



**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 8/4/2022)**

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.

Priorities:

- NEVI Program (high priority)
 - Light-duty EV infrastructure for corridors
 - Light-duty EV infrastructure for communities
- Medium / heavy-duty EV infrastructure (medium priority)
- Appendices: Non-traditional EV Applications (low priority)

Timeline:

- Peer-reviewed draft roadmap (Feb 2023)
- Final roadmap by Annual Merit Review (May 2023)

[SIGN UP FOR WORKING GROUPS HERE](#)

Working Group	Topics for Discussion	
<p>WG1 - Vehicle Systems Co-Chairs:</p> <ul style="list-style-type: none"> • Rich Byczek, Global Technical Director, Transportation Technologies, Intertek • Brian Engle, Director, Business Development – Electrification, Amphenol <p>First Call: July 18, 2022 @ 11 am – 12 pm Eastern Recurring Call: 2nd and 4th Tuesdays @ 12:30 – 2 pm Eastern Next Calls: August 9, Aug 23 @ 12:30-2:00 pm Eastern</p>	<p><u>On-Vehicle Charging</u>. On-Road EVs (high priority)</p> <ul style="list-style-type: none"> - Light duty - Medium/heavy duty <p><u>Address in the above as appropriate</u></p> <ul style="list-style-type: none"> - EV-EVSE Interoperability - V1G Smart charge management (communications / control), V2X, Vehicle aggregation - Cybersecurity 	<p><u>On-Vehicle Energy Storage Systems</u></p> <ul style="list-style-type: none"> - Battery Management; Bi-directional power flow; Battery safety - Other Uses (Battery secondary use; Battery recycling) - High voltage distribution system, including cabling, motors, inverters
<p>WG2 - Charging Infrastructure Co-Chairs:</p> <ul style="list-style-type: none"> • Joe Bablo, Principal Engineering Manager – Energy Storage and E-mobility, UL Solutions • Mike Johnston, Executive Director of Codes & Standards, National Electrical Contractors Assn (NECA) <p>First Call: July 15 @ 3 – 4 pm Eastern Recurring Call: 2nd and 4th Mondays @ 11:00am -12:30pm Eastern Next Calls: August 8, Aug 22 @ 11:00am - 12:30pm Eastern</p>	<p><u>Station / Site Architecture</u> [incl. installation, permitting]; Light duty EVs (high priority); Medium and heavy-duty EVs (medium priority)</p> <ul style="list-style-type: none"> - Highway / Corridor Charging (high priority) - Workplace Charging (high priority) - Residential Charging incl. multi-unit dwellings (high priority) - Public (community/on-street) Charging (high priority) - Truck Charging (Plazas, Depots retrofitting warehouses, shipping centers) (medium priority) <p><u>Address in the above as appropriate</u></p> <ul style="list-style-type: none"> - DCFC and AC L2 - MCS - Site Architecture / Power Capacity - Onsite DERs / Energy storage 	<p><u>Charging Systems</u></p> <ul style="list-style-type: none"> - DCFC and AC L2 for light-duty EVs (high priority) - MCS for medium and heavy-duty EVs (high priority) - Wireless power transfer (static, dynamic), incl. electromagnetic compatibility (medium priority) <p><u>Address in the above as appropriate</u></p> <ul style="list-style-type: none"> - EV - EVSE interoperability - V1G Smart charge management (communications / control) - V2X - Safety - Cybersecurity

	<ul style="list-style-type: none"> - V2X - Vehicle aggregation - Cross Cutting (smart charge management, communications / controls), facility controls / facility energy management systems, cybersecurity, resiliency, and safety - Reliability (EVSE maintenance, cable management, environmental and use conditions, ventilation for multiple charging vehicles) 		
<p>WG3 – Grid Integration</p> <p>Co-Chairs:</p> <ul style="list-style-type: none"> • 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) <p>First Call: July 14 @ 4 – 5 pm Eastern Recurring Call: 1st and 3rd Tuesdays @ 12:30-2pm Eastern Next Calls: August 2, Aug 16 @ 12:30-2:00pm Eastern</p>	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p><u>Communication / Control Pathways</u></p> <ul style="list-style-type: none"> - Charging service provider - Energy services interface - DER aggregator - Building management - Telematics <p><u>Address in the above as appropriate & separately</u></p> <ul style="list-style-type: none"> - Cross Cutting (V1G / V2X communications / controls, cybersecurity, resiliency) </td> <td style="width: 50%; vertical-align: top;"> <p><u>Power Distribution and DER Integration</u></p> <ul style="list-style-type: none"> - Medium voltage distribution - DC-as-a-Service (DCaaS) - Interconnection - Microgrids/DERMs - Implications of charging as a service - DER Integration (solar, wind, battery energy storage) <p><u>Address in the above as appropriate & separately</u></p> <ul style="list-style-type: none"> - Cross Cutting (communications / controls, cybersecurity, resiliency, safety) </td> </tr> </table>	<p><u>Communication / Control Pathways</u></p> <ul style="list-style-type: none"> - Charging service provider - Energy services interface - DER aggregator - Building management - Telematics <p><u>Address in the above as appropriate & separately</u></p> <ul style="list-style-type: none"> - Cross Cutting (V1G / V2X communications / controls, cybersecurity, resiliency) 	<p><u>Power Distribution and DER Integration</u></p> <ul style="list-style-type: none"> - Medium voltage distribution - DC-as-a-Service (DCaaS) - Interconnection - Microgrids/DERMs - Implications of charging as a service - DER Integration (solar, wind, battery energy storage) <p><u>Address in the above as appropriate & separately</u></p> <ul style="list-style-type: none"> - Cross Cutting (communications / controls, cybersecurity, resiliency, safety)
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Appendices: (No specific working group activities, just high-level update on status)

- Non-traditional Electric Vehicle Applications
 - Marine, aircraft (EVTol), off-road, railroad
 - Electric Power Takeoff
 - Electric Truck Refrigeration Unit (eTRU)

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.

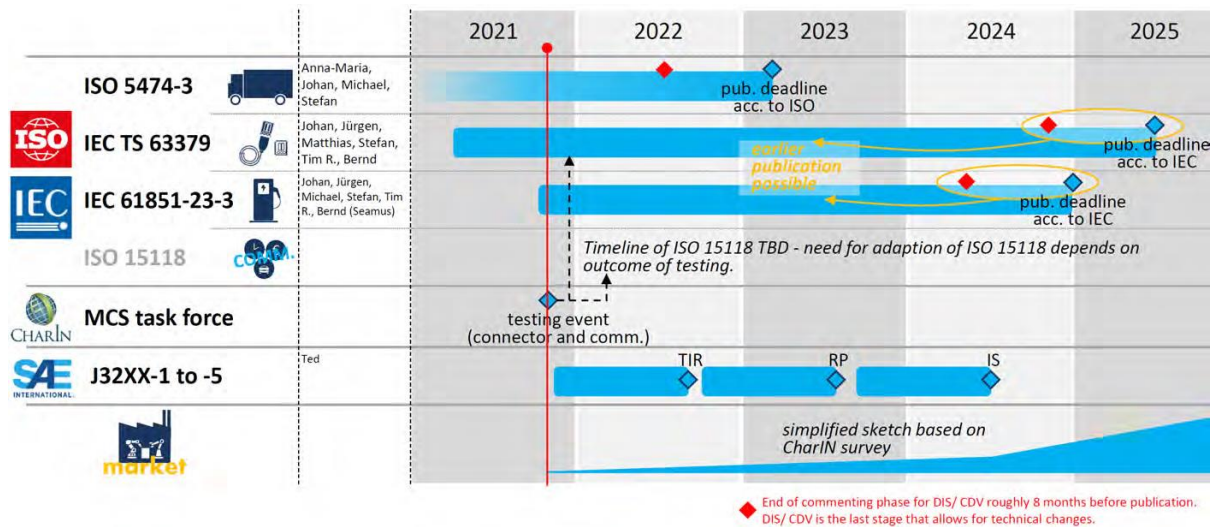


Figure 1 Roadmap of complementary SDO Standards for Megawatt Charging System including SAE J3271

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.