

**DOCKETED**

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<b>Project Title:</b>	Implementation of AB 2127 Electric Vehicle Charging Infrastructure Assessments
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<b>Filer:</b>	Christina Cordero
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# **ISO 15118 Charger Communication and Interoperability Workshop**

California Energy Commission

November 10, 2021



# Welcome

## ISO 15118 Charger Communication and Interoperability Workshop

We will begin at **9:02 a.m.**

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CEC presentation on ISO 15118 proposal

**~9:25 a.m. | Panel 1: Charging Today**

JD Power, ChargerHelp!, Electrify America,  
In-Charge, Argonne National Lab

**~10:20 a.m. | Panel 2: Automakers and ISO 15118**  
CharIN, Ford, Volkswagen, Lucid, Lumissil

**~11:05 a.m. | Panel 3: Charging Providers and ISO 15118**  
Siemens, Greenlots, EVBox, SemaConnect,  
PowerFlex, Qualcomm

**~12:10 p.m.**

Public comment

*Q&A and breaks throughout*



# Where we're headed in California

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- **Unprecedented transformations** planned for next 10-25 years
    - 100% zero emission passenger car sales in 2035 (13 years!)
    - Carbon neutral in 2045
  - Our challenges are **stacked and interconnected**
    - Charging millions of new EVs
    - Deploying and powering electrified heat pumps, cooktops, etc.
    - Decarbonizing the grid and increasing reliance on variable sources
- All three are interrelated and **success is interdependent**



# We must coordinate EVs and the grid as one

- This year's **AB 2127 Electric Vehicle Charging Infrastructure Assessment** attempts to unify the discussion ([link](#))
    - We need a ton of chargers in 2030 (>1 million)
    - Grid interaction: load curves, driver behaviors, tools + technologies
  - Examples of 2030 grid interaction analysis in AB 2127 report
    - Unconstrained scenario: Additional **6,600 MW** on top of existing peak
    - Even with time-of-use rates, **timer peaks** can strain distribution
- We need more than just charger and vehicle counts; **California must modernize to accommodate massive and dynamic EV charging load onto the grid**





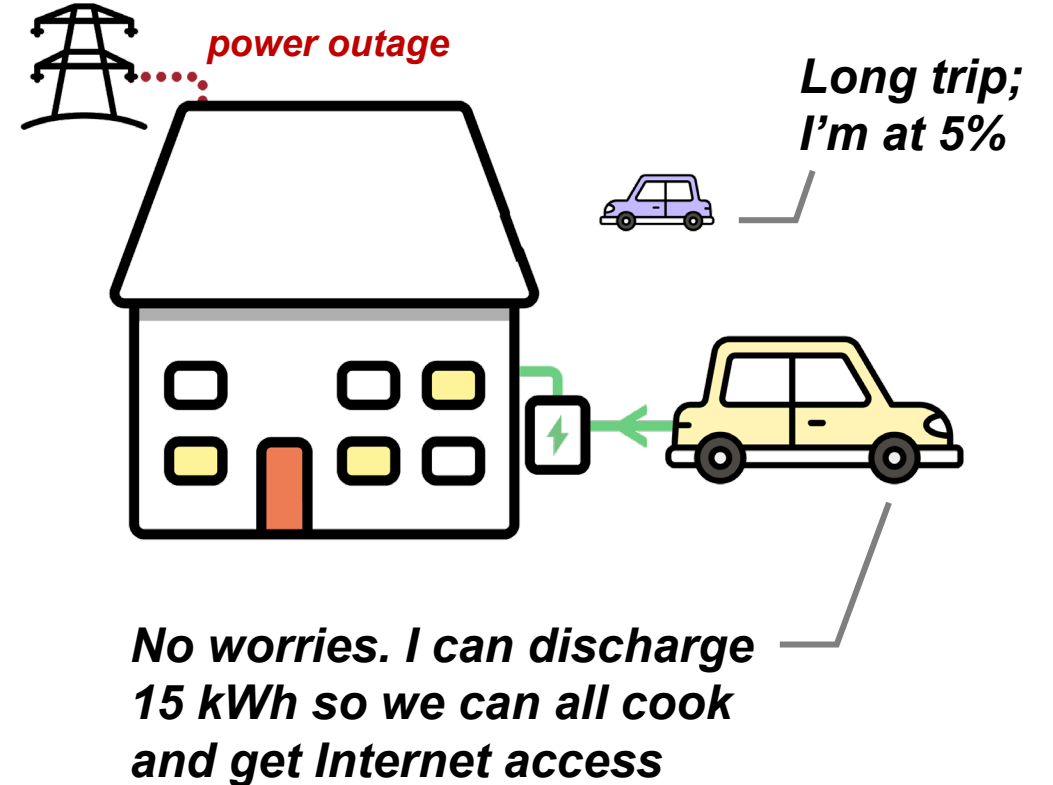
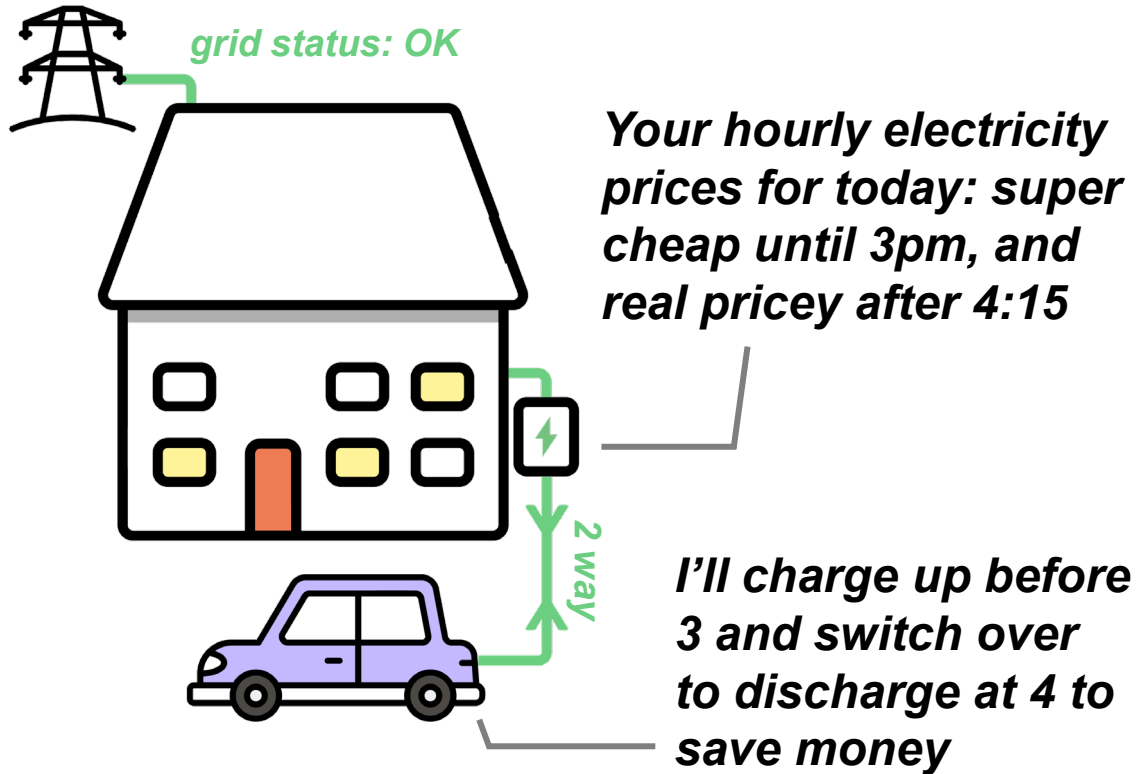
# Equipping our toolbox

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- Growing implementation of **ISO 15118** globally
  - Standard for vehicle-charger communication
  - Vehicle can share energy (kWh) needed, departure times, etc.
  - Charger can share power schedules, prices, grid signals, etc.
- What does this mean for the customer?
  - Better-than-gas experience (Plug and Charge)
  - Auto schedule charging based on electricity prices or other signals
  - Share energy needs with chargers or load management systems
  - Bidirectional charging (backup power, rate arbitrage, V2V)



# A peek at 2025?



- Standardized vehicle-charger communication maximizes opportunities for **easy and widespread vehicle-grid integration**



# Proposing a path forward

- Staff and leadership developed a no regrets proposal to support the use of a **common language for vehicle-charger communication**
  - Supports global market's use of ISO 15118
  - Articulates clear policy direction
  - Ensures CEC funded chargers can communicate with ISO 15118 vehicles
  - Crafted after **40+ stakeholder calls** and extensive staff analysis

*“Given the growing use of ISO 15118 ... and continued stakeholder interest in this topic, the CEC will further examine opportunities to – if and when appropriate – advance the deployment of ISO 15118-capable charging hardware.”*

→ This is the result of that examination and our **proposed path forward**





# “ISO 15118 ready”

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- Goal: All light duty EV chargers funded by the CEC are capable of ISO 15118 communication (we call such chargers **“ISO 15118 ready”**)
- CEC proposal **does not** require implementation of ISO 15118 use cases
- Applies to any charger with a **J1772** or **CCS connector**

For example:

An ISO 15118-ready charge should be capable of Plug and Charge and energy management features, but is not required to have Plug and Charge or energy management features implemented in software.

At minimum, the charger hardware is “ready” for these use cases to be activated or implemented.



# An ISO 15118 ready charger is capable of:

1. Powerline communication (PLC) 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.
4. Remotely receiving updates to activate or enable ISO 15118 use cases.
5. Connecting to a backend network.

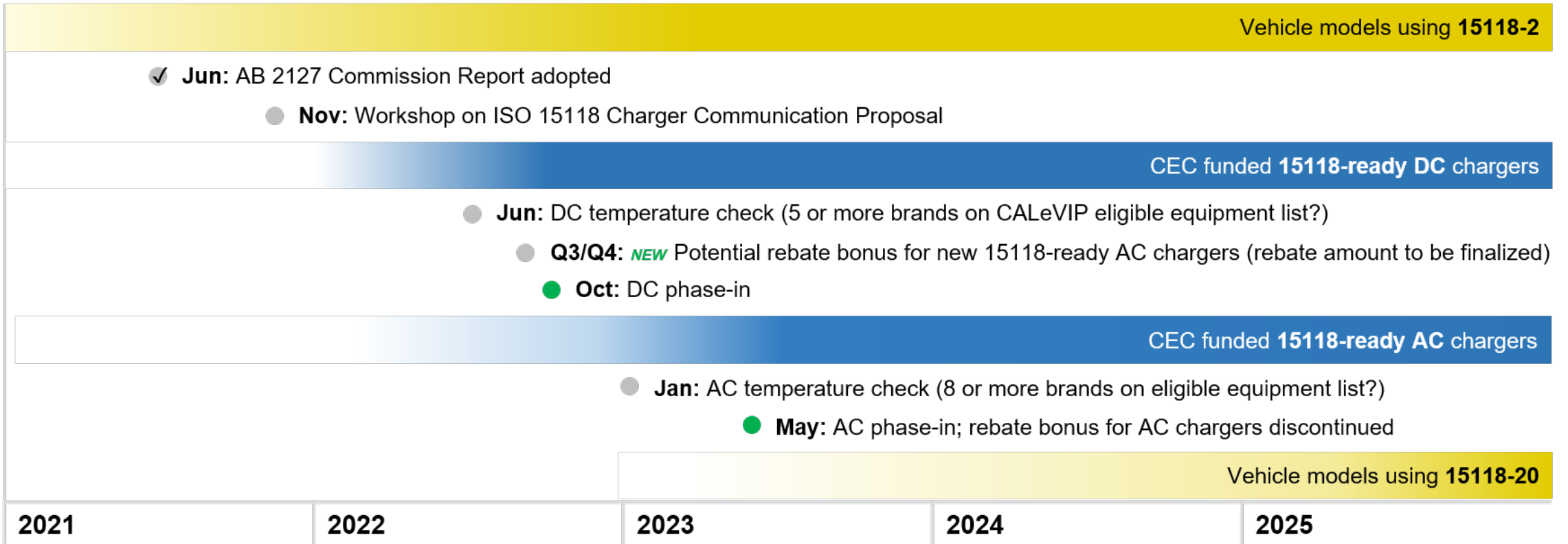
**Backward compatibility:** The charger must be capable of selecting the appropriate communication protocol used by the vehicle

- AC: Shall support **IEC 61851-1 + ISO 15118-2 at minimum.**
- DC: Shall support **DIN 70121 + ISO 15118-2 at minimum.**
- Chargers should additionally support ISO 15118-20 when feasible.



# Next steps and timeline

## CEC Expected ISO 15118 Transition Timeline





# Verification will rely on self-attestation in immediate term

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- Charging providers must attest whether equipment they are enrolling onto the CALeVIP eligible equipment list (or future equivalent) is ISO 15118-ready as defined in this proposal
- CEC recommends that charger manufacturers self-test for ISO 15118-3 conformance using ISO 15118-5
- CEC will continue conversations with industry and may explore other verification means in the future



# Need easier-to-use and more easily grid-integrated chargers for imminent EV surge

- Proposal will help **prepare California for widespread EV adoption**
  - Chargers must support superior-to-gas experience
  - Chargers must support easy coordination with grid
- The CEC will **continue and expand industry support**
  - Full speed ahead with existing charger funding
  - Rebate bonus for ISO 15118 ready AC chargers before phase in
  - Local EVSE testing services at [ViGIL](#) (Bay Area)
  - Upcoming [interoperability testing event](#) (open RFP)



# Thanks!

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## Questions about proposal specifics

- Right now: Use the **Zoom Q&A box** for clarifying questions
- After the workshop: Reach out to [jeffrey.lu@energy.ca.gov](mailto:jeffrey.lu@energy.ca.gov)

## Written comments

- File to docket [19-AB-2127](#) by **Friday, December 10**

## Full proposal document is available online

- <https://efiling.energy.ca.gov/getdocument.aspx?tn=240210>