EXHIBIT C
EVSE PRODUCT SPECIFICATION

SECTION 26 27 29

ELECTRICAL VEHICULAR CHARGING STATION

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes: AC Level 2 electric vehicle supply equipment.

1.02 DEFINITIONS

A. CCID: Charge Circuit Interrupting Device. Device that continuously monitors differential current among all current-carrying line conductors in a grounded system and rapidly interrupts the circuit under conditions where the differential current exceeds the rating of the charging circuit interrupting device.

B. EV: Electric vehicle.

C. EVSE: Electric vehicle supply equipment. This term refers to AC Level 2 charging equipment that depends on the built-in charger located onboard the vehicle.

D. Fastened in Place: Does not require tools to be removed and replaced.

E. Fixed in Place: Requires tools to be removed and replaced.

F. OCPP: Open Charge Point Protocol; an application protocol for communication between EVs and a central management system.

1.03 ACTION SUBMITTALS

A. Product Data:

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes of EV charging stations.
2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

B. Shop Drawings:

1. Include plans, elevations, sections, and mounting/attachment details.
2. Detail fabrication and assembly of mounting assemblies for electric vehicle charging stations.
3. Include verification of wireless communications service at each electric vehicle charging station location.

1.04 INFORMATIONAL SUBMITTALS

A. Preconstruction test reports.

B. Manufacturers' published instructions.

C. Manufacturer's Field Reports:

1. Manufacturer's field reports for field quality-control support.
2. Manufacturer's field reports for system startup support.

D. Sustainability Certifications:

1. Manufacturer's certification of Energy Star compliance for products provided.

1.05 CLOSEOUT SUBMITTALS

A. Maintenance Contracts:

1. Software and firmware service agreement as negotiated with the District.

B. Warranty documentation.

1. Definitions of warranty period by part number/sub-component as negotiated with the District

C. Sustainable design closeout documentation.

1. Submit data certifying that vehicle charging equipment is capable of responding to time-of-use market signals and whether equipment is incorporated into demand response program, load flexibility program, or other energy management strategies.

1.06 PRECONSTRUCTION TESTING

A. Wireless Survey: Complete wireless survey to determine if wireless provider signals meet or exceed manufacturer's recommended minimum values.

B. Electrical Site Validation: Include basis of design (site load analysis) verifying that site electrical infrastructure capacity meets or exceeds manufacturer's minimum requirements.

C. Preconstruction Test Reports: Collect, assemble, and submit test reports prepared by qualified testing agency.

1.07 WARRANTY

A. Manufacturer warrants that vehicle charging equipment performs in accordance with specified requirements and agrees to provide repair or replacement of components or products that fail to perform as specified within warranty period.

1. Extended-Warranty Period: Five years from date of post-burn-in, station turn-on.

PART 2 – PRODUCTS

2.01 AC LEVEL 2 ELECTRIC VEHICLE SUPPLY EQUIPMENT

A. Description: EVSE with rated input voltage of 240 V ac or 208 V ac for commercial charging applications.

B. Performance Criteria:

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1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction and marked for intended location and application.
2. Listing Criteria:
    a. EV Supply Equipment: UL 2594.
    b. Personnel Protection: UL 2231-1 and UL 2231-2.
3. General Characteristics:
    a. Comply with NFPA 70, Article 625.
    b. Comply with NEMA 250.
    c. Comply with SAE J1772.
    d. Surge Protection: 6 kV at 3000 A.
    e. Operating Temperature: Minus 22 to 122 deg F (Minus 30 to 50 deg C).
    f. Operating Humidity: Up to 95 percent, noncondensing.
    g. Indoor/Outdoor Rated: NEMA 250, Type 3R .
    h. Energy Metering Accuracy: 1.0 percent of full scale at 15-minute intervals.

C. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, diagrams, and performance data illustrating size, physical appearance, and other characteristics of product.
2. Sustainable Design Submittals: Prepare and submit documentation for the following:
    a. Submit certification indicating vehicle charging equipment complies with requirements for ENERGY STAR product labeling.
    b. Submit certification indicating that vehicle charging equipment is capable of responding to time-of-use market signals and whether equipment is incorporated into demand response program, load flexibility program, or other energy management strategies.
3. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.
    a. Include sample warranty language.
4. Safety:
    a. Automatic Plug-Out Detection: Power terminated, SAE J1772 with automatic SMS or email notification.
    b. Ground Fault Circuit Interruption: 20 mA CCID with auto retry (every 15 seconds).

D. Charging Network:

1. Station Management Software:
    a. Web-based station management software for the District.
    b. Building management system (BMS) integration with open API capabilities, demonstrated integration with BMS providers and BacNet adapters
    c. Capable of configuring stations for pricing and access policies.
        1) Pricing Policies Include: Time-of-use, duration-based, and energy consumption (kWh) pricing.

2) Access Policies Include: Private-only, public-only, or combined private/public access.

d. Capable of generating operational reports:

1) Transaction Reports: Summary of individual session details (e.g. plug-in time, plug-out time, kWh delivered).

2) Usage Reports: Histogram summary of station usage by time-of-day in one-hour intervals.

3) Cost Reports: Summary of electricity cost generated by station usage.

4) Revenue Reports: Summary of Owner revenue generated from driver fees.

5) Sustainability Reports:

(a) Summary of carbon offset and fossil fuel consumption reduced due to usage of charging stations.

(b) Energy usage reporting, at minimum monthly reporting providing energy usage on a per-port and station basis, preferably has the ability to download a customizable report at any given time.

2. Driver Account Software:

a. Web-based driver account management software for EV owners.

b. Vehicle OEM mapping EV Roaming via OCPI Integrations.

c. Credit card and app-less payment options.

d. Provides remote management features such as: start/stop charge session.

e. Accessible to all members of the public, with no membership of a specific network required for access.

f. Equipped to provide location and real-time availability to users on the web through sites such as plugshare.com and the Alternative Fuels Data Center.

g. Waitlist availability with notifications enabled.

h. Meets security and privacy compliance ISO 27001, SOC, GDPR

i. Option for a LACCD white labeled smartphone app for payment and access.

j. Drivers can register with address contact and credit card payment information.

k. Drivers can specify SMS txt and email alert preferences (e.g. charge complete and plug-out).

l. Drivers can monitor charging session history, including fees incurred and kWh consumed.

3. Network Services:

a. Vendor provides 24/7 network monitoring.

b. Continuously monitor state-of-health of charging stations.

c. Automated driver billing and Owner payment.

d. Pricing and access policy configuration through web-based software.

1) Dynamic pricing based on the electrical utility’s time of usage tariffs.

e. Near real-time monitoring and reporting of charging session data.

f. Near real-time mapping of station location, availability, access, and pricing information.

g. Multiple portals for key stakeholders, including Owner, electric vehicle drivers, and customer service.

h. Load Management: Constant peak power, time-of-use, or dynamic (utility-controlled demand response) peak power. Management levels at site, panel, circuit breaker, or charger group. Power sharing.

4. Other Services:

a. Vendor provides 24/7 call center service and support for customers in English and Spanish.

E. Network:

1. Data Communication: Cellular: 4G LTE and Wi-Fi.
2. Network Communication Protocol: OCPP and TCP/IP.
3. Network Security: HTTPS-WSS; 128-bit AES Encryption.

F. Cable Management:

1. Holsters hold and store J1772 plug on EVSE.
2. Cable Management System: Auto retracting overhead cable storage device.

G. AC Level 2 EV Charging Station for Commercial, Workplace, Multi-Residential, and Fleet Applications, High Output

1. Characteristics:

a. Must be on the Southern California Edison Charge Ready Approved Product List for EV Charging Equipment.

b. Buy America Compliant.

c. EV Charging interfaces and payment systems considered information and communication technology (ICT) shall be compliant with Section 508 accessibility requirements.

d. Compliant with California Division of the State Architect design and accessibility regulations.

e. Compliant with all California regulations including, but not limited to, the California Building Standards Code.

f. Conform to ISO 15118 Standard as set forward by the CPUC.

g. California Type Evaluation Program (CTEP) certified.

h. EVSE station white label and branding options for a fully LACCD branded pedestal, **preferred but not required**.

i. Performance:

1) Power:

(a) Supply Voltage: 120/240 or 120/208 V at 60 Hz, single phase, 40 A.

(b) Hard wired: Capped at 40 A max output for SCE compliance.

(c) Output Current: 12 to 40 A, configurable by software.

(d) Output Quantity: 2 ports or single port as required by design

(e) Output Power: Level 2, 9.6 kW at 40 A per port, maximum.

(f) Integrated Ground-Fault Circuit Interrupter (GFCI): 20 mA, auto reset. Provide unit that makes three attempts at 15-minute intervals.

(g) Frequency: 60 Hz.

(h) Standby Power Consumption: 6.5 W per port, maximum.

2) Operating Conditions:

(a) Location Rating: Outdoor

(b) Operating Temperature Range: Minus 22 to 122 deg F (Minus 30 to 50 deg C).

(c) Humidity Range: Up to 95 percent, noncondensing.

(d) Energy Metering Accuracy: 1.0 percent of full scale at 15-minute intervals.

j. Features:

1) LCD Messaging Screen:

(a) Communicates charging instructions to electric vehicle drivers.

(b) Backlit.

(c) LED Status Lights for the following states:

(1) Station available.

(2) Vehicle charging.

(3) Vehicle fully charged.

(4) Fault detection.

k. Enclosure: NEMA 250, Type 3R.

l. Mounting: Pedestal mount or Wall mount as indicated on Drawings.

m. Cable and Connector: Type 1, SAE J1772, standard connector compatible with Tesla adapter.

n. Output Wiring: Cable Nominal Length: minimum 18 ft. (5.5 m), 25 ft. (7.6 m) preferred.

1) Cable Management System:

(a) Auto-retractable cable management.

(b) Independently installable and replaceable without disconnecting power supply.

o. User Interface:

1) Provide indicators that allow user to identify charging station from distance by flashing the LED on the charging station or by using the mobile app.

2) Display Screen: minimum 3.5 in. (88.9 mm) color LCD, at the minimum.

(a) Provide screen that displays power, charging, charging complete, remote control, system status, faults, and service required.

3) Provide display showing following information to users:

(a) In Waiting Mode: Charging fee and custom message from site owner.

(b) At Start of Charging Session: Instructions to start charging session.

(c) During Charging Session: Cumulative length of charging session.

(d) At End of Charging Session: Total length and cost for charging session.

4) Provide toll-free assistance number legibly printed on front of charging station offering 24/7 user support.

p. Networking:

1) Protocol: TCP/IP.

2) WAN Communications: Cellular LTE.

3) Capable of remote configuration, diagnostic, and reporting including:

(a) Customize charging station pricing policy and rates.

(b) Activate or deactivate the charging station.

(c) Start or stop charging session.

(d) Set or modify maximum output current.

(e) Update charger embedded software and firmware.

(f) Provide real-time health status of EVSE back to network monitoring system.

(g) Control user access to EVSE.

q. Authorization or Payment System:

1) Provide credit card reader for direct customer payment.

2) Provide system that accepts Apple Pay, Google Pay, contactless, magnetic and EMV credit card.

3) Smart Card Reader: ISO 15693 (iCLASS), ISO 14443 (MIFARE, DESFIRE).

4) PCI compliant.

5) Capable of remote control and authorization using mobile application, web site, or toll-free number.

6) Allow customizable predetermined fee to users for accessing charging stations that are meant for public use.

7) Allow charging stations fees by time of use or kWh consumption (if local municipality allows for it.

8) Allow users to pay for the charging service directly at charging station through following methods:

(a) Access card provided by Network Operator.

(b) Provider's mobile app for payment of the charging session with funds in account that can be loaded from credit card, Visa or MasterCard.

(c) Pay-as-you-go payment by credit card by guest payment through provider's mobile app.

r. Charging Network:

1) Compatible with connected charging network.

2) Compatible with open-source, minimum OCPP 2.0.1, vendor-agnostic software and hardware protocols for EVSE and Network Management Server.

3) Multiple units independently connect to charging network.

2. Energy Management: Provide load management to control maximum output power to every EV in accordance with SAE J1772.

a. Dynamic Load Management:

1) Site Level Load Management: Limit total kW of chargers on site to not exceed predetermined power consumption.

2) Panel Level Load Management: Limit total power consumption of chargers connected to each distribution panel not to exceed predetermined limit. Distribute power to each electric vehicle connected so it receives full charging output until electrical limit is reached. When electrical limit is reached, each electric vehicle receives load-managed reduced charging current.

3) Circuit Breaker Level Load Management: Limit total power consumption of chargers connected to each circuit breaker. Provide load management system that can manage multiple breakers in single panel. Manage power distribution such that first vehicle connected to circuit receives full charging current. As subsequent vehicles are connected, all but the first vehicle connected receives load-managed reduced charging current.

b. Time-of-Use: Provide system to manage charging current to each connected charger automatically in real time to reduce energy costs by limiting total amount of current used by each charger to one of the following:

1) Fixed value.

2) Schedule of set points over period of 24 hours.

c. Power Sharing Profiles:

1) 1) Provide system to distribute power so each electric vehicle connected receives full charging output until site electrical limit setting is reached. When electrical limit is reached, each electric vehicle will receive the following outputs.

(a) Equal Charge: Every vehicle connected receives full power until maximum power consumption limit is reached, then every connected vehicle receives reduced equal charging current n.

(b) First In - First Out: First vehicle(s) plugged in (up to the kW limit) receives full power until vehicle is fully charged or unplugged, then next sequential vehicle plugged in receives full power.

(c) Set Charge: Every vehicle receives the same predetermined amount of charging current, regardless of how many vehicles are plugged in, until maximum power consumption limit is reached.

d. OpenADR 2.0b Compliance: Utility controlled demand response.

PART 3 – EXECUTION

3.01 FIELD QUALITY CONTROL OF VEHICLE CHARGING EQUIPMENT

A. Field tests and inspections must be witnessed by District.

B. Tests and Inspections:

1. Perform manufacturer's recommended tests and inspections.
2. For each unit of vehicle charging equipment, perform the following tests and inspections:
    a. Unit self-test.
    b. Operation test with EV.
    c. Network communications test.

C. Nonconforming Work:

1. Unit will be considered defective if it does not pass tests and inspections.
2. Remove and replace defective units and retest.

D. Field Quality-Control Reports: Collect, assemble, and submit test and inspection reports.

E. Manufacturer Services: Furnish services of factory-authorized service representative to support field tests and inspections.

F. Manufacturer's Field Reports for Field Quality-Control Support: Prepare report after each visit by factory-authorized service representative, documenting activities performed at Project site.

3.02 SYSTEM STARTUP

A. Perform startup service.

1. Complete installation and startup checks in accordance with manufacturer's published instructions.

B. Manufacturer Services: Furnish services of factory-authorized service representative to support system startup.

C. Manufacturer's Field Reports for System Startup Support: Prepare report after each visit by factory-authorized service representative, documenting activities performed at Project site.

3.03 OPERATIONS & MAINTENANCE

A. Equipment Control

1. Upon completion of construction and written acceptance by the District (Notice of Acceptance) of a fully complete and operational EV charging station (including power and data service), the Vendor shall provide operations and maintenance for the EV charging equipment.

B. Software and Firmware Service Agreement:

1. Technical Support: Beginning at Substantial Completion, verify that software and firmware service agreement includes software and firmware support for five years.
2. Upgrade Service: At Substantial Completion, update software and firmware to latest version. Install and program software and firmware upgrades at time of Substantial Completion.
3. Upgrade Reports: Prepare report after each update, documenting upgrades installed.

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C. Hardware Service Agreement:

1. Provide operational service to minimize system downtime and to minimize maintenance costs incurred by the District.
    a. Lenth of time shall be a minimum of 5 years.
    b. Service includes full replacement of universal charging station head unit.
    c. Vendor must install replacement unit for the District.
    d. Failed unit returned will be picked up by the Vendor in same box as used to ship replacement unit.
    e. The District's electric vehicle charging system must be immediately operational with installation of replacement unit.
    f. Provide regular routine and preventative maintenance services on all EV charging equipment which, at a minimum, shall include inspections, testing, necessary adjustment, parts cleaning, software upgrades and scheduled overhauls as recommended by the equipment manufacturer. Preventative and routine maintenance shall be performed in accordance with the provisions of the maintenance manual/guideline of each component.
    g. Host and maintain any software system used and fix any bugs that exist in any software system used that effect usage and/or performance.
    h. Have material and staff immediately available to repair and/or replace any facilities damaged by normal wear, forces of nature, or acts of third parties.

D. Up Time Requirement, Dashboard Reporting, and Maintenance Notifications

1. Other than allowable downtime for maintenance and repairs, equipment must be up and running equal to or greater than 97.00% of the time.
2. Monthly Downtime Length Reports
3. Charging port uptime must be calculated on a monthly basis for the previous twelve months. Uptime shall be self-monitored by the Vendor and reported to the District if uptime is less than 97.00% for the monthly calculation or for a continuous window exceeding twelve hours.
4. The District may notify the Vendor if it has reason to believe the uptime requirement is not being met and require the Vendor to develop an action plan to bring the equipment back to working condition.
5. The District also reserves the right to have third party monitoring of uptime to validate Vendor reporting.

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END OF SECTION