American National Standards Institute (ANSI)
Electric Vehicles Standards Panel (EVSP)

Priorities, Timeline, Panel Architecture, and Meeting Schedule
Roadmap of Standards and Codes for EVs@Scale
(Updated 3/22/2023)

The EVSP has established working groups (WGs) to develop the standardization roadmap. Participation in the EVSP is open to EV stakeholders that have operations in the United States. Participants may sign up for one or more WGs using the sign-up form. Some key priority areas are noted on the last page. **Working groups will be on hiatus during April when the draft EVSP roadmap is out for public review.**

Priorities:

- NEVI Program (high priority)
  - Light-duty EV infrastructure for corridors
  - Light-duty EV infrastructure for communities
- Medium / heavy-duty EV infrastructure (medium priority)

Timeline:

- Draft roadmap (end of March 2023)
- Final roadmap (end of June 2023)

SIGN UP FOR WORKING GROUPS HERE

Working Group	Topics for Discussion	

WG1 - Vehicle Systems
Co-Chairs:
• Rich Byczek, Global Technical Director, Transportation Technologies, Intertek
• Brian Engle, Director, Business Development – Electrification, Amphenol
 	
Recurring Calls: 2nd and 4th Tuesdays @ 11:00 am – 12:30 pm Eastern. WG1 currently on hiatus until May.
Next Calls:
May 9 @ 11:00 am – 12:30 pm Eastern
May 23 @ 11:00 am – 12:30 pm Eastern
	On-Vehicle Energy Storage Systems
	o **Power Rating Methods**
	o **Battery Safety**
	  o **Functional Safety in the Charging System**
	  o **Delated Battery Overheating Events**
	  o **EV Emergency Shut-Off**
	  o **Micromobility and Light EVs**
	  o **Electric Mopeds and Motorcycles**
	o **Battery Testing – Performance and Durability**
		o **Battery Storage**
		o **Battery Packaging, Transport, and Handling**
		o **Battery Recycling/Materials Reclamation**
		o **Battery Secondary Uses**
		o **Crash Tests/Safety**

WG2 - Charging Infrastructure **Co-Chairs:** • Joe Bablo, Principal Engineering Manager – Energy Storage and E-mobility, UL Solutions • Mike Johnston, Executive Director of Codes & Standards, National Electrical Contractors Assn (NECA) **Recurring Calls: 2nd and 4th Mondays @ 11:00 am -12:30 pm Eastern** **Next Calls:** **Mar 27 @ 11:00am -12:30 pm Eastern** **May 8 @ 11:00am -12:30 pm Eastern** **May 22 @ 11:00am -12:30 pm Eastern**	Charging Systems o **DCFC and AC L2 for light-duty EVs** (high priority) (Power quality, EV charging levels, EVSE and charging systems, couplers, EMC) o **MCS for medium and heavy-duty EVs** (high priority) o **Wireless power transfer** (static, dynamic, and communications in support of)	Station / Site Architecture **General installation considerations** (site assessment, permitting, personnel involved, environmental/use conditions, ventilation, cable management, EVSE labeling, signage/parking, physical security, accessibility) **Specific Installation Considerations for Different Charging Scenarios** o Residential Charging o Commercial / Workplace Charging o Highway / Corridor Charging

WG3 – Grid Integration & Cybersecurity **Co-Chairs:** • Gregory "Brian" Dindlebeck, Cyber Security Engineer, Pacific Northwest National Laboratory (PNNL) • Steve Griffith, Senior Industry Director, Transportation Systems and Cybersecurity, National Electrical Manufacturers Assn (NEMA) **Recurring Calls: 1st and 3rd Tuesdays @ 12:00-1:30 pm Eastern** **Next Calls:** **Mar 29 @ 12:00-1:30 pm Eastern (add'l call)** **May 2 @ 12:00-1:30 pm Eastern** **May 16 @ 12:00-1:30 pm Eastern**	Communications / Controls o Communications Architecture for EV Charging o Communications Requirements for Various EV Charging and Grid Support Scenarios o Communication and Measurement of EV Energy Consumption o Cybersecurity and Data Privacy o Telematics Smart Grid Communications	Power Distribution / DER Integration and Fast Charging Stations / Microgrids o Power (electrical) systems/safety o Communications/controls Cybersecurity

Project Objectives
The priorities of the codes & standards effort will be to provide support development of the most critical standards for EVs at Scale, i.e., high power DC charging, storage (microgrid, DERMS) integrated with DC charging, vehicle grid integration, high power scalable/interoperable wireless charging and vehicle-oriented system standards; key information for each of these standards is summarized below:

High Power DC Charging Standards (MCS via SAE, IEC SDOs) – As a pathway to connect many vehicles at each charging location (depot, plaza, workplace/warehouse) the MCS coupler can/will be significant to a wide power range (kW to MW levels) up to 3000A, down to 30A. SDO-based US standards do not exist, or have been initiated, for electrical, mechanical, interoperability or digital communication. This is the highest priority/largest gap of all standards considered important for EVs at Scale. Figure 1 shows relevant SAE, IEC, and ISO standards work groups launched that cover subsystems and system level aspects of the Megawatt Charging System.

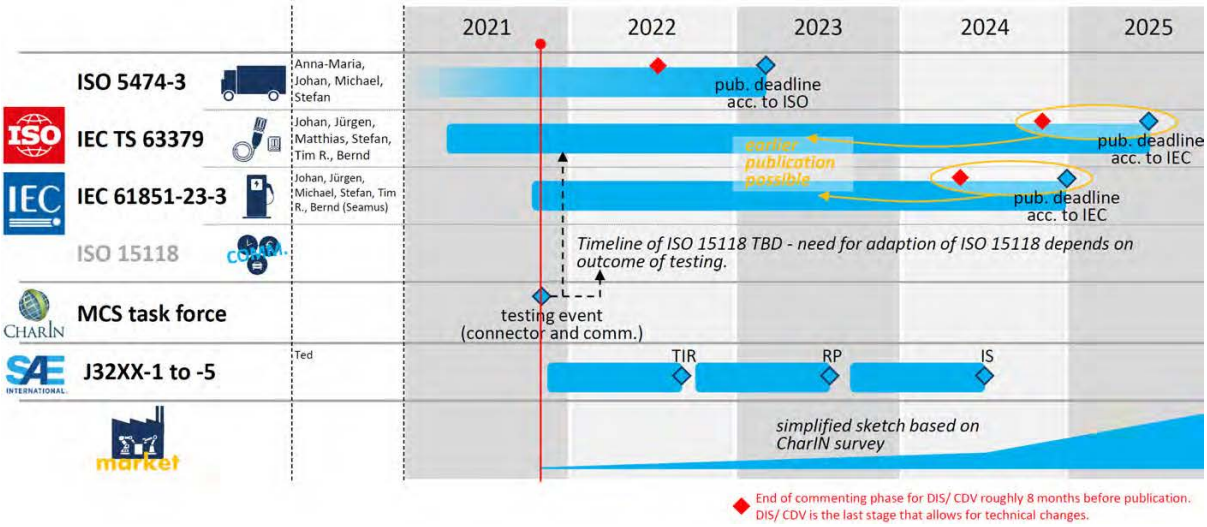

Figure 1 Roadmap of complementary SDO Standards for Megawatt Charging System including SAEJ3271

Integrated storage (microgrid, DERMS) DC charging Standards – IEEE P2030.13 is an extension/evolution of microgrid and DERMs standards that leverages SAE and other standards as a functional specification for high power DC charging station management. This includes 'DC as a Service' scenarios where the utility directly supplies DC power at the point of use, including DER assets as opposed to AC distribution. Safety, control/communication, interoperability, metering, and compliance specifications are included. Leveraging EEmerge and OpenCompute references on DC distribution for a blind mate coupling in a chassis mounted power module for EV charging directly supports 'EVs at Scale' with scalable solutions.

Vehicle-Grid-Integration topics (including Energy Services Interface, V2G, aggregation) – Utility interconnection topics cover bi-directional power flow (specifically vehicle/facility power export-UL9741) but can also address resiliency supporting capabilities of vehicles at scale. Aggregation of vehicle charging rate control and the energy services interface (ESI) will be impacted by FERC order 2222 allowing participation by many (all parties) and will impact purchaser choices via revenue streams, for EVs at Scale. Open Charge Point Protocol (OCPP) message payload is an interoperability gap in standards.

High Power Scalable/Interoperable Wireless Charging (including SWIFTCharge) – The present J2954/1 wireless charging standard only spans to 11kW and J2954/2 is a work in progress high power standard, not interoperable with low power infrastructure. This includes recently launched SAE J2954 dynamic WPT charging standards work groups. SWIFTCharge is a new industry-based consortium (analogous to USB/Bluetooth roots) creating a requirements document that can/will be adopted by an SDO, accelerating the process to a validated solution. As a J2954 alternative, it is interoperable/scalable from residential size single emitter (GA) to high power public and commercial (up to 1MW) systems.

Vehicle Oriented System Standards (including non-road, electric aircraft) – Vehicle systems (electric power take-off connectors, electric transportation refrigeration units, battery management, battery safety, etc.), are standards areas that have gaps that may impact EVs at Scale. SAE J2953/4 on charging rate reporting is a gap, normalizing the rate representation improves user access.