Vehicle Electrification System Standards

I. Vehicle Level Vehicle Electrification High Voltage System Architectures

I.a Acronyms and Definitions

Description:
For a technician to navigate the technologies within vehicle electrification, it is imperative that they accurately identify and communicate information about a vehicle repair or diagnostic by using correct acronyms and definitions within their communications.

Outcome (Goal):
Students will be able to properly articulate, through verbal and written communication, what constitutes each of the different vehicle electrification categories.

Objective:
When provided a diagram of a vehicle, with its component ratings (i.e. hp, kW, A-h, engine, on-board charger, etc.) students will identify and articulate the correct vehicle type.

Task:
When provided an electrified vehicle, students will use OEM service information and their visual recognition ability to correctly identify the category or type of vehicle electrification system.
<table>
<thead>
<tr>
<th>Type</th>
<th>Acronym</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Hybrid Electric Vehicle</td>
<td>HEV</td>
<td>A road vehicle that can draw propulsion energy from both of the following sources of stored energy: 1. A consumable fuel 2. An RESS that is recharged by an electric motor-generator system, an external electric energy source, or both</td>
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<tr>
<td>Plug-In Hybrid Electric Vehicle</td>
<td>PHEV (PHV)</td>
<td>An electric vehicle that can be recharged with an off-board source of electricity, it includes both battery electric vehicles (BEV) and plug-in hybrid electric vehicles (PHEV)</td>
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<tr>
<td>Range Extender Extended Range Electric Vehicle</td>
<td>LD/MD/HD EREV</td>
<td>A small engine-powered generator or auxiliary power unit (APU) added to a battery electric vehicle to produce a plug-in electric vehicle (PEV). This generator sustains vehicle operation beyond the range provided by the batteries alone.</td>
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<tr>
<td>Battery Electric Vehicle</td>
<td>BEV</td>
<td>A vehicle that receives its on-board propulsion power solely from batteries, unlike a hybrid vehicle that may receive a portion of its power from a separately fueled power source, such as an internal combustion engine.</td>
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<tr>
<td>Fuel Cell Electric Vehicle</td>
<td>FCEV</td>
<td>A vehicle that receives propulsion energy from an onboard fuel cell power system (hydrogen). It is assumed that the fuel cell system is using a small battery pack (1.3 – 1.6 kw-h) for acceleration.</td>
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**Governing Standards (Safety, Testing, Diagnostics or Repair):**
J1715 - HEV & EV Terminology
Industry Resource Organization:

✓ Society of Automotive Engineers (SAE)
☐ Institute of Electrical & Electronic Engineers (IEEE)
☐ International Electrotechnical Commission (IEC)
☐ American Society for Testing and Materials (ASTM)
☐ Occupational Safety & Health Administration (OSHA)
☐ National Fire Protection Association (NFPA)
☐ Underwriters Laboratories (UL)

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