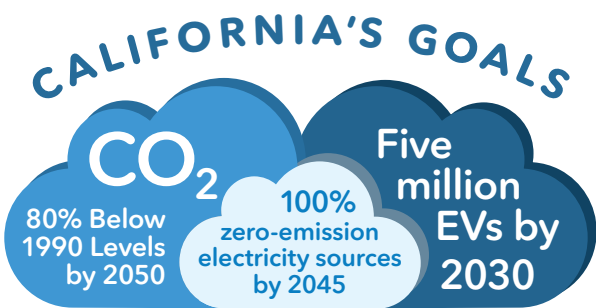


<b>DOCKETED</b>	
<b>Docket Number:</b>	18-MISC-04
<b>Project Title:</b>	Vehicle Grid Integration Roadmap Update
<b>TN #:</b>	225745
<b>Document Title:</b>	Presentation - A Zero Carbon Future Requires 100% Renewable Energy and Energy Storage
<b>Description:</b>	Filed by Eli Harland (CEC) on behalf of Honda.
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<b>Organization:</b>	Honda
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HONDA

A Zero Carbon Future Requires 100% Renewable Energy and Energy Storage

Electric Vehicle Grid Integration will Help Secure this Future



1. V1G Markets

- Currently, neither electricity markets nor utility demand response programs reward the flexibility that controlled EV charging (V1G) or bidirectional EV charging (V2G) can provide.
- Electric vehicle charging is flexible because cars often sit for hours fully charged - their predictable load and long dwell times can become a fast acting resource.
- Changing the electricity market rules to recognize the value of EV charging flexibility could enhance vehicle sales and broaden electricity markets with new entrants.

2. Sub-metering from Vehicle

- Currently, demand response requires utilizing a whole house or site revenue-grade meter to prove demand response.
- Linking the vehicle's action to other generation and site load is imprecise and creates operational difficulty.
- Instead, using vehicle charging data or sub-meters to prove response would improve the accuracy of reconciling vehicle response.

3. Controlled One-way Charging (V1G)

- Currently, V1G, or "smart charging", is not recognized as a grid resource the way that stationary battery storage is.
- V1G includes slowing, stopping, or delaying EV charging based upon grid signals. This makes the vehicle a flexible scheduled load
- V1G offers the potential to be lower cost than storage, as no major capital investment is required. Only a control signal to the vehicle or charging station to start and stop charging is needed.
- Because of its flexibility and low cost, V1G should be recognized as a grid resource for storage.

4. Multiple DR Program Participation

- Currently, utility and ISO rules prevent enrollment in multiple DR programs at a time.
- Many EV customers are already enrolled in traditional DR programs, and are therefore ineligible to participate in vehicle-based DR programs.
- Customers should be able to participate in both traditional DR and vehicle-based DR programs at the same time.

5. Point of Vehicle Sale Interconnection Permit

- Currently, the interconnection process for generation can take a long time.
- Customers need a simple, barrier-free pathway to participate in bidirectional (V2G) programs. Delays in getting an interconnection permit for a vehicle could be a barrier to widespread adoption.
- A type-certification based interconnection process should be established for V2G.

6. Rule 21 Includes Vehicle Standards

- Currently, Rule 21 specifically lists UL1741 standards for inverters; however, UL does not apply to automobiles.
- The Society of Automotive Engineers (SAE) creates vehicle standards, including those covering grid connections for EVs.
- SAE J3072, a standard for bi-directional charge/discharge of vehicles, includes the same safety testing and performance standard (IEEE 1547) as UL1741.
- Rule 21 should also list SAE J3072 as an acceptable safety performance standard.

7. Rule 21 is Power-based

- Current regulations for interconnection dictate the type of inverter and generation source.
- Interconnection permits should be based on power and response, and not the specific model of the inverter, thus allowing for multiple types of equipment.

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