

DOCKETED

Docket Number:	19-AB-2127
Project Title:	Implementation of AB 2127 Electric Vehicle Charging Infrastructure Assessments
TN #:	240677
Document Title:	Argonne Panelist Presentation ISO 15118
Description:	N/A
Filer:	Spencer Kelley
Organization:	California Energy Commission
Submitter Role:	Commission Staff
Submission Date:	11/22/2021 10:59:27 AM
Docketed Date:	11/22/2021

CALIFORNIA ENERGY COMMISSION

ISO 15118 CHARGER COMMUNICATIONS AND INTEROPERABILITY WORKSHOP



ISO 15118: A STANDARDIZED APPROACH TO VGI



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November 10, 2021

Argonne National Laboratory's work was supported by the U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Vehicle Technologies Office, under contract DE-AC02-06CH11357.

INTRODUCTION

Background and Role

- Principal Electrical Engineer at Argonne National Laboratory
- Researching PEV charging communication, interoperability, VGI, developing enabling technologies for the last decade.
- Early career involved with PEV codes and standards
 - SAE Standards (J1772, J2931, J2847, J2953)
 - DIN 70121 and ISO 15118
- Recently: Implementation, demonstration and development of VGI use cases and technology



CHALLENGES & BARRIERS TO VGI

California Joint Agency VGI Working Group

- Approaches for automated load management that can reduce needs for upgrading distribution grids while serving growing EV loads.
- Lack of consistency in applying open standards (i.e., communication).
- Lack of information and clear value propositions for many if not most of the use cases, which could benefit from further pilot and demonstration experience

https://gridworks.org/wp-content/uploads/2020/09/GW_VehicleGrid-Integration-Working-Group.pdf

- Communication infrastructure between EV/EVSE not broadly deployed (PLC)
- Non-Networked EVSE (EVSE to Backend)
- Proprietary EVSE networks and vendor lock-in
- SCM at the local level (building EMS, etc.) is inhibited by proprietary telematics implementations or proprietary EVSE networks

ISO 15118

Highlights and Use Cases

Defines communication protocol between EV and EVSE utilizing Power Line Communication (PLC)

- AC, DC, Wireless Power Transfer (WPT), Bidirectional power transfer (BPT or V2G), and Automated Connection Device (pantograph DC charging of busses)

Automated Authentication and Authorization

- External Identification Means (EIM)
- Plug & Charge (PnC)

Automated Billing

- PnC enables secure and automated billing via e-mobility contract

SLAC (Signal Level Attenuation Characterization)

- Process to accurately identify physically connected EV to EVSE
- Shortcoming of a purely telematics based approach

Optimized Load Management

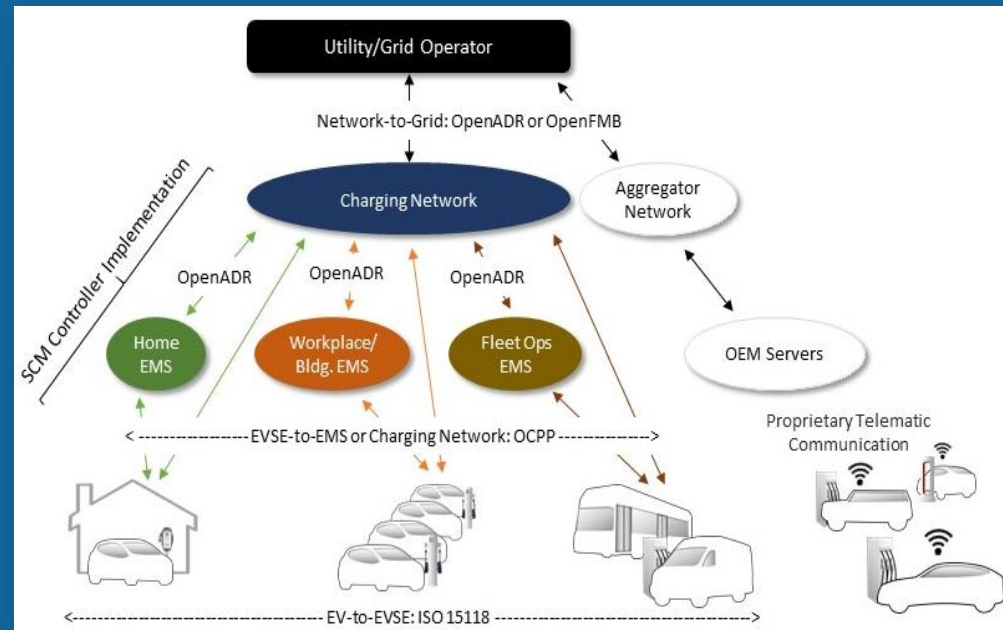
- Smart Charging via Charge Schedules or Dynamic Control
- Meets the needs of the grid and EV driver
- Ensures accurate energy requirements of vehicle (drivers typically guess)

WHAT IF ISO 15118 IS NEVER IMPLEMENTED?

Options

- Industry will never reach a truly interoperable user experience in which any PEV can charge with any EVSE and be integrated with the grid seamlessly
- EV OEM or EVSP network specific VGI implementations will create vendor lock-in and require more work to integrate the different programs into a Utility VGI program

Implement interoperable international standards such as ISO 15118 and OCPP





Thank You

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