



## SAE Ground Vehicle Standards Status of work – PHEV +

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## SAE Standards - Communication

SAE International

### J2847/1 Communication between Plug-in Vehicles and the Utility Grid

<b>SCOPE:</b>	Establishes requirements and specifications for communication between plug-in electric vehicles and the electric power grid, for energy transfer and other applications. Where relevant, this document notes, but does not formally specify, interactions between the vehicle and vehicle operator.
<b>Participants:</b>	Organizations representing automotive OEM's, suppliers, government, academia, and industry.
<b>Expected Outcome:</b>	Status: <i>in progress</i>

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## SAE Standards - Communication

### J2847/2 Communication between Plug-in Vehicles and the Supply Equipment (EVSE)

SCOPE:	Establishes use cases for communication between plug-in electric vehicles and the electric power grid, for reverse power flow.
Participants:	Organizations representing automotive OEM's, suppliers, government, academia, and industry.
Expected Outcome:	Status: <i>in progress</i>

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## SAE Standards - Communication

### J2847/3 Communication between Plug-in Vehicles and the Utility Grid for Reverse Power Flow

SCOPE:	Establishes the communication structure between plug-in electric vehicles and the electric power grid, for reverse power flow.
Participants:	Organizations representing automotive OEM's, suppliers, government, academia, and industry.
Expected Outcome:	Status: <i>in progress</i>

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## SAE Standards - Communication

### J2836/1™ - Use Cases for Communication between Plug-in Vehicles and the Utility Grid

<b>SCOPE:</b>	This SAE Information Report J2836 establishes use cases for communication between plug-in electric vehicles and the electric power grid, for energy transfer and other applications.
<b>Participants:</b>	Organizations representing automotive OEM's, suppliers, government, academia, and industry.
<b>Expected Outcome:</b>	Status: <i>in progress</i>

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## SAE Standards - Communication

### J2836/2™ - Use Cases for Communication between Plug-in Vehicles and the Supply Equipment (EVSE)

<b>SCOPE:</b>	This SAE Information Report J2836 establishes use cases for communication between plug-in electric vehicles and the electric power grid, for energy transfer and other applications.
<b>Participants:</b>	Organizations representing automotive OEM's, suppliers, government, academia, and industry.
<b>Expected Outcome:</b>	Status: <i>in progress</i>

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## SAE Standards - Communication

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### J2836/3™ - Use Cases for Communication between Plug-in Vehicles and the Utility Grid for Reverse Power Flow

<b>SCOPE:</b>	This SAE Information Report J2836 establishes use cases for communication between plug-in electric vehicles and the electric power grid, for energy transfer and other applications.
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<b>Expected Outcome:</b>	Status: <i>in progress</i>

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## SAE Standards - Hybrids

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### J2841 Definition of the Utility Factor for Plug-In Hybrid Electric Vehicles Using NHTS Data

NHTS: National Household Travel Survey Data

<b>SCOPE:</b>	The total fuel and energy consumption rates of a Plug-In Hybrid Electric Vehicle (PHEV) vary depending upon the distance driven. Total distance between charge events determines how much of the driving is performed in each of the two fundamental modes. An equation describing the portion of driving in each mode is defined.
<b>Participants:</b>	Organizations representing automotive OEM's, suppliers, and US Research and Innovative Technology Center
<b>Expected Outcome:</b>	Status: <i>in progress</i>

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## SAE Standards - Hybrids

### J1711 Recommended Practice for Measuring the Exhaust Emissions and Fuel Economy of Hybrid-Electric Vehicles

<b>SCOPE:</b>	Establishes uniform chassis dynamometer test procedures for hybrid-electric vehicles (HEVs) that are designed to be driven on public roads.
<b>Participants:</b>	Organizations representing automotive OEM's, suppliers, government, academia, and industry.
<b>Expected Outcome:</b>	Status: <i>in progress</i>



## SAE Standards - Hybrids

### J1772™ SAE Electric Vehicle Conductive Charge Coupler

<b>SCOPE:</b>	General requirements for the electric vehicle conductive charge system and coupler for use in North America. Define a common electric vehicle conductive charging system architecture including operational requirements and the functional and dimensional requirements for the vehicle inlet and mating connector.
<b>Participants:</b>	Organizations representing automotive OEM's, suppliers, government, academia, and industry.
<b>Expected Outcome:</b>	Status: Published (January, 2010)



## SAE Standards - Hybrids

### J1773 SAE Electric Vehicle Inductively Coupled Charging

<b>SCOPE:</b>	Describes manually connected inductive charging for Levels 1 and 2 power transfer. Requirements for Level 3 compatibility are contained in Appendix B. Recommended software interface messaging requirements are contained in Appendix A. This type of inductively coupled charging is generally intended for transferring power at frequencies higher than power line frequencies
<b>Participants:</b>	Organizations representing automotive OEM's, suppliers, government, academia, and industry.
<b>Expected Outcome:</b>	Status: <i>in progress</i>



## SAE Standards - Hybrids

### J2344 Guidelines for Electric Vehicle Safety

<b>SCOPE:</b>	Technical guidelines relating to safety for Electric Vehicles (EVs) during normal operation and charging that should be considered when designing electric vehicles for use on public roadways. This document covers electric vehicles having a gross vehicle weight rating of 4536 kg (10 000 lb) or less that are designed for use on public roads.
<b>Participants:</b>	Organizations representing automotive OEM's, suppliers, government, academia, and industry.
<b>Expected Outcome:</b>	Status: <i>in progress</i>



## SAE Standards - Hybrids

### J2293/1 Energy Transfer System for Electric Vehicles--Part 1: Functional Requirements and System Architectures

<b>SCOPE:</b>	Describes 1.bi-directional energy transfer from the vehicle to the utility grid (V2G), 2. updates the communication medium from SAE J1850 to either Power Line Communication (PLC) or wireless and 3. conforms to a major revision to SAE J1772. Plug-In Hybrid (PHEV), Plug-In Fuel Cell Vehicles (PFCV) and may require unique communication aspects.
<b>Participants:</b>	Organizations representing automotive OEM's, suppliers, government, academia, and industry.
<b>Expected Outcome:</b>	Revision Status: Published July, 2008



## SAE Standards - Hybrids

### J2293/2 Energy Transfer System for Electric Vehicles--Part 2: Functional Requirements and System Architectures

<b>SCOPE:</b>	Describes 1.bi-directional energy transfer from the vehicle to the utility grid (V2G), 2. updates the communication medium from SAE J1850 to either Power Line Communication (PLC) or wireless and 3. conforms to a major revision to SAE J1772. Plug-In Hybrid (PHEV), Plug-In Fuel Cell Vehicles (PFCV) and may require unique communication aspects.
<b>Participants:</b>	Organizations representing automotive OEM's, suppliers, government, academia, and industry.
<b>Expected Outcome:</b>	Revision Status: Published July, 2008



## SAE Standards - Hybrids

### J2758 Determination of the Maximum Available Power from a Rechargeable Energy Storage System on a Hybrid Electric Vehicle

<b>SCOPE:</b>	Provides test procedure to determine RESS peak power so that a vehicle's ratio of RESS peak power rating to the sum of the Internal Combustion Engine power rating and the RESS peak power rating can be established.
<b>Participants:</b>	Organizations representing automotive OEM's, suppliers, government, academia, and industry.
<b>Expected Outcome:</b>	Revision Status: Published April, 2007



## SAE Standards - Batteries

### J2380 Vibration Testing of Electric Vehicle Batteries

<b>SCOPE:</b>	Describes the vibration durability testing of a single battery (test unit) consisting of either an electric vehicle battery module or an electric vehicle battery pack. For statistical purposes, multiple samples would normally be subjected to such testing
<b>Participants:</b>	Organizations representing automotive OEM's, suppliers, government, academia, and industry.
<b>Expected Outcome:</b>	Status: Published, 2009



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## SAE Standards - Batteries

### J2464 Electric Vehicle Battery Abuse Testing

<b>SCOPE:</b>	A guide toward standard practice and is subject to change to keep pace with experience and technical advances. It describes a body of tests which may be used as needed for abuse testing of electric or hybrid electric vehicle batteries to determine the response of such batteries to conditions or events which are beyond their normal operating range.
<b>Participants:</b>	Organizations representing automotive OEM's, suppliers, government, academia, and industry.
<b>Expected Outcome:</b>	Status: Published, 2009

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## SAE Standards - Batteries

### J1797 Recommended Practice for Packaging of Electric Vehicle Battery Modules

<b>SCOPE:</b>	Provides for common battery designs through the description of dimensions, termination, retention, venting system, and other features required in an electric vehicle application. The document does not provide for performance standards. Performance is addressed by SAE J1798. This document does provide for guidelines in proper packaging of battery modules to meet performance criteria detailed in J1766.
<b>Participants:</b>	Organizations representing automotive OEM's, suppliers, government, academia, and industry.
<b>Expected Outcome:</b>	Revision Status: Published June, 2008

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## SAE Standards - Batteries

### J1798 Recommended Practice for Performance Rating of Electric Vehicle Battery Modules

<b>SCOPE:</b>	Provides for common test and verification methods to determine Electric Vehicle battery module performance. The document creates the necessary performance standards to determine (a) what the basic performance of EV battery modules is; and (b) whether battery modules meet minimum performance specification established by vehicle manufacturers or other purchasers.
<b>Participants:</b>	Organizations representing automotive OEM's, suppliers, government, academia, and industry.
<b>Expected Outcome:</b>	Revision Status: Published July, 2008



## SAE Standards - Batteries

### J2288 Life Cycle Testing of Electric Vehicle Battery Modules

<b>SCOPE:</b>	Defines a standardized test method to determine the expected service life, in cycles, of electric vehicle battery modules. It is based on a set of nominal or baseline operating conditions in order to characterize the expected degradation in electrical performance as a function of life and to identify relevant failure mechanisms where possible.
<b>Participants:</b>	Organizations representing automotive OEM's, suppliers, government, academia, and industry.
<b>Expected Outcome:</b>	Revision Status: Published June, 2008



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## SAE Standards - Batteries

### J2289 Electric-Drive Battery Pack System: Functional Guidelines

<b>SCOPE:</b>	Describes common practices for design of battery systems for vehicles that utilize a rechargeable battery to provide or recover all or some traction energy for an electric drive system. It includes product description, physical requirements, electrical requirements, environmental requirements, safety requirements, storage and shipment characteristics, and labeling requirements.
<b>Participants:</b>	Organizations representing automotive OEM's, suppliers, government, academia, and industry.
<b>Expected Outcome:</b>	Revision Status: Published July, 2008

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## SAE Standards - Communication

### J2735 Dedicated Short Range Communication (DSRC) Data Dictionary and Message Sets

<b>SCOPE:</b>	The test procedures and performance levels in this SAE Recommended Practice cover the measurement of magnetic and electric field strengths over the frequency range 9 kHz to 30 MHz and conducted emissions over the frequency range of 450 kHz to 30 MHz <sup>1</sup> .
<b>Participants:</b>	Organizations representing automotive OEM's, suppliers, and US Research and Innovative Technology Center
<b>Expected Outcome:</b>	Definition of specific data elements and their format to ensure fully interoperable DSRC communications systems and applications. Status: Published, 2009.

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## SAE Standards - Communication

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### J551/5 Performance Levels and Methods of Measurement of Magnetic and Electric Field Strength from Electric Vehicles, Broadband, 9 kHz To 30 MHz

<b>SCOPE:</b>	Specifies standard message sets, data frames and data elements for use by applications intended to utilize the 5.9 GHz Dedicated Short Range Communications for Wireless Access in Vehicular Environments (DSRC/WAVE)
<b>Participants:</b>	Organizations representing automotive OEM's, suppliers, and US Research and Innovative Technology Center
<b>Expected Outcome:</b>	Revision. Status: Published.

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## SAE Standards - Communication

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### J1113 Electromagnetic Compatibility—Component Test Procedure - Part 42 - Conducted Transient Emissions

<b>SCOPE:</b>	Test procedure to evaluate automotive electrical and electronic components for Conducted Emissions of transients, and for other electromagnetic disturbances, along battery feed (B+) or switched ignition inputs of a Device Under Test (DUT). For 12 V heavy-duty trucks, and vehicles with 24 V systems.
<b>Participants:</b>	Organizations representing automotive OEM's, suppliers, and US Research and Innovative Technology Center
<b>Expected Outcome:</b>	Revision. Status: Published.

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