<table>
<thead>
<tr>
<th><strong>DOCKETED</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Docket Number:</strong></td>
<td>17-EVI-01</td>
</tr>
<tr>
<td><strong>Project Title:</strong></td>
<td>Block Grant for Electric Vehicle Charger Incentive Projects</td>
</tr>
<tr>
<td><strong>TN #:</strong></td>
<td>224015</td>
</tr>
<tr>
<td><strong>Document Title:</strong></td>
<td>CALeVIP Webinar Presentation</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Filer:</strong></td>
<td>Jessica Martinez</td>
</tr>
<tr>
<td><strong>Organization:</strong></td>
<td>California Energy Commission</td>
</tr>
<tr>
<td><strong>Submitter Role:</strong></td>
<td>Commission Staff</td>
</tr>
<tr>
<td><strong>Submission Date:</strong></td>
<td>6/29/2018 11:24:43 AM</td>
</tr>
<tr>
<td><strong>Docketed Date:</strong></td>
<td>6/29/2018</td>
</tr>
</tbody>
</table>
Alternative and Renewable Fuel and Vehicle Technology Program
California Electric Vehicle Infrastructure Project
Future Equipment Requirements Webinar
June 28, 2018

Brian Fauble
Energy Commission Specialist II
Agenda

• Welcome
• CALeVIP Background
• New Energy Star Commitment Process
• Future Level 2 Charger Requirements
• Mobile Charging Requirements
• DCFC Site Requirements
• Adjourn
• Released solicitation November 2016
• Awarded recipient CSE February 17, 2017
• Agreement Executed June 27, 2017
• Fresno County Incentive Project launched December 2017 – Level 2 chargers only
• Southern California Incentive Project launches early August 2018 – DC fast chargers only
• **Goals:**

  • Implement targeted incentive projects throughout California that address a specific region’s EV charging needs.

  • Provide a mechanism that speeds up the installation, reporting, and funding processes.
• CALeVIP vs Incentive Projects
  • CALeVIP = Home for all Incentive Projects
  • Incentive Project = Geographical targeted project
• Current Funding: $39 million
  • Up to $200 million in future funding
• Planning on 3-4 projects in 2019
  • Tentatively planning to workshop the projects in September
ENERGY STAR® Certification Requirement
• Energy Star will be a requirement for CALeVIP

• New Energy Star process for CALeVIP
  • Allows EVSE manufacturers that are committed to becoming Energy Star certified to be temporarily eligible.
  • Allows non Energy Star certified chargers, that meet the other CALeVIP minimum requirements, to be eligible until the mandatory requirement is reinstated.
Energy Star Requirement

1a) Energy Star Partnership Agreement (Energy Star)

1b) Energy Star Participating Form for Product Brand Owner (Energy Star)

2) Complete the Energy Star Commitment form (Energy Commission)
https://calevip.org/sites/default/files/docs/calevip/CALeVIP_ENERGY_STAR_Commitment_Form.pdf

3) Docket the Energy Star Commitment Form (Energy Commission)

4) Download and submit the Equipment Self-Validation Form (CAleVIP)
https://calevip.org/equipment-self-validation-form

5) Complete your Energy Star testing and Certification with a laboratory and certification body
Questions and Comments

Use the raise hand feature to let the host know you’d like to ask a question/make a comment. You will be unmuted and called on by the presenter to speak. Please first state your name and organization.

If you do not have a microphone, please type your question/comments in the chat. Please include your name and organization.

**NOTE:** Once you have asked your question, please click the raise hand button again to lower your hand.

The Raise Hand button is found on the lower right hand side of the Participants panel.
Future Tech Requirements
Smart Charging Equipment & Network Interoperability

Advanced technology considerations for CALeVIP

Matthew Fung, Research and Development Division
Noel Crisostomo, Fuels and Transportation Division
Topics

- Energy Commission purpose, policy objectives, and needs for “Global Interoperability”
- Communicating with Electric Vehicle Service Equipment (EVSE)
  - Open Charge Point Interface
  - ISO/IEC 15118
- Implementation supply chain
- Market goals and solutions
- Recommendations and next steps
- Q&A
How can [CEC] best support the development of EVSE interoperability in California and what interoperability criteria should be considered?
“Ensure technology research is coordinated with the development of standards, procurement policies and tariffs.”


Need for action on: “Lack of standard methodology for aggregating PEVs into larger, controllable resources.”

- 2018-2020 Electric Program Investment Charge Investment Plan

“Standardize electric vehicle charging equipment to enable resource dispatch.”


“Spur the construction and installation of ... 250,000 EV chargers by 2025.”

- Executive Order B-48-18
“Networking technologies that enable shared use should be leveraged to automate demand responsive charging.”

- California Plug-In Electric Vehicle Infrastructure Projections (2018)
Interoperability will provide standardized devices that are capable of functioning as intended with each other — without special effort by the user.

Key Standards
- AC L1 & L2 charge communication
- DC communication
- Interoperability
- Wireless charging

Vision for Global Interoperability
Communicating with EVSE

Aggregator (EVSP or OEM)
OpenADR 2.0b & SEP 2.0b (Demand & Price Signals)
OCPP 1.6 & others (Equipment Management)
ISO/IEC 15118 (Vehicle-to-Grid Communication)
OCPI 2.1 (Inter-network Billing)
Open Charge Point Interface

- Communication between charging networks
- Air Resources Board’s ongoing rulemaking for the Electric Vehicle Charging Stations Open Access Act (SB 454)
- Version 2.1, incorporated as a test procedure until finalized through a standards body
- Proposed compliance for EVSE:
  - New: No later than 1/1/2020
  - Existing: No later than 8/1/2020
Benefits of Interoperability between charger networks

Secure identification
Simplified payment
Improved transparency
Manages queueing
Expands travel range
Ensures accessibility
ISO/IEC 15118 – “Vehicle to Grid Communication Interface”

- International Standards Organization / International Electrotechnical Commission
  - Initiated by OEMs and utilities in 2008, published 2013, improvements continuously developed with industry and in coordination with SAE.
- Communicates between charge controllers on Electric Vehicle and the Supply Equipment
- Securely automates transfer of driver-specific payment preferences, AC/DC charging, and negotiates with utility prices for “smart” charging.
- Deployed and encouraged globally across many advanced PEV markets.
Benefits of interoperability between the EV and charger

ISO/IEC 15118

- “Plug & Charge”
- AC & DC Charging Control
- Demand Response & Battery Storage
- Inductive Charging
- Automated Connection
- Location Based Services

Easy & Convenient
Transparent & Secure
Reduces Utility Cost
Useful for Automated EV
Handling safety
Enables new value
• **Market Traction**
  • At least 8 automakers and nearly a dozen (known) EVSPs are developing ISO 15118 products, as supported by a robust electrical and information technology supply chain.

• **Software**
  • American National Standards Institute: Road Vehicles Communication Package
  • Open-source [reference implementation](#)

• **Hardware**
  • High-level communications controllers are commoditizing
  • 1 mo. payback for $5-25 hardware cost (varies based on base EVSE function), if smart charging can arbitrage -$0.10/kWh for average EV load in CA

• **Interoperability Testing**
  • Semi-annual testing symposiums for device conformance
  • Commercially-available simulation and testing equipment and services for EVSE
Automotive industry interoperability technologies have advanced, and public funds spurring the construction of chargers can accelerate adoption by utilizing these capabilities to create seamless charging experiences.

CALeVIP will be deploying EVSE concurrently to the deployment of PEVs that will be designed with ISO 15118. Without interoperable EVSEs, drivers’ charging experience and costs will be needlessly onerous and expensive.

Implementation and integration takes about 1.5 years.

- EPIC grant funding supported manufacturer ISO 15118 EVSE integration in advance of PEVs with ISO functions anticipated for U.S. deployment in 2019.

Potential solutions supported by Energy Commission additional to CALeVIP

- Research – creation of vehicle/charger testing devices
- Development – augmentation of OEM charge controller/software design
- Manufacturing – grant for component integration or infrastructure assembly
• Consistent with B-16-2012, “...achieve by 2020: [...] electric vehicle charging will be integrated into the electricity grid;”

• Leverage CALeVIP, in alignment with the IEPR and ZEV Action Plan, to transform the market and “ensure convenient charging infrastructure to greatly expand the use of ZEVs.”

• CALeVIP Electric Vehicle Service Equipment requirement for future projects:
  • Level 2 conductive or inductive, AC and DC chargers shall have the capability of communication with the PEV, based on ISO/IEC 15118
  • Require for equipment installed after January 1, 2020*, implementation of:
    • ISO/IEC 15118
    • Open Charge Point Interface
      *Consistent with proposed SB 454 compliance timeframe for OCPI
  • Validate proof of implementation
Questions for Discussion

• How to validate proof of implementation? (e.g. specification sheets, completed testing procedure with multiple vehicle types)

• What are other ways for the Energy Commission to support the industry to develop interoperable smart charging equipment?

• Are there other advanced technologies that should be considered?
Appendix

Non-exhaustive list of companies with completed projects, that intend to deploy, recommend implementation, or have supplied components for ISO/IEC 15118 chargers.
Appendix

Targets for Electrified Vehicles (eV) = Gas Hybrid, Plug-In Hybrid, Battery, & Fuel Cell Electric Vehicles
Icon size equal to number of Plug-In (PH/BEV) models, 1=unknown

- Outline = OEM known to use ISO 15118 for DC and/or AC
- Tesla
- Volvo
- Daimler
- Ford
- Nissan
- Jaguar
- PSA
- Renault
- Subaru
- GM
- Porsche
- VW
- BMW
- Aston Martin
- Honda
- Toyota/Mazda
- Nissan/Renault/Mitsubishi
- Hyundai/Kia

If OEM ≤ 0, share of electrified LDV are unknown

<table>
<thead>
<tr>
<th>Year</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
<th>2024</th>
<th>2025</th>
<th>2026</th>
<th>2027</th>
<th>2028</th>
<th>2029</th>
<th>2030</th>
<th>2031</th>
</tr>
</thead>
<tbody>
<tr>
<td>500k/y BEV</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1M/y BEV</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Questions and Comments

Use the raise hand feature to let the host know you’d like to ask a question/make a comment. You will be unmuted and called on by the presenter to speak. Please first state your name and organization.

If you do not have a microphone, please type your question/comments in the chat. Please include your name and organization.

**NOTE:** Once you have asked your question, please click the raise hand button again to lower your hand.

The Raise Hand button is found on the lower right hand side of the **Participants** panel.
Mobile Chargers & Eligible DCFC Sites
Mobile Charger Descriptions

• Inter-Site Charger: Does not move at the site on a daily basis.
• Intra-Site Charger: Can easily move on the site on a daily basis to charge cars in different parking stalls.
• Must stay at address listed on the application
• Only level 2 chargers will be eligible
• Must follow all other level 2 charger requirements
  • J-1772 Connector
  • Capable of 6.2kW
  • Networked with minimum 1 year network agreement
  • Certified by a Nationally Recognized Testing Laboratory
• Rebate amount will be equal to the level 2 charger rebate
Intra-Site Charger Requirements

• Must stay at the address listed on the application, cannot be mounted in a vehicle for mobile servicing

• Must follow all other Level 2 or DC fast charger requirements
  • Level 2: J-1772, 6.2kW+, networked, NRTL
  • DCFC: Both CHAdeMO & SAE CCS connectors, 50kW+, networked, NRTL

• Rebates will be equal to the general Level 2 and DC fast charger rebates
Eligible Mobile Charger Sites

• **Intra-Site Mobile Charger**
  • Possible Mobile Charger Eligible Sites
    • Hotels, Airports, Private Workplaces, Fleets, Valet Service
  • Other Possible Requirements
    • Must be at a permanent site address and can’t leave the property
    • Must be secured at night
    • Must have an attendant

• **Inter-Site Mobile Charger**
  • Same requirements as the general Level 2 chargers
Eligible DCFC Sites

• Primary: Shopping Centers, Restaurants, Gas Stations, Hospitals, Airports, Police or Sheriff Stations

• Secondary (1/4 mile from Primary): Hotels, Parking Garages, City or County Owned Properties

• Must be available to the public 24 hours a day, 7 days a week, 365 days a year.

• Must not be located behind a fence and/or gate
Questions and Comments

Use the raise hand feature to let the host know you’d like to ask a question/make a comment. You will be unmuted and called on by the presenter to speak. Please first state your name and organization.

If you do not have a microphone, please type your question/comments in the chat. Please include your name and organization.

**NOTE:** Once you have asked your question, please click the raise hand button again to lower your hand.

The Raise Hand button is found on the lower right hand side of the *Participants* panel.
Future CALeVIP Information

- CALeVIP Website [www.calevip.org](http://www.calevip.org)
- Energy Commission Block Grant/CALeVIP docket webpage [http://www.energy.ca.gov/altfuels/zev/2017-EVI-01/](http://www.energy.ca.gov/altfuels/zev/2017-EVI-01/)
- Center for Sustainable Energy email [calevip@energycenter.org](mailto:calevip@energycenter.org)
Comments Due 7/3/2018 by 5:00pm

California Energy Commission
Docket Unit, MS-4
Re: Docket No. 17-EVI-01
1516 Ninth Street
Sacramento, CA 95814 -5512
(916) 654-4423

https://efiling.energy.ca.gov/Ecomment/Ecomment.aspx?doc
tetnumber=17-EVI-01

Recommend all comments be submitted online.