



Board Report

File #: 2020-0062, File Type: Contract

Agenda Number: 42.

EXECUTIVE MANAGEMENT COMMITTEE  
MAY 20, 2021

**SUBJECT: EXECUTE CONTRACT WITH SOUTHERN CALIFORNIA EDISON (SCE) TO UPGRADE UTILITIES AT DIVISION 9 & EL MONTE TRANSIT CENTER, EXECUTE CONTRACT MODIFICATION WITH BYD FOR DIVISION 9 (D9) DEPOT CHARGERS, AND GRANT DESIGN-BUILD AUTHORITY FOR CHARGING INFRASTRUCTURE**

**ACTION: APPROVE RECOMMENDATIONS**

**RECOMMENDATION**

AUTHORIZE the Chief Executive Officer to:

- A. NEGOTIATE AND EXECUTE a cost reimbursable Contract with SoCal Edison (SCE) to upgrade Division 9 (D9) and EL Monte Bus Depot utilities to support the full electrification of Battery Electric Buses procured from BYD, for an amount Not-To-Exceed \$19,565,853.
- B. EXECUTE Modification No. 7 to BYD Coach & Bus, LLC (BYD), to add forty-four (44) Heliox Depot Chargers, software licenses, installation and commissioning support, and twelve (12) year warranty service and support for D9 charging infrastructure at the Firm Fixed price of \$22,938,872 increasing the Contract Value from \$48,528,900 to \$71,467,772.
- C. INCREASE the Contract Modification Authority amount from \$4,777,472 to \$30,778,325 to incorporate upgrades to the charging infrastructure and for vehicle configuration changes for Contract OP28367-002, with BYD Coach & Bus, LLC.

CONSIDER:

- D. FIND that awarding a design-build delivery method authority, pursuant to Public Utilities Code Section 130242(b), will achieve for Metro certain private sector efficiencies through the integration of design, project work and components.

Approval requires a two-thirds affirmative vote.

- E. Approve the hiring of an initial five (5) new, non-contract full-time employees as a part of the FY22 midyear budget process to ensure the successful delivery of the ZEB program.

## **ISSUE**

In July 2017, Metro's Board of Directors approved a motion to "convert the Metro Orange Line to full Zero Emission operation by 2020 and the Metro Silver Line as soon as feasible, thereafter."

In accordance with the Board motion staff executed contracts with BYD for 100 forty-foot Battery Electric Buses (BEB); a base order of 60 BEBs followed by an option order for 40. Concurrently, staff proceeded with designs to upgrade the charging infrastructure at D9, the El Monte Transit Center, and Harbor Gateway Transit Center (HGTC).

Approval of staff's recommendations is necessary to contract with SCE and BYD to upgrade the utilities and deliver and install the chargers and charging infrastructure necessary to support anticipated service levels with BYD 40' BEB's.

## **BACKGROUND**

In July 2017 the Metro Board approved a motion to convert the Silver Line to full Zero Emission operation as soon as feasible, thereafter 2020. One element is to upgrade the utilities at D9 and the adjacent El Monte Transit Center to support the anticipated service with 40' BEB's. It is staff's recommendation for SCE to upgrade the charging locations with the necessary power and for BYD to provide the depot chargers. In parallel, Metro will initiate a solicitation for the civil work to install the chargers.

### **Power Supply**

In support of the plan, SCE completed a Method of Service (MOS) study to analyze the existing sites and develop strategies to meet the charging needs at D9 and the El Monte Transit Center. In all, five charging options were considered.

- Only one, Option E, provides Metro with the anticipated 10 MW power, minimizes impact to operations, and provides the maximum resiliency to minimize risk of power outages. However, it will take approximately 44 months to complete the work once SCE is awarded a contract.
- Option A is considered only a temporary solution while work on one of the other options is performed. Option A can be implemented shortly after SCE is awarded a contract; however, the 10 MW will be available only during off-peak hours. During peak hours power will be limited to 5 MW. This option may be acceptable in the near term; however, it will create operational risk and does not offer the resiliency necessary to reduce the risk of power outages.

Therefore, it is staff's recommendation to issue a contract to SCE for Options A and E. This will permit Metro to initiate ZEB operation on the Silver Line once the depot and en-route charges are installed. One hundred percent ZEB operation from D9 will be possible when the Option E work is completed.

### **Chargers**

BYD's contracts include delivery of depot chargers. However, these chargers use BYD's proprietary design, are non-standard, are compatible only with BYD equipment, and have limited eligibility for funding, e.g., they are not eligible for SCE Charge Ready Transport program.

Since the BYD contracts were first awarded July 2017, there has been significant advancement in charger standards and design. Chargers conform to approved standards allowing for compatibility with fleets from multiple vendors, have greater and faster charging capacity allowing for operational flexibility, and occupy a smaller footprint which is critical for our space-challenged depots. Therefore, it is staff's recommendation to issue BYD a contract modification to upgrade the chargers with a depot charging strategy utilizing SAE3105-1 overhead charging infrastructure.

#### Civil Work

Civil work at D9 and the El Monte Transit Center is required to install the chargers, electrical cabinets, and ancillary equipment. Typical work includes installation of concrete pads and running of conduits and wire. To minimize risk to project schedule, staff is seeking Board approval to use a design-build project delivery method for deploying charging infrastructure as appropriate.

PUC Section 130242 requires a finding by a two-thirds majority vote by the Board to use the design-build project delivery method.

### **DISCUSSION**

#### SCE - MOS Study and Proposed Solutions

Prior to the MOS being initiated, SCE determined that 5 MW is currently available for D9 and the El Monte Transit Center. Staff calculated that 10 MW is required for the complete transition to 100% BEB operation from D9 and the El Monte Transit Center.

The MOS Study conducted by SCE offered Metro five (5) options to meet the charging needs. These proposed options are presented below, along with the associated costs and staff's assessments:

- Option A - \$149,644
  - Project Scope: Install necessary cable to support temporary service of 10 MW without Preferred Emergency (PE) Gear.
  - Staff assessment. Acceptable only as a temporary solution for startup service.  
It may be possible for Metro to stay under the 5MW cap during peak hours by using robust charge management system, batteries, a larger solar installation, and on-site power generation. It may be necessary for SCE to allow 10MW of load to flow permanently during off peak hours. This option would save over \$19M in upfront costs, but comes with additional risks if the charging cannot be consistently performed to stay under the cap. In addition, the El Monte Transit Center charging requirements make this option very difficult to achieve.
  
- Option B - N/A
  - Project Scope: Install necessary cable to support temporary service of 10 MW with PE Gear.
  - Staff Assessment: N/A  
SCE determined that serving the requested load with PE gear is not feasible due to reliability and operational requirements; therefore no scope or cost was provided.

- Option C - \$5,237,746
  - Project Scope: Install (1) 66/12 kV 28 MW transformers and (1) 66 kV line without redundancy.
  - Staff Assessment. Not recommended.  
Option C proposes the addition of a new customer-dedicated substation and installing a new tap configuration 66kV line segment (approximately 0.6 mile) from the existing Anita-Amador 66 kV Line to Metro Substation creating the new Anita-Amador-Metro 66 kV Line. It is noted that the substation would be dedicated to Metro but would be owned by SCE.
  
- Option D - \$15,757,721
  - Project Scope: Install (1) 66/12 kV 28 MW transformer and (2) 66 kV lines for transmission line redundancy.
  - Staff Assessment: Not recommended.  
Option D proposed the addition of a new customer-dedicated substation with one (1) transformer and two (2) 66 kV lines. Option D saves nearly \$3.7M as compared to Option E but adds a risk power outage due to transformer failure. While the probability of transformer failure is low, any failure would disrupt service until the transformer is replaced.
  
- Option E - \$19,416,209
  - Project Scope: Install (2) 66/12 kV 28 MW transformers and (2) 66 kV lines for transmission line and transformer redundancy.
  - Staff Assessment: Recommended.  
Option E proposes the addition of a new customer-dedicated substation with two (2) transformers and two (2) 66 kV lines; the maximum resiliency available. SCE studied looping in the existing Anita-Amador 66 kV Line by installing approximately 0.9 mile of new underground circuit from Metro's Sub-station to the existing Amador-Anita 66 kV Sub-transmission Line creating the new Amador-Metro 66 kV Line and installing approximately 0.78 mile of overhead and underground circuit creating the new Anita-Metro 66 kV Line. The construction schedule is around 44 months for this option.

### SAE3105-1 Depot Chargers

The proposed solution by BYD requires installing an overhead inverted pantograph per bus; e.g., 100 total, to charge the BEBs while parked. The pantographs will be suspended from an overhead gantry fitted with one 175kW Heliox charger providing power to every three pantographs. This system complies with the SAE J3015-1 overhead charging standards.

Additionally, CNG fueling lanes will be equipped with a 450kW charger per lane so buses can get a burst of charge while being cleaned. This maintains an operational commonality with CNG buses that will still be at D9 during the transition. Additionally, this helps reduce the peak electrical demand on the electric circuit.

### Civil Work | Design-Build

Design-build is a method of project delivery through which Metro contracts directly with a single entity that is responsible for both design and subsequent construction services for the stated project. Metro

has successfully utilized design-build contracts on various capital programs. Staff seeks suitable opportunities to utilize the design-build delivery method for the civil work associated with the charging infrastructure. The design-build approach offers numerous benefits:

- A single point of responsibility for design, installation, and construction.
- Functional specifications are provided which promotes more open competition
- More budgeted projects can be accomplished by adding design/build capacity.
- Risk for design is shifted to the design/build contractor; therefore, changes related to design may be minimized.
- Schedule efficiency and significant time savings may be realized because construction may proceed while design is being finalized.
- Administrative costs may be reduced by combining the solicitation process for the design and construction phases;
- Save construction management and engineering resources during the construction phase; and
- Minimize contractor-generated changes resulting in a reduced contract closeout time.

These contracts will be awarded to the lowest price responsive, responsible bidder meeting the requirements set forth in the invitation for bids.

#### Approve Addition of Staff

Successful execution of a charging infrastructure program requires a skilled and experienced staff exclusively dedicated to this effort. Staff is requesting the approval of five (5) new non-contract positions in FY22 as listed below:

- Two (2) Sr. Manager Project Control. In the coming months, it is anticipated that two concurrent civil projects will be active at different locations. Each should be staffed with a Sr. Manager, Project Control.
- Two (2) Sr. Engineers. Minimally, each Sr. Manager Project Control should be supported by a Sr. Engineer.
- One (1) Sr. Analyst. It is anticipated that the projects will need to be supported by an analyst to coordinate budget and financial matters with Metro's internal stakeholders.

This initial request is part of the total FTE need for infrastructure support which is planned as part of the Zero Emission Bus (ZEB) program. The five (5) positions will be hired on using available FTEs created through the FY22 midyear budget process. Upon approval of Recommendation E, staff will immediately commence recruitment processes to establish a ZEB specific qualified candidate pool for the five (5) positions with anticipated start dates of Q2/Q3 of FY22. This will be done through the FY22 midyear budget process. As the scale of the work evolves, staff may return and request Board approval for additional positions.

#### Staff's Recommendation

1. SCE - MOS Study and Proposed Solutions: Staff recommends executing Options A and E.

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Option A will allow Metro to maintain and continue operation, initiate ZEB service while the major substation upgrade is performed. Option E will allow Metro to meet its long-term power needs with the greatest level of resiliency available. This approach will provide 10 MW and be scalable to increased power levels, if needed.

2. SAE3105-1 Depot Chargers: The solution proposed by BYD is considered the most robust and efficient in terms of operation and maintainability. It also ensures compatibility with manufacturers employing the same standards.
3. Design-Build: This authorization allows Metro to potentially reduce schedule, minimize risk to Metro, and reduce costs.

### **DETERMINATION OF SAFETY IMPACT**

There is no impact to safety. Recommendations A-D will allow Metro to initiate ZE operations on the Silver Line in the quickest and most cost-effective manner and provide the electrical power to support further expansion of ZE operation.

### **FINANCIAL IMPACT**

Budget for the recommended action is included in the Life of Project (LOP) budget of Capital project 201077 - BYD 40 Foot Zero Emission Buses. Due to SCE payment requirements, a payment is scheduled for early FY22. Staff will closely monitor the financial situation and if needed, will request Board approval of a Mid-year budget amendment to make the payment. Since the project requires multi-year contracts, the Cost Center Manager, and Project Manager will be responsible for future fiscal year budgeting.

#### **Impact to Budget**

The combined funding for these actions include Federal, State and Local sources including Green Funds. Staff can also pursue funds such as LCTOP and BOS 5307 for this electrification effort. Staff also continues to pursue all additional grant and rebate opportunities as they materialize. This will help ensure that the Bus Acquisition and Electrification Program remain funded while enacting the fleet conversion to Zero Emissions by 2030.

### **IMPLEMENTATION OF STRATEGIC PLAN GOALS**

These recommendations support Goal #3, Enhance communities and lives through mobility and access to opportunity and Goal #4 Transform LA County through regional collaboration and national leadership.

### **ALTERNATIVES CONSIDERED**

Staff has considered leaving the existing circuit that supplied both Division 9 and El Monte Transit Center SCE service delivery alone; however, this approach is not recommended as this cannot

support the Board's directive to convert the entire fleet to zero emission buses.

The Board of Directors may choose not to authorize the Contract award for this project; however, this alternative is not recommended as this is critical to facilitate the timely execution and associated deliverables of Metro's ZEB Master Plan and Vehicle Engineering and Acquisition capital and operating projects.

### **NEXT STEPS**

Upon Board approval, staff will continue to competitively award individual task orders, on an as-needed basis, for engineering, technical, and program management support services. Also, staff will commence recruitment activities for the five (5) positions critical to support the ZEB program and hire these positions when the FY22 budget is amended.

### **ATTACHMENTS**

Attachment A - Procurement Summary  
Attachment B - Contract Modification Log  
Attachment C - DEOD Summary  
Attachment D - Funding / Expenditure Plan

Prepared by: Marc Manning, Senior Director, Vehicle Engineering and Acquisition (213) 922-5871  
Jesus Montes, Senior Executive Officer, Vehicle Engineering and Acquisition (213) 418-3277

Reviewed by: James T. Gallagher, Chief Operations Officer (213) 922-4424  
Debra Avila, Chief Vendor/Contract Management Officer (213) 418-3051

## PROCUREMENT SUMMARY

**ZIXTY 40-FOOT ZERO EMISSION TRANSIT  
BUS CONTRACT / CONTRACT NO. OP28367-002**

1.	<b>Contract Number:</b> OP28367-002		
2.	<b>Recommended Vendor:</b> BYD Coach & Bus, LLC (BYD)		
3.	<b>Mod. Work Description:</b> See Attachment B		
4.	<b>Contract Work Description:</b> See list of pending and negotiated changes in Attachment B.		
5.	<b>The following data is current as of:</b> 4/2018		
6.	<b>Contract Completion Status</b>		<b>Financial Status</b>
	<b>Contract Awarded:</b>	9/08/2017	<b>Contract Award Amount:</b> \$47,774,723
	<b>Notice to Proceed (NTP)</b>	9/08/2017	<b>Total of Modifications Approved:</b> \$754,177
	<b>Original Complete Date:</b>	8/16/2019	<b>Pending Modifications (Including this action)</b> \$22,938,872
	<b>Current Est. Complete Date:</b>	11/01/2021	<b>Current Contract Value (with this action)</b> \$71,467,772
7.	<b>Contract Administrator:</b> Joe Marzano		<b>Telephone Number:</b> 213-922-7014
8.	<b>Project Manager:</b> Julio Rodriguez		<b>Telephone Number:</b> 213-922-6603

**A. Procurement Background**

This Board Action is to approve Contract Modification No. 6 for on-route opportunity charger licenses and monitoring for forty-four (44) depot-chargers, one hundred twenty (120) smart charging licenses, one hundred twenty (120) monitoring licenses, support for installation, commissioning of all the chargers, and twelve (12) years of extended warranty for service and maintenance to support Metro's Bus Operations and infrastructure for the Silver Line in the amount of \$22,938,872.

This Contract Modification will be processed in accordance with Metro's Acquisition Policy and the contract type is a firm fixed unit price.

On July 20, 2017, the Board awarded Contract No.: OP28367-002 to BYD Coach & Bus, LLC, for the manufacture and delivery of the 60 units of the 60' ZE transit buses in the Not-to-Exceed amount of \$47,774,723. Attachment B shows the list of pending and negotiated change orders.



**B. Cost/Price Analysis**

The recommended price of \$22,938,871.73 including tax, has been determined to be fair and reasonable based upon an independent cost estimate, cost analysis, technical evaluation, fact finding, and negotiations.

<b>Proposal Amount</b>	<b>Metro ICE</b>	<b>Negotiated Amount</b>
\$22,938,872	\$27,313,908	\$22,938,872

**CONTRACT MODIFICATION/CHANGE ORDER LOG**

**BYD COACH & BUS, LLC. -FOOT ZERO EMISSION TRANSIT BUS CONTRACT  
OP28367-002**

<b>Mod. no.</b>	<b>Description</b>	<b>Status (approved or pending)</b>	<b>Date</b>	<b>\$ Amount</b>
1	Modify SP-38 LEP definition of Disadvantage Worker	Approved	1/9/19	\$ 0
2	Exercise 3.0 Optional Configuration - APC PF-1	Approved	12/3/19	\$326,780
3	Extend Period of Performance for Base Buy to 11/1/2021	Approved	12/27/19	\$ 0
4	Negotiated changes in configuration on base buy buses	Approved	4/16/20	(\$473,710)
5	Procure 10 shop chargers	Approved	9/30/20	\$450,514
6	On-Route OPP chargers (8) Difference from original 300kW to 450kW	Approved	4/12/21	\$450,592.80
7	Depot Chargers, Licenses, Monitoring, Infrastructure	Pending	Open	\$22,938,871.73
	<b>Modification Total:</b>			\$23,693,048.70
	<b>Original Contract:</b>	Approved	9/8/17	\$47,774,723
	<b>Total:</b>			<b>\$71,467,771.70</b>

**DEOD SUMMARY****BYD COACH & BUS, LLC - FORTY-FOUR (44) HELIOX DEPOT CHARGERS, SOFTWARE LICENSES, INSTALLATION AND COMMISSIONING SUPPORT, AND TWELVE (12) YEAR WARRANTY SERVICE AND SUPPORT FOR D9 CHARGING INFRASTRUCTURE / OP28367-002****A. Small Business Participation**

BYD Coach and Bus, LLC, a Transit Vehicle Manufacturer (TVM), is on the Federal Transit Administration's (FTA) list of eligible TVMs. BYD Coach and Bus, LLC reported that it submitted its overall Disadvantaged Business Enterprise (DBE) goal of 3% to FTA for FY20, in compliance with 49 Code of Federal Regulations (CFR) Section 26.49(a)(1). TVMs submit overall DBE goals and report participation directly to FTA annually.

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

A review of the current service contract indicates that the Living Wage and Service Contract Worker Retention Policy (LW/SCWRP) was not applicable at the time of award. Therefore, the LW/SCWRP is not applicable to this modification.

**C. Prevailing Wage Applicability**

Prevailing Wage is not applicable to this modification.

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

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

**E. Local Employment Plan**

Local Employment Plan Program is applicable on this contract. Staff will monitor progress on all LEP commitments, including the contractual commitments in creating employment opportunities in the State of California and the 40% commitment to hire disadvantaged workers.

**Funding and Expenditure Plan  
CP201077**

In Thousands	Expenses Through FY20	FY21 YTD Q3	FY21 Q4	FY22	FY23	FY24	Total LOP	% of Total
<b>Uses of Funds</b>								
Vehicles & Charging Infrastructure	\$ -	\$ -	\$ 19,566	\$ 6,882	\$ 16,057	\$ -	\$ 42,505	
Spare Parts, Optional Features, Training Aids	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		
Labor	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		
Travel/Administration	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		
<b>Total Project Costs</b>	\$ -	\$ -	\$ 19,566	\$ 6,882	\$ 16,057	\$ -	\$ 42,505	

In Thousands	Expenses Through FY20	FY21 YTD Q3	FY21 Q4	FY22	FY23	FY24	Total LOP	% of Total
<b>Sources of Funds</b>								
State: LCTOP			\$ 19,566	\$ 6,882	\$ 12,552		\$ 39,000	
Local: PC40% / MR 2% / General / Other					\$ 3,505		\$ 3,505	
<b>Total Project Funding</b>	\$ -	\$ -	\$ 19,566	\$ 6,882	\$ 16,057	\$ -	\$ 42,505	

Note: Funding plan depicts the sources for the proposed recommendations.

LCTOP is a state approved funding source for this project and use.

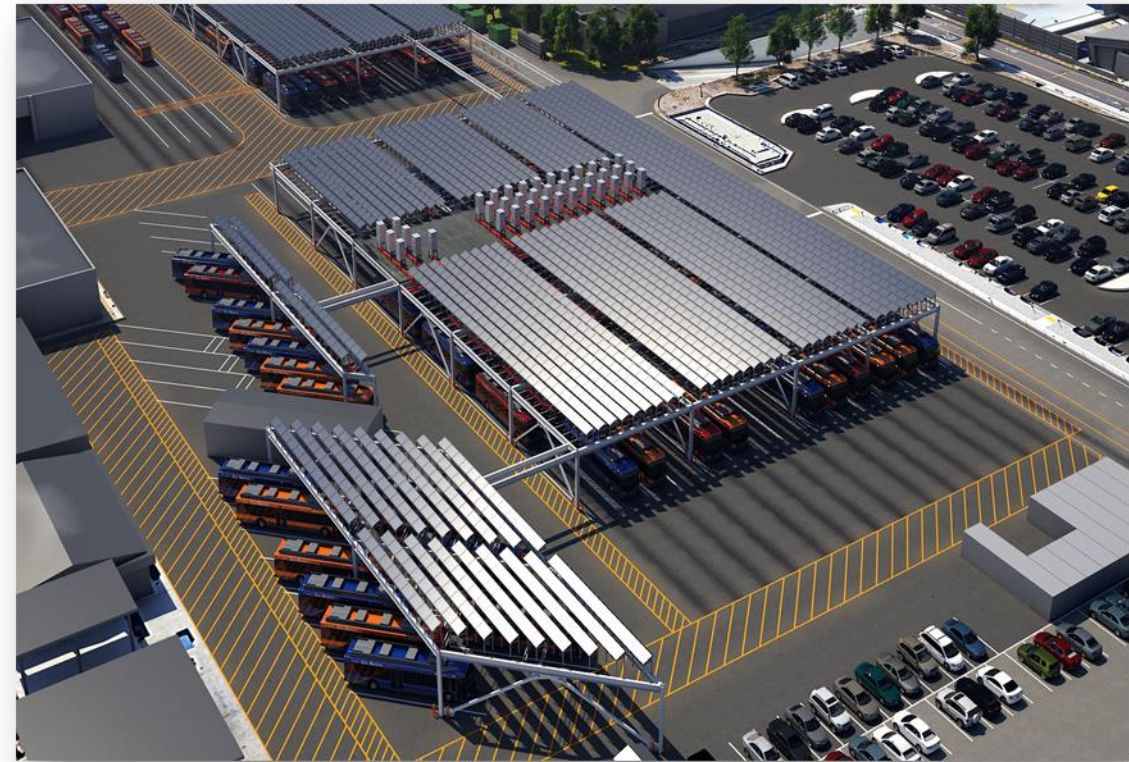
Other Local funding sources are eligible sources for the use of funds in excess of LCTOP.

# SCE | Upgrade Utilities for Division 9 & El Monte Transit Center BYD | Deliver Depot Chargers for Division 9



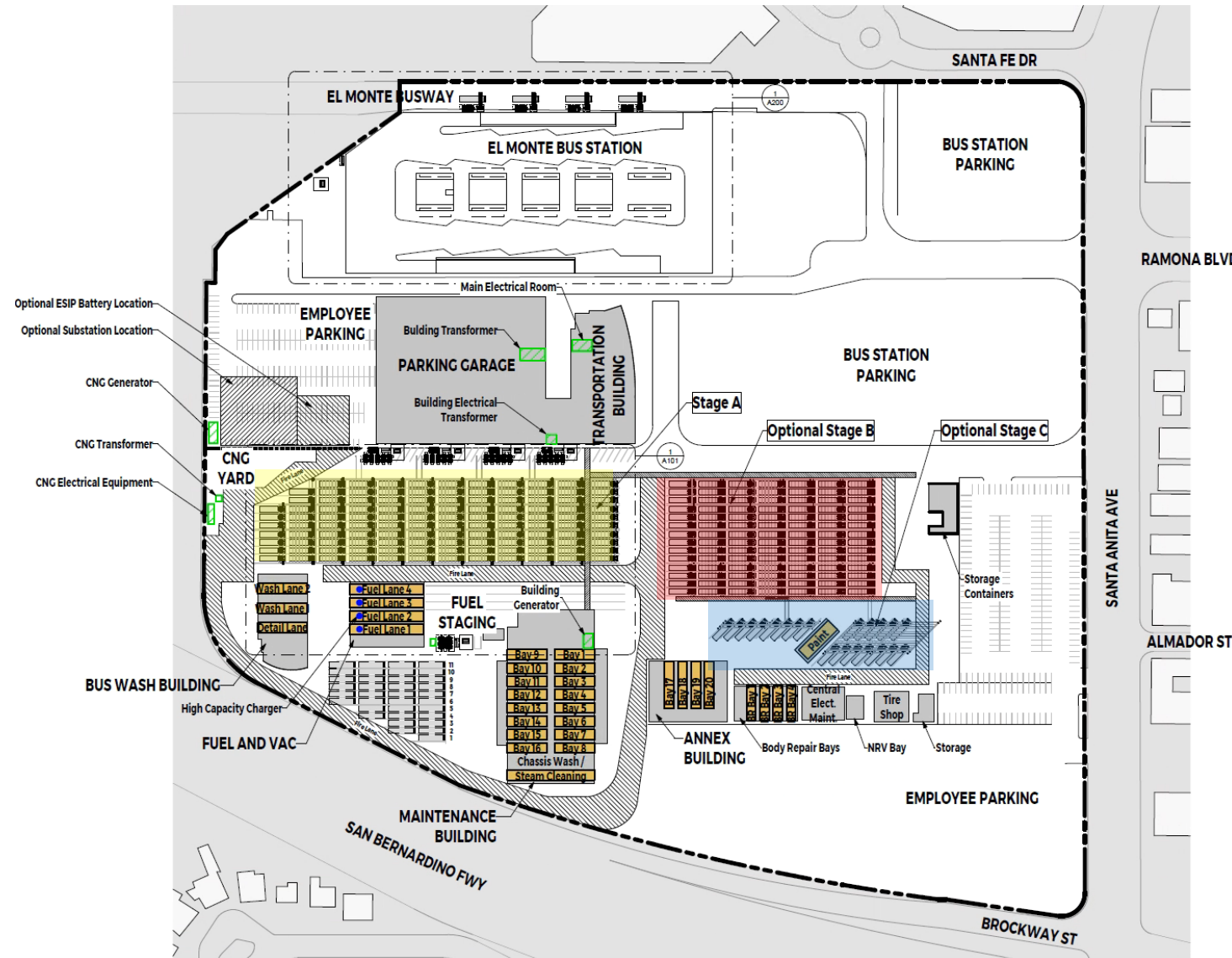
# Introduction

- ❑ Approval of recommendations required to initiate conversion of D9 and El Monte Transit Center for Zero Emission Operations
  - ❑ SCE | Upgrade Utilities
  - ❑ BYD Change Order | Deliver Depot Chargers
- ❑ Modeling performed to optimize power requirements & charging strategies
- ❑ Method of Service Study performed by SCE to identify best options for delivering required power



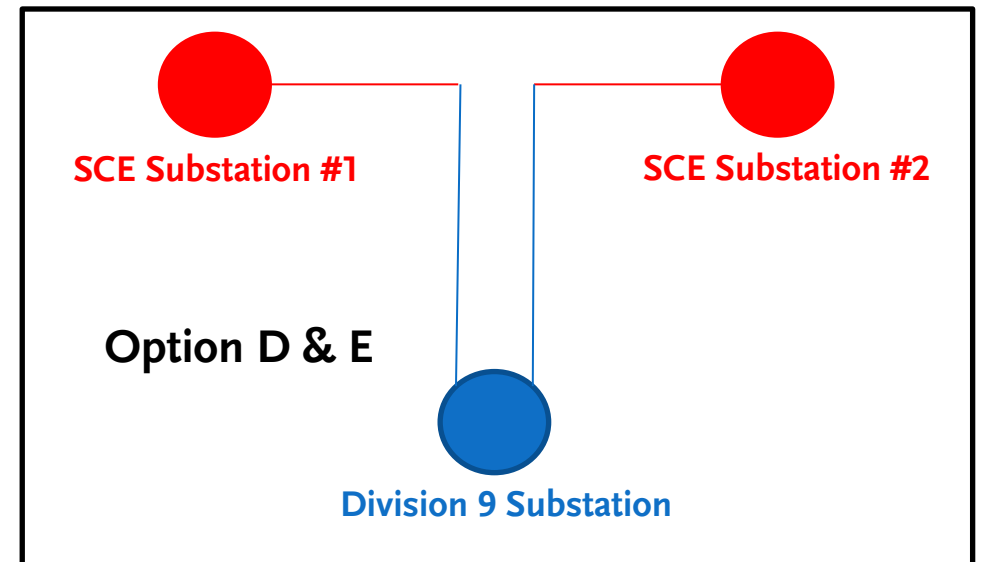
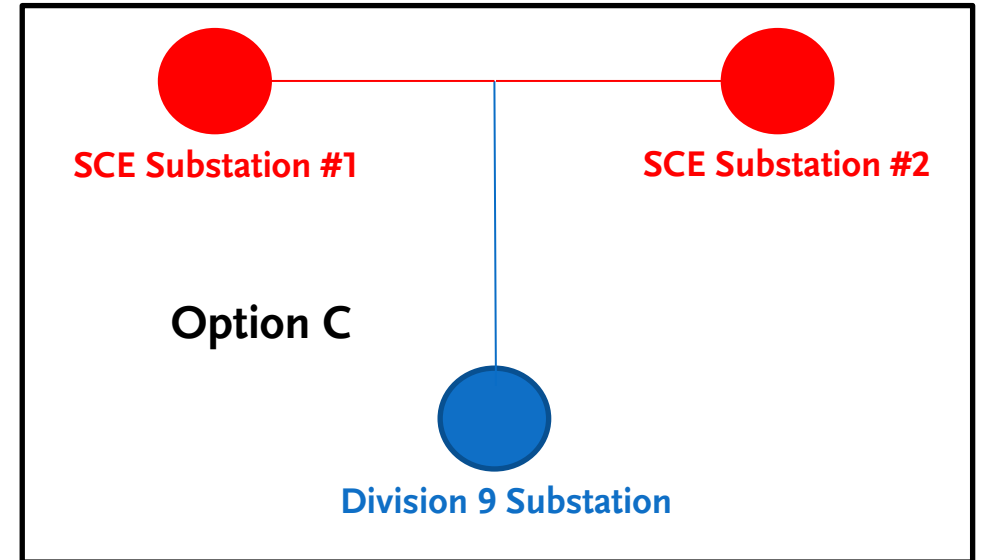
# Modeling | Division 9 Charging Layout

- ❑ Heliox Charging System Service Proven in N. America & Europe
- ❑ Charging compatible with Proterra, New Flyer, Nova and BYD
- ❑ Optimizes Use of Limited Space
- ❑ Allows for optimization of bus battery capacity, minimizes need for long-range buses
- ❑ Variable Charger Output allows reduction in power demand – cost savings
- ❑ Supports multi-stage transition – Work can be performed as funds are available.



# SCE Utility Upgrade for Division 9 & El Monte Transit Center

- ❑ Five Options offered (A – F).
  - ❑ Option A is interim for up to 10 MW only during off-peak hours.
  - ❑ Option B withdrawn as not viable
  - ❑ Option C: 1 power line & 1 transformer
  - ❑ Option D: 2 power lines & 1 transformer
  - ❑ Option E: 2 power lines & 2 transformers
  
- ❑ Recommendation is to select Options A & E:
  - ❑ Option A (\$149,644) allows most immediate transition to Zero Emission operations
  
  - ❑ Option E (\$19,416,209) provides highest level of resiliency. Also, increases available demand from 5 MW to 15 MW





# Overview | BYD Project

## Contract:

- Base order of sixty 40' BEB's
- Option order for forty additional 40' BEB's, 100 total
- Proprietary Plug-in Chargers

## Current Status:

- Change order successfully executed to update charging strategy from proprietary plug-in and inductive charging to industry standards: SAE-J1772 CCS1(Plug-in) & SAE-J3105/1 (overhead cross-rails/pantograph)
- Five pilot buses delivered between January and March 2021; first buses in the world equipped with both charging strategies
- Pilot buses currently undergoing comprehensive field testing.

## Recommendation:

- BYD originally proposed delivery of proprietary plug-in chargers.
- Given rapid advancements in both zero emission bus and battery charger technology, decision was made to adopt SAE standard charging strategies
- Approval of recommendation for delivery of forty-four (44) depot chargers is required to ensure equipment is available to effectively and efficiently charge the battery electric buses being delivered.

