

PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

ENERGY DIVISION

**RESOLUTION E-5175
November 18, 2021**

R E S O L U T I O N

Resolution E-5175 Southern California Edison requests approval to authorize the processes for qualifying Electric Vehicle Supply Equipment (EVSE) under the Charge Ready 2 program's site-host and utility-ownership models.

PROPOSED OUTCOME:

- This Resolution finds that the proposal from Southern California Edison Company (SCE) to authorize the processes for qualifying Electric Vehicle Supply Equipment (EVSE) as eligible for the Charge Ready 2 program's site-host and utility-ownership models is, with modifications, reasonable and in compliance with Decision (D.) 20-08-045.

SAFETY CONSIDERATIONS:

- There is no direct impact on safety. SCE must comply with the Safety Requirements Checklist for Transportation Electrification programs the California Public Utilities Commission adopted in D.18-05-040.

ESTIMATED COST:

- This Resolution has no direct cost impact. The California Public Utilities Commission authorized Southern California Edison Company's Charge Ready 2 program via D. 20-08-045, and this Resolution does not modify that budget.

By Advice Letter 4322-E filed on October 23, 2020.

SUMMARY

This Resolution approves, with modifications, the request from Southern California Edison Company (SCE) to authorize the qualification processes to certify Electric Vehicle Supply Equipment (EVSE) as eligible under the Charge Ready 2 program's site-host and utility-ownership models.

On October 23, 2020, SCE filed Advice Letter (AL) 4322-E, requesting approval of the process to qualify Electric Vehicle Supply Equipment (EVSE) for the Charge Ready 2 Infrastructure and Market Education program (Charge Ready 2). SCE proposes two processes—one to continually approve EVSE that meet technical qualifications on a rolling basis for customers within Charge Ready 2 who will own the EVSE, and one in which SCE will issue a Request for Qualification (RFQ) for purchasing EVSE that SCE will own through the program. As proposed, the EVSE that are either purchased or qualified through these pathways must conform to the applicable eligibility requirements within SCE's Standard Equipment EVSE Qualification Package (Qualification Package).

This Resolution authorizes, with modifications, SCE's qualification processes. While we find SCE's proposed qualification processes to be reasonable, the Resolution requires modifications to the EVSE and vendor requirements within SCE's Qualification Package. Specifically, this Resolution directs SCE to update its Qualification Package to require that all EVSE support interoperability via open standards and to ensure that qualified vendors share data confidentially with SCE, the CPUC, and the Charge Ready 2 program evaluator on networking and service costs, per the Charge Ready 2 Decision.¹

BACKGROUND

Southern California Edison Company (SCE) filed Advice Letter (AL) 4322-E on October 23, 2020, requesting approval of the process to qualify EVSE for Charge Ready 2, pursuant to Order Paragraph (OP) 19 of Decision (D.) 20-08-045. The Charge Ready 2 program will deploy approximately 38,000 new EV chargers for passenger (light-duty) vehicles at workplaces, multi-unit dwellings (MUDs), and public destination centers. SCE will deploy mostly Level 2 chargers, with the option for Level 1, and a minimum of 205 direct current fast charger (DCFC) ports. The program is divided into several sub-

¹ D.20-08-045.

programs, as described in Table 1 below.

Table 1: Summary of Charge Ready 2 Programs

Program	Budget	Description
Make-Ready Expansion (Level 2 and Level 1)	\$333,000,000	This is an expansion of SCE's Charge Ready Pilot program and will allow SCE to build the make-ready infrastructure to support a total of 22,000 ports ² of mostly Level 2 and some Level 1 chargers. In most cases, site hosts will own the EVSE. SCE will site these chargers at MUDs, workplaces, and public destination centers. While SCE will build the make-ready, customers participating in this program will receive a rebate for purchasing and owning the EVSE. All site hosts installing Level 1 or Level 2 charging through the Make-Ready Expansion program must participate in the Charge Ready DR program.
Make-Ready Expansion (DCFC)	\$13,975,206	A subset of the Make-Ready Expansion, SCE will offer rebates to a limited number of sites to install DCFCs. At minimum, this program will support the installation of 205 DCFC ports. Site prioritization for DCFCs is addressed through a separate Tier 3 AL filing, and criteria for siting and rebates, among other programmatic details, will be determined based on proximity to customers needing charging, proximity to MUDs, and proximity to

² D.20-08-045, page 56: "In sum, we determine that 22,000 ports, comprised of 10,200 MUD and 12,000 workplace/destination center is a reasonable size and investment for the Make-Ready Expansion program.

		Disadvantaged Communities (DACs) and low-income customers.
Make-Ready Expansion (Own and Operate)	\$16,548,463	A subset of the Make-Ready Expansion, customers at MUDs in DACs can choose between having SCE own and operate the EVSE and make-ready or can own the infrastructure themselves and receive a rebate to cover the cost of maintenance and operation of the EVSE. This program is capped at 2,500 ports within the Make-Ready Expansion program.
New Construction Rebate	\$54,000,000	SCE will provide rebates to developers of new MUD buildings to encourage MUD developers to install operational charging stations during construction. The rebate will only cover an installation that is beyond the local and state building code requirements. The rebate program will target up to approximately 15,400 of ports and will provide a rebate of up to \$3,500 per port.
Marketing, Education, and Outreach	\$15,500,000	The Charge Ready 2 ME&O program includes \$4.8 million to expand SCE's TE Advisory Services program and \$9.7 million for program specific marketing to drive participation in the infrastructure programs.
Evaluation	\$4,320,000	This budget will go to a third-party evaluator.

The majority of the Make-Ready Expansion sites will use the "site-host EVSE ownership model," which will have the site-host (or customer) own the EVSE and receive a rebate from SCE to cover all or a portion of the cost of the EVSE. Customers at MUDs located in DACs participating in the Own and Operate program have a choice between the site-

host ownership model and a “utility-ownership model,” in which the IOU will own and operate the EVSE on the customer’s behalf.

For both ownership models, SCE must first qualify the EVSE technology eligible for installation through the program. D. 20-08-045 also directs SCE to include a streamlined process for pre-qualifying or deeming qualified the vendors and equipment that were qualified for the prior Charge Ready Pilot if they meet the technical requirements for Charge Ready 2.

OP 19 of D.20-08-045 directs SCE, within 60 days of the adoption of the Decision, to file a Tier 1 AL outlining the RFQ Processes for EVSE under both the site-host and utility-ownership models, consistent with Section 4.5.12 of the Decision. On October 23, 2020, SCE filed AL 4322-E to establish the RFQ processes for EVSE for both the Charge Ready 2 site-host and utility-ownership models.

Site-host EVSE ownership

SCE proposes that site hosts under the site-host ownership model will select EVSE from SCE’s Approved Product List (APL), which identifies specific EV charging equipment whose suppliers attest to comply with technical, safety, and other requirements when they submit their application to SCE to receive approval.

SCE compiled the APL over several years, and SCE continues to maintain and expand it over time to allow customers to select from an array of EVSE vendors that SCE has approved for one or more of SCE’s TE programs. SCE has a continuously open equipment qualification approach in which it conducts a quarterly verification process to routinely update the APL with any changes to the listed EVSE information. As new suppliers offer EVSE products to the market, or when existing suppliers can offer new commercially available EVSE products not yet listed, they can immediately request and receive an EVSE Qualification Package from SCE. In a technology provider’s application to be included on the APL, the technology provider must attest to meeting the Qualification Package requirements. This is different than an RFQ as it will not occur all at once but on a rolling basis. SCE notes that using this continuously open equipment qualification approach prevents suppliers from having to wait for a formal RFQ, ensures that customers have a growing range of EVSE products to select from, and facilitates the introduction of new EVSE solutions over the life cycle of the Charge Ready 2 program.

Utility EVSE ownership

SCE proposes to issue an RFQ to identify the suppliers and EVSE vendors that it will use for the Own and Operate option. SCE will use the RFQ to obtain competitive equipment and services pricing, and to identify those suppliers that may be interested in operating and maintaining the equipment for a 10-year duration, pursuant to the requirement within D.20-08-045 for the infrastructure to remain operational for a minimum of 10-years.

The specific EVSE that SCE selects for use under the utility-ownership option will be based on the results of the pricing and commercial terms reached through the competitive bid process for that equipment currently listed or qualified to be listed on SCE's APL, so long as they meet the technical specifications that the Charge Ready 2 Decision requires.

Technical requirements

AL 4322-E also includes the technical, data collection, and warranty requirements for participating vendors. SCE's process to qualify EVSE for the APL ensures that any equipment SCE uses in its programs conforms to the applicable eligibility requirements. SCE refers to the eligibility requirements as its Standard Equipment EVSE Qualification Package (Qualification Package). SCE has developed these qualification requirements for both standards-based (on-road) EVSE, and for "non-standards" based EVSE (off-road vehicle applications).

Technical and data collection requirements

For on-road EVSE (i.e., for EVSE that serve EVs that drive on the road and not off-road equipment), the Qualification Package contains the following categories of EVSE eligibility requirements:

1. Equipment Eligibility Requirements
2. Technical Requirements
3. Communication and Control Requirements
4. Information and Security Requirements
5. Payment and Processing Capabilities
6. EVSE Pricing
7. Data Collection and Reporting Requirements

SCE also verifies the equipment's certification by a Nationally Recognized Testing Laboratory and other certifications as may apply.

Warranty Requirements

For site-host ownership, the site host must ensure the EVSE remains operational for a 10-year duration. SCE, however, does not plan to impose any specific warranty requirements, and will allow site-hosts to select and negotiate directly with suppliers. For utility-owned equipment, SCE will require a 10-year warranty coverage.

NOTICE

Notice of SCE's AL 4322-E was made by publication in the CPUC's Daily Calendar. SCE states that a copy of the AL was mailed and distributed in accordance with Section 4 of General Order 96-B.

PROTESTS

SCE's AL 4322-E received one protest. On November 12, 2020, ChargePoint, Inc. (ChargePoint) submitted a protest. ChargePoint states that the protest is for the sole purpose of seeking clarification that the "[s]teamlined process for pre-qualifying or deeming qualified vendors and equipment already on SCE's APL" will apply to both Level 2 and DCFC equipment. ChargePoint supports SCE's proposed use of its Approved Product List, as it helps to efficiently coordinate qualification processes between SCE Transportation Electrification (TE) programs. ChargePoint cites that one of the benefits of allowing a streamlined process for pre-qualifying equipment already on SCE's APL is saving significant time and resources that SCE and market participants would otherwise spend repeatedly qualifying the same equipment. ChargePoint asks that SCE clarify whether the APL will apply to both Level 2 and DCFC equipment.

Beyond this clarification, ChargePoint does not express any issue with AL 4322-E.

On November 19, 2020, SCE issued a reply to ChargePoint's protest. SCE states that it is uncertain why ChargePoint believes that SCE's current APL does not include DCFC equipment. SCE says that it provides a link to the current APL in AL 4322-E, which includes approved DCFC equipment. SCE does not believe the CPUC needs to address ChargePoint's concern through a disposition of AL 4322-E, as ChargePoint argues.

DISCUSSION

This section of the Resolution identifies how the CPUC disposes of the issues associated with the establishment of the SCE Charge Ready 2 EVSE qualification processes. We find SCE's process for continually approving EVSE on its APL for the site-host owned equipment, and the proposed process for issuing an RFQ for the Own and Operate program, to be reasonable. The process for site-host owned EVSE leverages the work that SCE and vendors already undertook within the Charge Ready Pilot and ensures that customers will have choice in the EVSE they purchase. Further, this process ensures that as new technology becomes available throughout the program implementation period, the APL will reflect those technological advances. For the Own and Operate RFQ, SCE leverages the work of the APL development, while ensuring additional cost and warranty protections via an official RFQ process.

That said, this section addresses some issues with the EVSE and vendor requirements within the Qualification Package. We evaluated these issues based on consistency with D.20-08-045. The qualification processes are authorized, with modifications, as discussed in this section.

1. ChargePoint's Protest

Pre-qualification applies to Level 2 and DCFC EVSE.

ChargePoint seeks a clarification that the process for pre-qualifying vendors and equipment will apply to both Level 2 and DCFC equipment. As SCE has clarified in its reply to ChargePoint, the process applies to both Level 2 and DCFC equipment.

2. Application of Technical Requirements from D.20-08-045

The Technical Requirements within D.20-08-045 Section 4.5.12 aim to ensure interoperability and open standards.

In OP 19 of D.20-08-045, the CPUC directed SCE, within 60 days of the adoption of the Decision, to file a Tier 1 AL outlining the RFQ Processes for EVSE under both the site-host and utility-ownership models, consistent with Section 4.5.12 of the Decision.

Also within this Section,³ the Decision discusses the EVSE requirement related to interoperability:

³ "TOU Rates, Demand Response, and Technical Requirements"

“...the Commission seeks to support interoperability. All EVSEs deployed through [Charge Ready 2]—either site host owned or utility owned—must support open standards, and should, if practical, be capable of high-level communications, as defined in the final report from the 2017 VGI Working Group.”⁴

This section of the Decision goes on to describe the requirements for all Level 1 or Level 2 EVSE within the Make-Ready Expansion portion of the program to participate in the Charge Ready 2 DR program. The Decision directs SCE to file a Tier 2 AL to describe its implementation plan for the Charge Ready DR program,⁵ and one of the minimum components of this AL requirement is a description of the communication capabilities and technology requirements.⁶ This means that each EVSE must be capable of communication and technical capabilities to support DR and to support high-level communications and open standards.

The Decision further cites the 2017 Vehicle-Grid Integration (VGI) Working Group’s final report, which states that “high-level communication” refers to driver authentication, communication of transaction details, and smart charging coordination information parameters.⁷ This report specifically recommends that alternating current

⁴ D.20-08-045 at page 94.

⁵ SCE filed AL 4363-E on December 2, 2020, describing the implementation plan for the Charge Ready Demand Response Program. Energy Division suspended this AL on December 24, 2020. Energy Division is still reviewing AL 4363-E as of the release of this Resolution.

⁶ The Decision’s requirements for the Tier 2 AL on the DR program includes the following: “a. SCE should describe the communication capabilities participating EVSEs will need to meet in order to effectively participate in the CR2 DR program, and how to the best of SCE’s ability this accounts for any anticipated communications developments; b. SCE should outline how the participating EVSE/EVSP technology and communications requirements will incorporate Vehicle Grid Integration (VGI) Working Group guidance; c. SCE should describe how it will ensure consistency with communication capabilities across EVSPs. And qualified technology (e.g. ability to receive communication signals, ability to directly communicate with the driver, and the ability to throttle charging); ci. If SCE chooses to continue to allow the EVSPs to manage the driver relationship, then SCE should develop a plan for how signals can be passed through to drivers consistently across the CR2 DR program; cii. SCE should describe how it will ensure a consistent protocol on timing and method by which EVSPs notify customers of a DR event; d. SCE should describe how each participating EVSP will be capable of allowing drivers themselves to opt-out of DR events; e. SCE should identify any potential communication challenges that may create barriers or hurdles for implementing VGI-related communication strategies identified through the VGI Working Group and Commission guidance to implement Pub. Util. Code § 740.16, and propose strategies or methods for overcoming any identified communication related barriers [where] feasible.”

⁷ 2018 VGI Working Group Report at page 20.

(AC) Level 2 conductive EVSE have hardware to allow for high-level communication between the EVSE and the EV. The Working Group final report also recommends the capability of the EVSE to communicate with a “Power Flow Entity” which refers to an offsite entity that is requesting or mandating VGI activities from other actors.⁸

The language within D.20-08-045 thus means that for Level 2 and DCFC the EVSE that SCE supports through Charge Ready 2 should be capable of communicating with the power flow entity. We want to ensure that the EVSEs are cross-compatible with multiple vendors and that we are additionally maintaining security. Thus, the hardware must be securely updateable and able to be switched to another service provider, regardless of what software or standards are initially included. This is the essence of interoperability to which the Decision cites.

As described in more detail within this discussion section, SCE AL 4322-E and its attached Qualification Package fail to include necessary technology requirements to support interoperability as the Decision requires.

There are three critical open standards for EV charging deployment, which SCE must include as technical requirements in the Charge Ready 2 program in order to comply with D.20-08-045.

The CPUC has worked closely with the California Energy Commission (CEC) for several years to evaluate EVSE communication protocols and interoperability. On the CEC’s end, this work has included an analysis resulting in a staff proposal to improve charger communication capability and interoperability for its light-duty EVSE investments.⁹ Under the proposal issued in November 2021, light-duty EVSE that the CEC funds must be hardware-ready for ISO 15118 communication in late 2022 for DC equipment and Spring 2023 for AC equipment. This is still a staff proposal and has not yet been ratified by the CEC.

The CPUC has also already addressed EVSE interoperability within the Decision authorizing San Diego Gas & Electric (SDG&E) to implement Power Your Drive Extension (PYD2).¹⁰ In the section of D.21-04-014 titled “EVSE Qualification,” the CPUC directed SDG&E to ensure EVSE, at minimum, meet certain requirements to support

⁸ 2018 VGI Working Group Report at page 9.

⁹ “ISO 15118 Charger Communications and Interoperability Proposal (Nov 2021)”

<https://efiling.energy.ca.gov/GetDocument.aspx?tn=240210&DocumentContentId=73669>

¹⁰ D.21-04-014.

interoperability. The Decision states that “[t]o ensure the future-proofing of infrastructure installed in PYD2, SDG&E should require the qualification of equipment that is equipped with a [Society of Automotive Engineers (SAE)] J1772 connector, is compliant with [Open Charge Alliance’s Open Charge Point Protocol (OCPP)], and has hardware that is remotely upgradable to offer various AC charging features using ISO 15118 high-level communications including, but not limited to, smart charging.” The Decision goes on to say that consistent with those requirements, EVSE should have:

- A connection with a network service provider that is capable of receiving utility Open ADR (IEC 62746-10-01) messages as a Virtual End Node;
- The capability of being controlled remotely;
- Managed charging capabilities;
- A warranty;
- A maintenance and service plan; and
- Ability to collect, locally store, and communicate data within the EVSE remotely.

While the Commission issued D.21-04-014 after the Charge Ready 2 Decision, it illustrates the critical technical requirements to supporting EVSE interoperability, as cited within the Charge Ready 2 Decision.

Further, the PYD2 Decision illustrates the CPUC’s ongoing alignment with the CEC as the CPUC cited to the CEC’s AB 2127 staff report as justification for requiring all EVSE qualified for the PYD2 program to have hardware that is remotely upgradable to offer various AC charging features using ISO 15118.¹¹ At the time of the PYD2 Decision the CEC had not yet adopted the staff report, but did adopt a version of this report on July 14, 2021, adding that, “market unification would foster a more efficient and understandable charging network and could deliver value and convenience to drivers and site hosts.”¹² Within the final report, the CEC identifies several key standards to interoperability. The report identifies that North American market players appear to be rapidly unifying around CCS for standard DCFC charger connectors for light-duty.¹³

¹¹ AS the PYD2 Decision cites, the CEC’s AB 2127 staff report at page 53 recommended that “where possible, state agencies should leverage procurement requirements to accelerate market unification around interoperable communication protocols.” Further, the CEC AB 2127 staff report at page 59 recommended that all AC EVSE be equipped with a SAE J1772 connector, be capable of high-level communications using the ISO 15118 protocol, and be compliant with Open Charge Alliance’s OCPP. The staff report states that the latter two are key protocols that fill two communication gaps critical to achieving convenient, grid-integrated charging.

¹² CEC AB 2127 final report at 62.

¹³ CEC AB 2127 final report at 62

For charger communication protocols, the report identifies two key protocols—Open Charge Alliance’s OCPP for charger-to-network communications,¹⁴ and International Organization for Standardization (ISO) 15118 for communications between the vehicle and charger.¹⁵ While the AB 2127 report only recommended further examination of ISO 15118, as noted above, the CEC has since issued a staff proposal to require ISO 15118 readiness within all CEC-funded EVSE starting in late 2022 for DC and mid 2023 for AC—the ISO 15118 Charger Communication and Interoperability Proposal.¹⁶

While the CPUC has not adopted the draft Transportation Electrification Framework (TEF) staff proposal, the recommendations in the CEC AB 2127 final report¹⁷ and the directives in the PYD2 Decision are consistent with the draft TEF’s proposal. In the draft TEF, staff propose that the CPUC require that all EVSE funded through the IOU TE programs be capable of accepting updates via a network “over-the-air” and “meet the hardware and software requirements consistent with CEC planned requirements,” including using “ISO 15118 as a solution for VGI communication.”¹⁸

As discussed in more detail in the next portion of this Discussion section, SCE AL 4322-E and its attached Qualification Package do not include all of the three open standards which the TEF recommends, the CEC AB 2127 report identifies, and which the CEC currently proposes to require. As such, AL 4322-E does not comply with D.20-08-045’s directive on including open standards.

SCE must amend the Qualification Package’s “Technical Requirements” to align with D.20-08-045 (Section 4.5.12) to ensure Charge Ready 2 supports interoperability and open standards.

SCE states that the Technical Requirements section of the Qualification Package “relates to equipment typically used for on-road [EVs] where charging equipment interoperability standards exist.” Each qualified vendor must complete the table of the technical requirements checklist to confirm that the EVSE they submit for qualification meets the stated requirements or capabilities.

¹⁴ CEC AB 2127 final report at 67

¹⁵ CEC AB 2127 final report at 68

¹⁶ “ISO 15118 Charger Communications and Interoperability Proposal (Nov 2021)”

<https://efiling.energy.ca.gov/GetDocument.aspx?tn=240210&DocumentContentId=73669>

¹⁷ CEC AB 2127 final report at 68.

¹⁸ CPUC Energy Division Draft TEF at 82.

Within the Technical Requirements, SCE's proposed standards language differs from that of the CEC's Proposed Charger Communication and Interoperability Proposal, and from the technical requirements necessary to support interoperability, as directed in D.20-08-045.

SAE J1772

The J1772 connector standard for AC charging allows for rudimentary communications between the vehicle and EVSE, but not high-level communications between the vehicle and EVSE (e.g., the driver's mobility needs, scheduling, electricity pricing, vehicle discharge commands, authentication, and billing) that the VGI Working Group Report and CEC final report recommend.¹⁹

Within the Standard Equipment Technical Requirements section, there is a requirement that states "FORM AND FUNCTION STANDARDS: EVSEs SHALL comply with Society of Automotive Engineers (SAE) J1772, CCS, SAE J3068, SAE J3105, or IEEE 2030.1.1 (CHAdeMO) requirements."²⁰ Although this requirement does not mandate SAE J1772, we understand that since the APL and Qualification Package also serve the Charge Ready Transport program, that some of these standards may apply to medium- or heavy-duty charging equipment or off-road charging equipment. We expect that for the light-duty EVSE deployed through Charge Ready 2 that all AC conductive EVSE would be compliant with SAE J1772 and DC conductive EVSE would be compliant with the Combined Charging Standard (CCS). Per D.20-08-045 Conclusion of Law (COL) 12, "DCFC sites should include at least one CCS and one CHAdeMO connector to ensure accessibility and optimize usage." The DCFC hardware requirements apply to DCFC chargers featuring a CCS connector, including multiple-port chargers with at least one CCS connector.

OCPP

OCPP allows for communication specifically between the EVSE and the Power Flow Entity, or in this case, and as the CPUC clarified in PYD2, a network services provider. Any EVSE that is OCPP-compliant will work with any back-end network that is also OCPP compliant. This gives charger operators and site hosts greater flexibility and control over their chargers (e.g., monitoring charger status, connecting chargers to signals for local electricity pricing and DR).²¹ OCPP also ensures the EVSEs do not

¹⁹ CEC AB 2127 final report at page 66.

²⁰ SCE's EV Charging Equipment Qualification Package at page 8.

²¹ CEC AB 2127 final report at 67.

become stranded assets if an Electric Vehicle Service Provider (EVSP) goes out of business.

Under the Communication and Control Requirements section for EVSE supporting on-road vehicles, SCE includes a requirement that states: “Communications and controls with charger/EVSE SHOULD be OCPP 1.6 or later or similar (provide detail).”²² SCE did not provide a reasonable rationale for why this requirement is stated as “should” rather than “shall.”

Requiring OCPP is not premature given this is already in widespread use with charger network companies.²³ As of September 2021, at least 20 EVSE manufacturers and 32 network providers state that they offer equipment with or are capable of communicating via OCPP.²⁴ Further, the CPUC has since enforced this standard for the PYD2 program, and the CPUC previously enforced this standard for the AB 1082 and AB 1083 programs.²⁵

Requiring OCPP supports the Decision’s goal of interoperability and utilization of open standards. Further, SCE’s own Qualification Package states that “[t]he Standard Equipment Technical Requirements Checklist relates to equipment typically used for on-road vehicles where charging equipment interoperability standards exist.”²⁶ As OCPP exists today, we do not find it reasonable to further delay requiring this protocol as a criterion for EVSE to qualify for the program. To the extent that additional EVSE management features are useful beyond the capabilities of OCPP, alternative EVSE to network service provider communication standards may be implemented *in addition* to OCPP. Thus, we direct SCE to update its Qualification Package to change the directive on OCPP to read:

“Communications and controls between a network services provider with charger/EVSE SHALL be capable of operating on Open Charge Alliance’s OCPP

²² SCE’s EV Charging Equipment Qualification Package at page 9.

²³ Open Charge Alliance, OCPP 1.6 Certified Implementations.

<https://www.openchargealliance.org/certification/certifiedcompanies/>

²⁴ Per the California Electric Vehicle Infrastructure Project (CALeVIP), Equipment Manufacturers and Network Providers have noted “OCPP” in the “typical equipment standards that they offer.

<https://calevip.org/calevip-connects?category=79&county=All&op=%EF%80%82&keys=OCPP>.

²⁵ D.19-11-017

²⁶ SCE’s EV Charging Equipment Qualification Package at page 7.

1.6 or later. Similar communication standards may be implemented in addition to OCPP.”

ISO 15118

SCE’s Qualification Package does not include any mention of standards in the domain of communication between the EV and EVSE. One such standard, ISO 15118, provides a standardized method for EVs and EVSE to communicate the information needed to enable authentication, automatic billing, smart charging, and bidirectional charging. The existing version of ISO 15118 is already in use for CCS DC charging, and some EVs also use it for automatic authentication and billing. It is also in use in medium- and heavy-duty vehicle applications for automatic connections including J3105. A second version that will update the standard, ISO 15118-20, is pending final approval from the ISO/IEC. The AB 2127 report finds that use of ISO 15118 is growing among automakers and charging providers for various applications including AC charging, DC charging, and other advanced features.²⁷ The AB 2127 report also documented a non-exhaustive list of light-duty EV manufacturers with plans to implement ISO 15118 in Chapter 5 of the report.²⁸

The CEC ISO 15118 Charger Communication and Interoperability Proposal states that “ISO 15118 is a standard supporting high-level communication between the vehicle and the charger, and is already widely used for basic DC charging controls with [CCS]...Given the growing use and capabilities of ISO 15118, CEC staff propose that future light-duty vehicle chargers installed using CEC funds should be hardware-ready for ISO 15118.” Thus, it is essential to ensure that CPUC policies on charger and communication standards continue to align with CEC policies, as appropriate. Level 2 and DCFC EVSE installed with ratepayer funds as part of the Charge Ready 2 program should be hardware-ready for ISO 15118.

A charger that is ISO 15118-ready or “hardware-ready for ISO 15118” is capable of:

1. Powerline carrier (PLC) based high-level communication as specified in ISO 15118-3;
2. Secure management and storage of keys and certificates;

²⁷ CEC AB 2127 final report at 72.

²⁸ CEC AB 2127 final report at 68, footnote 114: “Audi, BMW, Daimler, Ford, Lucid, Porsche, Volvo and Volkswagen have stated their intention to implement ISO 15118 for AC and DC charger communications...”

3. Transport Layer Security (TLS) version 1.2; additional support for TLS 1.3 or subsequent versions is recommended to prepare for future updates to the ISO 15118 standard;
4. Remotely receiving updates to activate or enable ISO 15118 use cases; and
5. Connecting to backend network.

ISO 15118-ready chargers must have onboard hardware to support the above capabilities, but are not required to actively support specific ISO 15118 use cases. These defined capabilities are consistent with how the CEC staff proposal also defines ISO 15118-ready and “hardware-ready for ISO 15118.” CEC staff recommend that manufacturers self-test for ISO 15118-3 conformance using tests defined in ISO 15118-5. ISO 15118-ready chargers must be capable of remotely receiving updates to activate or enable ISO 15118 uses cases. ISO 15118-ready chargers shall be backward compatible at the charger level with existing vehicles using a J1772 or CCS connector inlet, and must be capable of selecting the appropriate communication protocol used by the vehicle.

The omission of ISO 15118 from SCE’s technical requirements does not support the Decision’s language around high-level communications, open standards, nor support for interoperability. We do not find that enforcing ISO 15118 hardware readiness is premature. The CEC identifies at least ten automakers with EVs already introduced or forthcoming to the U.S. market designed for ISO 15118 communications²⁹ and a growing number of EVSE manufacturers commensurate with that market demand.³⁰

To mitigate the risk of stranded assets and support capabilities to mitigate the impact of EV charging on the grid, we find it to be in the ratepayers’ interest to ensure that the ratepayer funded EVSE deployed through Charge Ready 2 are capable of accommodating the growing number of EVs that support ISO 15118 charging features. It would not be a prudent use of ratepayer funds if the EVSE became quickly outdated. Rather, by requiring emerging technology, the ratepayer funded assets will extend their useful life by adapting to future needs. We highlight and emphasize the need for a competitive TE market, and ensuring interoperability as ISO 15118 provides and as the Decision directs, will ensure market certainty for EVSPs and OEMs in developing their own products.

²⁹ CEC AB 2127 final report at 69 cites Audi, Daimler, Porsche, Volkswagen, Lucid Motors, Ford, Hyundai, Rivian, Volvo and other automakers.

³⁰ CEC AB 2127 final report at 69 and 71.

Because the Decision requires the charging infrastructure to remain operational for a minimum of 10 years, it behooves the CPUC to be thoughtful in setting the minimum technology requirements. To act otherwise would force customers to retain lesser capabilities, and could minimize the ability to manage charging load.

While the Decision does not explicitly mention ISO 15118, the directive for the EVSE to be interoperable is in the spirit of the legislature's longstanding directive for the CPUC to leverage "the technological advances that are needed to ensure the widespread use of plug-in hybrid and electric vehicles" and "to ensure that technologies employed in plug-in hybrid and electric vehicles work in a harmonious manner and across service territories."³¹ Interoperability in this context means that EVs and charging equipment should be capable of various charging features needed for widespread adoption and harmonious operation across California.

ISO 15118 is the most widespread standard that meets the Decision's requirements. At this time, a majority of U.S. based EVSE manufacturers and automotive OEMs in various on-road vehicle segments are developing products that will use ISO 15118 for high-level communications between the EV and EVSE. We view this as the market demonstrating a consensus around the use of this standard for EV to EVSE communications, especially in the context of the numerous global EV markets implementing ISO 15118. Further, ISO 15118-ready chargers would be backward compatible with EVs from the minority of automotive OEMs that may not have yet implemented ISO 15118 or continue to rely upon rudimentary charging communications IEC 61851.³² Implementation of ISO 15118, in alignment with D.20-08-045 will help to future-proof EVSE, ensuring that all EVSE are physically capable of supporting charging features which rely on ISO 15118, and ensuring drivers have the opportunity to benefit from smart and bidirectional charging. Further, ISO 15118 readiness will help ensure that the chargers are hardware-ready to support current and upcoming EV features, critical VGI capabilities, and an easier-than-gas user experience.³³

On November 3, 2021, four parties filed comments raising concerns about the draft Resolution's ISO 15118 requirement. Comments raised concerns that requiring ISO

³¹ P.U. Code Section 740.2 (c) and (e).

³² CEC AB2127 final report at page 72, footnote 135.

³³ "ISO 15118 Charger Communications and Interoperability Proposal (Nov 2021)"
<https://efiling.energy.ca.gov/GetDocument.aspx?tn=240210&DocumentContentId=73669>

15118 is premature, misaligned with the CEC, and impacted by supply chain issues such as chip shortages. Further, while Tesla argues against the requirement for ISO 15118, it suggests that if the CPUC goes forward with ISO 15118 for Charge Ready 2 that it do so in a phased approach.

In response to these concerns, we find it reasonable to implement a phased-in requirement within this program. Beginning in October 2022, all EVSE deployed through Charge Ready 2 and which are featured on the APL shall be ISO 15118-ready. This timing aligns with CEC staff's proposed ISO 15118 requirement for DC chargers. While this is still more accelerated than the CEC's proposal for AC charging, the phase in allows for a grace period to address some concerns around supply chain issues and general alignment with the CEC's proposed approach, while ensuring most of the chargers SCE deploys through the program are still ISO 15118-ready, supporting the Decision's interoperability requirements.

Thus, to ensure that all chargers it deploys beginning in October 2022 reflect this requirement, we find it reasonable to direct SCE to update its Qualification Package to reflect that:

“EVSE qualified for the Charge Ready 2 program using SAE J1772 and Combined Charging Standard SHALL be ISO 15118-ready, capable of enabling high-level communications using the ISO 15118 protocol to communicate with the vehicle.”

3. Networking Costs

SCE should clarify that vendors must agree to confidentially share their networking fee information.

Within the details of the procurement process, SCE does not mention any requirements for qualified vendors to share data. However, D.20-08-045 states that “SCE must also include a provision within the customer agreement and within its agreement with qualified participating vendors for the Make Ready Expansion, New Construction, and Own and Operate programs, including EVSPs, regarding giving SCE and its contracted evaluator access to data.”³⁴

³⁴ D.20-08-045 at page 125.

The IOUs received sparse data from the EVSPs through the light-duty pilots, including the Charge Ready pilot. The IOUs and the CPUC have little insight from those pilots into the soft costs, like networking and other service fees, that customers must pay to operate their chargers. Through Program Advisory Council (PAC) meetings, SCE has shared how these soft costs can amount to sums that are challenging for customers to pay. As a result, D.20-08-045 directed SCE to ensure that vendors provide SCE and the evaluator access to data.

Accordingly, SCE should update the qualification process to make clear that EVSPs must share data on charging usage and data on cost to customers, including the cost of networking fees and other packages for which customers pay. We understand that EVSPs may have concerns about sharing networking fee data, and so SCE may obtain this data confidentially and notify vendors that SCE will securely provide this data only to the CPUC and the program evaluator. This agreement should be contingent upon SCE qualifying the vendors for the Charge Ready 2 program.

Safety Considerations

This Resolution approves, with modifications, SCE's proposed EVSE qualification processes for its Charge Ready 2 program. There are no incremental safety considerations associated with this Resolution that the CPUC has not already addressed via D.20-08-045.

COMMENTS

Public Utilities Code section 311(g)(1) provides that this Resolution must be served on all parties and subject to at least 30 days public review. Please note that comments are due 20 days from the mailing date of this Resolution. Section 311(g)(2) provides that this 30-day review period and 20-day comment period may be reduced or waived upon the stipulation of all parties in the proceeding.

The 30-day review and 20-day comment period for the draft of this Resolution was neither waived nor reduced. Accordingly, this draft Resolution was mailed to parties for comments, and will be placed on the CPUC's agenda no earlier than 30 days from today.

On November 3, 2021, SCE, Tesla, Inc. (Tesla), ChargePoint, and EVgo filed comments on the draft Resolution.

In response to the requirement for ISO 15118, SCE, Tesla, ChargePoint, and EVgo argued that the CPUC should reject this requirement. SCE stated that it has significant concerns with requiring all EVSE to be capable of using the ISO 15118 protocol, that it is concerned it is premature to require this capability due to the potential negative impacts on the program and participating customers, and that the draft Resolution does not take into account the operational impacts or limitations on customer choice of such a requirement. SCE also takes issue with the use of the PYD2 Decision as a basis for the requirement, and argues that the draft Resolution fails to reference multiple findings from the AB 2127 report which counter the draft Resolution's conclusion to require ISO 15118 functionality. This includes SCE's assertion that the CEC appears to suggest it may be premature to adopt ISO 15118 as the report explains that the CEC will further examine opportunities to – if and when appropriate – advance the deployment of ISO 15118 capable charging hardware.

Tesla argues that rather than mandating a specific protocol it is important to let the market continue to push toward the right pathway. Tesla argues that at minimum it is important to provide a transition period for when new equipment standards become effective. Tesla finds the ISO 15118 requirement inconsistent with the CEC's proposed process for phasing in ISO 15118 over several years and cites the significant ongoing discussion regarding the relationship between ISO 15118 and enabling broader VGI programs and goals. At minimum, Tesla states, if additional equipment standards are necessary, a phase in timeline should be provided similar to what the CEC is considering. Tesla argues that the draft resolution lacks a detailed technical readiness assessment for evaluating why it is necessary to require one specific communication protocol at this time. Lastly, Tesla argues that beyond the intent to future proof EVSE and ensure that all drivers have the opportunity to benefit from smart and bidirectional charging, there is limited discussion on how this protocol will be utilized in Charge Ready 2 to benefit customers, the potential cost impact for requiring it immediately, the technical readiness and backwards compatibility with different versions of ISO 15118, and other potential supply chain constraints that may impact its broad applicability. Tesla also points to the fact that the CEC recently noticed a workshop to discuss a draft ISO 15118 proposal³⁵ with market readiness assessments incorporated, and argues that

³⁵ CEC held the CEC ISO 15118 Charger Communications and Interoperability Workshop on Wednesday, November 10, 2021.

it would be appropriate to evaluate alignment with the proposal to create consistent implementation timelines.

EVgo argues that adoption of ISO 15118 would be premature given uncertainties and lack of stakeholder discussion on this topic. While EVgo foresees the benefits that ISO 15118 will bring, EVgo expresses caution that unknowns and uncertainties in widespread implementation prevail and warrant further stakeholder discussion. EVgo expresses additional concern over chip shortages, citing that the pandemic along with fires at key chip fabrication facilities and droughts in Taiwan have put strain on supplies of integrated circuits (ICs). The lead time for Power Line Carrier (PLC) chips can be substantial as a result of these shortages, adding complexity and logistical challenges to requiring ISO 15118. EVgo also argues that ISO 15118 is deployed today primarily for billing purposes (Plug and Charge) and that the updates to the standard that incorporate additional data and use cases for VGI purposes—ISO 15118-20—is still under development. EVgo argues that interoperability is regulated by CARB and already applies to chargers installed under the Charge Ready 2 program via the “Electric Vehicle Charging Stations Open Access Act.” Lastly, EVgo argues that the CPUC should partner with the CEC on workshops, like the one the CEC recently noticed. EVgo argues that the CEC has only just begun to explore ISO 15118 through a workshop process and has not mandated ISO 15118 in its programs.

ChargePoint argues that the CPUC should reject the ISO 15118 requirement, but if the final resolution does address the standard it should be revised to align with the CEC proposal to implement ISO 15118 on a going forward basis, once the necessary technological and market evaluation has been completed. ChargePoint raises concerns that the draft Resolution’s determination regarding ISO 15118 is flawed and contains misstatements of fact. In particular, ChargePoint raises issues with a citation to a presentation from the New York State Department of Public Service addressing equipment eligibility requirements and recommendations for EVSE and Infrastructure Deployment, use of the PYD2 Decision as justification for the requirement, and argues that the draft Resolution overlooks the CEC’s ongoing stakeholder process, including the recently noticed ISO 15118 workshop scheduled for November 10, 2021. In response to the draft Resolution’s language on OCPP, SCE stated that it is generally agreeable to using OCPP, but is concerned that certain versions of the protocol may not meet its technical or cybersecurity requirements. SCE requests language to be added to the resolution to state that the communications and controls must also comply with “other

relevant technical and cybersecurity requirements established for SCE's Charge Ready 2 program."

Tesla states that it has concerns with the methodology and rationale utilized in the draft Resolution to establish OCPP as a program eligibility requirement, and that indicating that this is the "de facto" standard without further analysis appears insufficient for establishing a new program requirement that is immediately effective. Further, it states that it is important to further analyze the compatibility between different versions of OCPP and ISO 15118.

ChargePoint argues that the OCPP requirement should not be adopted, and that the final Resolution should be modified to instead say "Communications and controls between a network services provider with charger/EVSE must be capable of operating on OCPP 1.6 or later. Similar communication standards may be implemented in addition to OCPP." Further, ChargePoint argues that the draft Resolution contains erroneous statements and unfounded conclusions regarding the alleges status of OCPP as a "de facto" standard.

In response to the draft Resolution's language on SAE J1772 and CCS, SCE comments that the directive that all DC EVSE be compliant with CCS conflicts with D.20-08-045's Conclusion of Law 12: "DCFC sites should include at least one CCS and one CHAdeMO connector to ensure accessibility and optimize usage." SCE requests that the CPUC clarify if the draft Resolution requirement intends to supersede the Conclusion of Law 12 requirement. SCE supports only requiring CCS as the North American EV market is coalescing around CCS as the primary DC port standard. CHAdeMO only supports a single EV make/model in North America and SCE is unaware of any other OEMs utilizing or planning to utilize CHAdeMO. SCE argues that deploying this technology through SCE's program seems an imprudent investment and significantly limits the potential use of the charging stations. Further, SCE argues that operators in the future may have a difficult time recovering ongoing operational costs.

The parties included some other miscellaneous suggestions. SCE provided support to correct FOF 14 and FOF 17. EVgo argued that the CPUC should balance its need for diligent review with the need to accommodate emerging technologies, like high power charging equipment. Given the time lag between a utility application to when the program is implemented, programs like Charge Ready 2 may fall behind the latest technological trends (e.g., requirement of 50kW charging).

In response to these comments, we made modifications to this Resolution to address concerns around alignment with the CEC's approach to ISO 15118, timing concerns around the ISO 15118 requirement, language related to the OCPP requirement, clarification on D.20-08-045 COL 12, and other concerns raised in comments. While the Resolution clarifies that the requirement is for ISO 15118-readiness and modifies the ISO 15118 requirement to go into effect in October 2022, better aligning with CEC's timing and addressing some concerns over supply chain issues, we still find the requirement for ISO 15118 readiness to be critical in supporting D.20-08-045. Further, we do not find this to be premature. While Tesla points to the lack of technical readiness assessment, we rely on the technical assessment that our sister agency, the CEC, has done. There is no need to duplicate its work on ISO 15118, as well as our years long collaboration with the CEC and stakeholders on this topic. Tesla also states that there is limited discussion on backwards compatibility—which the Resolution addresses through modifications—and potential cost impacts. The CEC in its ISO 15118 Charger Communications and Interoperability Proposal, which Tesla cites to in comments, states that "CEC staff estimate the marginal hardware components needed for ISO 15118 readiness cost less than \$6 per charger." We do not find this cost estimate to be significant in the context of Charge Ready 2 given the program budget is a total of \$436 million, there is some cost sharing for the EVSE in place, and SCE will be reevaluating its rebate levels annually.

While we align the ISO 15118-ready requirement in this program with CEC's proposed requirement for DC equipment, our approach with Charge Ready 2 is still more accelerated than the CEC's for AC equipment. The primary reason for these differences is the fact that our programs themselves differ slightly in design and implementation from the CEC's infrastructure programs. Given the limited timeline for Charge Ready 2 implementation, it is reasonable for this requirement to go into effect sooner than that of the CEC's infrastructure programs.

Additionally, SCE in its comments states that automakers are exploring using vehicle telematics as an alternative path to ISO 15118. However, these requirements focus on hardware-readiness for ISO 15118, and do not affect or preclude the use of other pathways for charging communication. ISO 15118 readiness is compatible with the use of vehicle telematics systems.

Regarding suggestions from both SCE and ChargePoint to modify the OCPP language, the Resolution is modified to adopt most of ChargePoint's suggestion. This has the

impact of ensuring that the chargers are OCPP compliant but that the network operator could use a different protocol if they wish. As long as the charger itself can be connected using OCPP, we find this meets the Decision's requirements on open standards. We have additionally addressed the concern from ChargePoint that the referenced NYSERDA and ENERGY STAR sources are insufficient by citing to different sources.

As SCE did not include within its suggested language the specific cybersecurity and technical requirements it wishes to impose in addition to OCPP, we find the suggested language to be too broad.

FINDINGS

1. Decision (D.) 20-08-045 Ordering Paragraph (OP) 19 directs SCE, within 60 days of the adoption of the Decision, to file a Tier 1 advice letter outlining the qualification processes for electric vehicle supply equipment (EVSE) under both the site-host and utility-ownership models, consistent with Section 4.5.12 of the Decision.
2. On October 23, 2020, SCE filed advice letter 4322-E to establish the qualification processes for EVSE for both the Charge Ready 2 site-host and utility-ownership models, and to outline the technical, data collection, and warranty requirements for participating vendors.
3. On November 12, 2020, ChargePoint, Inc. submitted a protest seeking clarification that the streamlined process for pre-qualifying vendors and equipment on SCE's Approved Product List (APL) will apply to both Level 2 and direct current fast charger (DCFC) equipment.
4. On November 19, 2020, SCE issued a reply to ChargePoint, Inc.'s protest stating that its current APL includes approved DCFC equipment.
5. As proposed in advice letter 4322-E, site hosts under the site-hose ownership model will select EVSE from SCE's APL, which identifies specific electric vehicle (EV) charging equipment whose suppliers attest to comply with technical, safety, and other requirements when they submit their application to SCE to receive approval.
6. Any EVSE SCE uses in its Charge Ready 2 program must conform to the applicable eligibility requirements, which SCE collectively refers to as its Standard Equipment EVSE Qualification Package.

7. As SCE clarified in its reply to ChargePoint, Inc., the process for pre-qualifying vendors and equipment should apply to both Level 2 and DCFC EVSE.
8. SCE's proposed processes for continually approving EVSE on its APL for the site-host owned EVSE and the proposed process for issuing an RFQ for the SCE-owned EVSE is reasonable.
9. Section 4.5.12 of D.20-08-045, "TOU Rates, Demand Response, and Technical Requirements," states that "...the Commission seeks to support interoperability. All EVSEs deployed through [Charge Ready 2]—either site host owned or utility owned—must support open standards, and should, if practical, be capable of high-level communications, as defined in the final report from the 2017 VGI Working Group."
10. Each EVSE deployed through Charge Ready 2 must be capable of communication and technical capabilities to support demand response (DR) and to support high-level communications and open standards.
11. The hardware within the EVSEs that SCE deploys through Charge Ready 2 should not be isolated to one service provider and should be securely updateable and able to be switched to another service provider regardless of what software is initially included.
12. The CPUC determined in D.21-04-014, which authorized San Diego Gas & Electric (SDG&E) to implement the Power Your Drive Extension, that there are three critical open standards for EVSE deployment to support interoperability—EVSE that is equipped with a Society of Automotive Engineers (SAE) J1772 connector, is compliant with Open Charge Alliance's Open Charge Point Protocols (OCPP), and has hardware that is remotely upgradable to offer various AC charging features using ISO 15118 high level communications.
13. The CPUC based the directives on standards within D.21-04-14 on the California Energy Commission's (CEC) Assembly Bill (AB) 2127 staff report, which recommends that where possible, state agencies should leverage procurement requirements to accelerate market unification around interoperable communication protocols. CEC recommends that all alternative current (AC) EVSEs be equipped with a SAE J-1772 connector, be capable of high-level communications using the ISO 15118 protocol, and be compliant with Open Charge Alliance's OCPP.
14. The CEC AB 2127 final report identifies several key standards to interoperability. The report identifies that North American market players appear to be rapidly unifying around CCS for standard DCFC charger connectors for light-duty. For

charger communication protocols, the report identifies two key protocols—OCPP for charger-to-network communications, and ISO 15118 for communications between the vehicle and charger.

15. The CEC's ISO 15118 Charger Communication and Interoperability Proposal, issued by staff in November 2021, states that "ISO 15118 is a standard supporting high-level communication between the vehicle and the charger, and is already widely used for basic DC charging controls with Combined Charger System (CCS)...Given the growing use and capabilities of ISO 15118, CEC staff propose that future light-duty vehicle chargers installed using CEC funds should be hardware-ready for ISO 15118."
16. A charger that is ISO 15118-ready is capable of: 1) Powerline carrier (PLC) based high-level communication as specified in ISO 15118-3; 2) secure management and storage of keys and certificates; 3) Transport Layer Security (TLS) version 1.2; additional support for TLS 1.3 or subsequent versions is recommended to prepare for future updates to the ISO 15118 standard; 4) remotely receiving updates to activate or enable ISO 15118 use cases; and 5) connecting to backend network.
17. The ISO 15118-ready chargers must have onboard hardware to support these capabilities, but are not required to actively support specific ISO 15118 use cases. ISO 15118-ready chargers must be capable of remotely receiving updates to activate or enable ISO 15118 use cases. ISO 15118-ready chargers must be backward compatible at the charger level with existing vehicles using J1772 or CCS connector inlet, and must be capable of selecting the appropriate communication protocol used by the vehicle.
18. ISO 15118 is the most widespread standard for vehicle to EVSE communications that meets the Decision's requirements, particularly on interoperability and open standards.
19. SCE's Standard Equipment EVSE Qualification Package must be amended to align with D.20-08-045 Section 4.5.12 to ensure Charge Ready 2 supports interoperability and open standards, as currently the language on standards differs from the technical requirements necessary to support interoperability.
20. For light-duty EVSE deployed through Charge Ready 2, all alternating current (AC) conductive EVSE must be compliant with SAE J1772 and direct current (DC) conductive EVSE should be compliant with the Combined charging Standard (CCS). The DCFC hardware requirements apply to DCFC chargers featuring a CCS connector, including multiple-port chargers with at least one CCS connectors.

21. Per D.20-08-045 Conclusion of Law 12, “DCFC sites should include at least one CCS and one CHAdeMO connector to ensure accessibility and optimize usage.”
22. SAE J1772 is a connector standard for AC charging that allows for rudimentary communications between the vehicle and EVSE, but not high-level communications.
23. OCPP allows for communication between the EVSE and the network, ensures the EVSEs do not become stranded assets if the vendor goes out of business, and is already in widespread use with charger network companies.
24. Requiring OCPP supports D.20-08-045’s goal of interoperability and utilization of open standards, and as it exists today, it is not reasonable to further delay requiring this protocol as a criteria for EVSE to qualify for the Charge Ready 2 program.
25. SCE’s Standard Equipment EVSE Qualification Package states that “[t]he Standard Equipment Technical Requirements Checklist relates to equipment typically used for on-road vehicles where charging equipment interoperability standards exist.”
26. Within advice letter 4322-E, SCE’s Standard Equipment EVSE Qualification Package does not include any mention of standards for communication between the vehicle and the EVSE.
27. ISO 15118 provides a standardized method for the vehicle and EVSE to communicate the information needed to enable authentication, automatic billing, smart charging, and bidirectional charging.
28. The existing version of ISO 15118 is already in use for CCS DC charging, some EVs also use it for automatic authentication and billing, and a second version of ISO 15118 is pending final approval.
29. The omission of ISO 15118 readiness from the technical requirements does not support D.20-08-045’s directives on high-level communications, open standards, nor support for interoperability.
30. At this time, a majority of EVSPs and OEMs are developing equipment that is compatible with ISO 15118 and the CEC identifies at least ten automakers with EVs already introduced or forthcoming to the U.S. market designed for ISO 15118 communications.
31. While the Decision does not explicitly mention ISO 15118, the directive for the EVSE to be interoperable is in the spirit of the directives in Public Utilities Code Section 740.2 (c) and (e). Interoperability in the context of Public Utilities Code Section 740.2 (c) and (e) means that EVs and charging equipment should be capable of various charging features needed for widespread adoption and harmonious operation across California.

32. Within advice letter 4322-E, SCE does not mention any requirements for qualified vendors to share data.
33. D.20-08-045 states that “SCE must also include a provision within the customer agreement and within its agreement with qualified participating vendors for the Make Ready Expansion, New Construction, and Own and Operate programs, including EVSPs, regarding giving SCE and its contracted evaluator access to data.”
34. Collecting networking fee cost data from vendors is important to the success of the Charge Ready 2 program and will help the CPUC ensure ratepayers are receiving a competitive price for the soft costs associated with installing EVSEs.
35. It is appropriate to keep networking fee cost data confidential between the vendor, SCE, the CPUC, and the evaluator.

THEREFORE IT IS ORDERED THAT:

1. This Resolution approves, with modifications, Southern California Edison Company’s Advice Letter 4322-E.
2. This Resolution directs Southern California Edison Company to ensure that the process for pre-qualifying vendors and charging equipment for the Charge Ready 2 program applies to both Level 2 electric vehicle supply equipment and direct current fast charger electric vehicle supply equipment, where the electric vehicle supply equipment meets the applicable technical requirements defined in Decision (D.)20-08-045 and clarified in this Resolution.
3. Southern California Edison Company must revise its Standard Equipment EVSE Qualification Package for equipment and services deployed through the Charge Ready 2 program to include the following modifications:
 - a. All alternating current (AC) conductive electric vehicle supply equipment deployed through Charge Ready 2 must be compliant with Society of Automotive Engineers (SAE) J1772, and direct current (DC) conductive EVSE must be compliant with the Combined Charging Standard (CCS).
 - b. Communications and controls between a network service provider with charger/electric vehicle supply equipment shall be capable of operating on Open Charge Alliance’s Open Charge Point Protocols (OCPP) 1.6 or later.
 - c. Starting in October 2022, all electric vehicle supply equipment qualified for and deployed through the Charge Ready 2 program using Society of Automotive Engineers (SAE) J1772 and Combined Charging Standard (CCS)

- shall be International Organization of Standardization (ISO) 15118-ready, capable of enabling high level communications using the ISO 15118 protocol to communicate with the vehicle.
4. Southern California Edison Company must update the Charge Ready 2 electric vehicle supply equipment qualification process to require that vendors, including electric vehicle service providers (EVSPs), must share data on charging usage and on the cost to customers of networking fees and other service packages for which customers must pay. SCE shall obtain this data confidentially and shall share it with the CPUC and the Charge Ready 2 program evaluator upon request.

This Resolution is effective today.

I certify that the foregoing Resolution was duly introduced, passed, and adopted at a conference of the Public Utilities Commission of the State of California held on **November 18, 2021**, the following Commissioners voting favorably thereon:

/s/ Rachel Peterson

Rachel Peterson
Executive Director

MARYBEL BATJER
President

MARTHA GUZMAN ACEVES
CLIFFORD RECHTSCHAFFEN
GENEVIEVE SHIROMA
DARCIE HOUCK
Commissioner