

## DOCKETED

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## **Oxygen Initiative Comments**

*Additional submitted attachment is included below.*



**CALIFORNIA ENERGY COMMISSION  
DOCKET 16-TRAN-01**

**COMMENTS PROVIDED BY OXYGEN INITIATIVE (FORMERLY KNGRID)**

**I. Introduction**

Oxygen Initiative (OI), formerly KnGrid, appreciates this opportunity to provide comments into the California Energy Commission's (CEC's) 16-TRAN-01 Docket on Vehicle Grid Integration interoperability standards. OI reiterates our support for the CPUC's September 14th Ruling (R.13-11-007), which provided guidance to conform to the ISO 15118 global VGI standard to utilities in their Transportation Electrification plans to achieve SB 350 goals on schedule. OI also asserts the time has come to go further and adopt this VGI standard for all California investments in electric vehicle charging infrastructure.

As has been stated many times and in many different ways for several years now, California's statutory goals are part of a global effort to decarbonize the global economy in order to avoid unmanageable changes in our natural world. As our state comprises only one percent of global GHG emissions, success for California won't necessarily translate to success for human civilization if we act in a vacuum. California has a special role to play in this global effort as our state is recognized as a clean technology leader. As it pertains to GHG emissions reduction, eMobility and holistic renewable energy policy, the world watches us. Oddly, vehicle-grid

integration, an arcane and highly technical field, provides California with an uncommon opportunity to lead the world from the following perspective: we can choose a durable pathway that gives automakers (that have global market scope) and utilities a scalable technical solution and control system that leverages prior investments from nations and technology experts around the world. California can embrace the spirit of global cooperation as we simultaneously begin investing in cleaner transportation and a sustainable power system connected to an intelligent grid. The best way to do that is by sending the market a signal: policy paralysis on vehicle-grid integration is over. The way forward is the global ISO/IEC standard: 15118. The reasons to do this now are overwhelming:

- Investor-owned utilities and others are poised to invest billions in transportation electrification infrastructure beginning in 2017
- Automakers have already coalesced around this standard for DC Fast Charging already and are now signaling movement toward 15118 for AC Level 2 smart charging as well<sup>1</sup>
- Failure to establish a mandate for this standard now will result in:
  - utility investments in an increasingly fragmented ecosystem of non-standardized approaches to VGI
  - customer confusion about VGI methods as proprietary and balkanized and incompatible solutions proliferate

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<sup>1</sup> [http://charinev.org/news/?no\\_cache=1](http://charinev.org/news/?no_cache=1)

- stranded investments of ratepayer money if we decide later to standardize charging station equipment with VGI
- ISO 15118 vehicle owners with no stations that can support the standard or its convenience features
- Implementation of the standard requires specific equipment on the charging stations that cannot be upgraded without replacement, leading to stranded investments: Home Plug Green-PHY modem, smart controller
- California must, by statute, comply with SB 350 which mandates accelerated deployment of approximately 400,000 AC Level 2 charging outlets to support the Governor's goal of enough grid-integrated charging infrastructure to support 1 million PEVs by 2020. (The state currently has approximately 8,000 AC Level 2 public stations)
- Adopting a standard will result in:
  - the construction of a homogenous charging station ecosystem that enables a plug-and-play experience for PEV consumers that can accelerate adoption
  - as it simultaneously avoids or defers costly distribution system upgrades,
  - clarity for automakers as they develop and deploy new vehicles and mobility services able to utilize this plug-and-play ecosystem for smart refueling,
  - easy and scalable energy market-certification and aggregation of PEVs as DERs with

- cyber-secure communications via digital certificates, encryption and public/private key infrastructure (PKI) as defined in the ISO 15118 standard
- scalable and accurate tracking of LCFS compliance via the smart meter requirement for all ISO 15118 charging stations
- easy implementation of utility sub-metering
- no negative impact on existing telematics solutions/programs employed today on vehicles without the standard onboard

## **II. Why ISO 15118**

The ISO 15118 standard was built on the right philosophy:

- that it should flexibly support virtually any use-case for intelligent grid- and battery-friendly charging scenarios,
- it can accept signaling from any kind of smart grid protocol including SEP 2.0 and Open ADR 2.0b (including future signals needed for distribution level grid support as they are developed and deployed)
- it specifies that each station should include a revenue-grade meter to associate with the vehicle's battery thereby creating a distinct DER. This enables flexibility to aggregate sub-metered charging stations as distinct energy storage DERs certified as market resources in CAISO ancillary services markets which other VGI methods do not support

- it is a scalable solution that could succeed the utility's implementation of a sub-metering protocol
- it embraces a 'mobility-first' philosophy that enables the automaker's onboard refueling logic to be prioritized by the vehicle when selecting an energy 'load plan'
- it prioritizes cyber-security both between the vehicle and the charging station as well as between the charging station and cloud-based clearinghouses<sup>2</sup> by specifying the use of digital certificates with public key infrastructure (PKI)
- it is a global and open standard
- it is preferred by a preponderance of stakeholders around the globe
- it is a living standard as evidenced by current work in the ISO 15118 Joint Working Group to codify both reverse power transfer and wireless charging specifications in the protocol
- no other standard provides a sub-metered pathway for LCFS compliance tracking
- the standard enables all secondary actors to digitally contract with each other including the site host providing the parking space

### **III. Why creation of a new Technical Working Group to evaluate standards is wasteful and unproductive**

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<sup>2</sup> See Appendix B of the ISO 15118 Standard Document.

Oxygen Initiative has participated in the debate between multiple stakeholders over VGI standards for over five years running. We are confident that further efforts to convene more dialogue and debate will merely result in more paralysis and yield no movement off of existing entrenched preferences and opinions. Further, investments in transportation electrification are behind schedule already for the state to make its transportation electrification goals. While efforts dedicated to support OEMs and utilities as they build compelling VGI business cases using the chosen standard can be productive, a working group that simply re-litigates the same dysfunctional and stale dialogue<sup>3</sup> at CEC will not.

#### **IV. Conclusion**

OEMs need confidence in the charging station ecosystem in order to plan product rollouts. Several OEMs planning dozens of PEV models by 2025 will need literally hundreds of thousands of public and semi-public AC Level 2 charging station outlets to be installed over the next 5 years. Given California's experience to date with the time involved for each location to identify locations, get permits, develop properly engineered project design packages, etc, the enormity of this challenge is hard to overstate. Simply put, we're out of time for debate if we're serious about our statutory goals. The time to act is now, leveraging prior CEC EPIC investments in smart charging, and set a course for our charging station ecosystem that puts an end to fragmentation and leverages prior investments in an exciting path forward that holds the promise of revolution-scale adoption of a next generation of plug-in

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<sup>3</sup> During the December 7th workshop, we saw a push for a particular individual with a pre-disposition toward SEP 2.0 from the Smart Inverter Working Group that was met with resistance in public comments as well as other displays of polarity among stakeholders.



electric vehicles. Vehicles that can, by virtue of their built-in intelligence, cross-contribute to firming zero-carbon sources of electric power as they simultaneously zero out vehicle emissions.

Acting decisively now will accelerate a different kind of innovation. As we build this shared ecosystem, OEMs will seize opportunities to use it in ways that delight their customers with simplicity and innovation in the same way mobile phone operators do. This innovation will not be about proprietary approaches to demand response that require the use of a specific network of charging stations. It will be about innovative commercial offers to consumers driven by the existence of a scalable control system that can liberate values associated with:

- avoided utility costs,
- the ability to aggregate dispatchable electric loads across all automaker brands and charging networks to manage increasingly steep statewide power ramping periods, and
- new pricing offers that simplify the value to the consumer of e-fuel while simultaneously enabling the vehicle to smart charge based on the marginal cost of the fuel including externalities and congestion at all levels of the grid including local transformers

We can get there fast and we can get there together with a standards-based charging ecosystem where OEMs, charge spot operators and utilities collaborate on the standard and compete on the implementation. This effort, combined with new and compelling vehicles, can help summon the revolution California seeks. News of this revolution will sweep across the globe along with a template on how to follow and vehicles already in series-production made by companies with global distribution.

Respectfully submitted,  
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