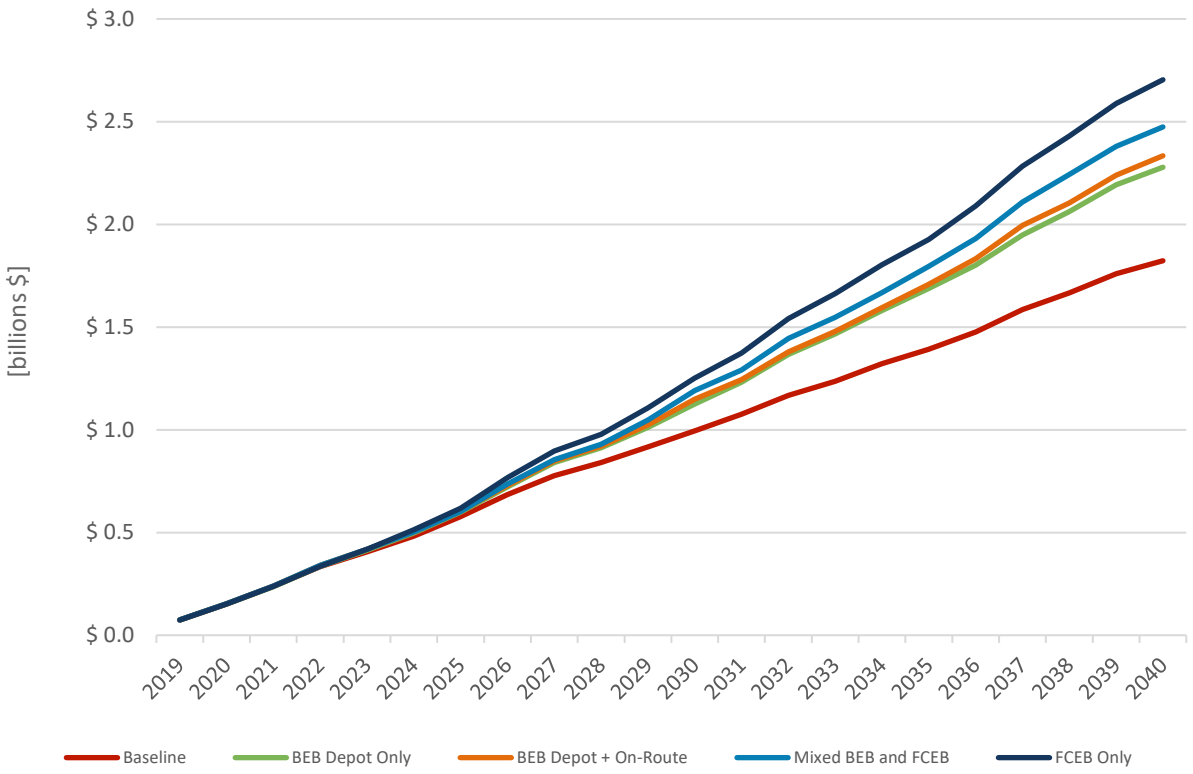


Figure ES-1 – Total Cost of Ownership, by Scenario

If MTS selects an all BEB strategy, incremental ZEB transition costs are likely to fall between approximately $455 million for the BEB Depot-Only Charging scenario, where approximately 77% of MTS' fleet is replaced with BEBs by 2040, to $511 million for the BEB Depot and On-Route Charging scenario, where approximately 84% of MTS' fleet is replaced with BEBs by 2040. The difference in incremental cost for these scenarios is a result of more vehicles being transitioned due to the use of on-route charging infrastructure, the incremental cost of the on-route charging infrastructure, as well as higher utility charges as a result of on-route charging because higher demand charges are incurred throughout the on-peak when on-route charging will occur. It should be noted that this analysis includes all vehicle lengths and types (40', 45', 60', and cutaways/minibus). While manufacturers have produced BEBs for each of the vehicle lengths and types used at MTS, only 40' and 60' BEBs have completed Altoona testing and are applicable under the CARB ICT regulation. The BEB Depot-Only Charging scenario meets the CARB ICT regulation requirements assuming a waiver for depot-charged technology that does not meet service requirements is granted as is clearly detailed in the rule.

If MTS selects an FCEB Only strategy, incremental ZEB transitional costs are estimated at approximately $881 million for replacement of approximately 95% of the fleet with FCEBs by 2040. The remaining 5% would be replaced during the next vehicle replacement cycle after 2040, as it is anticipated that by 2040, FCEB technology will have advanced such that all MTS service could be completed using FCEBs. A primary assumption for the FCEB analysis is that FCEB vehicles will be available for all vehicle types and lengths during the transition period. Currently, FCEBs have only been produced in 40' and 60' models. In addition, due to the limited

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deployment of FCEBs in service in the United States, FCEB and hydrogen fuel costs remain high. These costs are expected to come down in the future as more vehicles are deployed and as hydrogen production ramps up; however, there is currently no basis for assuming future cost reductions. Also, the current experience with FCEB maintenance cost is high due to the fact that much of the data is based on older vehicles that are no longer under warranty and require the support of a European company. As such, there are more unknowns associated with the incremental costs for the FCEB scenarios, and costs are likely to be more subject to change. It is expected that the cost of the FCEB Only and Mixed Fleet scenarios will come down if a larger number of vehicles and infrastructure are sold within the U.S., but the extent is still unknown. Significant investments in hydrogen production and distribution infrastructure is required and will take years to develop to gain a better understanding of the long-term costs for FCEB Only deployment.

As expected, with an incremental cost of approximately $651 million, the Mixed BEB and FCEB scenario that transitions approximately 95% of MTS' fleet to ZEB by 2040, has an incremental cost that falls between an all BEB and all FCEB deployment. Though the costs are considerably cheaper for a mixed fleet deployment than FCEB Only, there are expected to be complexities with managing the fleet through the transition that would require maintaining existing internal combustion engine vehicle infrastructure (CNG, propane, and gasoline), installing new BEB infrastructure, and installing new FCEB fueling infrastructure. Space constraints at the depot will require careful planning if this path is selected.

MTS may accumulate ZEB credits from their procurement of ZEBs prior to 2023. These credits can be used in place of ZEB purchases to satisfy CARB's ZEB procurement requirements beginning in 2023. With the purchase of eight (8) BEBs to support the ZEB pilot operations in 2019 and 2020, and the purchase of twelve (12) BEBs to support a new service in 2022, MTS will have nineteen (19) ZEB credits that can be applied to ZEB purchase requirements in 2023 and beyond. The use of these ZEB credits is not considered in the analysis of the transition scenarios.

As a result, recommendations for MTS are as follows:

1. **Remain proactive with ZEB deployments:** MTS has been proactive in the purchase and deployment of BEBs through their ZEB Pilot Program. Significantly more development, data collection, and analyses are needed before the technology is ready for fleetwide deployment. For example, BEBs will require charge management software, hardware, and standards to manage the fleetwide transition. For FCEB deployment to be competitive, lower fuel costs that will evolve over time with the production of hydrogen at scale is required. MTS should move forward carefully, taking advantage of various grant and incentive programs to offset the incremental cost for ZEB deployment. Incentive programs may be eliminated in future years as ZEB procurements are required instead of being optional.
2. **Target specific routes and blocks for early ZEB deployments:** MTS should consider the strengths of given ZEB technologies and focus those technologies on routes and blocks that take advantage of their efficiencies and minimizes the impact of the constraints related to the respective technologies. For example, depot-charged BEBs for shorter

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routes and blocks, on-route charged BEBs for mid-range routes with layovers at a transit center, and FCEBs for long routes or routes with higher speeds and/or heavier loads. These technologies cannot follow a "one-size-fits-all" approach from either a performance or cost perspective. Matching the technology to the service will be a critical best practice. Results from the ZEB Pilot Program will help to inform these decisions.

3. **Continue with BEBs and consider FCEBs:** At this stage, it is too early to tell which technology will dominate the market 10 to 20 years from now. Having capability to deploy both ZEB technologies creates an opportunity for MTS to fully assess BEBs and FCEBs to determine which technology can best meet the operational range requirements while being financially efficient and sustainable.

The transition to ZEB technologies represents a paradigm shift in bus procurement, operation, maintenance, and infrastructure. The technology requires significant development before it is ready to support fleetwide transitions. However, it is only through a continual process of deployment with specific goals for advancement that the industry can achieve the goal of economically sustainable, zero-emission public transit. Ultimately, the ZEB technology that is most efficient and sustainable to operate will evolve into either the majority ZEB solution or the only ZEB solution. MTS, with endorsement and approval from their Board of Directors, has elected to pursue a mixed use scenario that will allow them to initially deploy BEBs and explore possible opportunities and funding mechanisms to deploy FCEBs in service where BEBs are not able to meet range requirements. MTS will continue to monitor technology improvements and funding availability to accelerate the transition to a 100% zero-emission fleet. Evaluation will be completed in annual updates provided to the MTS Board of Directors and CARB.

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Introduction

Founded in 1975, the San Diego Metropolitan Transit System (MTS) provides bus and light rail services to the urban areas of San Diego County and rural parts of East County, generating over 92 million passenger trips per year.

MTS engaged the Center for Transportation and the Environment (CTE) to perform a zero-emission bus (ZEB) transition study in March 2018. The study's goal is to create a plan for a 100% zero-emission fleet by 2040 to be in compliance with the Innovative Clean Transit regulation enacted by California Air Resources Board (CARB). The results of the study will be used to inform MTS Board members and educate MTS staff of estimated costs, benefits, constraints, and risks to guide future planning and decision making. In addition to the ZEB transition study, MTS has initiated a pilot program to test ZEB technology in their service to better understand the technology and inform decision making. In 2019, MTS installed six (6) 62.5-kilowatt (kW) ChargePoint vehicle chargers at the Imperial Avenue Division (Imperial Ave) and deployed six (6) 40-foot New Flyer battery-electric buses (BEBs). In 2020, MTS installed an additional two (2) ChargePoint chargers each at South Bay Bus Maintenance Facility (South Bay), Kearny Mesa Division (Kearney Mesa), and the East County Bus Maintenance Facility (East County) to facilitate BEB pilot operations throughout the service area. Finally, two (2) 40-foot Gillig BEBs are scheduled for deployment in late 2020.



Zero-emission technologies considered in this study include BEBs and hydrogen fuel cell-electric buses (FCEBs). BEBs and FCEBs have similar electric drive systems that feature a traction motor powered by a battery. The primary difference between BEBs and FCEBs, however, is the amount of battery storage and how the batteries are recharged. The energy supply in a BEB comes from electricity provided by an external source, typically the local utility's grid, which is used to recharge the batteries. The energy supply for an FCEB is completely on-board, where hydrogen is converted to electricity using a fuel cell. The electricity from the fuel cell is used to recharge the batteries, extending the range. The electric drive components and energy source for a BEB and FCEB are illustrated in **Figure 1**.

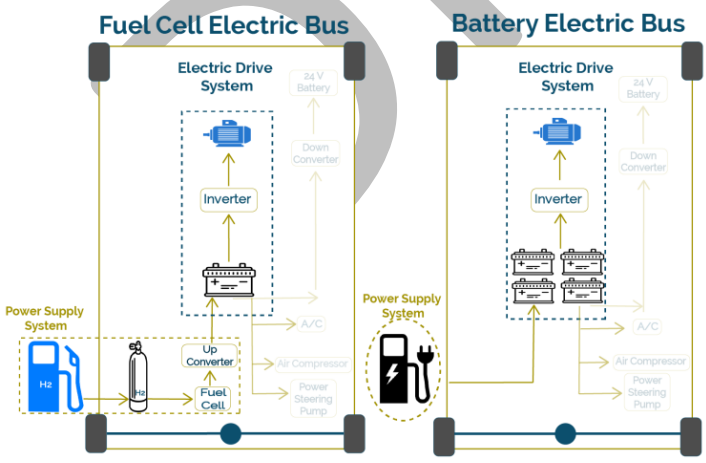


Figure 1 - Battery and Fuel Cell Electric Bus Schematic

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CARB's Innovative Clean Transit Regulation

On December 14, 2018, CARB enacted the Innovative Clean Transit (ICT) regulation requiring all California public transit agencies with the state wide goal to gradually transition to a 100% ZEB fleet. The ruling specifies the timeline for the required annual percentage of new bus procurements that must be zero-emission, starting with 25% of new bus purchases in 2023 and ramping up to 100% of new bus purchase in 2029. This section summarizes key elements of the ICT.

ZEB Purchase Requirements

MTS' fleet exceeds 100 buses and, as such, is considered a "large" agency by CARB. All new bus purchases must include a specified percentage of ZEBs in accordance with the following schedule:

Table 1 – CARB Innovative Clean Transit (ICT) ZEB Transition Timeline.

Starting January 1	Percent of New Bus Purchases	Purchase Discharge Criteria
2023	25%	If 850 ZEBs by 12/31/2020
2024	25%	If 1250 ZEBs by 12/31/2020
2025	25%	-
2026	50%	-
2027	50%	-
2028	50%	-
2029	100%	-

New bus purchase requirements may be set-aside in 2023 and 2024 if a minimum number of buses are purchased in each respective year across all transit agencies in California. Purchase of cutaway/minibus, over-the-road, double-decker, or articulated buses may be deferred until the latter of either January 1, 2026 or until a model of a given type has passed the "Altoona" bus testing procedure and obtained a Bus Testing Report. As of the date of this report, only heavy-duty 30', 35', 40' and 60' ZEBs have passed Altoona bus testing.

ZEB Bonus Credits

Agencies may earn ZEB Bonus Credits for early acquisition that may be used against future compliance requirements. To earn bonus credits, ZEBs must be placed into service according to the following schedule. Bonus credits expire December 31, 2028.

Table 2 - ZEB Bonus Credits Applied to CARB ICT Transition Schedule

Technology	Placed in Service	ZEB Bonus Credit
BEB	As of January 1, 2018	1
FCEB	As of January 1, 2018	2
FCEB	January 1, 2018 to December 31, 2022	1

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ZEB Credits

Although MTS is not expected to have ZEB Bonus Credits to utilize toward compliance, ZEBs purchased in advance of the new purchase requirements may be used as credits toward annual ZEB procurement compliance. As such, BEBs purchased in 2019 (6), 2020 (2), and planned for 2022 (12) represents nineteen (19) ZEB credits that may be applied toward purchase compliance with the ICT regulation in the early years of the transition.

ZEB Rollout Plan

MTS is required to submit a ZEB Rollout Plan that has been approved by their governing board by December 31, 2020. ZEB Rollout Plans must include all of the following components:

- A goal of full transition to ZEBs by 2040 with careful planning that avoids early retirement of conventional internal combustion engine buses;
- Identification of the types of ZEB technologies a transit agency is planning to deploy, such as BEBs and FCEBs;
- A schedule for construction of facilities and infrastructure modifications or upgrades, including charging, fueling, and maintenance facilities, to deploy and maintain ZEBs. This schedule must specify the general location of each facility, type of infrastructure, service capacity of an infrastructure, and a timeline for construction;
- A schedule for zero-emission and conventional internal combustion engine buses purchases and lease options. This schedule for bus purchases replacements must identify the bus types, fuel types, and number of buses;
- A schedule for conversion of conventional internal combustion engine buses to ZEBs, if any. This schedule for bus conversion must identify number of buses, bus types, the propulsion systems being removed and converted to;
- A description on how a transit agency plans to deploy ZEBs in disadvantaged communities as listed in the latest version of CalEnviroScreen at the time of the Rollout Plan is submitted;
- A training plan and schedule for ZEB operators and maintenance and repair staff; and
- Identification of potential funding sources.

A copy of the ZEB Rollout Plan is included in **Appendix A**.

Exemptions

Agencies may request exemption from ZEB purchase requirements in a given year due to circumstances beyond the transit agency's control. Acceptable circumstances include:

- Delay in bus delivery is caused by setback of construction schedule of infrastructure needed for the ZEB.
- Available depot-charged BEBs cannot meet a transit agency's daily mileage needs.
- Available ZEBs do not have adequate gradeability performance to meet the transit agency's daily needs
- When a required ZEB type for the applicable weight class based on gross vehicle weight rating (GVWR) is unavailable for purchase because the ZEB has not passed Altoona,

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cannot meet ADA requirements, or would violate any federal, state, or local regulations or ordinances.

- When a required ZEB type cannot be purchased by a transit agency due to financial hardship and the agency can demonstrate that they have applied for applicable ZEB funding mechanisms.

Reporting Requirements

Starting March 31, 2021, and continuing every year thereafter through March 31, 2050, each transit agency must submit an annual ICT ZEB compliance report by March 31 for the prior calendar year. The initial report must be submitted by March 31, 2021, and must include the number and information of active buses in the transit agency's fleet as of December 31, 2017.

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ZEB Transition Planning

ZEB Transition Planning Methodology

This study uses CTE's ZEB Transition Planning Methodology, which is a complete set of analyses used to inform agencies in converting their fleets to zero-emission that has been developed over the last decade. The methodology consists of data collection, analysis and assessment stages; these stages are sequential and build upon findings in previous steps. The work steps specific to this study are outlined below:

1. Planning and Initiation
2. Requirements Analysis
3. Service Assessment
4. Fleet Assessment
5. Fuel Assessment
6. Facilities Assessment
7. Maintenance Assessment
8. Total Cost of Ownership Assessment

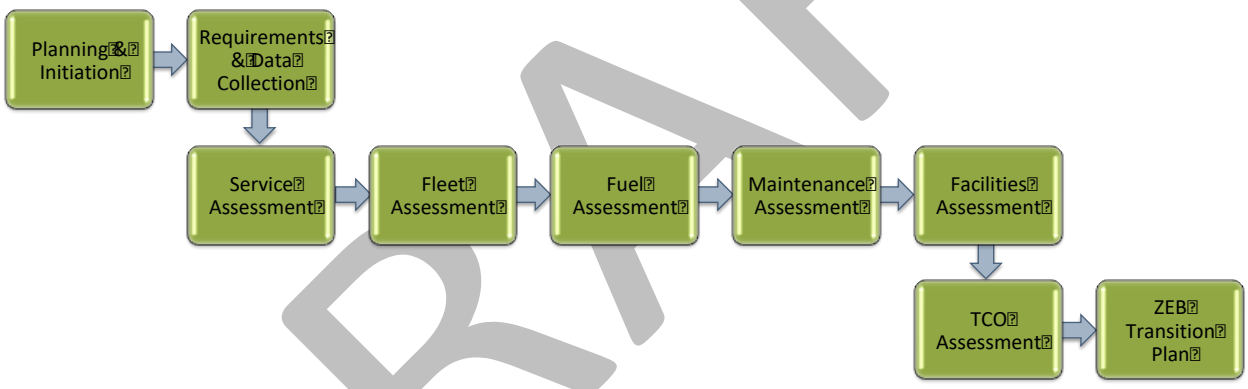


Figure 2 – CTE's ZEB Transition Study Methodology

The **Planning and Initiation** phase builds the administrative framework for the transition study. During this phase, the project team drafted the scope, approach, tasks, assignments and timeline for the project. CTE worked with MTS staff to plan the overall project scope and all deliverables throughout the full life of the study. CTE conducted an "Assumptions Workshop" to start the ***Requirements & Data Collection*** phase. The assumptions collected during this phase provide key parameters used in each of the Assessment phases that follow. CTE collected fleet, operational, maintenance, and facilities information to define the "As Is" or baseline scenario. CTE also collected route and block mileage and duty cycle information as the basis for the Service Assessment.

During the ***Service Assessment***, CTE worked with MTS staff to assess how MTS fleet vehicles are used and to identify service requirements. CTE leverages several different tools and methods, including route modeling and simulation software, and empirically-derived screening models based on real world operational data, to calculate expected energy efficiency, range,

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endurance, and energy consumption to identify any limitations or constraints to the application of electric vehicle technologies. Results from modeling were used to estimate achievability of every block in MTS' network using BEBs and FCEBs. The results from the Service Assessment were used to guide ZEB procurements in the Fleet Assessment and determine energy requirements (Depot Charging, On-Route Charging, and/or Hydrogen) in the Fuel Assessment.

The **Fleet Assessment** develops a projected timeline for replacement of current buses with ZEBs that is consistent with the agency's Fiscal Year 2019 fleet replacement plan. Multiple projection scenarios are created utilizing different combinations of ZEB technologies. This assessment also includes a projection of fleet capital cost over the transition lifetime and it can be optimized with regard to any state mandates, like CARB's ICT regulation, or to meet agency goals such as minimizing cost or maximizing service levels.

The **Fuel Assessment** merges the results of the Service Assessment and Fleet Assessment to determine annual fuel requirements and associated costs. The Fuel Assessment calculates energy costs through the full life of the transition for each scenario, including the agency's current internal combustion engine vehicles. To more accurately estimate BEB charging costs, a focused Charging Analysis is performed to simulate daily system-wide charging use. As current technologies are phased out in later years of the transition, the Fuel Assessment calculates the increasing energy requirements for ZEBs. The Fuel Assessment also provides a total energy cost over the transition lifetime.

The **Facilities Assessment** determines the necessary infrastructure to support the projected zero-emission fleet based on results from the Fleet Assessment and Fuel Assessment. The Facilities Assessment is calculated for each scenario used in the Fleet and Fuel Assessments. The result shows quantities of hydrogen and battery electric infrastructure and calculates associated costs.

The **Maintenance Assessment** calculates all projected fleet maintenance costs over the life of the project. This includes costs related to existing internal combustion engine vehicles remaining in the fleet, as well as new BEBs and FCEBs, calculated for each scenario.

The **Total Cost of Ownership Assessment** compiles results from the previous assessment stages and provides a comprehensive view of all associated costs, organized by scenario, over the transition lifetime.

Assessment Scenarios

The approach for this ZEB transition study is based on the creation and analysis of five (5) scenarios:

1. Baseline
2. BEB Depot-Only Charging
3. BEB Depot and On-Route Charging
4. FCEB Only
5. Mixed BEB and FCEB

The BEB Depot-Only Charging and FCEB Only scenarios are used as the 'bookends' to help identify potential constraints or risks in scaling to fleetwide adoption of ZEBs that may not be

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readily apparent from pilot-bus deployments. At the current state of technology, neither BEBs nor FCEBs have sufficient range to allow for a "one-for-one" replacement of all internal combustion engine buses. Improvements are expected to be made over time; however, there are significant challenges to overcome, and the timeline to achieve the goal is uncertain.

The Baseline scenario assumes that there are no changes to the current technology for bus procurements (e.g. compressed natural gas [CNG], gasoline, diesel, propane) and is used for comparison to the other ZEB transition scenarios. The Baseline scenario includes the scheduled BEB purchases from 2019 to 2022 as previously discussed. The BEB Depot-Only Charging scenario assumes that vehicles are charged only at the depot when they are not in-service. In the BEB Depot-Only scenario, BEBs are only deployed in-service where analysis determines that they can complete specified service blocks (e.g. meet the daily mileage requirements). The BEB Depot-Only Charging scenario meets the requirements of the CARB ICT regulation in that BEBs will be utilized for all service that meet the daily mileage requirements on an single charge.

MTS is unable to increase fleet size to accommodate fleet expansion potentially needed to support a 100% ZEB transition due to space constraints present at the current depots. As a result, the BEB Depot and On-Route Charging scenario was developed to mitigate the need for additional bus purchases and consider another alternative to meet a 100% ZEB fleet. In this scenario, BEBs are charged at the depots when not in-service and on-route where necessary to complete service requirements. The FCEB scenario assumes that FCEBs are utilized where based on analysis they meet daily service requirements. Finally, the Mixed BEB and FCEB scenario utilizes both BEB and FCEBs. The underlying assumption is that neither technology is suitable for 100% of the fleet replacement due to inherent constraints. However using a mixed fleet of BEBs and FCEBs can achieve, or nearly achieve, a 100% zero-emission fleet.

Due to the inherent nature of varying conditions over the period of a long-term fleet transition, it is necessary to establish a number of simplifying assumptions. These assumptions were developed based on discussions between CTE and MTS, and are as follows:

- Transition to a 100% ZEB fleet by 2040 to comply with the CARB ICT regulation
- No change in fleet size throughout the study period except for the addition of two (2) additional BEBs in 2020 support the ZEB Pilot Program and up to twelve (12) articulated vehicles to support service expansion from South Bay in 2022; the initial pilot buses (6) and buses scheduled for purchase in 2021 were used for vehicle replacement and did not add to the fleet size.
- Due to space constraints at the MTS depots, it is not feasible to increase fleet size to support ZEB deployment. Costs for a new depot, estimated at $185 million are not included in the analysis.
- Current fleet composition (Fiscal Year 2019 Fleet Plan) used for the baseline scenario
- Current planned fleet replacement cycles
- 12-year bus lifespan assumed for future heavy duty transit buses
- 7-year lifespan for cutaway vehicles
- Costs expressed in 2019 dollars with no escalation
- Current battery sizes for BEBs and fuel tank sizes for FCEBs are based on existing specifications for vehicles that have completed Altoona testing

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- A 5% improvement in battery capacity (for BEB) and efficiency (FCEB) every two years
- A battery replacement with occur at the mid-life of each heavy-duty transit BEB (6 years)
- A battery replacement and fuel-cell overhaul will occur at the mid-life of each heavy-duty transit FCEB (6 years)

In addition to the uncertainty of technology improvements, there are other risks to consider. Although current BEB range limitations may be remedied over time as a result of advancements in battery energy density and more efficient components, battery degradation may re-introduce range limitations as a risk to an all-BEB fleet over time. In emergency scenarios that require use of BEBs, agencies may face challenges supporting long-range evacuations and providing temporary shelters in support of fire and police operations. Furthermore, fleetwide energy service requirements and power redundancy and resiliency may be difficult to achieve at any given depot in an all-BEB scenario. Higher capital equipment costs and availability of hydrogen may constrain FCEB solutions.

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Requirements Analysis

Baseline Data Collection

It is essential to understand the key elements of MTS' service to evaluate the costs associated with a full-ZEB transition. Key data elements of the current MTS service were provided by MTS staff and included the following:

- Fleet composition
- Routes and blocks
- Mileage and fuel consumption
- Maintenance costs

Fleet

At the time of the study, the MTS bus fleet totaled 823 vehicles that provide service on nearly 105 fixed routes with additional, complementary, on-demand paratransit service. A breakdown of size and fuel type is shown in **Table 3** and **Table 4**. Bus services operate out of five divisions, all of which include operations, maintenance and fueling functions: Imperial Avenue Division (Imperial Ave), Kearney Mesa Division (Kearney Mesa); South Bay Bus Maintenance Facility (South Bay); East County Bus Maintenance Facility (East County); and Copley Park Maintenance Facility (Copley). MTS' fixed route mini buses and on-demand paratransit buses operate from Copley.

Table 3 - Fleet Breakdown by Division and Length

Division	Bus Length [ft]				Totals
	22, 29, 32	40	45	60	
Copley	215	0	0	0	**215**
East County	3	51	24	0	**78**
Kearny Mesa	0	85	0	42	**127**
Imperial Ave	0	111	0	44	**155**
South Bay	0	221	0	27	**248**
Totals	**218**	**468**	**24**	**113**	**823**

Table 4 - Fleet Breakdown by Division and Fuel Type

Division	Fuel Type					Totals
	CNG	Diesel	Propane	Gasoline	Electric	
Copley	0	0	77	138	0	**215**
East County	51	24	0	3	0	**78**
Kearny Mesa	127	0	0	0	0	**127**
Imperial Ave	149	0	0	0	6	**155**
South Bay	248	0	0	0	0	**248**
Totals	**575**	**24**	**77**	**141**	**6**	**823**

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Routes and Blocks

MTS' current service consists of 105 routes run on 1189 blocks as detailed in **Table 5**.

Table 5 - Count of Blocks by Division and Bus Length

Division	Bus Length [ft]				Totals
	22, 29, 32	40	45	60	
Copley	183	0	0	0	**183**
East County	6	71	33	0	**110**
Kearny Mesa	0	168	0	59	**227**
Imperial Ave	0	189	0	105	**294**
South Bay	19	344	0	12	**375**
Totals	**208**	**772**	**33**	**176**	**1189**

Fuel

MTS' current fuel use was collected and used to estimate energy costs throughout the study period. Cost escalation is not assumed throughout the study. Annual fleet mileage and fuel use is shown in **Table 6**, **Table 7**, and **Table 8**.

Table 6 - Annual Service Miles by Division and Bus Length

Division	Bus Length [ft]				Totals
	22, 29, 32	40	45	60	
Copley	7,317,895	-	-	-	**7,317,895**
East County	35,724	1,696,686	797,770	-	**2,530,180**
Kearny Mesa	-	3,347,629	-	2,394,070	**5,741,699**
Imperial Ave	-	4,221,607	-	1,639,506	**5,861,113**
South Bay	-	8,834,534	-	835,484	**9,670,018**
Totals	**7,353,619**	**18,100,456**	**797,770**	**4,869,060**	**31,120,905**

Table 7 - Annual Diesel, Gasoline, and Propane Fuel Consumption by Division and Bus Length [DGE]

Division	Bus Length [ft]				Totals [DGE]
	22, 29, 32	40	45	60	
Copley	1,341,232	-	-	-	**1,341,232**
East County	4,401	-	-	-	**4,401**
Kearny Mesa	-	-	-	-	**-**
Imperial Ave	-	-	-	-	**-**
South Bay	-	-	-	-	**-**
Totals [DGE]	**1,345,633**	**-**	**-**	**-**	**1,345,633**

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Table 8 - Annual CNG Fuel Consumption by Division and Bus Length [Therms]

Division	Bus Length [ft]				Totals [Therms]
	22, 29, 32	40	45	60	
Copley	-	-	-	-	-
East County	-	683,935	-	-	**683,935**
Kearny Mesa	-	1,438,836	-	1,011,100	**2,449,936**
Imperial Ave	-	1,756,221	-	986,864	**2,743,085**
South Bay	-	3,887,292	-	139,509	**4,026,801**
Totals [Therms]	**-**	**7,766,283**	**-**	**2,137,473**	**9,903,756**

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Service Assessment

Bus efficiency and range are primarily driven by vehicle specifications; however, it can be impacted by a number of variables including the route profile (i.e., distance, dwell time, acceleration, sustained top speed over distance, average speed, traffic conditions, etc.), topography (i.e., grades), climate (i.e., temperature), driver behavior, and operational conditions such as passenger loads and auxiliary loads. As such, BEB efficiency and range can vary dramatically from one agency to another. Therefore, it is critical to determine efficiency and range estimates that are based on an accurate representation of the operating conditions associated with MTS' system to complete the assessment.

The first task in the Service Assessment is to develop route and bus models to run operating simulations for representative MTS routes. CTE uses Autonomie, a powertrain simulation software program developed by Argonne National Labs for the heavy-duty trucking and automotive industry. CTE has modified software parameters specifically for electric buses to assess energy efficiencies, energy consumption, and range projections. CTE collected GPS data from sixteen (16) MTS routes. GPS data includes time, distance, vehicle speed, vehicle acceleration, GPS coordinates, and roadway grade that is used to develop the route model. CTE used component level specifications and the collected route data to develop a baseline performance model by simulating the operation of an electric bus on each route. Ideally it would be best to collect data and model every route in MTS' network; however, this is impractical due to the amount of time and labor this approach would require. Instead, a sampling approach is used where sample routes are identified with respect to topography and operating profile (e.g. average speeds, etc.). The modeling results of the sample routes are then applied to the routes and blocks that share the same characteristics. Routes selected for the analysis are included in **Table 9** below.

Table 9 - Selected Routes for Modeling

Division	Hills/ Low Speed	Hills/High Speed	Flat/Low Speed	Flat/High Speed	Count
Copley		838	84		**2**
East County	936	280	815	864	**4**
Kearny Mesa			237	120	**2**
Imperial Ave	2,10,13		7		**4**
South Bay	3	235	1	905	**4**
Count	**5**	**3**	**5**	**3**	**16**

The route modeling included analysis of several scenarios, varying passenger load, accessory load, and battery degradation, to estimate real-world vehicle performance, fuel efficiency, and range. The data from the routes, as well as the specifications for each of the bus types selected, was used to simulate operation of each type of bus on each type of route. The models were run with varying loads to represent "nominal" and "strenuous" loading conditions. Nominal loading conditions assume average passenger loads and moderate temperature over the course

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of the day, which places marginal demands on the motor and heating, ventilation, and air conditions (HVAC) system. Strenuous loading conditions assume high or maximum passenger loading and either very low or very high temperature (based on agency's latitude) that requires near maximum output of the HVAC system. This Nominal/Strenuous approach offers a range of operating efficiencies to use in estimating average annual energy use (Nominal) or planning minimum service demands (Strenuous). Modeled operating scenarios are included in **Table 10** below.

Table 10 - Modeled Operating Scenarios

Bus Length [ft]	Load Case	Occupants	HVAC Load [kW]	Other Loads [kW]	Total Aux Load [kW]
22-32	Nominal	5	4	2	**6**
22-32	Strenuous	15	12	2	**14**
40	Nominal	9	3	2	**5**
40	Strenuous	39	10	2	**12**
45	Nominal	20	4.5	2	**6.5**
45	Strenuous	40	10	2	**12**
60	Nominal	10	5	3	**8**
60	Strenuous	55	15	3	**18**

Route modeling ultimately provides an average energy use per mile (kilowatt-hour/mile [kWh/mi]) associated with each route, bus size and load case. Using the results shown in **Table 11**, system-wide energy use, and costs, are estimated in the subsequent assessments.

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Table 11 - Modeling Results Summary

Bus Length [ft]	Route	Nominal Efficiency [kWh/mi]	Strenuous Efficiency [kWh/mi]
40	1	1.9	2.8
	2	2.0	2.9
	3	2.1	3.1
	10	1.9	2.8
	13	1.8	2.6
	120	1.9	2.7
	237	2.1	2.7
	815	1.9	2.9
	864	1.8	2.7
	905	2.0	2.6
	936	2.0	2.9
45	280	2.7	3.0
60	7	3.2	4.5
	235	2.9	3.5
	905	2.8	3.6
22-32	84	1.4	2.1

Using vehicle performance predicted from route modeling, combined with educated assumptions for battery electric and fuel cell technology, CTE analyzed the expected performance and range needed on every block in MTS' network and assessed the "achievability" of each block by BEBs and FCEBs over time, as range improves. This assessment analyzes the feasibility of maintaining the MTS' current level of service with BEB and FCEB vehicles and does not plan for any expansions. The analysis focuses on bus endurance and range limitations to determine if the ZEBs could meet the service requirements of the blocks throughout the transition period. The energy needed to complete a block is compared to the available energy for the respective bus type that is planned for the block to determine if a BEB or FCEB can successfully operate on that block. This assessment also determines a timeline for when blocks become for eligible for zero-emission vehicles as technology improves. This information is used to then inform ZEB procurements in the Fleet Assessment.

Research suggests that battery density for electric vehicles has improved by an average of 5% each year.[1] For the purposes of this study, considering the extended period of a complete fleet transition (e.g. through 2040), CTE assumes a more conservative 5% improvement every two years. If the trend continues, it is expected that buses may continue to improve their ability to carry more energy without a weight penalty or reduction in passenger capacity. Over time, BEBs are expected to approach the capability to replace all of an agency's internal combustion engine buses one-for-one. FCEBs do not have the same range constraints as BEBs. Typically, FCEBs can more readily serve an agency's current blocks on a one-to-one basis with internal combustion engine buses; however, costs of hydrogen fuel and bus capital costs can create higher barriers to entry. There is also a significant amount of research going towards fuel cell technologies. We assume 5% bi-annual improvement in hydrogen tank size as a proxy for other component improvements such as battery capacity, motor efficiency, fuel cell efficiency, etc.

The block analysis, with the assumption of 5% improvement in battery capacity or improvement in hydrogen storage capacity every other year, is used to determine the timeline for when routes and blocks become achievable for BEBs and FCEBs, respectively, to replace internal combustion engine buses one-for-one. This information is used to then inform ZEB procurements in the Fleet Assessment. The results from the block analysis are used to determine when/if a full transition to BEBs or FCEBs may be feasible. Results from this analysis are also used to determine the specific energy requirements and develop the estimated costs to operate the ZEBs in the Fuel Assessment.

Results from the block analysis that indicate the yearly block achievability by bus length throughout the transition period for BEBs and FCEBs are included in **Figure 3** and **Figure 4** below, respectively.

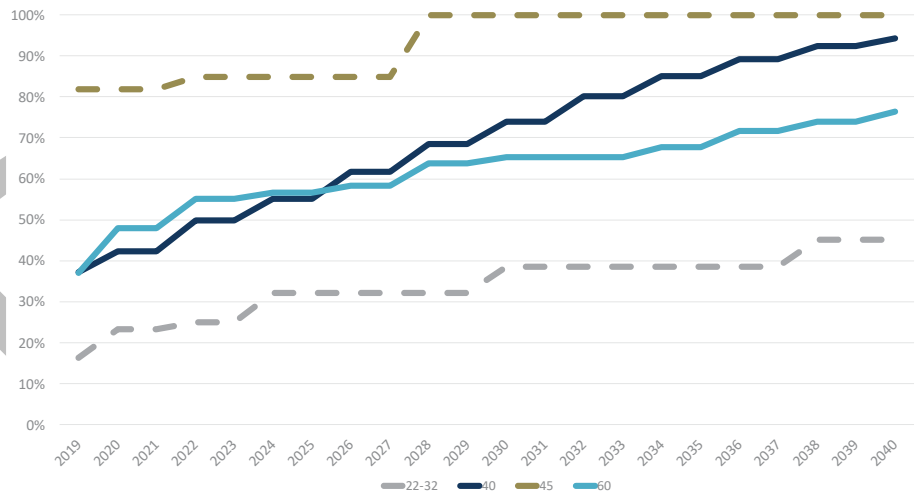


Figure 3 – BEB Block Achievability Percentage by Length

[1] U.S. Department of Energy; LONG-RANGE, LOW-COST ELECTRIC VEHICLES ENABLED BY ROBUST ENERGY STORAGE, MRS Energy & Sustainability, Volume 2, Wednesday, September 9, 2015; https://arpa-e.energy.gov/?q=publications/long-range-low-cost-electric-vehicles-enabled-robust-energy-storage

The BEB achievability in **Figure 3** shows that by 2040, it is expected that nearly all 40’ and 45’ MTS blocks can be completed by BEBs. However, in 2040, 60’ and cutaway blocks (22’-32’) struggle, with only approximately 76% and 45% able to be completed by BEBs, respectively. Please note that the dashed lines indicate that, at the time of the study, there are no 45’or cutaway BEBs available on the market that have completed Altoona testing and the timeline for these to be available is uncertain.

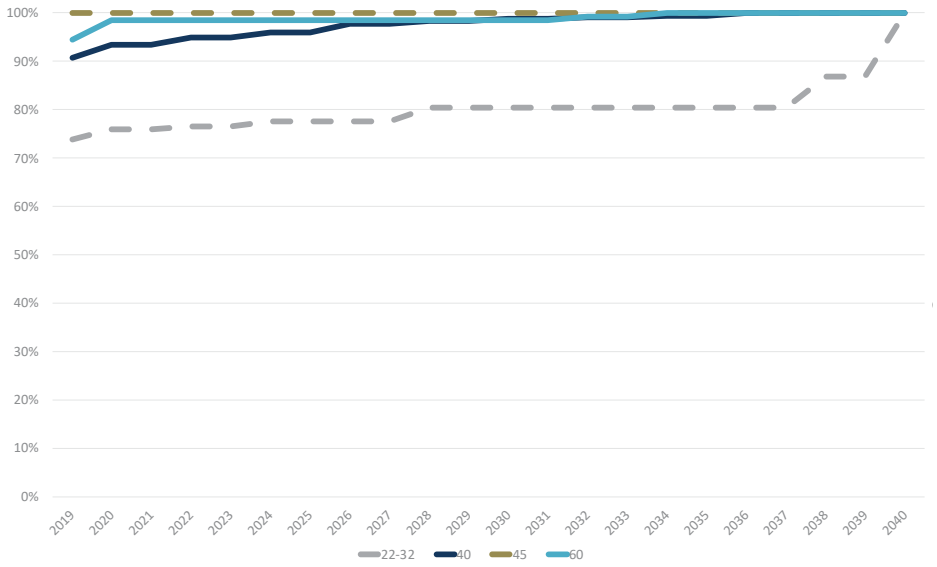


Figure 4 – FCEB Block Achievability Percentage by Bus Length

The FCEB achievability in **Figure 4** shows that by 2040, it is expected that 100% of MTS blocks can be completed by FCEBs. It is predicted that with the exception of cutaway buses (22’-32’), all other FCEB sizes can complete 90% or greater of MTS blocks starting in 2020. Please note that the dashed lines indicate that, at the time of the study, there are no 45’or cutaway BEBs available on the market that have completed Altoona testing and the timeline for these to be available is uncertain.

While routes and block schedules are unlikely to remain the same over the course of the transition period, these projections assume the blocks will retain a similar structure to what is in place today. Despite changes over time, this analysis assumes blocks will maintain a similar distribution of distance, relative speeds, and elevation changes by covering similar locations within the city and using similar roads to get to these destinations. This core assumption affects energy use estimates as well as block achievability in each year.

It should be noted that BEB range is negatively impacted by battery degradation over time. A BEB may be placed in service on a given block with beginning-of-life batteries; however, it may not be able to complete the entire block at some point in the future before the batteries at are end-of-life (typically considered 80% of available service energy). Conceptually, older buses can be moved to shorter, less demanding blocks and newer buses can be assigned to longer, more demanding blocks. MTS can rotate the fleet to meet the demand assuming there is a steady procurement of BEBs each year to match service requirements. This could also be said for FCEBs, although the impact of degradation is assumed to be less.

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Fleet Assessment

The goal of the Fleet Assessment is to determine the type and quantity of ZEBs, as well as the schedule and cost to transition the fleet to zero-emissions. Results from the Service Assessment are integrated with MTS' current fleet replacement plan and purchase schedule to produce two main outputs: a projected bus replacement timeline through the end of the projection period, and the associated total capital costs.

While the industry is rapidly changing, there are still tradeoffs for each zero-emission technology, primarily between range, operational impact, capital costs and operating costs. For this reason, a mixed fleet scenario consisting of multiple ZEB types in addition to scenarios that only consider a single technology are considered.

Cost Assumptions

CTE and MTS developed cost assumptions for this analysis for each bus length and technology type (e.g. CNG, gasoline, propane, BEB, FCEB). Key assumptions for bus costs for the MTS Transition Study are as follows:

- Bus costs are based on MTS procurements, industry quotes, and the State of California statewide procurement contract for BEBs and FCEBs executed in 2019
- Bus costs are inclusive of configurable options and taxes (7.75%)
- Bus costs are estimated where buses of a given configuration are not commercially available or where no quotes were available
- Future bus costs are based on year 2019 since the is currently no basis for increases or decreases

Conventional wisdom dictates that the costs of BEBs will decrease over time due to higher production volume and competition from new vendors entering the market. While initially this was true, costs appear to have leveled out in recent years. However, it should be also noted that vendors have added more battery storage over the same time period without increasing base costs.

FCEB prices are expected to decrease over time as vehicle orders increase; however, CTE does not currently have an adequate basis to reduce the costs over time for the purchase of FCEBs. Note that there is a program under development, known as the 100-Bus Fuel Cell Electric Bus Initiative, where multiple vendors have committed to a base price of $850k for a 40-foot FCEB based on a minimum bus order of 100 vehicles; however, the future of this initiative is uncertain. **Table 12** provides estimated bus costs used in the analysis.

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Table 12 - Fleet Assessment Cost Assumptions

Length [ft]	CNG	Diesel	Gasoline	Propane	Electric	Hydrogen
22' Cutaway	-	-	$80,000	$110,000	$250,000	*$375,000*
29' Cutaway	-	-	$150,000	-	*$325,000*	*$487,000*
32' Cutaway	-	-	-	$177,000	*$325,000*	*$487,500*
40'	$549,962	-	-	-	$964,144	$1,147,515
45'	$800,000	$700,000	-	-	*$950,000*	*$1,400,000*
60'	$1,003,365	-	-	-	$1,374,333	$1,631,264

Note: Italic text indicates that the cost was an estimate based on similar vehicle costs

Baseline

The Baseline scenario is used for comparative purposes only. It assumes no changes to MTS' current fleet composition throughout the life of the study. The Baseline scenario helps create context for incremental costs incurred or benefits accrued by transitioning the fleet to zero-emission.

Figure 5 presents the number of each bus type that is purchased each year to maintain MTS' current fleet composition through 2040. The number of buses purchased each year is based on the vehicle replacement schedule (Fiscal Year 2019) provided by MTS.

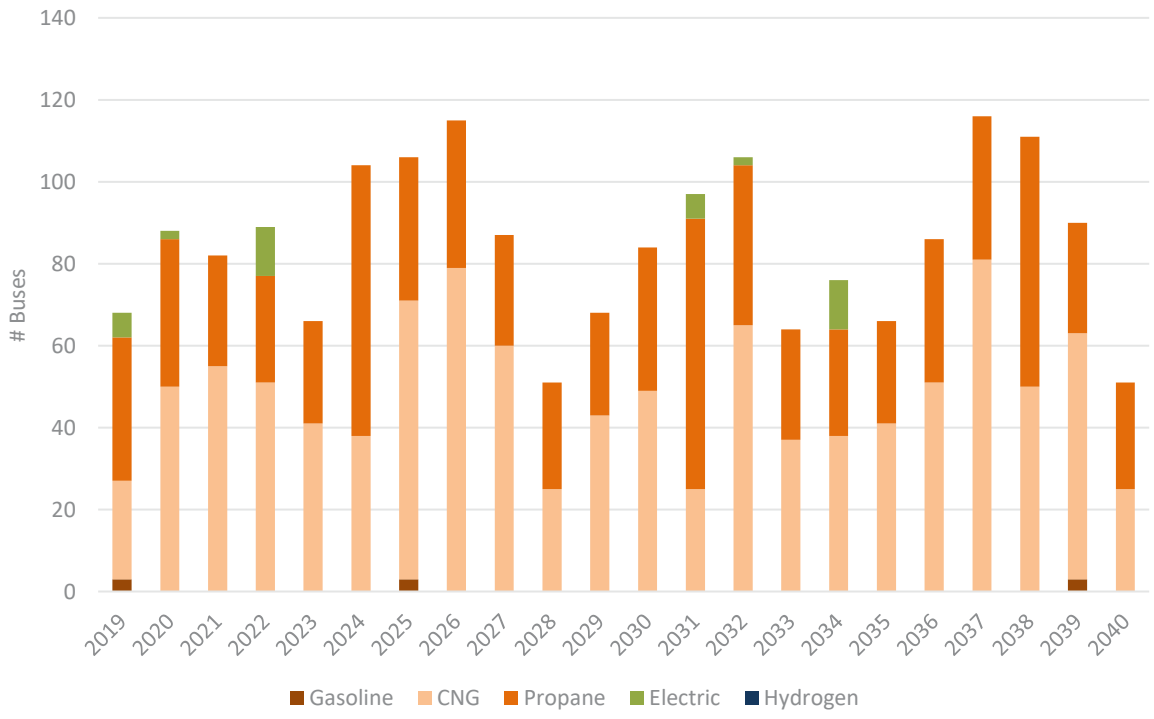


Figure 5 - Projected Vehicle Purchases, Baseline Scenario

Figure 6 depicts the annual baseline fleet composition through 2040. MTS phases out gasoline vehicles for propane from 2019 to 2021, and adds twelve (12) BEBs in 2022.

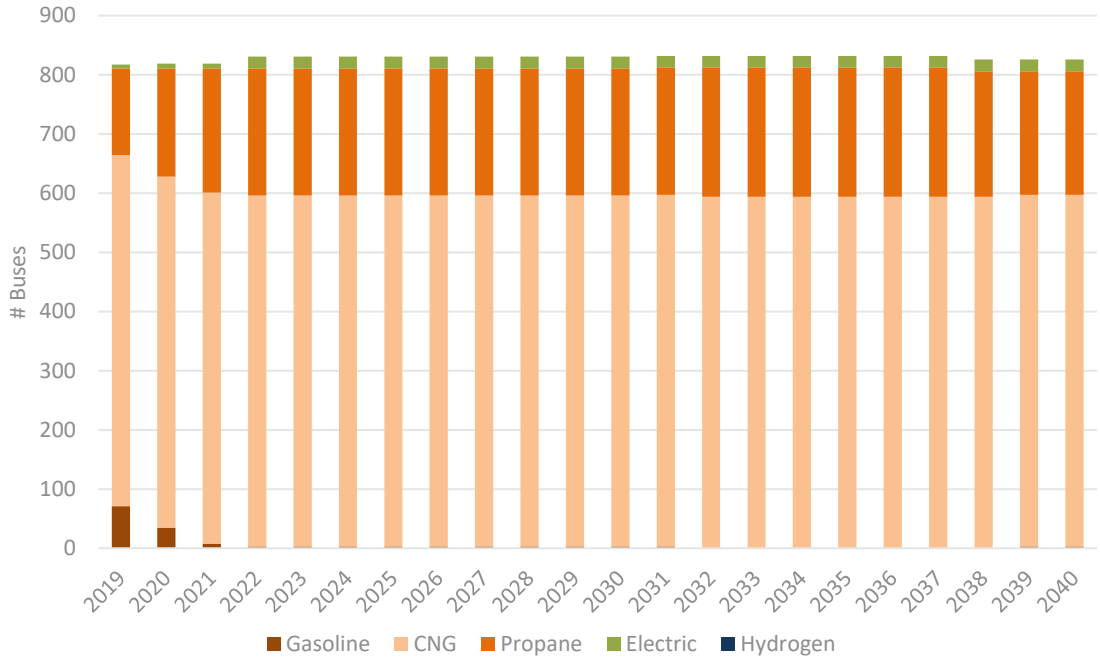


Figure 6 - Annual Fleet Composition, Baseline

Figure 7 shows the annual capital costs based on the purchase schedule and bus cost assumptions for the Baseline Scenario. Total bus purchases range from approximately $20 to $60 million each year.

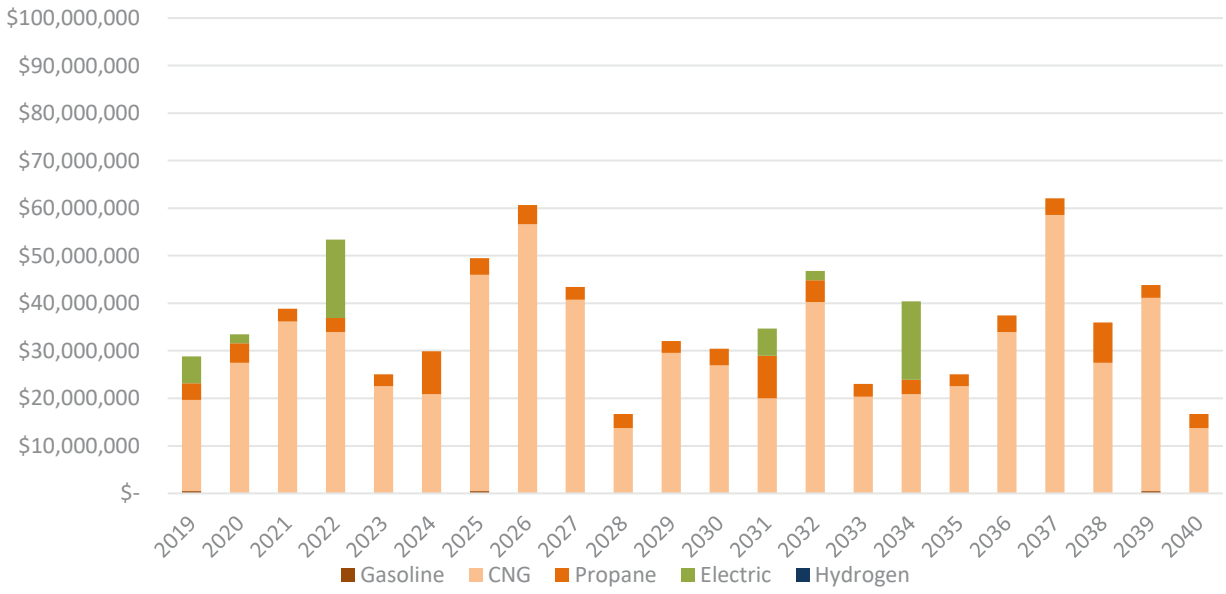


Figure 7 - Annual Capital Costs, Baseline

BEB Depot-Only Charging

The BEB Depot-Only Charging scenario assumes that depot-charged BEBs are used wherever possible; however, there may be instances where a depot-charged BEB cannot replace an internal combustion engine bus one-for-one due to insufficient range. As MTS has space constraints that limit their ability to increase the number of vehicles, replacement of a single internal combustion engine bus with multiple BEBs is not feasible. As a result, If vehicles cannot be replaced with a BEB because of the inability to complete the blocks, the vehicles are replaced with a internal combustion engine bus of the existing fuel type. The figures below show projected purchases, annual fleet composition, and annual total capital costs for the BEB Depot-Only Charging scenario. MTS phases out gasoline vehicles for propane from 2019 to 2021, and adds twelve (12) BEBs in 2022, but the fleet remains unchanged thereafter at a total of 835 buses. Note that by 2040, a total of approximately 77% of MTS fleet consists of BEBs. The fleet is unable to transition to 100% ZEB using depot-charged BEBs due to range limitations, primarily with the 60' and cutaway vehicles.

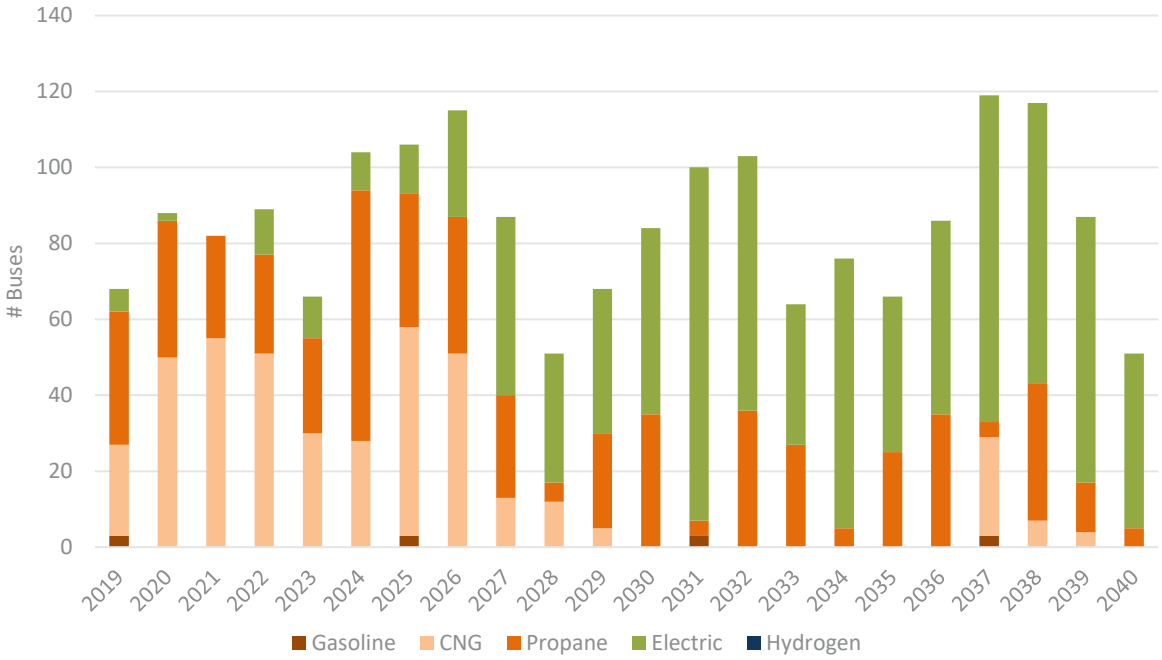


Figure 8 - Projected Vehicle Purchases, BEB Depot-Only Scenario

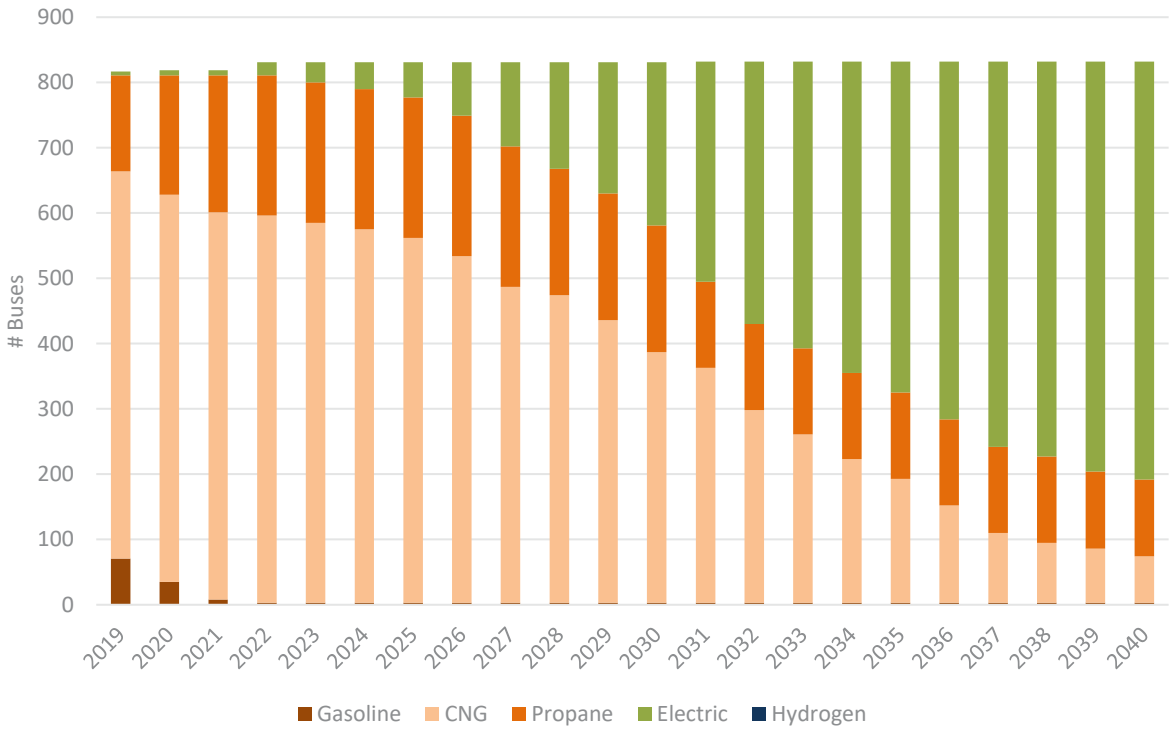


Figure 9 – Annual Fleet Composition, BEB Depot-Only Scenario

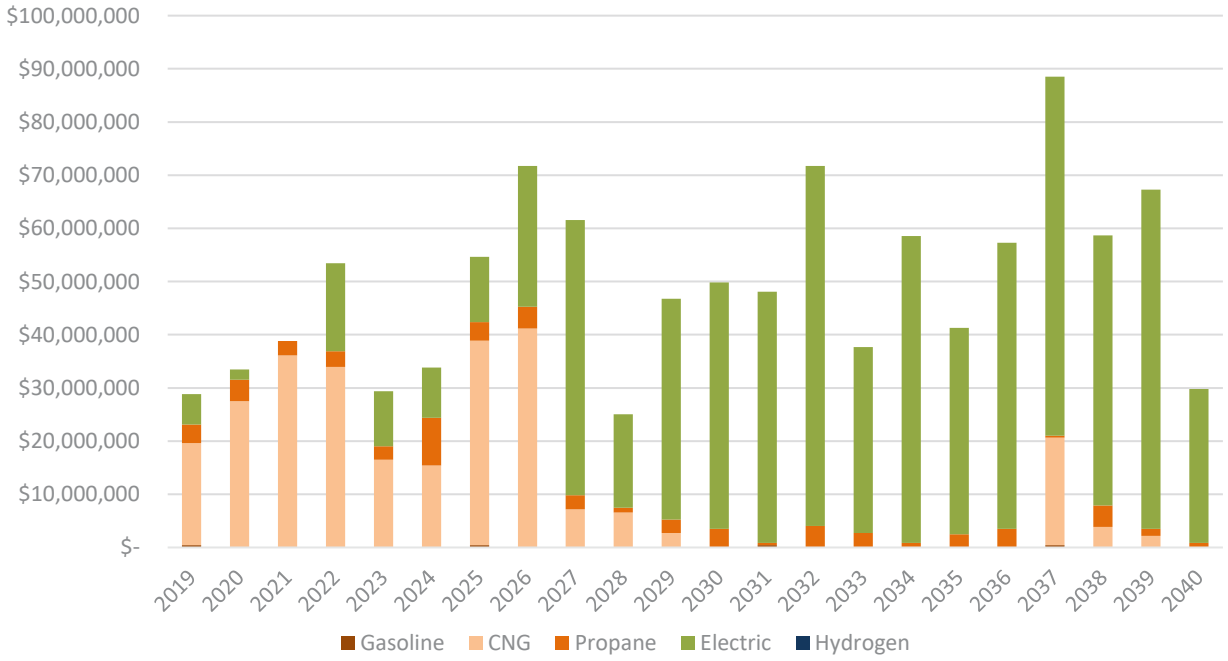


Figure 10 - Annual Capital Cost, BEB Depot-Only Scenario

BEB Depot and On-Route Charging

The BEB Depot and On-Route Charging scenario builds off of the analysis completed for the BEB Depot Only Charging scenario. Because bus replacements are based on block achievability found in the Service Assessment, there may be instances where block coverage is insufficient and depot-charged BEBs cannot meet service requirements. In that case, on-route charged BEBs can fill the gap. On-route charging allows an agency to add energy to buses while in service, providing the additional energy necessary to complete a block, without having to travel the extra distance and take the extra time to charge at a depot. Because MTS operates their Paratransit service as on-demand with no set routes or service area, the use of on-route charging is not feasible for these vehicles because they are unable to predict where a vehicle will be at a specific time of day when it needs to charge.

The figures below show projected purchases, annual fleet composition, and annual total capital costs for the BEB Depot and On-Route Charging scenario. By 2040, the addition of on-route charging allows MTS to replace approximately 84% of the fleet with BEBs. The fleet is unable to transition to 100% ZEB using depot-charged BEBs due primarily to the inability to operate the Paratransit fleet (cutaway/minibus) using on-route charging.

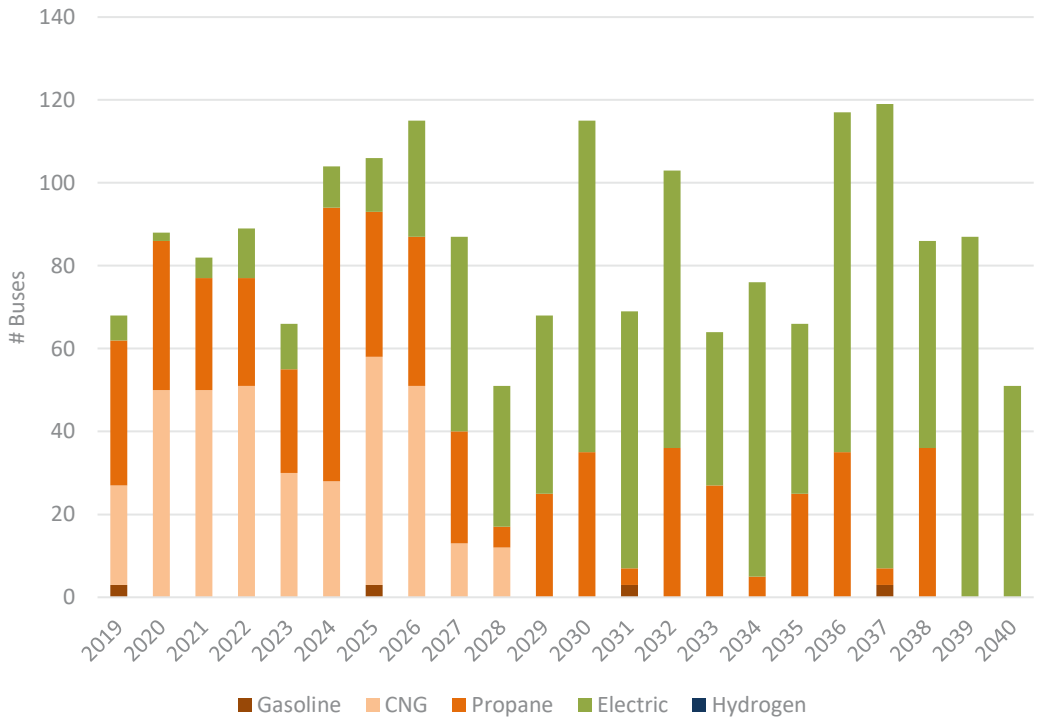


Figure 11 – Projected Vehicle Purchases, BEB Depot and On-Route Scenario

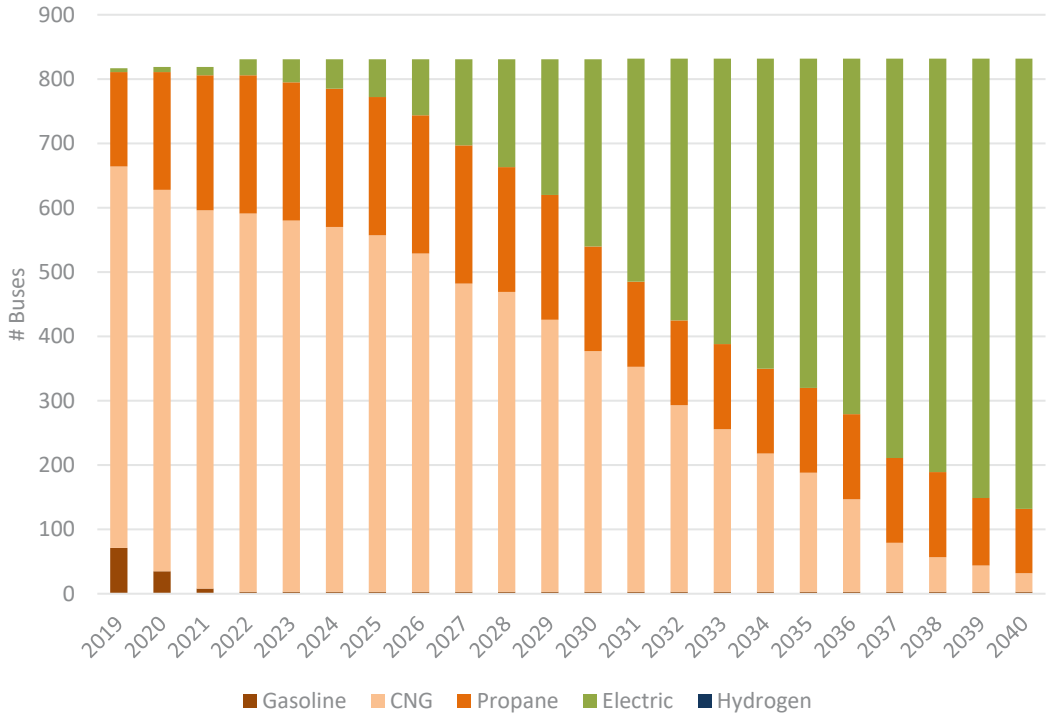


Figure 12 – Annual Fleet Composition, BEB Depot and On-Route Scenario

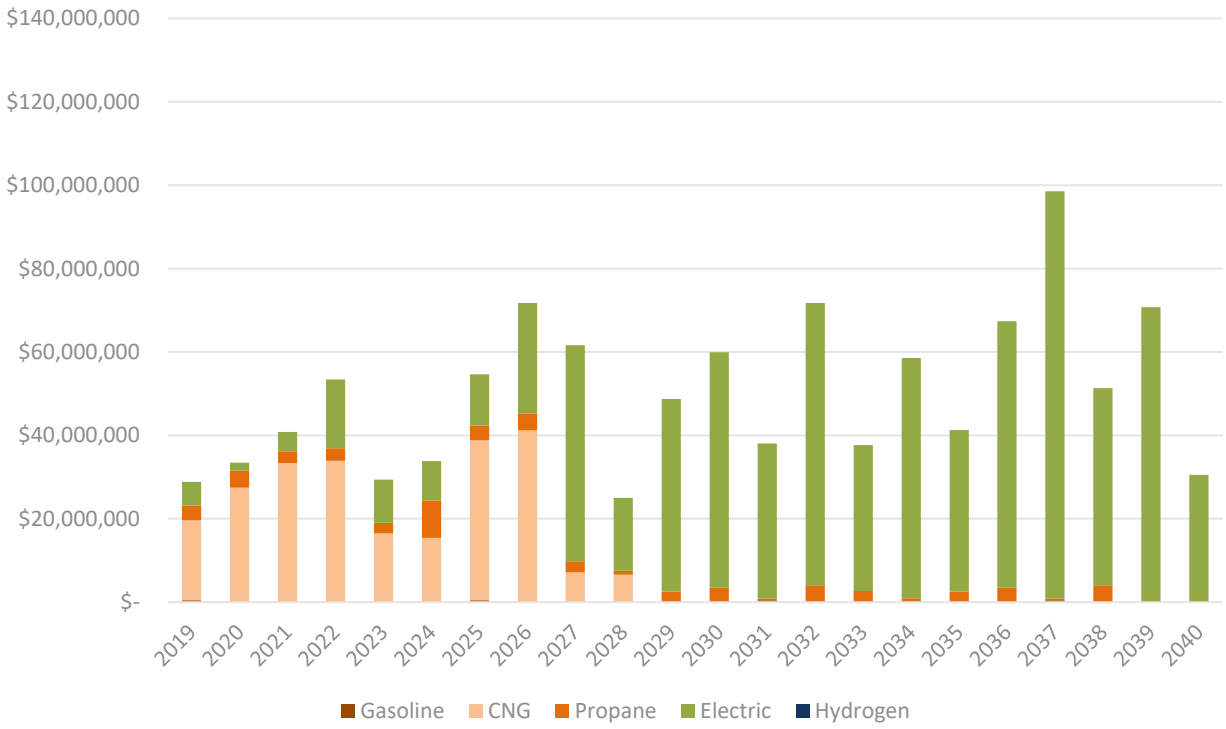


Figure 13 – Annual Capital Costs, BEB Depot and On-Route Scenario

FCEB Only

As discussed previously, FCEBs do not have the same range constraints as BEBs. Based on the analysis completed, by the end of the transition period, it is estimated that all of MTS blocks can be served by a FCEB on a one-for-one replacement basis (see **Figure 4**). There are significant assumptions that commercially available, Altoona tested 45' and cutaway FCEBs will be available during the transition period as well as improvements in range as previously discussed. The figures below show projected purchases, annual fleet composition and annual total capital costs for the FCEB Only scenario. By 2040, MTS is able to replace approximately 95% of its fleet with FCEBs. The remaining 5% of vehicles will be replaced with FCEBs when they reach their useful life after 2040. There is a lag between when FCEB technology can meet block energy requirements and when a vehicle is replaced due to the vehicle replacement schedule. Note that the hydrogen powered cutaway vehicles are differentiated from heavy-duty FCEBs due to the uncertainty associated with production of these vehicles in the future.

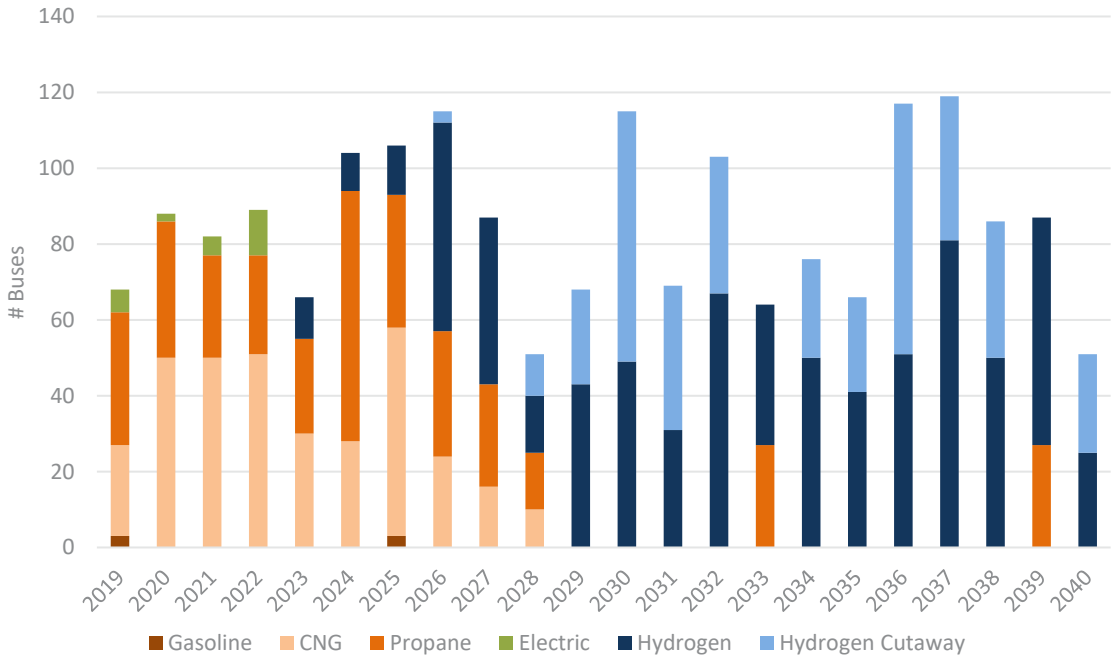


Figure 14 - Projected Vehicle Purchases, FCEB Only Scenario

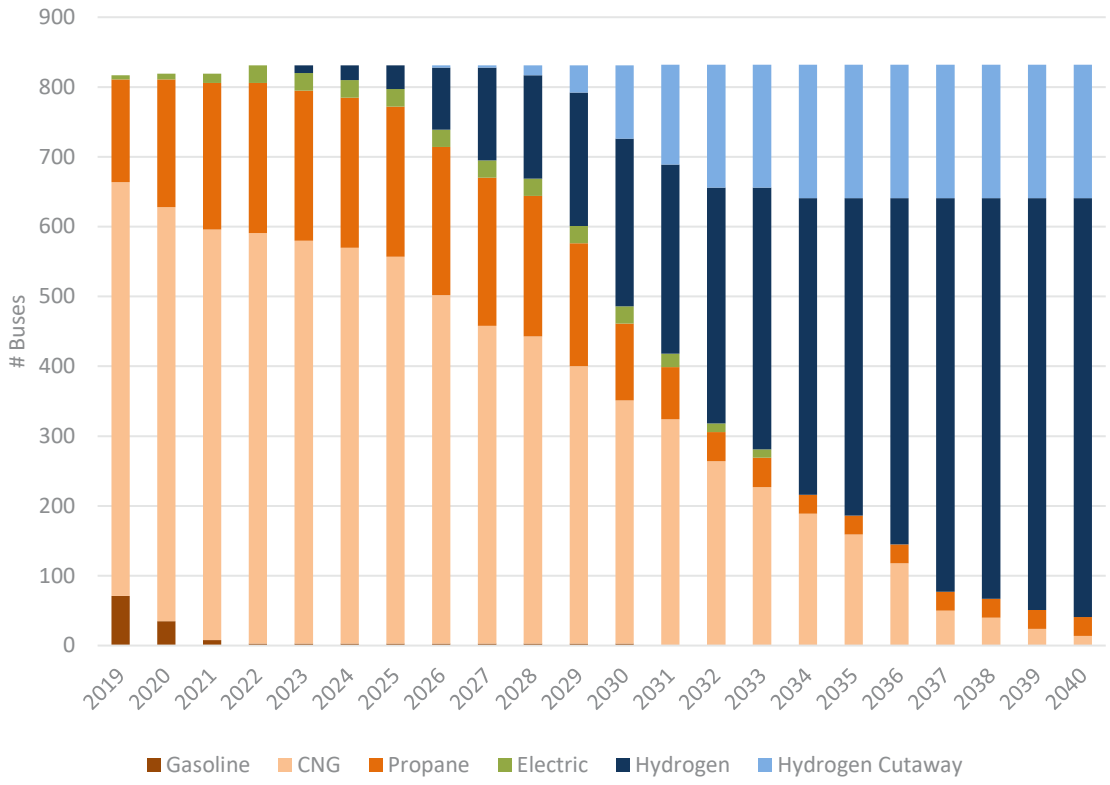


Figure 15 – Annual Fleet Composition, FCEB Only Scenario

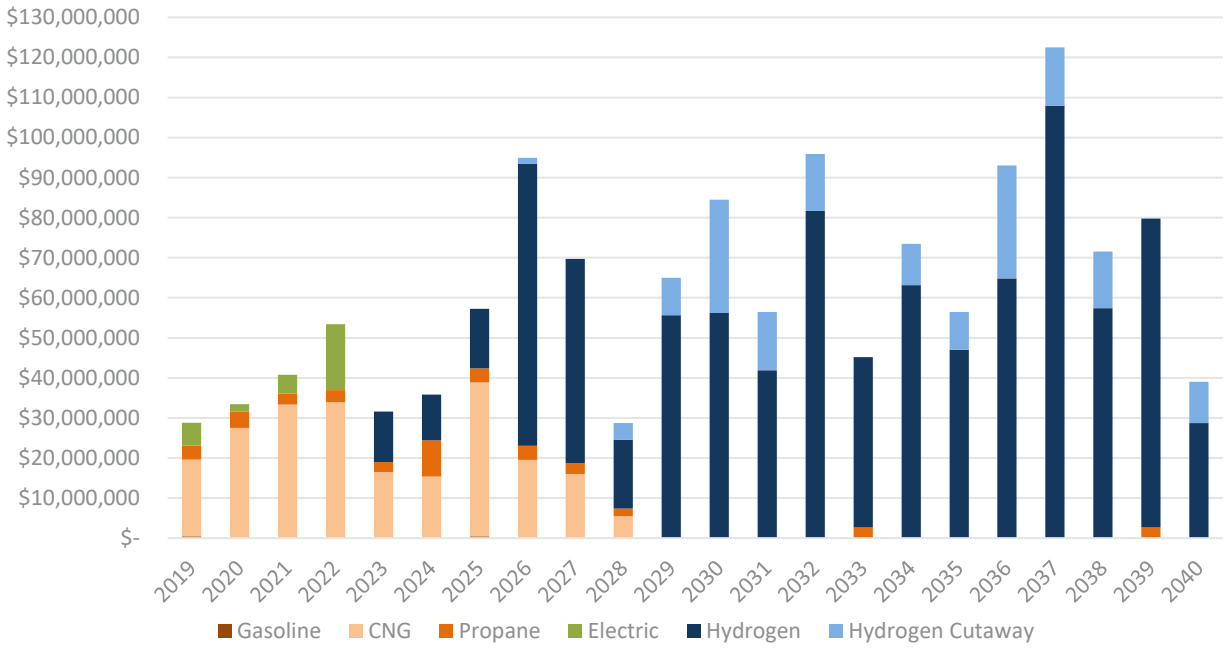


Figure 16 – Annual Capital Costs, FCEB Only Scenario

Mixed BEB and FCEB

In the Mixed BEB and FCEB scenario, depot-charged BEBs are utilized where they can replace internal combustion engine buses on a one-for-one basis. Since FCEBs have a greater range, they are used on the longer blocks and in Paratransit service where BEBs are not feasible. By the end of the transition period, any instance where block coverage is insufficient, a FCEB is used to replace MTS' original vehicle type. The figures below show projected purchases, annual fleet composition, and annual total capital costs for the Mixed BEB and FCEB fleet. By 2040, MTS is able to replace approximately 95% of its fleet with BEB and FCEBs. As in the FCEB Only scenario, the remaining 5% of vehicles will be replaced with FCEBs when they reach their useful life after 2040. There is a lag between when ZEB technology can meet block energy requirements and when a vehicle is replaced due to the vehicle replacement schedule. Note that the hydrogen powered cutaway vehicles are differentiated from heavy-duty FCEBs due to the uncertainty associated with production of these vehicles in the future.

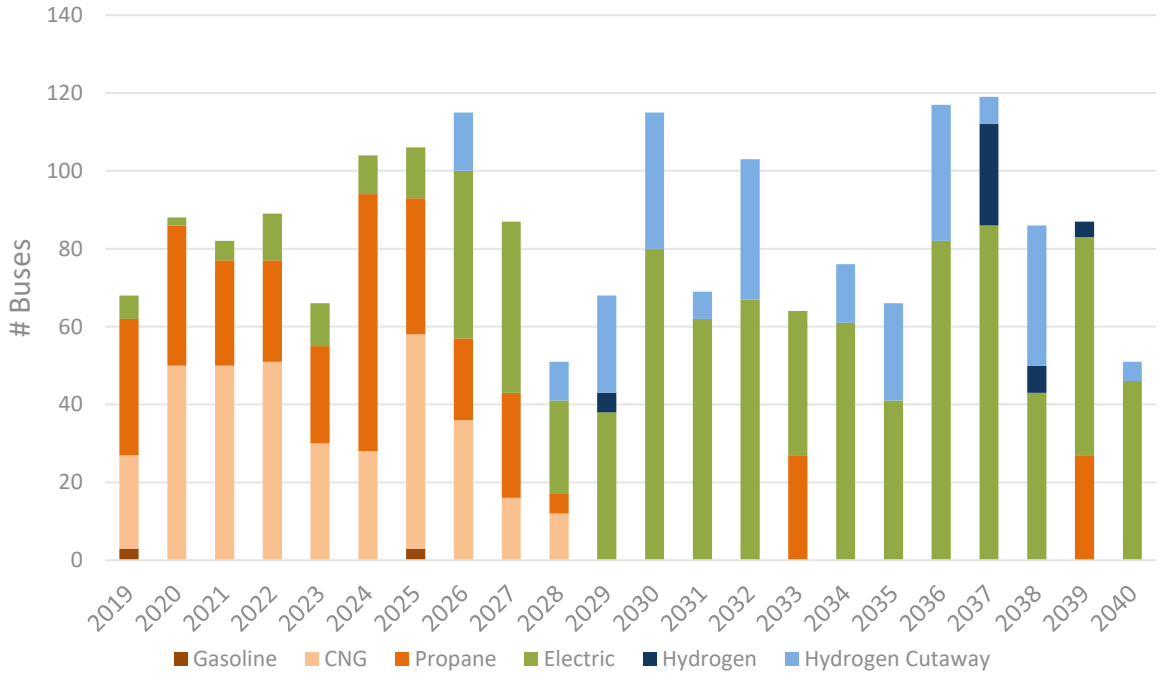


Figure 17 – Projected Vehicle Purchases, Mixed Scenario

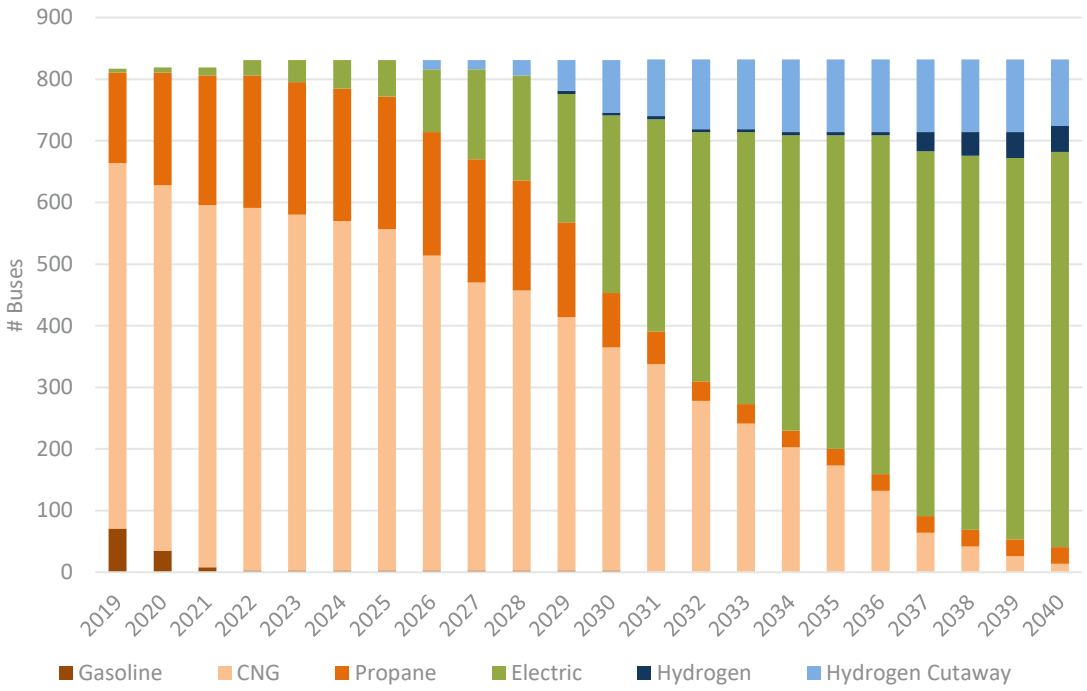


Figure 18 – Annual Fleet Composition, Mixed Scenario

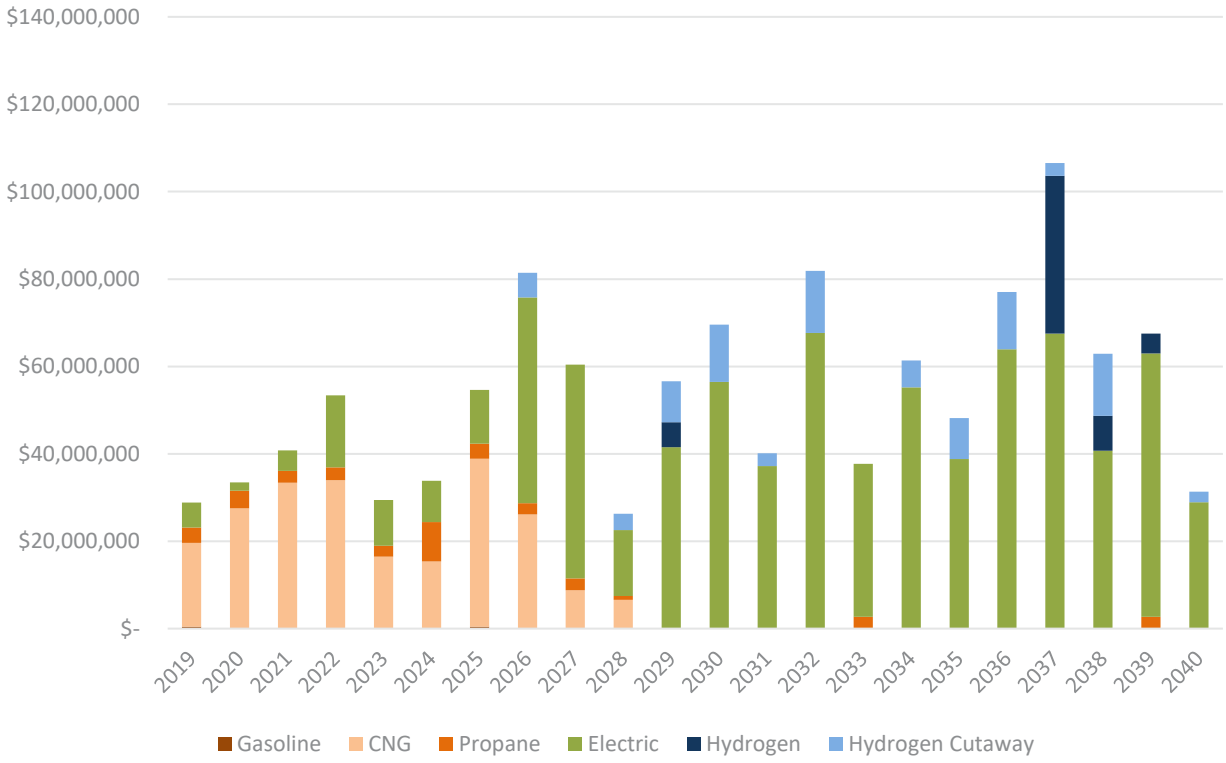


Figure 19 – Annual Capital Costs, Mixed Scenario

Fleet Assessment Cost Comparison

As discussed previously, the transition and fleet composition schedules were used to develop the total capital cost for vehicle purchases through the transition period. **Figure 20** shows the cumulative fleet purchase costs for each scenario.

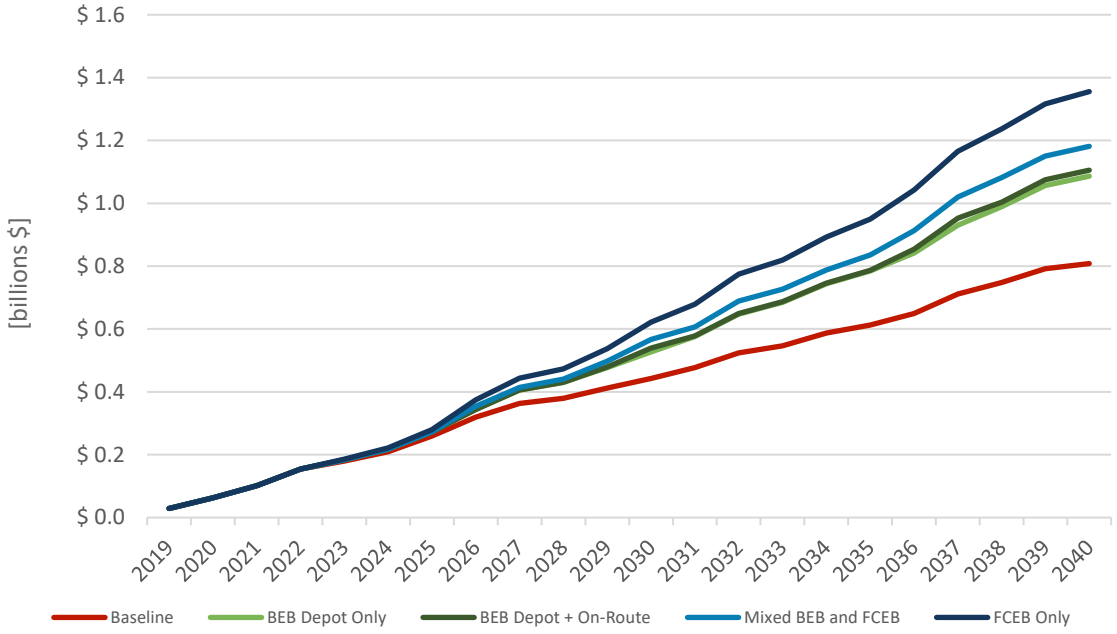


Figure 20 – Total Capital Costs, Fleet Assessment

By the end of the transition period, the cumulative vehicle costs vary substantially according to the technology selected as does the percentage of the fleet that can be transitioned to zero-emission by 2040. **Table 13** provides the combined total costs for each transition scenario, the percentage increase in cost above the baseline scenario, and the percentage of ZEBs present in the fleet in 2040 for the scenario.

Table 13 - Total Capital Costs, Fleet Assessment

Scenario	Cost	% Cost Increase Over Baseline	% ZEB in 2040
Baseline	$ 808,294,000	----	2%
BEB Depot Only	$ 1,086,465,000	34%	77%
BEB Depot + On-Route	$ 1,105467,000	37%	84%
FCEB Only	$ 1,355,484,000	68%	95%
Mixed BEB and FCEB	$ 1,181,414,000	46%	95%

Fuel Assessment

Using ZEB performance data from the bus modeling and route simulation, CTE analyzed the expected performance on each block in MTS' service network to calculate daily energy requirements. The five projection scenarios from the Fleet Assessment are used to estimate associated fuel and energy costs unique to each fleet projection throughout the study life. This assessment calculates energy costs using 2019 prices. The Fuel Assessment estimates quantities and costs for MTS' current and future internal combustion engine vehicles as well as electrical energy and hydrogen fuel quantities and costs for the future BEB and FCEBs projected in each scenario.

The terms "fuel" and "energy" are used interchangeably in this assessment, as ZEB technologies do not always require traditional liquid fuel. For clarity, in the case of BEBs, "fuel" is electricity and costs include energy, demand and other utility charges. FCEBs are more similar to internal combustion engine vehicles as they are fueled by a gaseous or liquid hydrogen fuel. In addition to the cost of the fuel itself, however, there are additional operational costs associated with the hydrogen fueling station that must be considered. Operation and maintenance costs to maintain fueling infrastructure for both BEBs and FCEBs are built into the Fuel Assessment. Fuel cost estimates are based on the assumptions shown in **Table 14** below.

Table 14 – Fuel Cost Assumptions

Fuel	Cost	Source
Gasoline	$2.73/gal	MTS contracted rate
CNG	$0.85/DGE	MTS contracted rate
Hydrogen (trucked)	$8.10/kg	Average of contracted rates for multiple CA transit agencies
Electricity	Varies	SDG&E AL-TOU and EV-HP Tariff Schedules

The primary source of energy for a BEB comes from the local electrical grid. Utility companies typically charge separate rates for total electrical energy used and the maximum electrical demand on a monthly basis. As more buses, and chargers, are added to a system, both the energy used and the demand increase. Rates also vary throughout the year and throughout the day; this makes costs highly variable. Costs not only depend on seasonal differences like temperature, but also the time of day buses are charged.

Table 15 shows the current San Diego Gas & Electric (SDG&E) rate schedule used in the Fleet Assessment to estimate electrical costs for BEBs. MTS' energy rates are Direct Access, meaning the energy is purchased outside the utility at a more competitive rate and supplied through SDG&E. These rates are averaged from monthly rates and are a summarized version of SDG&E's full schedule.

Table 15 – SDGE&E Rate Schedule

	Fee Type	Unit	AL-TOU2	A6-TOU	A6-TOU
Demand Levels			0 - 499 kW	500 - 1200 kW	> 1200 kW
Service Type			Secondary	Primary	Substation
Customer Charge	Service Fee	per month	$ 310.34	$ 59.77	$ 30,722.49
Demand Charge	Non-Coincident Transmission & Distribution	per kW	$ 24.23	$ 23.66	$ 15.46
	Annual Peak Avg: Transmission & Distribution	per kW	$ 17.25	$ 17.11	$ 1.84
Energy Rates	Annual Super Off-Peak Avg	per kWh	$ 0.09892	$ 0.09865	$ 0.09865
	Annual Off-Peak Avg	per kWh	$ 0.11637	$ 0.11593	$ 0.11593
	Annual Peak Avg	per kWh	$ 0.13311	$ 0.13256	$ 0.13256

Charging Analysis

To accurately estimate energy use and electrical demand, and subsequent costs, due to BEB charging, charging was simulated at each depot, for each year of the transition. Electrical energy and demand were estimated based on current block schedules and BEB purchase projections and apply SDG&E tariff schedules to calculate an annual cost of charging. This annual cost is evaluated for each year of the study and at each depot to obtain a total BEB depot charging cost for the transition. This estimate is used as the total "fuel" cost for BEB depot charging in the subsequent assessment scenarios and it is incremental to on-route charging costs, hydrogen fuel costs and internal combustion engine costs.

The local utility, SDG&E, calculates total energy costs, measured per kWh, using three different Time-of-Use rates (TOU), as was shown in **Table 15.** Ideally, buses would all charge in the least expensive, Super Off-Peak time for the lowest overall cost, but because MTS is limited by space and by the available charge window to meet schedule requirements, this is not possible. To reduce overall energy and demand costs, charge management was modeled to optimize charging for MTS' pull-out requirements.

Charge management reduces electricity costs by optimizing energy use (kWh) and maximum demand (kW) to occur during cheaper time windows. By managing charging, the total annual costs, using South Bay in 2040 as an example, are reduced by approximately $2.65 million, or by approximate 31%, as shown in **Table 16** below.

Table 16 - Charging Costs, South Bay, 2040

Fees	Annual Cost Unmanaged	Annual Cost Managed
Customer Charge	$ 717	$ 717
Noncoincident Demand	$ 3,288,020	$ 3,185,582
Demand Charge	$ 2,377,075	-
Demand Subscription	-	-
Energy	$ 2,749,706	$ 2,583,234
Total	**$ 8,415,519**	**$ 5,769,533**

Optimizing Energy Use

Figure 21 shows each weekday block's status at South Bay over a single day in 2040 (a weekday block is identical for each day of the week). Grey indicates the bus is in service; blue indicates setup time and delay; and gold indicates charging time. This unmanaged scenario assumes a standard 30-minute delay between pull-in and charge start. There are a significant number of charges occurring during On-Peak from 4pm to 9pm. This charging method incurs an annual total energy cost of approximately $2.75 million, shown in **Table 16**.

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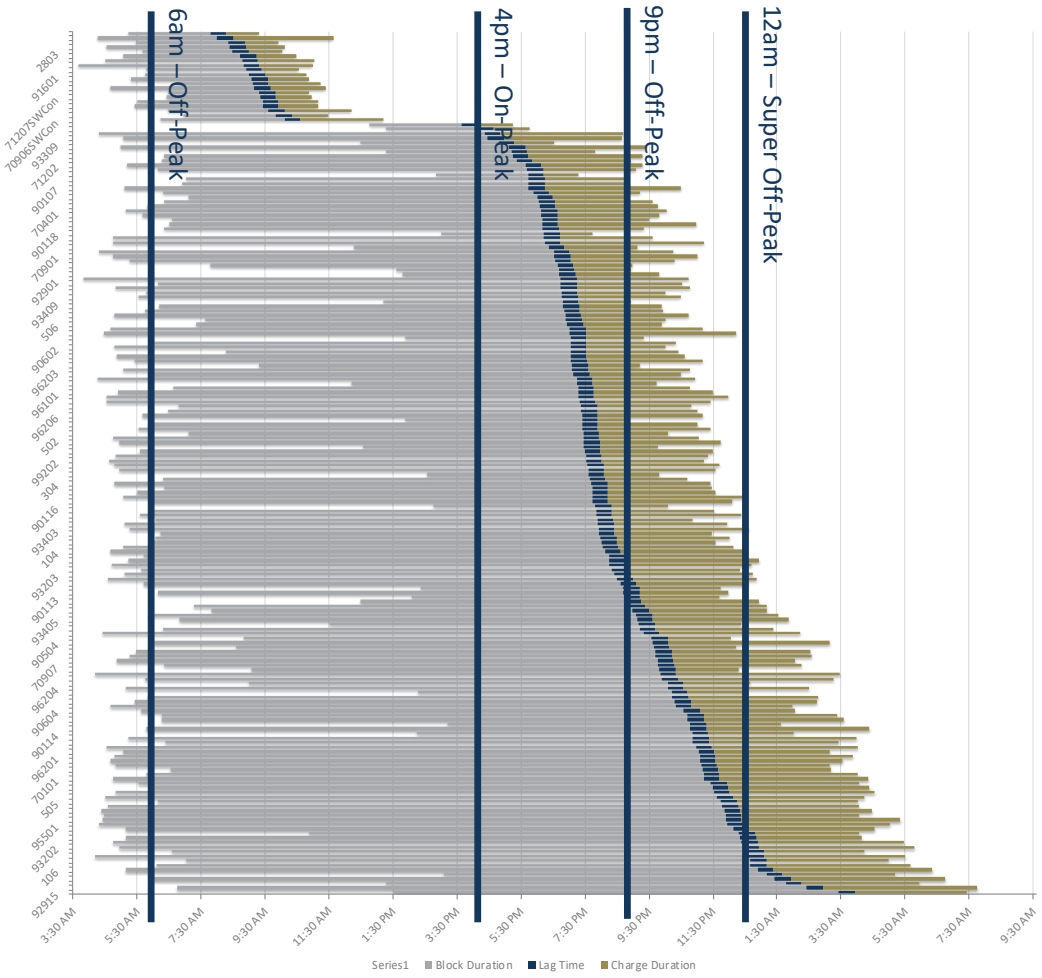


Figure 21 – Unmanaged Charging, South Bay, Weekday, 2040

Figure 22 shows the effect of actively managing charging on the same day shown in **Figure 21**. All the blocks that pull in between 4pm and 9pm now have extra delay time added so that the On-Peak time of use rate is avoided. This modification results in an energy cost savings of approximately $166,000 per year over the unmanaged case (**Table 16**).

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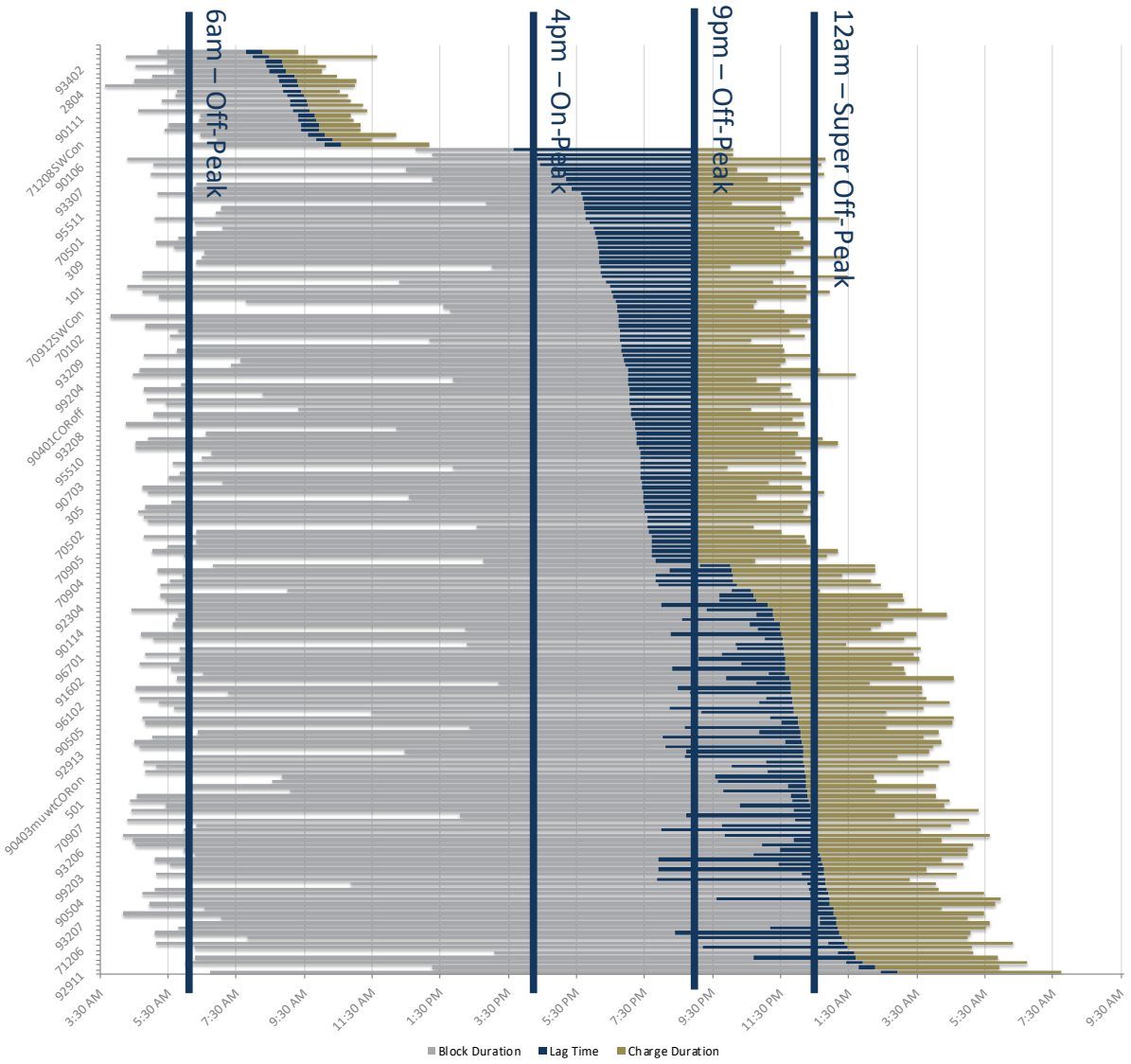


Figure 22 – Managed Charging, South Bay, Weekday, 2040

Minimizing Demand

The other main cost component of the utility bill is the demand charge, billed per kW. For a MTS operating BEBs, the number of chargers operating simultaneously is directly proportional to demand costs. By reducing the number of chargers running at any given time, demand costs are reduced. In this analysis, all chargers are assumed to provide 125 kW to the bus and pull approximately 132 kW from the grid.

In **Figure 23** below, managed charging eliminates the demand during the On-Peak by delaying charging to start only after 9pm. Charges that previously occurred On-Peak were spread to the Off-Peak and Super Off-Peak times. The Managed Off-Peak and Super Off-Peak windows do have a higher average demand than in the Unmanaged case, but demand costs are determined by the maximum, so overall, costs are still reduced, because the Managed peak demand is still lower than the peak in the Unmanaged case.

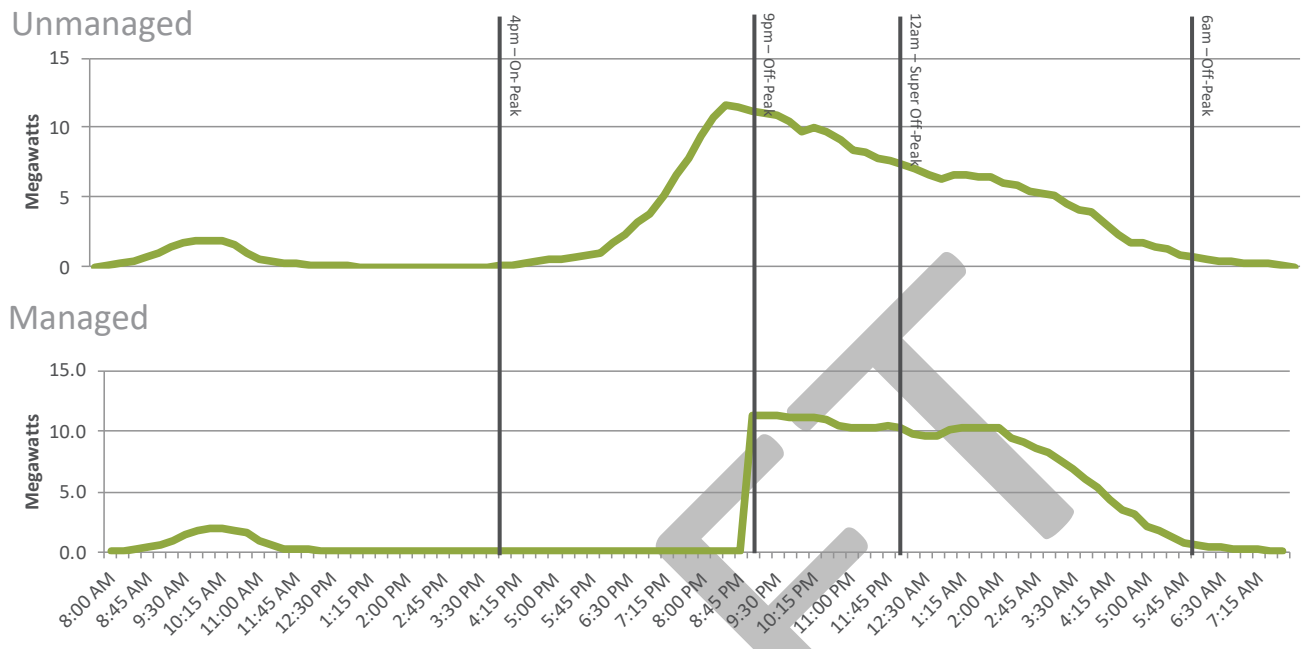


Figure 23 – Weekday Demand, South Bay, 2040

Table 17 provides more detail for the demand analysis. The Unmanaged case experiences a maximum demand of 11,580 kW during On-Peak; however, in the Managed case, all On-Peak demand is eliminated. This change eliminates SDG&E's demand charge, which is only based on On-Peak demand, saving $2.38 million annually (**Table 16**). In the Managed case, the max demand (11,220 kW) occurs during Off-Peak, and is still lower than the Unmanaged peak, therefore SDG&E's Noncoincident demand charge is reduced by approximately $100,000 annually (**Table 16**).

Table 17– Demand by Time of Use, South Bay, 2040

Time of Use	Unmanaged Peak Demand (kW)	Managed Peak Demand (kW)
On-Peak	11,580.8	0.0
Off-Peak	11,167.2	11,220.0
Super Off-Peak	7,312.8	10,331.2

Figure 24 shows the annual BEB depot charging costs based on managed charging as discussed previously in the charging analysis. These costs are inclusive of all divisions. The charging costs are applicable to the BEB Depot Only Charging scenario, the BEB Depot and On-Route Charging, and the Mixed BEB and FCEB scenario costs. Additional cost evaluation is completed for on-route charging to include the estimated fuel costs.

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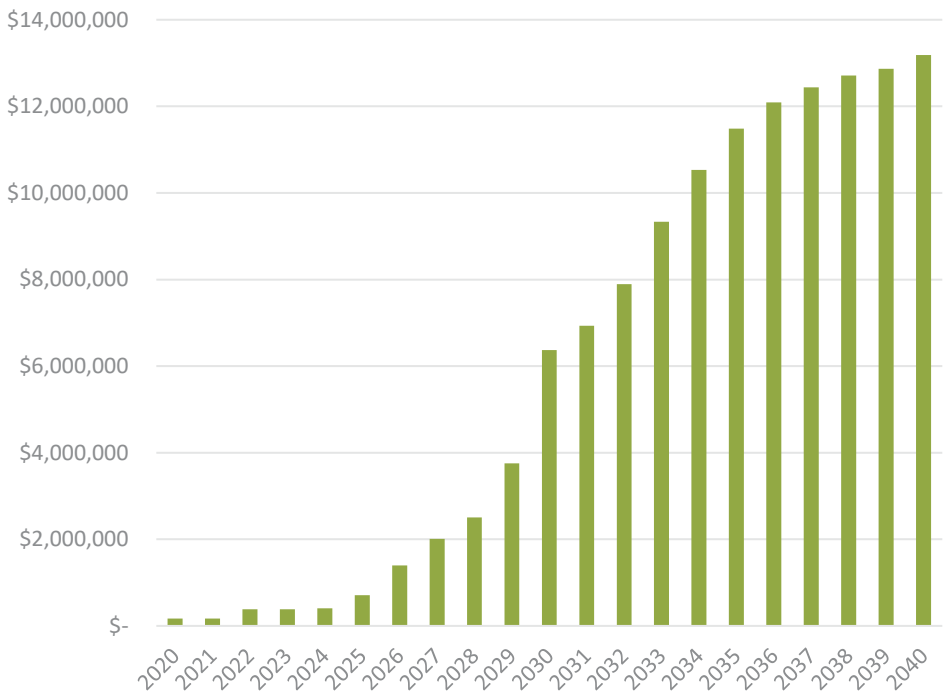


Figure 24 – Annual BEB Depot Charging Costs

The SDG&E Proposed EV Rate was also evaluated for comparison to the existing AL-TOU rates to determine potential costs savings over the life of the transition although the rate has yet to be approved. Results from the analysis indicate an approximate 26% savings in fuel costs over the transition period if the Proposed EV Rate is implemented and remains in effect for the duration of the transition. However, for the purposes of the transition analysis, the current AL-TOU rates were utilized for cost estimating and comparison to Baseline.

Baseline

The Baseline scenario is comparative purposes only and assumes that there is no change in the current MTS fleet configuration throughout the life of the study. The Baseline scenario helps create context for incremental costs incurred or benefits accrued by transitioning the fleet to zero-emission.

Figure 25, below, depicts energy consumption for each fuel type over the transition period for the Baseline scenario. Fuel use is shown in diesel gallon equivalent (DGE) for all fuel types. It is assumed that the fuel economy for MTS' internal combustion engine vehicles remain constant over the study life.

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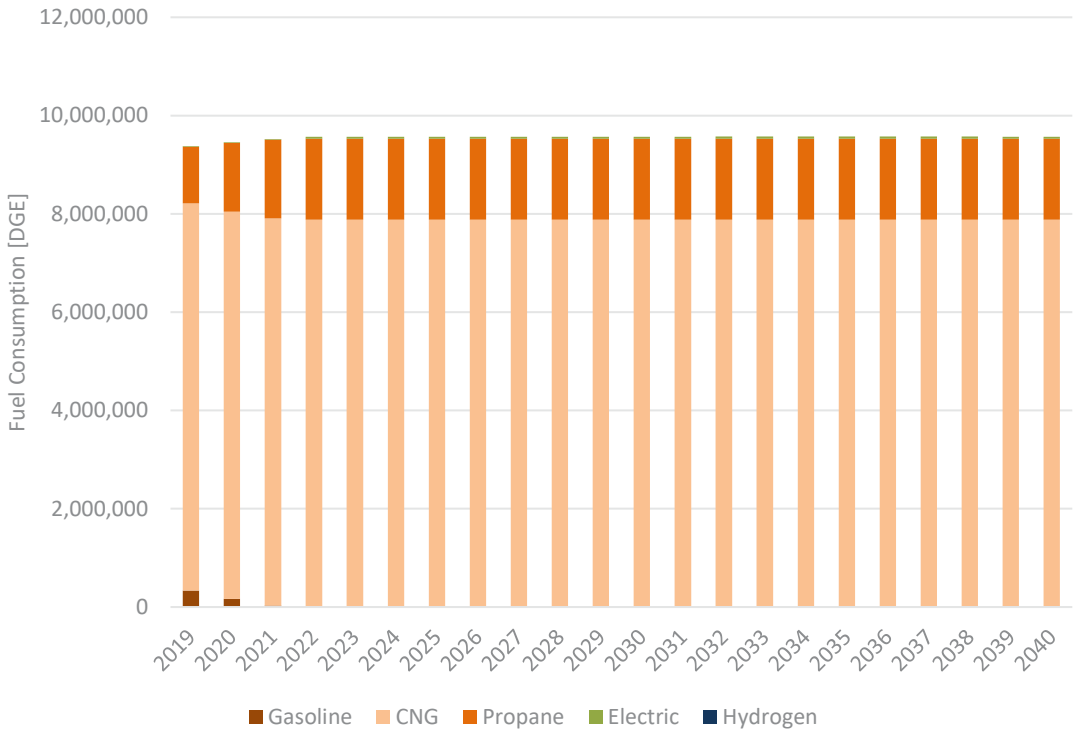


Figure 25 – Annual Fuel Consumption, Baseline

Figure 26 shows the calculated annual costs for each fuel type based on the quantities for the Baseline scenario.

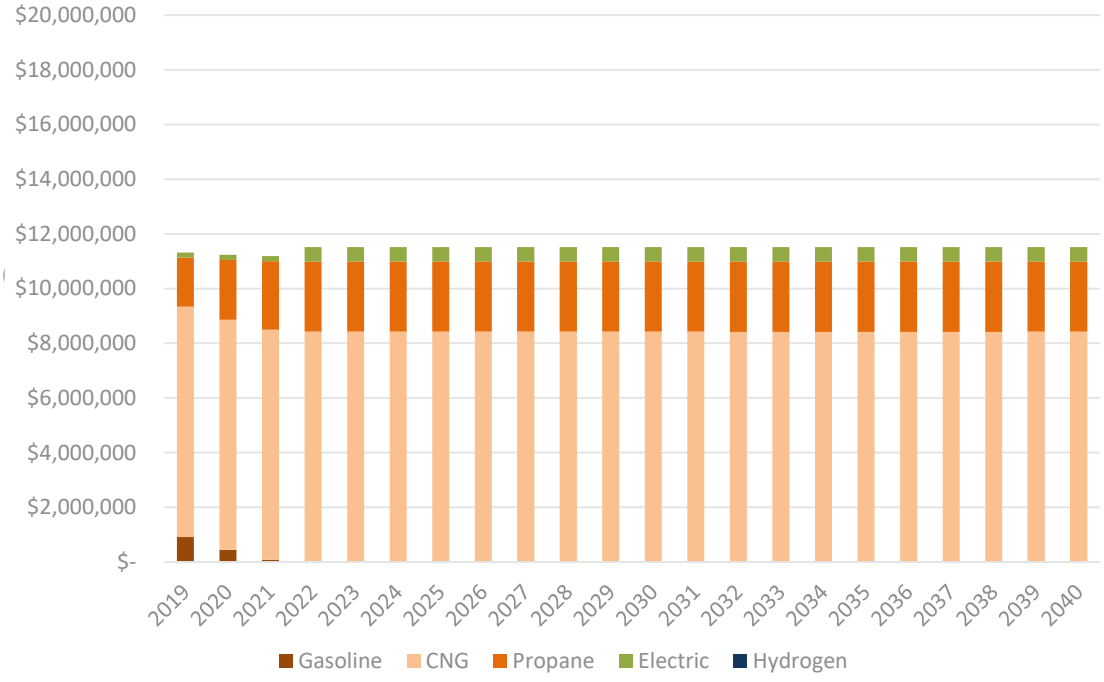


Figure 26 – Annual Fuel Costs, Baseline

BEB Depot-Only Charging

Figure 27 depicts energy consumption by fuel type over the transition period for the BEB Depot-Only Charging scenario. As one would expect, legacy fuels are phased out as electricity consumption increases, reflecting an increasing number of BEBs in the fleet. Electricity use by BEBs, measured in kWh, is converted to DGE for this analysis. Total energy use in 2040 is less than half of that in 2019 due to the improved efficiency of BEBs over internal combustion engine buses.

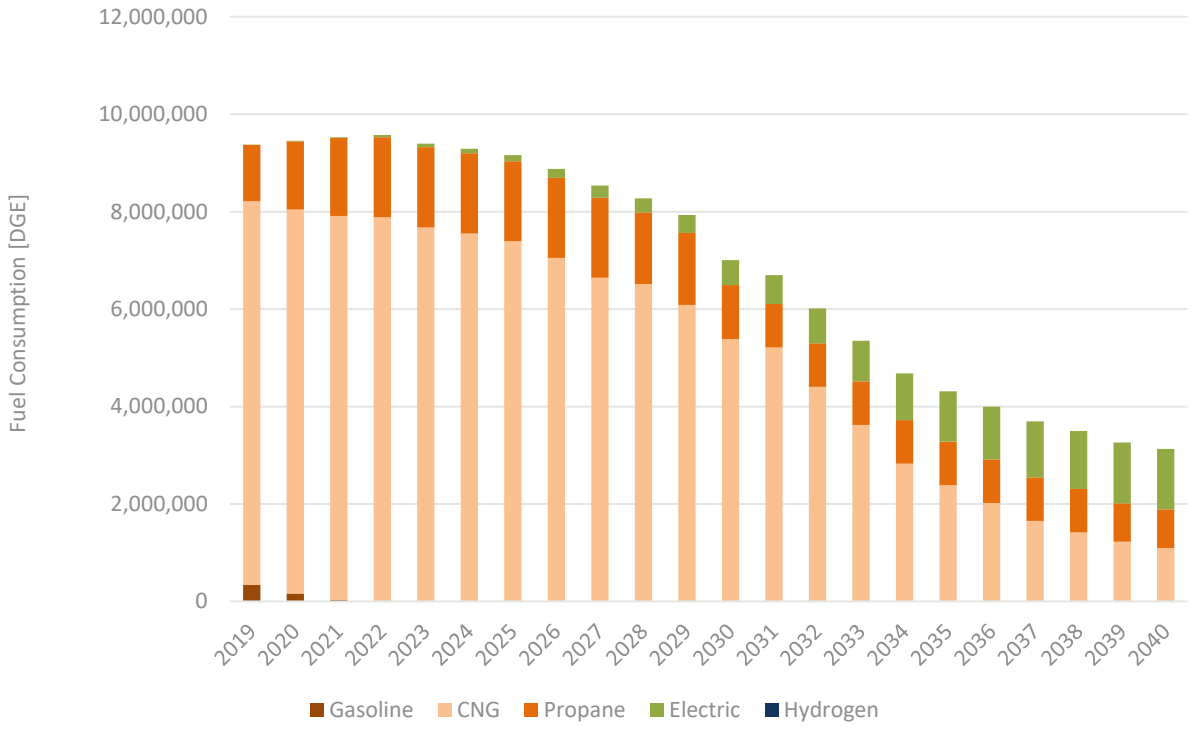


Figure 27 – Annual Fuel Consumption, BEB Depot-Only Scenario

Figure 28 shows the annual costs for each fuel type based on the quantities shown in **Figure 27**. Total estimated fuel costs in 2040 are approximately $16 million.

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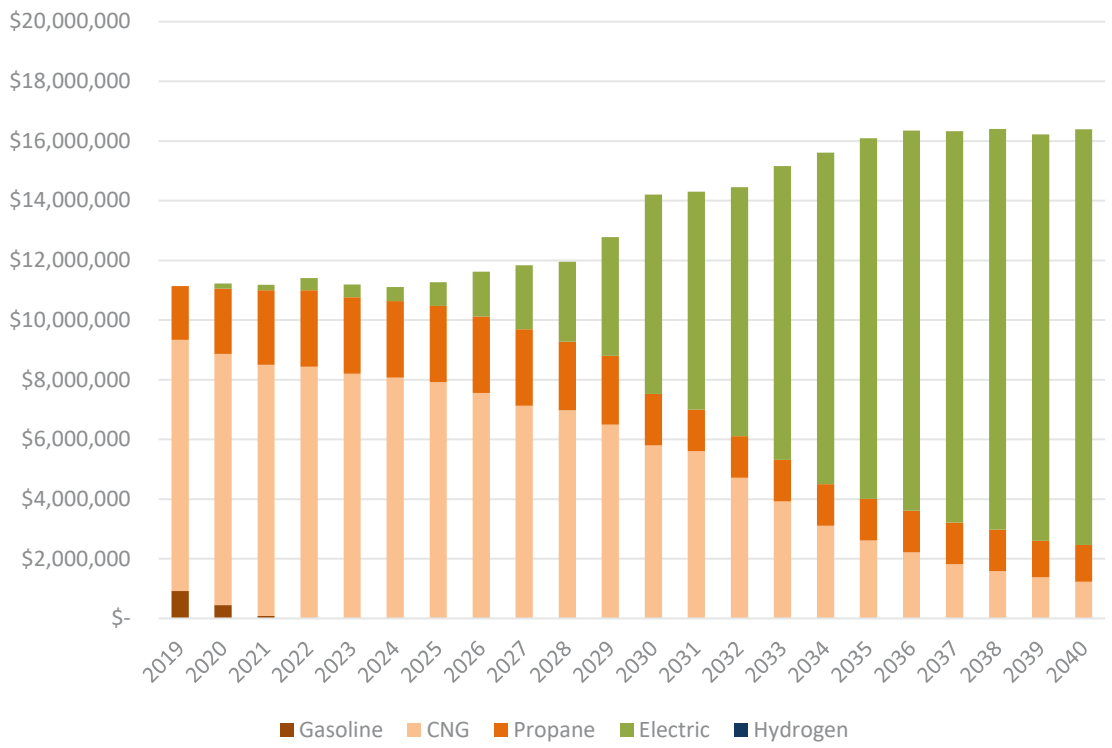


Figure 28 – Annual Fuel Costs, BEB Depot-Only Scenario

BEB Depot and On-Route Charging

Because bus replacements are based on block achievability, there may be instances where block coverage is insufficient and depot-charged BEBs cannot meet service requirements. On-route charged BEBs can be used to supplement depot charging to extend the range of vehicles and increase the feasibility for a 100% ZEB fleet. On-route charging allows an agency to add energy to buses while in service, providing the additional energy necessary to complete a block, without having to travel the extra distance and take the extra time to charge at a depot. Because MTS operates their Paratransit service as on-demand with no set routes or service area, the use of on-route charging is not feasible for these vehicles because they are unable to predict where a vehicle will be at a specific time of day when it needs to charge.

Figure 29, below, depicts energy consumption for each fuel type over the transition period assuming combination of depot and on-route charged BEBs. As expected, legacy fuels are phased out as electricity consumption increases, reflecting an increasing number of BEBs in the fleet. Total energy use in 2040 is approximately 20% of total energy use in 2019; this is representative of the improved efficiency of BEBs over internal combustion engine vehicles.

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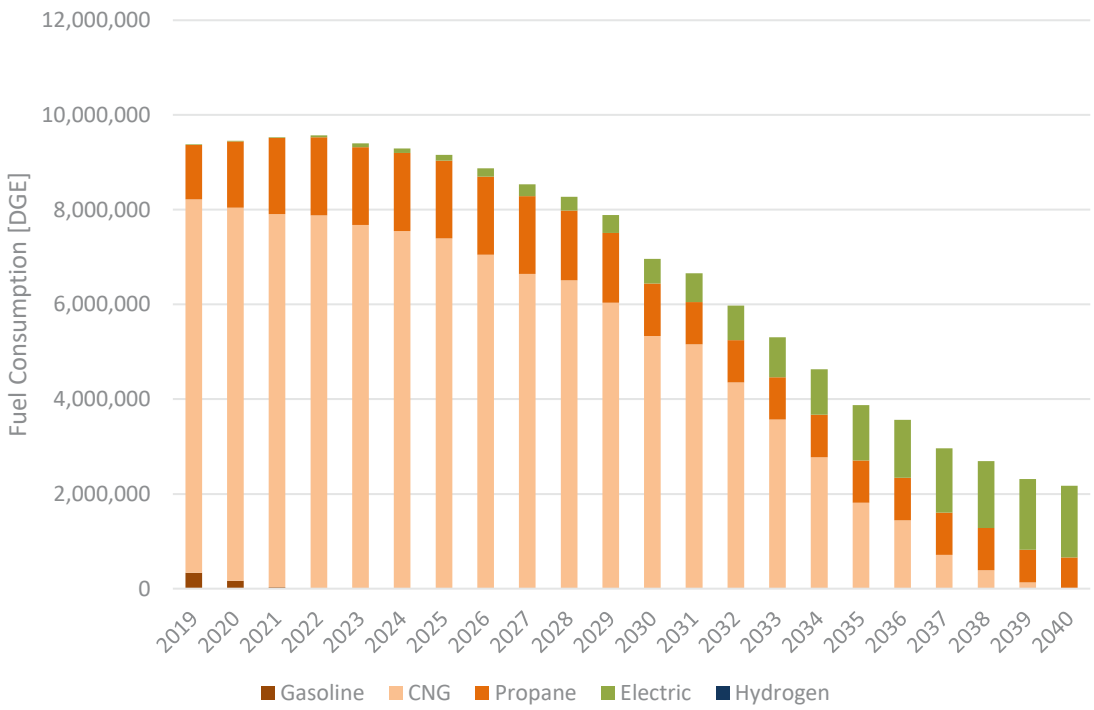


Figure 29 – Annual Fuel Consumption, BEB Depot and On-Route Scenario

Figure 30 shows the annual costs for each fuel type based on the quantities in **Figure 29**. Total estimated fuel costs in 2040 are approximately $20 million.

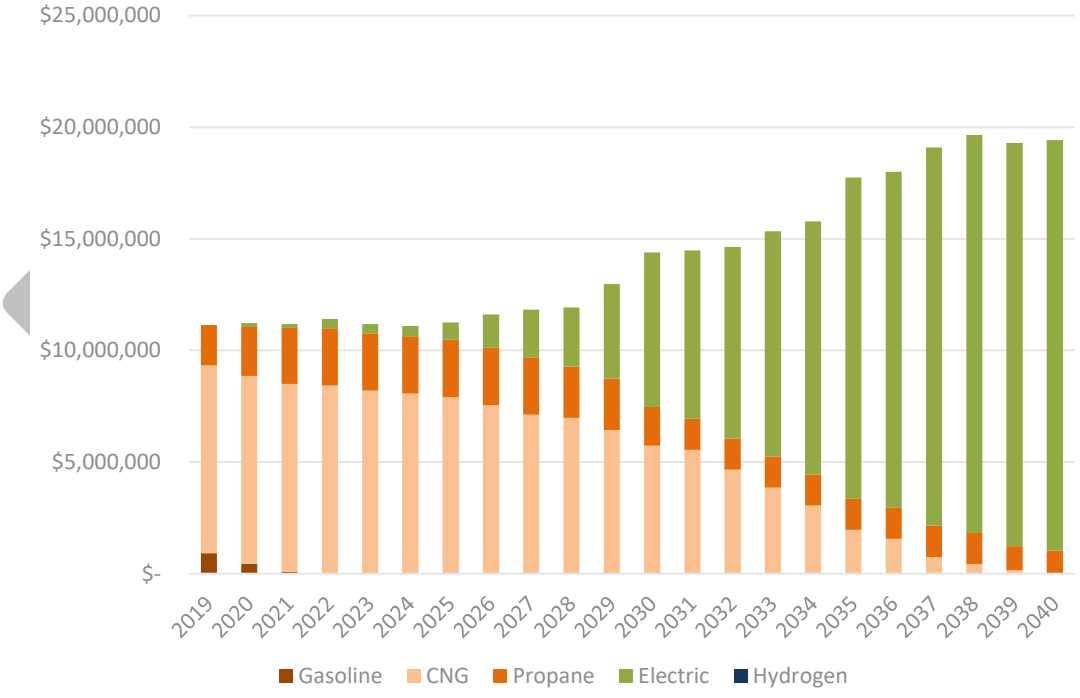


Figure 30 – Annual Fuel Costs, BEB Depot and On-Route Scenario

FCEB Only

Typically, FCEBs have greater range than a BEB, and are able to complete all of MTS's blocks by the end of the transition in 2040. **Figure 31** depicts fuel consumption for each fuel type over the transition period for the FCEB Only scenario. As expected, legacy fuels are phased out as hydrogen consumption increases, reflecting an increasing number of FCEBs in the fleet. Total energy use in 2040 is reduced by half from 2019.

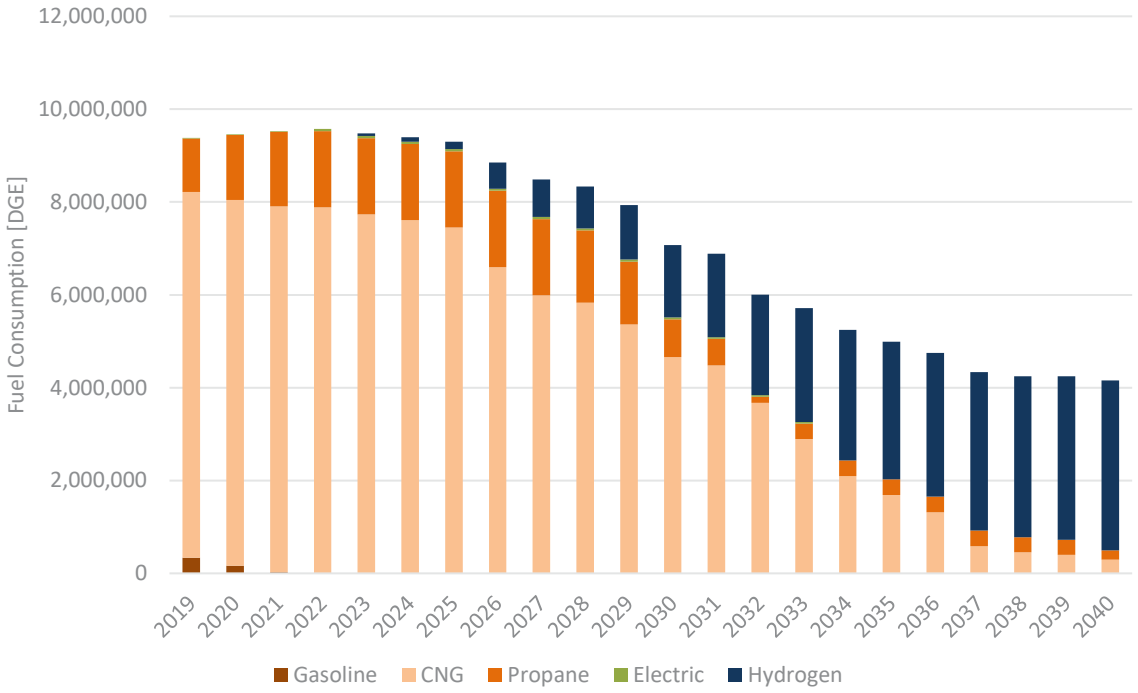


Figure 31 – Annual Fuel Consumption, FCEB Only Scenario

Figure 32 shows estimated annual costs for each fuel type based on the quantities shown in **Figure 31**. Total estimated fuel costs in 2040 are approximately $33 million, the bulk of which is from hydrogen.

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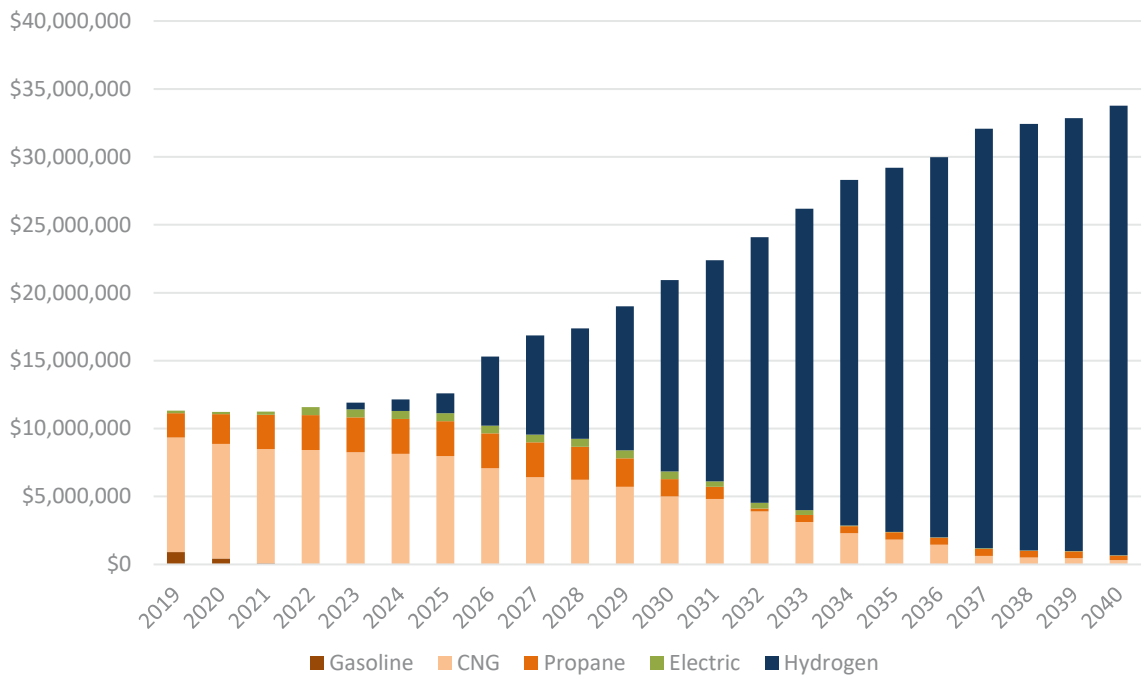


Figure 32 – Annual Fuel Costs, FCEB Only Scenario

Mixed BEB and FCEB

In the Mixed BEB and FCEB scenario, BEBs are utilized where they can replace internal combustion engine vehicles on a one-for-one basis. Since FCEBs have a greater range, they are used on the longer blocks and in Paratransit service where BEBs are not feasible. By the end of the transition period, any instance where block coverage was insufficient, a FCEB is used to replace the MTS' original vehicle type

Figure 33 depicts energy consumption for each fuel type over the transition period for the Mixed BEB and FCEB scenario. Legacy fuels are phased out as electricity and hydrogen consumption increases, reflecting an increasing number of BEBs and FCEBs in the fleet. Equivalent fleet energy use is reduced from nearly 10 million DGE in 2019 to just over 2 million DGE in 2040, an approximate 80% decrease.

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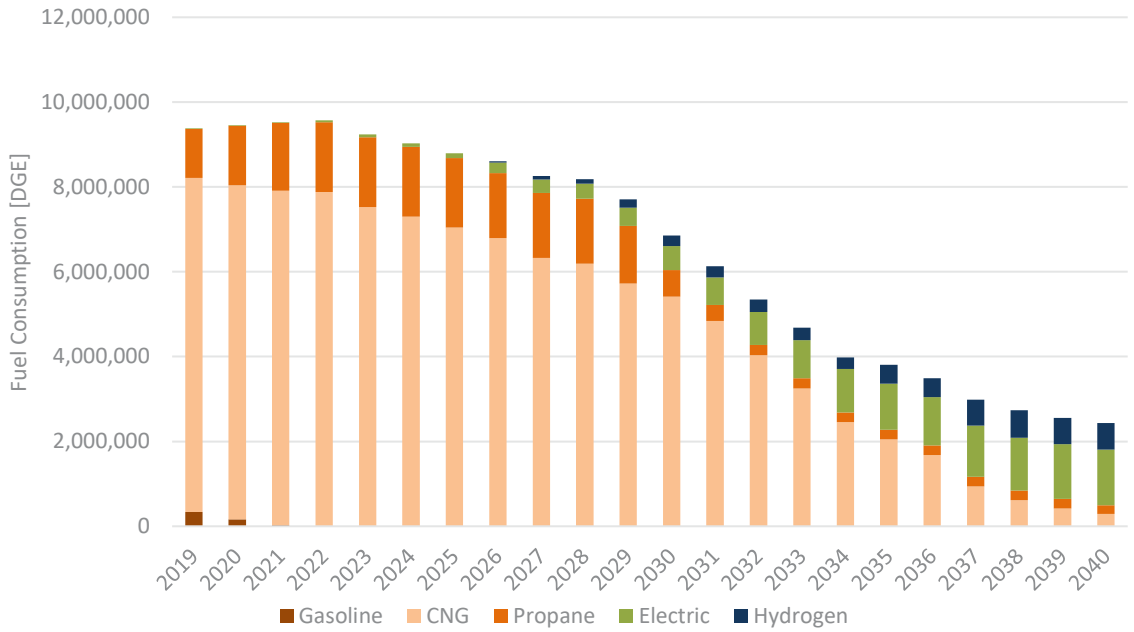


Figure 33 – Annual Fuel Consumption, Mixed Scenario

Figure 34 shows the estimated annual costs for each fuel type based on the quantities found in **Figure 33.** Total estimated fuel costs in 2040 are approximately $20 million, a majority of which are from electricity use for BEBs and to a lesser extent hydrogen fuel.

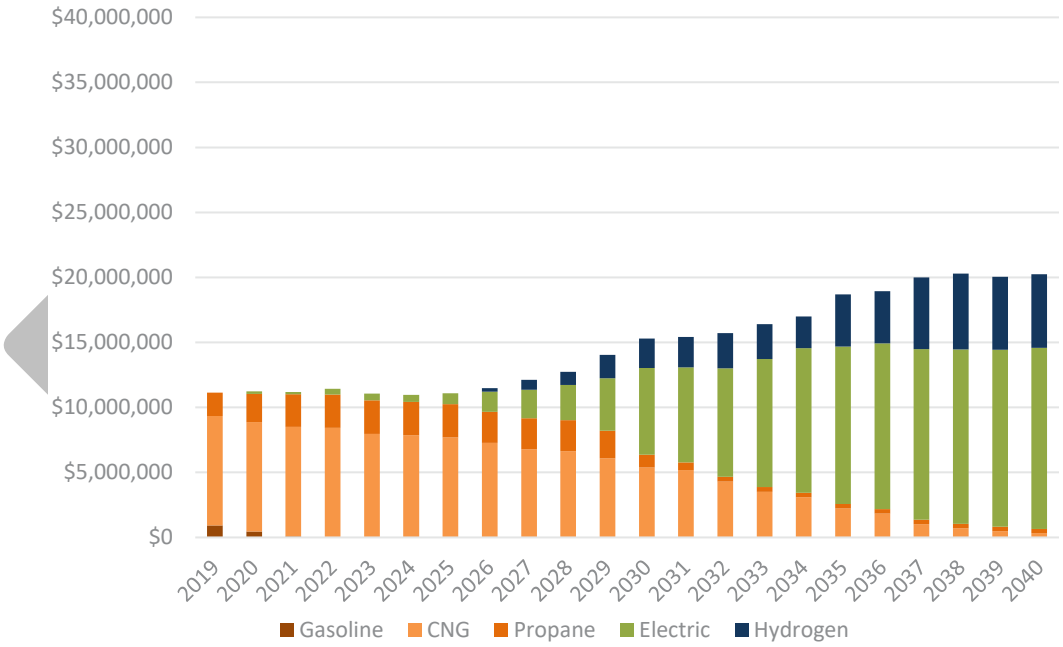


Figure 34 – Annual Fuel Costs, Mixed Scenario

Fuel Assessment Cost Comparison

The Fuel Assessment includes all electrical and fuel costs over the transition for each scenario. **Figure 35** shows the cumulative fuel costs for each scenario. **Table 18** shows the combined total costs, the incremental cost over the Baseline and the percentage of the fleet that is zero-emission in 2040.

Figure 35 - Total Costs, Fuel Assessment

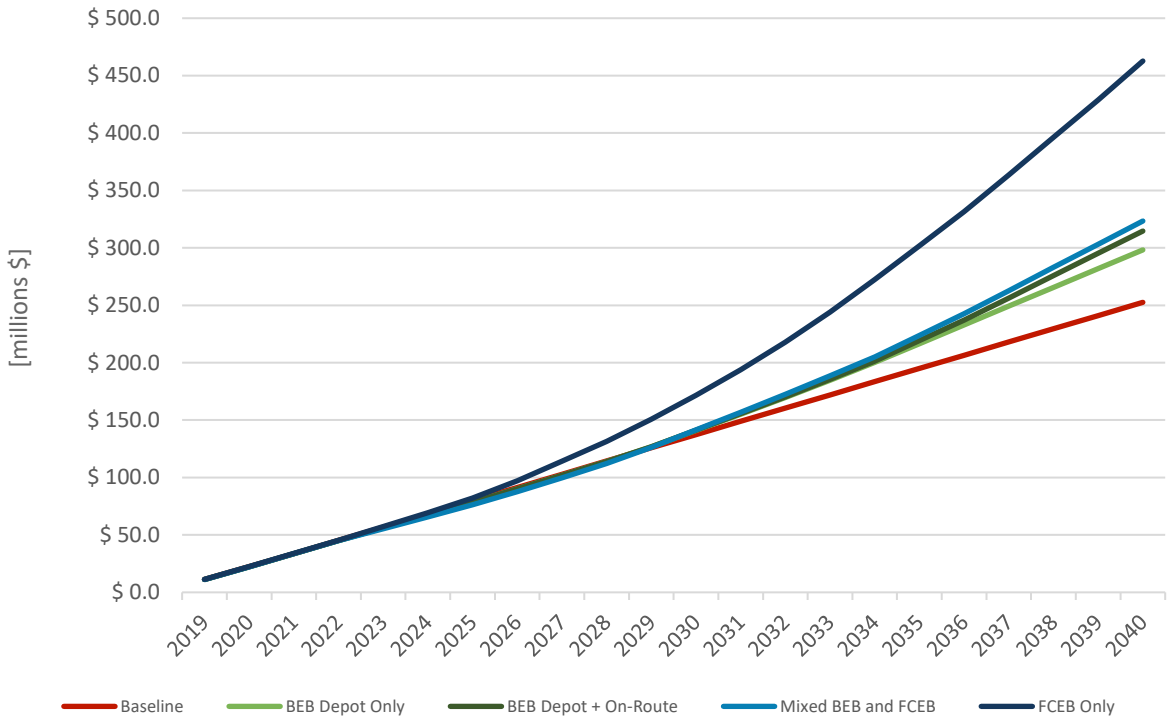


Table 18 - Total Costs, Fuel Assessment

Scenario	Cost	% Cost Increase Over Baseline	% ZEB in 2040
Baseline	$ 252,569,000	----	2%
BEB Depot Only	$ 298,234,000	18%	77%
BEB Depot + On-Route	$ 314,657,000	25%	84%
FCEB Only	$ 462,731,000	83%	95%
Mixed BEB and FCEB	$ 323,380,000	28%	95%

Facilities Assessment

Once bus and fueling requirements are understood for the ZEB transition, the requirements for supporting infrastructure can be determined including charging equipment for BEBs and hydrogen fueling equipment for FCEBs. The Facilities Assessment determines the scale of charging and/or hydrogen infrastructure necessary to meet the demands of the projected fleets' energy use estimated in the Fleet and Fuel Assessments, as well as all associated costs with installation of this infrastructure.

This section is divided between battery electric infrastructure and hydrogen fueling infrastructure. The scenarios shown below correspond with scenarios in the Fleet and Fuel Assessments.

Baseline

For the Baseline scenario, there are no additional costs associated with ZEB infrastructure because no ZEBs are added to the fleet. Although a total of nineteen (19) buses are scheduled to be added to the fleet between 2020 and 2022, these buses were already considered part of the baseline analysis as the infrastructure costs have already been programmed. No additional fueling infrastructure upgrades are required to support the Baseline scenario. Since the current internal combustion engine fueling infrastructure (CNG, gasoline, propane) must remain in place throughout the transition period, any upgrades or maintenance shall be required for each scenario. Related costs will be the same for each scenario and thus excluded from the analysis.

Battery-Electric Charging Infrastructure Scenarios

With pilot BEB deployments, charging requirements are met relatively easily with a handful of plug-in pedestal chargers and minimal infrastructure investment. Scaling to a fleetwide BEB deployment requires a significantly different approach to charging and substantial infrastructure upgrades. Plug-in charging is no longer practical as charger dispenser cables can create hazards in the bus yard. Instead, the preferred approach is to use overhead pantograph or reel dispensers attached to gantries installed above bus parking lanes.

In addition to the installation of the charging stations, improvements to existing electrical infrastructure including switchgear, service connections, etc. are required to support deployment of BEBs. Design work will be required to support BEB deployment including development of detailed electrical and construction drawings required for permitting once specific charging equipment has been selected. To define the timeline and costs to install the necessary charging equipment, the scope of work is broken into four key project types: planning, structural, power upgrades, and charger installation. Rather than building out the infrastructure all at once, projects are sized and scheduled to meet the near-term charging requirements.

CTE and AECOM developed estimates for components of each projects to build up a total cost estimate for each project. Assumptions used for BEB infrastructure are shown in **Table 19**. Conceptual BEB depot layouts, prepared by AECOM, are provided **Appendix B**.

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Table 19 – BEB Infrastructure Planning Assumptions

Project	Cost Estimate Metrics	Source
Infrastructure Planning	$150k per division	Engineer's estimate
Structural Projects (Gantries, Conduit, duct banks, etc.)	Design/Construction: avg. $99k per bus	Engineer's estimate, includes 20% contingency
Power Upgrade Projects	Design, Construction, & Equip: $218k per MW	Engineer's estimate, includes 20% contingency
Charging Projects	Charging Equipment & Installation: $72k per bus	Quotes and estimates, includes 20% contingency

Key assumptions:

- Gantry structures used at each division except for Copley as depot plug-in charging will be utilized with cutaway vehicles
- One (1) plug-in reel or overhead pantograph per bus
- Two (2) buses per 125 kW charger except at Copley where four (4) per charger
- Two (2) charge windows, i.e., no more than half the buses charge at any given moment expect at Copley where four (4) charge windows
- Off-peak, overnight charging
- Charge management software to manage charging
- Dispenser capacity to serve up to 80% of the fleet at a time; No movement of buses overnight



Source: CTE

BEB Depot-Only Charging

Charging infrastructure to support 648 depot-charged BEBs in 2040 is required, as calculated in the Fleet Assessment.

Depot Planning Projects

The build-out of charging infrastructure will require planning at each division. Planning is assumed to cost approximately $150,000 at each division and will occur as shown in the table below. One planning project is expected at each of the five depots, which totals approximately $750,000 over the life of the transition.

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Table 20 – Planning Projects, BEB Depot-Only Scenario

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Total
Copley										1													1
East County								1															1
Kearny Mesa				1																			1
Imperial Ave										1													1
South Bay			1																				1
Total			**1**	**1**				**1**		**2**													**5**

Depot Structural Projects

Structural projects include (1) trenching and build out duct banks from the switchgear to the charger pads, (2) construction of charger pads (i.e., foundation for charging equipment), (3) construction of gantry foundations and overhead gantry structures that hold the dispensers, and (4) installation of conduit from switchgear to charger pads and gantries. **Table 21** shows the detailed cost assumptions for structural projects. These cost assumptions also apply to other projection scenarios. Duct bank cost is incurred only once per division, other costs are on a per gantry basis.

Table 21 – Structural Project Cost Assumptions

Item	Cost	Unit
Initial Duct/Bank	$ 300,000	per division
Gantry & Foundation	$ 500,000	per gantry
Incremental Duct Bank/Conduit	$ 15,000	per gantry
Charger Pad (3 chargers per gantry)	$ 25,000	per gantry
Contingency	20%	on project costs
Design Engineering	6%	on project costs and contingency

Each entry in the table below indicate a structural project to add overhead gantry capacity to each depot. **Table 22** shows the number of gantries added in a given year at each depot. Each gantry can serve between five and eight buses, depending on the location and space constraints at the depots. Note, that gantries are not employed at Copley as the depot only services cutaway vehicles and it is expected that these vehicles will charge using plug-in charging.

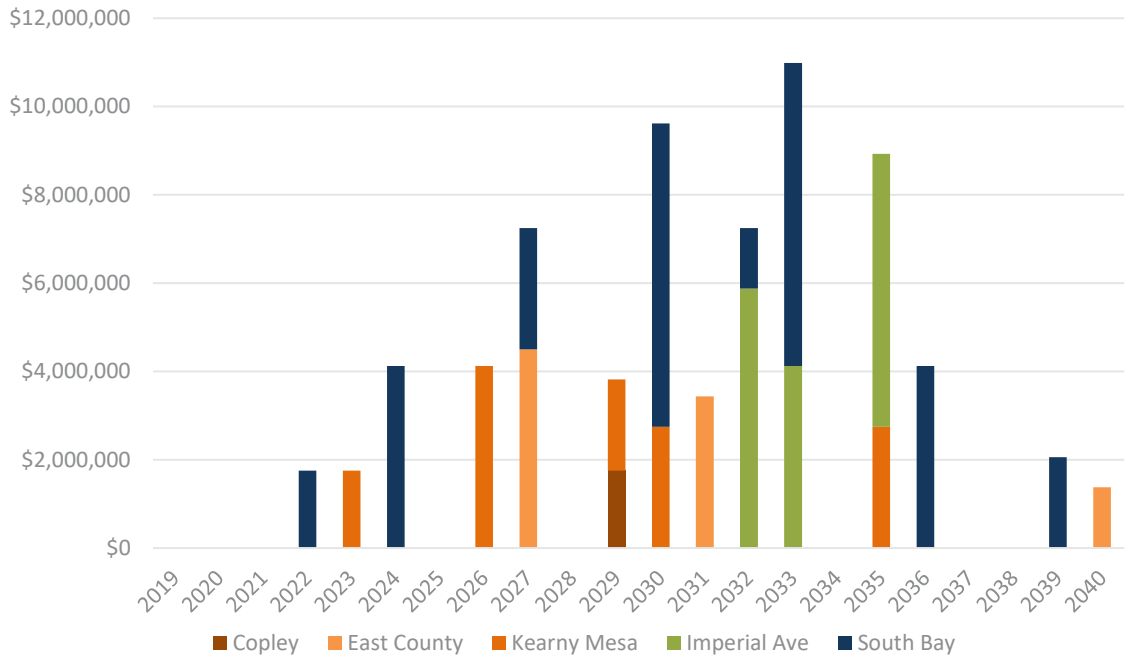
Table 22 – Incremental Gantries, BEB Depot-Only Scenario

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Total
Copley											2												2
East County									6				5									2	13
Kearny Mesa					2			6			3	4					4						17
Imperial Ave														8	6		9						23
South Bay				2		6			4			10		2	10			6			3		43
Total				**2**	**2**	**6**		**6**	**10**		**5**	**14**	**5**	**10**	**16**		**13**	**6**			**3**	**2**	**98**

Figure 36 shows the total annual costs of structural projects by division for the BEB Depot-Only Charging scenario. These costs include the initial duct bank costs at each division, plus gantry and foundation costs, incremental duct bank/conduit costs and charger pad costs per gantry, sequenced in accordance with the above tables. On top of these costs, 20% contingency and 6% engineering cost is added. Although no gantries are proposed at Copley, there are still

structural projects that are required to support plug-in charger installation including duct bank installation, charger pad installation, and design services.

Figure 36 – Annual Structural Projects Cost, BEB Depot-Only Scenario



Depot Power Upgrade Projects

Power upgrade projects include construction of transformer foundations and installation of transformers. It is assumed that transformers will be modular and incremental power requirements are met over time. The table below shows the assumed costs for depot power upgrade projects.

Table 23 – Power Upgrade Cost Assumptions, BEB Depot-Only Scenario

Transformer/Switchback Pad	Cost	Unit
Transformer/Switchback Pad	$ 350,000	per division, up to 10 MW
Construction, Equipment (1 MW)	$ 200,000	per project
Construction, Equipment (2 MW)	$ 300,000	per project
Construction, Equipment (3 MW)	$ 350,000	per project
Construction, Equipment (4 MW)	$ 375,000	per project
Construction, Equipment (5 MW)	$ 400,000	per project
Contingency	20%	on project costs
Design Engineering	6%	on project costs and contingency

Table 24 shows incremental required electrical demand, in megawatts, for each division. Each entry indicates the minimum amount of power that must be added in a given year to meet the growing demand at a given facility as more BEBs are purchased. Please note that the incremental demand at Imperial Avenue noted in 2019. The additional demand associated with two 62.5 kW chargers at East County, Kearney Mesa, and South Bay is not included in this forecast to support the two year pilot program as no additional power upgrades were required to complete the installations.

Table 24 – Incremental Electrical Demand, BEB Depot-Only Scenario [MW]

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Total
Copley										0.7		0.8	0.8								0.4		2.8
East County									0.4	0.7	0.8		1.4									0.7	4.0
Kearny Mesa			0.1		0.8			0.7	0.6		1.3	0.7		0.7			0.3				0.4		5.6
Imperial Ave	0.4													2.1	0.7	0.7	1.4	1.0	1.0				7.2
South Bay				0.7		0.6	0.7	0.8	0.7			2.4		0.8	2.1	2.1		0.7	0.7	1.0	1.0		14.2
Total	**0.4**		**0.1**	**0.7**	**0.8**	**0.6**	**0.7**	**1.5**	**1.7**	**1.4**	**2.1**	**3.9**	**2.2**	**3.6**	**2.8**	**2.8**	**1.7**	**1.7**	**1.7**	**1.0**	**1.8**	**0.7**	**33.8**

It is more economical, however, to increase power capacity in fewer projects that can meet power requirements for a longer period of time. Therefore, power upgrades are consolidated to occur in selected years, in accordance with the required demand in **Table 24**. These recommended upgrades are shown in **Table 25**. MTS will need to add an additional estimated 36 MW of capacity to its system by 2040 to accommodate charging for 640 BEBs.

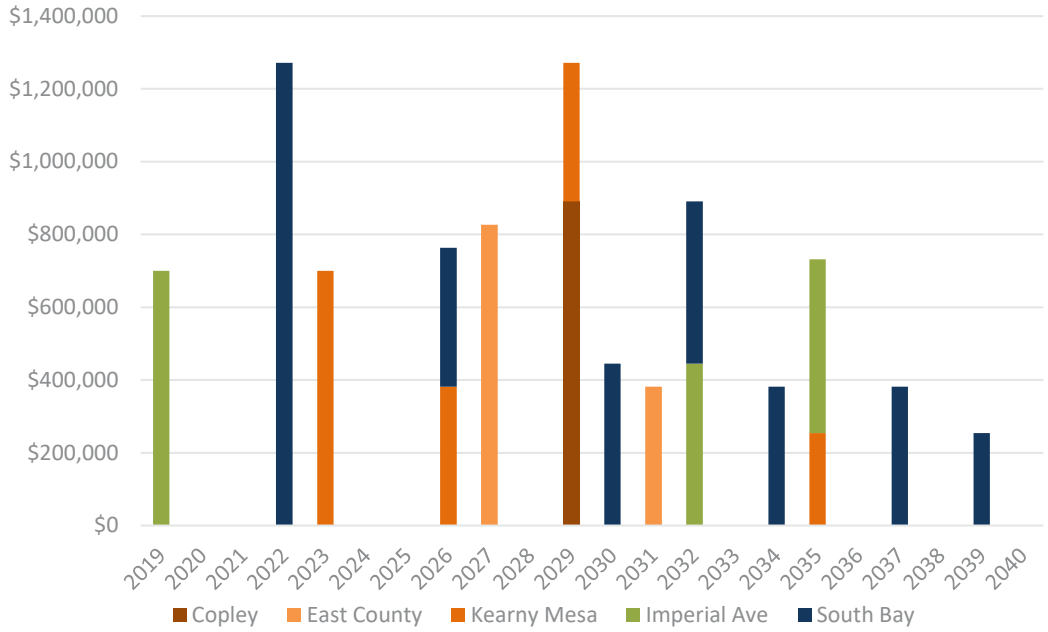
Table 25 – Recommended Power Upgrade Projects, BEB Depot-Only Scenario [MW]

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Total
Copley											3.0												**3.0**
East County									2.0				2.0										**4.0**
Kearny Mesa					1.0			2.0			2.0						1.0						6.0
Imperial Ave	1.0													3.0			4.0						8.0
South Bay				2.0				2.0				3.0		3.0		2.0			2.0		1.0		**15.0**
Total	**1.0**			**2.0**	**1.0**			**4.0**	**2.0**		**5.0**	**3.0**	**2.0**	**6.0**		**2.0**	**5.0**		**2.0**		**1.0**		**36.0**

The total cumulative cost of Power Upgrade projects, in 2019 dollars, is provided in **Figure 37.** Total estimated power upgrade costs over the project life are approximately $10 million.

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Figure 37 – Annual Power Upgrade Project Costs, BEB Depot-Only Scenario



Depot Charger Installation Projects

Charging projects include purchase and installation of 125 kW chargers and dispensers. Each bus will require one dispenser. Every two (2) buses (40' and larger) will require one (1) charger, while buses at Copley (all smaller, cutaway-style buses) which are assigned four (4) buses to one charger. Please note that six (6) 62.5 kW plug-in chargers with one dispenser each at Imperial Avenue and two (2) 62.5 kW plug-in chargers with one dispenser each at East County, Kearney Mesa, and South Bay have already been installed to support the pilot program. Dispensers for future installation are expected to be either overhead reel or pantograph style except for Copley where plug-in chargers are assumed. **Table 26** provides the costs assumed for charger and dispenser installs.

Table 26 – Dispenser and Charger Project Cost Assumptions

Item	Cost	Unit
Charger	$ 80,000	per 125 kW charger
Charger Installation	$ 10,000	per 125 kW charger
Dispenser/Pantograph	$ 10,000	per dispenser
Dispenser Installation	$ 5,000	per dispenser
Contingency	20%	on project costs

Table 27 and **Table 28** show the annual dispensers and charger installations by division for each year of the project.

Table 27 – Annual Dispenser Installations, BEB Depot-Only Scenario

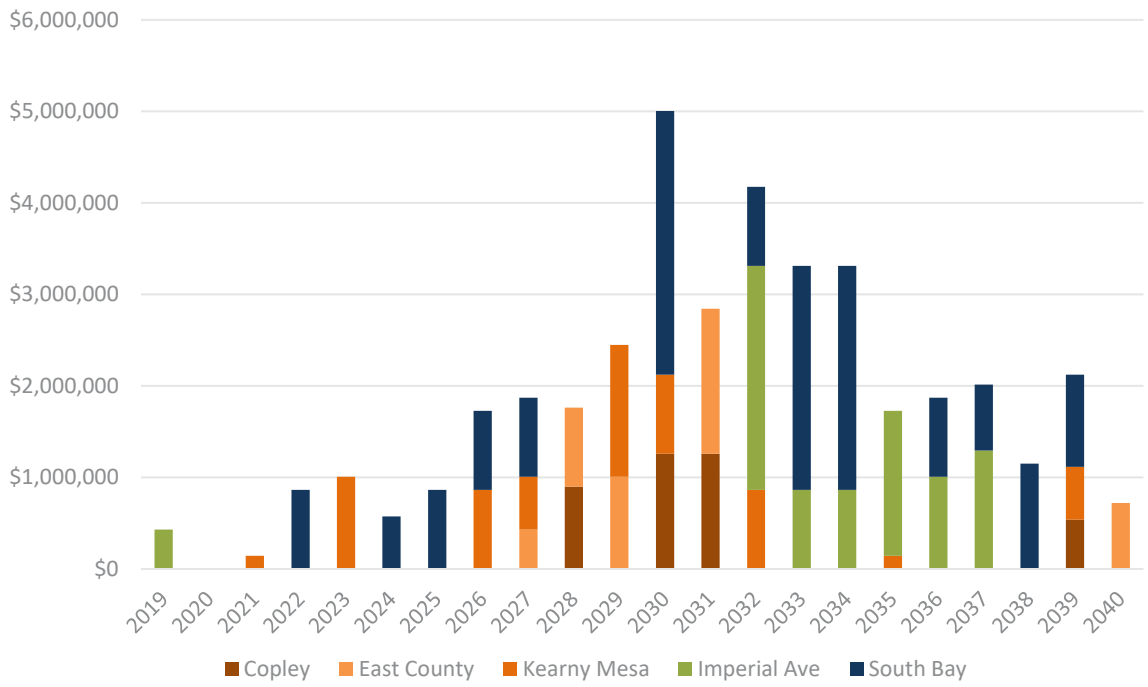
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Total
Copley										20		28	28								12		88
East County									6	12	14		22									10	64
Kearny Mesa			2		14			12	8		20	12		12			2				8		90
Imperial Ave	6													34	12	12	22	14	18				118
South Bay				12		8	12	12	12			40		12	34	34		12	10	16	14		228
Total	**6**		**2**	**12**	**14**	**8**	**12**	**24**	**26**	**32**	**34**	**80**	**50**	**58**	**46**	**46**	**24**	**26**	**28**	**16**	**34**	**10**	**588**

Table 28 – Annual Charger Installations, BEB Depot-Only Scenario

Division	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Total
Copley										5		7	7								3		22
East County									3	6	7		11									5	32
Kearny Mesa			1		7			6	4		10	6		6			1				4		45
Imperial Ave	3													17	6	6	11	7	9				59
South Bay				6		4	6	6	6			20		6	17	17		6	5	8	7		114
Total	**3**		**1**	**6**	**7**	**4**	**6**	**12**	**13**	**11**	**17**	**33**	**18**	**29**	**23**	**23**	**12**	**13**	**14**	**8**	**14**	**5**	**272**

Figure 38 shows the annual cost of charger and dispenser installations based on these cost assumptions and the above estimated charger and dispenser quantities.

Figure 38 – Annual Cost of Charger and Dispenser Installations, BEB Depot-Only Scenario



BEB Depot-Only Charging Infrastructure Cost Summary

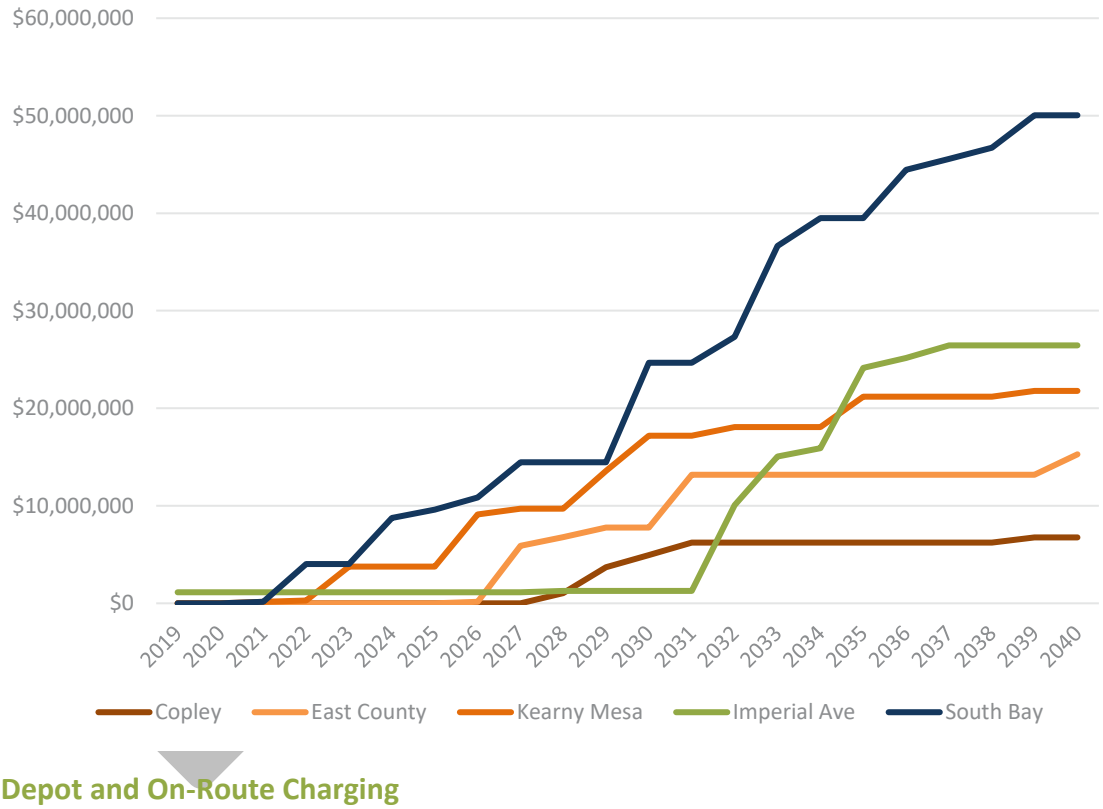
Table 29 summarizes all costs for charging infrastructure by division for the BEB Depot-Only Charging scenario. **Figure 39** provides the cumulative total cost breakdown by division. The estimated total infrastructure costs for the BEB Depot-Only Charging scenario are approximately $120 million; this includes, at all divisions: all gantry structural projects, all power upgrade projects, all charger and dispenser installations, all planning projects, design engineering costs and added 20% contingency on all costs. Costs for a new facility to accommodate overflow due to reduced bus capacity at existing facilities due to infrastructure space requirements has not been incorporated in this analysis; however, there may be a need

to construct a new facility as the build-out progresses. Estimated costs of $185 million for a new facility are not included in this analysis.

Table 29 – Total Infrastructure Costs, BEB Depot-Only Scenario

Division	Cost
Copley	$ 6,756,000
East County	$ 15,277,000
Kearny Mesa	$ 21,780,000
Imperial Ave	$ 26,448,000
South Bay	$ 50,045,000
Total	**$ 120,305,000**

Figure 39 – Cumulative Total Infrastructure Costs, BEB Depot-Only Scenario



BEB Depot and On-Route Charging

The BEB Depot and On-Route Charging scenario adds on-route charging infrastructure to the depot charging infrastructure already developed and presented in the previous section. The addition of on-route charging supports deployment of an additional 60 on-route-charged electric buses in addition to 640 depot-charged buses in 2040. All depot charging-related quantities, locations and costs are identical to BEB Depot-Only Charging scenario. The physical locations of the on-route chargers are not at the depot, but are referenced by depot to serve buses that operate out of the referenced depot. In this section, only costs related to the

additional on-route infrastructure are shown; summarized at the end are the combined on-route and depot charging costs.

On-route chargers do not require any additional support structure to be built, such as gantries, and do not require any structural project planning as with depot chargers. Required infrastructure projects for on-route chargers include planning, power upgrade, and charger purchase and installation. **Table 30** shows the cost assumptions used in the following sections to estimate costs for on-route charging infrastructure.

Table 30 – On-Route Infrastructure Project Cost Assumptions

Item	Cost	Unit
Planning	$ 100,000	per site
Chargers	$ 350,000	per 450 kW charger
Charger Installation	$ 50,000	per 450 kW charger
Transformer/Switchback Pad	$ 50,000	per site
Construction, Equipment (1 MW)	$ 200,000	per MW
Contingency	20%	on project costs
Design Engineering	6%	on project costs and contingency

On-Route Planning Projects

The build-out of on-route charging infrastructure will require planning for each site. It is assumed that each on-route charging planning project will cost $100,000 per site with additional 20% contingency costs applied. The planning projects will occur at each location as shown in **Table 31**, below. A total of 8 on-route charging sites will be required to serve the additional 67 on-route-charged buses. Note, because Copley exclusively houses on-demand paratransit buses, on-route charging is not feasible for these buses because they do not run fixed routes.

Table 31 – Planning Projects, BEB Depot and On-Route Scenario

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Total
Copley																							
East County											1												1
Kearny Mesa																	3						3
Imperial Ave																			3				3
South Bay																				1			1
Total											1						3		3	1			8

Total planning costs are approximately $1 million over the life of the transition.

On-Route Power Upgrade Projects

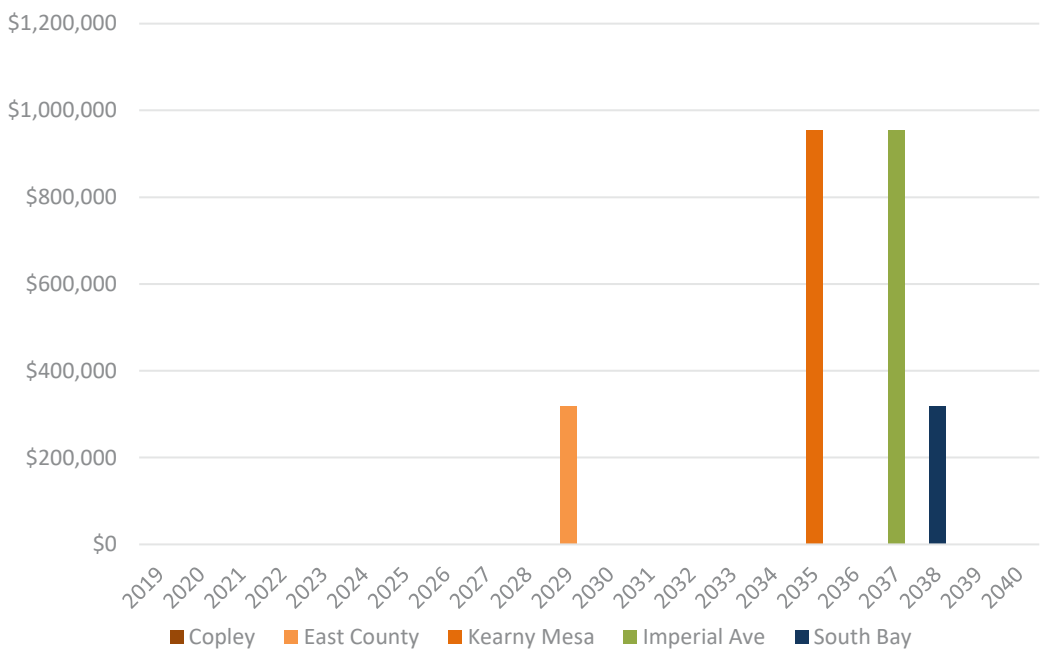
Power upgrade projects include construction of transformer foundations and installation of transformers. Each on-route charging site requires approximately 1 MW of power for two 450 kW chargers. **Table 32** shows a total of 8 MW of additional power required to serve the 67 on-route charged buses, 1 MW each for the 8 required site locations. Power upgrades are in addition to depot power upgrade projects from the BEB Depot-Only Charging scenario.

Table 32 – On-Route Power Upgrade Projects, BEB Depot and On-Route Scenario

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Total
Copley																							
East County											1.0												1.0
Kearny Mesa																	3.0						3.0
Imperial Ave																			3.0				3.0
South Bay																				1.0			1.0
Total											**1.0**						**3.0**		**3.0**	**1.0**			**8.0**

The total annual cost of on-route power upgrade projects, in 2019 dollars, is provided in **Figure 40**. From **Table 30**, each power upgrade project is assumed to cost $250k per site (at 1 MW each), plus 20% contingency costs. In 2040, total power upgrade costs are approximately $2.5 million over the life of the transition.

Figure 40 – Annual Power Upgrade Project Cost for On-Route Charging, BEB Depot and On-Route Scenario



On-Route Charger Installation Projects

Table 33 shows assumed costs for on-route charger procurement and installation projects.

Table 33 – On-Route Charger Project Cost Assumptions

Item	Cost	Unit
Chargers	$ 350,000	per 450 kW charger
Charger Installation	$ 50,000	per 450 kW charger
Contingency	20%	of project costs

On-route chargers require purchase and installation of 450 kW chargers and pantograph dispensers. For on-route charging, one dispenser per charger is assumed, and is included in the charger cost.

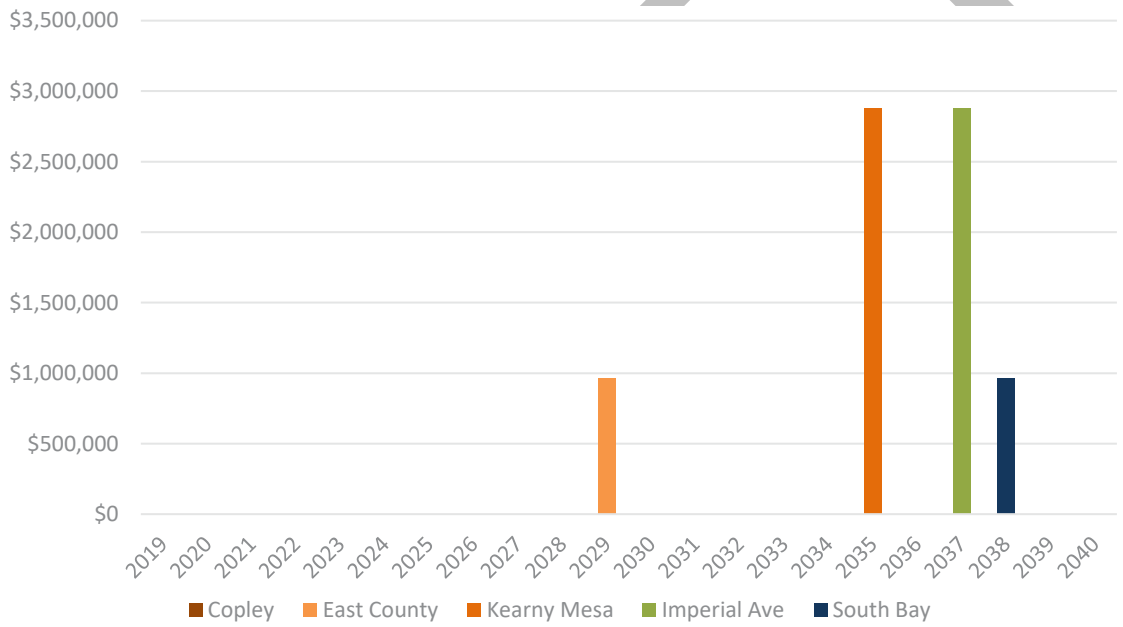
Table 34 shows on-route charger installations. Like planning and power upgrade projects, all site charger installations for each depot occur in a single year. Each charging site requires two chargers. For 8 sites, a total of 16 chargers are required.

Table 34 – Charger Installation Projects, BEB Depot and On-Route Scenario

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Total
Copley																							
East County											2												**2**
Kearny Mesa																	6						**6**
Imperial Ave																			6				**6**
South Bay																				2			**2**
Total											**2**						**6**		**6**	**2**			**16**

Figure 41 shows the total annual costs of on-route charger installations for the BEB Depot and On-Route Charging scenario. Total charger procurement and installation costs are approximately $8 million over the life of the project.

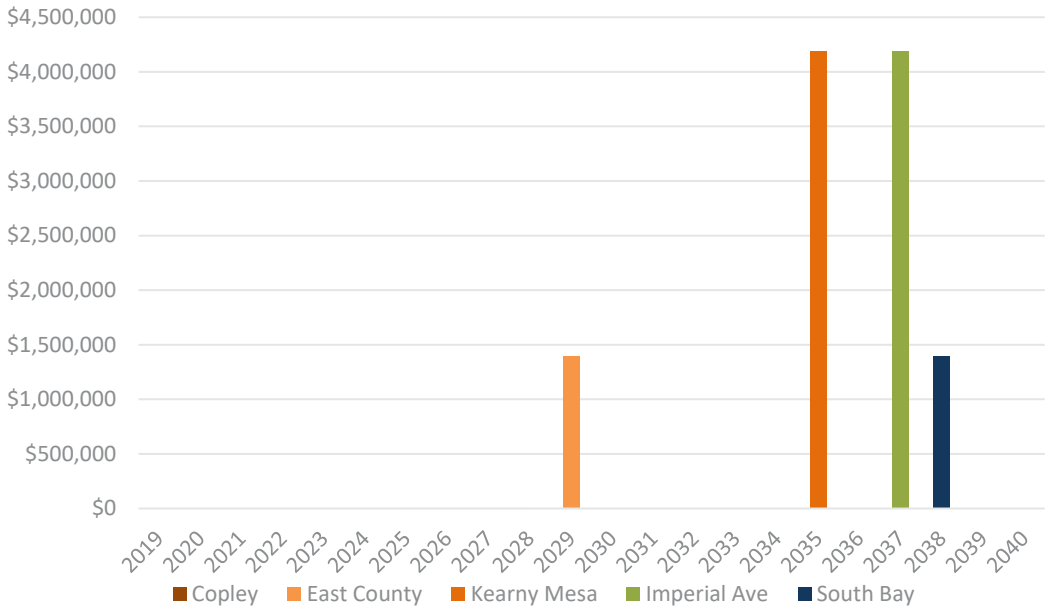
Figure 41 – Annual Charger Install Costs for On-Route Chargers, BEB Depot and On-Route Scenario



BEB Depot and On-Route Charging Infrastructure Summary

Estimated total annual costs for on-route charging infrastructure are shown in **Figure 42**. Total cumulative on-route charger infrastructure costs are approximately $11 million over the transition period.

Figure 42 – Total On-Route Infrastructure Costs, BEB Depot and On-Route Charging Scenario



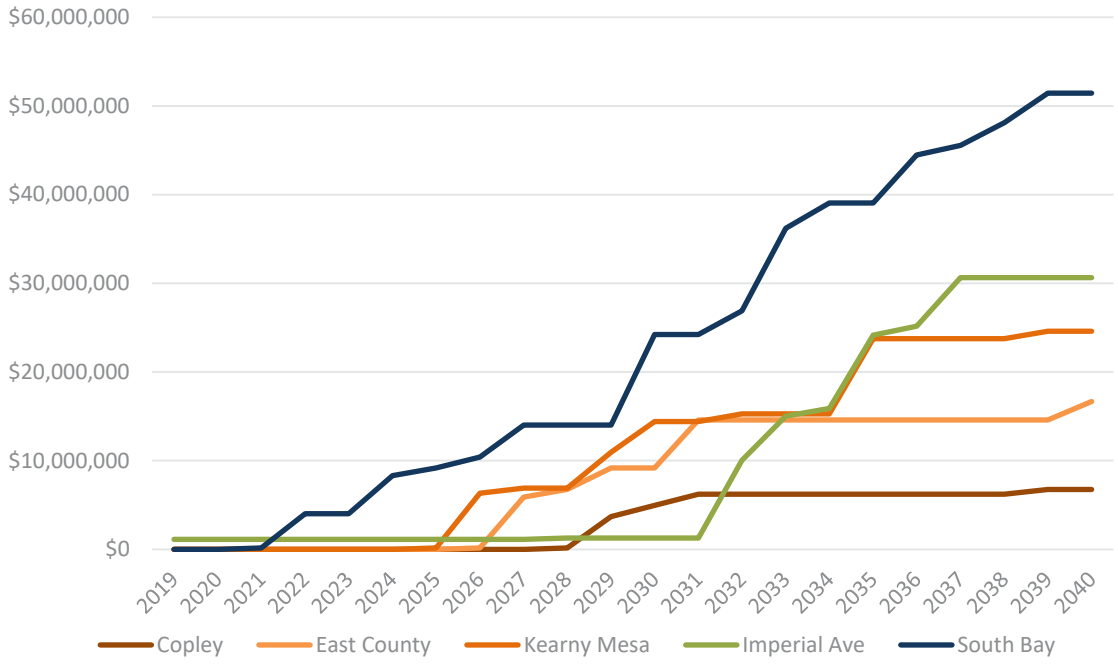
On-route charging infrastructure costs are incremental to depot charging infrastructure costs. The total combined on-route and depot charging infrastructure costs are shown in **Table 35** and cumulative annual infrastructure costs for the BEB Depot and On-Route Charging Scenario are shown in **Figure 43**. The total combined infrastructure costs for the BEB Depot and On-Route Charging scenario is approximately $131 million.

Table 35 – Total Infrastructure Costs, BEB Depot and On-Route Charging Scenario

Division	Cost
Copley	$ 6,756,000
East County	$ 16,675,000
Kearny Mesa	$ 25,974,000
Imperial Ave	$ 30,642,000
South Bay	$ 51,443,000
Total	**$ 131,489,000**

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Figure 43 – Cumulative Total Infrastructure Costs, BEB Depot and On-Route Charging



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Hydrogen Fuel Cell Infrastructure Scenarios

To define the timeline and costs to build-out hydrogen fueling infrastructure, we break the scope of work into four key project types: (1) planning, (2) structural, (3) maintenance bay upgrades, and (4) fueling. Rather than building out the infrastructure all at once, projects are sized and scheduled to meet the near-term fueling requirements.

CTE worked with Fiedler Group to develop the cost assumptions for FCEB infrastructure, summarized in the table below. Proposed depot layouts and the final report for depot upgrades prepared by Fiedler Group, is provided in **Appendix C.**

Table 36: FCEB Infrastructure Planning Assumptions

Project	Cost Estimate	Source
Infrastructure Planning	$150,000 per division	Engineer's estimate
50-Bus Incremental Mechanical Equipment and Installation Package	Varies by facility; Includes design, permitting, and installation for two (2) dispensers; all mechanical process equipment; electrical utilities and switchgear. Excludes storage tanks.	Engineer's estimate, vendor quotes
Incremental Addition of 15,000 Liquid Hydrogen Tank	$290,000 per tank for installation	Engineer's estimate, vendor quotes
Maintenance Upgrades	Electrical, Lighting, Ventilation, and Gas Detection - $125,000 per bay for depots that do not service CNG - $50,000 per bay for depots that currently service CNG	Engineer's estimate

FCEB Only

The FCEB scenario assumes that FCEBs are utilized where based, on analysis, they meet daily service requirements. The following estimates calculate necessary hydrogen infrastructure costs to support a fleet of 791 FCEBs in 2040, including 191 hydrogen powered cutaways. See **Appendix C**, which includes proposed site plans, detailed breakdown of required equipment and project phasing.

Planning Projects

The build-out of hydrogen infrastructure will require planning at each division. It is assumed that each planning project will cost $150,000, occurring as shown in the table below, and only once per division. Total planning projects for five divisions total approximately $750,000.

Table 37 – Planning Projects, FCEB Only Scenario

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Total
Copley										1													1
East County								1															1
Kearny Mesa							1																1
Imperial Ave				1																			1
South Bay					1																		1
Total				1	1		1	1		1													5

50-Bus Mechanical Projects

For hydrogen fueling equipment, it is economical to package projects in 50-bus increments with all necessary mechanical and fueling components included, except for liquid hydrogen storage tanks. Storage tanks can be added in a modular fashion as demand increases, separately from other fueling components The 50-bus mechanical projects include:

1. Two dispensers, though additional dispensers may be added
2. All mechanical process equipment and hydrogen wetted components
3. Design, engineering, and permitting
4. Construction costs
5. Demolition of existing pavement, and excavation
6. Installation of new equipment foundations
7. All electrical conduit, conductors and termination
8. Emergency Shut Down and Notification system
9. Mechanical installation
10. Electrical utilities and switchgear

Table 38 shows the estimated mechanical project costs by year and division. Costs vary per project in a given year due to the scale of the implementation at each division. Buildout of mechanical infrastructure at each division are grouped into no more than three phases to minimize disruption of service and capital expenses. The total cost of mechanical projects to support the FCEB Only scenario is approximately $63 million, spread over 12 different projects.

Table 38 – 50-Bus Mechanical Projects Cost, FCEB Only Scenario [millions $]

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Total
Copley												8.6				3.6							**12.3**
East County										4.3				3.6									**7.9**
Kearny Mesa									4.3				3.6										**7.9**
Imperial Ave						4.3									6.5				4.3				**15.1**
South Bay							8.6									6.5						4.3	**19.4**
Total						**4.3**	**8.6**		**4.3**	**4.3**		**8.6**	**3.6**	**3.6**	**6.5**	**10.1**			**4.3**			**4.3**	**62.6**

Storage Capacity Projects

Storage capacity projects include the incremental addition of one or more 15,000-gallon liquid hydrogen storage tanks. Tanks are sized at 15,000 gallons to accommodate one truckload of liquid hydrogen, or approximately 3,000 kg. Storage capacity projects can be built in conjunction with a 50-bus mechanical project wherever possible, but can also occur on their own as necessary as the FCEB fleet grows at a given division. The required capacity of hydrogen storage at a given depot is sized to accommodate an approximate 4-day supply of average daily fuel use. **Table 39** shows the planned storage capacity projects and costs by year and division. Costs shown include installation when not accompanied by a mechanical project. A standalone, single-tank project costs approximately $290,000. The total storage capacity projects will cost approximately $5 million over the life of the study.

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Table 39 – Storage Capacity Projects Cost, FCEB Only Scenario [millions $]

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Total
Copley												0.58											**0.58**
East County										0.29				0.29									**0.58**
Kearny Mesa									0.29				0.29					0.44					**1.02**
Imperial Ave						0.29									0.58				0.58				**1.45**
South Bay							0.87									0.58							**1.45**
Total						**0.29**	**0.87**		**0.29**	**0.29**		**0.58**	**0.29**	**0.29**	**0.58**	**0.58**		**0.44**	**0.58**				**5.08**

Maintenance Bay Upgrade Projects

Maintenance bays at each depot will require hydrogen detection and exhaust equipment to ensure safety. **Table 40** indicates the timing and location of upgrade projects, as well as the number of bays that require upgrades at each division. A total of 84 maintenance bays will require upgrades.

Table 40 – Hydrogen Maintenance Bay Upgrade Projects, FCEB Only Scenario

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Totals
Copley											10												**10**
East County									12														**12**
Kearny Mesa								20															**20**
Imperial Ave					15																		**15**
South Bay						27																	**27**
Total					**15**	**27**		**20**	**12**		**10**												**84**

Table 41 shows the associated project costs for the upgrades. A total of approximately $5 million is required to upgrade all 84 maintenance bays. We assume a cost of $50,000 per maintenance bay to retrofit CNG facilities for hydrogen buses at East County, Imperial Avenue, Kearny Mesa and South Bay. At Copley, which does not currently service any CNG buses, we assume $125,000 per bay for the required upgrades. This cost comes from requirement of additional ventilation systems; CNG facilities have the required ventilation systems already installed.

Table 41 – Maintenance Bay Upgrade Project Costs, FCEB Only Scenario [millions $]

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Totals
Copley												1.3											**1.3**
East County										0.6													**0.6**
Kearny Mesa									1.0														**1.0**
Imperial Ave						0.8																	**0.8**
South Bay							1.4																**1.4**
Total						**0.8**	**1.4**		**1.0**	**0.6**		**1.3**											**5.0**

FCEB Only Infrastructure Summary

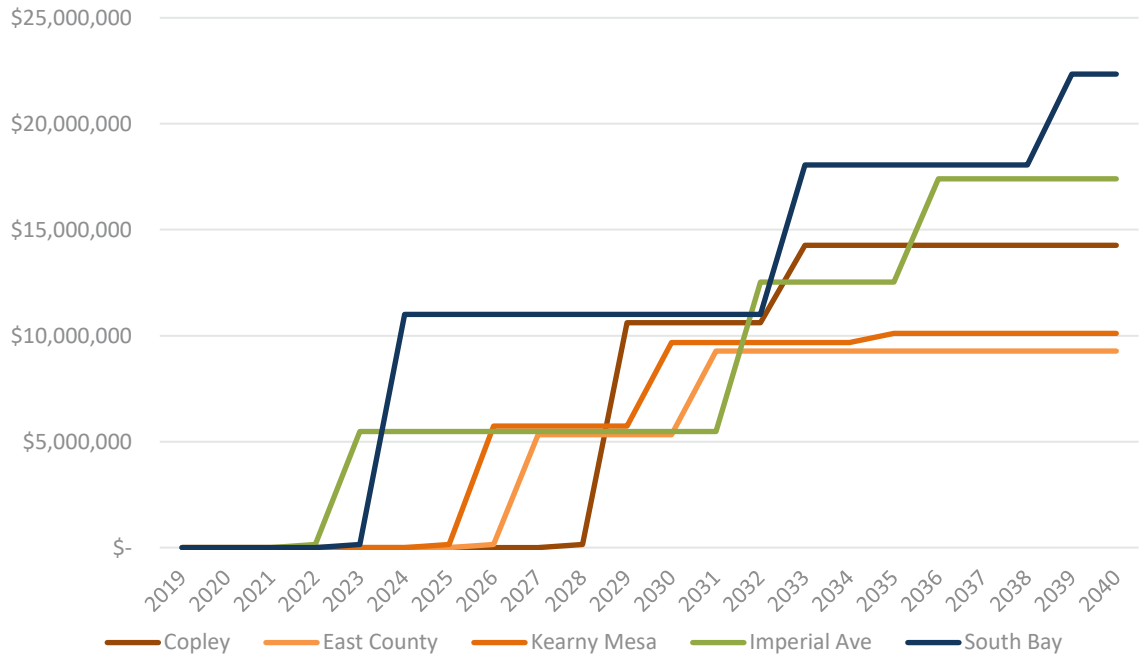
Table 42 provides the total infrastructure costs for the FCEB Only scenario for the transition. The total buildout of required FCEB infrastructure will require approximately $73 million for the FCEB Only scenario. **Figure 44** shows a cumulative summary by year and division.

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Table 42 – Total Infrastructure Costs, FCEB Only Scenario

Division	Cost
Copley	$ 14,265,000
East County	$ 9,274,000
Kearny Mesa	$ 10,109,000
Imperial Ave	$ 17,403,000
South Bay	$ 22,344,000
Total	**$ 73,394,000**

Figure 44 – Cumulative Infrastructure Costs, FCEB Only Scenario

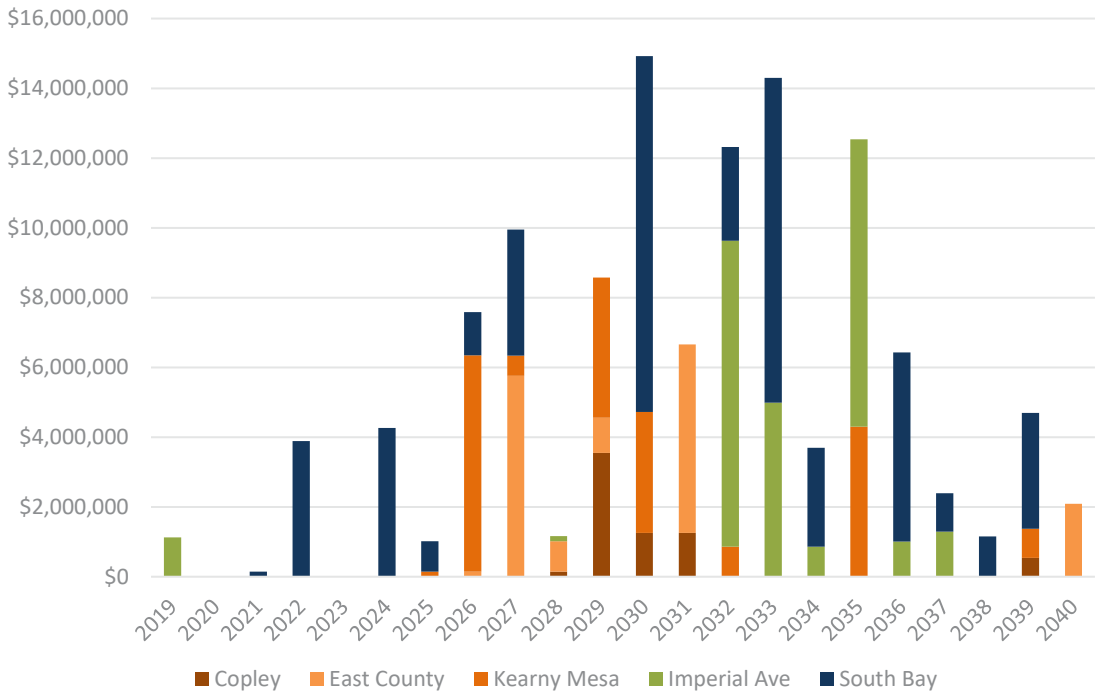


Mixed BEB and FCEB Scenario

In the Mixed BEB and FCEB scenario, charging infrastructure is required to service a total of 640 BEBs in addition to hydrogen fueling infrastructure to service 151 FCEBs across all five depots, including 108 hydrogen powered cutaways. A small number of vehicles will remain propane by 2040 but will ultimately transition to FCEB during the next replacement cycle.

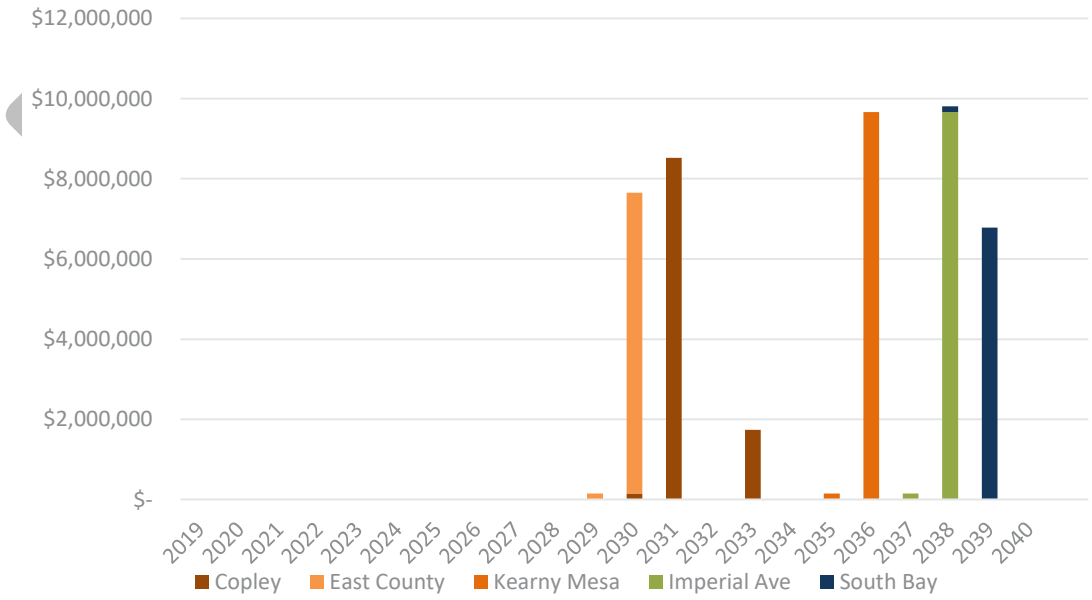
BEB charging infrastructure necessary to support the Mixed BEB and FCEB scenario mimics the costs provided in the BEB Depot-Only Charging scenario. The total infrastructure costs, by division and year, for BEB deployment are detailed on **Figure 45**.

Figure 45 - Annual BEB Infrastructure Costs, Mixed BEB and FCEB Scenario



In addition to BEB charging, hydrogen fueling is required to support the Mixed BEB and FCEB scenario. The FCEB fueling costs are developed as discussed in the FCEB Only scenario where the scope of work is broken into four (4) key project types: (1) planning, (2) structural, (3) maintenance bay upgrades, and (4) fueling. Infrastructure is built out over time as necessary to support FCEB deployment. Annual costs for the FCEB infrastructure portion of the mixed fleet are provided in **Figure 46**.

Figure 46 - Annual FCEB Infrastructure Costs, Mixed BEB and FCEB Scenario



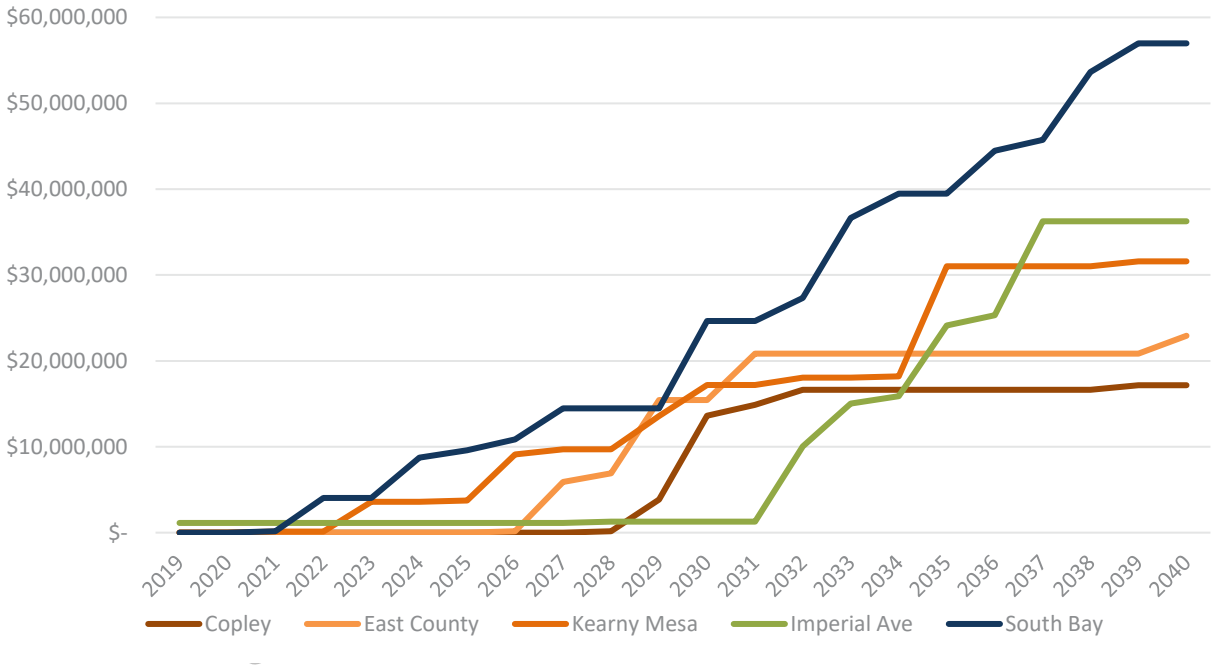
Mixed BEB and FCEB Infrastructure Summary

Table 43 provides the total infrastructure costs for the Mixed BEB and FCEB scenario for the transition. This total buildout of required BEB and FCEB infrastructure is expected to require approximately $165 million. **Figure 47** provides cumulative infrastructure costs for the Mixed BEB and FCEB scenario by year and division.

Table 43 - Total Infrastructure Costs, Mixed BEB and FCEB Scenario

Division	Cost
Copley	$ 17,166,000
East County	$ 22,927,000
Kearny Mesa	$ 31,590,000
Imperial Ave	$ 36,258,000
South Bay	$ 56,975,000
Total	**$ 164,915,000**

Figure 47 - Cumulative Infrastructure Costs, Mixed BEB and FCEB Scenario



Facilities Assessment Cost Comparison

The Facilities Assessment includes all infrastructure-related costs over the transition for each scenario. **Figure 48** shows the cumulative infrastructure costs for each scenario. **Table 44** shows the combined total costs and percent ZEB fleet in 2040. Note that the percent increase over baseline is not provided in the table as the Baseline is assumed to be zero as additional infrastructure is not required to operate the fleet in the current makeup.

Figure 48 - Total Costs, Facilities Assessment

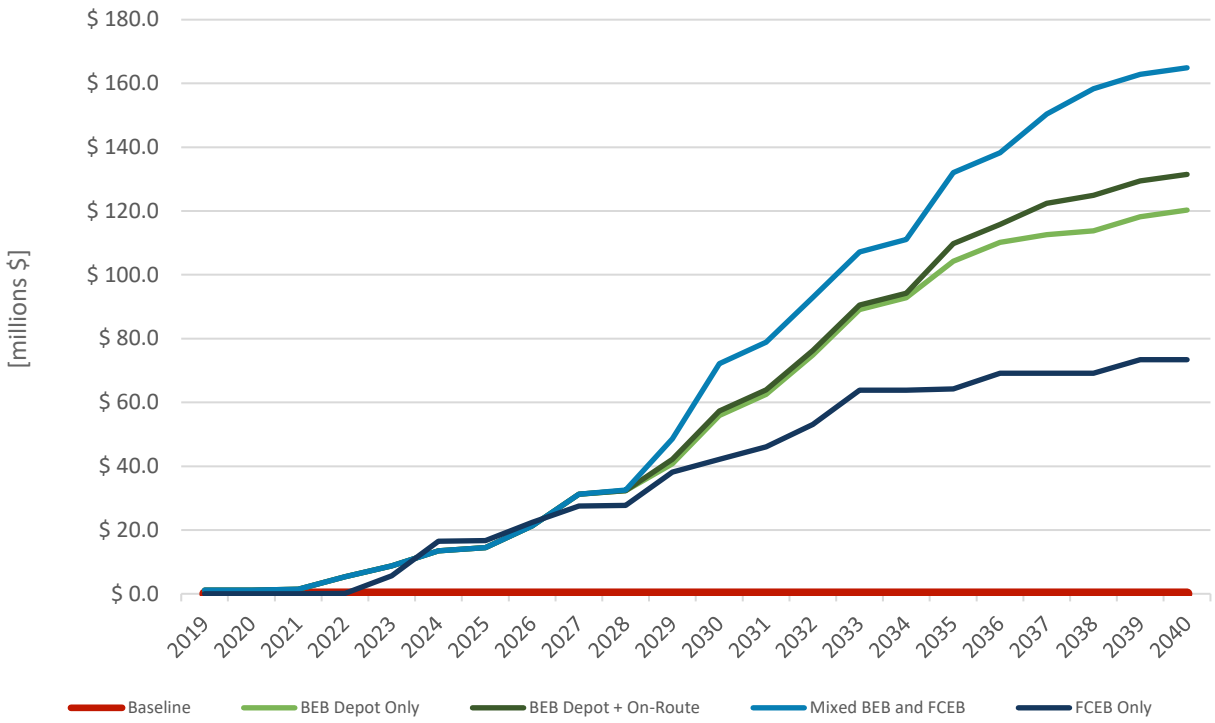


Table 44 - Total Costs, Facilities Assessment

Scenario	Cost	% Cost Increase Over Baseline	% ZEB in 2040
Baseline	$ ----	----	2%
BEB Depot Only	$ 120,305,000	NA	77%
BEB Depot + On-Route	$ 131,489,000	NA	84%
FCEB Only	$ 73,394,000	NA	95%
Mixed BEB and FCEB	$ 164,915,000	NA	95%

Maintenance Assessment

One of the anticipated benefits of moving to a BEB or FCEB fleet is maintenance costs. Conventional wisdom indicates that a transit agency may attain 30% to 50% in maintenance cost savings for a BEB. This is due to the fact that there are fewer fluids to replace (no engine oil or transmission fluid), fewer brake changes due to regenerative braking, and far fewer moving parts than on an internal combustion engine bus. However, the savings in traditional maintenance costs may be offset by the cost of battery or fuel-cell replacements over the life of the vehicles.

There is limited data available on early deployments and many early deployments are from new manufacturers where production quality issues manifest as maintenance issues. Internal combustion engine vehicle labor and maintenance costs includes CNG, Propane and Diesel and is provided by MTS. BEB labor and maintenance cost comes from analysis completed by the U.S. DOE National Renewable Laboratory (NREL). There is limited information available regarding maintenance costs for FCEBs due to the limited number of vehicles in operation in the United States. Much of the information comes from AC Transit, which is the largest FCEB fleet in the country. Unfortunately, these buses are older models that require a significant amount of maintenance. In addition, the buses are out of warranty and support from the European manufacturer is expensive. As a result, rather than use artificially high costs for older model FCEBs, maintenance costs associated with CNG buses were used as a replacement based on similarities between the vehicles. In addition to labor and materials, the cost impact of mid-life overhauls for major components for each type of bus is also estimated. **Table 45** shows the assumed costs of scheduled and unscheduled labor and maintenance used in this analysis.

Table 45 – Labor and Materials Cost Assumptions

Type	Estimate	Source
Internal combustion engine	$1.05/mi, including tires	MTS
BEB	$0.74/mi	U.S. DOE NREL
FCEB	$1.05/mi including tires	MTS/CTE

In addition to Labor and Maintenance, the cost impact of mid-life overhauls of major components for each type of bus are estimated. Assumptions used in this analysis are given in **Table** 46**.** These costs are from MTS for internal combustion engine buses and for BEB and FCEB, mid-life overhaul cost estimates are provided by vehicle OEMs.

Table 46 – Mid-Life Overhaul Cost Assumptions

Type	Overhaul Scope	Estimate	Source
Internal combustion engine	Engine/Transmission Overhaul	$50k per bus	MTS
BEB	Battery Replacement	$500 per kWh	Bus OEM

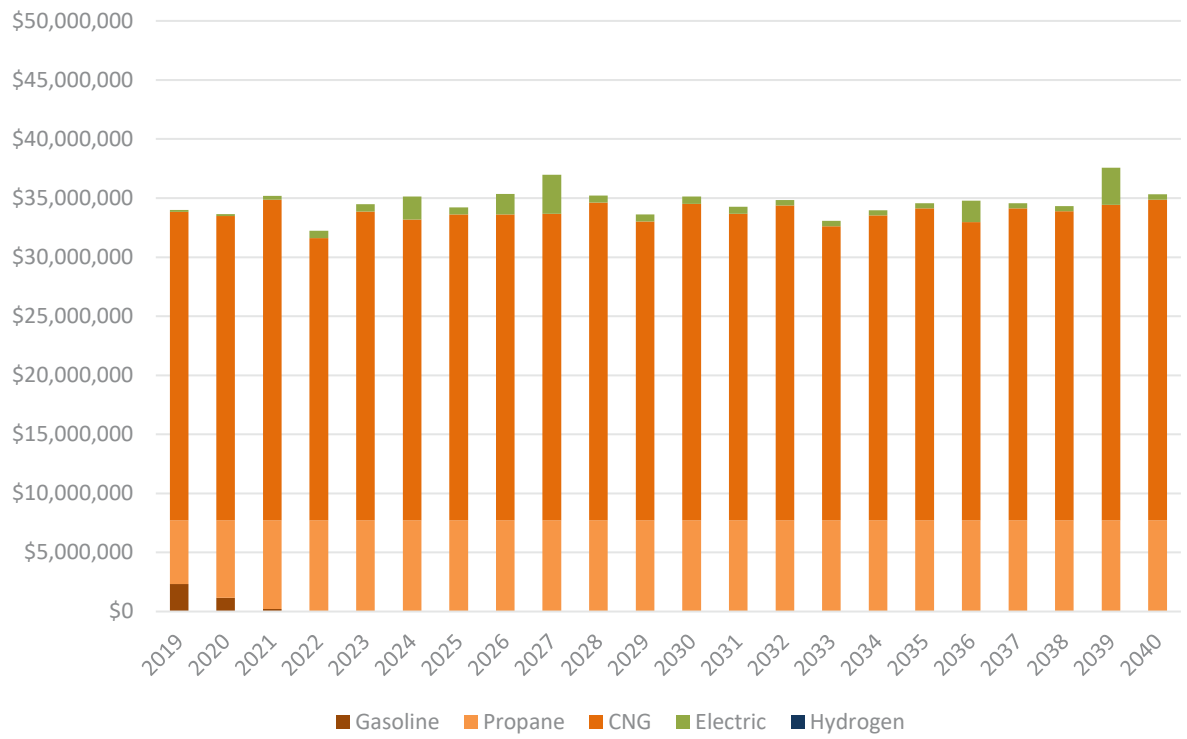
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FCEB	Battery Replacement Fuel Cell Overhaul	$500 per kWh $40k per bus	Bus OEM Fuel Cell OEM

Baseline

The baseline assumes no changes to MTS' current fleet configuration throughout the life of the study, i.e. no ZEB purchases other than those already planned, and is used for comparative analysis. **Figure 49** shows the combined labor, materials and mid-life overhaul costs for the Baseline scenario fleet projection for each year of the study, in 2019 dollars. Annual fleet maintenance costs average approximately $35 million per year.

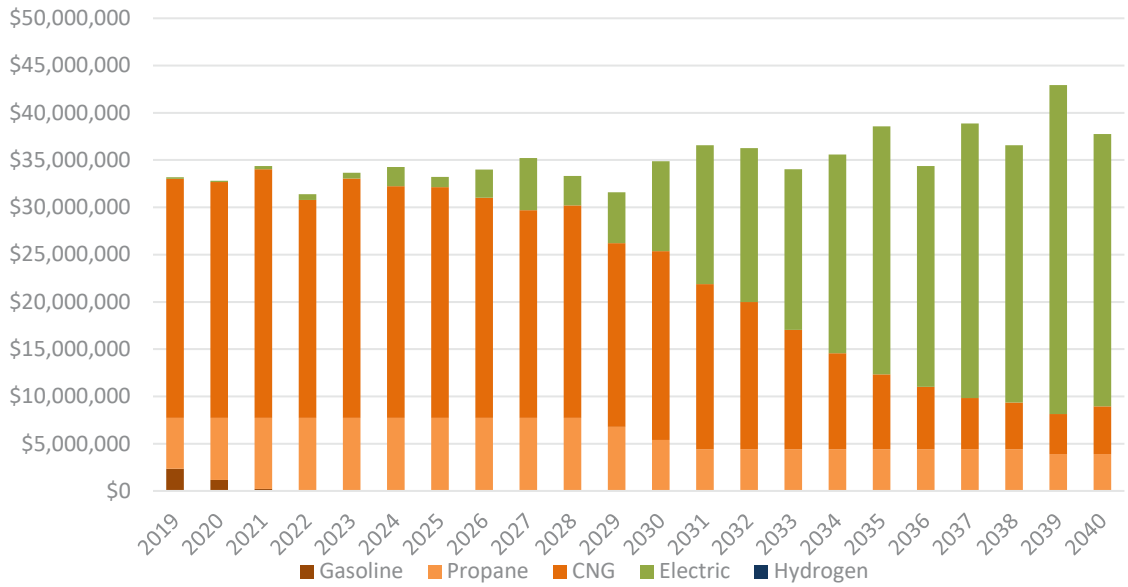
Figure 49 – Annual Fleet Maintenance Costs, Baseline



BEB Depot-Only Charging

Figure 50 shows the combined labor, materials and mid-life overhaul costs for the BEB Depot-Only Charging scenario for each year of the transition, in 2019 dollars.

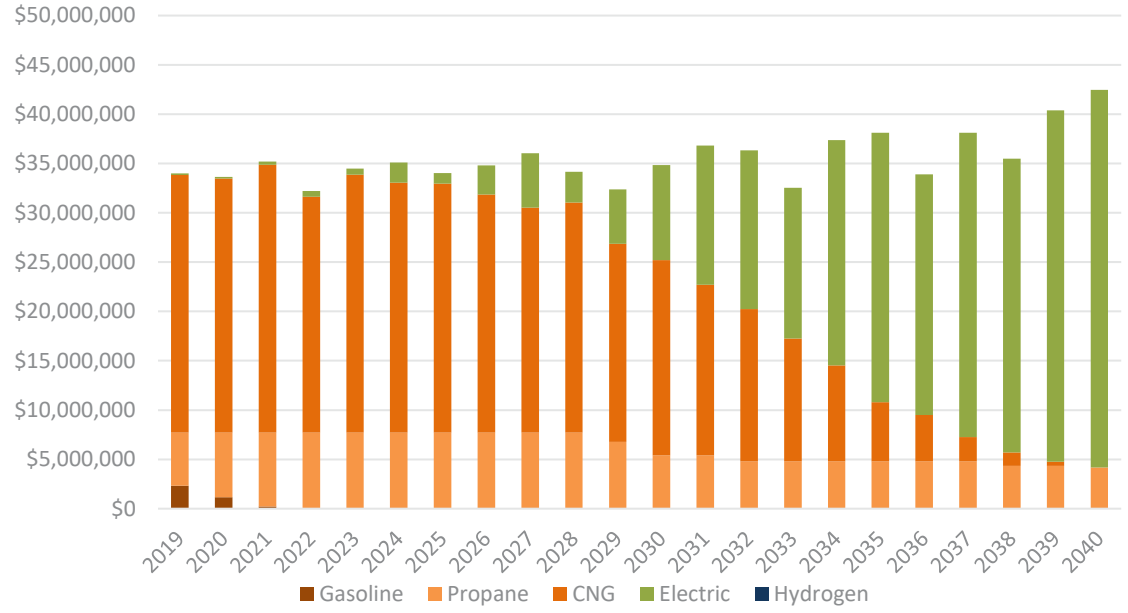
Figure 50 – Annual Fleet Maintenance Costs, BEB Depot-Only Scenario



BEB Depot and On-Route Charging

Figure 51 shows the combined labor, materials and mid-life overhaul costs for the BEB Depot and On-Route Charging scenario for each year of the transition, in 2019 dollars.

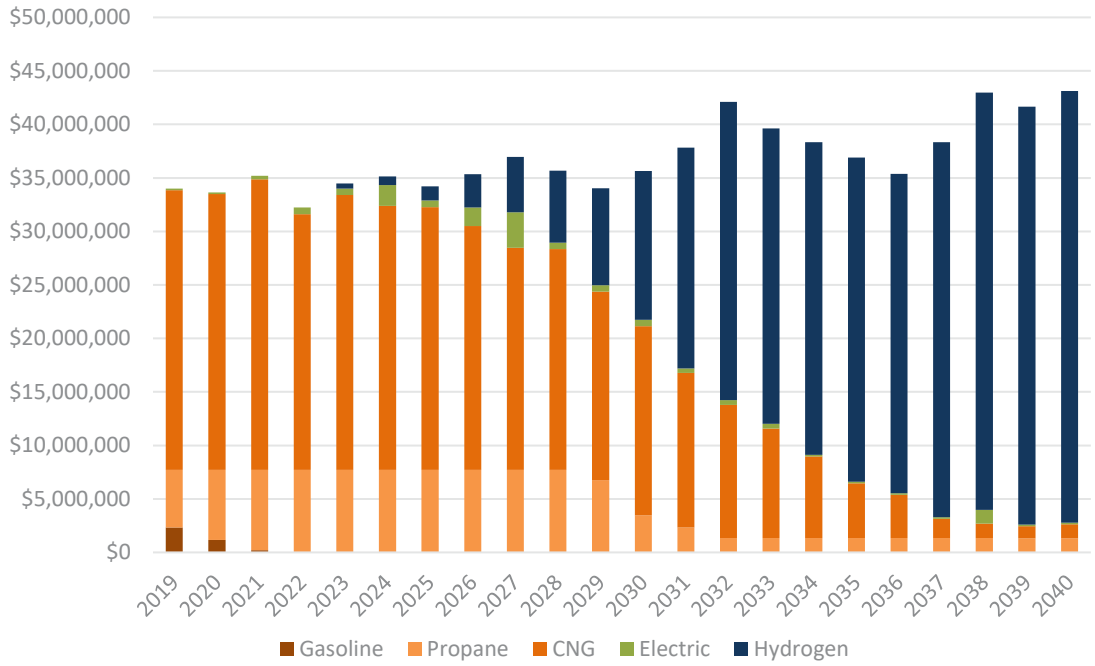
Figure 51 – Annual Fleet Maintenance Costs, BEB Depot and On-Route Scenario



FCEB Only

Figure 52 shows the combined labor, materials and mid-life overhaul costs for FCEB Only scenario for each year of the transition, in 2019 dollars.

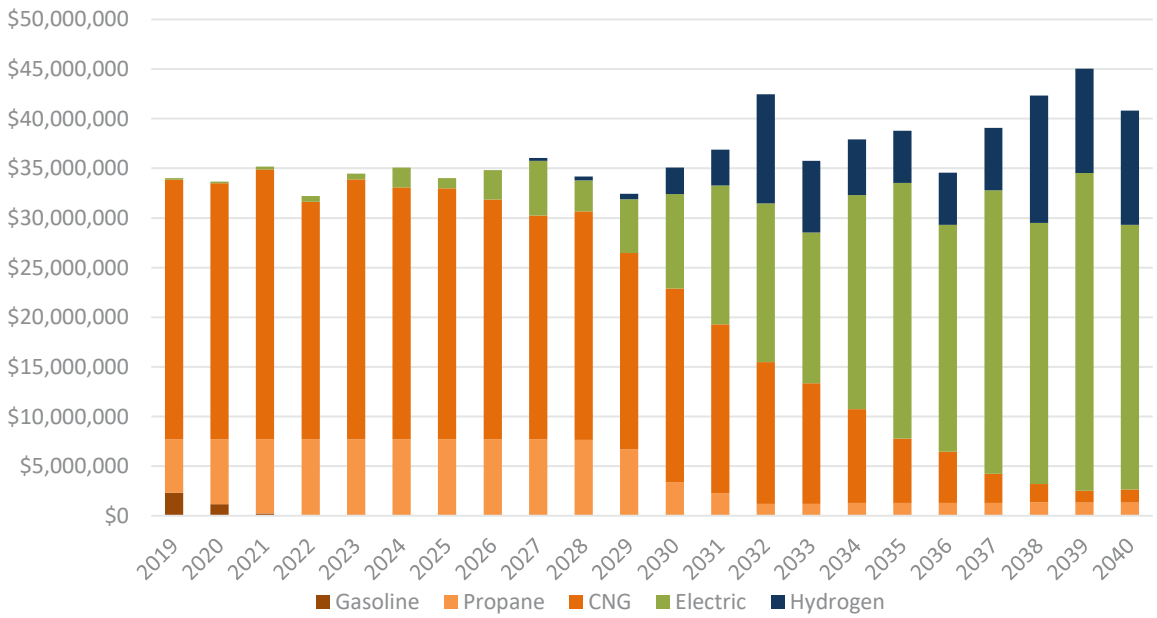
Figure 52 - Annual Maintenance Costs, FCEB Only Scenario



Mixed BEB and FCEB Scenario

Figure 53 shows the combined labor, materials and mid-life overhaul costs for the Mixed BEB and FCEB scenario for each year of the transition, in 2019 dollars.

Figure 53 – Annual Fleet Maintenance Costs, Mixed Scenario



Maintenance Assessment Cost Comparison

The Maintenance Assessment includes all labor, materials and overhaul costs over the transition for each scenario. **Figure 54** shows the cumulative maintenance costs for each scenario. **Table 47** shows the combined total costs and the incremental cost over the Baseline.

Figure 54 – Total Costs, Maintenance Assessments

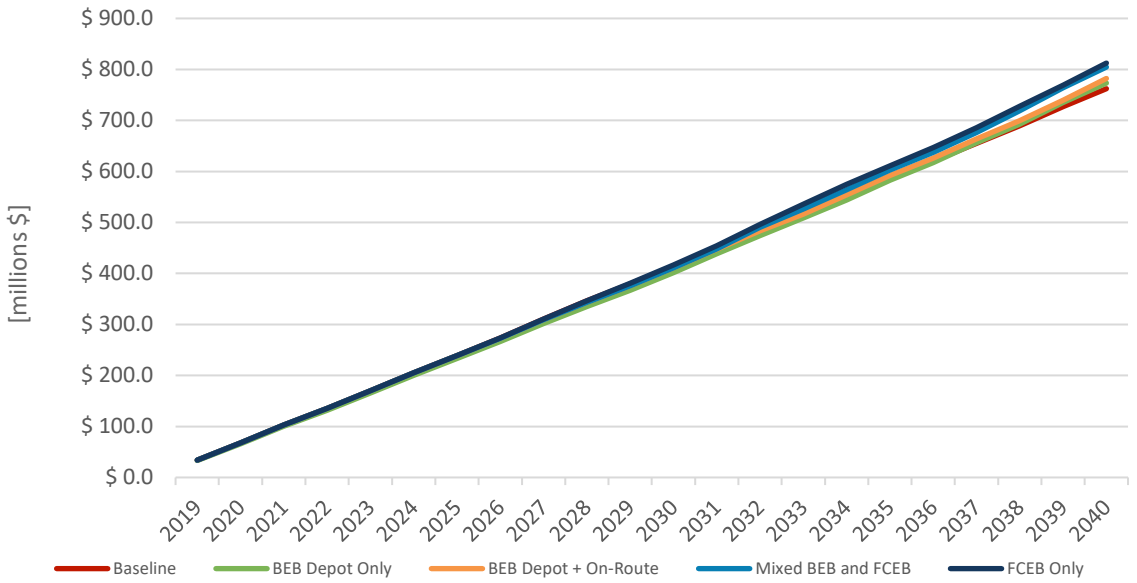


Table 47 – Total Costs, Maintenance Assessments

Scenario	Cost	% Cost Increase Over Baseline	% ZEB
Baseline	$ 762,263,000	----	2%
BEB Depot Only	$ 773,287,000	1%	77%
BEB Depot + On-Route	$ 782,339,000	3%	84%
FCEB Only	$ 812,484,000	7%	95%
Mixed BEB and FCEB	$ 804,691,000	6%	95%

Total Cost of Ownership Assessment

The Total Cost of Ownership Assessment compiles and organizes the results from the Fleet, Fuel, Facilities and Maintenance assessments to show total and annual costs throughout the transition. It includes selected capital and operating costs of each transition scenario over the transition timeline. There may be other costs incurred (i.e., incremental operator and maintenance training); however, these four assessment categories are the key drivers in ZEB transition decision-making. Redundancy, external battery storage, battery recycling, and potential costs associated with a new depot that may be required to support ZEB deployment are not included in this analysis but are important considerations that will also be factored in during the transition.

It is important to note, there is no cost escalation assumed, nor do we assume any cost reduction due to economies of scale for ZEB technology, because there is no historical basis for this assumption. Future changes to MTS' service level, depot locations, route alignments, block scheduling, etc. are unforeseen. The sections below provide best estimates using the information currently available, and using the culmination of assumptions explained throughout this study.

Costs by Scenario

The following sections show total costs per scenario, broken down by assessment type.

Baseline

The Baseline scenario is used for comparative purposes only. It assumes no changes to the agency's current fleet configuration throughout the life of the study, i.e. no ZEB-related purchases. **Table 48** shows the fleet, fuel, facilities and maintenance costs for the Baseline scenario in 2019 dollars. MTS's total operating and capital costs are an estimated $1.82 billion from 2019 to 2040. There are no facilities costs for this scenario. Since we assume MTS will not be adding any additional buses (ZEB or internal combustion engine), other than those that are already included in the baseline scenario, no additional facilities are required.

Table 48 – Total Costs, Baseline [millions $]

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Total
Fleet	28.8	33.5	38.8	53.4	25.0	29.9	49.5	60.7	43.4	16.7	32.0	30.4	34.7	46.8	23.0	40.4	25.0	37.4	62.1	36.0	43.9	16.7	**808**
Fuel	11.3	11.2	11.2	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	**253**
Facilities	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
Maintenance	34.0	33.7	35.3	32.3	34.5	35.2	34.3	34.5	37.0	35.3	33.7	35.2	34.3	34.8	33.1	34.0	34.6	34.8	34.6	34.3	37.6	35.3	**762**
Total	**74.1**	**78.3**	**85.3**	**97.2**	**71.1**	**76.6**	**95.3**	**106.7**	**92.0**	**63.5**	**77.2**	**77.2**	**80.5**	**93.1**	**67.6**	**85.9**	**71.1**	**83.7**	**108.2**	**81.8**	**92.9**	**63.6**	**1,823**

BEB Depot-Only Charging

Table 49 shows the combined fleet, fuel, facilities and maintenance costs for the BEB Depot-Only Charging scenario in 2019 dollars. The total estimated combined cost is approximately $2.28 billion over the length of the transition, from 2019 to 2040. This scenario estimates a total of 640 BEBs in service by 2040.

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Table 49 – Total Costs, BEB Depot-Only Scenario [millions $]

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Total
Fleet	28.8	33.5	38.8	53.4	29.4	33.8	54.7	71.8	61.6	25	46.8	49.9	48.1	71.7	37.7	58.6	41.3	57.3	88.5	58.7	67.3	29.8	1,086
Fuel	11.1	11.2	11.2	11.4	11.2	11.1	11.3	11.6	11.8	12	12.8	14.2	14.3	14.5	15.2	15.6	16.1	16.3	16.3	16.4	16.2	16.4	298
Facilities	1.1	0.0	0.3	3.9	3.5	4.7	1.0	6.8	9.9	1.2	8.4	15.1	6.7	12.3	14.3	3.7	11.4	6.0	2.4	1.2	4.4	2.1	120
Maintenance	33.2	32.8	34.4	31.5	33.7	34.3	33.3	33.2	35.3	33.4	31.7	35	36.6	36.3	34	35.6	38.6	34.4	38.9	36.6	42.9	37.8	773
Total	**74.3**	**77.5**	**84.7**	**100**	**77.8**	**84**	**100**	**123**	**119**	**71.6**	**99.6**	**114**	**106**	**135**	**101**	**113**	**107**	**114**	**146**	**113**	**131**	**86**	**2,278**

BEB Depot and On-Route Charging

Table 50 shows the combined fleet, fuel, facilities and maintenance costs for the BEB Depot and On-Route Charging scenario in 2019 dollars. The total estimated combined cost is approximately $2.33 billion over the length of the transition, from 2019 to 2040. The additional cost of approximately $56 million over the BEB Depot-Only Charging scenario is attributed to additional capital and operational expenses from the additional 60 on-route-charged buses; this scenario estimates a total of 700 total BEBs in service by 2040.

Table 50 – Total Costs, BEB Depot and On-Route Scenario [millions $]

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Total
Fleet	28.8	33.5	38.8	53.4	29.4	33.8	54.7	71.8	61.6	25	48.8	59.9	38	71.7	37.7	58.6	41.3	67.4	98.5	51.4	70.8	30.5	1,105
Fuel	11.1	11.2	11.2	11.4	11.2	11.1	11.3	11.6	11.8	11.9	13	14.4	14.5	14.6	15.3	15.8	17.7	18	19.1	19.7	19.3	19.4	315
Facilities	1.1	0.0	0.3	3.9	3.5	4.7	1.0	6.8	9.9	1.2	9.8	15.1	6.7	12.3	14.3	3.7	15.6	6.0	6.6	2.6	4.4	2.1	131
Maintenance	34	33.7	35.3	32.3	34.5	35.2	34.1	34	36.1	34.2	32.4	34.9	36.9	36.3	32.6	37.4	38.1	33.9	38.1	35.5	40.4	42.5	782
Total	**75.1**	**78.3**	**85.6**	**101**	**78.6**	**84.8**	**101**	**124**	**119**	**72.4**	**104**	**124**	**96**	**135**	**99.9**	**115**	**113**	**125**	**162**	**109**	**135**	**94.5**	**2,334**

FCEB Only

Table 51 shows the combined fleet, fuel, facilities and maintenance costs related to the FCEB Only scenario in 2019 dollars. The total estimated combined cost is approximately $2.70 billion over the length of the transition, from 2019 to 2040. This scenario estimates a total of 791 FCEBs in service by 2040.

Table 51 – Total Costs, FCEB Only Scenario [millions $]

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Total
Fleet	28.8	33.5	38.8	53.4	31.6	35.9	57.3	94.9	69.7	28.7	65	84.5	56.5	95.9	45.2	73.5	56.4	93	123	71.6	79.8	39	1,355
Fuel	11.3	11.2	11.2	11.6	11.9	12.2	12.6	15.3	16.9	17.4	19	20.9	22.4	24.1	26.2	28.3	29.2	30	32.1	32.4	32.8	33.8	463
Facilities	0.0	0.0	0.0	0.2	5.5	10.9	0.2	5.7	5.2	0.2	10.5	3.9	3.9	7.0	10.7	0.0	0.4	4.9	0.0	0.0	4.3	0.0	73
Maintenance	34	33.7	35.3	32.3	34.5	35.2	34.3	34.5	37	35.7	34.1	35.7	37.9	42.2	39.7	38.4	37	35.4	38.8	41.9	41.7	43.2	812
Total	**74.1**	**78.3**	**85.3**	**97.4**	**83.6**	**94.1**	**104**	**150**	**129**	**82**	**129**	**145**	**121**	**169**	**122**	**140**	**123**	**163**	**193**	**146**	**159**	**116**	**2,704**

Mixed BEB and FCEB

Table 52 shows the combined fleet, fuel, facilities and maintenance costs related to the Mixed BEB and FCEB scenario in 2019 dollars. The total estimated combined cost is approximately $2.47 billion over the length of the transition, from 2019 to 2040. This scenario estimates a total of 640 BEBs and 151 FCEBs (791 total ZEBs) in service by 2040.

Table 52 – Total Costs, Mixed Scenario [millions $]

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Total
Fleet	28.8	33.5	38.8	53.4	29.4	33.8	54.7	81.4	60.4	26.3	56.6	69.6	40.1	81.8	37.7	61.4	48.2	77	107	62.9	67.6	31.3	1,181
Fuel	11.1	11.2	11.2	11.4	10.5	10.4	10.5	11.3	12	12.6	13.9	15.2	15.3	15.6	16.3	16.5	18.7	18.9	20	20.3	20	20.3	323
Facilities	1.1	0.0	0.3	3.9	3.5	4.7	1.0	6.8	9.9	1.3	16.1	23.6	6.7	14.1	14.3	3.8	21.0	6.1	12.2	7.9	4.4	2.1	165
Maintenance	34	33.7	35.3	32.3	34.5	35.2	34.1	34	36.1	34.2	32.5	35.1	36.9	42.5	35.8	37.9	38.8	34.6	39.1	42.3	45.1	40.8	805
Total	**75.1**	**78.3**	**85.6**	**101**	**77.9**	**84.1**	**100**	**134**	**118**	**74.4**	**119**	**143**	**99.1**	**154**	**104**	**120**	**127**	**137**	**178**	**133**	**137**	**94.5**	**2,474**

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Total Estimated Costs

Figure 55 shows the combined total costs from the assessments above, broken down by scenario.

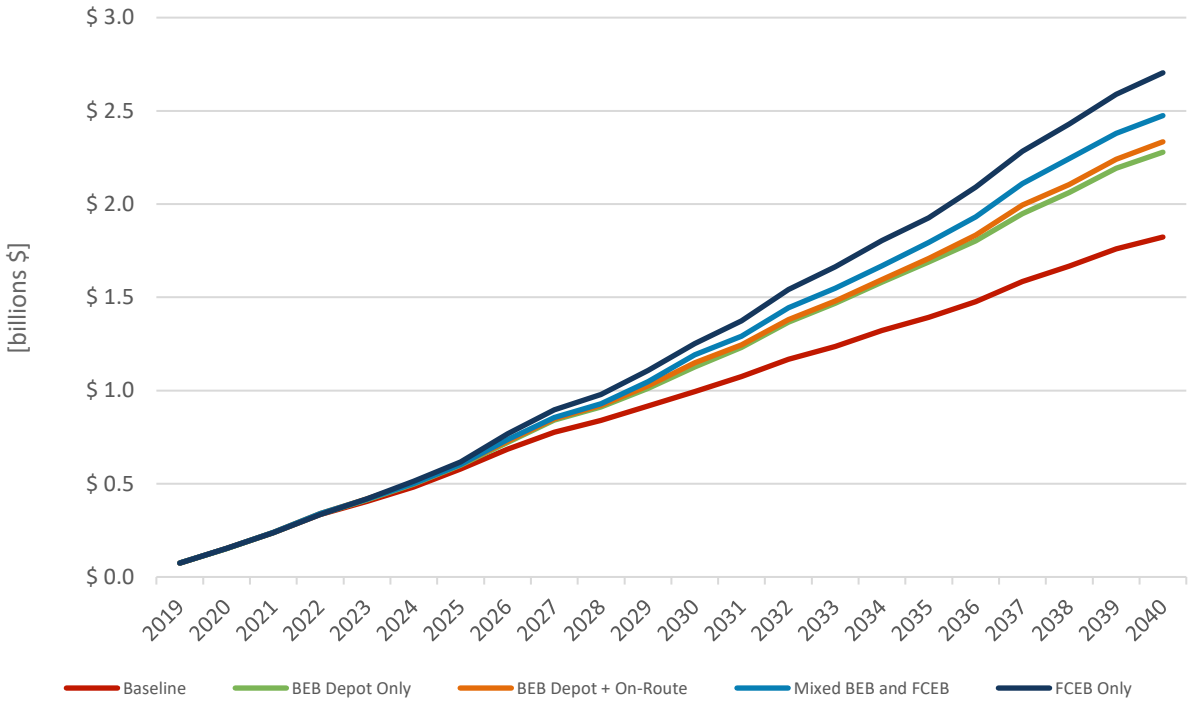


Figure 55 - Total Cost of Ownership, 2019-2040

Table 53 provides the detailed cost totals, total cost increase over Baseline, and the percent ZEBs in the fleet in 2040.

Table 53 – Total Cost of Ownership, by Scenario

	Baseline	BEB Depot Only	BEB Depot + On-Route	FCEB Only	Mixed BEB and FCEB
Fleet	$ 808,294,000	$ 1,086,465,000	$ 1,105,467,000	$ 1,355,484,000	$ 1,181,414,000
Fuel	$ 252,569,000	$ 298,234,000	$ 314,657,000	$ 462,731,000	$ 323,380,000
Infrastructure	-----	$ 120,305,000	$ 131,489,000	$ 73,394,000	$ 164,915,000
Maintenance	$ 762,263,000	$ 773,287,000	$ 782,339,000	$ 812,484,000	$ 804,691,000
Total	**$ 1,823,126,000**	**$ 2,278,291,000**	**$ 2,333,952,000**	**$ 2,704,093,000**	**$ 2,474,400,000**
Incremental Cost Over Baseline		**$ 455,165,000**	**$ 510,826,000**	**$ 880,967,000**	**$ 651,274,000**
% ZEB in 2040	**2%**	**77%**	**84%**	**95%**	**95%**

Emissions Assessment

A primary benefit of transitioning an entire fleet from internal combustion engine vehicles to zero-emission is the reduction of greenhouse gas (GHG) emissions. GHG emissions consist primarily of carbon dioxide (CO_2) but also include small amounts of methane (CH_4) and Nitrous Oxide (N_2O), emitted during fuel combustion[2]. In the transportation sector the vast majority of GHG emissions is from CO_2. For completeness, total GHG emissions are also calculated but the primary focus is on reduction of CO_2.

In addition to GHGs, additional emissions called "criteria pollutants" are generated when burning traditional transportation fuels. These include substances that are commonly thought of as smog and are known to damage human health. Some examples are carbon monoxide (CO), nitrogen oxides (NO_x), volatile organic compounds (VOC) and particulate material under 10 microns and 2.5 microns in diameter (PM10 and PM2.5).

The primary sources of data to support this analysis are listed below:

- Argonne National Laboratory – *Alternative Fuel Life-Cycle Environmental and Economic Transportation (AFLEET) Tool*
- EPA Motor Vehicle Emissions Simulator (MOVES)
- MTS – data on existing fleet mileage and fuel economy

Carbon Emissions

There are three categories of emissions generally referred to in the context of zero emission vehicle transportation: well-to-wheel emissions (WTW), tailpipe emissions and upstream emissions.

WTW emissions include all emissions generated by the vehicle during operation *and* emissions generated by the powerplant or refinery to produce the electricity or fuel used by the vehicle. WTW emissions are present for the generation of nearly all different fuels, be it diesel, gasoline, CNG or electricity, as these fuels require a combination of petroleum, natural gas and coal for their production (except in the case of electricity produced by 100% renewable energy).

Tailpipe emissions include all emissions generated by the vehicle during operation. We assume fossil fuel vehicles produce emissions on a per mile or per gallon basis according to AFLEET which uses the EPA's MOVES model. BEBs and FCEBs do not produce any tailpipe emissions.

Upstream emissions are generated by the fuel refinery or powerplant during extraction, processing and transportation of the fuel. In this analysis, upstream emissions are calculated by the difference between WTW and tailpipe emissions.

Emissions from electricity production uses inputs from the Western Electricity Coordinating Council (WECC) as part of AFLEET's set of standard assumptions. The WECC energy mix is as follows: Renewable (41.1%), Natural Gas (25.5%), Coal (24.7%), Nuclear (8.3%), Residual Oil (0.2%), Biomass (0.1%).

[2] EPA, Sources of Greenhouse Gas Emissions; https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions#transportation

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Emissions analyses were performed for slightly different scenarios than in other previous assessments in this study. Two alternative purchase scenarios were created based on the Mixed BEB and FCEB scenario to demonstrate, at the request of stakeholders, potential emissions reductions from more aggressive ZEB purchasing schedules. The Early Purchasing scenario shifts purchases of ZEBs to begin immediately in 2020, instead of in 2023 as required by the CARB ICT regulation. The Mixed 2030 100% ZEB scenario alters purchases of ZEBs so that MTS' fleet is 100% zero-emission by 2030 rather than 2040 as required in the CARB ICT regulation. This includes replacing any existing internal combustion engine buses before the end of their useful life and replacing a single bus with multiple buses where necessary to maintain service levels. The BEB Depot and On-Route scenario was not analyzed due to marginal differences with the BEB Depot Only scenario.

1. Baseline (for comparison)
2. BEB Depot Only
3. Mixed BEB and FCEB
4. Mixed BEB and FCEB – Early Purchasing
5. Mixed BEB and FCEB – 2030 100% ZEB

Figure 56 compares the total estimated well-to-wheel greenhouse gas emissions for each scenario. The baseline scenario generates roughly 2.5 million tons of GHGs over the transition period (2019-2040). This scenario assumes "business as usual" and does not attempt to replace any internal combustion engine buses with zero emission buses. The BEB Depot Only, Mixed and Mixed Early Purchasing scenarios all result in similar cumulative GHG emissions of approximately 1.6 million tons. The Mixed 2030 100% ZEB scenario results in the lowest overall GHG emissions, around 1.2 million tons, since the conversion to ZEBs occurs sooner than in the other scenarios. That results in a 36% GHG savings over the baseline for the Depot Only, Mixed and Mixed Early Purchasing scenarios and a 52% savings for the Mixed 2030 100% ZEB scenario.

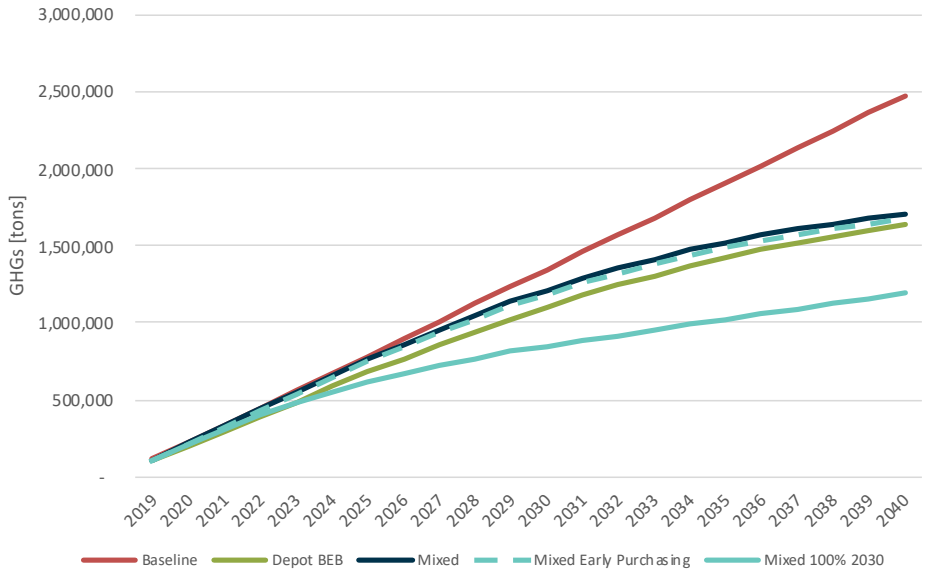


Figure 56 - Cumulative WTW GHGs, 2019-2040

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Figure 57 shows the breakdown of well-to-wheel GHG emissions by scenario and emissions type. Again, this is the cumulative total emissions estimated through the transition period, 2019 to 2040. The Mixed 100% 2030 scenario has the lowest overall emissions, producing about 50% less emissions than the baseline scenario, whereas the other scenarios produce around 30% less emissions than the baseline scenario. The tailpipe and upstream emissions components of Depot BEB, Mixed and Mixed Early Purchasing scenarios are roughly the same at about 1.1 million tons of tailpipe and around 500,000 to 600,000 tons of upstream emissions. The Mixed 2030 100% ZEB scenario has highest amount of upstream emissions, approximately 680,000 tons but the lowest tailpipe emissions at 512,000 tons, ultimately resulting in the lowest overall emissions of all the alternate scenarios. This is a result of increased used of FCEBs early in the transition.

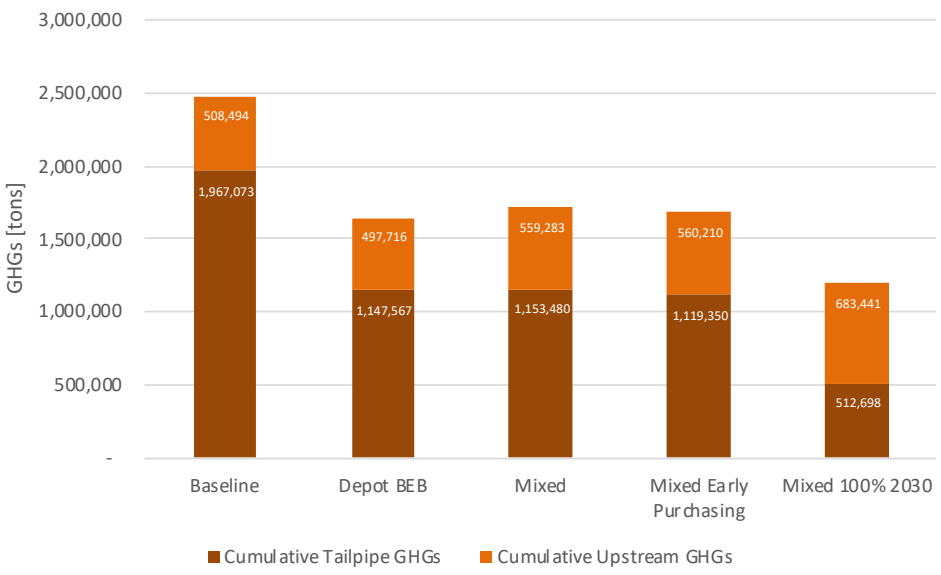


Figure 57 – Cumulative WTW GHGs Breakdown, 2019-2040

Criteria Pollutants

As discussed previously, criteria pollutants are compounds that are considered hazardous to human health. These include, but is not limited to, CO, VOCs, NOx, and PM10 and PM2.5. Fossil fuel vehicles produce these pollutants during combustion and as such, these emissions are emitted along roadways and near population centers, unlike upstream pollutants, which occur at the power plant or refinery. **Table 54** compares the projected total tailpipe criteria pollutants in each scenario; these estimates are cumulative over the transition period. Since ZEBs do not produce any tailpipe emissions, the reductions are a direct result of replacing of fossil fuel vehicles with zero-emission. For example, the Mixed 2030 100% ZEB scenario replaces the most internal combustion engine buses earlier in the study period, thereby reducing overall emissions the most. **Table 55** compares the emissions savings as a percentage over the baseline. The Mixed 2030 100% ZEB scenario also exhibits the highest cumulative savings in every pollutant category.

Table 54 –Tailpipe Criteria Pollutants, Cumulative, 2019-2040

Scenario	CO (lbs)	VOC (lbs)	NOx (lbs)	PM2.5 (lbs)	PM10 (lbs)
Baseline	9,755,782	110,096	1,674,260	4,249	6,071
Depot BEB	7,089,348	76,866	1,081,673	3,201	4,440
Mixed	5,640,795	66,027	989,595	2,493	3,521
Mixed Early Purchasing	5,560,730	64,615	958,607	2,469	3,474
Mixed 2030 100%	2,907,189	34,602	466,295	1,367	1,837

Table 55 – Criteria Pollutant Savings Over Baseline, Cumulative, 2019-2040

Scenario	CO (lbs)	VOC (lbs)	NOx (lbs)	PM2.5 (lbs)	PM10 (lbs)
Depot BEB	27%	30%	35%	25%	27%
Mixed	42%	40%	41%	41%	42%
Mixed Early Purchasing	43%	41%	43%	42%	43%
Mixed 2030 100%	70%	69%	72%	68%	70%

It should be noted that there are significant technical and financial challenges associated with meeting the Mixed 2030 100% ZEB scenario that have been documented separately and presented to MTS Board of Directors.

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Conclusions and Recommendations

ZEB technologies are in a period of rapid development and change. While the technology is proven in many pilot deployments, it is not yet matured to the point where it can easily replace current internal combustion engine technologies on a large scale. BEBs will require significant investment in facilities and infrastructure and may require changes to service and operations to manage their inherent constraints. On the other hand, FCEBs are believed to provide an operational equivalent to CNG, however, the incremental cost of buses, fueling infrastructure, and fuel places this technology at a serious disadvantage.

CARB's ICT regulation is an achievement toward addressing the challenges of climate change with a goal of 100% zero-emission transit fleets by 2040. However, as demonstrated in this analysis, there will be a substantial cost as well as technical challenges. Transit agencies may be challenged to meet this goal and provide the same level of passenger service. Fortunately, CARB's ruling provides waivers for economic hardship and in the event the current state of depot-charged bus technology does not meet service requirements.

A primary assumption for this analysis is that MTS is unable to increase fleet size due to significant space constraints at their depots and, as a result, vehicles must be replaced on a one-for-one basis. Analysis of additional land purchase and construction of new depot facilities was not part of this analysis, though it is expected to cost approximately $185 million to complete if required. If MTS selects an all BEB strategy, incremental ZEB transitional costs are likely to fall between $455 million for the BEB Depot-Only Charging scenario, where approximately 77% of MTS' fleet is replaced with BEBs by 2040, to $511 million for the BEB Depot and On-Route Charging scenario, where approximately 84% of MTS' fleet is replaced with BEBs by 2040. The difference in incremental cost for these scenarios is a result of more vehicles being transitioned due to the use of on-route charging infrastructure, the incremental cost of the on-route charging infrastructure, as well as higher utility charges as a result of on-route charging because higher demand charges are incurred throughout the on-peak when on-route charging will occur. It should be noted that this analysis includes all vehicle lengths and types (40', 45', 60', and cutaways); however, currently only 40' and 60' BEBs have completed Altoona testing. The BEB Depot-Only Charging scenario meets the CARB ICT regulation requirements assuming a waiver for depot-charged technology that does not meet service requirements is granted as is clearly detailed in the regulation.

If MTS selects an FCEB Only strategy, incremental ZEB transitional costs are estimated at approximately $881 million for replacement of approximately 95% of the fleet with FCEBs by 2040. The remaining 5% would be replaced during the next vehicle replacement cycle after 2040, as it is anticipated that by 2040, FCEB technology will have advanced such that all MTS service could be completed using FCEBs. A primary assumption for the FCEB analysis is that FCEB vehicles will be available for all vehicle types and lengths during the transition period. In addition, due to the limited deployment of FCEBs in service in the United States, capital costs for vehicles and fuel costs remain high. These costs are expected to come down in the future as more vehicles are deployed; however, there is no basis at this time to make assumptions as to how much they may be reduced. Also, the current experience with FCEB maintenance cost is high due to the fact that much of the data is based on older vehicles that are no longer under

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warranty and require the support of a European company. As such, there are more unknowns associated with the incremental costs for the FCEB Only scenario, and costs are likely to be more subject to change. It is expected that the cost of the FCEB Only scenario will come down if a larger number of vehicles and infrastructure is deployed but to what extent is unknown. Significant investments in hydrogen infrastructure will be required and will take years to develop to gain a better understanding of the long-term costs for FCEB Only deployment.

As expected, with an incremental cost of approximately $651 million, the Mixed BEB and FCEB scenario that transitions approximately 95% of MTS' fleet to ZEB by 2040, has an incremental cost that falls between an all BEB and all FCEB deployment. Though the costs are considerably cheaper for a mixed fleet deployment than FCEB Only, there are expected to be complexities with managing the fleet through the transition that would require maintain existing internal combustion engine vehicle infrastructure (CNG, propane, and gasoline), installing new BEB infrastructure, and installing new FCEB fueling infrastructure. Space constraints at the depot will require careful planning if this path is selected. MTS may also experience additional benefits as a result of the transition to ZEBs.

MTS may accumulate ZEB credits from their procurement of ZEBs prior to 2023, although these ZEB credits are not considered in this analysis. These credits can be used in place of ZEB purchases to satisfy CARB's ZEB procurement requirements beginning in 2023. With the purchase of eight (8) BEBs to support the ZEB pilot operations in 2019 and 2020, and the purchase of twelve (12) BEBs to support a new service in 2022, MTS will have twenty (20) ZEB credits that can be applied to ZEB purchase requirements in 2023 and beyond. By early adoption, MTS will be able to better assess BEB technology in their own service and will also be able to monitor the progress in FCEB vehicle and infrastructure development and pricing.

As a result, recommendations for MTS are as follows:

1. **Remain proactive with ZEB deployments:** MTS has been proactive in the purchase and deployment of BEBs through their ZEB Pilot Program. Significantly more development, data collection, and analyses are needed before the technology is ready for fleetwide deployment. For example, BEBs will require charge management software, hardware, and standards to manage the fleetwide transition. For FCEB deployment to be competitive, lower fuel costs that will evolve over time with the production of hydrogen at scale will be required. MTS should move forward carefully, taking advantage of various grant and incentive programs to offset the incremental cost for ZEB deployment. Incentive programs may be eliminated in future years as ZEB procurements are required instead of being optional.
2. **Target specific routes and blocks for early ZEB deployments:** MTS should consider the strengths of given ZEB technologies and focus those technologies on routes and blocks that take advantage of their efficiencies and minimizes the impact of the constraints related to the respective technologies. For example, depot-charged BEBs for shorter routes and blocks, on-route charged BEBs for mid-range routes with layovers at a transit center, and FCEBs for long routes or routes with higher speeds and/or heavier loads. These technologies cannot follow a "one-size-fits-all" approach from either a performance or cost perspective. Matching the technology to the service will be a

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critical best practice. Results from the ZEB Pilot Program will help to inform these decisions.

3. **Continue with BEBs and consider FCEBs:** At this stage, it is too early to tell which technology will dominate the market 10 to 20 years from now. Having capability to deploy both ZEB technologies creates an opportunity for MTS to fully assess BEBs and FCEBs to determine which technology can best meet the operational range requirements while being financially efficient and sustainable.

The transition to ZEB technologies represents a paradigm shift in bus procurement, operation, maintenance, and infrastructure. The technology requires significant development before it is ready to support fleetwide transitions. However, it is only through a continual process of deployment with specific goals for advancement that the industry can achieve the goal of economically sustainable, zero-emission public transit. Ultimately, the ZEB technology that is most efficient and sustainable to operate will evolve into either the majority ZEB solution or the only ZEB solution. MTS, with endorsement and approval from their Board of Directors, has elected to pursue a mixed use scenario that will allow them to initially deploy BEBs and explore possible opportunities and funding mechanisms to deploy FCEBs in service in the future where BEBs are not able to meet range requirements. MTS will continue to monitor technology improvements and funding availability to accelerate the transition to a 100% zero-emission fleet. Evaluation will be completed in annual updates provided to the MTS Board of Directors and CARB.

A copy of the ZEB Rollout Plan is included in **Appendix A**.

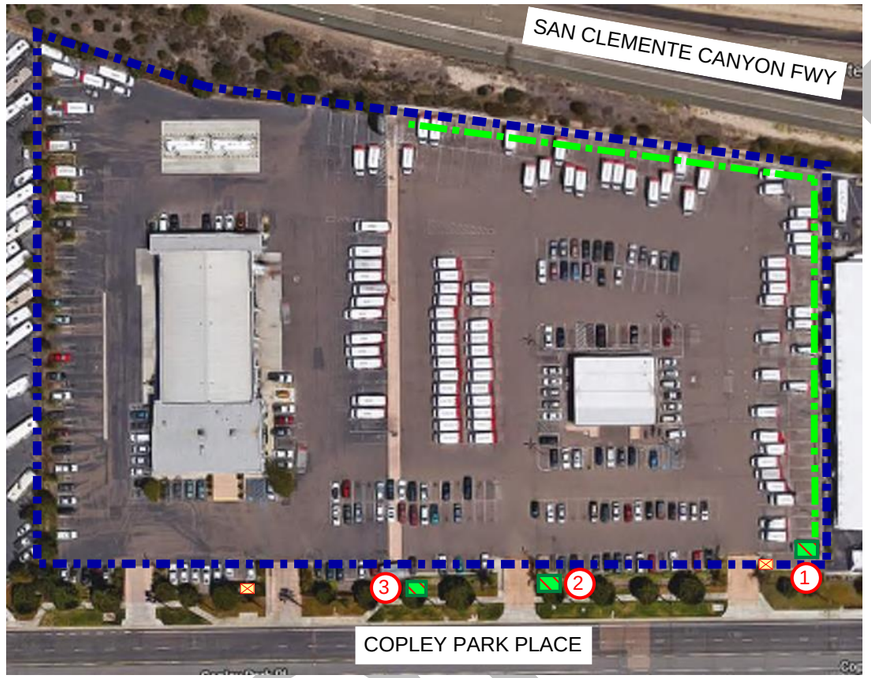
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Appendix A – ZEB Rollout Plan

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Appendix B – Depot Site Plans, BEB Infrastructure

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SITE PLAN - COPLEY BUS MAINTENANCE FACILITY

N

1" = 100'

LEGEND

- EXISTING TRANSFORMER
- POTENTIAL GROUND CHARGER LOCATION (36/35 REQUIRED CHARGING STALLS)
- PROPERTY LINE
- 1 NEW TRANSFORMER OPPORTUNITY (WITH RECOMMENDED PRIORITY)

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AECOM

Issue Status:
REPORT PACKAGE

BATTERY ELECTRIC BUS FEASIBILITY STUDY
CONSTRUCTION PHASING SITE PLAN
SAN DIEGO METROPOLITAN TRANSIT SYSTEM,
SAN DIEGO, CA
PROJ. NO.: 60579290 OCTOBER 2019







N

COPLEY - OPPORTUNITY AREA 1

1" = 50'

N

COPLEY - OPPORTUNITY AREA 2

1" = 50'

N

COPLEY - OPPORTUNITY AREA 3

1" = 50'

N

ENLARGED SITE PLANS - COPLEY

1" = 100'

LEGEND

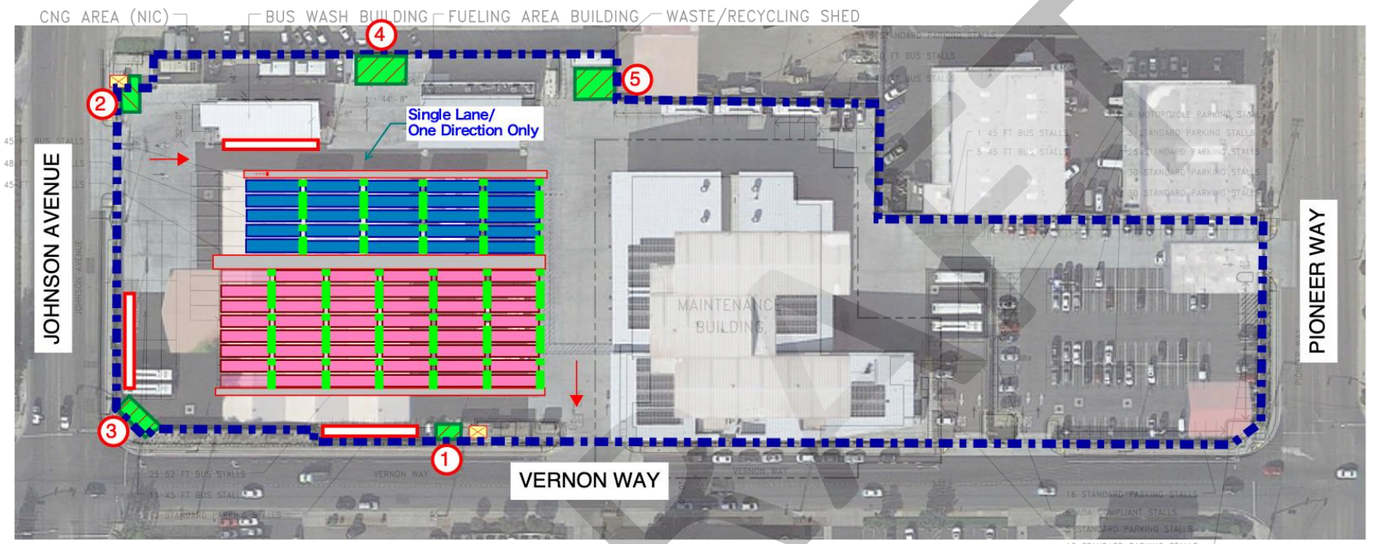
15'-0" X 20'-0" CONCRETE PAD FOR NEW TRANSFORMER AND SWITCHGEAR.
3 REQUIRED FOR SITE

DRAFT

AECOM

Issue Status:
REPORT PACKAGE

BATTERY ELECTRIC BUS FEASIBILITY STUDY
CONSTRUCTION PHASING SITE PLAN
SAN DIEGO METROPOLITAN TRANSIT SYSTEM,
SAN DIEGO, CA
PROJ. NO.: 60579290 OCTOBER 2019



East County		
Bus Length (ft)	All Buses	BEBs in 2040
22	0	0
29	3	0
32	0	0
40	51	46
45	24	25
60	0	0
Totals	78	71

LEGEND

- EXISTING TRANSFORMER
- PROPERTY LINE
- (1) NEW TRANSFORMER OPPORTUNITY (WITH RECOMMENDED PRIORITY)
- ALTERNATE CHARGER OPPORTUNITY
- 6' WIDE GANTRY SUPPORT STRUCTURE & CHARGER AREA
- 12' WIDE GANTRY SUPPORT STRUCTURE & CHARGER AREA
- POTENTIAL CHARGER GANTRY LOCATION (6 GANTRIES/8 BUS SPAN, 5 GANTRIES/5 BUS SPAN, 73 CHARGING STALLS)
- 40' BUS PARKING (48 SPACES/46 REQUIRED)
- 45' BUS PARKING (25 SPACES/25 REQUIRED)
- DIRECTION OF TRAFFIC

N

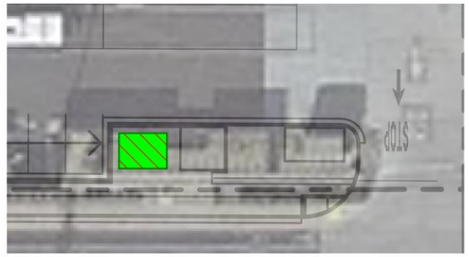
SITE PLAN - EAST COUNTY BUS MAINTENANCE

1" = 100'

Issue Status:
REPORT PACKAGE

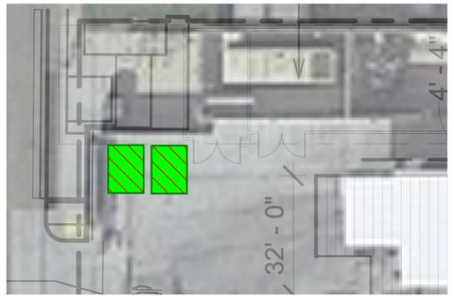
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BATTERY ELECTRIC BUS FEASIBILITY STUDY
CONSTRUCTION PHASING SITE PLAN
SAN DIEGO METROPOLITAN TRANSIT SYSTEM,
SAN DIEGO, CA
PROJ. NO.: 60579290 OCTOBER 2019



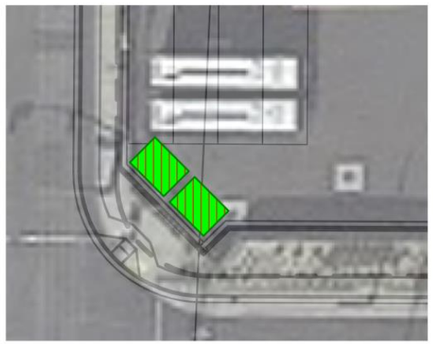
N **EAST COUNTY - OPPORTUNITY AREA 1**

1" = 50'



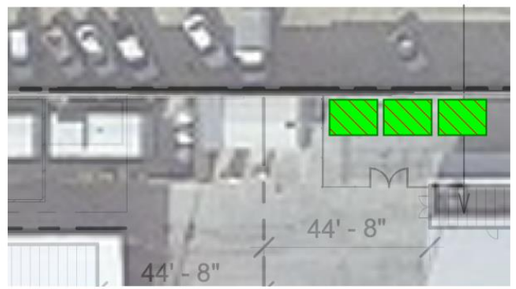
N **EAST COUNTY - OPPORTUNITY AREA 2**

1" = 50'



N **EAST COUNTY - OPPORTUNITY AREA 3**

1" = 50'



N **EAST COUNTY - OPPORTUNITY AREA 4**

1" = 50'



N **EAST COUNTY - OPPORTUNITY AREA 5**

1" = 50'

LEGEND

15'-0" X 20'-0" CONCRETE PAD FOR NEW TRANSFORMER AND SWITCHGEAR.
5 REQUIRED FOR SITE

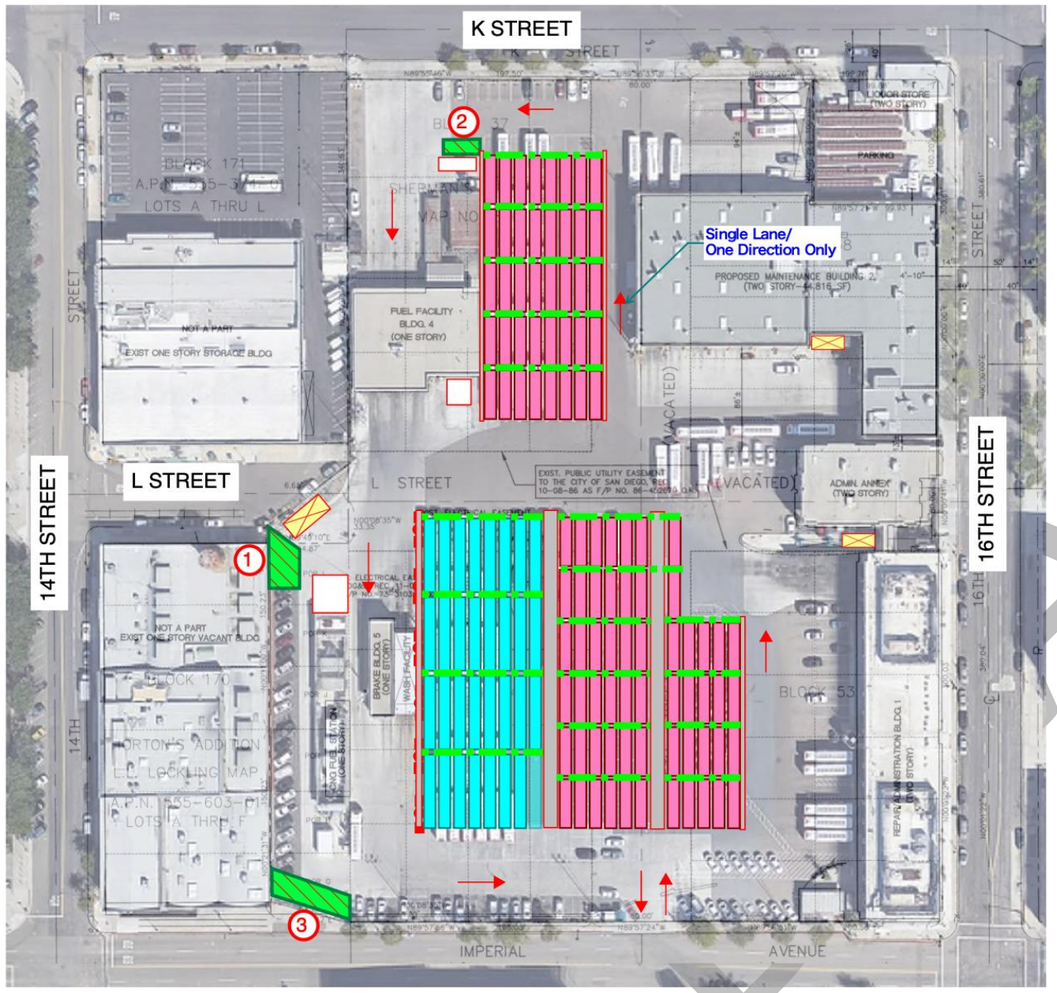
N **ENLARGED SITE PLANS - EAST COUNTY**

1" = 100'

Issue Status:
REPORT PACKAGE

AECOM

BATTERY ELECTRIC BUS FEASIBILITY STUDY
CONSTRUCTION PHASING SITE PLAN
SAN DIEGO METROPOLITAN TRANSIT SYSTEM,
SAN DIEGO, CA
PROJ. NO.: 60579290 OCTOBER 2019



Imperial Ave		
Bus Length (ft)	All Buses	BEBs in 2040
22	0	0
29	0	0
32	0	0
40	111	98
45	0	0
60	44	31
Totals	155	129

LEGEND

- EXISTING TRANSFORMER
- PROPERTY LINE
- ① NEW TRANSFORMER OPPORTUNITY (WITH RECOMMENDED PRIORITY)
- ALTERNATE CHARGER OPPORTUNITY
- 6' WIDE GANTRY SUPPORT STRUCTURE & CHARGER AREA
- 12' WIDE GANTRY SUPPORT STRUCTURE & CHARGER AREA
- POTENTIAL CHARGER GANTRY LOCATION (9 GANTRIES/8 BUS SPAN, 4 GANTRIES/6 BUS SPAN, 2 GANTRIES/6 BUS SPAN w/ 1 STALL CANTILEVER, 4 GANTRIES/5 BUS SPAN, 130 CHARGING STALLS)
- 40' BUS PARKING (98 SPACES/98 REQUIRED)
- 60' BUS PARKING (32 SPACES/31REQUIRED)
- DIRECTION OF TRAFFIC

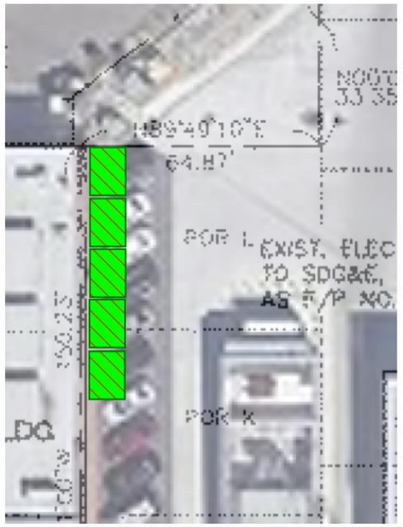
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SITE PLAN - IMPERIAL AVENUE DIVISION

1" = 100'

AECOM

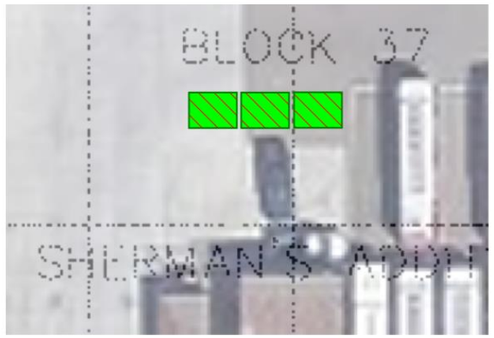
BATTERY ELECTRIC BUS FEASIBILITY STUDY
CONSTRUCTION PHASING SITE PLAN
SAN DIEGO METROPOLITAN TRANSIT SYSTEM,
SAN DIEGO, CA
PROJ. NO.: 60579290 OCTOBER 2019



N

IMPERIAL AVENUE - OPPORTUNITY AREA 1

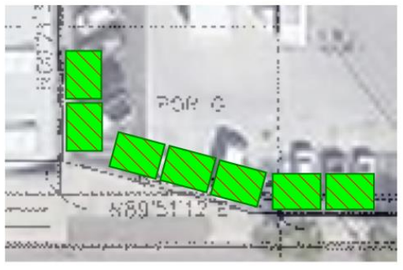
1" = 50'



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IMPERIAL AVENUE - OPPORTUNITY AREA 2

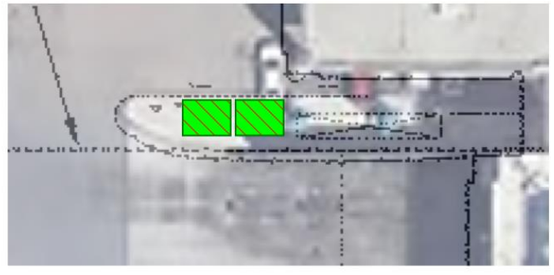
1" = 50'



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IMPERIAL AVENUE - OPPORTUNITY AREA 3

1" = 50'



N

IMPERIAL AVENUE - OPPORTUNITY AREA 4

1" = 50'

N

ENLARGED SITE PLANS - IMPERIAL AVENUE

1" = 100'

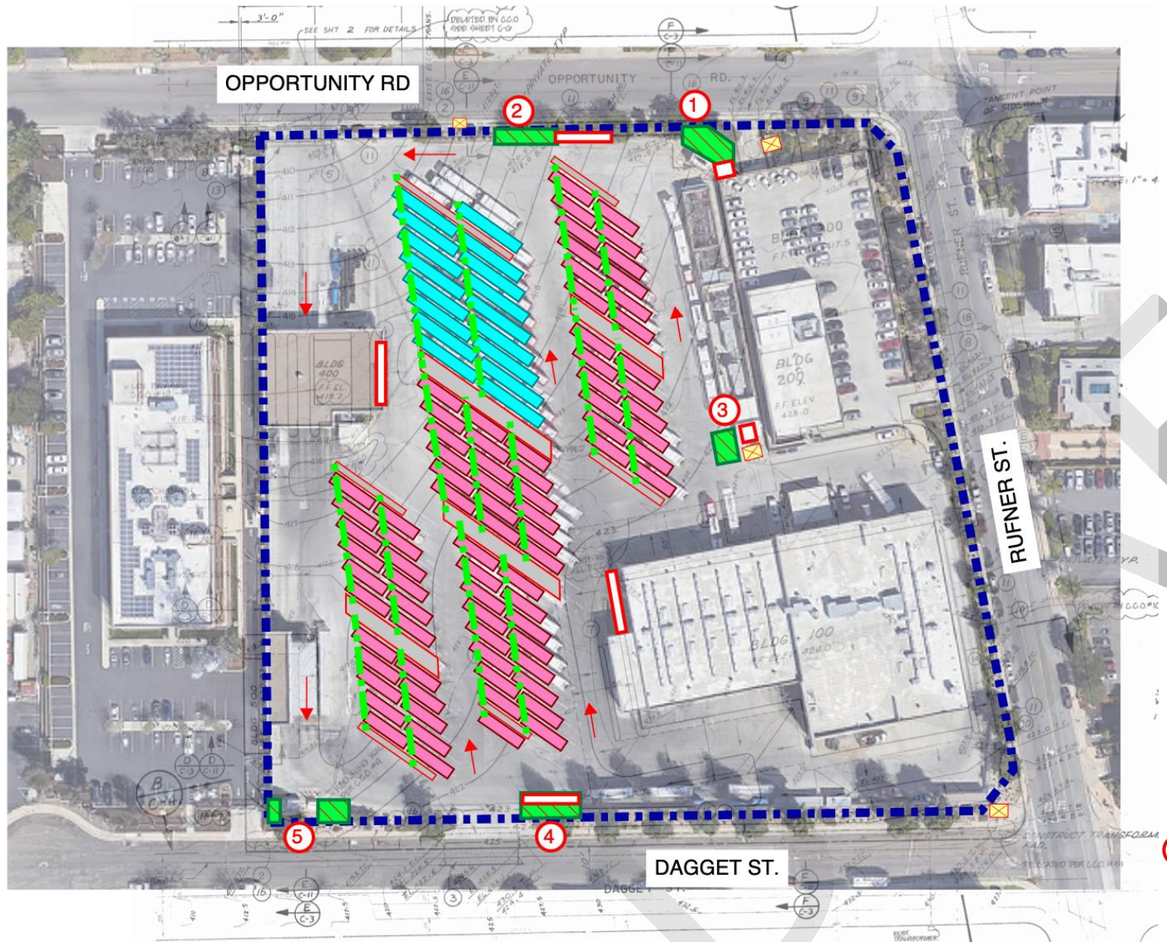
LEGEND

15'-0" X 20'-0" CONCRETE PAD FOR NEW TRANSFORMER AND SWITCHGEAR.
11 REQUIRED FOR SITE

Issue Status:
REPORT PACKAGE

AECOM

BATTERY ELECTRIC BUS FEASIBILITY STUDY
CONSTRUCTION PHASING SITE PLAN
SAN DIEGO METROPOLITAN TRANSIT SYSTEM,
SAN DIEGO, CA
PROJ. NO.: 60579290 OCTOBER 2019



Kearny Mesa - Option 1		
Bus Length (ft)	All Buses	BEBs in 2040
22	0	0
29	0	0
32	0	0
40	85	81
45	0	0
60	42	17
Totals	127	98

LEGEND

- EXISTING TRANSFORMER
- PROPERTY LINE
- (1) NEW TRANSFORMER OPPORTUNITY (WITH RECOMMENDED PRIORITY)
- ALTERNATE CHARGER OPPORTUNITY
- 6' WIDE GANTRY SUPPORT STRUCTURE & CHARGER AREA
- 12' WIDE GANTRY SUPPORT STRUCTURE & CHARGER AREA
- POTENTIAL CHARGER GANTRY LOCATION (2 GANTRIES/8 BUS SPAN, 2 GANTRY/8 BUS SPAN w/ 1 BUS CANTILEVER, 9 GANTRIES/6 BUS SPAN, 2 GANTRIES/5 BUS SPAN- 98 CHARGING STALLS)
- 40' BUS PARKING (81 SPACES/81 REQUIRED)
- 60' BUS PARKING (17 SPACES/17 REQUIRED)
- DIRECTION OF TRAFFIC

N

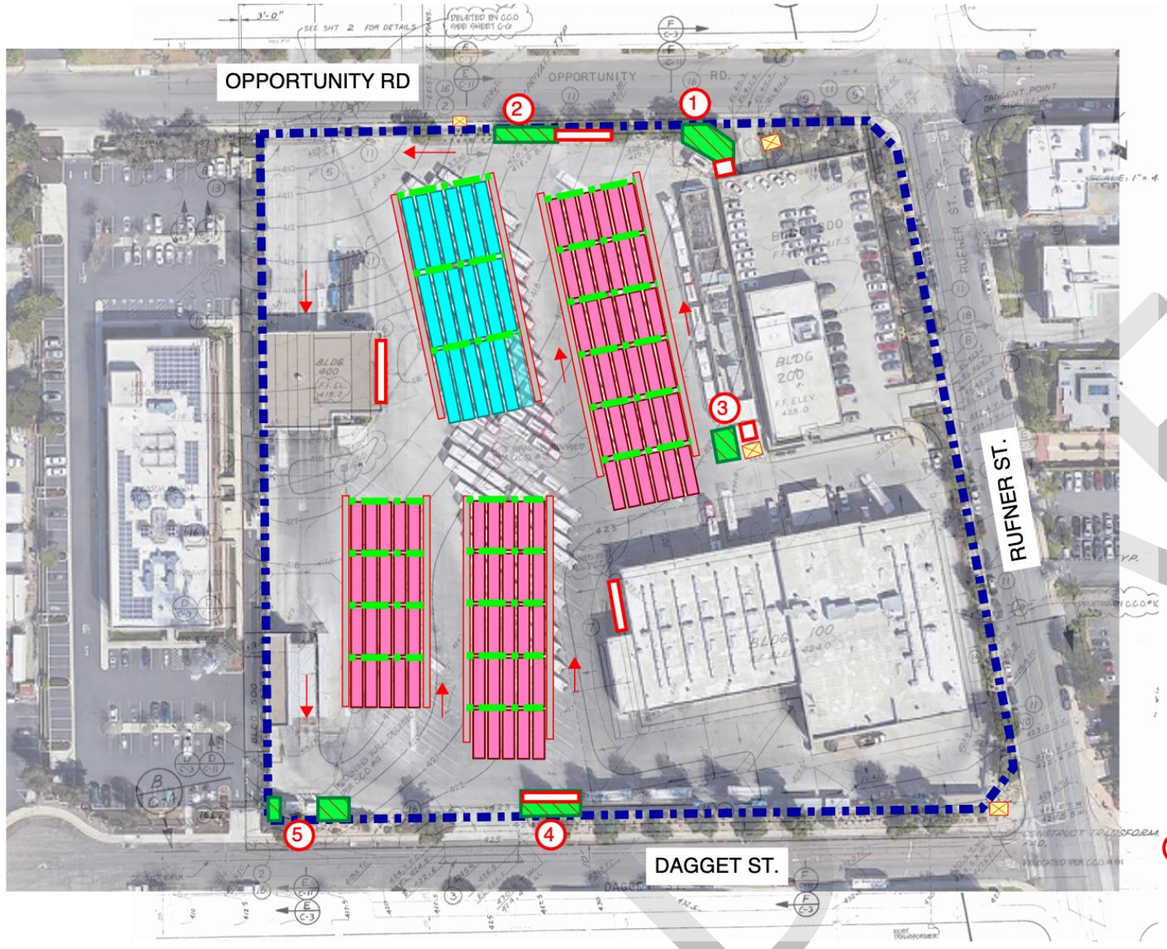
SITE PLAN - KEARNY MESA DIVISION
OPTION 1

1" = 100'

Issue Status:
REPORT PACKAGE

AECOM

BATTERY ELECTRIC BUS FEASIBILITY STUDY
CONSTRUCTION PHASING SITE PLAN
SAN DIEGO METROPOLITAN TRANSIT SYSTEM,
SAN DIEGO, CA
PROJ. NO.: 60579290 OCTOBER 2019



Kearny Mesa - Option 2		
Bus Length (ft)	All Buses	BEBs in 2040
22	0	0
29	0	0
32	0	0
40	85	81
45	0	0
60	42	17
Totals	127	98

LEGEND

- EXISTING TRANSFORMER
- PROPERTY LINE
- (1) NEW TRANSFORMER OPPORTUNITY (WITH RECOMMENDED PRIORITY)
- ALTERNATE CHARGER OPPORTUNITY
- 6' WIDE GANTRY SUPPORT STRUCTURE & CHARGER AREA
- 12' WIDE GANTRY SUPPORT STRUCTURE & CHARGER AREA
- POTENTIAL CHARGER GANTRY LOCATION (14 GANTRIES/6 BUS SPAN, 4 GANTRIES/4 BUS SPAN, - 98 CHARGING STALLS)
- 40' BUS PARKING (81 SPACES/81 REQUIRED)
- 60' BUS PARKING (18 SPACES/17 REQUIRED)
- DIRECTION OF TRAFFIC

N

SITE PLAN - KEARNY MESA DIVISION
OPTION 2

1" = 100'

AECOM

Issue Status:
REPORT PACKAGE

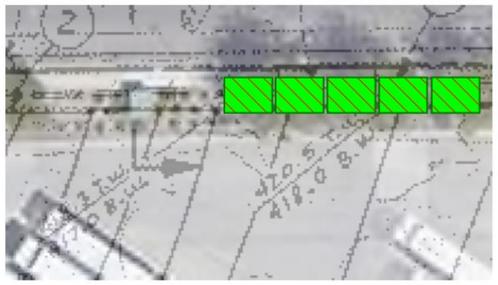
BATTERY ELECTRIC BUS FEASIBILITY STUDY
CONSTRUCTION PHASING SITE PLAN
SAN DIEGO METROPOLITAN TRANSIT SYSTEM,
SAN DIEGO, CA
PROJ. NO.: 60579290 OCTOBER 2019



N

KEARNY MESA - OPPORTUNITY AREA 1

1" = 50'



N

KEARNY MESA - OPPORTUNITY AREA 2

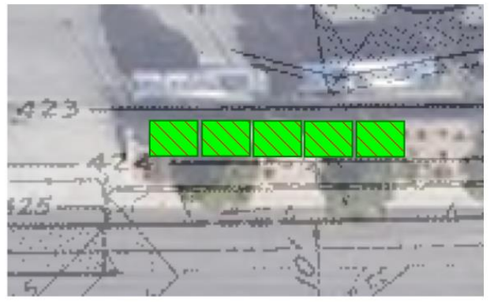
1" = 50'



N

KEARNY MESA - OPPORTUNITY AREA 3

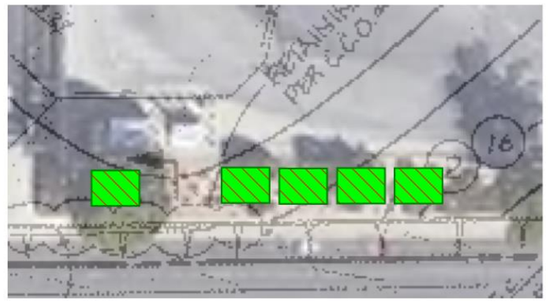
1" = 50'



N

KEARNY MESA - OPPORTUNITY AREA 4

1" = 50'



N

KEARNY MESA - OPPORTUNITY AREA 5

1" = 50'

N

ENLARGED SITE PLANS - KEARNY MESA

1" = 100'

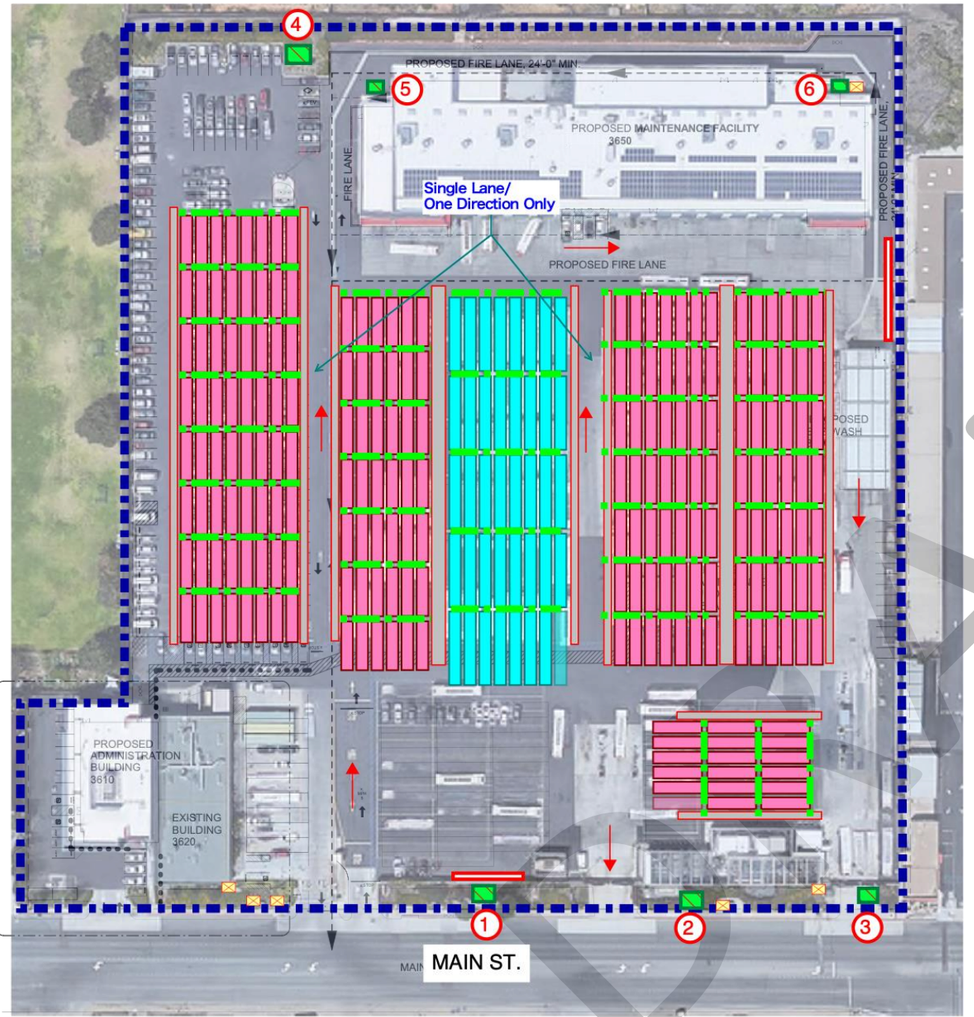
LEGEND

15'-0" X 20'-0" CONCRETE PAD FOR NEW TRANSFORMER AND SWITCHGEAR.
4 REQUIRED FOR SITE

AECOM

Issue Status:
REPORT PACKAGE

BATTERY ELECTRIC BUS FEASIBILITY STUDY
CONSTRUCTION PHASING SITE PLAN
SAN DIEGO METROPOLITAN TRANSIT SYSTEM,
SAN DIEGO, CA
PROJ. NO.: 60579290 OCTOBER 2019



South Bay		
Bus Length (ft)	All Buses	BEBs in 2040
22	0	0
29	0	0
32	0	0
40	221	214
45	0	0
60	39	39
Totals	260	253

LEGEND

- EXISTING TRANSFORMER
- PROPERTY LINE
- (1) NEW TRANSFORMER OPPORTUNITY (WITH RECOMMENDED PRIORITY)
- ALTERNATE CHARGER OPPORTUNITY
- 6' WIDE GANTRY SUPPORT STRUCTURE & CHARGER AREA
- 12' WIDE GANTRY SUPPORT STRUCTURE & CHARGER AREA
- POTENTIAL CHARGER GANTRY LOCATION (13 GANTRIES/8 BUS SPAN, 7 GANTRIES/7 BUS SPAN, 17 GANTRIES/6 BUS SPAN, 255 CHARGING STALLS)
- 40' BUS PARKING (215 SPACES/214 REQUIRED)
- 60' BUS PARKING (40 SPACES/39 REQUIRED)
- DIRECTION OF TRAFFIC

N

SITE PLAN - SOUTH BAY BUS MAINTENANCE FACILITY
OPTION 1

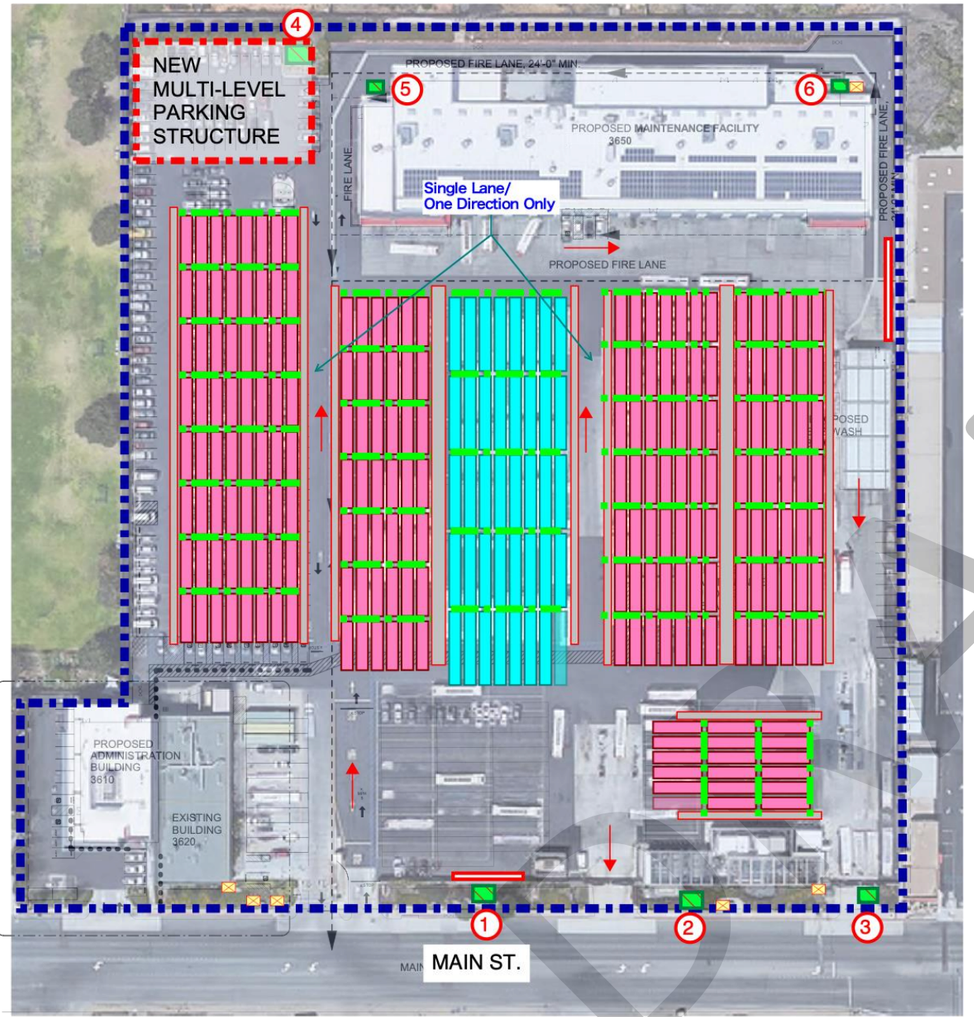
1" = 100'

Issue Status:
REPORT PACKAGE

AECOM

BATTERY ELECTRIC BUS FEASIBILITY STUDY
CONSTRUCTION PHASING SITE PLAN
SAN DIEGO METROPOLITAN TRANSIT SYSTEM,
SAN DIEGO, CA
PROJ. NO.: 60579290 OCTOBER 2019

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South Bay		
Bus Length (ft)	All Buses	BEBs in 2040
22	0	0
29	0	0
32	0	0
40	221	214
45	0	0
60	39	39
Totals	260	253

LEGEND

- EXISTING TRANSFORMER
- PROPERTY LINE
- (1) NEW TRANSFORMER OPPORTUNITY (WITH RECOMMENDED PRIORITY)
- ALTERNATE CHARGER OPPORTUNITY
- 6' WIDE GANTRY SUPPORT STRUCTURE & CHARGER AREA
- 12' WIDE GANTRY SUPPORT STRUCTURE & CHARGER AREA
- POTENTIAL CHARGER GANTRY LOCATION (13 GANTRIES/8 BUS SPAN, 7 GANTRIES/7 BUS SPAN, 17 GANTRIES/6 BUS SPAN, 255 CHARGING STALLS)
- 40' BUS PARKING (215 SPACES/214 REQUIRED)
- 60' BUS PARKING (40 SPACES/39 REQUIRED)
- DIRECTION OF TRAFFIC

N

SITE PLAN - SOUTH BAY BUS MAINTENANCE FACILITY
OPTION 2

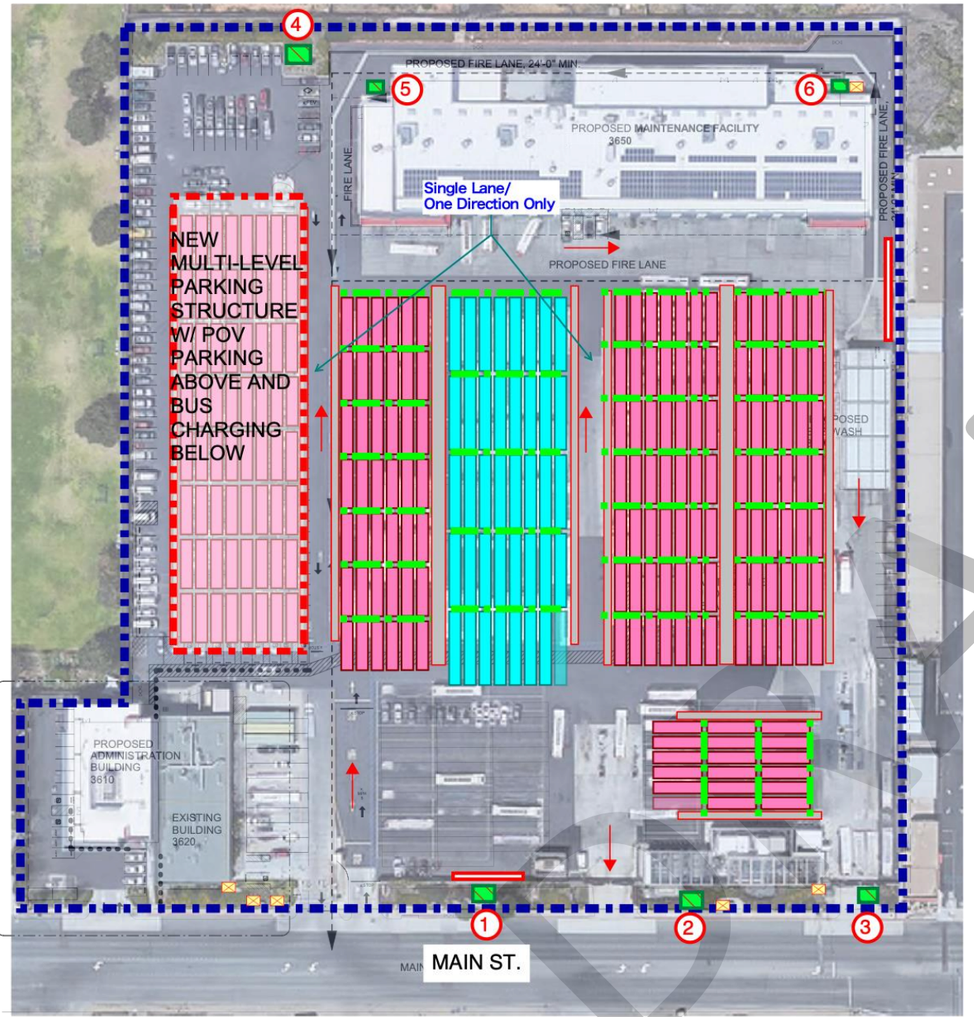
1" = 100'

DRAFT

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Issue Status:
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BATTERY ELECTRIC BUS FEASIBILITY STUDY
CONSTRUCTION PHASING SITE PLAN
SAN DIEGO METROPOLITAN TRANSIT SYSTEM,
SAN DIEGO, CA
PROJ. NO.: 60579290 OCTOBER 2019



South Bay		
Bus Length (ft)	All Buses	BEBs in 2040
22	0	0
29	0	0
32	0	0
40	221	214
45	0	0
60	39	39
Totals	260	253

LEGEND

- EXISTING TRANSFORMER
- PROPERTY LINE
- ① NEW TRANSFORMER OPPORTUNITY (WITH RECOMMENDED PRIORITY)
- ALTERNATE CHARGER OPPORTUNITY
- 6' WIDE GANTRY SUPPORT STRUCTURE & CHARGER AREA
- 12' WIDE GANTRY SUPPORT STRUCTURE & CHARGER AREA
- POTENTIAL CHARGER GANTRY LOCATION (5 GANTRIES/8 BUS SPAN, 7 GANTRIES/7 BUS SPAN, 17 GANTRIES/6 BUS SPAN, 255 CHARGING STALLS)
- 40' BUS PARKING (215 SPACES/214 REQUIRED)
- 60' BUS PARKING (40 SPACES/39 REQUIRED)
- DIRECTION OF TRAFFIC

N

SITE PLAN - SOUTH BAY BUS MAINTENANCE FACILITY
OPTION 3

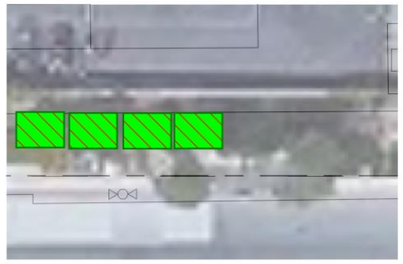
1" = 100'

Issue Status:
REPORT PACKAGE

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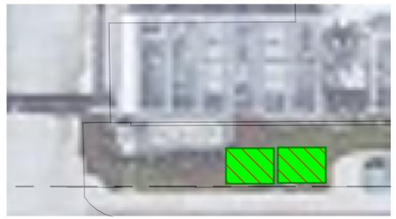
BATTERY ELECTRIC BUS FEASIBILITY STUDY
CONSTRUCTION PHASING SITE PLAN
SAN DIEGO METROPOLITAN TRANSIT SYSTEM,
SAN DIEGO, CA
PROJ. NO.: 60579290 OCTOBER 2019

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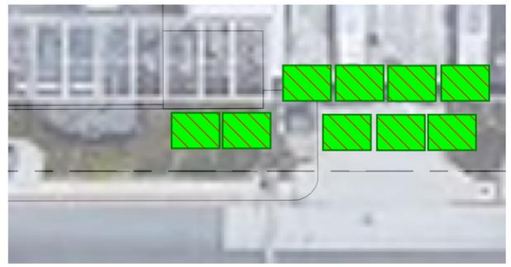
N **SOUTH BAY - OPPORTUNITY AREA 1**

1" = 50'



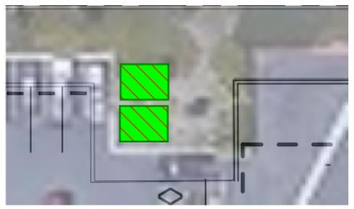
N **SOUTH BAY - OPPORTUNITY AREA 2**

1" = 50'

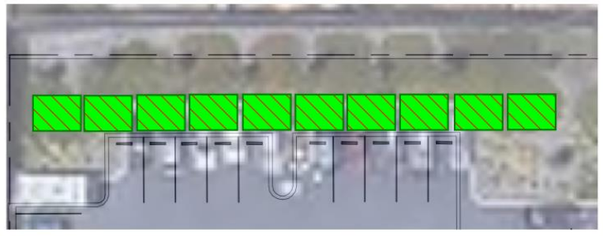


N **SOUTH BAY - OPPORTUNITY AREA 3**

1" = 50'



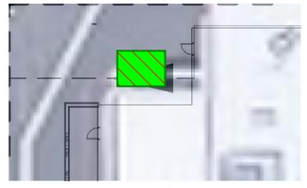
OPTION 1



OPTION 2

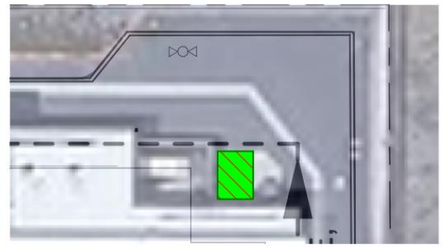
N **SOUTH BAY - OPPORTUNITY AREA 4**

1" = 50'



N **SOUTH BAY - OPPORTUNITY AREA 5**

1" = 50'



N **SOUTH BAY - OPPORTUNITY AREA 6**

1" = 50'

N **ENLARGED SITE PLANS - SOUTH BAY**

1" = 100'

LEGEND

15'-0" X 20'-0" CONCRETE PAD FOR NEW TRANSFORMER AND SWITCHGEAR.
16 REQUIRED FOR SITE

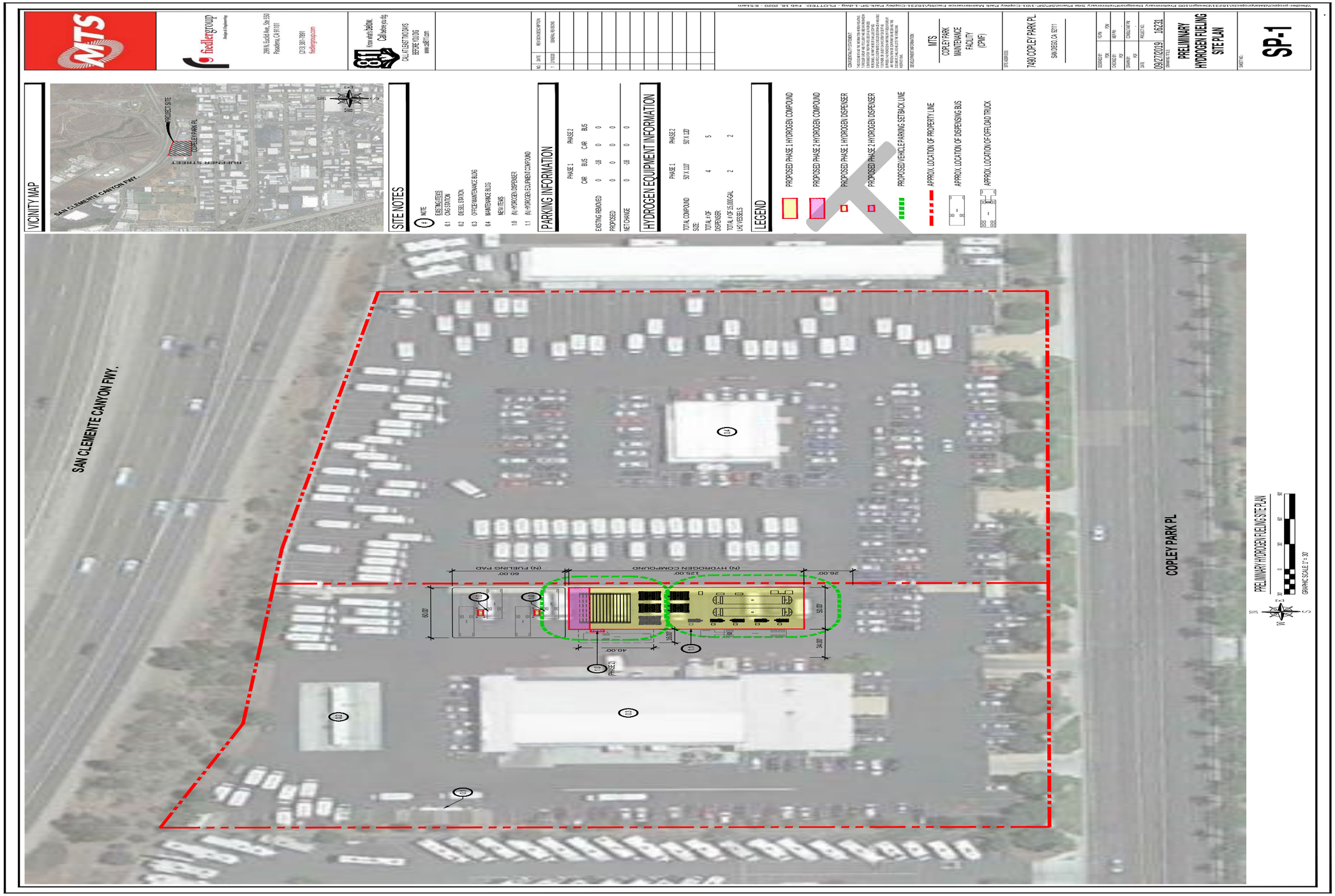
AECOM

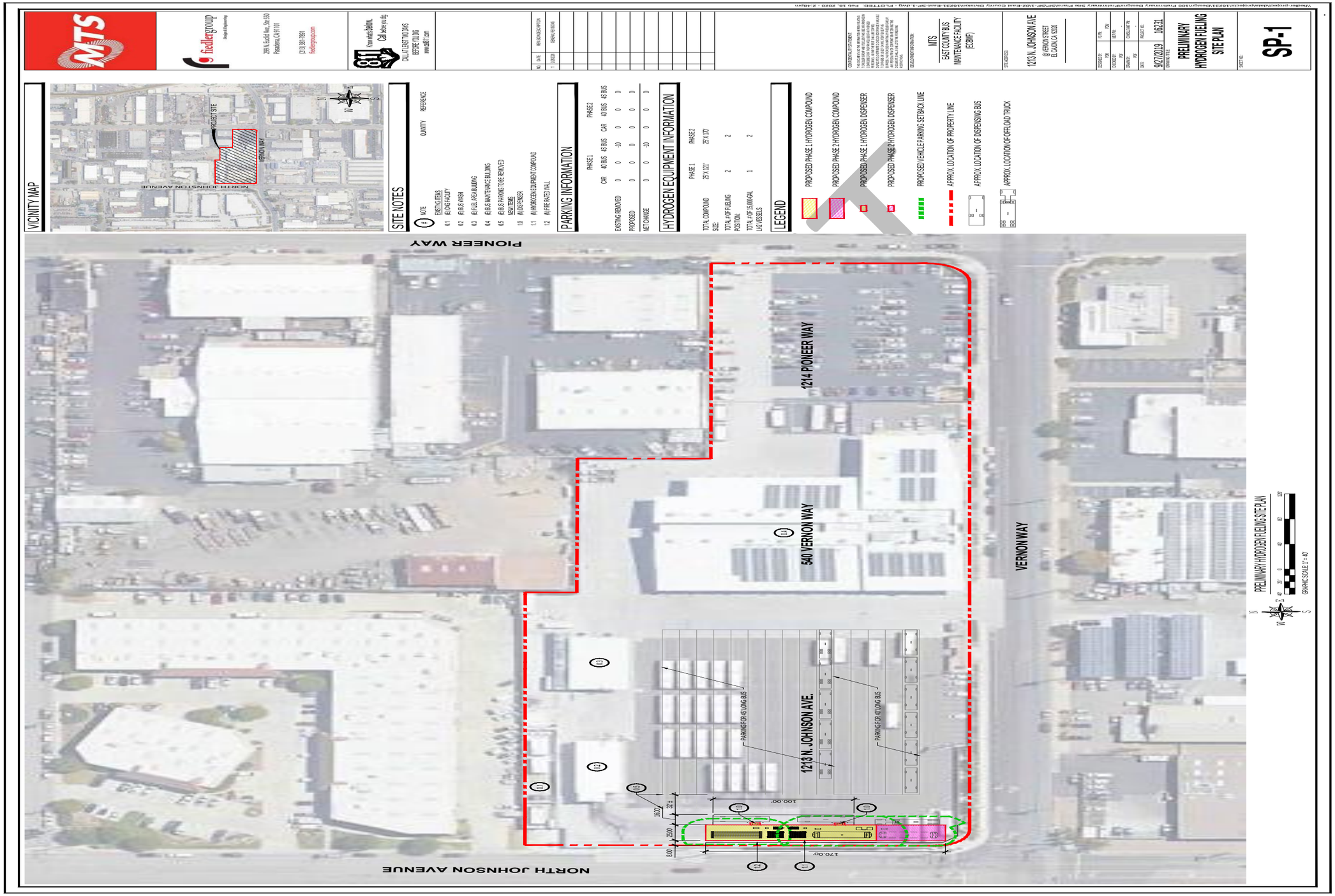
Issue Status:
REPORT PACKAGE

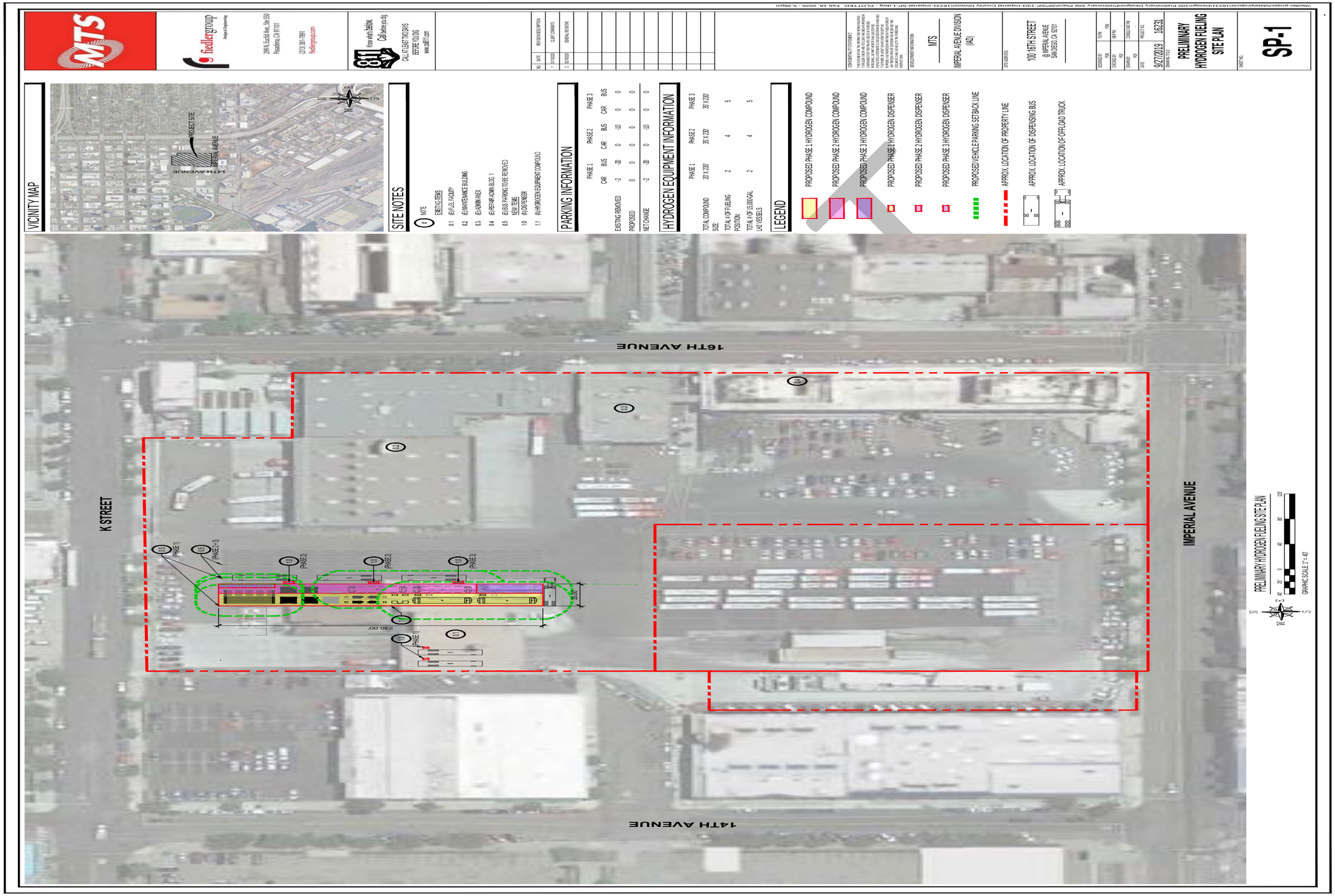
BATTERY ELECTRIC BUS FEASIBILITY STUDY
CONSTRUCTION PHASING SITE PLAN
SAN DIEGO METROPOLITAN TRANSIT SYSTEM,
SAN DIEGO, CA
PROJ. NO.: 60579290 OCTOBER 2019

Appendix C – Depot Site Plans, FCEB Infrastructure and Fiedler Group Report

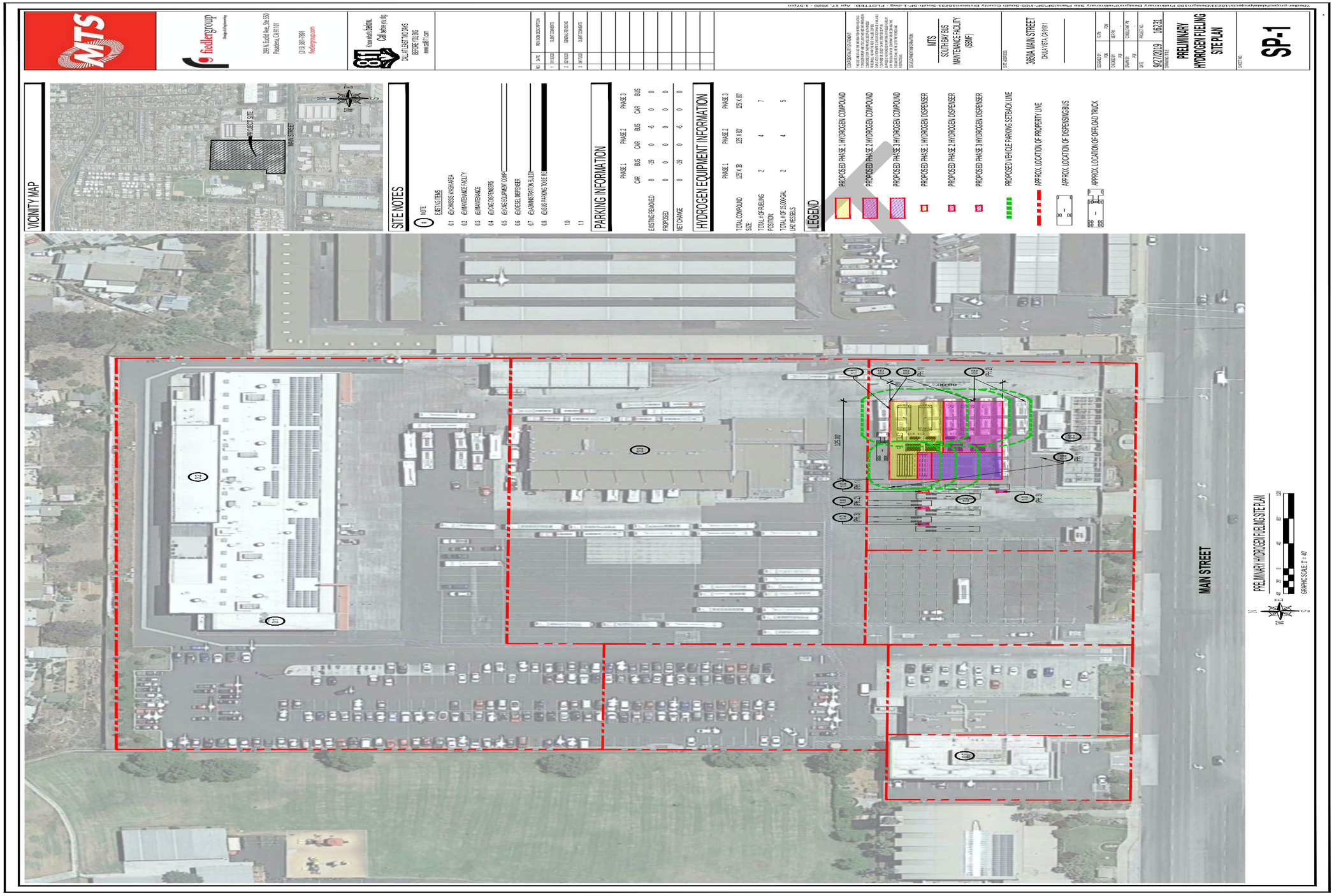
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NO. DATE REVISION DESCRIPTION
1 12/18/20 GENERAL REVISIONS
VICINITY MAP
PROJECT SITE
COPLEY PARK PL
RUFFNER STREET
SAN CLEMENTE CANYON FWY.
SITE NOTES
NOTE
EXISTING ITEMS
0.1 GAS STATION
0.2 DIESEL STATION
0.3 OFFICE/MAINTENANCE BLDG
0.4 MAINTENANCE BLDG
NEW ITEMS
1.0 (N) HYDROGEN DISPENSER
1.1 (N) HYDROGEN EQUIPMENT COMPOUND
PARKING INFORMATION
PHASE 1 PHASE 2
CAR BUS CAR BUS
EXISTING REMOVED 0 -18 0 0
PROPOSED 0 0 0 0
NET CHANGE 0 -18 0 0
HYDROGEN EQUIPMENT INFORMATION
PHASE 1 PHASE 2
TOTAL COMPOUND SIZE: 50 X 110' 50 X 120'
TOTAL # OF DISPENSER: 4 5
TOTAL # OF 5,000 KG H2 LAD VESSELS 2 2
LEGEND
PROPOSED PHASE 1 HYDROGEN COMPOUND
PROPOSED PHASE 2 HYDROGEN COMPOUND
PROPOSED PHASE 1 HYDROGEN DISPENSER
PROPOSED PHASE 2 HYDROGEN DISPENSER
PROPOSED VEHICLE PARKING SETBACK LINE
APPROX. LOCATION OF PROPERTY LINE
APPROX. LOCATION OF DISPENSING BUS
APPROX. LOCATION OF OFF-LOAD TRUCK
DISCLAIMER/ COPYRIGHT
DESIGNER INFORMATION
MTS
COPLEY PARK
MAINTENANCE
FACILITY
(CPMF)
SITE ADDRESS
7490 COPLEY PARK PL
SAN DIEGO, CA 92111
DESIGNED BY: YSHK
DRAWN BY: JDP
CHECKED BY: KEP
APPROVED BY: JDP
DATE: 09/27/2019
PROJECT NO: 16231
DRAWING TITLE
PRELIMINARY
HYDROGEN FUELING
SITE PLAN
SHEET NO.
SP-1
SAN CLEMENTE CANYON FWY.
COPLEY PARK PL
(N) FUELING PAD
(N) HYDROGEN COMPOUND
60.00'
125.00'
26.00'
50.00'
34.00'
40.00'
PRELIMINARY HYDROGEN FUELING SITE PLAN
GRAPHIC SCALE 1" = 30'


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DESIGNED BY: KSPK
DRAWN BY: CDOLLAR/PK
CHECKED BY: KEP/PK
APPROVED BY: PK
PROJECT NO.: 16233L
DATE: 9/27/2019
DRAWING TITLE: PRELIMINARY HYDROGEN FUELING SITE PLAN
SHEET NO.: SP-1
DESIGNER INFORMATION
MTS
EAST COUNTY BUS MAINTENANCE FACILITY (ECMF)
SITE ADDRESS
1213 N. JOHNSON AVE
@ VERNON STREET
EL CAJON, CA 92020
VICINITY MAP
PROJECT SITE
VERNON WAY
NORTH JOHNSON AVENUE
SITE NOTES
NOTE
QUANTITY
REFERENCE
EXISTING ITEMS
01 (E) CNG FACILITY
02 (E) BUS WASH
03 (E) FUEL AREA BUILDING
04 (E) BUS MAINTENANCE BUILDING
05 (E) BUS PARKING TO BE REMOVED
REMOVE ITEMS
10 (N) DISPENSER
11 (N) HYDROGEN EQUIPMENT COMPOUND
12 (N) PIPE RATED WALL
PARKING INFORMATION
PHASE 1
PHASE 2
CAR
40 BUS
45 BUS
CAR
40 BUS
45 BUS
EXISTING REMOVED
0
0
-10
0
0
0
PROPOSED
0
0
0
0
0
0
NET CHANGE
0
0
-10
0
0
0
HYDROGEN EQUIPMENT INFORMATION
PHASE 1
PHASE 2
SIZE:
TOTAL COMPOUND
25' X 121'
25' X 170'
POSITION:
TOTAL # OF FUELING LANES
2
2
TOTAL # OF BUS/FUELING VESSELS
1
2
LEGEND
PROPOSED PHASE 1 HYDROGEN COMPOUND
PROPOSED PHASE 2 HYDROGEN COMPOUND
PROPOSED PHASE 1 HYDROGEN DISPENSER
PROPOSED PHASE 2 HYDROGEN DISPENSER
PROPOSED VEHICLE PARKING SETBACK LINE
APPROX. LOCATION OF PROPERTY LINE
APPROX. LOCATION OF DISPENSING BUS
APPROX. LOCATION OF OFFLOAD TRUCK
1214 PIONEER WAY
540 VERNON WAY
1218 N. JOHNSON AVE.
VERNON WAY
PARKING FOR 45' LONG BUS
PARKING FOR 40' LONG BUS
100.00'
170.00'
32'±
16.00'
25.00'
8.00'
PRELIMINARY HYDROGEN FUELING SITE PLAN
GRAPHIC SCALE 1" = 40'


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1 7/1/2020 CLIENT COMMENTS
2 12/18/2020 GENERAL REVISIONS
CONFIDENTIALITY STATEMENT
DESIGNER INFORMATION
MTS
IMPERIAL AVENUE DIVISION
(IAD)
SITE ADDRESS
1001 16TH STREET
@ IMPERIAL AVENUE
SAN DIEGO, CA 92101
DESIGNED BY: YZHA
CHECKED BY: JWU
DRAWN BY: CDOLLAR/MYHA
QC: PROJECT NO.
DATE: 9/27/2019 16233L
DRAWING TITLE:
PRELIMINARY
HYDROGEN FUELING
SITE PLAN
SHEET NO.
SP-1
VICINITY MAP
PROJECT SITE
IMPERIAL AVENUE
14TH AVENUE
SITE NOTES
NOTE
EXISTING ITEMS
0.1 (E) F.C.S. FACILITY
0.2 (E) MAINTENANCE BUILDING
0.3 (E) ADMIN AREA
0.4 (E) RESIMPA ADMIN BLDG. 1
0.5 (E) BUS & PARKING TO BE REMOVED
NEW ITEMS
1.0 (N) UNDISPENSER
1.1 (N) HYDROGEN EQUIPMENT COMPOUND
PARKING INFORMATION
HYDROGEN EQUIPMENT INFORMATION
LEGEND
PROPOSED PHASE 1 HYDROGEN COMPOUND
PROPOSED PHASE 2 HYDROGEN COMPOUND
PROPOSED PHASE 3 HYDROGEN COMPOUND
PROPOSED PHASE 1 HYDROGEN DISPENSER
PROPOSED PHASE 2 HYDROGEN DISPENSER
PROPOSED PHASE 3 HYDROGEN DISPENSER
PROPOSED VEHICLE PARKING SETBACK LINE
APPROX. LOCATION OF PROPERTY LINE
APPROX. LOCATION OF DISPENSING BUS
APPROX. LOCATION OF OFF-LOAD TRUCK
16TH AVENUE
K STREET
IMPERIAL AVENUE
14TH AVENUE
PRELIMINARY HYDROGEN FUELING SITE PLAN
GRAPHIC SCALE 1" = 40'

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DESIGNED FOR INFORMATION
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KEARNY MESA DIVISION (KMD)
SITE ADDRESS
4630 RUFFNER ST
SAN DIEGO, CA 92111
DESIGNED BY: KTW
CHECKED BY: KEP
DRAWN BY: CDM
APP: PROJECT NO.
DATE: 09/27/2019 16231
DRAWING TITLE
PRELIMINARY HYDROGEN FUELING SITE PLAN
SHEET NO.
SP-1
VICINITY MAP
RUFFNER STREET
PROJECT SITE
DAGGET STREET
SITE NOTES
NOTE
EXISTING ITEMS
0.1 MAINTENANCE BLDG 100
0.2 BUILDING 200
0.3 BUILDING 300
0.4 DIESEL FUEL BLDG 400
0.5 BUILDING 500
0.6 (E) BUS PARKING TO BE REMOVED
0.7 RESTROOMS
1.0 (N) DISPENSER
1.1 (N) HYDROGEN EQUIPMENT COMPOUND
1.2 (N) FIRE RATED WALL
PARKING INFORMATION
PHASE 1 PHASE 2 PHASE 3
CAR BUS CAR BUS CAR BUS
EXISTING REMOVED 0 -5 0 0 0 -1
PROPOSED 0 0 0 0 0 0
NET CHANGE 0 -5 0 0 0 -1
HYDROGEN EQUIPMENT INFORMATION
PHASE 1 PHASE 2 PHASE 3
TOTAL COMPOUND SIZE: 25'X 12'1" 25'X 18'8" 25'X 12'5"
TOTAL # OF FUELING POSITION: 2 2 2
TOTAL # OF 15,000 GAL LNG VESSELS 1 2 3
LEGEND
PROPOSED PHASE 1 HYDROGEN COMPOUND
PROPOSED PHASE 2 HYDROGEN COMPOUND
PROPOSED PHASE 3 HYDROGEN COMPOUND
PROPOSED PHASE 1 HYDROGEN DISPENSER
PROPOSED PHASE 2 HYDROGEN DISPENSER
PROPOSED PHASE 3 HYDROGEN DISPENSER
PROPOSED VEHICLE PARKING SETBACK LINE
APPROX. LOCATION OF PROPERTY LINE
APPROX. LOCATION OF DISPENSING BUS
APPROX. LOCATION OF OFFLOAD TRUCK
RUFFNER STREET
DAGGET STREET
255.00
25.00'
PHASE 3
PHASE 2
PHASE 1
PRELIMINARY HYDROGEN FUELING SITE PLAN
GRAPHIC SCALE: 1" = 40'


MTS
Fiedlergroup
Integrated Engineering
2299 N. Euclid Ave., Ste 530
Pasadena, CA 91101
(213) 391-7991
fiedlergroup.com
811
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www.call811.com
NO. DATE REVISION DESCRIPTION
1 7/1/2020 CLIENT COMMENTS
2 12/16/2020 GENERAL REVISIONS
3 2/4/2020 CLIENT COMMENTS
CONFIDENTIALITY STATEMENT
DESIGNER INFORMATION
MTS
SOUTH BAY BUS
MAINTENANCE FACILITY
(SBMF)
SITE ADDRESS
3660A MAIN STREET
CHULA VISTA, CA 91911
DESIGNED BY: YCH
CHECKED BY: JWP
DRAWN BY: JWP
DATE: 9/27/2019
DRAWING TITLE
PRELIMINARY
HYDROGEN FUELING
SITE PLAN
SHEET NO.
SP-1
PROJECT NO.
16231
VICINITY MAP
PROJECT SITE
MAIN STREET
SITE NOTES
NOTE
EXISTING ITEMS
0.1 (E) CRASSS WASH AREA
0.2 (E) MAINTENANCE FACILITY
0.3 (E) MAINTENANCE
0.4 (E) CNG DISPENSERS
0.5 (E) CNG EQUIPMENT COMPC
0.6 (E) DIESEL DISPENSER
0.7 (E) ADMINISTRATION BLDG
0.8 (E) BUS PARKING TO BE RE
1.0
1.1
PARKING INFORMATION
PHASE 1 PHASE 2 PHASE 3
CAR BUS CAR BUS CAR BUS
EXISTING REMOVED 0 -19 0 -6 0 0
PROPOSED 0 0 0 0 0 0
NET CHANGE 0 -19 0 -6 0 0
HYDROGEN EQUIPMENT INFORMATION
PHASE 1 PHASE 2 PHASE 3
TOTAL COMPOUND SIZE: 125'X 80' 125' X 80' 125' X 80'
TOTAL # OF FUELING POSITION: 2 4 7
TOTAL # OF 55,000 GAL LNG VESSELS 2 4 5
LEGEND
PROPOSED PHASE 1 HYDROGEN COMPOUND
PROPOSED PHASE 2 HYDROGEN COMPOUND
PROPOSED PHASE 3 HYDROGEN COMPOUND
PROPOSED PHASE 1 HYDROGEN DISPENSER
PROPOSED PHASE 2 HYDROGEN DISPENSER
PROPOSED PHASE 3 HYDROGEN DISPENSER
PROPOSED VEHICLE PARKING SETBACK LINE
APPROX. LOCATION OF PROPERTY LINE
APPROX. LOCATION OF DISPENSING BUS
APPROX. LOCATION OF OFF-LOAD TRUCK
MAIN STREET
PRELIMINARY HYDROGEN FUELING SITE PLAN
GRAPHIC SCALE: 1" = 40'

Zero Emission Bus (ZEB) Draft Rollout Plan and Transition Plan

MTS Board of Directors Meeting
September 17, 2020

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Today's Discussion

- Public Engagement
- Deployment Plan
- Alternative Fleet Transitions
- Greenhouse Gas Analysis
- Cost Analysis
- Next Steps

Public Workshop Results

Participants: ~125 (English/Spanish)

Four presentation sections:

- MTS Electric Bus Pilot Update
- MTS Draft Transition Plan
- Greenhouse Gas Emission Benefit Study
- Implementation in Disadvantaged Communities

Workshop Results

- Overall, participants felt MTS is on the right track with this transition plan
- Participants overwhelmingly want MTS to prioritize ZEB rollout in Disadvantaged Communities
- Majority did not want to sacrifice current service levels to speed transition
- Participants want ZEB transition to happen as fast as possible

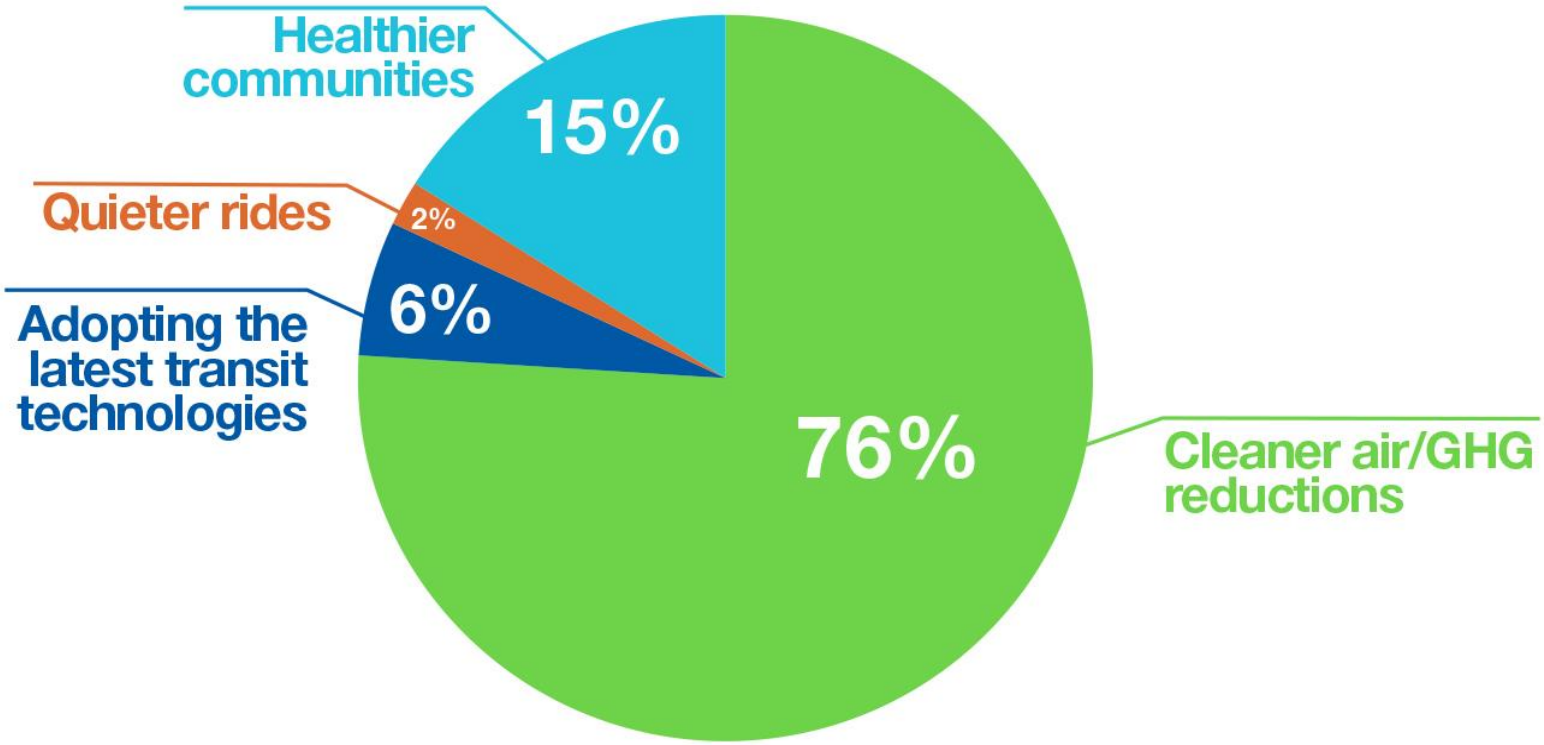


Question Themes Asked by Public

- ZEB deployment strategy – where?
- Cost of ZEB vs. CNG
- Funding sources for extra cost
- Impact to current service levels
- Paratransit and Minibuses
- Additional scenarios
  - 25% of bus purchases from 2020-23 are ZEB
  - 10-year transition, rather than 20
- In-route charging vs. depot charging

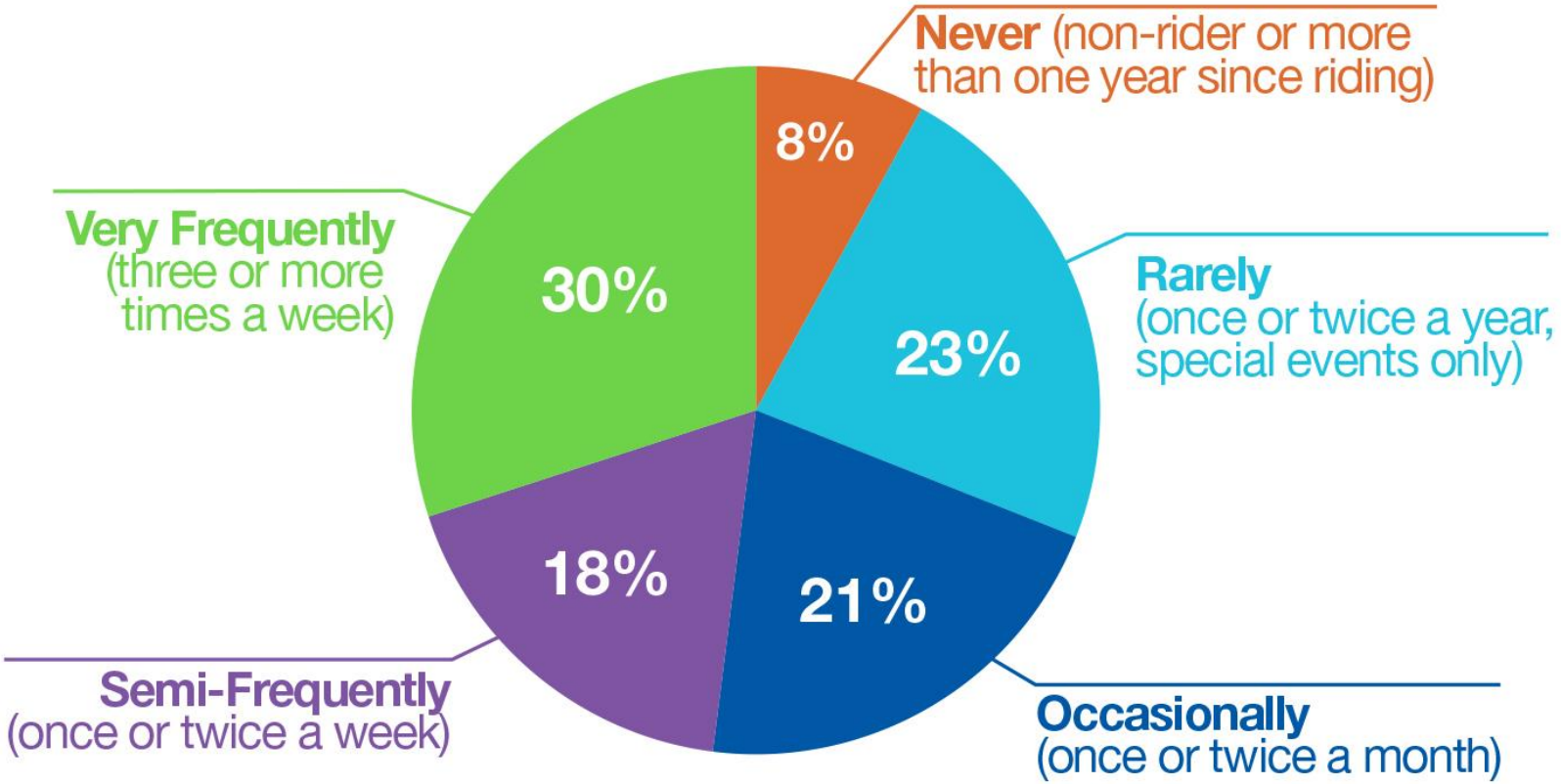
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What comes to mind first when you hear “zero emissions bus fleet?”



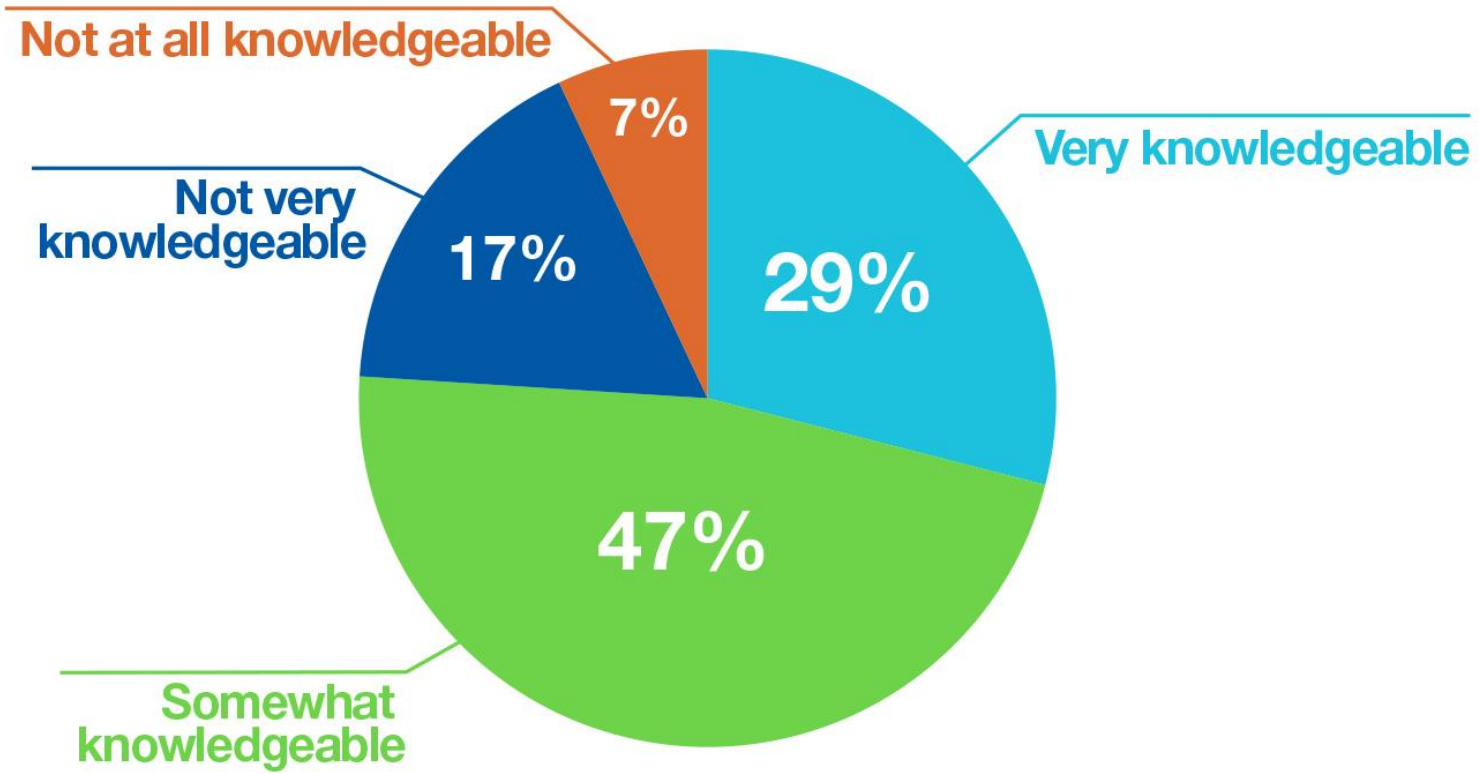
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Prior to COVID-19, how often did you ride MTS?



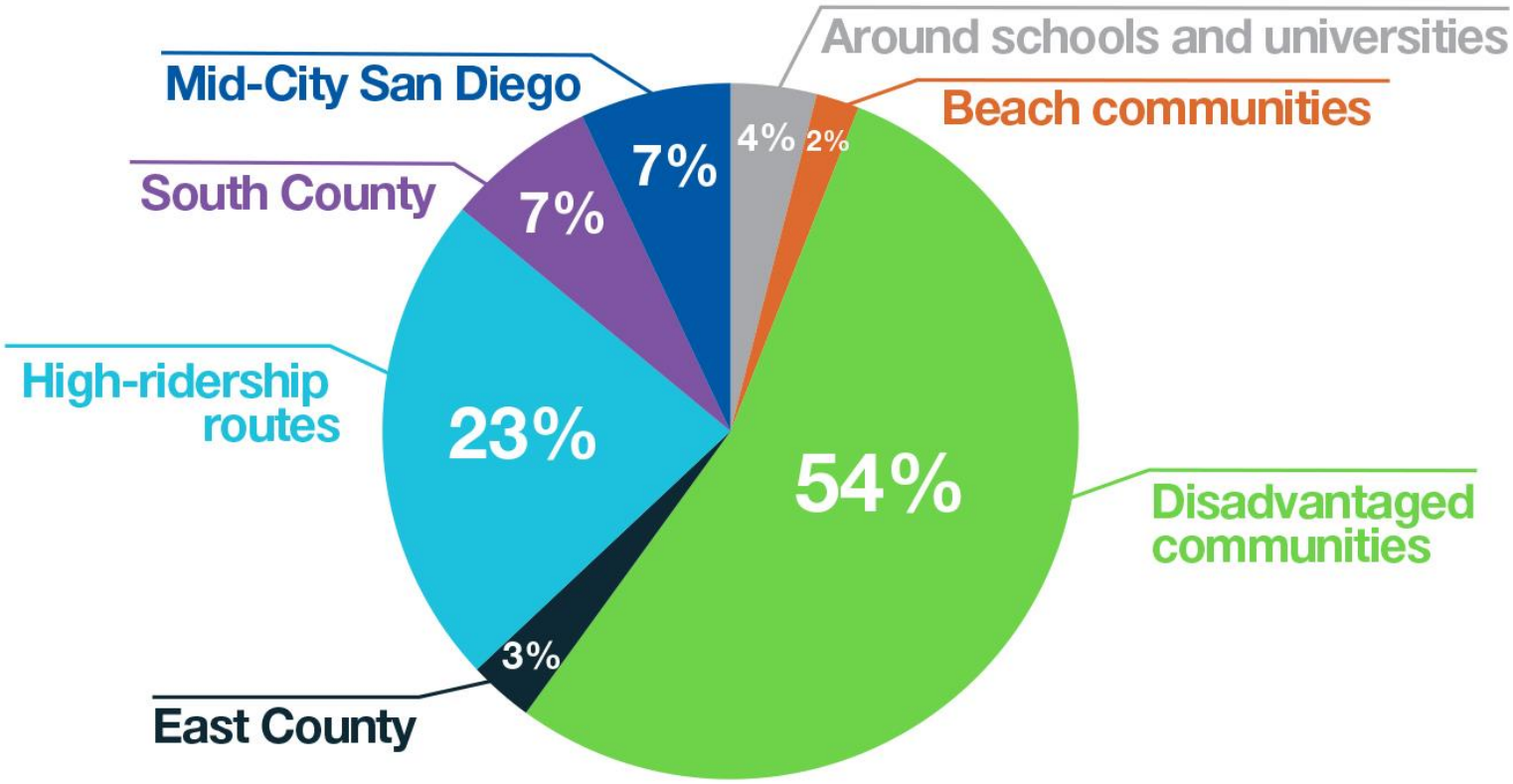
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How would you describe your level of knowledge about zero-emissions vehicles such as electric buses?



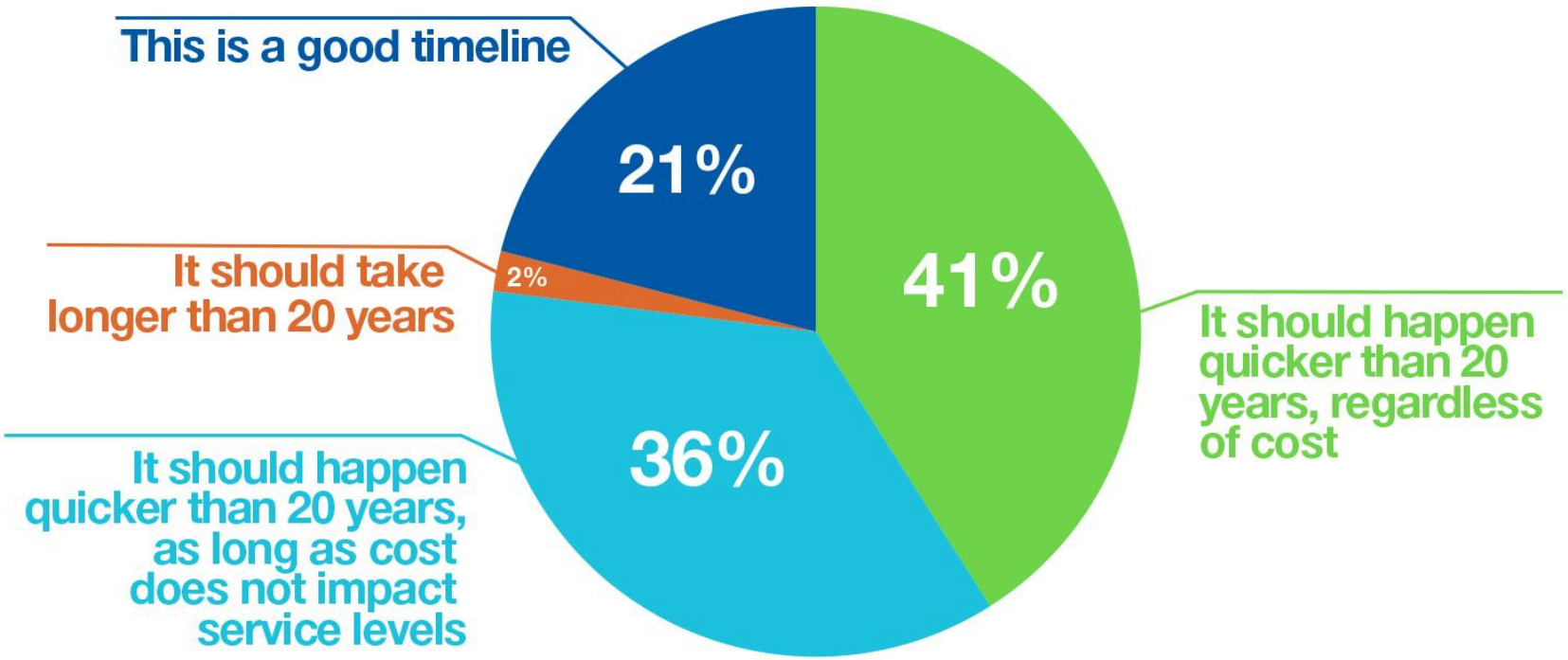
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What parts of the region would you like to see MTS prioritize ZEB rollout?



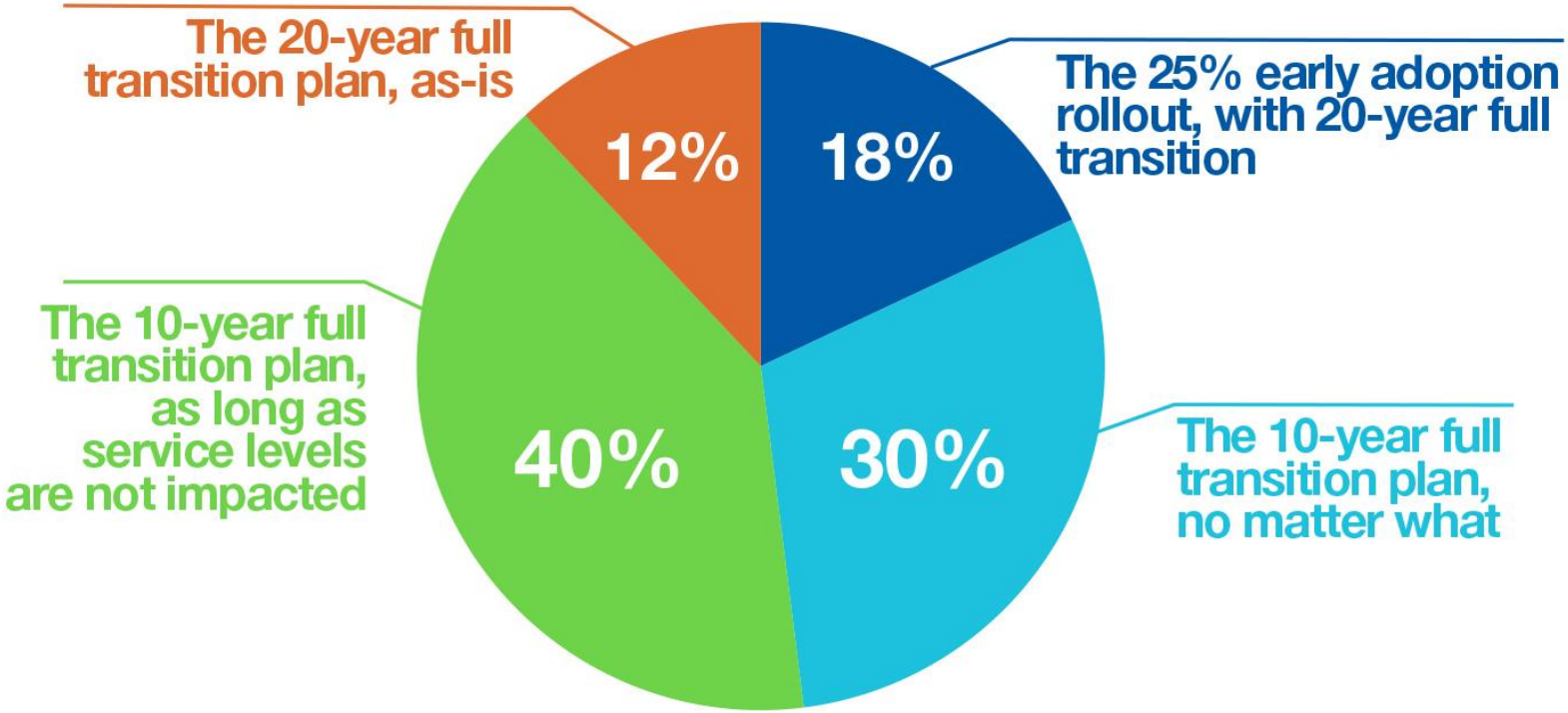
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What do you think about a 20-year conversion path for 800 buses?



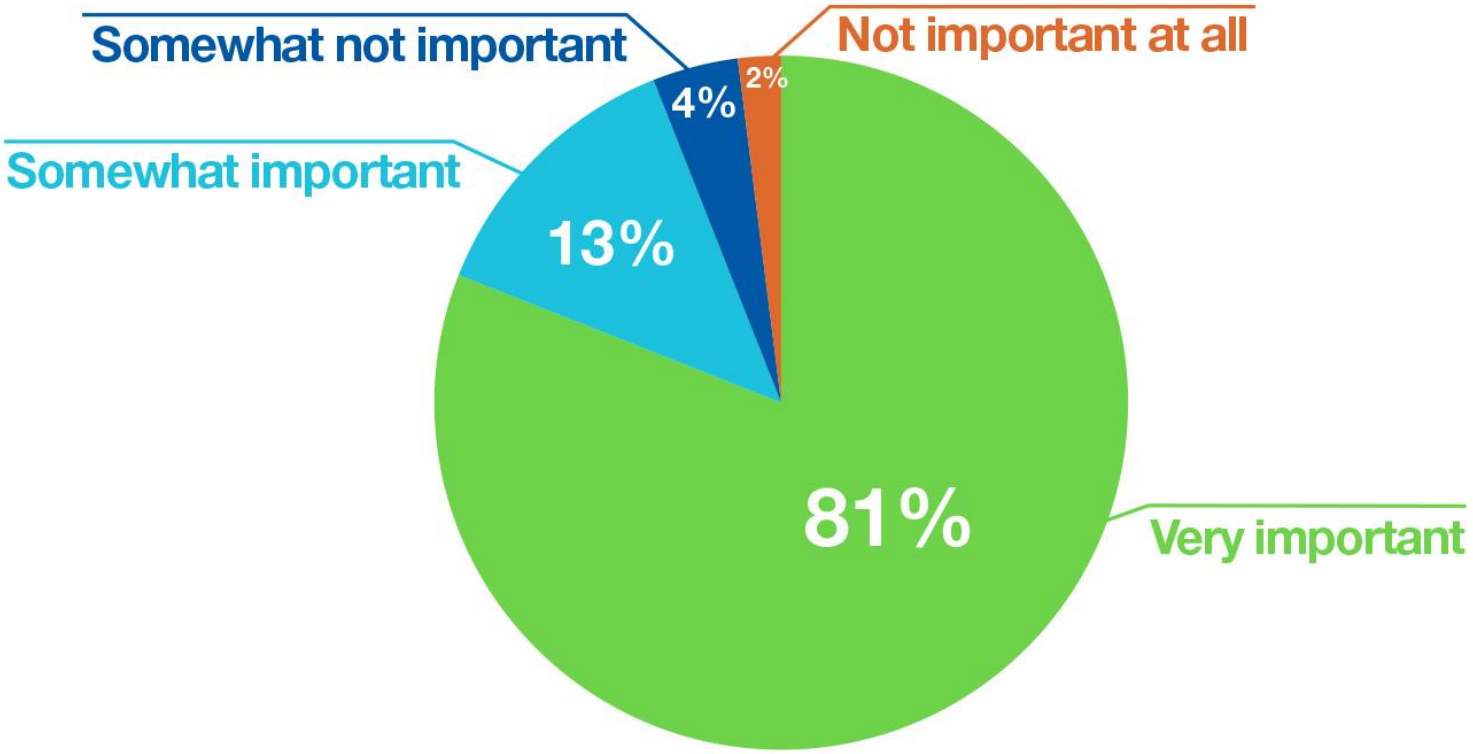
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After seeing the difference in GHG emissions for three different scenarios, I think the best plan is:



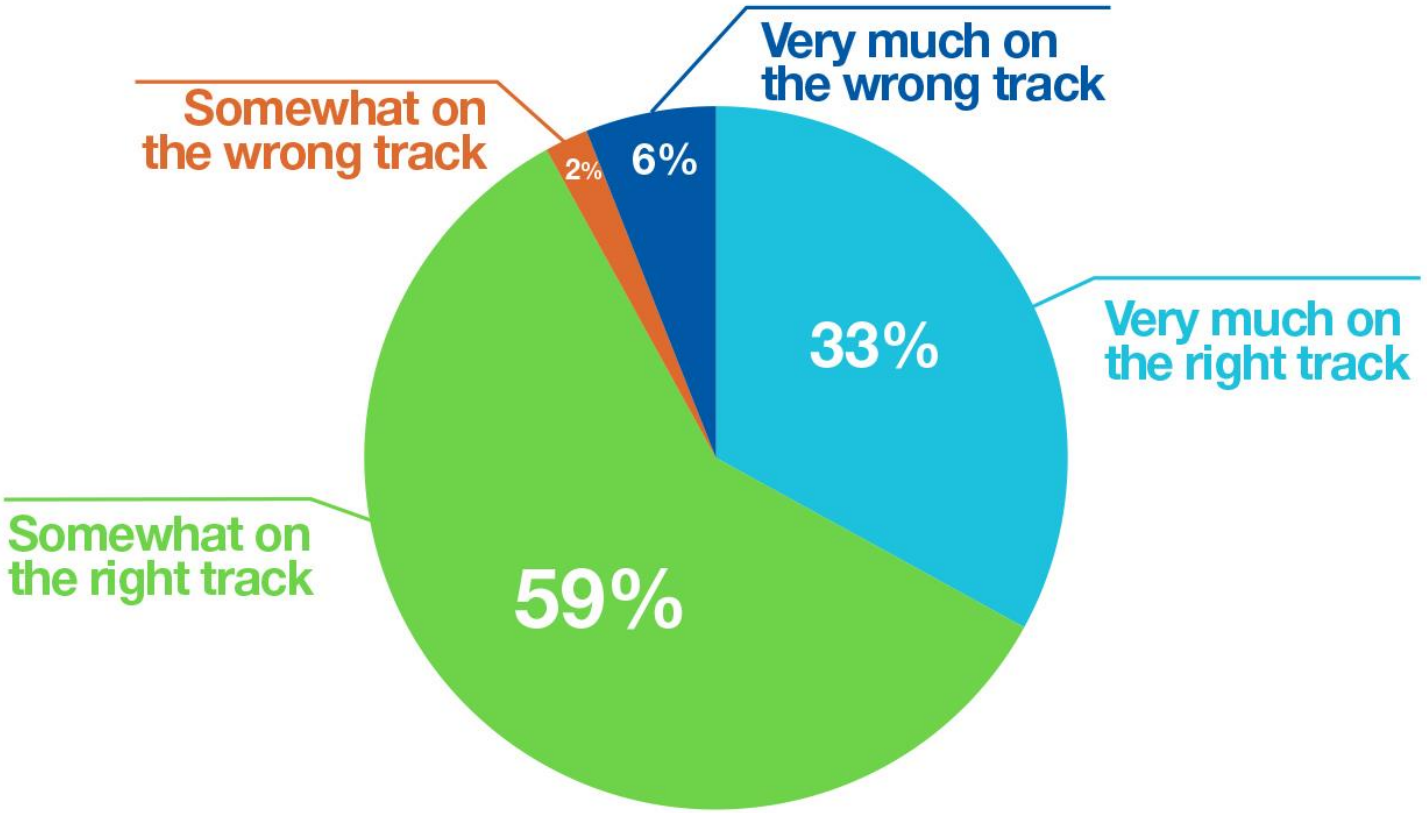
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How important is it to you that deployment of zero-emission buses in Disadvantaged Communities (DACs) are prioritized over other areas?



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As an initial reaction do you think MTS is on the right track with this 20-year/2040 transition plan?

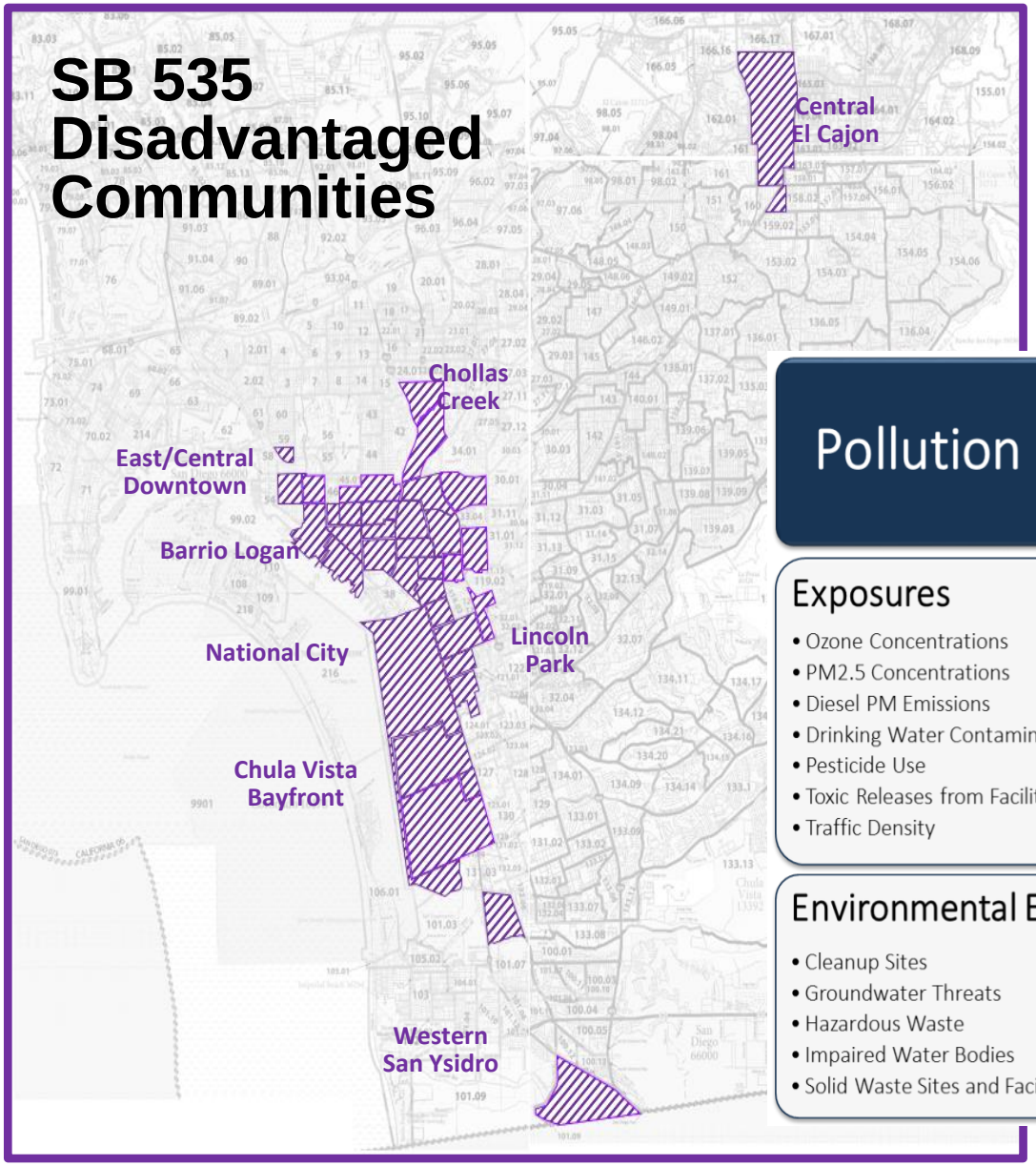


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Today's Discussion

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- Deployment Plan
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SB 535 Disadvantaged Communities



Pollution Burden

Exposures

- Ozone Concentrations
- PM2.5 Concentrations
- Diesel PM Emissions
- Drinking Water Contaminants
- Pesticide Use
- Toxic Releases from Facilities
- Traffic Density

Environmental Effects

- Cleanup Sites
- Groundwater Threats
- Hazardous Waste
- Impaired Water Bodies
- Solid Waste Sites and Facilities

Population Characteristics

Sensitive Populations

- Asthma Emergency Department Visits
- Cardiovascular Disease (Emergency Department visits for Heart Attacks)
- Low Birth-Weight Infants

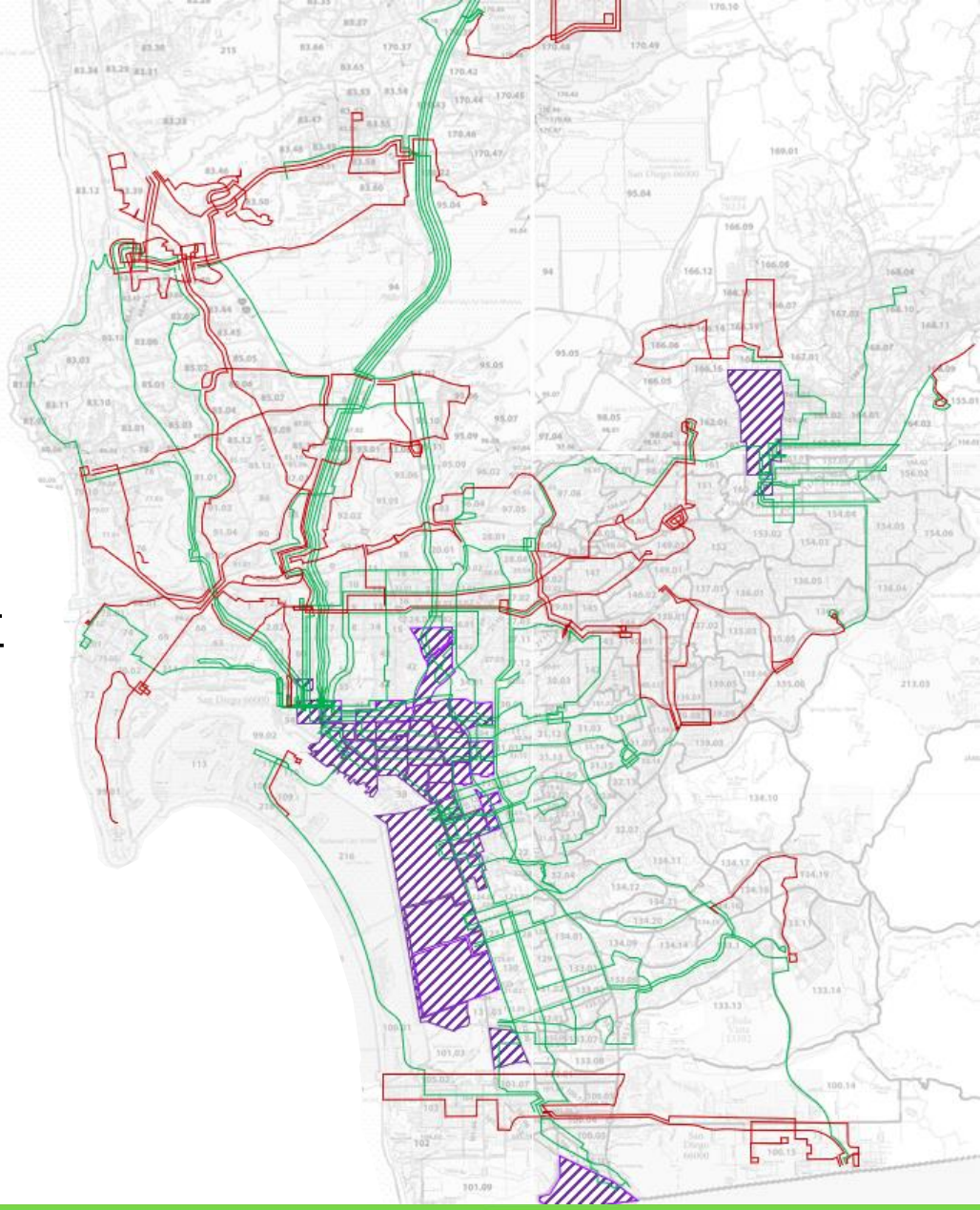
Socioeconomic Factors

- Educational Attainment
- Housing Burdened Low Income Households
- Linguistic Isolation
- Poverty
- Unemployment

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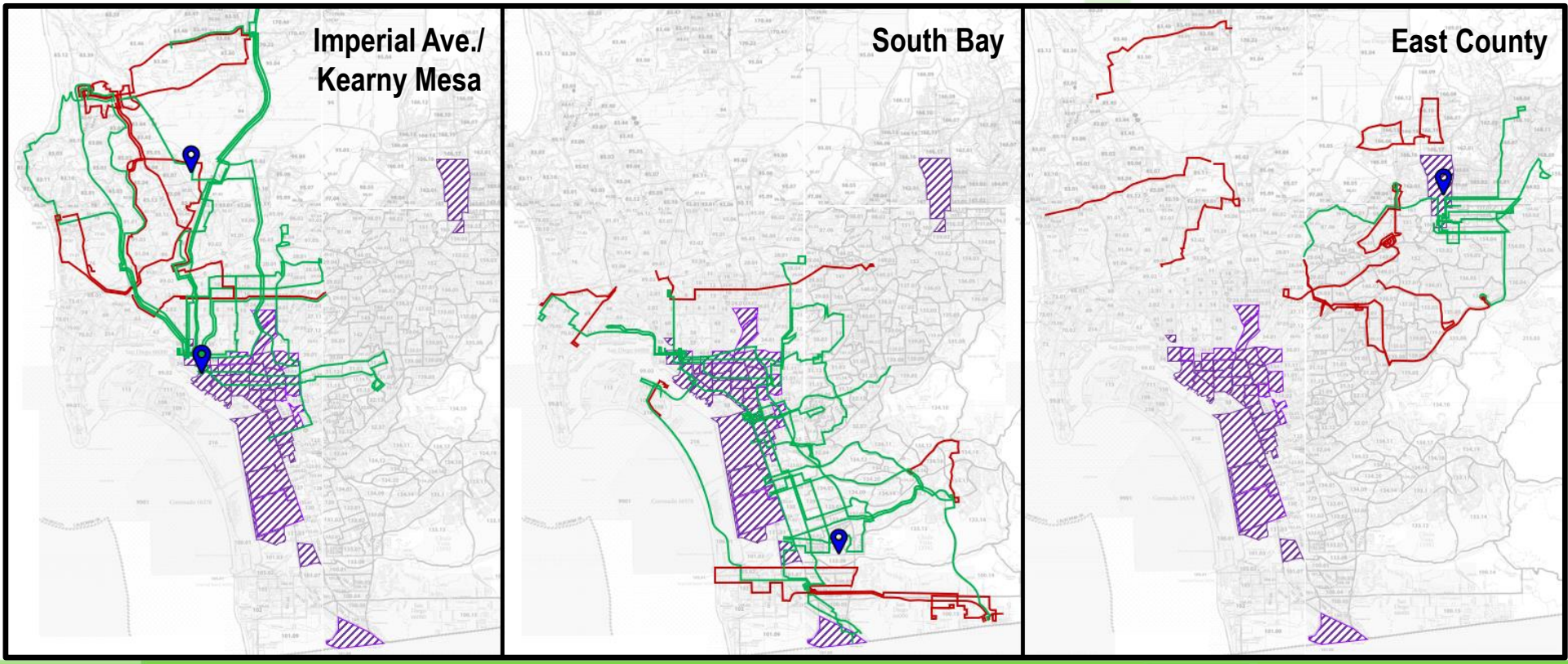
MTS Bus Network Map

- Green Lines = DAC Routes
  (at least one stop in an SB 535 DAC
- Red Lines = Non-DAC Routes
  (no stops in an SB 535 DAC)



DAC Routes by Division

- Divisions require charging infrastructure
  - Prioritize charging infrastructure
  - How many DAC-serving routes operate from each division?



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DAC Routes by Division

TOTALS (40' + 60' Buses)	**IAD + KMD**	**SBD**	**ECD**
All Routes	26	29	17
DAC Routes	15	20	7
Percentage of DAC Routes	**57.7%**	**69.0%**	**41.2%**

All Annual Ridership	22,396,771	19,525,035	4,234,546
DAC Route Annual Ridership	14,671,571	14,787,769	1,841,041
Percentage of Riders on DAC Routes	**65.5%**	**75.7%**	**43.5%**

Excluding "end-of-line" DAC Routes	**IAD + KMD**	**SBD**	**ECD**
All Routes	26	29	17
DAC Routes	3	11	2
Percentage of DAC Routes	**11.5%**	**37.9%**	**11.8%**

All Annual Ridership	22,396,771	19,525,035	4,234,546
DAC Route Annual Ridership	3,648,391	10,902,906	414,144
Percentage of Riders on DAC Routes	**16.3%**	**55.8%**	**9.8%**

ZEB Deployment Plan

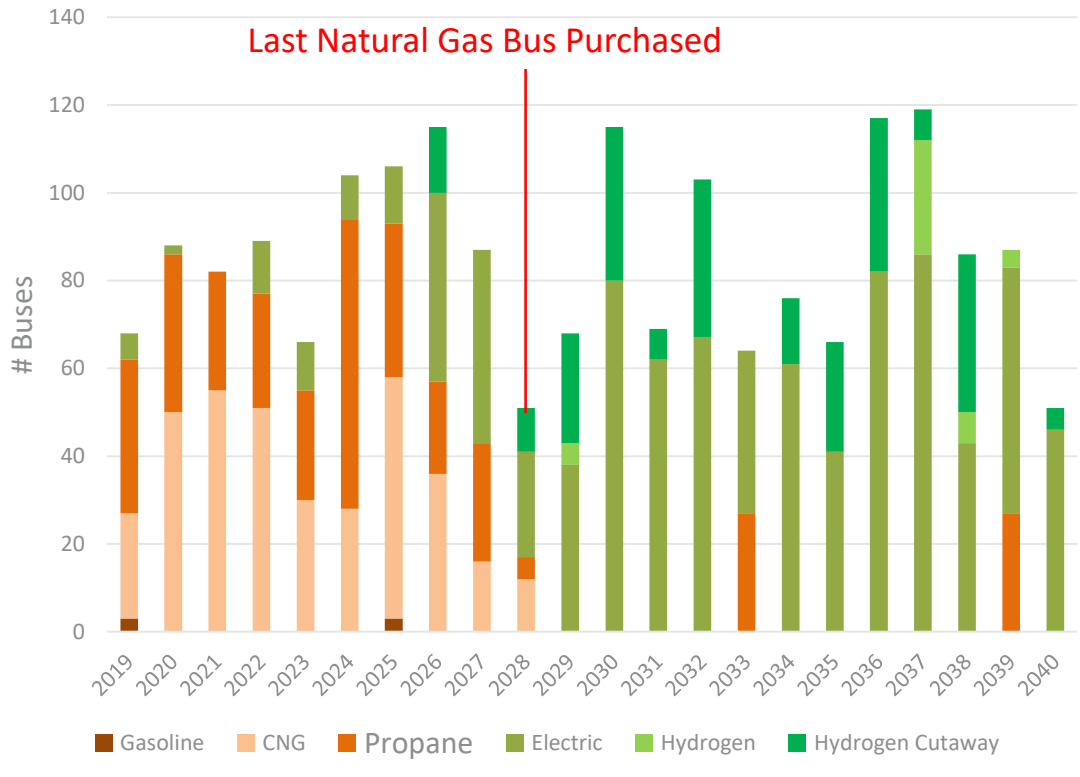
- Proposed Charging Infrastructure Priority
  1. South Bay
  2. Imperial Ave.
  3. Kearny Mesa
  4. East County
- Proposed Route Assignment Priority
  - Buses assigned on a daily basis, with ZEBs prioritized to routes in disadvantaged communities
    - DAC route listing kept updated for Operations Divisions (route changes, ridership, CalEnviroscreen updates)
  - Bus assignment tracking for accountability
  - Constraints
    - Range limitations vs. route block lengths
    - Bus types & availability (40’ vs. 60’)
    - Other considerations: interlines mix DAC and non-DAC routes; standbys and unplanned events require flexibility
    - 60 Iris Rapid (non-DAC route) to use ZEBs per grant requirements

Today's Discussion

- Public Engagement
- Deployment Plan
- Alternative Fleet Transitions
- Greenhouse Gas Analysis
- Cost Analysis
- Next Steps

Proposed (June) – Mixed Fleet 2040

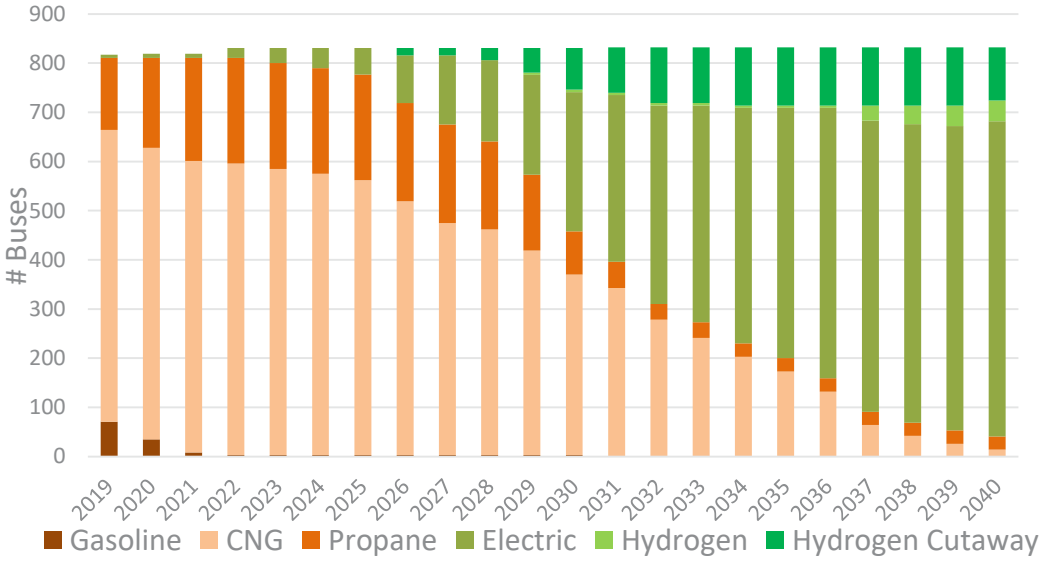
- Vehicles
- Infrastructure
- Costs
- Workforce Development



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Proposed (June) - Mixed Fleet 2040

- Vehicles:
  - Mixed fleet (BEB & FCEB)
    - Prioritizing technology
  - BEB can meet 49% of route schedules
  - Minibus considerations

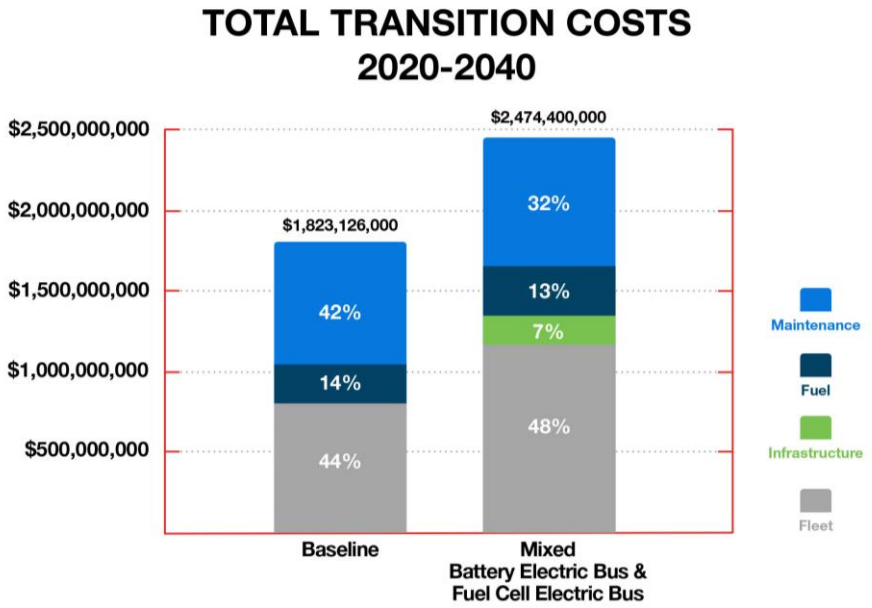


- Infrastructure:
  - Gantry systems
  - Grid upgrades
  - Redundancy
  - Two buses per charger
    - Charge management



Proposed (June) – Mixed Fleet 2040

- Costs: **$2,474,400,000**
  - Vehicles: $1,181,414,000
  - Infrastructure: $164,915,000
  - Fuel: $323,380,000
  - Maintenance: $804,691,000
  - Incremental cost over baseline: **$651,274,000**



- Workforce Development:
  - CARB regulation requirements
  - Maintenance training modules
  - Staff & regional partner training

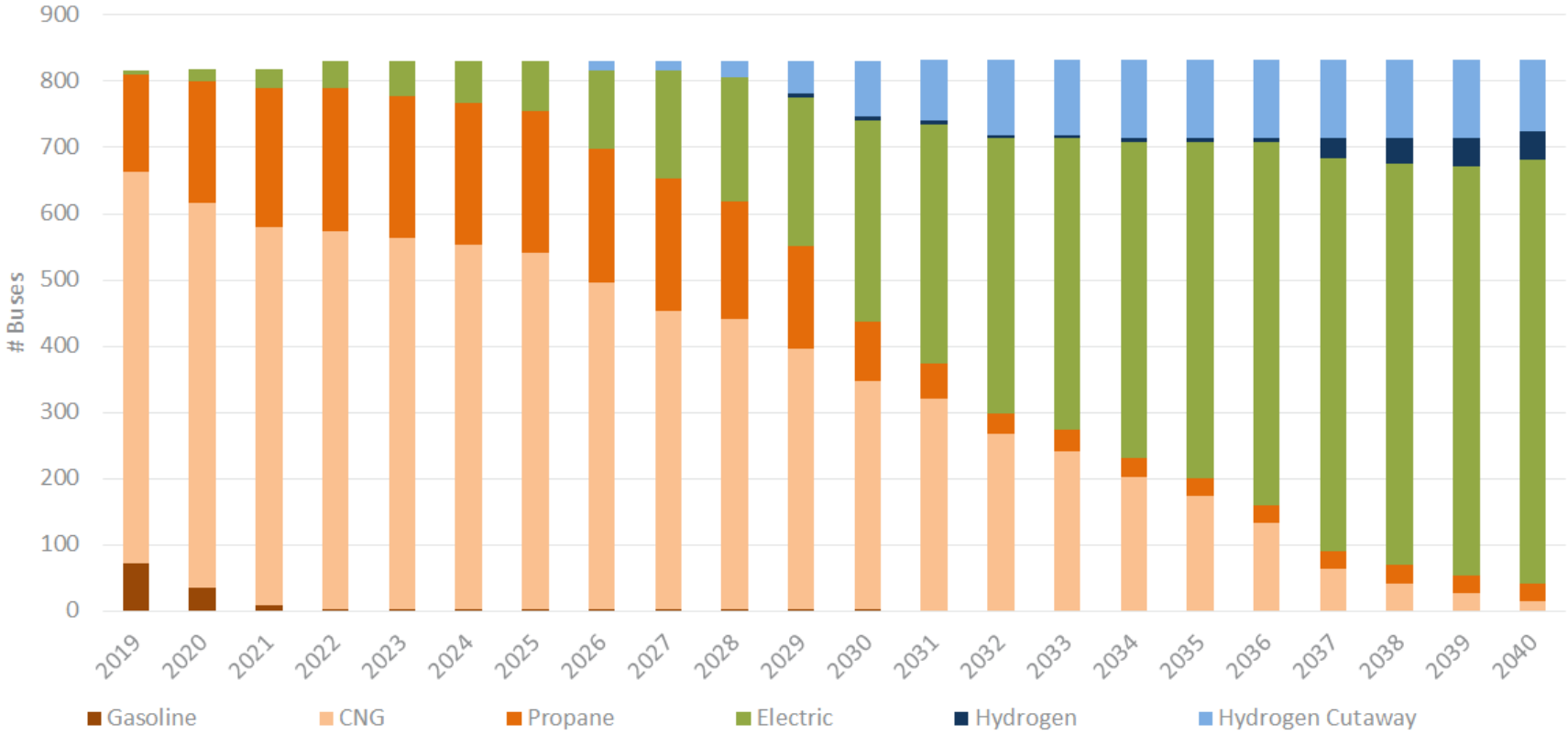


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Workforce Development

- ICT Regulation requires agencies to outline how ZEB training will be incorporated in current training programs
- Training will be completed through a combination of in-house, vendor and Original Equipment Manufacturers (OEM)
- MTS's workforce training includes incorporating ZEB training into current State accredited Apprentice Program
- Installation, maintenance or modification to vehicle chargers, or charging infrastructure requires Electric Vehicle Infrastructure Training Program (EVITP) certification

Alternative: 25% Early Adoption Pathway

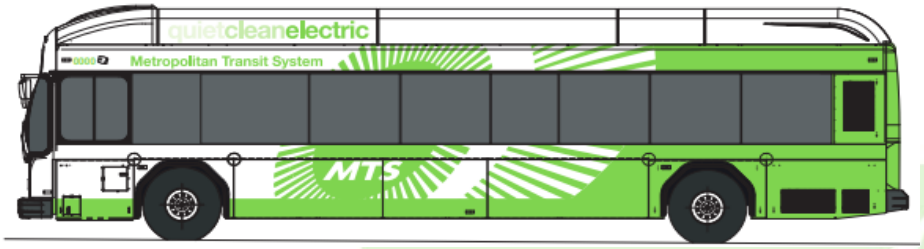


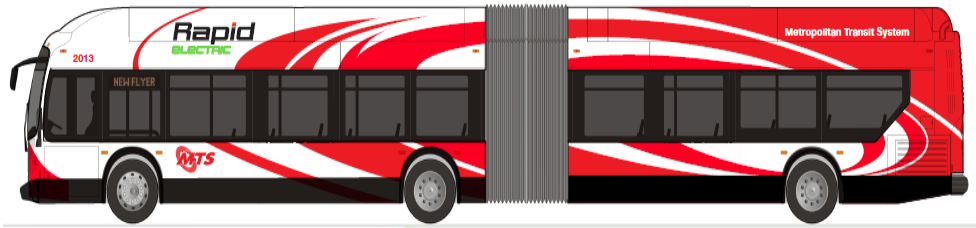
Assumes purchase of 25% ZEBs 2020-2022 prior to CARB ICT mandate; only applicable to 40' bus purchases

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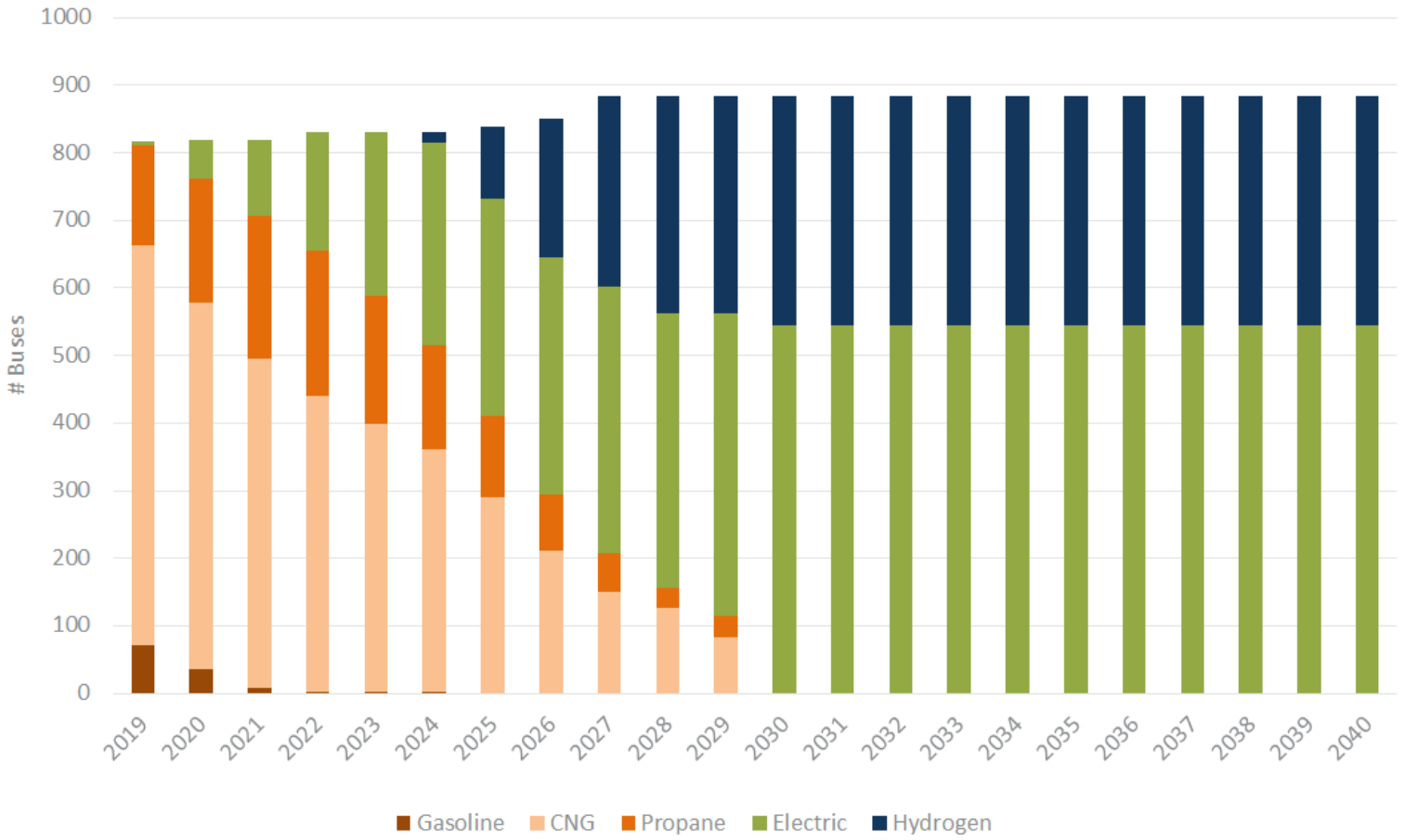
25% Early Adoption Pathway Considerations

- Infrastructure
  - Construction timelines
- Bus production schedule
- 2020 – Purchased 2 Gillig BEBs
- 2021 – **5 BEBs instead of CNG –** 13% total annual purchase
- 2022 – 12 Artic BEBs - 25% total annual purchase





Alternative: 2030 Pathway



Assumes ZEB transition by 2030; scenario requires purchase of multiple vehicles to replace a single vehicle in some instances and therefore increase in fleet size

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2030 Pathway Considerations

- Infrastructure
- Bus range limitations
- Early retirement of buses
- Additional facility
- Compressed funding gaps
- GHG increase with more fuel cell buses (well-to-wheel)





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Infrastructure/Range Limitations

Infrastructure

- Infrastructure for 150 buses as of today
- Annually infrastructure for 50 additional buses
- SDG&E timeline

Range Limitations

- Only 150 miles
- 49% of bus schedules can be met
- Only 20% of Minibus schedules can be met
- Additional buses to meet ranges

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Total Transition Costs

Total Costs (20 Years)	Current Experience (All CNG)	MTS 2040 (June Staff Proposal)	2040 + 25% Acceleration	2030 100% ZEB Transition
Fleet	$ 808,294,000	$ 1,181,414,000	$ 1,190,130,000	$ 1,490,353,000
Fuel	252,569,000	323,380,000	328,618,000	480,945,000
Infrastructure	-	164,915,000	165,483,000	137,824,000
Maintenance	762,263,000	804,691,000	806,232,000	853,955,000
New Facility	-	184,000,000	184,000,000	184,000,000
Vehicle Early Retirement (FTA)	-	-	-	19,512,000
Additional Labor (Fleet Requirements)	-	-	-	10,951,000
Total	**$ 1,823,126,000**	**$ 2,658,400,000**	**$ 2,674,463,000**	**$ 3,177,540,000**
Change from Current		835,274,000	851,337,000	1,354,414,000
Additional Funding from Proposal			16,063,000	519,140,000
Required Funding in First 8 Years		**334,109,600**	**340,534,800**	**948,089,800**
Approximate Annual Funding Requirement (Next 8 Years)		**42,000,000**	**43,000,000**	**119,000,000**

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2030 - Early Path Consideration Summary

- Total estimated increase of approximately **$519,140,000** between 2020 and 2040 (compare to the proposed mixed fleet option)
- Estimated increase in fleet size of 52 vehicles to meet range requirements required to meet timeline of 100% ZEB by 2030
- Increase in the number of FCEBs required to meet range requirements (339 vs.150) compared to Mixed Fleet Scenario
- Accelerate new facility ($184 million)
- Long-term increase in operating costs driven by cost of hydrogen fuel
- Requires early retirement of vehicles prior to the end of their service life; costs to retire vehicles early are not included in the costs
  - Vehicles would need to be sold; depreciated value returned to the FTA

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2030 - Path Considerations

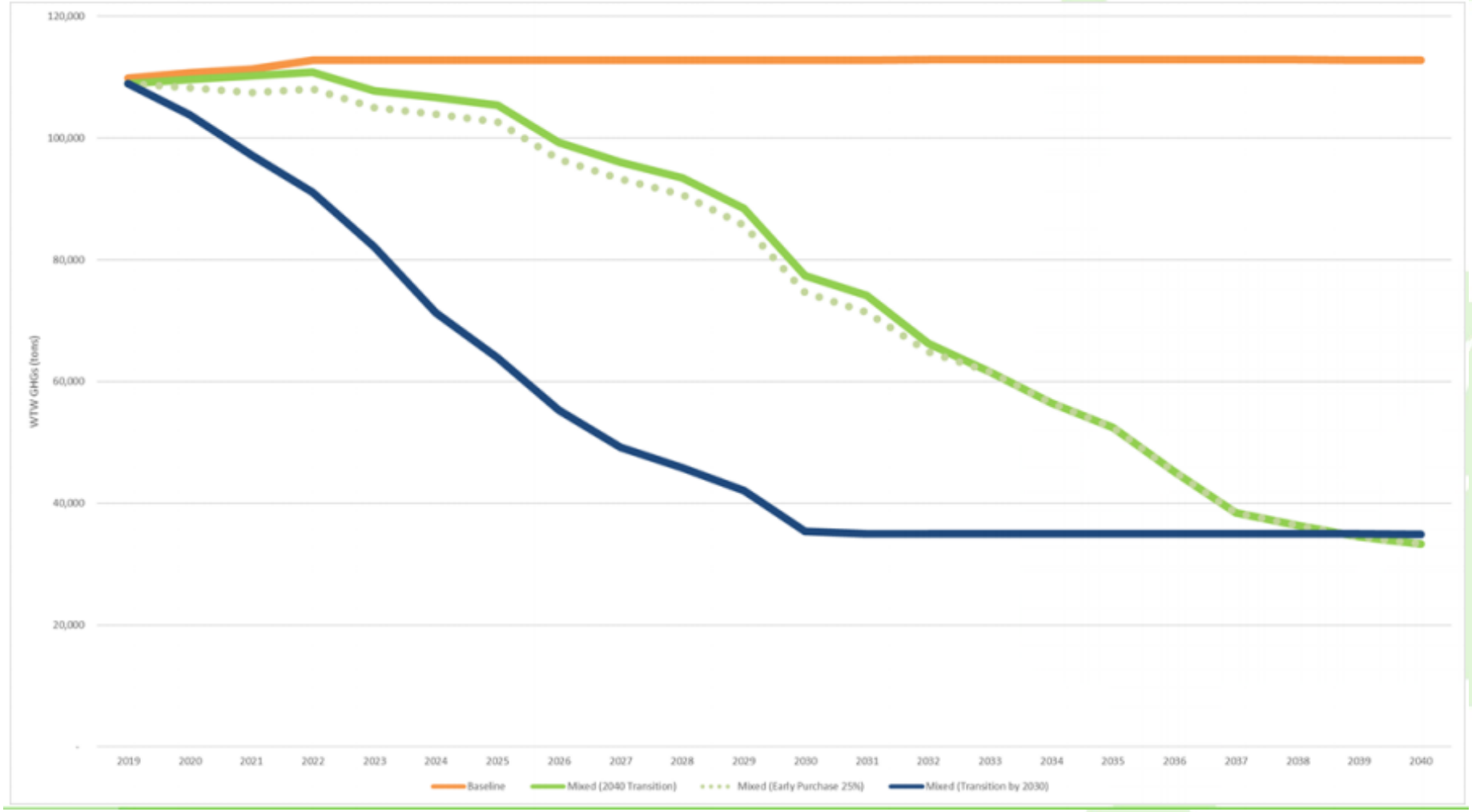
- Assumes approved fuel cell cutaway vehicles will be available by 2026
- Additional land purchase or facility construction necessary to support fleet expansion (2030 Transition)
- Estimated infrastructure design and build time frame from project conception to completion is minimum 2 year
- Time for SDG&E to complete accelerated utility service expansion to support charging infrastructure requirements is currently unknown
- Buses are typically ordered a minimum of 18 months in advance

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Today's Discussion

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GHG Benefits - Comparison

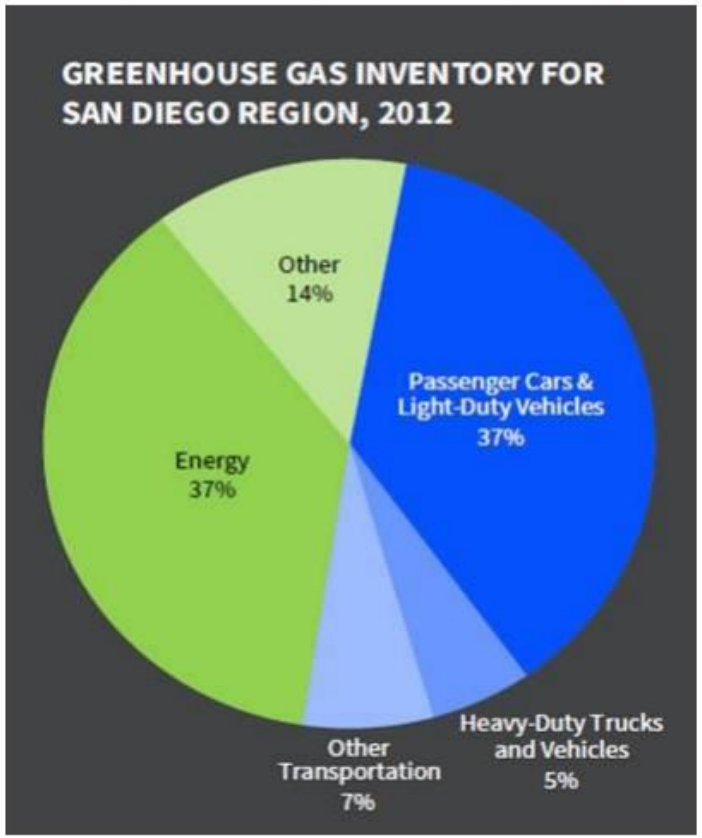


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Greenhouse Gas (GHG) Benefit Study

San Diego Greenhouse Gas Inventory

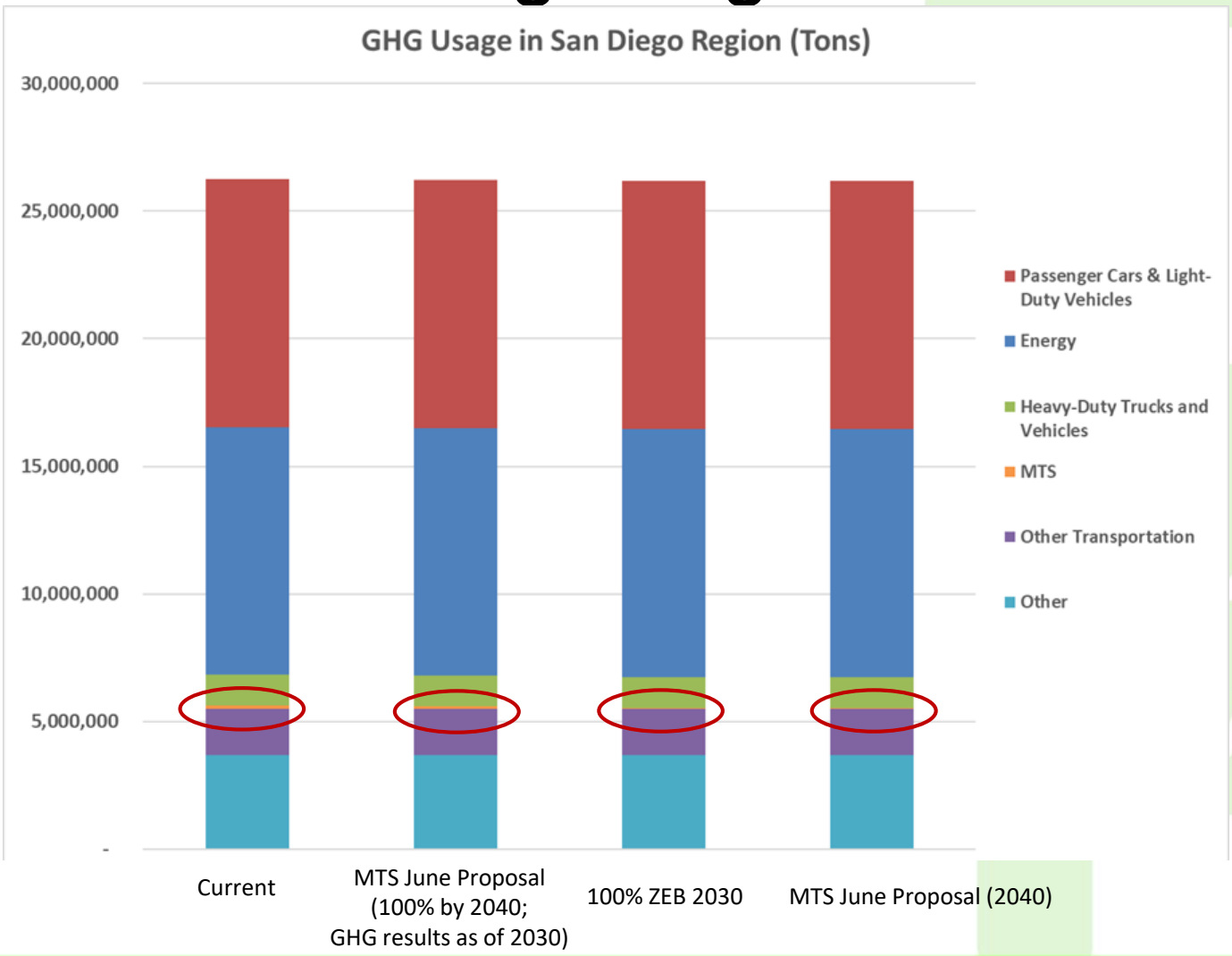
- The total San Diego regional emissions were estimated at **26.2 Million Tons**
- Heavy duty trucks and vehicles = **2.08 Million Tons**



*SANDAG (2012). Accelerate to Zero Emissions: *A Regional Collaboration to Combat Air Pollution through Transportation Electrification.*

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Greenhouse Gas (GHG) Benefit Study – San Diego Regional

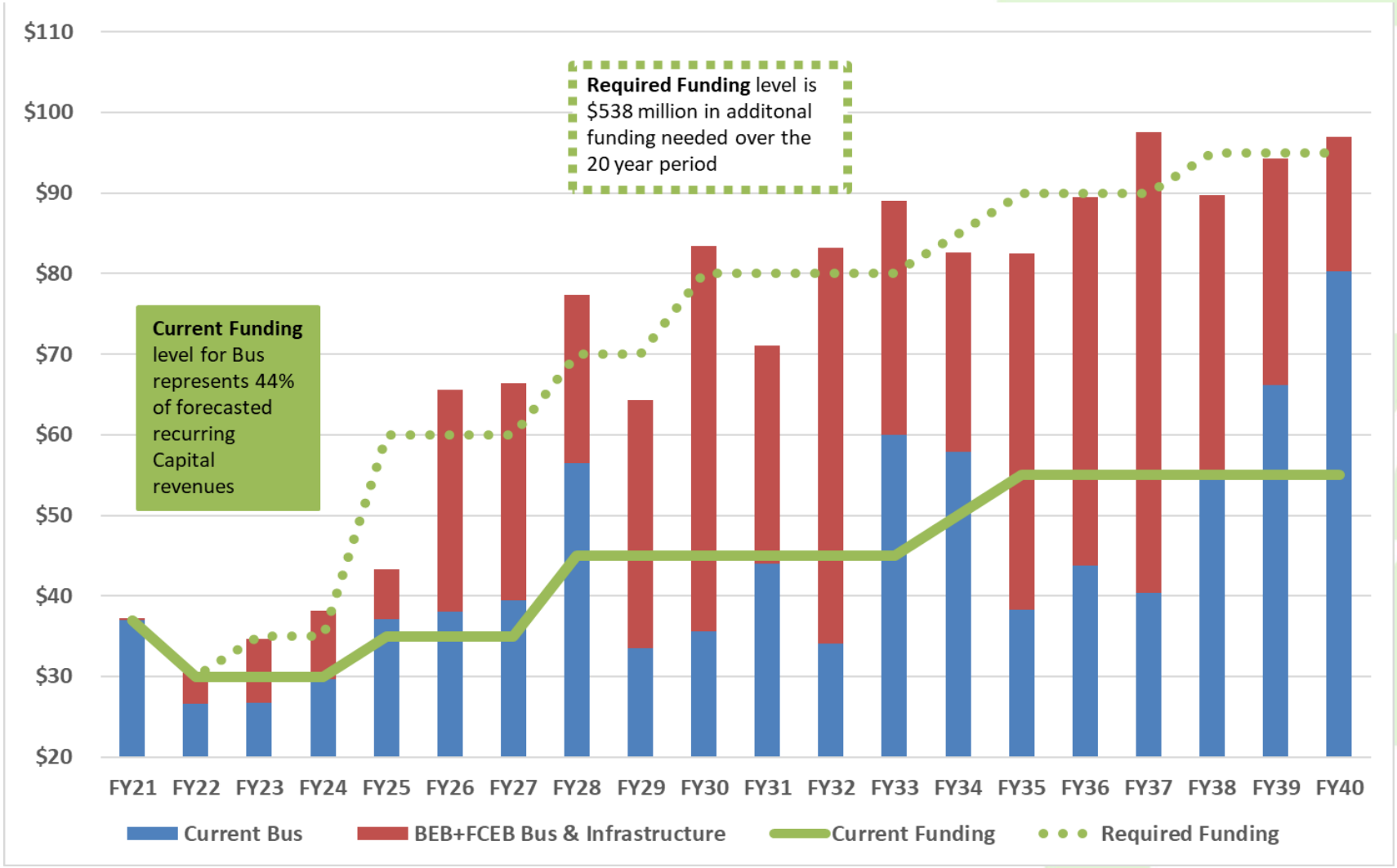


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Today's Discussion

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Current Capital Plan vs. June Proposal 100% ZEB 2040



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Total Transition Costs

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Approximate Annual Funding Requirement (Next 8 Years)		**42,000,000**	**43,000,000**	**119,000,000**

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What Are Our Funding Options?

- Additional local/state/federal funding
- Reduce Service:
  - e.g. Cost of 2030 plan represents 84% of bus annual operating subsidy
- Increase Fares:
  - e.g. Cost of 2030 plan represents more than double current fare revenue
- Deplete entire capital budget
  - Current CIP budget is approximately $100M

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Next Steps

- CARB Rollout Plan submission
- Continue working with SDG&E
- Continue planning for new bus facility
- South Bay charging infrastructure construction
- Determine funding resources

quietcleanelectric

Executive Committee Recommendation to the Board of Directors:

Include the following considerations in the draft Rollout Plan and Transition Plan:

- Prioritizing deployment of ZEB's in disadvantaged communities
- Workforce development and certification language
- Accelerated transition option #1 (25% purchase requirements 2020-2022), transitioning to 100% ZEB by 2040
  - This option includes the purchase of five battery electrics buses (BEBs) instead of five CNG buses in 2021, for a 13% total annual purchase, as well as the purchase of 12 articulated BEBs in 2022, for a 25% total annual purchase
- Annual review of the Transition Plan by the Board of Directors beginning in February 2021

MTS quietcleanelectric

Today's Recommendation

That the MTS Board of Directors:

1) Approve the ZEB draft Rollout Plan for submittal to the California Air Resources Board (CARB); and
2) Approve the MTS ZEB draft Transition Plan.

quietcleanelectric

IN - MEETING PUBLIC COMMENT

Noah Harris with Climate Action Campaign, provided a live public comment for agenda item #30. Harris's statement will be reflected in the minutes.

IN - MEETING PUBLIC COMMENT

Gretchen Newsom with IBEW 569, provided a live public comment for agenda item #30. Newsom’s statement will be reflected in the minutes.

IN - MEETING PUBLIC COMMENT

Carolina Matinez with Environmental Health Coalition, provided a live public comment for agenda item #30. Matinez's statement will be reflected in the minutes.

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101-7490
(619) 231-1466 • FAX (619) 234-3407

Agenda Item No. 45

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

September 17, 2020

SUBJECT:

THE 2020 ELECTION (MICHAEL VU, REGISTRAR OF VOTERS)

INFORMATIONAL ONLY

Budget Impact

None.

DISCUSSION:

The San Diego County Registrar of Voters is planning for the November 2020 election in light of the pandemic and its consequent safety concerns. Michael Vu will provide a presentation regarding the County's efforts, including information on how polling locations are being selected, how recommendations on sites can be transmitted, the community engagement and education strategies, and the process timeline.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Julia Tuer, 619.557.4515, Julia.Tuer@sdmts.com

Metropolitan Transit System (MTS) is a California public agency comprised of San Diego Transit Corp., San Diego Trolley, Inc. and San Diego and Arizona Eastern Railway Company (nonprofit public benefit corporations). MTS is the taxicab administrator for seven cities.

MTS member agencies include the cities of Chula Vista, Coronado, El Cajon, Imperial Beach, La Mesa, Lemon Grove, National City, Poway, San Diego, Santee, and the County of San Diego.



The Pandemic & The Election

Presidential General Election

November 3, 2020

1,876,113	2,005,273	4,500+
13,029	9	196
4,210	79.5% (average)	THE ELECTION

Election Goals

- To prioritize integrity, accessibility security and transparency in conjunction with a safe and healthy voting environment
- To drive awareness related to conducting an election where all voters will be mailed a ballot in order to limit the spread of COVID-19
- To educate voters on how to vote by-mail, to act early and to responsibly return it so their votes are secure.
- To educate voters about fewer in-person voting opportunities

VOTE SAFER SAN DIEGO

Corona Virus (COVID-19) Impacts

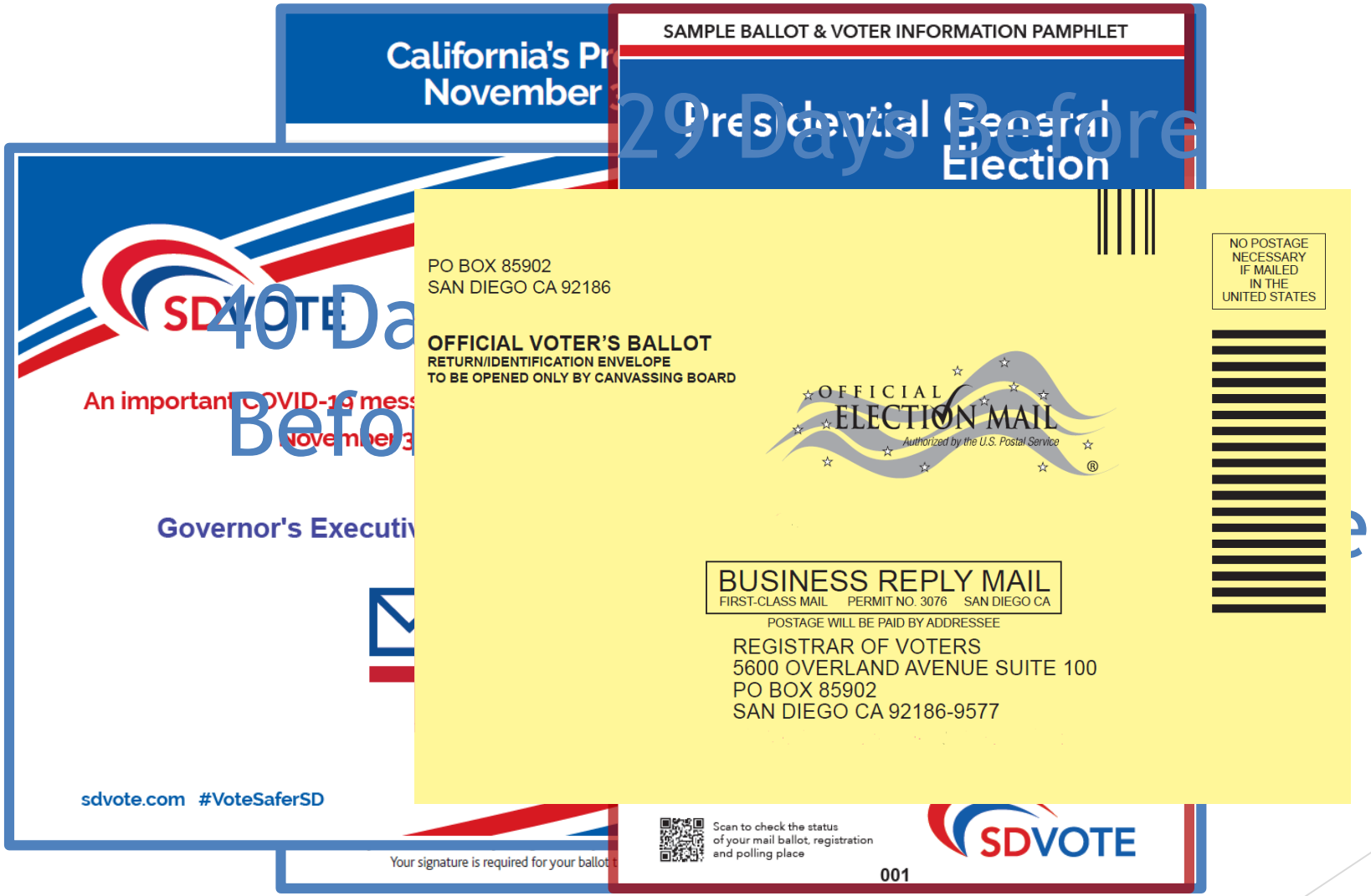
In order to carry on the November election in an accessible, secure and transparent manner, while preserving the public health due to the pandemic, the State has acted to provide options for county election officials to exercise. Albeit the duration and degree of the pandemic is uncertain, these actions provide certainty which election administrators and the voting public require in order to appropriately conduct the voting process.

The pandemic has created an environment where there will be a lack of:

- **available volunteer poll workers, many of whom are part of the high-risk 65+ age population.**
- **available polling places that are suitable to provide sufficient space for voters to social distance while voting and provide certainty of use.**

	STATE LAW Executive Order & Legislative Action	MARCH ELECTION	NOVEMBER ELECTION
MAIL BALLOTING	Mail Ballot Voters (100%)	Mail Ballot Voters (74%)	Mail Ballot Voters (100%)
IN-PERSON VOTING	**In-Person Voting Options** 1 Traditional polling place 2 Consolidate Precincts <=1:10K Governor's Executive Order Establish mail ballot drop off locations 1:15k for 29 days 3 Voter's Choice Act Model (BOS approval required)	**Traditional Poll Places** ▪ 1,548 polling places (1:1k approx.) public & private open 1 day ▪ 62 mail ballot drop off locations for 7 days ▪ Voters assigned to place ▪ 9k individual volunteers	**Consolidated Precincts** ▪ 235 polling place (1:8k approx.) public facilities open 4 days ▪ 126 mail ballot drop off locations for 29 days ▪ Voters assigned to place ▪ 3.5k election workers (disaster service worker option)
VOTER EDUCATION CAMPAIGN	Statutory Requirements	Party Status Campaign	Vote Safer San Diego Campaign VOTE SAFER SAN DIEGO

Election Mailings

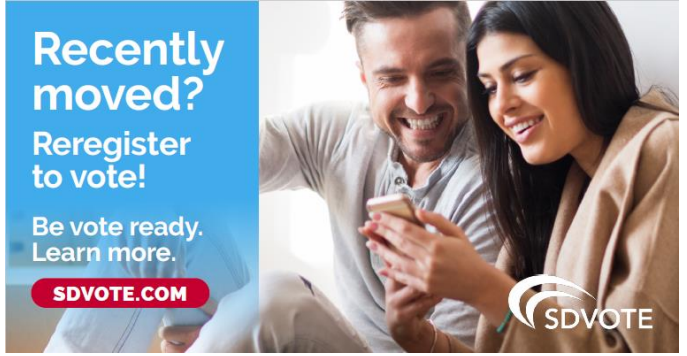



San Diego Votes!
Sign, seal and deliver your mail ballot to a trusted source.
Vote safely. Vote early. Vote.
SDVOTE.COM
SDVOTE


Check your voter registration


Verify your voter registration
Be vote ready. Learn more.
SDVOTE.COM
SDVOTE


VOTE SAFER SAN DIEGO
WHY VOTE BY MAIL?
SAFE
SECURE
Track when your ballot has been received and counted using 'Where's My Ballot?'.
SIMPLE
Your ballot will arrive Oct. 5th in a pre-paid envelope. Just complete and drop in any mailbox!
Scan this QR code to begin tracking.
#VoteSaferSD


Recently moved?
Reregister to vote!
Be vote ready. Learn more.
SDVOTE.COM
SDVOTE


SIGN
SEAL
RETURN
TO A TRUSTED SOURCE
Vote safely. Vote early. Vote.
SDVOTE.COM
SDVOTE


VOTE SAFER AT HOME!
SECURE
Make sure your envelope is Sealed & Secure!
SIMPLE
SAFER
VOTE SAFER SAN DIEGO
#VoteSaferSD


Sign
Seal
Return
to a trusted source
SDVOTE.COM
SDVOTE

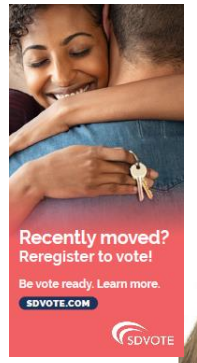

Vote by mail, it's simple, safe, and secure.
#VoteSaferSD
Learn more at sdvote.com


Simple, Safer & Secure.
VOTE SAFER SAN DIEGO
#VoteSaferSD
Learn more at sdvote.com

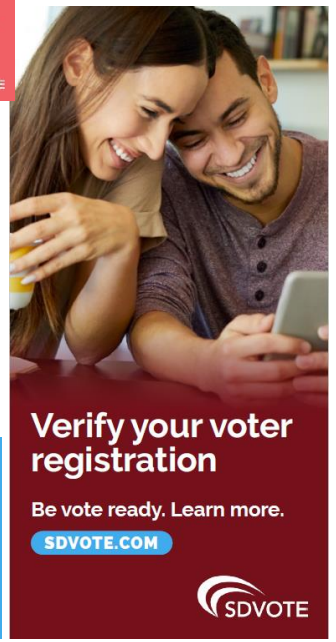

VOTE SAFER SAN DIEGO
VOTE
#VOTESAFERSD

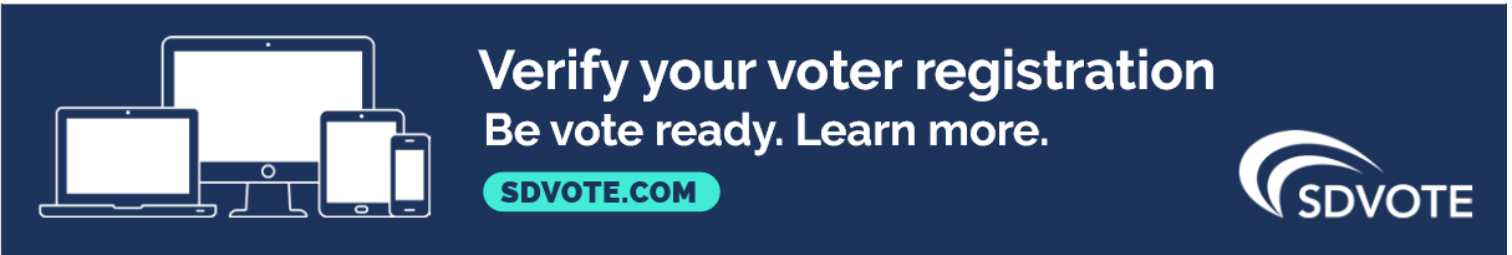

You've got mail!
Ballots start arriving in your mailbox Oct. 5.
OFFICIAL ELECTION MAIL
OFFICIAL ELECTION BALLOTING MATERIAL
VOTE SAFER SAN DIEGO
Vote safely. Vote early. Vote.
SDVOTE.COM
SDVOTE


Be Vote Ready
VOTE SAFER SAN DIEGO
SDVOTE


Recently moved?
Reregister to vote!
Be vote ready. Learn more.
SDVOTE.COM
SDVOTE


#VOTESAFERSD
Avoid crowds vote now
VOTE SAFER SAN DIEGO


Verify your voter registration
Be vote ready. Learn more.
SDVOTE.COM
SDVOTE


Verify your voter registration
Be vote ready. Learn more.
SDVOTE.COM
SDVOTE


Sign
Seal
Return
to a trusted source
SDVOTE.COM
SDVOTE


LEARN
Every active registered voter will receive a ballot in the mail.
VOTE SAFER SAN DIEGO
SDVOTE



Un mensaje importante
Registro Elec
Elección Pres

La experiencia de votar sin problemas: Una guía práctica

Para la Elección Presidencial General de noviembre 2020, a todos enviará una boleta por correo. Esto ayudará a reducir la exposici que se le permite ejercer su derecho a votar. Para proteger la sa nos, lo exhortamos a que vote en su boleta de vo onfort de su hogar.

nas estrategias para ayudar a hacer que el proc o más conveniente a medida que avanzamo 19 siendo aún una amenaza.

VERIFIQUE SU REGISTRO D

cambiado de nombre? Ya sea que usted es udó dentro de la misma calle, necesita vo l Registro Electoral le envíe por correo si sidencia y, si es diferente, su dirección se o volver a registrarse en línea. ¡Act

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cor
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vote

sle-free
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cal guide.

ial General Election, all voters will be mailed a
xposure to COVID-19 while allowing you to exercise
the health and welfare of all San Diegans, we encourage
allot from the safety and comfort of your home.
es to help make the voting process not only safer, but more
ead into flu season with COVID-19 still looming.

VERIFY YOUR VOTER REGISTRATION

moved or changed your name? Whether you are new to San Diego County or
oved down the street you need to re-register to vote.
sure the Registrar of Voters mails your ballot to the correct address. Verify your
address and, if different, your mailing address. You can verify your voter
register or re-register to vote online. Act now!

VOTE SAFER AT HOME

Mail ballots start going out the week of October 5.
If you have kept your voter information up to date you
hould expect to receive your ballot that same week.
f the way by signing up for "Where's My Ballot?"

arrives in your mailbox nearly a
mfortably at home.
e, sign it, date it and
our signature is

D-19 de parte del
San Diego
iembre de 2020

SDVOTE
COUNTY OF SAN DIEGO
REGISTRAR OF VOTERS

Presidential
General Election
November 3, 2020

Do you want to vote in the Nov. 3, 2020 Presidential General Election?

Due to the COVID-19 Pandemic, every active registered voter in California will receive a ballot in the mail for the upcoming election. If you need to vote in person you will also have that option.

However, to vote in the upcoming election and to make sure there are no delays in receiving your ballot in the mail, you must be registered to vote. Act now! It takes less than two minutes to register online at sdvote.com.

You can register to vote in California, if you are:

- A U.S. Citizen,
- A California Resident,
- At least 18 years old on or before the next election,
- Not in state or federal prison or on parole for a felony conviction, and
- Not found mentally incompetent by court action.

You can pre-register to vote in California, if you are:

- 16 or 17 years old, and
- Meet all other requirements to vote.

You will be automatically registered to vote on your 18th birthday.

Not sure if you are registered to vote?

You can check your registration status at sdvote.com. If you are already registered to vote, make sur residence and, if different your mailing address is up to date. Your mail ballot will be sent to the addr provided.

As always, the San Diego C of Voters is committed to ensurin secure, and accessible voting e

VOTE SAFER DIEGO

Ang ligtas at hassle-free na karanasan s Isang praktika

Nobyembre 2020 na Pampanguluhang Pan y papadalhan ng isang balota. Makakatul habang pinapayagan kayong gamitin ang kalusugan at kapakanan ng mga nyong balotang pangkoreo mula s mga estratehiya na makakatul oto, ngunit mas maginhawa -19 pa rin.

N ANG INYON

palit ng inyong pary ngan ninyong mi agapagrehistro g tirahan at, syon ng b

SDVOTE
COUNTY OF SAN DIEGO
REGISTRAR OF VOTERS

Pampanguluhang
Pangkalahatang Eleksyon
Ika-3 ng Nobyembre, 2020

Nais ba ninyong bumoto sa Pampanguluhang Pangkalahatang Eleksyon sa Ika-3 ng Nobyembre, 2020?

Dahil sa Covid-19 Pandemic, and bawat aktibong naki ng isang balota sa koreo para sa darating na eleksyon magkakaroon din kayo ng opsyon na iyon.

Gayunpaman, upang bumoto sa darating na eleks pagkanggap ng inyong balota sa koreo, dapat kayong m mas mababa sa dalawang minuto para magparehistro or

Maaari kayong magparehistro para makab

- Isang Mamamayan ng Estados Unidos,
- Isang Residente ng California,
- Hindi bababa sa 18 taong gulang sa o bago ang peloni, at
- Hindi kasalukuyang nasa pang-estado o pedi
- Hindi nagpatunayan ng isang aksyon ng korte

Maaari kayong maagang-magparehist

- 16 o 17 taong gulang, at
- Nakakamit ang lahat ng iba pang mga kina

Kayo ay awtomatikong nakarehistro para m

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Maaari ninyong makabo Ang inyo

tatus ng iny yong tirah ipapadal

Botante ng County ng San
2020 Pampanguluhang Pa
g Gobernador Ne
papadal

Trải Nghiệm Bỏ P
An Toàn & Đơn Gia
Hướng Dẫn Thực Tiễ

Đối với kỳ Tổng Tuyển Cử Tổng Thống 2020 vào tháng 11, 2020, tất cả cử tri sẽ được gởi một lá phiếu bầu. Điều này sẽ giúp giảm tiếp xúc với dịch COVID-19 tron khi cho phép quý vị thực hiện quyền bầu cử của mình. Nhằm bảo vệ sức khỏe và an sinh của tất cả người dân San Diego, chúng tôi khuyến khích quý vị bỏ phiếu bằng thư an toàn và thoải mái ngay tại nhà của mình.

Dưới đây là một vài cách để giúp quá trình bỏ phiếu không chỉ an toàn hơn mà còn thuận tiện hơn khi chúng ta bước vào mùa cúm với COVID-19 vẫn ch

KIỂM LẠI VIỆC GHI DANH CỬ TRI C

Quý vị đã chuyển chỗ ở hay đổi tên của mình? Cho dù quý San Diego hay mới chuyển qua bên kia đường, quý vị Hãy chắc chắn Văn Phòng Bầu Cử gởi lá phiếu địa chỉ cư trú của quý vị và, nếu khác, địa chỉ cử tri của mình, ghi danh để bỏ phiếu bằng

BỎ PHIẾU AN TO SAN

一個安全及輕鬆的投票體驗：
一份實用指南

於2020年11月的總統大選，本處將向所有選民寄送一份選票。這將有助於在行使您的投票權時，減低您接觸到 COVID–19。為保護所有San Diego市民的健康及福利，我們呼籲您於安全及舒適的家中，以您的郵寄選票投票。

Track Your Ballot

Informed Delivery (USPS)

There are currently 635,773 Informed Delivery users in San Diego County

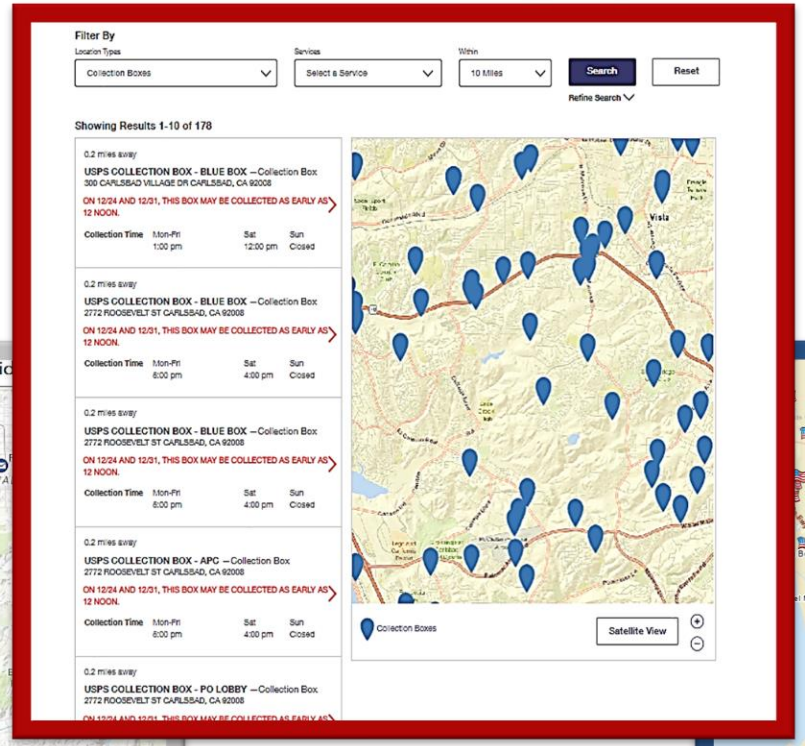


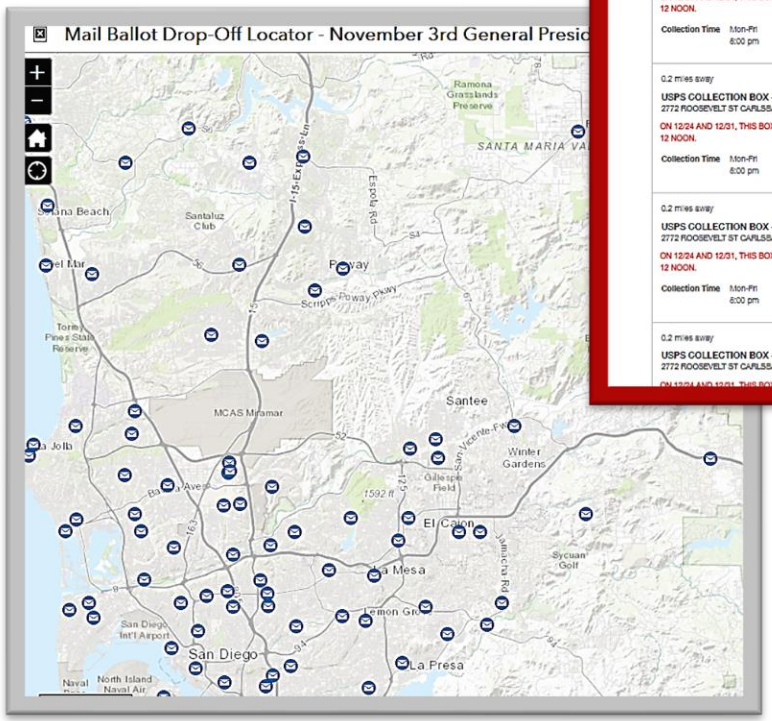
Where’s My Ballot?

Receive push notifications on the status of your ballot

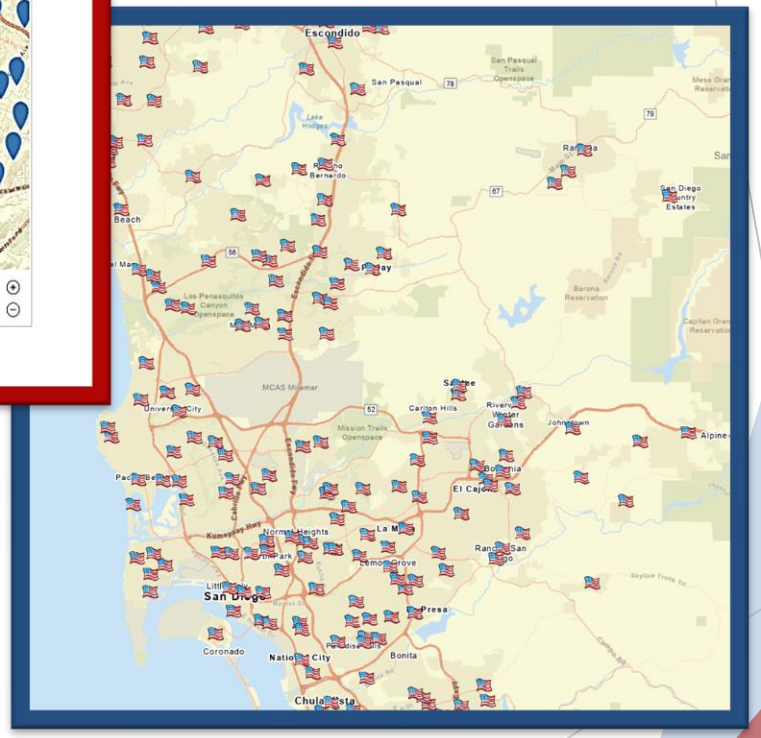


US Postal Box





Returning Your Ballot



Mail Ballot Drop Off Location

Super Poll Location

Key Dates

Countywide Mailer	Week of Aug 3
Sample Ballot & Voter Info Pamphlet Mailing *(starts)*	Sep 24
All Voters Mailed a Ballot & In-Office Voting *(begins)*	Oct 5
Last Day To Register	Oct 19
Super Polls *(open)*	**Oct 31**
ELECTION DAY	**Nov 3**
Certification of Election	Dec 3

Call To Action

Communicate Message

- Encourage Voting, Signing, Sealing & Returning Mail Ballot via a Trusted Source
  - US post office
  - mail ballot drop off location
  - polling place
- Track ballot
  - Informed Delivery (USPS)
  - Where's My Ballot?
- Use polling place as alternative
  - likelihood it has changed

SDVOTE
COUNTY OF SAN DIEGO
REGISTRAR OF VOTERS

VOTE SAFER SAN DIEGO

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101-7490
(619) 231-1466 • FAX (619) 234-3407

Agenda Item No. 46

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

September 17, 2020

SUBJECT:

SUSTAINABLE TRANSPORTATION EQUITY PROJECT GRANTS (DENIS DESMOND)

INFORMATIONAL ONLY

Budget Impact

None at this time.

DISCUSSION:

The Sustainable Transportation Equity Project (STEP) is a new transportation equity pilot from the California Air Resources Board (CARB) that aims to address community residents' transportation needs, increase access to key destinations, and reduce greenhouse gas emissions by funding planning, clean transportation, and supporting projects. STEP's purpose is to increase transportation equity in disadvantaged and low-income communities, using cap-and-trade funding through two types of grants: Planning and Capacity Building Grants and Implementation Grants. This first cycle grant process was open to community-based organizations, tribes, and local governments for implementing community-driven clean transportation projects.

MTS supported three applications during this STEP cycle, with different commitments for each:

- San Diego Foundation is the lead applicant on an Implementation Grant proposal developed by several community-based organizations. The primary component of this grant is to fund transit passes for youth and adults up to age 24. MTS is a sub-applicant on this grant, and would be providing the required 20% match for the entire grant by including the volume sales discount available with the Eco-pass program with the San Diego Foundation's project. Assuming

Metropolitan Transit System (MTS) is a California public agency comprised of San Diego Transit Corp., San Diego Trolley, Inc. and San Diego and Arizona Eastern Railway Company (nonprofit public benefit corporations). MTS is the taxicab administrator for seven cities.

MTS member agencies include the cities of Chula Vista, Coronado, El Cajon, Imperial Beach, La Mesa, Lemon Grove, National City, Poway, San Diego, Santee, and the County of San Diego.

the projected quantities are sold, this discount will represent up to $1.6 million in in-kind match over the five years of the program.

- The City of National City submitted an Implementation Grant application for a variety of projects at and surrounding the 8th Street Transit Center to support mobility and equity goals for people who live and work in the area. One of the included projects is a mobility hub proposed for the southern parking lot of the 8th Street Transit Center. This land is controlled by MTS on a long-term lease from the U.S. Navy. The City pledges to work with MTS on the location and design of the mobility hub components to ensure a sustainable and mutually beneficial project. MTS' contribution will be to participate in the project planning and implementation process.

- The City Heights Community Development Corporation submitted a Planning and Capacity Building Grant to launch a State Route 15 (SR-15) Transportation Equity & Affordable Housing Task Force with residents and stakeholders in City Heights to inform planning and development around the SR-15 transit plazas, considering the increased demand for transportation brought about by increases in housing and a cultural shift toward sustainability. MTS agreed to support the program by sharing transit data and attending meetings and project community events.

CARB has up to $19.5 million available ($1.75 million for Planning and Capacity Building Grants and a total of $17.75 million for up to three Implementation Grants). Applications were due August 31, 2020, and a letter of support from MTS (attached) was included with each application.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Julia Tuer, 619.557.4515, Julia.Tuer@sdmts.com

Attachments: A. Letter of Support – San Diego Foundation
B. Letter of Support – City of National City
C. Letter of Support – City Heights Community Development Corporation

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101-7490
(619) 231-1466 • FAX (619) 234-3407

August 31, 2020

Bree Swenson
California Air Resources Board
Sustainable Transportation and Communities Division – Mailstop 6B
1001 I Street
Sacramento, CA 95814

Dear Ms. Swenson:

SUBJECT: LETTER OF SUPPORT FOR SAN DIEGO FOUNDATION'S SUSTAINABLE TRANSPORTATION EQUITY PROJECT APPLICATION

On behalf of San Diego Metropolitan Transit System (MTS), I am pleased to provide this letter of support for the San Diego Foundation's application for the Sustainable Transportation Equity Project (STEP) Implementation Grant. The projects proposed in this application will advance transportation equity in many of our region's Senate Bill 535-defined disadvantaged communities.

Community leaders and equity advocates engaged MTS early in the development of this STEP proposal. MTS and the organizing group for this grant were able to build off the extensive engagement being done as part of the MTS Elevate SD 2020 project, started in 2018. We've received over a year and a half of community and public participation in defining transportation needs and gaps, and identifying solutions. Thousands of participants have weighed in at meetings, forums, on-line surveys, and social media. Our Transportation Equity Working Group is among the most involved of the Elevate SD 2020 subcommittees, and worked offered perspective from communities that aren't always heard in the planning process.

As a sub-applicant on this grant, MTS proposes to offer support to the San Diego Foundation's proposed STEP project by providing administrative credentials for MTS' new Pronto fare system web portal for institutional users, in order for the San Diego Foundation and its community partners to administer the eligibility, distribution, and payment for the Youth Opportunity Passes. MTS estimates approximately twenty hours per year would be required for its administration of this account, including set-up, training, and accounting, for a total estimated in-kind contribution of $10,000. Further, MTS is able to support the San Diego Foundation by providing transit data and staff to attend meetings as needed to implement the STEP projects and goals.

MTS has the experience and expertise to support this STEP grant as committed above, having worked with institutions for decades to provide various appropriate fare products. In our most significant such

Metropolitan Transit System (MTS) is a California public agency and is comprised of San Diego Transit Corporation and San Diego Trolley, Inc. nonprofit public benefit corporations, in cooperation with Chula Vista Transit and National City Transit. MTS is the taxicab administrator for eight cities and the owner of the San Diego and Arizona Eastern Railway Company.

MTS member agencies include: City of Chula Vista, City of Coronado, City of El Cajon, City of Imperial Beach, City of La Mesa, City of Lemon Grove, City of National City, City of Poway, City of San Diego, City of Santee, and the County of San Diego.

partnership, for the past five years MTS has been selling a universal transit pass to 35,000 University of California students every academic quarter, which the students voted to fund through their registration fees. Similar to the proposed STEP project, the University itself manages the student accounts (eligibility, distribution, etc.) while MTS provides back-end and technical account support.

MTS demonstrates organizational readiness to conduct equity work in both the planning and provision of services, by engaging with communities in multiple ways. In the not so distant past, cities and communities with high concentrations of low-income residents and minority populations in the San Diego region, as well as federally recognized tribes, were underserved and underrepresented in the planning process. Today, MTS service changes and analyses are guided by MTS Board Policy 42, which includes equity analyses as an integral part of all major changes. Beyond just a data exercise, our major changes include engagement with riders at transit stations, in communities, and via non-traditional outreach methods that are especially important for listening to communities of concern. We work closely with our regional transportation planning agency, the San Diego Association of Governments, participating in their Community-Based Organizations Working Group. MTS' engagement with the Transportation Equity Working Group, mentioned above, will continue even beyond the Elevate SD 2020 project. Through these methods, we continually strive to engage the most vulnerable and disenfranchised communities of the region in the planning and decision-making process and improve methods for analyzing how our service serves and impacts these populations.

Thank you for considering the San Diego Foundation as a STEP grant recipient. We look forward to advancing transportation equity in our jurisdiction by supporting this grant application.

Sincerely,



Denis Desmond
Director of Planning

L_STEPGRANT_LETTEROFSUPPORT_SDFOUNDATION_AUG2020

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101-7490
(619) 231-1466 • FAX (619) 234-3407

August 27, 2020

Mr. Roberto Yano
Director of Public Works, City Engineer
1243 National City Blvd.
National City, CA 91950

Dear Mr. Yano:

SUBJECT: LETTER OF SUPPORT FOR THE WEST SIDE NATIONAL CITY SUSTAINABLE TRANSPORTATION EQUITY PROJECT APPLICATION

On behalf of the San Diego Metropolitan Transit System (MTS), we are pleased to submit this letter in support for the proposed "West Side National City Mobility Enhancements" grant application submitted by the City of National City for funding consideration through the Sustainable Transportation Equity Project (STEP) program. The associated projects will provide enhancements to active transportation, shared mobility, and fixed-route transit, and include opportunities for outreach, education, art, and community engagement.

Organization's Contribution to the proposal and Partnership Structure

MTS was heavily involved in the development of the proposal. MTS participated in weekly coordination calls that included the City of National City, A Reason to Survive (A.R.T.S.), the San Diego Association of Governments (SANDAG), and Naval Base San Diego. MTS offered the idea to include transit priority improvements on Highland Avenue, the busiest bus corridor in the City of National City. These improvements have been included in the proposal.

Organization's Role in the Community

MTS provides bus and rail services directly or by contract with private operators across approximately 570 square miles of San Diego County, including service in eleven jurisdictions. MTS' three light rail lines and 96 fixed bus routes generate nearly 300,000 passenger trips each weekday, and 88 million trips annually.

Metropolitan Transit System (MTS) is a California public agency and is comprised of San Diego Transit Corporation and San Diego Trolley, Inc. nonprofit public benefit corporations, in cooperation with Chula Vista Transit and National City Transit. MTS is the taxicab administrator for eight cities and the owner of the San Diego and Arizona Eastern Railway Company.

MTS member agencies include: City of Chula Vista, City of Coronado, City of El Cajon, City of Imperial Beach, City of La Mesa, City of Lemon Grove, City of National City, City of Poway, City of San Diego, City of Santee, and the County of San Diego.

Organization's Commitment to Support the Proposal if Funded

If funded, MTS is committed to supporting the proposal. MTS will participate in Project Development Team (PDT) meetings, provide input on concept and engineering drawings, and provide education to their bus drivers related to the proposed transit priority improvements proposed on Highland Avenue.

How the Proposed Project will meet the Transportation needs of the Community Residents

The City of National City is the most disadvantaged city in San Diego County. According to the California Healthy Places Index (HPI), approximately 12% of National City workers commute to work by transit, walking, or cycling; this is a higher percentage than 87% of other California cities. Providing safe, low-stress connections to transit and employment centers will only help to increase the active transportation mode share within the city. Furthermore, the census tracts directly adjacent to the project have even higher percentages of workers who commute by transit, walking, or cycling, with some exceeding 17%.

Overall, the proposed work builds on a strong history of creating safe and equitable access to mobility options for people who live, work, and play in National City. Thank you for your time and consideration.

Sincerely,

Denis Desmond
Director of Planning

L_STEPGRANT_LETTEROFSUPPORT_NATIONALCITY_AUG2020

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101-7490
(619) 231-1466 • FAX (619) 234-3407

August 21, 2020

Bree Swenson
California Air Resources Board
Sustainable Transportation and Communities Division – Mailstop 6B
1001 I Street
Sacramento, California 95814

Dear Ms. Swenson:

SUBJECT: LETTER OF SUPPORT FOR CITY HEIGHTS COMMUNITY DEVELOPMENT CORPORATION'S SUSTAINABLE TRANSPORTATION EQUITY PROJECT APPLICATION

On behalf of San Diego Metropolitan Transit System (MTS), I am pleased to provide this letter of support for the City Heights Community Development Corporation (City Heights CDC) application for the Sustainable Transportation Equity Project (STEP) Planning and Capacity Building Grant. The proposed SR-15 Transportation Equity & Affordable Housing (TEAH) Task Force project will advance transportation equity in City Heights, a historically underserved and disinvested community in San Diego.

MTS values community partners like City Heights CDC and recognizes their Transportation & Planning program as leaders in community planning here in the San Diego region. City Heights is home to several of the highest performing bus routes in our system, and many households in City Heights are transit dependent.

We would value this opportunity to work with residents and stakeholders in City Heights to inform the mobility-related planning and development around the transit decks, future mobility hub, and increased demand for transportation choices triggered by future increases in housing and cultural shift toward sustainability. MTS is able to provide support via transit data, staff to attend two Task Force meetings each year of the contract term, and staff to attend the three planned Complete Corridor community events.

Thank you for considering the SR-15 Complete Corridor Taskforces as a STEP grant recipient. City Heights CDC is positioned with the credibility and staff expertise to facilitate collaboration and community engagement to advance transportation equity.

Sincerely,

Denis Desmond
Director of Planning

L_STEPGRANT_LETTEROFSUPPORT_CITYHEIGHTSCDC_AUG2020

Metropolitan Transit System (MTS) is a California public agency and is comprised of San Diego Transit Corporation and San Diego Trolley, Inc. nonprofit public benefit corporations, in cooperation with Chula Vista Transit and National City Transit. MTS is the taxicab administrator for eight cities and the owner of the San Diego and Arizona Eastern Railway Company.

MTS member agencies include: City of Chula Vista, City of Coronado, City of El Cajon, City of Imperial Beach, City of La Mesa, City of Lemon Grove, City of National City, City of Poway, City of San Diego, City of Santee, and the County of San Diego.





STEP Grants Participation

MTS Board of Directors

September 17, 2020

STEP Grants



- Sustainable Transportation Equity Project
  - California state cap-and-trade grant program
  - Purpose to increase transportation equity in disadvantaged and low-income communities
  - $19.5 million in available funding
  - Two types of grants: Planning & Capacity Building, and Implementation (next slide)
  - Eligible applicants were: CBOs, local agencies, tribes
  - Applications were due August 31, 2020

Two Types of Grants

- Planning and Capacity Building
  - Community transportation needs assessments
  - Community engagement activities
  - Land use and mobility plans
  - Other
  - $1.75 million available
  - Multiple grantees

- Implementation
  - Set of clean transportation and supporting projects
  - May include infrastructure, capital, operations, planning, policy-making, and outreach projects
  - $17.75 million available
  - 1-3 grants to be awarded throughout state

MTS Participation

- San Diego Foundation (Implementation Grant):
  - Youth Opportunity Passes and rider education.
  - Collaboration of many CBOs, including Greenlining Institute, Mid-City CAN, EHC, Casa Familiar, Climate Action Campaign
  - STEP grant (approx. $6M for 5 years) would pay for discounted transit passes for Youth (6-18) and Adults (19-24).
  - MTS would provide bulk discount per MTS Ordinance No 4.
    - MTS is sub-applicant to provide the in-kind match with value up to $1.6 million over 5 years.
  - CBOs will use new Pronto institutional portal to manage passes.
  - Details of how SD Foundation will manage program still to be worked out:
    - Eligibility & Distribution, CBO participation
    - Account management
    - Pre-payment requirement
  - No funding source ID'd after grant is expended.

MTS Participation

- City of National City (Implementation Grant):
  - Set of mobility projects centered around 8th Street Transit Ctr.
  - MTS would:
    - Participate on Project Development Team
    - Provide input on concepts and design
    - Coordinate/implement transit priority ops.
  - Mobility Hub proposed at 8th Street Transit Center; MTS and City to collaborate on ROW issues, design, parking, etc.

- City Heights Community Development Corporation (Planning & Capacity Building Grant):
  - SR-15 Transportation Equity & Affordable Housing Task Force.
  - Data and meeting support as needed.

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101-7490
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Agenda Item No. 47

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

September 17, 2020

SUBJECT:

AMERICA PLAZA PEDESTRIAN ENHANCEMENTS DESIGN UPDATE (PETER CASELLINI)

INFORMATIONAL ITEM

Budget Impact

The America Plaza Pedestrian Enhancements project is in MTS's FY21 Capital Improvement Plan (CIP), and is fully funded through a Transit and Intercity Rail Capital Program grant from the State of California. Total grant allocation for project design and construction is $4,294,000.

DISCUSSION:

The America Plaza Pedestrian Enhancements project is intended to improve pedestrian safety and enhance the quality of public space for passengers connecting between transit services at America Plaza and Santa Fe Depot along Kettner Boulevard. Together these two stations serve as the primary public transportation gateway into downtown San Diego, but the present condition of the site presents challenges to pedestrian navigation.

Objectives of this project include improving pedestrian flow along and across Kettner Boulevard, improving Rapid bus transit access and operations, improving management of auto passenger pick-up and drop-off, adding traffic calming features to the roadway to reduce vehicle speeds, and adding amenities such as enhanced landscaping to improve shade cover.

Additionally, this project includes development of a wayfinding strategy that MTS will be able to use for future wayfinding efforts across its service area.

Metropolitan Transit System (MTS) is a California public agency comprised of San Diego Transit Corp., San Diego Trolley, Inc. and San Diego and Arizona Eastern Railway Company (nonprofit public benefit corporations). MTS is the taxicab administrator for seven cities.

MTS member agencies include the cities of Chula Vista, Coronado, El Cajon, Imperial Beach, La Mesa, Lemon Grove, National City, Poway, San Diego, Santee, and the County of San Diego.

Details on the project effort to date, including a Comparison of Concepts memorandum, can be found for Board and public viewing on the MTS project page: https://www.sdmts.com/inside-mts-current-projects/america-plaza-and-santa-fe-depot-pedestrian-enhancement-project

Staff will present the final conceptual design for the America Plaza Pedestrian Enhancements project and update the Board on development of the wayfinding program.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Julia Tuer, 619.557.4515, Julia.Tuer@sdmts.com

Attachment: A. America Plaza Pedestrian Enhancements Public Outreach Feedback

AMERICA PLAZA/SANTA FE DEPOT PEDESTRIAN ENHANCEMENT PROJECT
Public Workshop #3
Wednesday, September 2, 2020
5:00-6:00 pm

Meeting Summary

MTS hosted the third and final workshop for the America Plaza/Santa Fe Depot Pedestrian Enhancement Project to seek input from the public on the recommended design concepts for the project area and on the proposed wayfinding plan. This input will be used by the project team to refine the recommended design and wayfinding plan before presentation to the MTS Board of Directors.

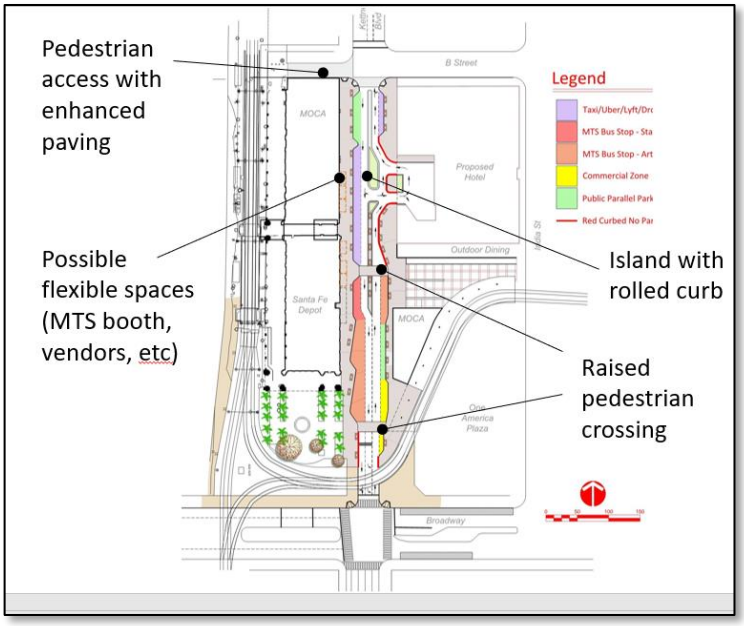
Due to restrictions on gathering from COVID-19, the workshop was conducted virtually via GoToWebinar. A total of 47 people participated in the workshop. Individual comments and questions received are detailed below. Key themes of the comments and questions included:

- Bike and pedestrian access and safety on Kettner
- Space for parking and shuttle/taxi/rideshare drop-off and pick-up
- Bus stops
- Barriers to access and pathways
- Coordination with Downtown Partnership and Civic San Diego efforts
- Interface with Amtrak

Recommended Design Concept
Peter Casellini, MTS' project manager for the America Plaza/Santa Fe Depot Pedestrian Enhancement Project, kicked off the workshop with a presentation about the goals of the project, existing conditions in the area, and some images of the project area. He reviewed the project schedule and the process to date. He reviewed the three options presented at the second workshop and indicated that based on input and technical review, the team is recommending option #2, which maintains two-way traffic and incorporates a wider sidewalk on the west side of Kettner and incorporates other features to calm traffic and make it a better pedestrian experience.

Peter introduced Vicki Estrada from Estrada Land Planning to review the recommended design concept. Vicki reviewed the design concept and described its features:

- Parallel parking provided in the northwest and southeast areas
- Designated areas for shuttle/taxi/rideshare pick-up and drop-off
- Dedicated bus bays (relocated from India Street)
- Enhanced paving in the B Street alley (will be implemented by Civic SD but coordinated with this project)
- Flexible spaces for vendors on Kettner
- Raised pedestrian crossings with shorter crossing distances



Peter then opened up the workshop to comments and questions from participants.

Q: Where are the bike lanes?
A: The goal is to lower the design speed on Kettner substantially. We are aiming for about 15 mph or 20 mph maximum. We have opportunities to raise crosswalk, we're trying to narrow the lanes as much as we can and bring in vertical design elements (e.g., street trees) that will help with traffic calming. We think that these will make sharing the road comfortable for cyclists to share the space.

Q: Given the proximity of the two stations, what is the long-term outlook and is MTS considering consolidation?
A: At this point the plan is for the Blue Line to stop at both stations in the future. Currently, as we are increasing frequency on the Blue Line, every other trip will terminate at America Plaza.

Q: How many parking spaces are provided on Kettner?
A: There is not a lot of street parking today. There is a lot of commercial parking, but not street parking. Our aim was to increase ADA parking and provide dedicated space for rideshare/taxi/shuttle drop-off and ensure that transit operations would function well.

Q: What is the data on vehicle volume by time of day and what are known issues with jams, accidents, and delays by frequency?
A: The traffic volumes overall are less than 10,000 per day. In terms of distribution in the peak hours we would have to look up that information. There are certain events, like train arrivals, where you will have increased activity in drop-offs, etc. The traffic volumes were low enough that we felt comfortable proposing this option with slower traffic speeds, narrowed lanes, etc. Regarding collisions, we looked at the collision data at the state level and it was low, but we did observe a lot of jaywalking. Where people want to cross is not always at a crosswalk.

Q: Where will the Rapid bus stops be?

A: Outbound buses are currently in the red space in front of the Santa Fe Depot. Inbound buses are currently on India. We would like to consolidate it so it is all on Kettner. The India and C stop currently doesn't feel consolidated and we want to make it easier for people to use.

Q: I'm a lifelong Trolley user and restrooms are a big deal. Trolley doesn't have any restrooms on board and rides can be long. This space looks really nice if you are white. There has been a national conversation on defunding the police and we know that black people are disproportionately harassed when walking through spaces like this. Defunding the police needs to be a priority in addition to engineering and planning aspects of the plan. I would also like to encourage you to remove the hostile fencing near the green line platform adjacent to the Santa Fe Depot. Also encourage you to avoid "cruel architecture" like skate stoppers or armrests that prevent unhoused neighbors from laying down.

A: With respect to restrooms, we know this is important to our riders. In this space our options are somewhat limited but we are looking to work with partners like Santa Fe Depot to see what we can do. On the criminal justice side of things, we want to make sure that this space is as welcoming to as much of the community as possible. There is only so much we can do to address these issues through this project, but I would like to cite the work of the MTS Public Safety Committee that is addressing some of these issues across the system. The comment on the architecture, one of the things we do want to do is see how many gateways we can open up in this area. There are some challenges on the Amtrak side of things. We have been in contact with the owners of the depot and they are open to opening up gates and paths of travel. It's important that we are not restricting the flow of travel.

Q: You mentioned an opportunity for enhancement to the B Street alley. What are the opportunities to work together to make this happen?

A: We did not touch that with this project specifically because Civic SD has their own project to come through and activate that space. We are actively communicating with their design team to make sure that their plans are in synch with our plans and that it looks like a cohesive project.

Q: I am a representative of the Museum of Contemporary Art. The northeast corner of the building is our loading dock. What are the two trapezoidal shapes shown on the curb?

A: Those represent handicap ramps, but they are largely symbolic to indicate that it will be accessible. We see that area as being a rolled curb so a truck would be able to access a loading dock.

Q: On a previous drawing we had seen the path of travel coming across the west side of the MOCA building. That is part of the museum's property and the fencing will likely become a permanent feature.

A: We will make sure that we remove the arrows so no one thinks this is a public space. There is still some MTS space so we can keep people on transit property.

Q: In the flexible space, we often have school buses bring school groups to the museum. Can that flexible space be used for school bus parking during those times?

A: Yes, MTS is comfortable with that being used for that purpose. It will be white curbed.

Q: What will the MTS booths have?

A: The origin of this concept is to activate the space and have market stalls like newsstands, coffee cart, etc. We don't want to construct anything but want have flexible kiosks available for different uses.

Wayfinding Plan
Chris Wahl from Fehr & Peers presented a plan for improving wayfinding and signage in the area. He explained the purpose of wayfinding and the study goals for improving signage and wayfinding in the area. He reviewed the criteria that were used to assess wayfinding needs in the area and discussed different options for sign placement and types of signs. He then reviewed the proposed sign plan and provided some examples of how they would help people successfully navigate through the space.

Peter then opened up the meeting to additional questions and comments on both the wayfinding plan and the recommended design concept.

Q: I work at a booth in the Santa Fe Depot. Have you ever considered a position for MTS in this location?
A: We could explore this through our Ambassador program. We do sometimes have staff available during special events, but we could look at the possibility of adding staff at Santa Fe Depot. It's something we will definitely want to do at the outset as we introduce changes in the system. Ideally wayfinding will be something that can speak for itself and will become intuitive.

Q: Are you aware of the IKE kiosks that DSDP has?
A: Yes, we are in frequent contact with DSDP and have been making efforts to ensure that what we are planning works with what they are doing. We understand that this is a transit space and they are responsible for the broader area, and we want to make sure that we are all working together.

Q: Are multiple languages being considered for signs and, if not, could you consider a QR code that provided alternative languages?
A: We are trying to use universal design elements like images and icons. We are trying to minimize language on the signs using symbols, arrows, proper nouns. But, we know that accommodating languages is important and we can look into the idea of a QR code.

Q: What will the raised crosswalks on Kettner look like?
A: A raised crosswalk means that it is at sidewalk level so it provides level access across the street. It helps prioritize pedestrians and helps people with access issues, and also serves as a traffic calming device. Since it is raised, it serves as a speed table so autos need to slow down to go over the crossing. We envision that the paving for the sidewalk will be consistent with the paving for the crosswalk so it "reads" like a pedestrian space.

Q: Are you interfacing with Amtrak? How?
A: Yes, we are. We have met with their station master and staff to get input from them about the challenges of the site and how we can support their needs. We also plan to work with them on wayfinding. We want this to be an outdoor version of Union Station for San Diego. We want it to feel like one unified space.

Q: What is the timeframe for this development and is it tied to hotel development?
A: We are hoping to conclude the conceptual design in the next couple of months. Then we will move to engineering design and enter construction in late 2021.

Q: Are there any changes to transfers between the Trolley and Coaster, especially with fencing?
A: We're hoping to make this as streamlined as possible. We have talked with NCTD about this project. We'd like to remove barriers as much as possible to make it easier to navigate.

Q: How are you going to keep rideshare cars from picking up passengers in bus bays. Currently rideshare cars do this in bus spaces.
A: This is a huge challenge because the buses are at the front door to Santa Fe Depot. With the sawtooth bus bays, we were trying to create a more identifiable bus space. We do also want to explore things like textured or colored pavement to make sure that it is obvious that it is bus only. We are trying to provide designated space for rideshare drop-off and pick-up.

Q: Will the passageways between Kettner and Depot tracks be resurfaced? They are currently rough and unlevel.
A: We are currently focused on the public right-of-way, between the building lines. We will be happy to discuss this with Santa Fe Depot owners since this is their space.

Q: Is there a way to reduce noise from Trolley horns?
A: Unfortunately, no. This is a federal requirement that we are subject to at major grade crossings. There are some areas where there are quiet zones that could be potentially be expanded, but that is not in the scope of this project.

Q: Why not put the flexible spaces in the area south of Santa Fe Depot instead of taking up sidewalk space?
A: We are working within public right-of-way and that area is private property owned by the Santa Fe Depot owners. They have plans to redevelop that space in the future. We have seen some high-level ideas for things like a food hall.

Q: What are your plans for maintaining the pathways? With increased pedestrian traffic you will have increased dropping of trash.
A: On our platforms we have our own maintenance teams. We install as many trash receptacles as we can afford. In the public space it would fall on existing maintenance assessment district responsibilities. The relationship of who owns the space and who is responsible for the space would largely stay the same.

Next Steps
Peter reviewed next steps for the project. The recommended design concept and wayfinding plan will be presented to the MTS Board of Directors on September 17. Once the plan is accepted, engineering design will take place and construction is anticipated in late 2021 or early 2022.

He also indicated that the presentation will be posted online for the next week if there are additional comments to be shared. Information can be accessed at: https://www.sdmts.com/inside-mts-current-projects/america-plaza-and-santa-fe-depot-pedestrian-enhancement-project.

America Plaza/Santa Fe Depot Pedestrian Improvements

Submitted Time	Topic			Comments	Email Address
	Circulation	Wayfinding	Jrban Design		
12/30/2019 22:32	X	X	X	My suggestion would be to completely eliminate cars from Kettner Blvd, at least the stretch between the transit stations, so riders can transfer quickly and safely. Adding tables, benches, canopies to create a vibrant pedestrian area would be wonderful. I would also welcome wayfinding signs. I have found wayfinding signs in other countries very useful. They indicate nearby attractions (Midway Museum or Civic Theater in our case) and also have concentric circles to show the area 5 and 10 minute walks away.	jeffrey.m.mihalik@gmail.com
1/16/2020 14:35			X	Good to see more of the Bollards. So the news does not have to show some car driving into building. Thank you!	kenny@cafemoto.com
1/22/2020 20:11		X		The number one thing I note at the Santa Fe Depot / America Plaza is a lack of clear signage to get you from one mode of transport to the other. If it were clearly marked to get say, from the Amtrak Platform to the 992 Airport route, life would me much easier for someone who is unfamiliar with the area.	marcjeysf@gmail.com
1/24/2020 18:14		X		to be fixed. I have been at that stop when something went wrong and the trolley wasn't stopping there. The intercom system made noise, but you couldn't hear anyone talking.	darshawindu@yahoo.com
1/24/2020 18:15	X			There is nothing wrong with the current way to walk between Santa Fe Depot and America Plaza. Leave it alone.	darshawindu@yahoo.com
1/24/2020 21:59		X		Make the entrance to Santa Fe Depot from Kettner Blvd. more inviting. Right now it looks like a homeless hideaway. There is no signage and if I didn't know that was the station I would stay away. The station entrance needs to be more inviting. Lights, bright signs, and distinct crosswalks. Maybe some big arrows in the trolley station.	rgarlaw@yahoo.com
1/27/2020 15:27			X	We need restrooms here, and at other transit centers. Transit Police can patrol and keep people from camping in them.	perry_clease@dronick.com
2/4/2020 12:46	X	X	X	How much time is added for cars to move on Kettner if two lanes of traffic are eliminated. Although it is good to have a road diet, more congestion by denser traffic is not desirable for pollution. When the blue line comes to Santa Fe depot, passengers will stay on the trolley instead having to exit at Am Plaza, which is a much better connection. Pedestrians have a long wait to cross Broadway when the trains come through. What is not pictured and creates a VERY DANGEROUS PEDESTRIAN CROSSING is the trolley crossing Kettner. When the blue line is extended to UTC, it will cross like the Orange line used to. The walkers and the trains use basically the same ROW. Currently the Silver line is very dangerous too at that coursing. If you are walking east on Broadway with the intention to turn and pick out he blue line, the sliver trolley comes right up behind you without notice until the horn is blown. More pedestrian crosswalks are needed on Kettner since people J walk all the time because the crossing are so inconvenient. The need to direct people between Santa Fe Depot and AM PL will diminish once the Blue line is extended. More information is needed for bus connections with the trolley. The bus to the airport in TJ isn't well advertised. The bus to our airport isn't well advertised. Color matching with the route and icons are important. I like the wayfinding maps in Tokyo,Bacelona and Seattle. Wider streets are great, but how do you keep alternative motorized vehicles off them? Like the shade and benches (with arms to keep people from sleeping on them. Prefer shorter bollards. Concrete blocks provide a seat. Lights are good, if they are needed and the bollards are shorter. I Like canopies and Markets Crosswalks should be clear but not confusing. On really busy crosswalks, a 4 way	jsrogers624@hotmail.com

2/7/2020 13:13			X	Restrooms please! Yes there are some in Sante Fe Depot, but they are locked and you need an Amtrak ticket to get in. The lack of restrooms is a big problem at all Transit Centers/Plazas.	perry_clease@dronick.com
2/13/2020 18:37	X			I took photographs to study the plans for this project. I see that Route 83 and Rapid Routes 215, 225 and 235 riders would be put in harms way with Vision Zero pedestrian safety problems while they are safe now. You would take the coming from the East stops away from Ash Street where there is a safe walk to the Santa Fe Station and trolleys and those for buses East away from where they are right next to the Santa Fe Station. You would instead make those coming on Rapid buses from the East cross over trolley tracks like 992 passengers do and those going on Rapid buses East cross over trolley tracks and Broadway. All would have longer walks from the trolley than now with all those homeless people hanging about. These plans do not represent a transit pedestrian friendly design for your MTS customers.	LynneShapiro2@aol.com
2/16/2020 16:31			X	I like the enhancement Santa Fe depot project	sladron98@gmail.com
2/29/2020 17:37	X			Opinion 1	
3/3/2020 10:40				Option 1 is by far the best and most beautiful, and also the best for pedestrian safety and ease of navigation. I hope MTS will waste no time in implementing it.	jeffrey.m.mihalik@gmail.com
3/5/2020 10:18	X			I strongly support Option 1 as a daily commuter on 215 and 235. I think it will be excellent for traffic calming and having a designated seperate loading area for busses + pick ups. However I have a few notes. (I gave a couple at the meeting, I have a couple more.) -The Pick up lanes and Bus Stop lanes should be switched, with Busses on the East side of the road headed south. This allows busses to make a direct left turn onto Broadway without having to do a weave with cars wishing to turn right. -Complementing this, the Broadway/Kettner intersection should have a left turn signal in its pattern. Though with a one way, an all green for Southbound Kettner would also have the same effect. Something just needs to be done to address how many busses need to make sketchy left turns due to no dedicated signal. -The crosswalks need to be adjusted slightly. The center one leads to from the pedestrian "tunnel", and then angles towards the hotel. A majority of users take the path from that "tunnel" to the America Plaza trolley station. -With the traffic calming + one way conversion I think you guys have an argument for even more traffic calming measures at Kettner/B Street. I think the bump out curbs should be at all four corners. -The termination of Routes 215,225,235 should be addressed. Lots of transfers from 225->Trolley/Train -Amtrak's lease is up in 2021 for the depot. If you guys can get into those negotiations now, and see if you can get more space allocated to the general public, that would go a very long way Best of luck, Please add me to any email list on updates for this project	andrewschad97@gmail.com
3/9/2020 19:28		X		Good Like	sladron98@gmail.com
6/22/2020 10:27				As an operator, I prefer option A, but could you also include painting the bus lane red like it is on the I-15 center line lane entry? This way, the ride shares who miss their turns do not get in our way and create gridlock	nicholas.a.uribe@gmail.com
8/3/2020 18:09		X		Simply have more signs. Raised crosswalk? Why? All sorts of lane changes? Why? Honestly, there isn't that much traffic on Kettner. I walk and drive there often, and there's no problem whatsoever. Unless you intend to add more buses, there's seldom more than one Rapid stopped at Santa Fe Depot anyway. Let people walk freely where they please--just have more obvious signs in more places. Please keep that commercial loading zone. I and other workers use it to make deliveries. Yellow zones can be hard to find in the area! Also, why not encourage riders to wait inside Santa Fe Depot if they'd like, and have an electronic sign inside indicating live bus/trolley departure times. That would be good for when it rains, etc. Thank you!	ricschulte@dslextreme.com
9/1/2020 11:25	X			I prefer the simplicity of Opt 2 but Opt 1 has an important mid-block crosswalk. Get that crosswalk back into Opt 2 please. If you don't give folks the most direct route they'll either take it anyway or be annoyed. (And the hotel is secondary in all this.) And raised. Raised is good. There's attention to the buses, just want to concur that giving them pride of design is good. More better. Thanks.	jtrappdavis@gmail.com

9/2/2020 18:52	X	Thank you for the presentation. I suggest the pedestrian crosswalks have activated blinking lighting atop the street paint markings to alert vehicles of a pedestrian crossing. There is an example of asphalt blinking light crosswalk crossing-- you can view this type of a downtown crossing Front Street at F st. I've lived at the Grande at Santa Fe Place highrise for over a decade so I am very familiar with the Santa Fe Station neighborhood. I have some concerns now based upon some of the attendee questions which came up during your presentations regarding the Santa Fe Station fencing, trash containers along with a request to make seating welcoming for the homeless. The fencing barriers were installed to strengthen security in the station for public safety. It was my understanding Amtrac was required to increase security after bombings in European train stations killed persons in those train stations. Most subway and train stations have eliminated trash containers or switched to the type with clear see-through plastic to allow for security oversight of those receptacles (due to trash containers having been used to plant bombs). Increasing custodial servicing of trash collection receptacles is imperative for safety. In regards to seating designed to welcome homeless use I am very familiar with seeing overnight sleeping occurring on the existing railside benches. When the homeless lay out on the entire bench it disallows a transit passenger from having access to seating. In addition, I have observed the homeless tend to stash personal items which makes securing the railway public areas extremely challenging because abandoned packages could be bombs awaiting detonation by terrorists. Amtrac personnel over the years have become much more concerned about safety of luggage and passengers in the station area. The additional fencing and increased hours of closed fence gates are a result of the increased security measures mandated by Homeland Security. That is also the reason there are no lockers for personal items in the train station. Homeless folks in need of a place to sleep or store personal items need to make use of San Diego outreach services and not use the stations for shelter and storage. Perhaps MTS could include directions or handout information on the location of San Diego homeless services, link: https://www.sandiego.gov/sites/default/files/vispdat.pdf	beckyvesterfelt@gmail.com
9/2/2020 20:50	X	My husband Sid and I listened in on the webinar this afternoon from 5 to 6. You all did a very good job of presenting the information and the illustrations used were helpful for us to understand your vision. We thought you covered a large number of facets of the project. However the one issue we need to address is, the The issue of the street people and how they adversely impact the first impression people get when they arrive downtown at the depot. We feel we need either Police and or security people there from 6am till 10 at night to patrol the area so the visitors to our beautiful city don't see laundry hanging on the fence to dry, having to walk around people sleeping on the sidewalk and or having the sidewalk blocked by their shopping cart full of belongings and most of all watch someone defecate on the corner of Broadway and Kettner which I have personally witnessed. We live in the Electra and it is not very common to see security personnel anywhere in this area. You've done a great job on this revitalization, let's make sure this aspect is included in your plan.	bonniekohn1@gmail.com
9/6/2020 16:47	X	Many thanks to you and Peter Casellini for hosting the workshop on America Plaza station enhancements. I just wanted to formally reiterate and add to my comments in writing: Restrooms are a paramount concern for riders on the Blue Line. Since Trolleys have no restrooms on board, and it's a 40-minute journey from the border to downtown, it's important to implement restrooms that are open for anyone to use, whether those are MTS customers or unhoused people who need restrooms too. The pedestrian-centric designs are nice from a white urbanist standpoint. However, such a space cannot be equitably enjoyed by all the members of our community until the transit police are abolished, and other police agencies are defunded, demilitarized, and ultimately abolished as well. Black and Brown people will be disproportionately harassed using this space (such a disproportionate reaction by MTS authorities has been well documented by the Voice of San Diego here: https://www.voiceofsandiego.org/topics/public-safety/black-mts-riders-cited-disproportionately/). Peter Casellini mentioned such a treatment is not part of the limited scope of this project, but I think that in the year 2020, during the largest movement for Black lives in American history, it ought to be studied. Consider replacing transit officers with unarmed ambassadors who are trained in first aid and mental health response, who might staff an information booth of some kind. Another issue with the space as it currently exists is the hostile fencing constructed along the Amtrak portion of the Santa Fe Depot. This ought to be removed, and installation of other cruel architecture such as skate stoppers, spikes, or armrests in the middle of benches should not be considered for installation, or ought to be removed if present. We're in the middle of a global pandemic, and there are no signs of it letting up anytime soon. MTS should also consider adding COVID measures, such as free mask dispensers and hand sanitizer stations. I hope you take the above comments into consideration as you study this transformation of this public space, which may exist for decades to come.	kmkmccloskey4@gmail.com

America Plaza Pedestrian Enhancements

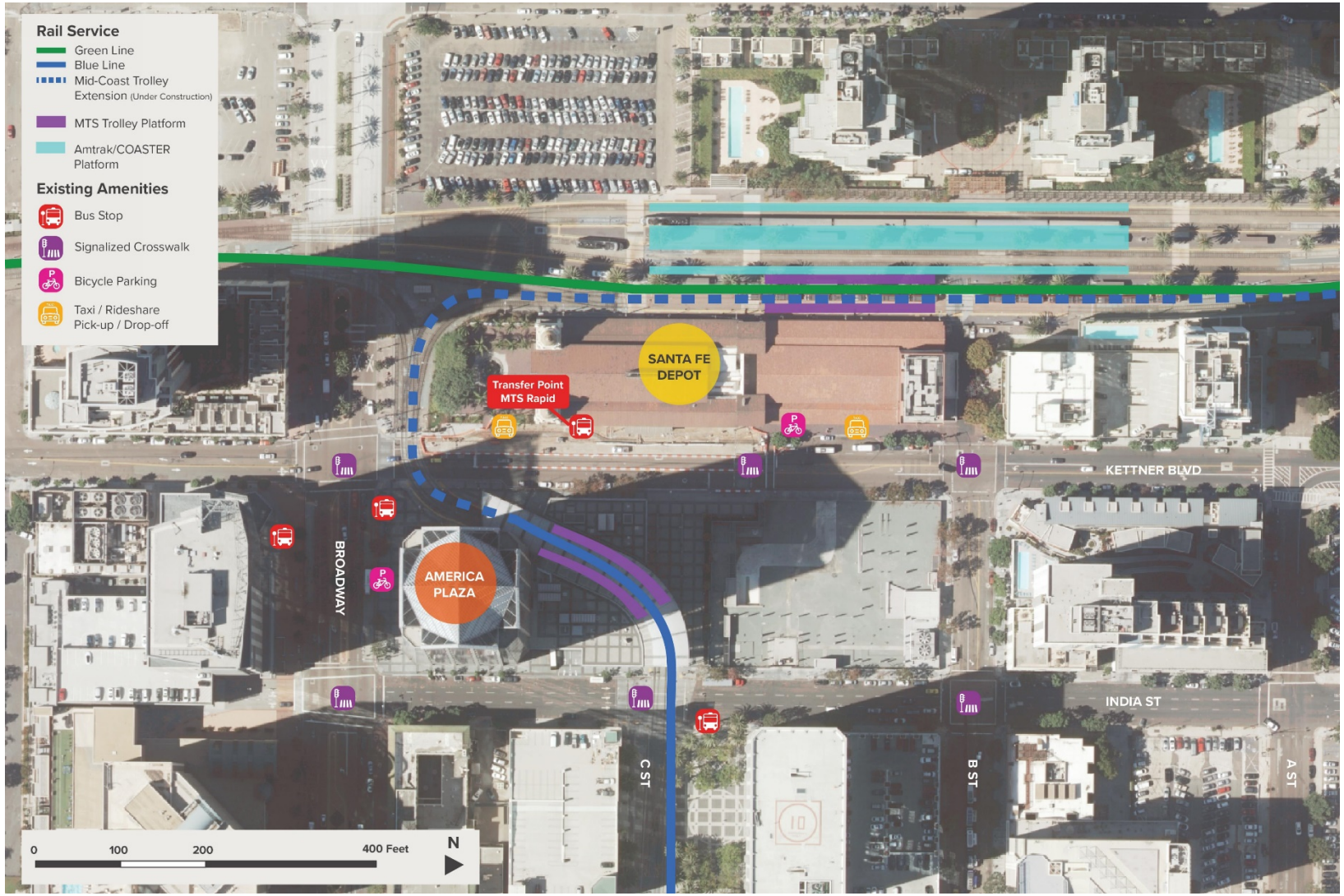
MTS Board of Directors

Thursday, September 17, 2020

Project Goals

This Pedestrian Enhancement project aims to:

- Promote seamless transitions between transportation modes
- Leverage historical and cultural resources
- Incorporate a modern wayfinding program
- Create a welcoming human-scale public space



Project Area







Project Area









Project Schedule

Technical Working Group Meeting No. 1

Fall 2019

Introduce the project and gather feedback regarding challenges and opportunities for improvements to the public realm and transit user experience



Public Workshop No. 1

Fall 2019

Gather input on improvements the public would like to see for America Plaza/Santa Fe Depot

Develop Design Concepts

Winter 2020

Use feedback to develop three design concepts to improve the public realm and the transit user experience



Public Workshop No. 2

Winter 2020

Gather feedback on the three design concepts that were developed

Refine Preferred Concept

Summer 2020

Develop a preferred concept based on public input and analysis

Technical Working Group Meeting No. 2

Summer 2020

Present the preferred design concept and wayfinding plan to the TWG

WE ARE HERE!

Public Workshop No. 3

Summer 2020

Present the preferred design concept and wayfinding plan to the public

MTS Board Meeting

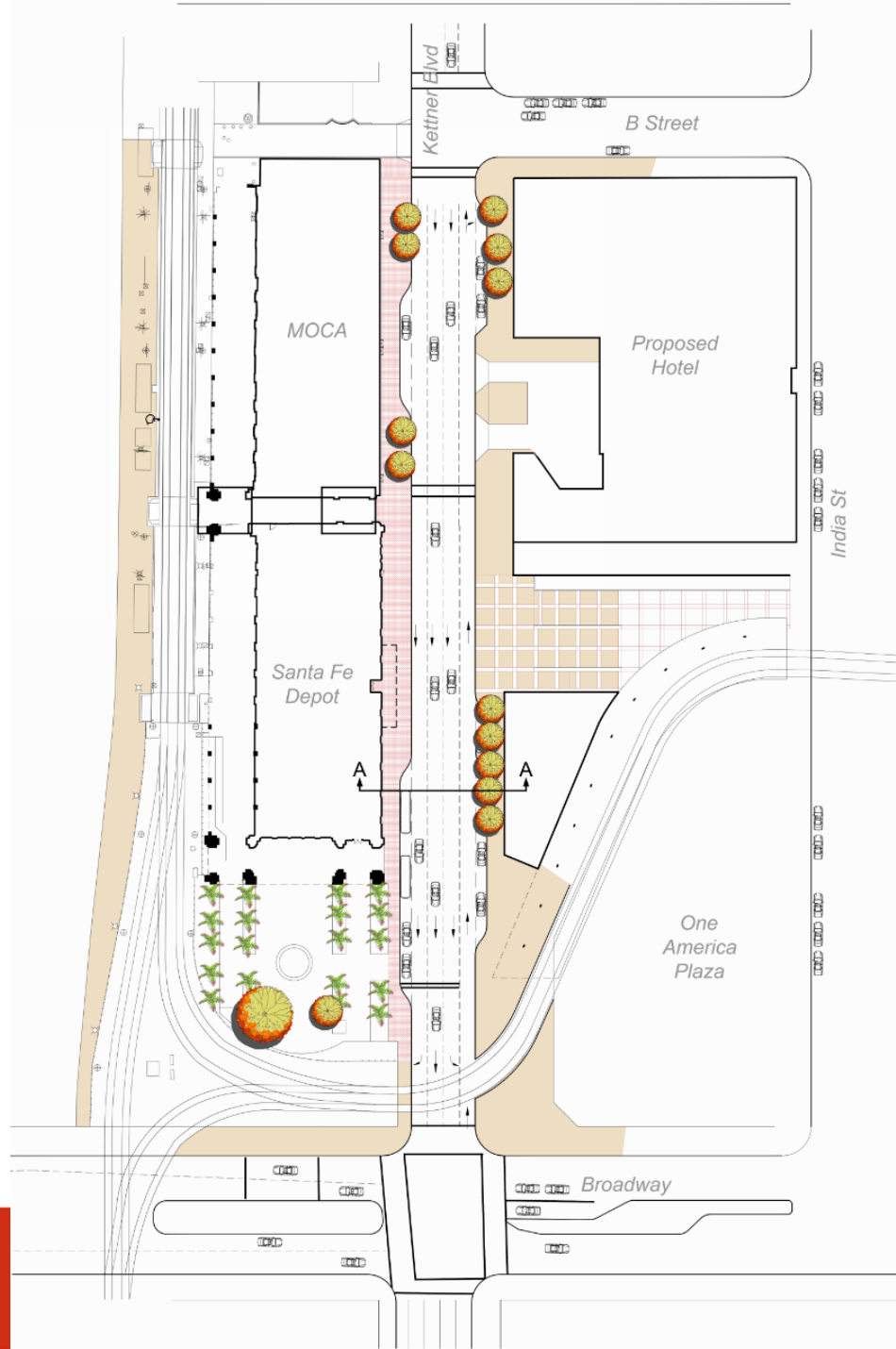
Fall 2020

Present the preferred design concept and wayfinding plan to the MTS Board of Directors

Existing Site Conditions

- Approximately 5,600 daily trips
- Approximately 4,800 daily pedestrian crossings
- Current signage is inconsistent and unclear





Three Options Developed

Each concept offered varying degrees of capital improvements and represented a range of investment scenarios

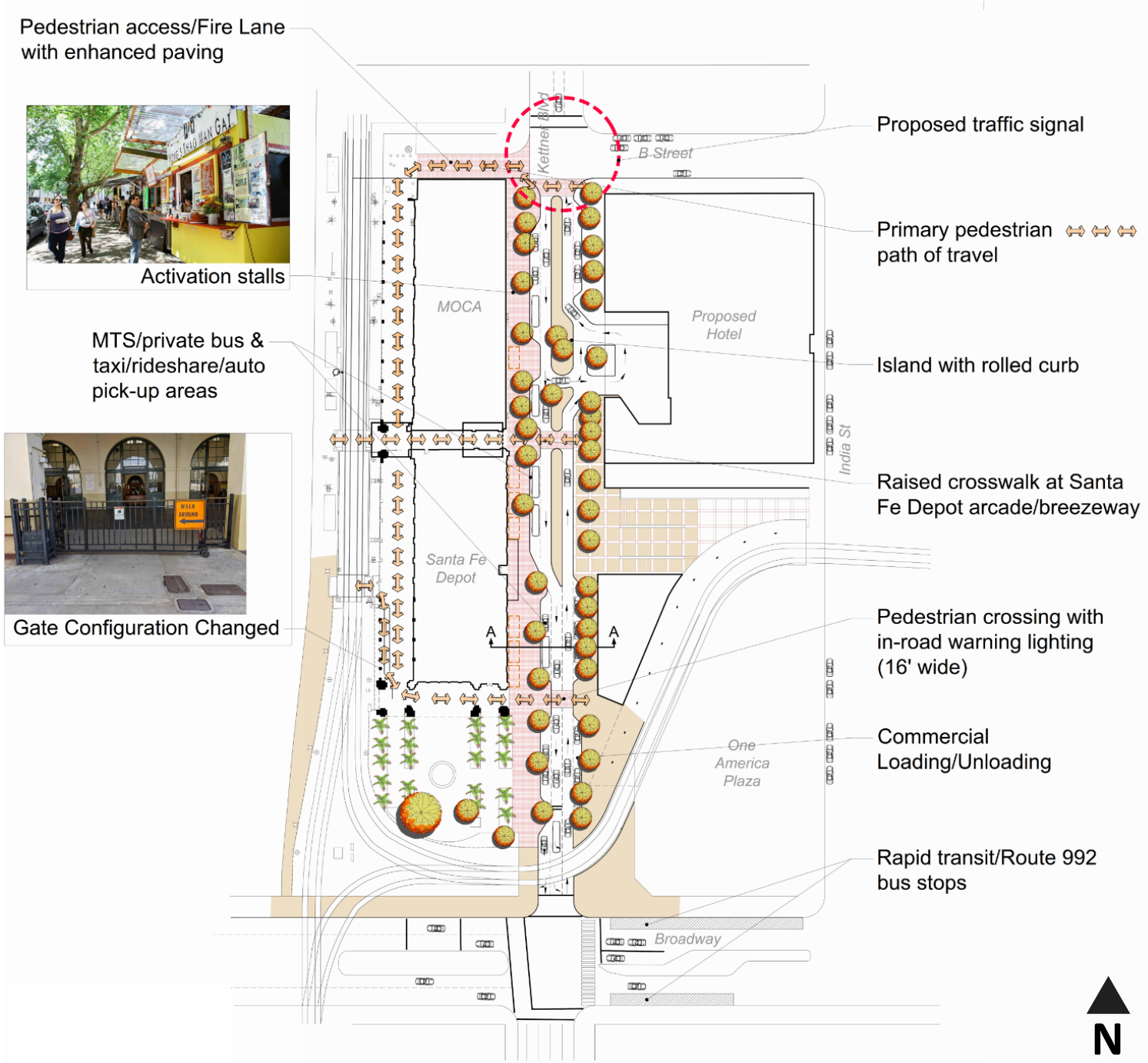
- **Option 1:** Conversion to one-way southbound travel on Kettner Boulevard
- **Option 2:** Two-way travel maintained, with a 30 ft. wide sidewalk on the westside of Kettner Boulevard
- **Option 3:** Two-way travel maintained, with lane restriping that allows for traffic calming and a parking/loading lane on the eastside of Kettner Boulevard

Option 2

Two-way travel with 30 ft. wide sidewalk on westside of Kettner Boulevard

Activation stalls

Gate Configuration Changed



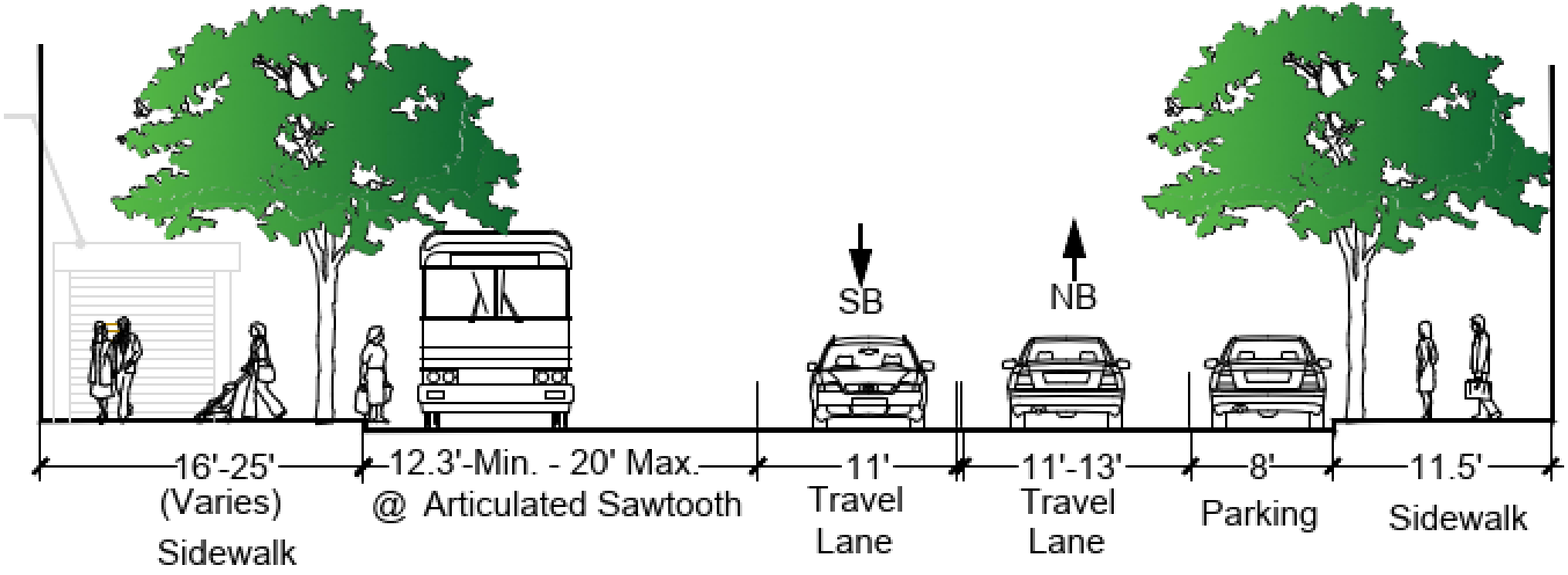
Evaluation of Options

- Options were evaluated using a weighted scoring method
- Option 2 performed the best and was advanced for further refinement

	WEIGHT	OPTION 1	OPTION 2	OPTION 3
PEDESTRIAN SAFETY	18%			
PEDESTRIAN ENVIRONMENT	16%			
MODAL INTERCONNECTIVITY	16%			
TRAFFIC CALMING OPPORTUNITIES	16%			
ACCESSIBILITY TO ACTIVITY CENTERS	14%			
STAKEHOLDER AND PUBLIC SUPPORT	12%			
EASE OF IMPLEMENTATION	8%			
TOTAL SCORE	100%	6.58	6.94	4.98

Refined Option Based on Feedback

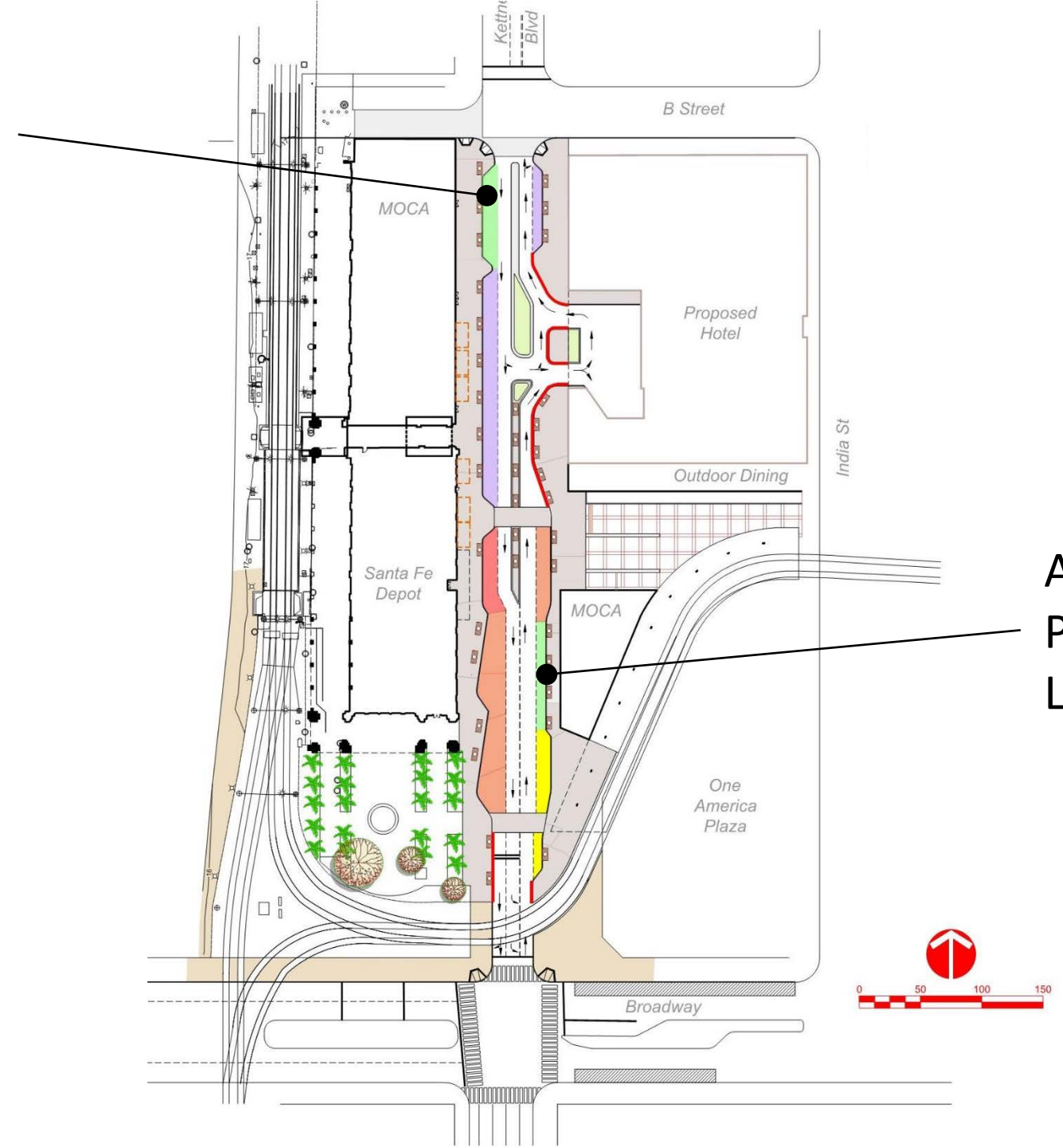
Two-way travel with widened sidewalks, enhanced bus bays, and enhanced pedestrian crossings



Refined Option

Two-way travel with widened sidewalks, enhanced bus bays, and enhanced pedestrian crossings

Parallel Parking



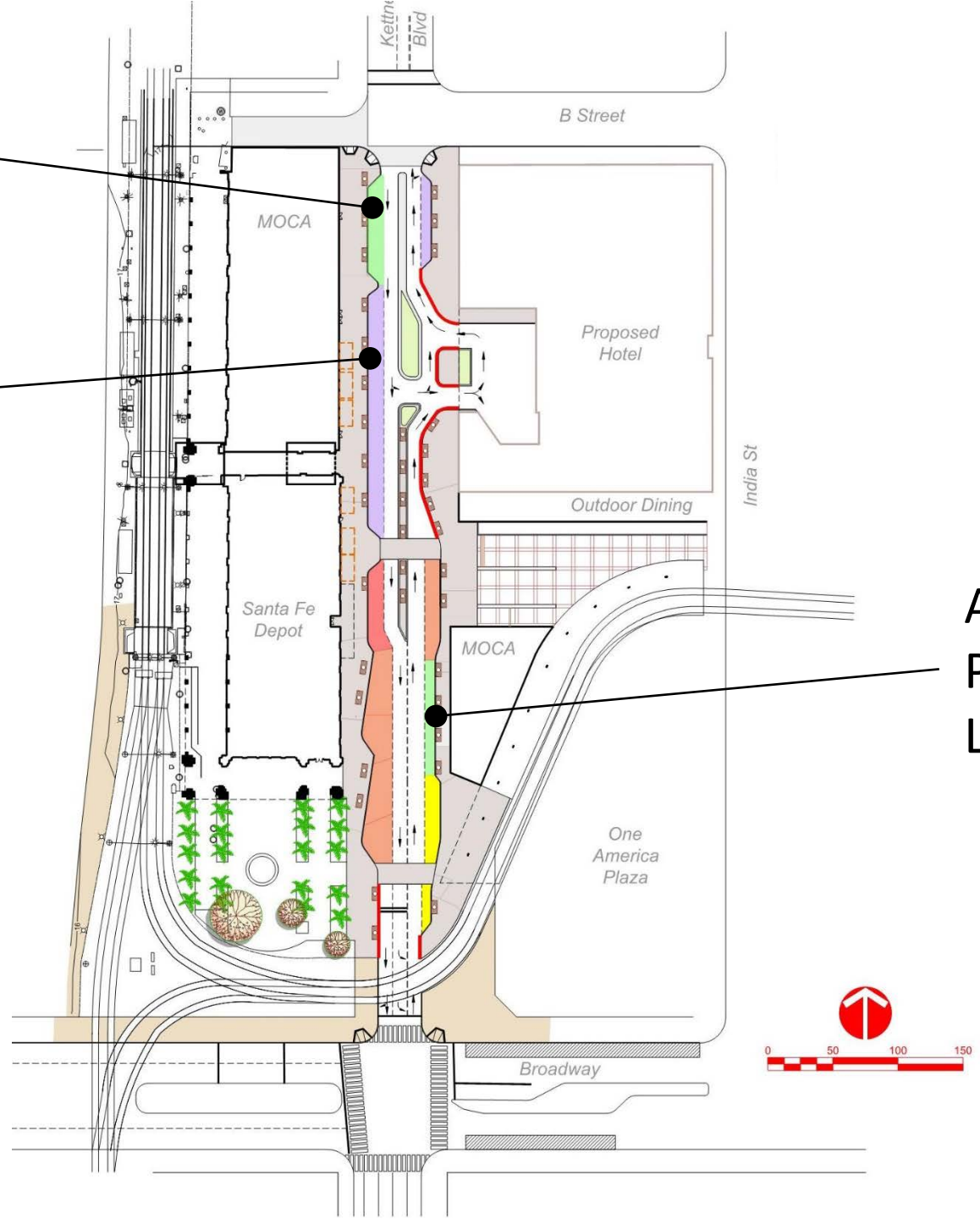
ADA Parking, Parking, and Loading

Refined Option

Two-way travel with widened sidewalks, enhanced bus bays, and enhanced pedestrian crossings

Parallel Parking

Private shuttle, taxi, auto pick-up areas



ADA Parking, Parking, and Loading

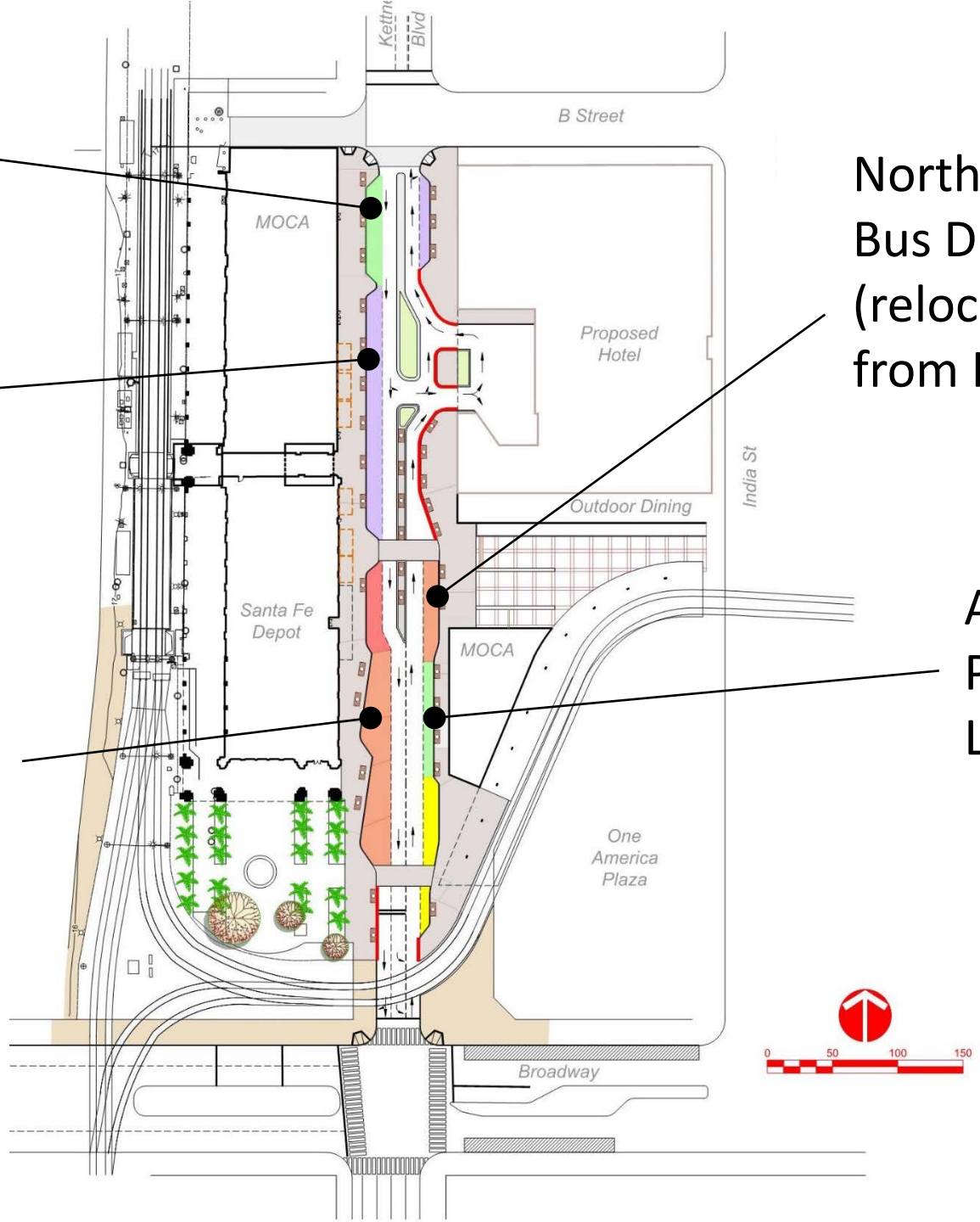
Refined Option

Two-way travel with widened sidewalks, enhanced bus bays, and enhanced pedestrian crossings

Parallel Parking

Private shuttle, taxi, auto pick-up areas

Dedicated bus bays



Northbound Bus Drop-off (relocated from India St)

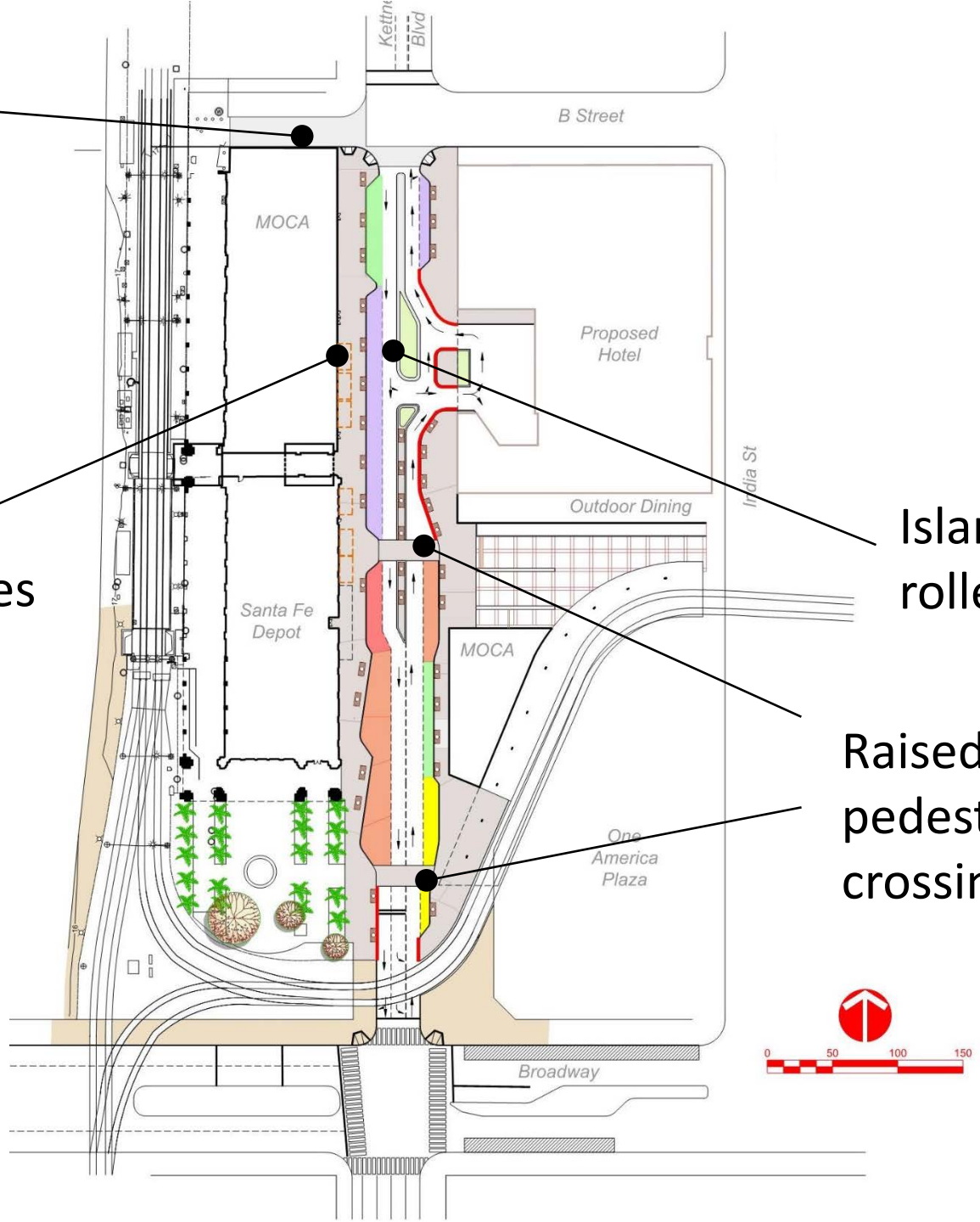
ADA Parking, Parking, and Loading

Refined Option

Two-way travel with widened sidewalks, enhanced bus bays, and enhanced pedestrian crossings

Pedestrian access with enhanced paving

Possible flexible spaces (MTS booth, vendors, etc)



Island with rolled curb

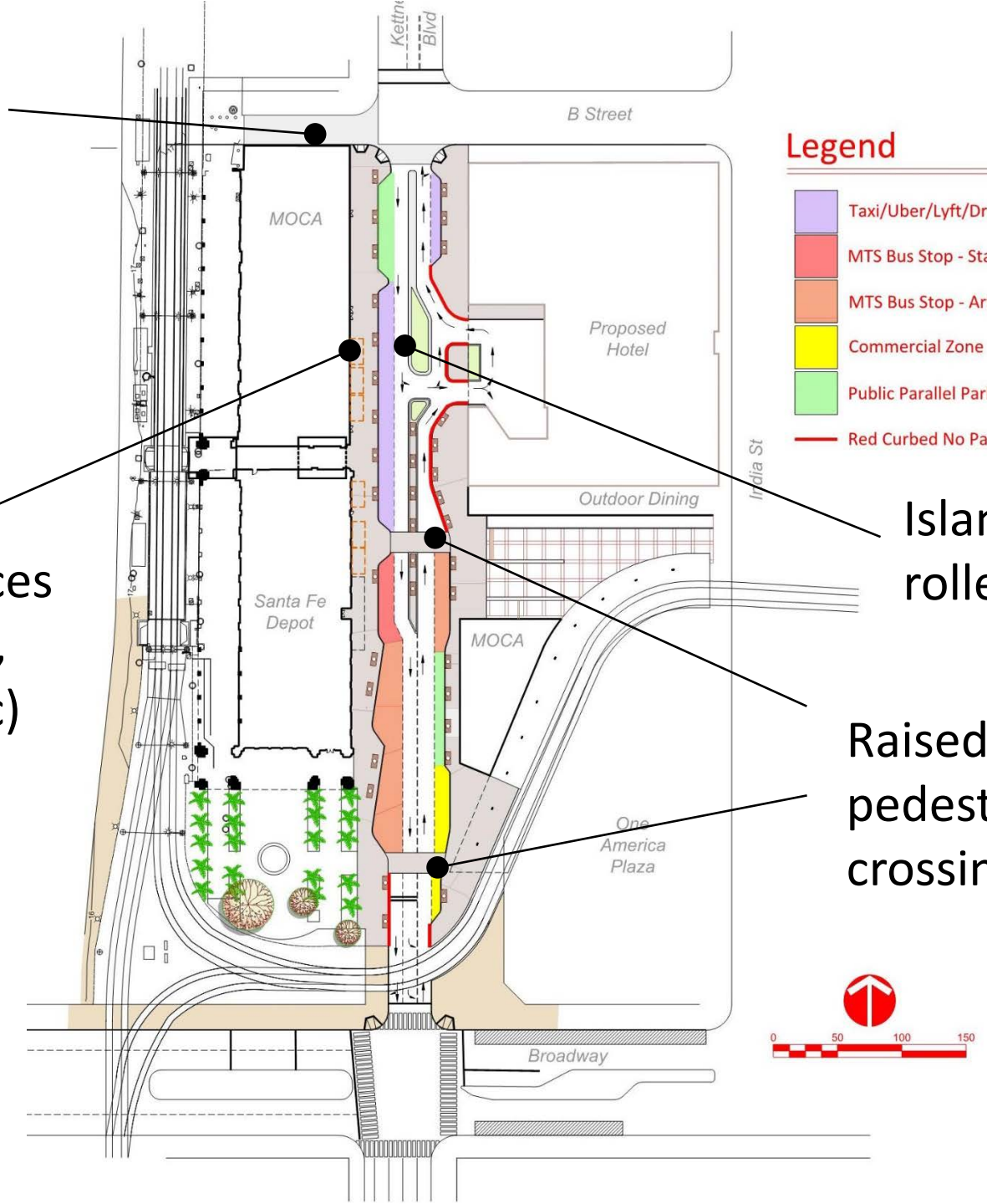
Raised pedestrian crossing

Refined Option

Two-way travel with widened sidewalks, enhanced bus bays, and enhanced pedestrian crossings

Pedestrian access with enhanced paving

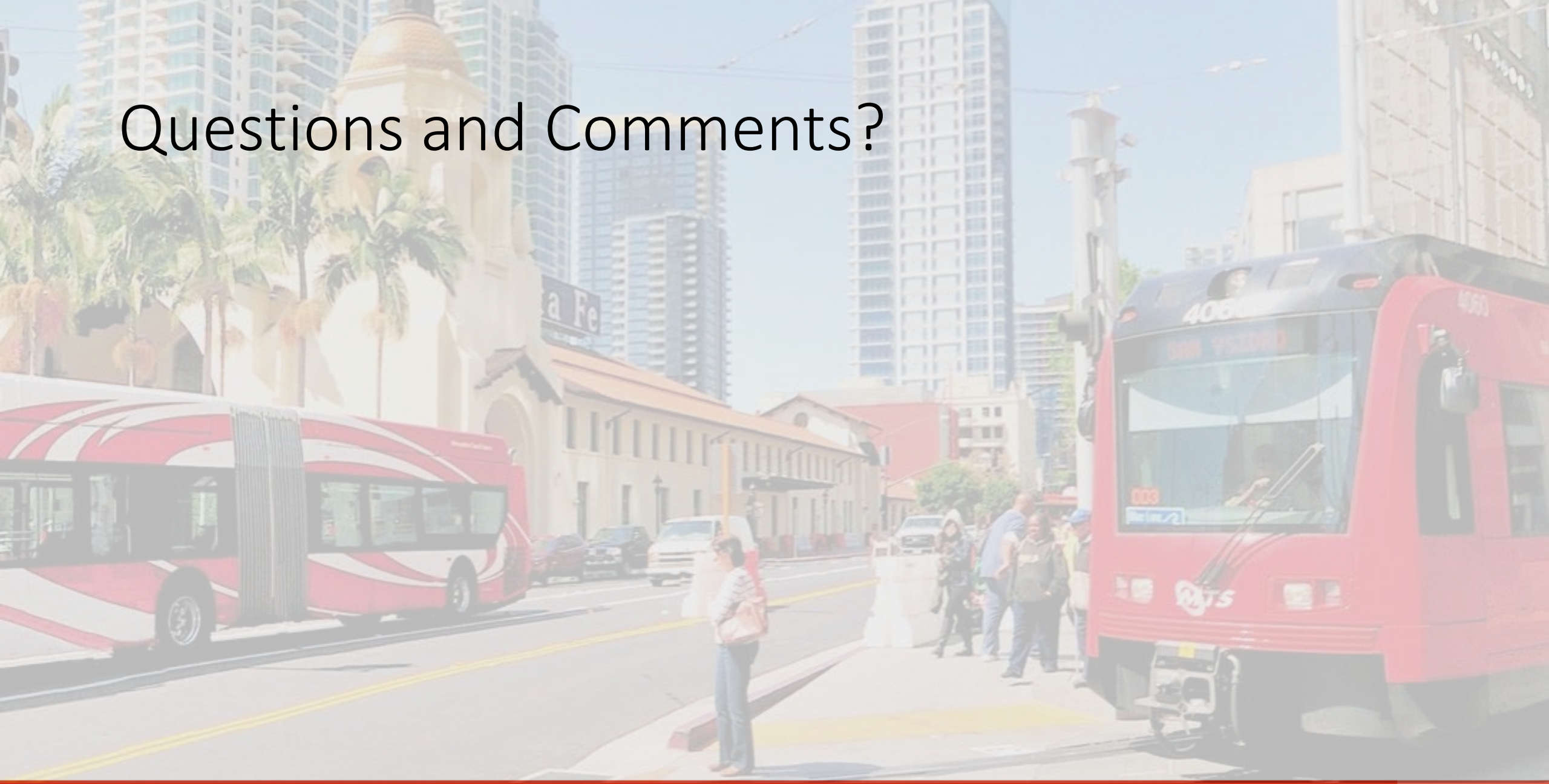
Possible flexible spaces (MTS booth, vendors, etc)



Island with rolled curb

Raised pedestrian crossing

Questions and Comments?



Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101-7490
(619) 231-1466 • FAX (619) 234-3407

Agenda Item No. 61

Chief Executive Officer's Report

September 17, 2020

In accordance with Board Policy No. 52, "Procurement of Goods and Services", attached are listings of contracts, purchase orders, and work orders that have been approved within the CEO's authority (up to and including $100,000) for the period July 22, 2020 through September 9, 2020.
*Please note additional reporting of purchase orders that is now possible with the new SAP Enterprise Resource Planning system.

CEO Travel Report (since last Board meeting)

N/A

Board Member Travel Report (since last Board meeting)

N/A

Metropolitan Transit System (MTS) is a California public agency comprised of San Diego Transit Corp., San Diego Trolley, Inc. and San Diego and Arizona Eastern Railway Company (nonprofit public benefit corporations). MTS is the taxicab administrator for seven cities.

MTS member agencies include the cities of Chula Vista, Coronado, El Cajon, Imperial Beach, La Mesa, Lemon Grove, National City, Poway, San Diego, Santee, and the County of San Diego.

EXPENSE CONTRACTS				
Doc #	**Organization**	**Subject**	**Amount**	**Day**
G2398.0-20	PHOENIX BUSINESS CONSULTING	TEMPORARY STAFFING	$0.00	7/22/2020
G1951.0-17-AE-57	MOTT MCDONALD	GEN ENGIN. SERVICES FOR MONUMENT PRESERVATION	$12,338.96	7/23/2020
G1931.16-16	NMS MANAGEMENT	COVID-19 AFTER CONFIRMED CASES	$21,002.30	7/27/2020
G2394.0-20	ADECCO	TEMPORARY STAFFING	$0.00	7/28/2020
PWG308.1-20	FIRE SERVICE CORP	ADD QUANTITY	$910.00	7/28/2020
G2395.0-20	APPLEONE	TEMPORARY STAFFING	$0.00	7/29/2020
B0706.2-19	GILLIG	TRAINING 2 BEBS	$10,000.00	7/29/2020
G1951.4-17	MOTT MCDONALD	ADD SUB	$0.00	7/29/2020
PWG301.1-20	BAKER ELECTRIC	CCO1 & CCO2	$56,759.13	8/3/2020
B0661.3-17	NEW FLYER	60FT NF CNG BUSES SALES TAX	$0.00	8/5/2020
PWG279.1-19	MOTOROLA	REMOVE POINT LOMA & PALOMAR MTN	($60,406.00)	8/7/2020
PWG253.3-18	ACM LIGHTING SERVICES	ADD STADIUM TROLLEY STATION TO SOW	$17,000.00	8/10/2020
B0717.0-20	TROLLEY SUPPORT	BUS PARTS-S1 GARD	$55,800.00	8/10/2020
PWG321.0-21	PRESENTATION PRODUCTS DBA SPINITAR	CTC VIDEO WALL PREVENTATIVE MAINT SUPPORT	$46,310.00	8/14/2020
L1531.1-20	CARLOS GUZMAN	FABRICATION OF PARTS	$0.00	8/14/2020
PWG256.2-18	PARADIGM	ADD RR EXHAUST FAN RESTROOM IAD	$8,172.00	8/17/2020
G2214.1-19	ELDON FLOYD	ADD FUNDS	$25,000.00	8/17/2020
G2245.1-19	KT&T	ADD FUNDS	$50,000.00	8/17/2020
G2019.0-17-CM05.1	KLEINFELDER - SIMON WONG	ADDITIONAL SERVICES	$21,497.36	8/17/2020
PWG274.0-19274-11	PUB CONSTRUCTION	IAD STUCCO	$33,996.42	8/18/2020
G1953.0-17-AE-46.01	PACIFIC RAIL ENTERPRISES	NO COST TIME EXTENSION	$0.00	8/18/2020
G2201.1-19	HANSON BRIDGETT	ADD FUNDS	$75,000.00	8/24/2020
G1946.0-17-AE-56.01	GLOBAL SIGNALS	ADD SCADA POINTS	$20,518.06	8/25/2020
G2217.2-19	MARK BARBER	ADD FUNDS	$25,000.00	8/26/2020
G2216.2-19	LAUGHLIN FALBO LEVY & MORESI	ADD FUNDS	$75,000.00	8/31/2020
G1946.0-17-AE-55.01	GLOBAL SIGNALS	DSDC ADD HOURS	$13,159.48	9/1/2020

EXPENSE CONTRACTS				
Doc #	**Organization**	**Subject**	**Amount**	**Day**
G2053.1-18.22	CIVILIAN	CAC SUPPORT	$20,280.00	9/2/2020
G1951.0-17-AE-60	MOTT MCDONALD	EL CAJON THIRD TRACK	$92,585.45	9/2/2020
G1493.0-13-13.03	KIMLEY HORN	KMD CONCRETE REVISE PLANS	$19,457.29	9/9/2020

REVENUE CONTRACTS & MOUs				
Doc #	**Organization**	**Subject**	**Amount**	**Day**
B0596.3-13	CLEAR CHANNEL	MAG PMT REDUCTION	$0.00	7/22/2020
L1546.0-20	CALTRANS	PLAN REVIEW INVOICING	$15,000.00	7/22/2020
G2014.1-17	CLEAR CHANNEL	MAG PMT REDUCTION	$0.00	7/22/2020
L1545.0-20	CALTRANS	FLAGGING PM INVOICING	$50,000.00	7/22/2020
L1554.0-21	JOSHUA GRADING & EXCAVATING	ROE 1ST AVE & HARBOR DR	$750.00	7/22/2020
G2418.0-21	MOTIVATED YOUTH ACADEMY	MTS COMPASS CARD PPB	$0.00	7/27/2020
L6794.0-20	SDG&E	GUY WIRE MORENA BLVD	$867.10	7/28/2020
S200-21-742	AIRX UTILITY SURVEYOURS	ROE MILEPOST SL 12.60	$1,054.60	7/29/2020
L1547.0-21	SC VALLEY ENGINEERING	ROE - PARKWAY DR & ALVARADO	$2,924.58	7/29/2020
G2375.0-20	UC SAN DIEGO	UCSD FY21 ECO PASS	$292,600.00	8/2/2020
L1160.4-14	ETIC ENGINEERING	ADD SCOPE OF WORK	$750.00	8/4/2020
S200-20-736	SDG&E	ROE - E ST & BAY BLVD	$1,409.30	8/5/2020
L6790.0-20	ANDREW SMOOT	JROE - MILEPOST 263.6	$902.56	8/14/2020
L6791.1-20	CALTRANS	NO COST TIME EXTENSION	$750.00	8/21/2020
S200-20-733.1	HP COMMUNICATIONS	ROE TIME EXTENSION	$2,511.87	8/23/2020
L6795.0-21	HDR ENGINEERING	VARIOUS - ROE	$1,579.60	8/23/2020
L1552.0-21	HHS CONSTRUCTION	ROE - MILEPOST EL 6.5	$1,804.60	8/25/2020
G2409.0-20	AMCAL	VILLA ENCANTADA SUBORDINATION AGMT	$0.00	9/2/2020
L6787.1-20	ORION CONSTRUCTION	JROE - TIME EXTENSION	$750.00	9/2/2020
G2410.0-20	AMCAL	VILLA ENCANTADA LEASE EESOPPELL CERT	$0.00	9/2/2020
G0930.17-04.96	SANDAG	RADIO LEASE	$68,503.71	9/9/2020

Purchase Orders							
PO Number	PO Date	Name	Prime Business Certification	Material Group	PO Value	DBE Subcontracted Amount	Non DBE Subcontracted Amount
4400001088	7/23/2020	Mcmaster-Carr Supply Co		G130-SHOP TOOLS	229.41	-	-
4400001089	7/27/2020	Office Depot		G200-OFFICE SUPPLIES	149.61	-	-
4400001090	7/27/2020	Office Depot		G200-OFFICE SUPPLIES	124.55	-	-
4400001091	7/27/2020	Office Depot		G200-OFFICE SUPPLIES	185.07	-	-
4400001092	7/27/2020	Office Depot		G200-OFFICE SUPPLIES	74.22	-	-
4400001093	7/27/2020	Mcmaster-Carr Supply Co		G170-LUBRICANTS	949.46	-	-
4400001094	7/28/2020	Mcmaster-Carr Supply Co		G180-JANITORIAL SUPPLIES	59.27	-	-
4400001095	7/31/2020	Office Depot		G200-OFFICE SUPPLIES	34.34	-	-
4400001096	7/31/2020	Office Depot		G200-OFFICE SUPPLIES	80.32	-	-
4400001097	7/31/2020	Office Depot		G200-OFFICE SUPPLIES	320.41	-	-
4400001098	7/31/2020	Office Depot		G200-OFFICE SUPPLIES	2,344.43	-	-
4400001099	7/31/2020	Office Depot		G200-OFFICE SUPPLIES	60.10	-	-
4400001100	7/31/2020	Office Depot		G200-OFFICE SUPPLIES	34.47	-	-
4400001101	7/31/2020	Office Depot		G200-OFFICE SUPPLIES	87.76	-	-
4400001102	7/31/2020	Office Depot		G200-OFFICE SUPPLIES	59.64	-	-
4400001103	7/31/2020	Office Depot		G200-OFFICE SUPPLIES	200.16	-	-
4400001104	7/31/2020	Office Depot		G200-OFFICE SUPPLIES	16.30	-	-
4400001105	8/3/2020	Office Depot		G200-OFFICE SUPPLIES	13.25	-	-
4400001106	8/3/2020	Office Depot		G200-OFFICE SUPPLIES	792.74	-	-
4400001107	8/4/2020	W.W. Grainger Inc		M180-STATION ELECTRICAL	513.04	-	-
4400001108	8/4/2020	Office Depot		G200-OFFICE SUPPLIES	747.89	-	-
4400001109	8/4/2020	Office Depot		G200-OFFICE SUPPLIES	83.94	-	-
4400001110	8/5/2020	Office Depot		G200-OFFICE SUPPLIES	135.51	-	-
4400001111	8/5/2020	Office Depot		G200-OFFICE SUPPLIES	1,249.74	-	-
4400001112	8/5/2020	Office Depot		G200-OFFICE SUPPLIES	1,325.63	-	-
4400001113	8/5/2020	Office Depot		G200-OFFICE SUPPLIES	238.99	-	-
4400001114	8/5/2020	Office Depot		G200-OFFICE SUPPLIES	442.28	-	-
4400001115	8/5/2020	Office Depot		G200-OFFICE SUPPLIES	32.81	-	-
4400001116	8/7/2020	Office Depot		G200-OFFICE SUPPLIES	90.85	-	-
4400001117	8/7/2020	Office Depot		G200-OFFICE SUPPLIES	835.83	-	-
4400001118	8/7/2020	Office Depot		G200-OFFICE SUPPLIES	446.04	-	-
4400001119	8/7/2020	Office Depot		G200-OFFICE SUPPLIES	10.89	-	-
4400001120	8/7/2020	Office Depot		G200-OFFICE SUPPLIES	130.23	-	-
4400001121	8/7/2020	Office Depot		G200-OFFICE SUPPLIES	583.63	-	-
4400001122	8/7/2020	Office Depot		G200-OFFICE SUPPLIES	247.83	-	-
4400001123	8/10/2020	Office Depot		G200-OFFICE SUPPLIES	311.85	-	-
4400001124	8/11/2020	Office Depot		G200-OFFICE SUPPLIES	264.57	-	-
4400001125	8/11/2020	Office Depot		G200-OFFICE SUPPLIES	311.66	-	-
4400001126	8/11/2020	Office Depot		G200-OFFICE SUPPLIES	480.14	-	-
4400001127	8/11/2020	Office Depot		G200-OFFICE SUPPLIES	69.68	-	-
4400001128	8/11/2020	Office Depot		G200-OFFICE SUPPLIES	226.50	-	-
4400001129	8/11/2020	Office Depot		G200-OFFICE SUPPLIES	167.34	-	-
4400001130	8/11/2020	Office Depot		G200-OFFICE SUPPLIES	127.92	-	-
4400001131	8/11/2020	Office Depot		G200-OFFICE SUPPLIES	80.80	-	-
4400001132	8/11/2020	Office Depot		G200-OFFICE SUPPLIES	48.30	-	-
4400001133	8/11/2020	Office Depot		G200-OFFICE SUPPLIES	116.92	-	-
4400001134	8/12/2020	Office Depot		G200-OFFICE SUPPLIES	119.72	-	-

Purchase Orders							
PO Number	PO Date	Name	Prime Business Certification	Material Group	PO Value	DBE Subcontracted Amount	Non DBE Subcontracted Amount
4400001135	8/12/2020	Office Depot		G200-OFFICE SUPPLIES	664.62	-	-
4400001136	8/12/2020	Office Depot		G200-OFFICE SUPPLIES	34.44	-	-
4400001137	8/12/2020	Office Depot		G200-OFFICE SUPPLIES	125.01	-	-
4400001138	8/12/2020	Office Depot		G200-OFFICE SUPPLIES	161.61	-	-
4500032773	8/12/2020	Office Depot		G200-OFFICE SUPPLIES	1,895.43	-	-
4500032774	8/12/2020	Office Depot		G200-OFFICE SUPPLIES	732.68	-	-
4500032775	8/13/2020	W.W. Grainger Inc		G130-SHOP TOOLS	308.38	-	-
4500032776	8/13/2020	W.W. Grainger Inc		G130-SHOP TOOLS	186.70	-	-
4500032777	8/13/2020	W.W. Grainger Inc		G130-SHOP TOOLS	2,432.89	-	-
4500032778	8/13/2020	W.W. Grainger Inc		G130-SHOP TOOLS	1,196.03	-	-
4500032779	8/13/2020	Office Depot		G200-OFFICE SUPPLIES	412.43	-	-
4500032780	8/14/2020	W.W. Grainger Inc		G180-JANITORIAL SUPPLIES	1,619.05	-	-
4500032781	8/14/2020	W.W. Grainger Inc		G130-SHOP TOOLS	16,762.91	-	-
4500032782	8/14/2020	W.W. Grainger Inc		G130-SHOP TOOLS	88.73	-	-
4500032783	8/14/2020	W.W. Grainger Inc		G130-SHOP TOOLS	2,368.76	-	-
4500032784	8/14/2020	W.W. Grainger Inc		G130-SHOP TOOLS	5,066.63	-	-
4500032785	8/14/2020	W.W. Grainger Inc		G130-SHOP TOOLS	2,250.64	-	-
4500032786	8/14/2020	W.W. Grainger Inc		G130-SHOP TOOLS	737.01	-	-
4500032787	8/14/2020	W.W. Grainger Inc		G130-SHOP TOOLS	288.33	-	-
4500032788	8/18/2020	Office Depot		G200-OFFICE SUPPLIES	7.02	-	-
4500032789	8/18/2020	Office Depot		G200-OFFICE SUPPLIES	7.02	-	-
4500032790	8/18/2020	Office Depot		G200-OFFICE SUPPLIES	6,576.57	-	-
4500032791	8/18/2020	Office Depot		G200-OFFICE SUPPLIES	2,194.26	-	-
4500032792	8/18/2020	Office Depot		G200-OFFICE SUPPLIES	4,308.51	-	-
4500032793	8/18/2020	Office Depot		G200-OFFICE SUPPLIES	12,384.41	-	-
4500032794	8/18/2020	Office Depot		G200-OFFICE SUPPLIES	77.89	-	-
4500032795	8/18/2020	Office Depot		G200-OFFICE SUPPLIES	1,888.74	-	-
4500032796	8/18/2020	Office Depot		G200-OFFICE SUPPLIES	387.18	-	-
4500032797	8/18/2020	Office Depot		G200-OFFICE SUPPLIES	514.11	-	-
4500032798	8/18/2020	Office Depot		G200-OFFICE SUPPLIES	337.08	-	-
4500032799	8/18/2020	Office Depot		G200-OFFICE SUPPLIES	219.61	-	-
4500032800	8/18/2020	Office Depot		G200-OFFICE SUPPLIES	223.52	-	-
4500032801	8/18/2020	Office Depot		G200-OFFICE SUPPLIES	19,216.92	-	-
4500032802	8/18/2020	Office Depot		G200-OFFICE SUPPLIES	59.64	-	-
4500032803	8/18/2020	Office Depot		G200-OFFICE SUPPLIES	676.30	-	-
4500032804	8/18/2020	Office Depot		G200-OFFICE SUPPLIES	65.80	-	-
4500032805	8/18/2020	Office Depot		G200-OFFICE SUPPLIES	230.68	-	-
4500032806	8/18/2020	Office Depot		G200-OFFICE SUPPLIES	2,487.57	-	-
4500032807	8/18/2020	Office Depot		G200-OFFICE SUPPLIES	71.62	-	-
4500032808	8/18/2020	Office Depot		G200-OFFICE SUPPLIES	286.00	-	-
4500032809	8/18/2020	Office Depot		G200-OFFICE SUPPLIES	471.95	-	-
4500032810	8/18/2020	Office Depot		G200-OFFICE SUPPLIES	1,320.87	-	-
4500032811	8/18/2020	W.W. Grainger Inc		G200-OFFICE SUPPLIES	2,092.02	-	-
4500032812	8/18/2020	W.W. Grainger Inc		B250-BUS REPAIR PARTS	906.73	-	-
4500032813	8/19/2020	W.W. Grainger Inc		G180-JANITORIAL SUPPLIES	603.73	-	-
4500032814	8/20/2020	W.W. Grainger Inc		M180-STATION ELECTRICAL	352.00	-	-
4500032815	8/20/2020	W.W. Grainger Inc		M180-STATION ELECTRICAL	110.38	-	-

Purchase Orders							
PO Number	PO Date	Name	Prime Business Certification	Material Group	PO Value	DBE Subcontracted Amount	Non DBE Subcontracted Amount
4500032816	8/20/2020	W.W. Grainger Inc		M160-SUMP PUMP STATIONS	386.35	-	-
4500032817	8/20/2020	W.W. Grainger Inc		G180-JANITORIAL SUPPLIES	1,738.54	-	-
4500032818	8/20/2020	W.W. Grainger Inc		G180-JANITORIAL SUPPLIES	142.77	-	-
4500032819	8/20/2020	Office Depot		G200-OFFICE SUPPLIES	63.46	-	-
4500032820	8/20/2020	Office Depot		G200-OFFICE SUPPLIES	387.90	-	-
4500032821	8/20/2020	Office Depot		G200-OFFICE SUPPLIES	1,488.89	-	-
4500032822	8/20/2020	Office Depot		G200-OFFICE SUPPLIES	445.55	-	-
4500032823	8/20/2020	Office Depot		G200-OFFICE SUPPLIES	2,546.89	-	-
4500032824	8/20/2020	Office Depot		G200-OFFICE SUPPLIES	183.47	-	-
4500032825	8/20/2020	Office Depot		G200-OFFICE SUPPLIES	33.16	-	-
4500032826	8/20/2020	Office Depot		G200-OFFICE SUPPLIES	3,185.63	-	-
4500032827	8/20/2020	Office Depot		G200-OFFICE SUPPLIES	2,537.48	-	-
4500032828	8/20/2020	Office Depot		G200-OFFICE SUPPLIES	571.08	-	-
4500032829	8/20/2020	Office Depot		G200-OFFICE SUPPLIES	71.44	-	-
4500032830	8/20/2020	Office Depot		G200-OFFICE SUPPLIES	879.71	-	-
4500032831	8/20/2020	Office Depot		G200-OFFICE SUPPLIES	358.95	-	-
4500032832	8/20/2020	Office Depot		G200-OFFICE SUPPLIES	47.46	-	-
4500032833	8/20/2020	Office Depot		G200-OFFICE SUPPLIES	4,938.75	-	-
4500032834	8/20/2020	Office Depot		G200-OFFICE SUPPLIES	153.11	-	-
4500032835	8/20/2020	Office Depot		G200-OFFICE SUPPLIES	571.08	-	-
4500032836	8/24/2020	W.W. Grainger Inc		B250-BUS REPAIR PARTS	66.85	-	-
4500032837	8/24/2020	Office Depot		G200-OFFICE SUPPLIES	250.02	-	-
4500032838	8/24/2020	Office Depot		G200-OFFICE SUPPLIES	1,162.63	-	-
4500032839	8/24/2020	Office Depot		G200-OFFICE SUPPLIES	1,935.16	-	-
4500032840	8/25/2020	Office Depot		G200-OFFICE SUPPLIES	106.68	-	-
4500032841	8/25/2020	Office Depot		G200-OFFICE SUPPLIES	105.06	-	-
4500032842	8/28/2020	W.W. Grainger Inc		M180-STATION ELECTRICAL	56.22	-	-
4500032843	8/28/2020	W.W. Grainger Inc		M180-STATION ELECTRICAL	588.65	-	-
4500032844	8/28/2020	W.W. Grainger Inc		M180-STATION ELECTRICAL	56.41	-	-
4500032845	8/31/2020	Office Depot		G200-OFFICE SUPPLIES	123.92	-	-
4500032846	8/31/2020	Office Depot		G200-OFFICE SUPPLIES	630.02	-	-
4500032847	8/31/2020	Office Depot		G200-OFFICE SUPPLIES	557.74	-	-
4500032848	8/31/2020	Office Depot		G200-OFFICE SUPPLIES	156.24	-	-
4500032849	8/31/2020	Office Depot		G200-OFFICE SUPPLIES	391.91	-	-
4500032850	8/31/2020	Office Depot		G200-OFFICE SUPPLIES	1,224.85	-	-
4500032851	8/31/2020	Office Depot		G200-OFFICE SUPPLIES	821.77	-	-
4500032852	8/31/2020	Office Depot		G200-OFFICE SUPPLIES	36.83	-	-
4500032853	8/31/2020	Office Depot		G200-OFFICE SUPPLIES	2,139.26	-	-
4500032854	8/31/2020	Office Depot		G200-OFFICE SUPPLIES	3,353.71	-	-
4500032855	8/31/2020	Office Depot		G200-OFFICE SUPPLIES	567.11	-	-
4500032856	8/31/2020	Office Depot		G200-OFFICE SUPPLIES	29,109.60	-	-
4500032857	8/31/2020	Office Depot		G200-OFFICE SUPPLIES	33,740.29	-	-
4500032858	8/31/2020	Office Depot		G200-OFFICE SUPPLIES	345.88	-	-
4500032859	8/31/2020	Office Depot		G200-OFFICE SUPPLIES	736.60	-	-
4500032860	8/31/2020	Office Depot		G200-OFFICE SUPPLIES	1,020.44	-	-
4500032861	8/31/2020	Office Depot		G200-OFFICE SUPPLIES	70.00	-	-
4500032862	8/31/2020	Office Depot		G200-OFFICE SUPPLIES	25.39	-	-

Purchase Orders							
PO Number	PO Date	Name	Prime Business Certification	Material Group	PO Value	DBE Subcontracted Amount	Non DBE Subcontracted Amount
4500032863	8/31/2020	Office Depot		G200-OFFICE SUPPLIES	11,661.67	-	-
4500032864	8/31/2020	Office Depot		G200-OFFICE SUPPLIES	5,008.22	-	-
4500032865	8/31/2020	Office Depot		G200-OFFICE SUPPLIES	658.69	-	-
4500032866	8/31/2020	Office Depot		G200-OFFICE SUPPLIES	894.25	-	-
4500032867	8/31/2020	Office Depot		G200-OFFICE SUPPLIES	970.00	-	-
4500032868	8/31/2020	Office Depot		G200-OFFICE SUPPLIES	2,758.40	-	-
4500032869	8/31/2020	Office Depot		G200-OFFICE SUPPLIES	12.93	-	-
4500032870	9/1/2020	Office Depot		G200-OFFICE SUPPLIES	18,384.00	-	-
4500032871	9/1/2020	Office Depot		G200-OFFICE SUPPLIES	3,898.88	-	-
4500032872	9/1/2020	Office Depot		G200-OFFICE SUPPLIES	74.81	-	-
4500032873	9/1/2020	Office Depot		G200-OFFICE SUPPLIES	47.33	-	-
4500032874	9/1/2020	Office Depot		G200-OFFICE SUPPLIES	50,133.38	-	-
4500032875	9/1/2020	Office Depot		G200-OFFICE SUPPLIES	2,777.93	-	-
4500032876	9/1/2020	Office Depot		G200-OFFICE SUPPLIES	4,190.51	-	-
4500032877	9/3/2020	Office Depot		G200-OFFICE SUPPLIES	6,989.91	-	-
4500032878	9/3/2020	Office Depot		G200-OFFICE SUPPLIES	817.83	-	-
4500032879	9/3/2020	Office Depot		G200-OFFICE SUPPLIES	964.00	-	-
4500032880	9/3/2020	W.W. Grainger Inc		G180-JANITORIAL SUPPLIES	3,913.50	-	-
4500032881	9/3/2020	Office Depot		G200-OFFICE SUPPLIES	75.39	-	-
4500032882	9/3/2020	Office Depot		G200-OFFICE SUPPLIES	8,538.55	-	-
4500032883	9/8/2020	Office Depot		G200-OFFICE SUPPLIES	101.38	-	-
4500032884	9/8/2020	Office Depot		G200-OFFICE SUPPLIES	2,139.26	-	-
4500032885	9/9/2020	Office Depot		G200-OFFICE SUPPLIES	247.47	-	-
4500032886	7/22/2020	JKL Cleaning Systems		P130-EQUIP MAINT REPR SVC	40.91	-	-
4500032887	7/22/2020	JKL Cleaning Systems		P130-EQUIP MAINT REPR SVC	1,290.96	-	-
4500032888	7/22/2020	JKL Cleaning Systems		P130-EQUIP MAINT REPR SVC	757.88	-	-
4500032889	7/22/2020	JKL Cleaning Systems		P130-EQUIP MAINT REPR SVC	68.18	-	-
4500032890	7/22/2020	JKL Cleaning Systems		P130-EQUIP MAINT REPR SVC	879.32	-	-
4500032891	7/22/2020	Charter Industrial Supply Inc	Small Business	G130-SHOP TOOLS	77.37	-	-
4500032892	7/22/2020	R.S. Hughes Co Inc		G190-SAFETY/MED SUPPLIES	74.81	-	-
4500032893	7/22/2020	Home Depot USA Inc		G140-SHOP SUPPLIES	259.46	-	-
4500032894	7/22/2020	Home Depot USA Inc		G140-SHOP SUPPLIES	170.44	-	-
4500032895	7/22/2020	Home Depot USA Inc		G140-SHOP SUPPLIES	134.57	-	-
4500032896	7/22/2020	Sid Tool Co		G180-JANITORIAL SUPPLIES	1,043.61	-	-
4500032897	7/22/2020	Waxie's Enterprises Inc.		G140-SHOP SUPPLIES	99.89	-	-
4500032898	7/22/2020	Kurt Morgan		G140-SHOP SUPPLIES	37.65	-	-
4500032899	7/22/2020	Siemens Mobility, Inc.		R230-RAIL/LRV MECHANICAL	392.76	-	-
4500032900	7/22/2020	ACM Artistic Neon	DBE	M180-STATION ELECTRICAL	191.28	-	-
4500032901	7/22/2020	Uline		M130-CROSSING MECHANISM	32.33	-	-
4500032902	7/22/2020	Uline		M130-CROSSING MECHANISM	1,128.79	-	-
4500032903	7/22/2020	The Gordian Group, Inc.		C130-CONSTRUCTION SVCS	77.58	-	-
4500032904	7/22/2020	Siemens Mobility, Inc.		R160-RAIL/LRV ELECTRICAL	66.33	-	-
4500032905	7/22/2020	Qualitrol Company LLC		M110-SUB STATION	20.33	-	-
4500032906	7/22/2020	Qualitrol Company LLC		M110-SUB STATION	294.51	-	-
4500032907	7/22/2020	Airgas Inc		G140-SHOP SUPPLIES	145.47	-	-
4500032908	7/22/2020	W.W. Grainger Inc		B250-BUS REPAIR PARTS	45.10	-	-
4500032909	7/22/2020	W.W. Grainger Inc		B250-BUS REPAIR PARTS	2,564.20	-	-

Purchase Orders							
PO Number	PO Date	Name	Prime Business Certification	Material Group	PO Value	DBE Subcontracted Amount	Non DBE Subcontracted Amount
4500032910	7/22/2020	Mohawk Mfg & Supply Co		B140-BUS CHASSIS	392.76	-	-
4500032911	7/22/2020	Mohawk Mfg & Supply Co		B140-BUS CHASSIS	14,977.25	-	-
4500032912	7/22/2020	Transit Holdings Inc		B140-BUS CHASSIS	23,562.77	-	-
4500032913	7/22/2020	Transit Holdings Inc		B140-BUS CHASSIS	6,197.08	-	-
4500032914	7/22/2020	Transit Holdings Inc		B140-BUS CHASSIS	2,722.53	-	-
4500032915	7/22/2020	Transit Holdings Inc		B140-BUS CHASSIS	690.23	-	-
4500032916	7/22/2020	Transit Holdings Inc		B140-BUS CHASSIS	600.38	-	-
4500032917	7/22/2020	Transit Holdings Inc		B140-BUS CHASSIS	641.31	-	-
4500032918	7/22/2020	Transit Holdings Inc		B140-BUS CHASSIS	19,731.18	-	-
4500032919	7/22/2020	Transit Holdings Inc		B140-BUS CHASSIS	1,102.73	-	-
4500032920	7/22/2020	Transit Holdings Inc		B140-BUS CHASSIS	253.64	-	-
4500032921	7/22/2020	Transit Holdings Inc		B140-BUS CHASSIS	153.01	-	-
4500032922	7/22/2020	Transit Holdings Inc		B140-BUS CHASSIS	249.11	-	-
4500032923	7/22/2020	Transit Holdings Inc		B140-BUS CHASSIS	224.92	-	-
4500032924	7/22/2020	Transit Holdings Inc		B140-BUS CHASSIS	1,346.88	-	-
4500032925	7/22/2020	Transit Holdings Inc		B140-BUS CHASSIS	1,616.05	-	-
4500032926	7/22/2020	Transit Holdings Inc		B140-BUS CHASSIS	5,729.07	-	-
4500032927	7/22/2020	Transit Holdings Inc		B140-BUS CHASSIS	729.04	-	-
4500032928	7/22/2020	Transit Holdings Inc		B140-BUS CHASSIS	1,588.45	-	-
4500032929	7/22/2020	Transit Holdings Inc		B140-BUS CHASSIS	161.63	-	-
4500032930	7/22/2020	Transit Holdings Inc		B140-BUS CHASSIS	3,689.04	-	-
4500032931	7/22/2020	Transit Holdings Inc		B140-BUS CHASSIS	114.75	-	-
4500032932	7/22/2020	Transit Holdings Inc		B120-BUS MECHANICAL PARTS	37.51	-	-
4500032933	7/22/2020	Transit Holdings Inc		B120-BUS MECHANICAL PARTS	3,316.33	-	-
4500032934	7/22/2020	Transit Holdings Inc		B120-BUS MECHANICAL PARTS	385.00	-	-
4500032935	7/22/2020	Transit Holdings Inc		B140-BUS CHASSIS	1,660.00	-	-
4500032936	7/22/2020	Transit Holdings Inc		B140-BUS CHASSIS	968.38	-	-
4500032937	7/22/2020	Transit Holdings Inc		B140-BUS CHASSIS	3,049.72	-	-
4500032938	7/22/2020	Transit Holdings Inc		B140-BUS CHASSIS	42.07	-	-
4500032939	7/22/2020	Transit Holdings Inc		B140-BUS CHASSIS	42.31	-	-
4500032940	7/22/2020	Transit Holdings Inc		B140-BUS CHASSIS	5,623.80	-	-
4500032941	7/22/2020	Transit Holdings Inc		B140-BUS CHASSIS	2,040.00	-	-
4500032942	7/22/2020	Transit Holdings Inc		B140-BUS CHASSIS	27.30	-	-
4500032943	7/22/2020	Transit Holdings Inc		B140-BUS CHASSIS	77.76	-	-
4500032944	7/22/2020	Transit Holdings Inc		B140-BUS CHASSIS	280.00	-	-
4500032945	7/22/2020	Transit Holdings Inc		B140-BUS CHASSIS	1,400.00	-	-
4500032946	7/22/2020	Transit Holdings Inc		B140-BUS CHASSIS	62.35	-	-
4500032947	7/22/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	442.49	-	-
4500032948	7/22/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	662.80	-	-
4500032949	7/22/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	260.93	-	-
4500032950	7/22/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	1,708.53	-	-
4500032951	7/22/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	1,200.00	-	-
4500032952	7/22/2020	Jeyco Products Inc		G160-PAINTS & CHEMICALS	1,551.12	-	-
4500032953	7/22/2020	Jeyco Products Inc		G160-PAINTS & CHEMICALS	30.64	-	-
4500032954	7/22/2020	Jeyco Products Inc		G160-PAINTS & CHEMICALS	3,913.50	-	-
4500032955	7/22/2020	Jeyco Products Inc		G160-PAINTS & CHEMICALS	41.42	-	-
4500032956	7/22/2020	Jeyco Products Inc		G160-PAINTS & CHEMICALS	416.45	-	-

Purchase Orders							
PO Number	PO Date	Name	Prime Business Certification	Material Group	PO Value	DBE Subcontracted Amount	Non DBE Subcontracted Amount
4500032957	7/22/2020	Jeyco Products Inc		G160-PAINTS & CHEMICALS	7,771.14	-	-
4500032958	7/22/2020	Gillig LLC		G140-SHOP SUPPLIES	817.09	-	-
4500032959	7/22/2020	Gillig LLC		G140-SHOP SUPPLIES	39.97	-	-
4500032960	7/22/2020	Gillig LLC		G140-SHOP SUPPLIES	15,971.00	-	-
4500032961	7/22/2020	Gillig LLC		G140-SHOP SUPPLIES	9,773.44	-	-
4500032962	7/22/2020	Gillig LLC		G140-SHOP SUPPLIES	3,499.00	-	-
4500032963	7/22/2020	Gillig LLC		G140-SHOP SUPPLIES	2,485.21	-	-
4500032964	7/22/2020	Gillig LLC		G140-SHOP SUPPLIES	1,808.59	-	-
4500032965	7/22/2020	Waxie's Enterprises Inc.		G140-SHOP SUPPLIES	435.84	-	-
4500032966	7/22/2020	Waxie's Enterprises Inc.		G140-SHOP SUPPLIES	3,734.22	-	-
4500032967	7/22/2020	Waxie's Enterprises Inc.		G140-SHOP SUPPLIES	1,986.85	-	-
4500032968	7/22/2020	Waxie's Enterprises Inc.		G140-SHOP SUPPLIES	43.68	-	-
4500032969	7/22/2020	Waxie's Enterprises Inc.		G140-SHOP SUPPLIES	1,829.92	-	-
4500032970	7/22/2020	Waxie's Enterprises Inc.		G140-SHOP SUPPLIES	214.89	-	-
4500032971	7/22/2020	W.W. Grainger Inc		G140-SHOP SUPPLIES	177.89	-	-
4500032972	7/22/2020	W.W. Grainger Inc		G140-SHOP SUPPLIES	96.09	-	-
4500032973	7/22/2020	W.W. Grainger Inc		G140-SHOP SUPPLIES	1,614.75	-	-
4500032974	7/22/2020	W.W. Grainger Inc		G140-SHOP SUPPLIES	200.84	-	-
4500032975	7/22/2020	R.S. Hughes Co Inc		G160-PAINTS & CHEMICALS	592.09	-	-
4500032976	7/22/2020	R.S. Hughes Co Inc		G160-PAINTS & CHEMICALS	1,596.18	-	-
4500032977	7/22/2020	R.S. Hughes Co Inc		G160-PAINTS & CHEMICALS	124.65	-	-
4500032978	7/22/2020	R.S. Hughes Co Inc		G160-PAINTS & CHEMICALS	132.59	-	-
4500032979	7/22/2020	R.S. Hughes Co Inc		G160-PAINTS & CHEMICALS	2,374.39	-	-
4500032980	7/22/2020	R.S. Hughes Co Inc		G160-PAINTS & CHEMICALS	297.61	-	-
4500032981	7/22/2020	R.S. Hughes Co Inc		G160-PAINTS & CHEMICALS	5,000.00	-	-
4500032982	7/22/2020	R.S. Hughes Co Inc		G160-PAINTS & CHEMICALS	37.90	-	-
4500032983	7/22/2020	Mohawk Mfg & Supply Co		B110-BUS HVAC SYSTEMS	333.87	-	-
4500032984	7/22/2020	Mohawk Mfg & Supply Co		B110-BUS HVAC SYSTEMS	1,113.93	-	-
4500032985	7/22/2020	Mohawk Mfg & Supply Co		B110-BUS HVAC SYSTEMS	407.04	-	-
4500032986	7/22/2020	Mohawk Mfg & Supply Co		B110-BUS HVAC SYSTEMS	710.80	-	-
4500032987	7/22/2020	Mohawk Mfg & Supply Co		B110-BUS HVAC SYSTEMS	398.86	-	-
4500032988	7/22/2020	Mohawk Mfg & Supply Co		B110-BUS HVAC SYSTEMS	9,728.79	-	-
4500032989	7/22/2020	Muncie Transit Supply		B130-BUS BODY	384.67	-	-
4500032990	7/22/2020	Muncie Transit Supply		B130-BUS BODY	309.00	-	-
4500032991	7/22/2020	Muncie Transit Supply		B130-BUS BODY	14,823.09	-	-
4500032992	7/22/2020	Truman Arnold Companies		A120-AUTO/TRUCK GASOLINE	205.35	-	-
4500032993	7/22/2020	San Diego Friction Products, Inc.		G140-SHOP SUPPLIES	3,473.79	-	-
4500032994	7/22/2020	San Diego Friction Products, Inc.		G140-SHOP SUPPLIES	274.14	-	-
4500032995	7/22/2020	Kaman Industrial Technologies		B120-BUS MECHANICAL PARTS	321.10	-	-
4500032996	7/22/2020	Kaman Industrial Technologies		B120-BUS MECHANICAL PARTS	2,653.91	-	-
4500032997	7/22/2020	TK Services Inc		B110-BUS HVAC SYSTEMS	506.81	-	-
4500032998	7/22/2020	Barry Sandler Enterprises		G180-JANITORIAL SUPPLIES	1,525.00	-	-
4500032999	7/22/2020	Barry Sandler Enterprises		G180-JANITORIAL SUPPLIES	428.07	-	-
4500033000	7/22/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	500.00	-	-
4500033001	7/22/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	2,247.24	-	-
4500033002	7/22/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	31,168.54	-	-
4500033003	7/22/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	185.87	-	-

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PO Number	PO Date	Name	Prime Business Certification	Material Group	PO Value	DBE Subcontracted Amount	Non DBE Subcontracted Amount
4500033004	7/22/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	3,139.90	-	-
4500033005	7/22/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	451.32	-	-
4500033006	7/22/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	112.11	-	-
4500033007	7/22/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	142.90	-	-
4500033008	7/22/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	43.10	-	-
4500033009	7/22/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	416.54	-	-
4500033010	7/22/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	1,787.74	-	-
4500033011	7/22/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	2,819.88	-	-
4500033012	7/22/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	1,317.24	-	-
4500033013	7/22/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	517.20	-	-
4500033014	7/22/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	288.68	-	-
4500033015	7/22/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	1,088.87	-	-
4500033016	7/22/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	41.05	-	-
4500033017	7/22/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	2,187.87	-	-
4500033018	7/22/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	5.23	-	-
4500033019	7/22/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	65.79	-	-
4500033020	7/22/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	592.62	-	-
4500033021	7/22/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	260.93	-	-
4500033022	7/22/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	445.44	-	-
4500033023	7/22/2020	Brown Marketing Strategies, Inc.	Small Business	P310-ADVERTISING SERVICES	546.64	-	-
4500033024	7/22/2020	Brown Marketing Strategies, Inc.	Small Business	P310-ADVERTISING SERVICES	57.73	-	-
4500033025	7/23/2020	Siemens Mobility, Inc.		R120-RAIL/LRV CAR BODY	234.26	-	-
4500033026	7/23/2020	Transit Holdings Inc		B140-BUS CHASSIS	110.55	-	-
4500033027	7/23/2020	Transit Holdings Inc		B140-BUS CHASSIS	463.87	-	-
4500033028	7/23/2020	Transit Holdings Inc		B140-BUS CHASSIS	2,451.35	-	-
4500033029	7/23/2020	Transit Holdings Inc		B130-BUS BODY	2,579.54	-	-
4500033030	7/23/2020	Transit Holdings Inc		B130-BUS BODY	897.80	-	-
4500033031	7/23/2020	Transit Holdings Inc		B130-BUS BODY	4,439.50	-	-
4500033032	7/23/2020	Transit Holdings Inc		B130-BUS BODY	1,383.39	-	-
4500033033	7/23/2020	Transit Holdings Inc		B130-BUS BODY	4,585.85	-	-
4500033034	7/23/2020	Transit Holdings Inc		B130-BUS BODY	267.36	-	-
4500033035	7/23/2020	Transit Holdings Inc		B130-BUS BODY	124.99	-	-
4500033036	7/23/2020	Transit Holdings Inc		B130-BUS BODY	1,274.73	-	-
4500033038	7/23/2020	Transit Holdings Inc		B130-BUS BODY	8,384.40	-	-
4500033039	7/23/2020	Transit Holdings Inc		B130-BUS BODY	2,071.44	-	-
4500033040	7/23/2020	Transit Holdings Inc		B130-BUS BODY	43.92	-	-
4500033041	7/23/2020	Duncan Bolt Company	Small Business	G140-SHOP SUPPLIES	392.60	-	-
4500033042	7/23/2020	Transit Holdings Inc		B140-BUS CHASSIS	60.30	-	-
4500033043	7/23/2020	Transit Holdings Inc		B140-BUS CHASSIS	15.06	-	-
4500033044	7/23/2020	Transit Holdings Inc		B140-BUS CHASSIS	189.91	-	-
4500033045	7/23/2020	Transit Holdings Inc		B140-BUS CHASSIS	364.54	-	-
4500033046	7/23/2020	Transit Holdings Inc		B140-BUS CHASSIS	5,890.70	-	-
4500033047	7/23/2020	Kaman Industrial Technologies		G140-SHOP SUPPLIES	406.92	-	-
4500033048	7/23/2020	Kaman Industrial Technologies		G140-SHOP SUPPLIES	511.44	-	-
4500033051	7/23/2020	Genuine Parts Co		B250-BUS REPAIR PARTS	105.46	-	-
4500033052	7/23/2020	Genuine Parts Co		B250-BUS REPAIR PARTS	104.93	-	-
4500033054	7/23/2020	Steven Timme		G230-PRINTED MATERIALS	3,086.17	-	-

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4500033055	7/23/2020	Kurt Morgan		G200-OFFICE SUPPLIES	484.88	-	-
4500033056	7/23/2020	Kurt Morgan		G200-OFFICE SUPPLIES	14,801.60	-	-
4500033057	7/23/2020	Kurt Morgan		G200-OFFICE SUPPLIES	121.33	-	-
4500033058	7/23/2020	Kurt Morgan		G200-OFFICE SUPPLIES	20,170.80	-	-
4500033059	7/23/2020	Kurt Morgan		G200-OFFICE SUPPLIES	537.71	-	-
4500033060	7/23/2020	Kurt Morgan		G200-OFFICE SUPPLIES	742.51	-	-
4500033061	7/23/2020	Home Depot USA Inc		G140-SHOP SUPPLIES	1,466.42	-	-
4500033062	7/23/2020	Westair Gases & Equipment Inc	Small Business	G190-SAFETY/MED SUPPLIES	908.34	-	-
4500033063	7/23/2020	Statewide Traffic Safety & Signs		G140-SHOP SUPPLIES	483.70	-	-
4500033064	7/23/2020	Praxair Distribution Inc.		G140-SHOP SUPPLIES	909.62	-	-
4500033065	7/23/2020	Praxair Distribution Inc.		G140-SHOP SUPPLIES	118.95	-	-
4500033066	7/23/2020	Praxair Distribution Inc.		G140-SHOP SUPPLIES	747.87	-	-
4500033067	7/23/2020	Praxair Distribution Inc.		G140-SHOP SUPPLIES	1,916.22	-	-
4500033068	7/23/2020	Praxair Distribution Inc.		G140-SHOP SUPPLIES	581.31	-	-
4500033069	7/23/2020	Praxair Distribution Inc.		G140-SHOP SUPPLIES	1,460.07	-	-
4500033070	7/23/2020	Praxair Distribution Inc.		G140-SHOP SUPPLIES	3,879.00	-	-
4500033071	7/23/2020	Praxair Distribution Inc.		G140-SHOP SUPPLIES	2,614.75	-	-
4500033072	7/23/2020	Praxair Distribution Inc.		G140-SHOP SUPPLIES	944.80	-	-
4500033073	7/23/2020	Praxair Distribution Inc.		G140-SHOP SUPPLIES	1,018.24	-	-
4500033074	7/23/2020	Praxair Distribution Inc.		G140-SHOP SUPPLIES	1,487.76	-	-
4500033075	7/23/2020	Tribologik Corporation		G140-SHOP SUPPLIES	690.27	-	-
4500033076	7/23/2020	Tribologik Corporation		G140-SHOP SUPPLIES	17.74	-	-
4500033077	7/23/2020	Romaine Electric Corporation	Small Business	B160-BUS ELECTRICAL	153.43	-	-
4500033078	7/23/2020	Gillig LLC		B130-BUS BODY	21.67	-	-
4500033079	7/23/2020	Gillig LLC		B130-BUS BODY	123.44	-	-
4500033080	7/23/2020	Vern Rose Inc		G160-PAINTS & CHEMICALS	25.50	-	-
4500033081	7/23/2020	Neopart Transit LLC		B200-BUS PWR TRAIN EQUIP	270.00	-	-
4500033082	7/23/2020	Harbor Diesel & Equipment		G170-LUBRICANTS	1,175.68	-	-
4500033083	7/23/2020	Harbor Diesel & Equipment		G170-LUBRICANTS	1,682.99	-	-
4500033084	7/23/2020	Wayne Harmeier Inc		B160-BUS ELECTRICAL	1,022.90	-	-
4500033085	7/23/2020	R.S. Hughes Co Inc		G190-SAFETY/MED SUPPLIES	205.81	-	-
4500033086	7/23/2020	R.S. Hughes Co Inc		G190-SAFETY/MED SUPPLIES	5,162.00	-	-
4500033087	7/23/2020	Transit Holdings Inc		B250-BUS REPAIR PARTS	92.84	-	-
4500033088	7/23/2020	Transit Holdings Inc		B250-BUS REPAIR PARTS	31.38	-	-
4500033089	7/23/2020	Transit Holdings Inc		B250-BUS REPAIR PARTS	29.04	-	-
4500033090	7/23/2020	Transit Holdings Inc		B250-BUS REPAIR PARTS	103.48	-	-
4500033091	7/23/2020	United Laboratories Inc		G180-JANITORIAL SUPPLIES	288.50	-	-
4500033092	7/23/2020	United Laboratories Inc		G180-JANITORIAL SUPPLIES	603.72	-	-
4500033093	7/23/2020	W.W. Grainger Inc		G160-PAINTS & CHEMICALS	688.43	-	-
4500033094	7/23/2020	W.W. Grainger Inc		G160-PAINTS & CHEMICALS	28,022.27	-	-
4500033095	7/23/2020	W.W. Grainger Inc		G160-PAINTS & CHEMICALS	11,307.07	-	-
4500033096	7/23/2020	Cubic Transportation Systems		B190-BUS FARE EQUIP	208.45	-	-
4500033097	7/23/2020	Acuity Specialty Products Inc		G180-JANITORIAL SUPPLIES	1,191.18	-	-
4500033098	7/23/2020	Acuity Specialty Products Inc		G180-JANITORIAL SUPPLIES	4,453.23	-	-
4500033099	7/23/2020	Wayne Harmeier Inc		B160-BUS ELECTRICAL	860.17	-	-
4500033100	7/23/2020	Freeby Signs		B130-BUS BODY	708.82	-	-
4500033101	7/23/2020	W.W. Grainger Inc		G140-SHOP SUPPLIES	133.69	-	-

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4500033102	7/23/2020	W.W. Grainger Inc		G140-SHOP SUPPLIES	56.98	-	-
4500033103	7/23/2020	W.W. Grainger Inc		G140-SHOP SUPPLIES	301.70	-	-
4500033104	7/23/2020	MS Electrical Distribution Inc		M180-STATION ELECTRICAL	7,488.63	-	-
4500033105	7/23/2020	JKL Cleaning Systems		G180-JANITORIAL SUPPLIES	29.30	-	-
4500033106	7/23/2020	Team One Repair Inc		G290-FARE REVENUE EQUIP	1,873.49	-	-
4500033107	7/23/2020	Willy's Electronic Supply Co	Small Business	R150-RAIL/LRV COMM EQUIP	270.00	-	-
4500033108	7/23/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	2,846.22	-	-
4500033109	7/23/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	142.77	-	-
4500033110	7/23/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	4,902.69	-	-
4500033111	7/23/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	53.16	-	-
4500033112	7/23/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	69.17	-	-
4500033113	7/23/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	56.57	-	-
4500033114	7/23/2020	Professional Contractors Supplies		G180-JANITORIAL SUPPLIES	849.76	-	-
4500033115	7/23/2020	Professional Contractors Supplies		G180-JANITORIAL SUPPLIES	589.28	-	-
4500033116	7/23/2020	Professional Contractors Supplies		G180-JANITORIAL SUPPLIES	93.12	-	-
4500033117	7/23/2020	Professional Contractors Supplies		G180-JANITORIAL SUPPLIES	279.29	-	-
4500033118	7/23/2020	Data Alliance Inc		R150-RAIL/LRV COMM EQUIP	168.45	-	-
4500033119	7/23/2020	Reliable Pipe Supply Co Inc	Small Business	M130-CROSSING MECHANISM	14,662.62	-	-
4500033120	7/23/2020	Reliable Pipe Supply Co Inc	Small Business	M130-CROSSING MECHANISM	234.47	-	-
4500033121	7/23/2020	M Power Truck & Diesel Repair		P210-NON-REV VEH REPAIRS	305.82	-	-
4500033122	7/23/2020	M Power Truck & Diesel Repair		P210-NON-REV VEH REPAIRS	257.69	-	-
4500033123	7/23/2020	Kiel NA LLC		B250-BUS REPAIR PARTS	224.98	-	-
4500033124	7/23/2020	Kiel NA LLC		B250-BUS REPAIR PARTS	906.73	-	-
4500033125	7/23/2020	Kiel NA LLC		B250-BUS REPAIR PARTS	2,536.44	-	-
4500033126	7/23/2020	Kiel NA LLC		B250-BUS REPAIR PARTS	108.84	-	-
4500033127	7/23/2020	Kiel NA LLC		B250-BUS REPAIR PARTS	117.73	-	-
4500033128	7/23/2020	W.W. Grainger Inc		B250-BUS REPAIR PARTS	729.04	-	-
4500033129	7/23/2020	Gillig LLC		B250-BUS REPAIR PARTS	234.70	-	-
4500033130	7/23/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	2,251.97	-	-
4500033131	7/23/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	3,879.00	-	-
4500033132	7/23/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	7,633.01	-	-
4500033133	7/23/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	9.13	-	-
4500033134	7/23/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	1,325.45	-	-
4500033135	7/23/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	404.52	-	-
4500033136	7/23/2020	Gillig LLC		B250-BUS REPAIR PARTS	348.35	-	-
4500033137	7/23/2020	Airgas Inc		G140-SHOP SUPPLIES	1,872.70	-	-
4500033138	7/23/2020	Airgas Inc		G140-SHOP SUPPLIES	791.99	-	-
4500033139	7/23/2020	SC Commercial, LLC		A120-AUTO/TRUCK GASOLINE	119.44	-	-
4500033140	7/23/2020	Fastenal Company		G140-SHOP SUPPLIES	1,025.56	-	-
4500033141	7/23/2020	Fastenal Company		G140-SHOP SUPPLIES	4,938.75	-	-
4500033142	7/23/2020	Fastenal Company		G140-SHOP SUPPLIES	695.74	-	-
4500033143	7/23/2020	OneSource Distributors, LLC		G180-JANITORIAL SUPPLIES	283.60	-	-
4500033144	7/24/2020	Siemens Mobility, Inc.		R220-RAIL/LRV TRUCKS	47.48	-	-
4500033145	7/24/2020	Knorr Brake Holding Corporation		R220-RAIL/LRV TRUCKS	3,377.97	-	-
4500033146	7/24/2020	Knorr Brake Holding Corporation		R220-RAIL/LRV TRUCKS	528.00	-	-
4500033147	7/24/2020	Knorr Brake Holding Corporation		R220-RAIL/LRV TRUCKS	3,225.74	-	-
4500033148	7/24/2020	Knorr Brake Holding Corporation		R220-RAIL/LRV TRUCKS	425.12	-	-

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4500033149	7/24/2020	Knorr Brake Holding Corporation		R220-RAIL/LRV TRUCKS	34.40	-	-
4500033150	7/24/2020	Knorr Brake Holding Corporation		R220-RAIL/LRV TRUCKS	6,390.66	-	-
4500033151	7/24/2020	Knorr Brake Holding Corporation		R220-RAIL/LRV TRUCKS	2,944.18	-	-
4500033152	7/24/2020	Western-Cullen-Hayes Inc		M130-CROSSING MECHANISM	52,992.12	-	-
4500033153	7/24/2020	Airgas Inc		G190-SAFETY/MED SUPPLIES	457.94	-	-
4500033154	7/24/2020	Airgas Inc		G190-SAFETY/MED SUPPLIES	4,445.67	-	-
4500033155	7/24/2020	Airgas Inc		G190-SAFETY/MED SUPPLIES	198.42	-	-
4500033156	7/24/2020	Airgas Inc		G190-SAFETY/MED SUPPLIES	197.57	-	-
4500033157	7/24/2020	Fastenal Company		G140-SHOP SUPPLIES	64,546.64	-	-
4500033158	7/24/2020	Fastenal Company		G140-SHOP SUPPLIES	1,700.00	-	-
4500033159	7/24/2020	Eran Hason		C110-GENERAL CONTRACTORS	1,250.94	-	-
4500033160	7/24/2020	Eran Hason		C110-GENERAL CONTRACTORS	883.15	-	-
4500033161	7/24/2020	Westair Gases & Equipment Inc	Small Business	G190-SAFETY/MED SUPPLIES	1,192.28	-	-
4500033162	7/24/2020	Harbor Diesel & Equipment		B200-BUS PWR TRAIN EQUIP	2,283.64	-	-
4500033163	7/24/2020	SMC Electrical Products Inc		M110-SUB STATION	111.58	-	-
4500033164	7/24/2020	Sherwin Williams Company		B130-BUS BODY	2,091.56	-	-
4500033165	7/24/2020	Madden Construction Inc		P280-GENERAL SVC AGRMNTS	82.51	-	-
4500033166	7/24/2020	Madden Construction Inc		P280-GENERAL SVC AGRMNTS	61.38	-	-
4500033167	7/24/2020	Madden Construction Inc		P280-GENERAL SVC AGRMNTS	109.97	-	-
4500033168	7/24/2020	Madden Construction Inc		P280-GENERAL SVC AGRMNTS	222.15	-	-
4500033169	7/24/2020	Vehicle Training Consultants		G190-SAFETY/MED SUPPLIES	77.15	-	-
4500033170	7/24/2020	Vehicle Training Consultants		G190-SAFETY/MED SUPPLIES	469.14	-	-
4500033171	7/24/2020	Jeyco Products Inc		G200-OFFICE SUPPLIES	149.60	-	-
4500033172	7/24/2020	CSAC Excess Insurance		P370-RISK MANAGEMENT	82.71	-	-
4500033173	7/24/2020	CDW LLC		I110-INFORMATION TECH	659.49	-	-
4500033174	7/24/2020	CDW LLC		I110-INFORMATION TECH	50.13	-	-
4500033175	7/24/2020	CDW LLC		I110-INFORMATION TECH	1,433.08	-	-
4500033176	7/24/2020	CDW LLC		I110-INFORMATION TECH	53.88	-	-
4500033177	7/24/2020	Airgas Inc		G140-SHOP SUPPLIES	802.00	-	-
4500033178	7/24/2020	Airgas Inc		G140-SHOP SUPPLIES	37.49	-	-
4500033179	7/24/2020	Kiel NA LLC		B250-BUS REPAIR PARTS	1,364.55	-	-
4500033180	7/24/2020	Kiel NA LLC		B250-BUS REPAIR PARTS	110.55	-	-
4500033181	7/24/2020	KGI Wireless, Inc.		P180-LEASES, OTHER	364.20	-	-
4500033182	7/24/2020	KGI Wireless, Inc.		P180-LEASES, OTHER	302.95	-	-
4500033183	7/24/2020	KGI Wireless, Inc.		P180-LEASES, OTHER	495.65	-	-
4500033184	7/24/2020	KGI Wireless, Inc.		P180-LEASES, OTHER	1,275.76	-	-
4500033185	7/24/2020	KGI Wireless, Inc.		P180-LEASES, OTHER	103.25	-	-
4500033186	7/24/2020	KGI Wireless, Inc.		P180-LEASES, OTHER	10,737.00	-	-
4500033187	7/24/2020	KGI Wireless, Inc.		P180-LEASES, OTHER	67,725.00	-	-
4500033188	7/24/2020	KGI Wireless, Inc.		P180-LEASES, OTHER	1,522.50	-	-
4500033189	7/24/2020	KGI Wireless, Inc.		P180-LEASES, OTHER	4,666.62	-	-
4500033190	7/24/2020	KGI Wireless, Inc.		P180-LEASES, OTHER	46,310.00	-	-
4500033191	7/27/2020	Transit Holdings Inc		B140-BUS CHASSIS	1,750.00	-	-
4500033192	7/27/2020	Transit Holdings Inc		B140-BUS CHASSIS	49.52	-	-
4500033193	7/27/2020	Transit Holdings Inc		B140-BUS CHASSIS	60.44	-	-
4500033194	7/27/2020	Transit Holdings Inc		B140-BUS CHASSIS	289.92	-	-
4500033195	7/27/2020	Transit Holdings Inc		B140-BUS CHASSIS	62.77	-	-

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4500033196	7/27/2020	Transit Holdings Inc		B140-BUS CHASSIS	3,089.95	-	-
4500033197	7/27/2020	Transit Holdings Inc		B140-BUS CHASSIS	1,283.41	-	-
4500033198	7/27/2020	Transit Holdings Inc		B140-BUS CHASSIS	8,353.60	-	-
4500033199	7/27/2020	Transit Holdings Inc		B140-BUS CHASSIS	2,194.74	-	-
4500033200	7/27/2020	Transit Holdings Inc		B140-BUS CHASSIS	193.93	-	-
4500033201	7/27/2020	Transit Holdings Inc		B140-BUS CHASSIS	173.80	-	-
4500033202	7/27/2020	Transit Holdings Inc		B140-BUS CHASSIS	33.97	-	-
4500033203	7/27/2020	Transit Holdings Inc		B140-BUS CHASSIS	46.13	-	-
4500033204	7/27/2020	Transit Holdings Inc		B140-BUS CHASSIS	54.23	-	-
4500033205	7/27/2020	Transit Holdings Inc		B140-BUS CHASSIS	173.28	-	-
4500033206	7/27/2020	Transit Holdings Inc		B140-BUS CHASSIS	9,156.12	-	-
4500033207	7/27/2020	Transit Holdings Inc		B140-BUS CHASSIS	928.89	-	-
4500033208	7/27/2020	Transit Holdings Inc		B140-BUS CHASSIS	22.90	-	-
4500033209	7/27/2020	Transit Holdings Inc		B140-BUS CHASSIS	1,057.83	-	-
4500033210	7/27/2020	Transit Holdings Inc		B140-BUS CHASSIS	969.75	-	-
4500033211	7/27/2020	Transit Holdings Inc		B140-BUS CHASSIS	67.29	-	-
4500033212	7/27/2020	Transit Holdings Inc		B140-BUS CHASSIS	2,670.63	-	-
4500033213	7/27/2020	Annex Automotive and		F120-BUS/LRV PAINT BOOTHS	40.86	-	-
4500033214	7/27/2020	Annex Automotive and		F120-BUS/LRV PAINT BOOTHS	258.40	-	-
4500033215	7/27/2020	SC Commercial, LLC		G170-LUBRICANTS	5,754.89	-	-
4500033216	7/27/2020	Madden Construction Inc		P280-GENERAL SVC AGRMNTS	414.00	-	-
4500033217	7/27/2020	Madden Construction Inc		P280-GENERAL SVC AGRMNTS	4,115.63	-	-
4500033218	7/27/2020	Madden Construction Inc		P280-GENERAL SVC AGRMNTS	4,666.62	-	-
4500033219	7/27/2020	Madden Construction Inc		P280-GENERAL SVC AGRMNTS	3,228.75	-	-
4500033220	7/27/2020	Transit Products and Services		B130-BUS BODY	1,235.62	-	-
4500033221	7/27/2020	Transit Products and Services		B130-BUS BODY	1,098.92	-	-
4500033222	7/27/2020	Jeyco Products Inc		G150-FASTENERS	646.18	-	-
4500033223	7/27/2020	Jeyco Products Inc		G150-FASTENERS	98.03	-	-
4500033224	7/27/2020	Jeyco Products Inc		G150-FASTENERS	1,010.83	-	-
4500033225	7/27/2020	Jeyco Products Inc		G150-FASTENERS	69.34	-	-
4500033226	7/27/2020	Jeyco Products Inc		G150-FASTENERS	91.85	-	-
4500033227	7/27/2020	Jeyco Products Inc		G150-FASTENERS	86.17	-	-
4500033228	7/27/2020	Supreme Oil Company		A120-AUTO/TRUCK GASOLINE	71.96	-	-
4500033229	7/27/2020	Supreme Oil Company		A120-AUTO/TRUCK GASOLINE	12,338.96	10,454.80	-
4500033230	7/27/2020	Supreme Oil Company		A120-AUTO/TRUCK GASOLINE	177.08	-	-
4500033231	7/27/2020	Supreme Oil Company		A120-AUTO/TRUCK GASOLINE	2,825.68	-	-
4500033232	7/27/2020	Supreme Oil Company		A120-AUTO/TRUCK GASOLINE	1,606.50	-	-
4500033233	7/27/2020	R.S. Hughes Co Inc		G160-PAINTS & CHEMICALS	3,316.00	-	-
4500033234	7/27/2020	R.S. Hughes Co Inc		G160-PAINTS & CHEMICALS	98.56	-	-
4500033235	7/27/2020	R.S. Hughes Co Inc		G160-PAINTS & CHEMICALS	2,085.19	-	-
4500033236	7/27/2020	SC Commercial, LLC		A120-AUTO/TRUCK GASOLINE	849.49	-	-
4500033237	7/27/2020	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	2,004.00	-	-
4500033238	7/27/2020	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	27.99	-	-
4500033239	7/27/2020	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	48.38	-	-
4500033240	7/27/2020	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	659.49	-	-
4500033241	7/27/2020	Kaman Industrial Technologies		G140-SHOP SUPPLIES	249.57	-	-
4500033242	7/27/2020	Kaman Industrial Technologies		G140-SHOP SUPPLIES	31,707.41	-	-

Purchase Orders							
PO Number	PO Date	Name	Prime Business Certification	Material Group	PO Value	DBE Subcontracted Amount	Non DBE Subcontracted Amount
4500033243	7/27/2020	Gillig LLC		B130-BUS BODY	6,465.00	-	-
4500033244	7/27/2020	Gillig LLC		B130-BUS BODY	560.51	-	-
4500033245	7/27/2020	Gillig LLC		B130-BUS BODY	2,450.29	-	-
4500033246	7/27/2020	Gillig LLC		B130-BUS BODY	1,486.05	-	-
4500033247	7/27/2020	Gillig LLC		B130-BUS BODY	61.91	-	-
4500033248	7/27/2020	W.W. Grainger Inc		G140-SHOP SUPPLIES	13,120.18	-	-
4500033249	7/27/2020	W.W. Grainger Inc		G140-SHOP SUPPLIES	1,075.24	-	-
4500033250	7/27/2020	W.W. Grainger Inc		G140-SHOP SUPPLIES	152.34	-	-
4500033251	7/27/2020	W.W. Grainger Inc		G140-SHOP SUPPLIES	3,305.11	-	-
4500033252	7/27/2020	W.W. Grainger Inc		G140-SHOP SUPPLIES	1,470.75	-	-
4500033253	7/27/2020	Muncie Transit Supply		B200-BUS PWR TRAIN EQUIP	8,172.00	-	-
4500033254	7/27/2020	Neopart Transit LLC		B160-BUS ELECTRICAL	903.60	-	-
4500033255	7/27/2020	Neopart Transit LLC		B160-BUS ELECTRICAL	2,003.58	-	-
4500033256	7/27/2020	Waxie's Enterprises Inc.		G140-SHOP SUPPLIES	20,314.49	-	-
4500033257	7/27/2020	Charter Industrial Supply Inc	Small Business	B120-BUS MECHANICAL PARTS	215.93	-	-
4500033258	7/27/2020	Charter Industrial Supply Inc	Small Business	B120-BUS MECHANICAL PARTS	550.22	-	-
4500033259	7/27/2020	Charter Industrial Supply Inc	Small Business	B120-BUS MECHANICAL PARTS	135.44	-	-
4500033260	7/27/2020	Staples Contract & Commercial Inc		G200-OFFICE SUPPLIES	1,097.07	-	-
4500033261	7/27/2020	Staples Contract & Commercial Inc		G200-OFFICE SUPPLIES	331.69	-	-
4500033262	7/27/2020	Staples Contract & Commercial Inc		G200-OFFICE SUPPLIES	43.37	-	-
4500033263	7/27/2020	Staples Contract & Commercial Inc		G200-OFFICE SUPPLIES	625.35	-	-
4500033264	7/27/2020	Staples Contract & Commercial Inc		G200-OFFICE SUPPLIES	1,152.92	-	-
4500033265	7/27/2020	Mohawk Mfg & Supply Co		B120-BUS MECHANICAL PARTS	28.80	-	-
4500033266	7/27/2020	Mohawk Mfg & Supply Co		B120-BUS MECHANICAL PARTS	3,500.00	-	-
4500033267	7/27/2020	Mohawk Mfg & Supply Co		B120-BUS MECHANICAL PARTS	191.26	-	-
4500033268	7/27/2020	Mohawk Mfg & Supply Co		B120-BUS MECHANICAL PARTS	1,012.86	-	-
4500033269	7/27/2020	Genuine Parts Co		A140-AUTO/TRUCK REPAIR	781.08	-	-
4500033270	7/27/2020	Genuine Parts Co		A140-AUTO/TRUCK REPAIR	60.30	-	-
4500033271	7/27/2020	Prochem Specialty Products Inc	Small Business	G180-JANITORIAL SUPPLIES	571.08	-	-
4500033272	7/27/2020	Prochem Specialty Products Inc	Small Business	G180-JANITORIAL SUPPLIES	284.21	-	-
4500033273	7/27/2020	Transit Holdings Inc		B250-BUS REPAIR PARTS	5,761.88	-	-
4500033274	7/27/2020	Transit Holdings Inc		B250-BUS REPAIR PARTS	624.00	-	-
4500033275	7/27/2020	W.W. Grainger Inc		G140-SHOP SUPPLIES	152.40	-	-
4500033276	7/27/2020	Northwest Pump & Equipment Co		G130-SHOP TOOLS	365.81	-	-
4500033277	7/27/2020	Northwest Pump & Equipment Co		G130-SHOP TOOLS	1,980.00	-	-
4500033278	7/27/2020	Sherwin Williams Company		F120-BUS/LRV PAINT BOOTHS	1,708.05	-	-
4500033279	7/27/2020	Wesco Distribution Inc		G270-ELECTRICAL/LIGHTING	107.32	-	-
4500033280	7/27/2020	Mission Janitorial Supplies		G180-JANITORIAL SUPPLIES	9,904.38	-	-
4500033281	7/27/2020	Mission Janitorial Supplies		G180-JANITORIAL SUPPLIES	1,092.59	-	-
4500033282	7/27/2020	Sportworks Northwest Inc		B130-BUS BODY	56.58	-	-
4500033283	7/27/2020	Vern Rose Inc		G160-PAINTS & CHEMICALS	398.36	-	-
4500033284	7/27/2020	Mohawk Mfg & Supply Co		B120-BUS MECHANICAL PARTS	82.38	-	-
4500033285	7/27/2020	Bonsall Petroleum Construction Inc		F110-SHOP/BLDG MACHINERY	22.63	-	-
4500033286	7/27/2020	Bonsall Petroleum Construction Inc		F110-SHOP/BLDG MACHINERY	5,770.15	-	-
4500033287	7/27/2020	Bonsall Petroleum Construction Inc		F110-SHOP/BLDG MACHINERY	6,078.18	-	-
4500033288	7/27/2020	Bonsall Petroleum Construction Inc		F110-SHOP/BLDG MACHINERY	21.60	-	-
4500033289	7/27/2020	Bonsall Petroleum Construction Inc		F110-SHOP/BLDG MACHINERY	706.55	-	-

Purchase Orders							
PO Number	PO Date	Name	Prime Business Certification	Material Group	PO Value	DBE Subcontracted Amount	Non DBE Subcontracted Amount
4500033290	7/27/2020	JKL Cleaning Systems		F110-SHOP/BLDG MACHINERY	0.58	-	-
4500033291	7/27/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	1,275.76	-	-
4500033292	7/27/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	103.70	-	-
4500033293	7/27/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	2,948.69	-	-
4500033294	7/27/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	11,326.63	-	-
4500033295	7/27/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	172.38	-	-
4500033296	7/27/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	67.95	-	-
4500033297	7/27/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	112.89	-	-
4500033298	7/27/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	53,585.29	-	-
4500033299	7/27/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	35,862.35	-	-
4500033300	7/27/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	4,938.75	-	-
4500033301	7/27/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	2,011.57	-	-
4500033302	7/27/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	29.99	-	-
4500033303	7/27/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	243.84	-	-
4500033304	7/27/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	186.26	-	-
4500033305	7/27/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	72.85	-	-
4500033306	7/27/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	34,730.56	-	-
4500033307	7/27/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	77.58	-	-
4500033308	7/27/2020	Northwest Pump & Equipment Co		G130-SHOP TOOLS	268.51	-	-
4500033309	7/27/2020	Northwest Pump & Equipment Co		G130-SHOP TOOLS	72.12	-	-
4500033310	7/27/2020	Schunk Carbon Technology LLC		R190-RAIL/LRV PANTOGRAPH	2,522.78	-	-
4500033311	7/27/2020	Siemens Mobility, Inc.		R160-RAIL/LRV ELECTRICAL	1,561.95	-	-
4500033312	7/27/2020	Clear Sign & Design Inc	Small Business	G230-PRINTED MATERIALS	115.77	-	-
4500033313	7/27/2020	Clear Sign & Design Inc	Small Business	G230-PRINTED MATERIALS	388.04	-	-
4500033314	7/27/2020	Clear Sign & Design Inc	Small Business	G230-PRINTED MATERIALS	463.78	-	-
4500033315	7/28/2020	Sloan Electromechanical		R170-RAIL/LRV HVAC	19,350.32	-	-
4500033316	7/28/2020	Sloan Electromechanical		R170-RAIL/LRV HVAC	3,679.62	-	-
4500033317	7/28/2020	Hani Toma		P130-EQUIP MAINT REPR SVC	547.99	-	-
4500033318	7/28/2020	Hani Toma		P130-EQUIP MAINT REPR SVC	1,060.75	-	-
4500033319	7/28/2020	JKL Cleaning Systems		P130-EQUIP MAINT REPR SVC	1,326.41	-	-
4500033320	7/28/2020	JKL Cleaning Systems		P130-EQUIP MAINT REPR SVC	26.33	-	-
4500033321	7/28/2020	JKL Cleaning Systems		P130-EQUIP MAINT REPR SVC	2,088.39	-	-
4500033322	7/28/2020	Graybar Electric Co Inc		M110-SUB STATION	2,214.73	-	-
4500033323	7/28/2020	Graybar Electric Co Inc		M110-SUB STATION	1,046.64	-	-
4500033324	7/28/2020	Graybar Electric Co Inc		M110-SUB STATION	2,430.57	-	-
4500033325	7/28/2020	Graybar Electric Co Inc		M110-SUB STATION	39.15	-	-
4500033326	7/28/2020	Siemens Mobility, Inc.		R160-RAIL/LRV ELECTRICAL	16.91	-	-
4500033327	7/28/2020	Home Depot USA Inc		F180-BUILDING MATERIALS	66.00	-	-
4500033328	7/28/2020	Home Depot USA Inc		F180-BUILDING MATERIALS	285.53	-	-
4500033329	7/28/2020	Home Depot USA Inc		F180-BUILDING MATERIALS	882.70	-	-
4500033330	7/28/2020	Home Depot USA Inc		F180-BUILDING MATERIALS	17.22	-	-
4500033331	7/28/2020	Home Depot USA Inc		F180-BUILDING MATERIALS	221.31	-	-
4500033332	7/28/2020	Home Depot USA Inc		F180-BUILDING MATERIALS	2,559.07	-	-
4500033333	7/28/2020	Professional Contractors Supplies		G140-SHOP SUPPLIES	18,567.48	-	-
4500033334	7/28/2020	Professional Contractors Supplies		G140-SHOP SUPPLIES	11,918.23	-	-
4500033335	7/28/2020	Professional Contractors Supplies		G140-SHOP SUPPLIES	1,663.72	-	-
4500033336	7/28/2020	Airgas Inc		G190-SAFETY/MED SUPPLIES	116.50	-	-

Purchase Orders							
PO Number	PO Date	Name	Prime Business Certification	Material Group	PO Value	DBE Subcontracted Amount	Non DBE Subcontracted Amount
4500033337	7/28/2020	Mcmaster-Carr Supply Co		R220-RAIL/LRV TRUCKS	7,742.25	-	-
4500033338	7/28/2020	W.W. Grainger Inc		G120-SECURITY	3,111.29	-	-
4500033339	7/28/2020	W.W. Grainger Inc		G120-SECURITY	78.45	-	-
4500033340	7/28/2020	Citywide Auto Glass Inc		R120-RAIL/LRV CAR BODY	6,532.84	-	-
4500033341	7/28/2020	Cembre Inc		M140-WAYSIDE SIGNALS	246.14	-	-
4500033342	7/28/2020	Cembre Inc		M140-WAYSIDE SIGNALS	2,742.28	-	-
4500033343	7/28/2020	Waxie's Enterprises Inc.		G180-JANITORIAL SUPPLIES	4,514.09	-	-
4500033344	7/28/2020	EAO Switch Corporation		R160-RAIL/LRV ELECTRICAL	2,305.90	-	-
4500033345	7/28/2020	Team One Repair Inc		G280-FARE MATERIALS	333.38	-	-
4500033346	7/28/2020	Allied Refrigeration Inc		R170-RAIL/LRV HVAC	84,691.50	-	-
4500033347	7/28/2020	Siemens Mobility, Inc.		R120-RAIL/LRV CAR BODY	1,316.10	-	-
4500033348	7/28/2020	Transit Holdings Inc		B130-BUS BODY	1,671.21	-	-
4500033349	7/28/2020	Transit Holdings Inc		B160-BUS ELECTRICAL	109.26	-	-
4500033350	7/28/2020	SC Commercial, LLC		G170-LUBRICANTS	80.48	-	-
4500033351	7/28/2020	South County Economic Development		P310-ADVERTISING SERVICES	183.28	-	-
4500033352	7/28/2020	Access Professional Inc.	Small Business	M200-YARD FACILITIES	327.65	-	-
4500033353	7/28/2020	Gillig LLC		B120-BUS MECHANICAL PARTS	265.68	-	-
4500033354	7/28/2020	Gillig LLC		B120-BUS MECHANICAL PARTS	16.48	-	-
4500033355	7/28/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	8,754.30	-	-
4500033356	7/28/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	1,500.40	-	-
4500033357	7/28/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	2,256.39	-	-
4500033358	7/28/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	268.51	-	-
4500033359	7/28/2020	Gillig LLC		B130-BUS BODY	271.53	-	-
4500033360	7/28/2020	Jeyco Products Inc		G130-SHOP TOOLS	1,188.50	-	-
4500033361	7/28/2020	Jeyco Products Inc		G130-SHOP TOOLS	2,477.18	-	-
4500033362	7/28/2020	SC Commercial, LLC		B180-BUS DIESEL	195.00	-	-
4500033363	7/28/2020	Culligan of San Diego		G140-SHOP SUPPLIES	537.09	-	-
4500033364	7/28/2020	Transit Holdings Inc		B250-BUS REPAIR PARTS	308.53	-	-
4500033365	7/28/2020	Transit Holdings Inc		B250-BUS REPAIR PARTS	25.86	-	-
4500033366	7/28/2020	Airgas Inc		G140-SHOP SUPPLIES	84.02	-	-
4500033367	7/28/2020	Airgas Inc		G140-SHOP SUPPLIES	66.33	-	-
4500033368	7/29/2020	Cable, Pipe & Leak Detection, Inc.		P280-GENERAL SVC AGRMNTS	554.08	-	-
4500033369	7/29/2020	Super Welding of Southern CA	Small Business	P130-EQUIP MAINT REPR SVC	1,657.81	-	-
4500033370	7/29/2020	Super Welding of Southern CA	Small Business	P130-EQUIP MAINT REPR SVC	2,370.50	-	-
4500033371	7/29/2020	Mcmaster-Carr Supply Co		F110-SHOP/BLDG MACHINERY	133.87	-	-
4500033372	7/29/2020	Mcmaster-Carr Supply Co		F110-SHOP/BLDG MACHINERY	288.21	-	-
4500033373	7/29/2020	Mcmaster-Carr Supply Co		F110-SHOP/BLDG MACHINERY	35.17	-	-
4500033374	7/29/2020	Mcmaster-Carr Supply Co		F110-SHOP/BLDG MACHINERY	744.75	-	-
4500033375	7/29/2020	Mcmaster-Carr Supply Co		F110-SHOP/BLDG MACHINERY	1,077.50	-	-
4500033376	7/29/2020	Mcmaster-Carr Supply Co		F110-SHOP/BLDG MACHINERY	1,899.64	-	-
4500033377	7/29/2020	California Air Compressor Company		F180-BUILDING MATERIALS	225.46	-	-
4500033378	7/29/2020	Zep Vehicle Care Inc		G180-JANITORIAL SUPPLIES	17,304.89	-	-
4500033379	7/29/2020	Zep Vehicle Care Inc		G180-JANITORIAL SUPPLIES	3,145.23	-	-
4500033380	7/29/2020	Zep Vehicle Care Inc		G180-JANITORIAL SUPPLIES	11,615.46	-	-
4500033381	7/29/2020	Zep Vehicle Care Inc		G180-JANITORIAL SUPPLIES	849.43	-	-
4500033382	7/29/2020	Neyenesch Printers Inc	Small Business	G230-PRINTED MATERIALS	504.31	-	-
4500033383	7/29/2020	Neyenesch Printers Inc	Small Business	G230-PRINTED MATERIALS	257.99	-	-

Purchase Orders							
PO Number	PO Date	Name	Prime Business Certification	Material Group	PO Value	DBE Subcontracted Amount	Non DBE Subcontracted Amount
4500033384	7/29/2020	Downtown San Diego Partnership		G250-NOVELTIES & AWARDS	1,077.50	-	-
4500033385	7/29/2020	Atwater Supply Inc.	Woman Owned Business	P280-GENERAL SVC AGRMNTS	1,477.37	-	-
4500033386	7/29/2020	R.S. Hughes Co Inc		G140-SHOP SUPPLIES	1,276.76	-	-
4500033387	7/29/2020	Transit Products and Services		B130-BUS BODY	11,981.33	-	-
4500033388	7/29/2020	Transit Products and Services		B130-BUS BODY	1,474.70	-	-
4500033389	7/29/2020	R.S. Hughes Co Inc		G190-SAFETY/MED SUPPLIES	9,738.45	-	-
4500033390	7/29/2020	Transit Holdings Inc		B130-BUS BODY	1,632.52	-	-
4500033391	7/29/2020	Transit Holdings Inc		B110-BUS HVAC SYSTEMS	20.74	-	-
4500033392	7/29/2020	Transit Holdings Inc		B110-BUS HVAC SYSTEMS	49.57	-	-
4500033393	7/29/2020	Transit Holdings Inc		B110-BUS HVAC SYSTEMS	1,344.70	-	-
4500033394	7/29/2020	Transit Holdings Inc		B110-BUS HVAC SYSTEMS	189.56	-	-
4500033395	7/29/2020	Transit Holdings Inc		B110-BUS HVAC SYSTEMS	23.72	-	-
4500033396	7/29/2020	Transit Holdings Inc		B110-BUS HVAC SYSTEMS	76.41	-	-
4500033397	7/29/2020	Transit Holdings Inc		B110-BUS HVAC SYSTEMS	104.74	-	-
4500033398	7/29/2020	Transit Holdings Inc		B110-BUS HVAC SYSTEMS	2,370.50	-	-
4500033399	7/29/2020	Transit Holdings Inc		B110-BUS HVAC SYSTEMS	727.60	-	-
4500033400	7/29/2020	Transit Holdings Inc		B110-BUS HVAC SYSTEMS	2,045.78	-	-
4500033401	7/29/2020	Transit Holdings Inc		B110-BUS HVAC SYSTEMS	1,978.00	-	-
4500033402	7/29/2020	Transit Holdings Inc		B110-BUS HVAC SYSTEMS	1,126.35	-	-
4500033403	7/29/2020	Transit Holdings Inc		B110-BUS HVAC SYSTEMS	472.93	-	-
4500033404	7/29/2020	Transit Holdings Inc		B110-BUS HVAC SYSTEMS	145.34	-	-
4500033405	7/29/2020	Transit Holdings Inc		B110-BUS HVAC SYSTEMS	162.48	-	-
4500033406	7/29/2020	Transit Holdings Inc		B140-BUS CHASSIS	3,241.73	-	-
4500033407	7/29/2020	Transit Holdings Inc		B140-BUS CHASSIS	3,484.64	-	-
4500033408	7/29/2020	Transit Holdings Inc		B140-BUS CHASSIS	730.03	-	-
4500033409	7/29/2020	Transit Holdings Inc		B140-BUS CHASSIS	176.43	-	-
4500033410	7/29/2020	Meritor, Inc.		B140-BUS CHASSIS	158.40	-	-
4500033411	7/29/2020	Alliant Insurance Services Inc		P370-RISK MANAGEMENT	3,070.88	-	-
4500033412	7/29/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	581.31	-	-
4500033413	7/29/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	4,882.37	-	-
4500033414	7/29/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	8,334.47	-	-
4500033415	7/29/2020	Clear Channel Outdoor, Inc.	Small Business	G230-PRINTED MATERIALS	1,823.46	-	-
4500033416	7/30/2020	Sid Tool Co		G130-SHOP TOOLS	1,671.21	-	-
4500033417	7/30/2020	Fastenal Company		G140-SHOP SUPPLIES	1,859.14	-	-
4500033418	7/30/2020	Fastenal Company		G140-SHOP SUPPLIES	189.13	-	-
4500033419	7/30/2020	Chromate Industrial Corporation		G150-FASTENERS	5,283.00	-	-
4500033420	7/30/2020	Chromate Industrial Corporation		G150-FASTENERS	2,139.26	-	-
4500033421	7/30/2020	Chromate Industrial Corporation		G150-FASTENERS	222.68	-	-
4500033422	7/30/2020	Chromate Industrial Corporation		G150-FASTENERS	883.66	-	-
4500033423	7/30/2020	Transit Holdings Inc		B130-BUS BODY	748.87	-	-
4500033424	7/30/2020	Transit Holdings Inc		B130-BUS BODY	3,328.59	-	-
4500033425	7/30/2020	Transit Holdings Inc		B130-BUS BODY	4,546.03	-	-
4500033426	7/30/2020	Transit Holdings Inc		B130-BUS BODY	1,755.82	-	-
4500033427	7/30/2020	Transit Holdings Inc		B130-BUS BODY	2,040.00	-	-
4500033428	7/30/2020	Transit Holdings Inc		B130-BUS BODY	81.20	-	-
4500033429	7/30/2020	Transit Holdings Inc		B130-BUS BODY	488.57	-	-
4500033430	7/30/2020	Transit Holdings Inc		B130-BUS BODY	62.83	-	-

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PO Number	PO Date	Name	Prime Business Certification	Material Group	PO Value	DBE Subcontracted Amount	Non DBE Subcontracted Amount
4500033431	7/30/2020	Transit Holdings Inc		B130-BUS BODY	315.72	-	-
4500033432	7/30/2020	Transit Holdings Inc		B130-BUS BODY	523.82	-	-
4500033433	7/30/2020	Transit Holdings Inc		B130-BUS BODY	5,338.96	-	-
4500033434	7/30/2020	Transit Holdings Inc		B130-BUS BODY	581.20	-	-
4500033435	7/30/2020	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	307.32	-	-
4500033436	7/30/2020	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	134.63	-	-
4500033437	7/30/2020	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	1,310.33	-	-
4500033438	7/30/2020	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	1,841.79	-	-
4500033439	7/30/2020	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	45.19	-	-
4500033440	7/30/2020	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	189.15	-	-
4500033441	7/30/2020	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	173.74	-	-
4500033442	7/30/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	197.85	-	-
4500033443	7/30/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	1,609.34	-	-
4500033444	7/30/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	13,953.66	-	-
4500033445	7/30/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	19,038.48	-	-
4500033446	7/30/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	301.70	-	-
4500033447	7/30/2020	Gillig LLC		B160-BUS ELECTRICAL	2,988.00	-	-
4500033448	7/30/2020	Gillig LLC		B160-BUS ELECTRICAL	22.15	-	-
4500033449	7/30/2020	Gillig LLC		B160-BUS ELECTRICAL	124.45	-	-
4500033450	7/30/2020	Gillig LLC		B160-BUS ELECTRICAL	106.48	-	-
4500033451	7/30/2020	Gillig LLC		B160-BUS ELECTRICAL	15,624.31	-	-
4500033452	7/30/2020	Gillig LLC		B160-BUS ELECTRICAL	365.92	-	-
4500033453	7/30/2020	Gillig LLC		B160-BUS ELECTRICAL	74.35	-	-
4500033454	7/30/2020	Gillig LLC		B160-BUS ELECTRICAL	23,155.20	-	-
4500033455	7/30/2020	Gillig LLC		B160-BUS ELECTRICAL	2,121.43	-	-
4500033456	7/30/2020	Waxie's Enterprises Inc.		G140-SHOP SUPPLIES	1,126.79	-	-
4500033457	7/30/2020	Waxie's Enterprises Inc.		G140-SHOP SUPPLIES	104.68	-	-
4500033458	7/30/2020	R.S. Hughes Co Inc		G140-SHOP SUPPLIES	92.65	-	-
4500033459	7/30/2020	R.S. Hughes Co Inc		G140-SHOP SUPPLIES	21,157.91	-	-
4500033460	7/30/2020	R.S. Hughes Co Inc		G140-SHOP SUPPLIES	2,337.74	-	-
4500033461	7/30/2020	Jeyco Products Inc		G140-SHOP SUPPLIES	330.00	-	-
4500033462	7/30/2020	Jeyco Products Inc		G140-SHOP SUPPLIES	480.10	-	-
4500033463	7/30/2020	Jeyco Products Inc		G140-SHOP SUPPLIES	2,610.78	-	-
4500033464	7/30/2020	Jeyco Products Inc		G140-SHOP SUPPLIES	764.55	-	-
4500033465	7/30/2020	Jeyco Products Inc		G140-SHOP SUPPLIES	171.14	-	-
4500033466	7/30/2020	Quality Logo Products, Inc.		G250-NOVELTIES & AWARDS	2,247.49	-	-
4500033467	7/30/2020	Quality Logo Products, Inc.		G250-NOVELTIES & AWARDS	83.40	-	-
4500033468	7/30/2020	Quality Logo Products, Inc.		G250-NOVELTIES & AWARDS	2,518.45	-	-
4500033469	7/30/2020	Quality Logo Products, Inc.		G250-NOVELTIES & AWARDS	2,171.07	-	-
4500033470	7/30/2020	W.W. Grainger Inc		B250-BUS REPAIR PARTS	657.29	-	-
4500033471	7/30/2020	Tribologik Corporation		G140-SHOP SUPPLIES	856.11	-	-
4500033472	7/30/2020	Tribologik Corporation		G140-SHOP SUPPLIES	901.75	-	-
4500033473	7/30/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	13.25	-	-
4500033474	7/30/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	59.97	-	-
4500033475	7/30/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	184.72	-	-
4500033476	7/30/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	212.52	-	-
4500033477	7/30/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	148.54	-	-

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4500033478	7/30/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	1,498.51	-	-
4500033479	7/30/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	248.85	-	-
4500033480	7/30/2020	Transit Holdings Inc		B250-BUS REPAIR PARTS	508.91	-	-
4500033481	7/30/2020	Transit Holdings Inc		B250-BUS REPAIR PARTS	189.29	-	-
4500033482	7/30/2020	Transit Holdings Inc		B250-BUS REPAIR PARTS	96.77	-	-
4500033483	7/30/2020	Transit Holdings Inc		B250-BUS REPAIR PARTS	2,675.40	-	-
4500033484	7/30/2020	Cummins Pacific LLC		B250-BUS REPAIR PARTS	27,087.83	-	-
4500033485	7/30/2020	Transit Holdings Inc		B250-BUS REPAIR PARTS	18.86	-	-
4500033486	7/30/2020	Transit Holdings Inc		B250-BUS REPAIR PARTS	1,536.09	-	-
4500033487	7/30/2020	Transit Holdings Inc		B250-BUS REPAIR PARTS	947.82	-	-
4500033488	7/30/2020	Transit Holdings Inc		B250-BUS REPAIR PARTS	240.95	-	-
4500033489	7/30/2020	Transit Holdings Inc		B250-BUS REPAIR PARTS	109.07	-	-
4500033490	7/30/2020	Transit Holdings Inc		B250-BUS REPAIR PARTS	310.82	-	-
4500033491	7/30/2020	Transit Holdings Inc		B250-BUS REPAIR PARTS	296.10	-	-
4500033492	7/30/2020	Transit Holdings Inc		B250-BUS REPAIR PARTS	5,710.75	-	-
4500033493	7/30/2020	Transit Holdings Inc		B250-BUS REPAIR PARTS	5,909.88	-	-
4500033494	7/30/2020	Transit Holdings Inc		B250-BUS REPAIR PARTS	604.99	-	-
4500033495	7/30/2020	Mohawk Mfg & Supply Co		B140-BUS CHASSIS	2,643.72	-	-
4500033497	7/30/2020	Mohawk Mfg & Supply Co		B140-BUS CHASSIS	79.20	-	-
4500033498	7/30/2020	Mohawk Mfg & Supply Co		B140-BUS CHASSIS	3,126.54	-	-
4500033499	7/30/2020	American National Standards Inst.		P280-GENERAL SVC AGRMNTS	634.78	-	-
4500033500	7/31/2020	Robcar Corporation	Woman Owned Business	G110-BUS/TROLLEY SIGNAGE	467.57	-	-
4500033501	7/31/2020	Shilpark Paint Corp.		G160-PAINTS & CHEMICALS	139.34	-	-
4500033502	7/31/2020	Shilpark Paint Corp.		G160-PAINTS & CHEMICALS	1,304.57	-	-
4500033503	7/31/2020	Reid and Clark Screen Arts Co		G140-SHOP SUPPLIES	1,302.93	-	-
4500033504	7/31/2020	Reid and Clark Screen Arts Co		G140-SHOP SUPPLIES	503.41	-	-
4500033505	7/31/2020	Reid and Clark Screen Arts Co		G140-SHOP SUPPLIES	2,155.00	-	-
4500033506	7/31/2020	Reid and Clark Screen Arts Co		G140-SHOP SUPPLIES	1,615.34	-	-
4500033507	7/31/2020	Chromate Industrial Corporation		G150-FASTENERS	36,134.40	-	-
4500033508	7/31/2020	Chromate Industrial Corporation		G150-FASTENERS	5,147.06	-	-
4500033509	7/31/2020	Chromate Industrial Corporation		G150-FASTENERS	1,259.60	-	-
4500033510	7/31/2020	Chromate Industrial Corporation		G150-FASTENERS	3,536.14	-	-
4500033511	7/31/2020	Chromate Industrial Corporation		G150-FASTENERS	2,995.17	-	-
4500033512	7/31/2020	Westair Gases & Equipment Inc	Small Business	G190-SAFETY/MED SUPPLIES	178.52	-	-
4500033513	7/31/2020	Westair Gases & Equipment Inc	Small Business	G190-SAFETY/MED SUPPLIES	2,418.55	-	-
4500033514	7/31/2020	Westair Gases & Equipment Inc	Small Business	G190-SAFETY/MED SUPPLIES	423.76	-	-
4500033515	7/31/2020	Westair Gases & Equipment Inc	Small Business	G190-SAFETY/MED SUPPLIES	56.65	-	-
4500033516	7/31/2020	Westair Gases & Equipment Inc	Small Business	G190-SAFETY/MED SUPPLIES	239.30	-	-
4500033517	7/31/2020	Westair Gases & Equipment Inc	Small Business	G190-SAFETY/MED SUPPLIES	720.63	-	-
4500033518	7/31/2020	Siemens Mobility, Inc.		R190-RAIL/LRV PANTOGRAPH	119.66	-	-
4500033519	7/31/2020	Siemens Mobility, Inc.		R190-RAIL/LRV PANTOGRAPH	2,290.12	-	-
4500033520	7/31/2020	Annex Automotive and		F120-BUS/LRV PAINT BOOTHS	176.75	-	-
4500033521	7/31/2020	Annex Automotive and		F120-BUS/LRV PAINT BOOTHS	2,362.92	-	-
4500033522	7/31/2020	Annex Automotive and		F120-BUS/LRV PAINT BOOTHS	1,864.87	-	-
4500033523	7/31/2020	Annex Automotive and		F120-BUS/LRV PAINT BOOTHS	1,865.80	-	-
4500033524	7/31/2020	HI-TEC Enterprises	Small Business	R160-RAIL/LRV ELECTRICAL	1,408.08	-	-
4500033525	7/31/2020	Knorr Brake Holding Corporation		R160-RAIL/LRV ELECTRICAL	1,161.55	-	-

Purchase Orders							
PO Number	PO Date	Name	Prime Business Certification	Material Group	PO Value	DBE Subcontracted Amount	Non DBE Subcontracted Amount
4500033526	7/31/2020	Siemens Mobility, Inc.		R160-RAIL/LRV ELECTRICAL	217.66	-	-
4500033527	7/31/2020	Siemens Mobility, Inc.		R160-RAIL/LRV ELECTRICAL	19,755.74	-	-
4500033528	7/31/2020	P & R Paper Supply Company Inc		G180-JANITORIAL SUPPLIES	5,650.65	-	-
4500033529	7/31/2020	CDW LLC		I110-INFORMATION TECH	414.84	-	-
4500033530	7/31/2020	CDW LLC		I110-INFORMATION TECH	158.27	-	-
4500033531	7/31/2020	CDW LLC		I110-INFORMATION TECH	7,552.24	-	-
4500033532	7/31/2020	Kaman Industrial Technologies		G130-SHOP TOOLS	849.49	-	-
4500033533	7/31/2020	Kaman Industrial Technologies		G130-SHOP TOOLS	54.93	-	-
4500033534	7/31/2020	Kaman Industrial Technologies		G130-SHOP TOOLS	2,872.65	-	-
4500033535	7/31/2020	Janek Corporation		B130-BUS BODY	55.30	-	-
4500033536	7/31/2020	Transit Holdings Inc		B140-BUS CHASSIS	83.78	-	-
4500033537	7/31/2020	Transit Holdings Inc		B140-BUS CHASSIS	89.21	-	-
4500033538	7/31/2020	Transit Holdings Inc		B140-BUS CHASSIS	915.51	-	-
4500033539	7/31/2020	Transit Holdings Inc		B140-BUS CHASSIS	15,985.79	-	-
4500033540	7/31/2020	Transit Holdings Inc		B140-BUS CHASSIS	1,253.94	-	-
4500033541	7/31/2020	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	1,260.32	-	-
4500033542	7/31/2020	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	183.18	-	-
4500033543	7/31/2020	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	8,631.00	-	-
4500033544	7/31/2020	Body Beautiful Car Wash, Inc.		G120-SECURITY	2,256.39	-	-
4500033545	7/31/2020	SPX Corporation		G290-FARE REVENUE EQUIP	11,423.74	-	-
4500033546	7/31/2020	SPX Corporation		G290-FARE REVENUE EQUIP	19,808.76	-	-
4500033547	7/31/2020	On Center Software Inc		I140-IT CAPITAL SOFTWARE	3,726.99	-	-
4500033548	7/31/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	2,259.56	-	-
4500033549	7/31/2020	Schunk Carbon Technology LLC		R220-RAIL/LRV TRUCKS	2,088.39	-	-
4500033550	7/31/2020	Muncie Transit Supply		B130-BUS BODY	145.71	-	-
4500033551	7/31/2020	Muncie Transit Supply		B130-BUS BODY	185.97	-	-
4500033552	7/31/2020	Muncie Transit Supply		B130-BUS BODY	11.61	-	-
4500033553	7/31/2020	Muncie Transit Supply		B130-BUS BODY	25.88	-	-
4500033554	7/31/2020	Muncie Transit Supply		B130-BUS BODY	2,477.18	-	-
4500033555	7/31/2020	Harbor Diesel & Equipment		B120-BUS MECHANICAL PARTS	327.56	-	-
4500033556	7/31/2020	Harbor Diesel & Equipment		B120-BUS MECHANICAL PARTS	53.83	-	-
4500033557	7/31/2020	Harbor Diesel & Equipment		B120-BUS MECHANICAL PARTS	26.76	-	-
4500033558	7/31/2020	W.W. Grainger Inc		G190-SAFETY/MED SUPPLIES	20,113.31	-	-
4500033559	7/31/2020	W.W. Grainger Inc		G190-SAFETY/MED SUPPLIES	320.43	-	-
4500033560	7/31/2020	W.W. Grainger Inc		G190-SAFETY/MED SUPPLIES	484.88	-	-
4500033561	7/31/2020	W.W. Grainger Inc		G190-SAFETY/MED SUPPLIES	1,394.04	-	-
4500033562	7/31/2020	W.W. Grainger Inc		G190-SAFETY/MED SUPPLIES	650.18	-	-
4500033563	7/31/2020	Gillig LLC		B200-BUS PWR TRAIN EQUIP	639.78	-	-
4500033564	7/31/2020	Gillig LLC		B200-BUS PWR TRAIN EQUIP	113.65	-	-
4500033565	7/31/2020	Airgas Inc		G190-SAFETY/MED SUPPLIES	2,477.18	-	-
4500033566	7/31/2020	Airgas Inc		G190-SAFETY/MED SUPPLIES	604.45	-	-
4500033567	7/31/2020	Airgas Inc		G190-SAFETY/MED SUPPLIES	138.95	-	-
4500033568	7/31/2020	Airgas Inc		G190-SAFETY/MED SUPPLIES	8,085.56	-	-
4500033569	7/31/2020	B & S Graphics Inc		B130-BUS BODY	4,503.60	-	-
4500033570	7/31/2020	Staples Contract & Commercial Inc		G200-OFFICE SUPPLIES	262.54	-	-
4500033571	7/31/2020	Staples Contract & Commercial Inc		G200-OFFICE SUPPLIES	1,402.94	-	-
4500033572	7/31/2020	Staples Contract & Commercial Inc		G200-OFFICE SUPPLIES	10,733.00	-	-

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PO Number	PO Date	Name	Prime Business Certification	Material Group	PO Value	DBE Subcontracted Amount	Non DBE Subcontracted Amount
4500033573	7/31/2020	HD Supply Construction Supply, LTD.		G140-SHOP SUPPLIES	303.69	-	-
4500033574	7/31/2020	HD Supply Construction Supply, LTD.		G140-SHOP SUPPLIES	2,558.48	-	-
4500033575	7/31/2020	HD Supply Construction Supply, LTD.		G140-SHOP SUPPLIES	569.62	-	-
4500033576	7/31/2020	HD Supply Construction Supply, LTD.		G140-SHOP SUPPLIES	1,984.01	-	-
4500033577	7/31/2020	Barrett Engineered Pumps	Small Business	M160-SUMP PUMP STATIONS	475.25	-	-
4500033578	7/31/2020	Barrett Engineered Pumps	Small Business	M160-SUMP PUMP STATIONS	2,040.61	-	-
4500033579	7/31/2020	Knorr Brake Holding Corporation		R220-RAIL/LRV TRUCKS	888.75	-	-
4500033580	7/31/2020	Knorr Brake Holding Corporation		R220-RAIL/LRV TRUCKS	8,264.59	-	-
4500033581	7/31/2020	Knorr Brake Holding Corporation		R220-RAIL/LRV TRUCKS	1,106.48	-	-
4500033582	7/31/2020	Knorr Brake Holding Corporation		R220-RAIL/LRV TRUCKS	898.93	-	-
4500033583	7/31/2020	Cummins-Allison		G220-OFFICE EQUIPMENT	335.59	-	-
4500033584	7/31/2020	Kenneth Place		G130-SHOP TOOLS	192.42	-	-
4500033585	7/31/2020	Kenneth Place		G130-SHOP TOOLS	2,424.38	-	-
4500033586	7/31/2020	Kenneth Place		G130-SHOP TOOLS	1,391.48	-	-
4500033587	7/31/2020	Kenneth Place		G130-SHOP TOOLS	110.57	-	-
4500033588	7/31/2020	Waxie's Enterprises Inc.		G180-JANITORIAL SUPPLIES	66.72	-	-
4500033589	7/31/2020	Waxie's Enterprises Inc.		G180-JANITORIAL SUPPLIES	108.92	-	-
4500033590	7/31/2020	Waxie's Enterprises Inc.		G180-JANITORIAL SUPPLIES	35,480.68	-	-
4500033591	7/31/2020	Willy's Electronic Supply Co	Small Business	G270-ELECTRICAL/LIGHTING	946.52	-	-
4500033592	8/2/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	2,040.00	-	-
4500033593	8/2/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	2,424.38	-	-
4500033594	8/2/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	75.00	-	-
4500033595	8/2/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	515.59	-	-
4500033596	8/2/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	474.29	-	-
4500033597	8/2/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	270.68	-	-
4500033598	8/2/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	1,583.34	-	-
4500033599	8/2/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	127.45	-	-
4500033600	8/2/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	898.83	-	-
4500033601	8/2/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	270.00	-	-
4500033602	8/2/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	102.14	-	-
4500033603	8/2/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	11.77	-	-
4500033604	8/2/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	345.00	-	-
4500033605	8/2/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	29.10	-	-
4500033606	8/2/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	33,996.42	-	20,000.09
4500033607	8/2/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	4,136.86	-	-
4500033608	8/2/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	2,993.00	-	-
4500033609	8/2/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	479.71	-	-
4500033610	8/2/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	354.48	-	-
4500033611	8/2/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	1,281.36	-	-
4500033612	8/2/2020	United Refrigeration Inc		G170-LUBRICANTS	105.47	-	-
4500033613	8/2/2020	United Refrigeration Inc		G170-LUBRICANTS	231.67	-	-
4500033614	8/2/2020	Kurt Morgan		G200-OFFICE SUPPLIES	112.09	-	-
4500033615	8/2/2020	Kurt Morgan		G200-OFFICE SUPPLIES	2,249.82	-	-
4500033616	8/2/2020	Kurt Morgan		G200-OFFICE SUPPLIES	1,091.40	-	-
4500033617	8/2/2020	Zep Vehicle Care Inc		G180-JANITORIAL SUPPLIES	15,343.60	-	-
4500033618	8/2/2020	Zep Vehicle Care Inc		G180-JANITORIAL SUPPLIES	628.40	-	-
4500033619	8/2/2020	Vern Rose Inc		G160-PAINTS & CHEMICALS	1,181.02	-	-

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PO Number	PO Date	Name	Prime Business Certification	Material Group	PO Value	DBE Subcontracted Amount	Non DBE Subcontracted Amount
4500033620	8/2/2020	Vern Rose Inc		G160-PAINTS & CHEMICALS	32,460.54	-	-
4500033621	8/2/2020	Barry Sandler Enterprises		G180-JANITORIAL SUPPLIES	338.68	-	-
4500033622	8/2/2020	Barry Sandler Enterprises		G180-JANITORIAL SUPPLIES	354.53	-	-
4500033623	8/2/2020	Barry Sandler Enterprises		G180-JANITORIAL SUPPLIES	1,285.66	-	-
4500033624	8/2/2020	Charter Industrial Supply Inc	Small Business	B200-BUS PWR TRAIN EQUIP	507.89	-	-
4500033625	8/2/2020	Mohawk Mfg & Supply Co		B110-BUS HVAC SYSTEMS	208.37	-	-
4500033626	8/2/2020	Mohawk Mfg & Supply Co		B110-BUS HVAC SYSTEMS	89.31	-	-
4500033627	8/2/2020	Wesco Distribution Inc		G270-ELECTRICAL/LIGHTING	77.37	-	-
4500033628	8/2/2020	Tribologik Corporation		G140-SHOP SUPPLIES	2,315.33	-	-
4500033629	8/2/2020	Tribologik Corporation		G140-SHOP SUPPLIES	33,044.01	-	-
4500033630	8/2/2020	Don Oleson Inc	Small Business	B120-BUS MECHANICAL PARTS	2,075.00	-	-
4500033631	8/2/2020	Don Oleson Inc	Small Business	B120-BUS MECHANICAL PARTS	271.53	-	-
4500033632	8/3/2020	Siemens Mobility, Inc.		R220-RAIL/LRV TRUCKS	1,058.03	-	-
4500033633	8/3/2020	Transit Holdings Inc		B130-BUS BODY	3,055.10	-	-
4500033634	8/3/2020	Transit Holdings Inc		B130-BUS BODY	1,268.06	-	-
4500033635	8/3/2020	Transit Holdings Inc		B130-BUS BODY	948.00	-	-
4500033636	8/3/2020	Transit Holdings Inc		B130-BUS BODY	1,089.27	-	-
4500033637	8/3/2020	Transit Holdings Inc		B130-BUS BODY	268.67	-	-
4500033638	8/3/2020	Transit Holdings Inc		B130-BUS BODY	25.88	-	-
4500033639	8/3/2020	Transit Holdings Inc		B160-BUS ELECTRICAL	61.82	-	-
4500033640	8/3/2020	Transit Holdings Inc		B160-BUS ELECTRICAL	1,253.20	-	-
4500033641	8/3/2020	Transit Holdings Inc		B160-BUS ELECTRICAL	28.34	-	-
4500033642	8/3/2020	Transit Holdings Inc		B160-BUS ELECTRICAL	10,571.62	-	-
4500033643	8/3/2020	Transit Holdings Inc		B160-BUS ELECTRICAL	721.93	-	-
4500033644	8/3/2020	Transit Holdings Inc		B160-BUS ELECTRICAL	43.47	-	-
4500033645	8/3/2020	Transit Holdings Inc		B160-BUS ELECTRICAL	3,455.00	-	-
4500033646	8/3/2020	Data Hardware Depot LP		I110-INFORMATION TECH	7,191.75	-	-
4500033647	8/3/2020	Data Hardware Depot LP		I110-INFORMATION TECH	667.85	-	-
4500033648	8/3/2020	Data Hardware Depot LP		I110-INFORMATION TECH	3,232.50	-	-
4500033649	8/3/2020	Data Hardware Depot LP		I110-INFORMATION TECH	150.00	-	-
4500033650	8/3/2020	Data Hardware Depot LP		I110-INFORMATION TECH	401.96	-	-
4500033651	8/3/2020	Data Hardware Depot LP		I110-INFORMATION TECH	301.88	-	-
4500033652	8/3/2020	Data Hardware Depot LP		I110-INFORMATION TECH	3,943.52	-	-
4500033653	8/3/2020	Data Hardware Depot LP		I110-INFORMATION TECH	2,424.38	-	-
4500033654	8/3/2020	Data Hardware Depot LP		I110-INFORMATION TECH	28,294.08	-	-
4500033655	8/3/2020	Data Hardware Depot LP		I110-INFORMATION TECH	2,786.09	-	-
4500033656	8/3/2020	General Signals Inc		M130-CROSSING MECHANISM	41.96	-	-
4500033657	8/3/2020	General Signals Inc		M130-CROSSING MECHANISM	17,609.09	-	-
4500033658	8/3/2020	Staples Contract & Commercial Inc		G200-OFFICE SUPPLIES	363.13	-	-
4500033659	8/3/2020	Staples Contract & Commercial Inc		G200-OFFICE SUPPLIES	51.52	-	-
4500033660	8/3/2020	Staples Contract & Commercial Inc		G200-OFFICE SUPPLIES	76.44	-	-
4500033661	8/3/2020	Staples Contract & Commercial Inc		G200-OFFICE SUPPLIES	429.44	-	-
4500033662	8/3/2020	Waxie's Enterprises Inc.		G180-JANITORIAL SUPPLIES	90.73	-	-
4500033663	8/3/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	241.09	-	-
4500033664	8/3/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	169.35	-	-
4500033665	8/3/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	620.64	-	-
4500033666	8/3/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	112.02	-	-

Purchase Orders							
PO Number	PO Date	Name	Prime Business Certification	Material Group	PO Value	DBE Subcontracted Amount	Non DBE Subcontracted Amount
4500033667	8/3/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	410.53	-	-
4500033668	8/3/2020	Supreme Oil Company		A120-AUTO/TRUCK GASOLINE	330.79	-	-
4500033669	8/3/2020	Supreme Oil Company		A120-AUTO/TRUCK GASOLINE	2,218.87	-	-
4500033670	8/3/2020	Supreme Oil Company		A120-AUTO/TRUCK GASOLINE	157.10	-	-
4500033671	8/3/2020	Supreme Oil Company		A120-AUTO/TRUCK GASOLINE	11,616.37	-	-
4500033672	8/3/2020	Supreme Oil Company		A120-AUTO/TRUCK GASOLINE	307.37	-	-
4500033673	8/3/2020	SC Commercial, LLC		A120-AUTO/TRUCK GASOLINE	2,156.11	-	-
4500033674	8/3/2020	Kaman Industrial Technologies		G130-SHOP TOOLS	581.31	-	-
4500033675	8/3/2020	Kaman Industrial Technologies		G130-SHOP TOOLS	350.00	-	-
4500033676	8/3/2020	Mohawk Mfg & Supply Co		B140-BUS CHASSIS	95.36	-	-
4500033677	8/3/2020	Mohawk Mfg & Supply Co		B140-BUS CHASSIS	2,872.67	-	-
4500033678	8/3/2020	Harbor Diesel & Equipment		B200-BUS PWR TRAIN EQUIP	122.08	-	-
4500033679	8/3/2020	Golden State Supply LLC		G140-SHOP SUPPLIES	192.54	-	-
4500033680	8/3/2020	Acuity Specialty Products Inc		G180-JANITORIAL SUPPLIES	60.30	-	-
4500033681	8/3/2020	Acuity Specialty Products Inc		G180-JANITORIAL SUPPLIES	7.93	-	-
4500033682	8/3/2020	Sherwin Williams Company		F120-BUS/LRV PAINT BOOTHS	353.96	-	-
4500033683	8/3/2020	Siemens Mobility, Inc.		R160-RAIL/LRV ELECTRICAL	117.99	-	-
4500033684	8/3/2020	Mouser Electronics Inc		R160-RAIL/LRV ELECTRICAL	2,205.45	-	-
4500033685	8/3/2020	TK Services Inc		B250-BUS REPAIR PARTS	152.64	-	-
4500033686	8/3/2020	County of San Diego		P180-LEASES, OTHER	37,362.56	-	-
4500033687	8/3/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	1,677.57	-	-
4500033688	8/3/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	32,246.35	-	-
4500033689	8/3/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	98.86	-	-
4500033690	8/3/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	2,247.24	-	-
4500033691	8/3/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	2,262.56	-	-
4500033692	8/3/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	284.71	-	-
4500033693	8/3/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	168.08	-	-
4500033694	8/3/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	198.79	-	-
4500033695	8/3/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	252.91	-	-
4500033696	8/3/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	299.56	-	-
4500033697	8/3/2020	W.W. Grainger Inc		B250-BUS REPAIR PARTS	406.99	-	-
4500033698	8/3/2020	Sectran Security Inc		P430-MONEY HANDLING SVCS	254.00	-	-
4500033699	8/3/2020	Sectran Security Inc		P430-MONEY HANDLING SVCS	1,182.67	-	-
4500033700	8/3/2020	Sectran Security Inc		P430-MONEY HANDLING SVCS	994.04	-	-
4500033701	8/3/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	709.79	-	-
4500033702	8/3/2020	Veritech, Inc.	Small Business	B250-BUS REPAIR PARTS	380.74	-	-
4500033703	8/3/2020	Harbor Diesel & Equipment		B200-BUS PWR TRAIN EQUIP	905.86	-	-
4500033704	8/3/2020	W.W. Grainger Inc		F110-SHOP/BLDG MACHINERY	746.97	-	-
4500033705	8/3/2020	W.W. Grainger Inc		F110-SHOP/BLDG MACHINERY	7,927.88	-	-
4500033706	8/4/2020	Siemens Mobility, Inc.		R160-RAIL/LRV ELECTRICAL	3,025.62	-	-
4500033707	8/4/2020	Daniels Tire Service		A110-AUTO/TRUCK TIRES	1,065.65	-	-
4500033708	8/4/2020	Daniels Tire Service		A110-AUTO/TRUCK TIRES	1,184.37	-	-
4500033709	8/4/2020	Daniels Tire Service		A110-AUTO/TRUCK TIRES	933.21	-	-
4500033710	8/4/2020	Daniels Tire Service		A110-AUTO/TRUCK TIRES	78.29	-	-
4500033711	8/4/2020	Shilpark Paint Corp.		F180-BUILDING MATERIALS	624.02	-	-
4500033712	8/4/2020	San Diego Seal Inc	Small Business	M110-SUB STATION	671.14	-	-
4500033713	8/4/2020	West-Lite Supply Co Inc	Small Business	M180-STATION ELECTRICAL	68.96	-	-

Purchase Orders							
PO Number	PO Date	Name	Prime Business Certification	Material Group	PO Value	DBE Subcontracted Amount	Non DBE Subcontracted Amount
4500033714	8/4/2020	West-Lite Supply Co Inc	Small Business	M180-STATION ELECTRICAL	454.25	-	-
4500033715	8/4/2020	Professional Contractors Supplies		G130-SHOP TOOLS	2,674.74	-	-
4500033716	8/4/2020	Professional Contractors Supplies		G130-SHOP TOOLS	12.51	-	-
4500033717	8/4/2020	Professional Contractors Supplies		G130-SHOP TOOLS	103.35	-	-
4500033718	8/4/2020	Professional Contractors Supplies		G130-SHOP TOOLS	324.95	-	-
4500033719	8/4/2020	Cembre Inc		M170-IMPEDANCE BOND	169.63	-	-
4500033720	8/4/2020	Mission Janitorial Supplies		G180-JANITORIAL SUPPLIES	394.69	-	-
4500033721	8/4/2020	Team One Repair Inc		G290-FARE REVENUE EQUIP	290.34	-	-
4500033722	8/4/2020	HD Supply Construction Supply, LTD.		M180-STATION ELECTRICAL	1,619.05	-	-
4500033723	8/4/2020	MS Electrical Distribution Inc		M180-STATION ELECTRICAL	1,500.00	-	-
4500033724	8/4/2020	W.W. Grainger Inc		G180-JANITORIAL SUPPLIES	33.08	-	-
4500033725	8/4/2020	W.W. Grainger Inc		G180-JANITORIAL SUPPLIES	51.72	-	-
4500033726	8/4/2020	W.W. Grainger Inc		G180-JANITORIAL SUPPLIES	8,555.35	-	-
4500033727	8/4/2020	NASG Holding Inc		R120-RAIL/LRV CAR BODY	339.42	-	-
4500033728	8/4/2020	Transit Holdings Inc		B130-BUS BODY	3,574.40	-	-
4500033729	8/4/2020	Transit Holdings Inc		B130-BUS BODY	669.61	-	-
4500033730	8/4/2020	Transit Holdings Inc		B130-BUS BODY	19.65	-	-
4500033731	8/4/2020	Transit Holdings Inc		B130-BUS BODY	29.09	-	-
4500033732	8/4/2020	Transit Holdings Inc		B160-BUS ELECTRICAL	954.69	-	-
4500033733	8/4/2020	Transit Holdings Inc		B160-BUS ELECTRICAL	8,583.37	-	-
4500033734	8/4/2020	Transit Holdings Inc		B160-BUS ELECTRICAL	10,505.16	-	-
4500033735	8/4/2020	Virginia Electronic & Lighting LLC		M140-WAYSIDE SIGNALS	2,262.56	-	-
4500033736	8/4/2020	Cubic Transportation Systems		G290-FARE REVENUE EQUIP	25.28	-	-
4500033737	8/4/2020	Cubic Transportation Systems		G290-FARE REVENUE EQUIP	122.98	-	-
4500033738	8/4/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	152.68	-	-
4500033739	8/4/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	511.76	-	-
4500033740	8/4/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	241.29	-	-
4500033741	8/4/2020	Jeyco Products Inc		G200-OFFICE SUPPLIES	551.65	-	-
4500033742	8/4/2020	Jeyco Products Inc		G200-OFFICE SUPPLIES	340.21	-	-
4500033743	8/4/2020	Jeyco Products Inc		G200-OFFICE SUPPLIES	5,821.52	-	-
4500033744	8/4/2020	Material Sales Inc	Small Business	G130-SHOP TOOLS	62.50	-	-
4500033745	8/4/2020	Kaman Industrial Technologies		G140-SHOP SUPPLIES	664.56	-	-
4500033746	8/4/2020	R.S. Hughes Co Inc		G190-SAFETY/MED SUPPLIES	77.43	-	-
4500033747	8/4/2020	R.S. Hughes Co Inc		G190-SAFETY/MED SUPPLIES	87.04	-	-
4500033748	8/4/2020	R.S. Hughes Co Inc		G190-SAFETY/MED SUPPLIES	886.27	-	-
4500033749	8/4/2020	R.S. Hughes Co Inc		G190-SAFETY/MED SUPPLIES	20.20	-	-
4500033750	8/4/2020	Mohawk Mfg & Supply Co		B200-BUS PWR TRAIN EQUIP	27.99	-	-
4500033751	8/4/2020	Mohawk Mfg & Supply Co		B200-BUS PWR TRAIN EQUIP	1,016.82	-	-
4500033752	8/4/2020	Cummins Pacific LLC		B250-BUS REPAIR PARTS	125.75	-	-
4500033753	8/4/2020	Gillig LLC		B130-BUS BODY	417.25	-	-
4500033754	8/4/2020	Gillig LLC		B130-BUS BODY	379.82	-	-
4500033755	8/4/2020	Ferguson Enterprises		F110-SHOP/BLDG MACHINERY	3,144.51	-	-
4500033756	8/4/2020	Ferguson Enterprises		F110-SHOP/BLDG MACHINERY	918.03	-	-
4500033757	8/4/2020	TK Services Inc		B250-BUS REPAIR PARTS	484.88	-	-
4500033758	8/4/2020	CASEI		F110-SHOP/BLDG MACHINERY	221.03	-	-
4500033759	8/4/2020	Digicert, Inc.		I110-INFORMATION TECH	160.73	-	-
4500033760	8/4/2020	Digicert, Inc.		I110-INFORMATION TECH	606.80	-	-

Purchase Orders							
PO Number	PO Date	Name	Prime Business Certification	Material Group	PO Value	DBE Subcontracted Amount	Non DBE Subcontracted Amount
4500033761	8/4/2020	Waxie's Enterprises Inc.		G140-SHOP SUPPLIES	3,551.39	-	-
4500033763	8/4/2020	W.W. Grainger Inc		B250-BUS REPAIR PARTS	48.65	-	-
4500033764	8/4/2020	Charter Industrial Supply Inc	Small Business	B120-BUS MECHANICAL PARTS	998.34	-	-
4500033765	8/4/2020	Waco Filters Corporation		F120-BUS/LRV PAINT BOOTHS	8,252.91	-	-
4500033766	8/4/2020	Transit Holdings Inc		B130-BUS BODY	3,256.19	-	-
4500033767	8/4/2020	Transit Holdings Inc		B130-BUS BODY	1,969.51	-	-
4500033768	8/4/2020	Transit Holdings Inc		B130-BUS BODY	196.37	-	-
4500033769	8/4/2020	Transit Holdings Inc		B130-BUS BODY	4,126.84	-	-
4500033770	8/4/2020	Transit Holdings Inc		B130-BUS BODY	118.17	-	-
4500033771	8/4/2020	Transit Holdings Inc		B130-BUS BODY	124.13	-	-
4500033772	8/4/2020	Transit Holdings Inc		B140-BUS CHASSIS	25,872.93	-	-
4500033773	8/4/2020	Transit Holdings Inc		B140-BUS CHASSIS	8,771.56	-	-
4500033774	8/4/2020	Transit Holdings Inc		B140-BUS CHASSIS	4,600.33	-	-
4500033775	8/5/2020	Charter Industrial Supply Inc	Small Business	R220-RAIL/LRV TRUCKS	197.57	-	-
4500033776	8/5/2020	Siemens Mobility, Inc.		R230-RAIL/LRV MECHANICAL	234.80	-	-
4500033777	8/5/2020	Allied Electronics Inc		M110-SUB STATION	552.12	-	-
4500033778	8/5/2020	Allied Electronics Inc		M110-SUB STATION	1,836.70	-	-
4500033779	8/5/2020	Allied Electronics Inc		M110-SUB STATION	3,491.10	-	-
4500033780	8/5/2020	West-Lite Supply Co Inc	Small Business	R180-RAIL/LRV LIGHTING	70.56	-	-
4500033781	8/5/2020	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	19.97	-	-
4500033782	8/5/2020	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	127.04	-	-
4500033783	8/5/2020	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	817.08	-	-
4500033784	8/5/2020	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	293.42	-	-
4500033785	8/5/2020	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	401.49	-	-
4500033786	8/5/2020	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	495.05	-	-
4500033787	8/5/2020	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	429.93	-	-
4500033788	8/5/2020	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	233.19	-	-
4500033789	8/5/2020	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	83.81	-	-
4500033790	8/5/2020	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	15,516.00	-	-
4500033791	8/5/2020	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	10,508.86	-	-
4500033792	8/5/2020	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	892.17	-	-
4500033793	8/5/2020	Transit Holdings Inc		B120-BUS MECHANICAL PARTS	317.95	-	-
4500033794	8/5/2020	Transit Holdings Inc		B130-BUS BODY	92,167.20	-	-
4500033795	8/5/2020	Transit Holdings Inc		B130-BUS BODY	1.66	-	-
4500033796	8/5/2020	W.W. Grainger Inc		G140-SHOP SUPPLIES	1,378.45	-	-
4500033797	8/5/2020	W.W. Grainger Inc		G140-SHOP SUPPLIES	5,749.84	-	-
4500033798	8/5/2020	W.W. Grainger Inc		G140-SHOP SUPPLIES	322.76	-	-
4500033799	8/5/2020	Golden State Supply LLC		F180-BUILDING MATERIALS	546.30	-	-
4500033800	8/5/2020	Golden State Supply LLC		F180-BUILDING MATERIALS	7,015.93	-	-
4500033801	8/5/2020	Uline		G220-OFFICE EQUIPMENT	110.64	-	-
4500033802	8/5/2020	Harmer Steel Products Company		T110-TRACK, RAIL	165.08	-	-
4500033803	8/5/2020	JKL Cleaning Systems		G130-SHOP TOOLS	1,668.88	-	-
4500033804	8/5/2020	JKL Cleaning Systems		G130-SHOP TOOLS	99.11	-	-
4500033805	8/5/2020	JKL Cleaning Systems		G130-SHOP TOOLS	102.04	-	-
4500033806	8/5/2020	Shilpark Paint Corp.		G160-PAINTS & CHEMICALS	431.99	-	-
4500033807	8/5/2020	Cummins Pacific LLC		B250-BUS REPAIR PARTS	310.82	-	-
4500033808	8/5/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	424.00	-	-

Purchase Orders							
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4500033809	8/5/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	5,628.20	-	-
4500033810	8/5/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	18.36	-	-
4500033811	8/5/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	47.13	-	-
4500033812	8/5/2020	Home Depot USA Inc		G130-SHOP TOOLS	2,330.52	-	-
4500033813	8/5/2020	Don Oleson Inc	Small Business	B120-BUS MECHANICAL PARTS	1,146.01	-	-
4500033814	8/5/2020	Don Oleson Inc	Small Business	B120-BUS MECHANICAL PARTS	440.00	-	-
4500033815	8/5/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	55.41	-	-
4500033816	8/5/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	152.40	-	-
4500033817	8/5/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	1,497.51	-	-
4500033818	8/5/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	379.30	-	-
4500033819	8/5/2020	Industrial Maintenance Supply LLC	DBE	G150-FASTENERS	130.92	-	-
4500033820	8/5/2020	R.S. Hughes Co Inc		G140-SHOP SUPPLIES	2,671.83	-	-
4500033821	8/5/2020	R.S. Hughes Co Inc		G140-SHOP SUPPLIES	4,781.57	-	-
4500033822	8/5/2020	Jeyco Products Inc		G130-SHOP TOOLS	17,503.42	-	-
4500033823	8/5/2020	Jeyco Products Inc		G130-SHOP TOOLS	12,542.72	-	-
4500033825	8/5/2020	CDW LLC		I110-INFORMATION TECH	85.86	-	-
4500033826	8/5/2020	CDW LLC		I110-INFORMATION TECH	377.75	-	-
4500033827	8/5/2020	CDW LLC		I110-INFORMATION TECH	438.11	-	-
4500033828	8/5/2020	CDW LLC		I110-INFORMATION TECH	178.79	-	-
4500033830	8/5/2020	W.W. Grainger Inc		G180-JANITORIAL SUPPLIES	50.35	-	-
4500033831	8/5/2020	W.W. Grainger Inc		G180-JANITORIAL SUPPLIES	1,850.00	-	-
4500033832	8/5/2020	Home Depot USA Inc		G140-SHOP SUPPLIES	151.89	-	-
4500033833	8/5/2020	Home Depot USA Inc		G140-SHOP SUPPLIES	585.99	-	-
4500033834	8/5/2020	Home Depot USA Inc		G140-SHOP SUPPLIES	1,864.87	-	-
4500033835	8/5/2020	Team One Repair Inc		G290-FARE REVENUE EQUIP	836.87	-	-
4500033836	8/5/2020	Transit Holdings Inc		B250-BUS REPAIR PARTS	5.26	-	-
4500033837	8/5/2020	Transit Holdings Inc		B250-BUS REPAIR PARTS	2,211.22	-	-
4500033838	8/5/2020	Transit Holdings Inc		B250-BUS REPAIR PARTS	4.46	-	-
4500033839	8/5/2020	Siemens Mobility, Inc.		M140-WAYSIDE SIGNALS	1,812.64	-	-
4500033840	8/5/2020	Freeby Signs		B250-BUS REPAIR PARTS	598.34	-	-
4500033841	8/5/2020	Barry Sandler Enterprises		G180-JANITORIAL SUPPLIES	654.58	-	-
4500033842	8/5/2020	Barry Sandler Enterprises		G180-JANITORIAL SUPPLIES	2,863.87	-	-
4500033843	8/5/2020	Fastenal Company		G190-SAFETY/MED SUPPLIES	92,585.45	27,997.84	-
4500033844	8/5/2020	Fastenal Company		G190-SAFETY/MED SUPPLIES	76.05	-	-
4500033845	8/5/2020	Waxie's Enterprises Inc.		G180-JANITORIAL SUPPLIES	990.28	-	-
4500033846	8/5/2020	Duncan Bolt Company	Small Business	G130-SHOP TOOLS	1,805.82	-	-
4500033847	8/6/2020	Siemens Mobility, Inc.		R160-RAIL/LRV ELECTRICAL	1,056.21	-	-
4500033848	8/6/2020	West-Lite Supply Co Inc	Small Business	G130-SHOP TOOLS	127.19	-	-
4500033849	8/6/2020	West-Lite Supply Co Inc	Small Business	G130-SHOP TOOLS	484.88	-	-
4500033850	8/6/2020	West-Lite Supply Co Inc	Small Business	G130-SHOP TOOLS	3,185.63	-	-
4500033851	8/6/2020	Airgas Inc		G140-SHOP SUPPLIES	50,375.88	-	-
4500033852	8/6/2020	Airgas Inc		G140-SHOP SUPPLIES	80.74	-	-
4500033853	8/6/2020	EAO Switch Corporation		R160-RAIL/LRV ELECTRICAL	364.54	-	-
4500033854	8/6/2020	Chromate Industrial Corporation		G150-FASTENERS	195.39	-	-
4500033855	8/6/2020	Chromate Industrial Corporation		G150-FASTENERS	1,162.63	-	-
4500033856	8/6/2020	Siemens Mobility, Inc.		R190-RAIL/LRV PANTOGRAPH	41.36	-	-
4500033857	8/6/2020	Siemens Mobility, Inc.		R190-RAIL/LRV PANTOGRAPH	2,040.87	-	-

Purchase Orders							
PO Number	PO Date	Name	Prime Business Certification	Material Group	PO Value	DBE Subcontracted Amount	Non DBE Subcontracted Amount
4500033858	8/6/2020	NASG Holding Inc		R120-RAIL/LRV CAR BODY	277.57	-	-
4500033859	8/6/2020	Siemens Mobility, Inc.		R120-RAIL/LRV CAR BODY	355.59	-	-
4500033860	8/6/2020	Transit Holdings Inc		B160-BUS ELECTRICAL	1,057.25	-	-
4500033861	8/6/2020	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	412.70	-	-
4500033862	8/6/2020	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	489.48	-	-
4500033863	8/6/2020	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	952.51	-	-
4500033864	8/6/2020	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	950.00	-	-
4500033865	8/6/2020	Transit Holdings Inc		B130-BUS BODY	3,907.75	-	-
4500033866	8/6/2020	Transit Holdings Inc		B130-BUS BODY	34.75	-	-
4500033867	8/6/2020	Transit Holdings Inc		B130-BUS BODY	586.07	-	-
4500033868	8/6/2020	Transit Holdings Inc		B130-BUS BODY	7,261.38	-	-
4500033869	8/6/2020	Meritor, Inc.		B140-BUS CHASSIS	1,405.16	-	-
4500033870	8/6/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	400.00	-	-
4500033871	8/6/2020	Transit Holdings Inc		B250-BUS REPAIR PARTS	419.95	-	-
4500033872	8/6/2020	Transit Holdings Inc		B250-BUS REPAIR PARTS	270.00	-	-
4500033873	8/6/2020	Transit Holdings Inc		B250-BUS REPAIR PARTS	24,675.00	-	-
4500033874	8/6/2020	Waxie's Enterprises Inc.		G140-SHOP SUPPLIES	172.40	-	-
4500033875	8/6/2020	Waxie's Enterprises Inc.		G140-SHOP SUPPLIES	6,399.50	-	-
4500033876	8/6/2020	Waxie's Enterprises Inc.		G140-SHOP SUPPLIES	790.24	-	-
4500033877	8/6/2020	Kaman Industrial Technologies		B130-BUS BODY	1,325.24	-	-
4500033878	8/6/2020	Kaman Industrial Technologies		B130-BUS BODY	3,067.54	-	-
4500033879	8/6/2020	Kaman Industrial Technologies		B130-BUS BODY	2,361.98	-	-
4500033880	8/6/2020	Cubic Transportation Systems		B190-BUS FARE EQUIP	37,362.56	-	-
4500033881	8/6/2020	Prochem Specialty Products Inc	Small Business	G180-JANITORIAL SUPPLIES	641.12	-	-
4500033882	8/6/2020	Aslan Capital Inc		G180-JANITORIAL SUPPLIES	333.79	-	-
4500033883	8/6/2020	Aslan Capital Inc		G180-JANITORIAL SUPPLIES	210.25	-	-
4500033884	8/6/2020	Gillig LLC		B130-BUS BODY	627.65	-	-
4500033885	8/6/2020	Gillig LLC		B130-BUS BODY	499.89	-	-
4500033886	8/6/2020	Asbury Environmental Services		B200-BUS PWR TRAIN EQUIP	290.01	-	-
4500033887	8/6/2020	Brault Inc	Small Business	C120-SPECIALTY CONTRACTOR	1,345.78	-	-
4500033888	8/6/2020	Transit Holdings Inc		B250-BUS REPAIR PARTS	101.48	-	-
4500033889	8/6/2020	Transit Holdings Inc		B250-BUS REPAIR PARTS	563.35	-	-
4500033890	8/6/2020	Transit Holdings Inc		B250-BUS REPAIR PARTS	27.99	-	-
4500033891	8/6/2020	Transit Holdings Inc		B250-BUS REPAIR PARTS	38.99	-	-
4500033892	8/6/2020	Transit Holdings Inc		B250-BUS REPAIR PARTS	46.13	-	-
4500033893	8/6/2020	Transit Holdings Inc		B250-BUS REPAIR PARTS	116.98	-	-
4500033894	8/6/2020	Transit Holdings Inc		B250-BUS REPAIR PARTS	173.75	-	-
4500033895	8/6/2020	Transit Holdings Inc		B250-BUS REPAIR PARTS	1,574.12	-	-
4500033896	8/6/2020	Kurt Morgan		G200-OFFICE SUPPLIES	32.26	-	-
4500033897	8/6/2020	Kurt Morgan		G200-OFFICE SUPPLIES	7,593.70	-	-
4500033898	8/6/2020	Transit Holdings Inc		B130-BUS BODY	5,907.22	-	-
4500033899	8/6/2020	Transit Holdings Inc		B130-BUS BODY	32.34	-	-
4500033900	8/6/2020	Transit Holdings Inc		B130-BUS BODY	332.42	-	-
4500033901	8/6/2020	Transit Holdings Inc		B130-BUS BODY	226.40	-	-
4500033902	8/6/2020	OSI Hardware Inc		I110-INFORMATION TECH	82.09	-	-
4500033903	8/6/2020	OSI Hardware Inc		I110-INFORMATION TECH	3,299.75	-	-
4500033904	8/6/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	28.26	-	-

Purchase Orders							
PO Number	PO Date	Name	Prime Business Certification	Material Group	PO Value	DBE Subcontracted Amount	Non DBE Subcontracted Amount
4500033905	8/6/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	6,880.16	-	-
4500033906	8/6/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	291.21	-	-
4500033907	8/6/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	454.25	-	-
4500033908	8/6/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	48.21	-	-
4500033909	8/6/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	270.00	-	-
4500033910	8/6/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	1,185.99	-	-
4500033911	8/6/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	524.75	-	-
4500033912	8/6/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	207.04	-	-
4500033913	8/6/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	2,341.43	-	-
4500033914	8/6/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	141.02	-	-
4500033915	8/6/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	31.98	-	-
4500033916	8/6/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	488.72	-	-
4500033917	8/6/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	3,492.00	-	-
4500033918	8/6/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	22,516.80	-	-
4500033919	8/6/2020	Cummins Pacific LLC		B200-BUS PWR TRAIN EQUIP	3,500.00	-	-
4500033920	8/6/2020	AT&T DataComm Inc		I110-INFORMATION TECH	1,000.00	-	-
4500033921	8/6/2020	AT&T DataComm Inc		I110-INFORMATION TECH	711.15	-	-
4500033922	8/6/2020	AT&T DataComm Inc		I110-INFORMATION TECH	2,194.74	-	-
4500033923	8/6/2020	AT&T DataComm Inc		I110-INFORMATION TECH	2,003.00	-	-
4500033924	8/7/2020	HD Supply Construction Supply, LTD.		G130-SHOP TOOLS	100.19	-	-
4500033925	8/7/2020	HD Supply Construction Supply, LTD.		G130-SHOP TOOLS	3,157.42	-	-
4500033926	8/7/2020	HD Supply Construction Supply, LTD.		G130-SHOP TOOLS	641.02	-	-
4500033927	8/7/2020	HD Supply Construction Supply, LTD.		G130-SHOP TOOLS	999.00	-	-
4500033928	8/7/2020	HD Supply Construction Supply, LTD.		G130-SHOP TOOLS	7,775.24	-	-
4500033929	8/7/2020	HD Supply Construction Supply, LTD.		G130-SHOP TOOLS	1,034.40	-	-
4500033930	8/7/2020	HD Supply Construction Supply, LTD.		G130-SHOP TOOLS	6,854.33	-	-
4500033931	8/7/2020	HD Supply Construction Supply, LTD.		G130-SHOP TOOLS	22,516.80	-	-
4500033932	8/7/2020	HD Supply Construction Supply, LTD.		G130-SHOP TOOLS	767.18	-	-
4500033933	8/7/2020	HD Supply Construction Supply, LTD.		G130-SHOP TOOLS	1,277.49	-	-
4500033934	8/7/2020	HD Supply Construction Supply, LTD.		G130-SHOP TOOLS	99,352.39	-	-
4500033935	8/7/2020	M Power Truck & Diesel Repair		P210-NON-REV VEH REPAIRS	90.24	-	-
4500033936	8/7/2020	M Power Truck & Diesel Repair		P210-NON-REV VEH REPAIRS	3,342.41	-	-
4500033937	8/7/2020	M Power Truck & Diesel Repair		P210-NON-REV VEH REPAIRS	409.94	-	-
4500033938	8/7/2020	M Power Truck & Diesel Repair		P210-NON-REV VEH REPAIRS	1,373.40	-	-
4500033939	8/7/2020	M Power Truck & Diesel Repair		P210-NON-REV VEH REPAIRS	1,568.90	-	-
4500033940	8/7/2020	M Power Truck & Diesel Repair		P210-NON-REV VEH REPAIRS	189.04	-	-
4500033941	8/7/2020	San Diego Seal Inc	Small Business	R220-RAIL/LRV TRUCKS	3,010.54	-	-
4500033942	8/7/2020	Fastenal Company		G140-SHOP SUPPLIES	1,585.67	-	-
4500033943	8/7/2020	Siemens Mobility, Inc.		R120-RAIL/LRV CAR BODY	1,044.08	-	-
4500033944	8/7/2020	Siemens Mobility, Inc.		R120-RAIL/LRV CAR BODY	22,472.82	-	-
4500033945	8/7/2020	Siemens Mobility, Inc.		R120-RAIL/LRV CAR BODY	33.08	-	-
4500033946	8/7/2020	Culligan of San Diego		G140-SHOP SUPPLIES	42.20	-	-
4500033947	8/7/2020	Graybar Electric Co Inc		G130-SHOP TOOLS	2,886.69	-	-
4500033948	8/7/2020	W.W. Grainger Inc		F110-SHOP/BLDG MACHINERY	183.28	-	-
4500033949	8/7/2020	W.W. Grainger Inc		F110-SHOP/BLDG MACHINERY	123.80	-	-
4500033950	8/7/2020	Transit Holdings Inc		B140-BUS CHASSIS	1,305.58	-	-