SAE J1711: Argonne Researchers Recharge Plug-in Vehicle Standards

The question of how fuel economy and emissions are measured essentially comes down to how the vehicles are tested.

The Challenge

In 1999, the Society of Automotive Engineers (SAE) issued the SAE J1711 procedure to address hybrid electric vehicle (HEV) and plug-in hybrid electric vehicle (PHEV) testing. Since that time, the technology has evolved considerably, creating a need for the procedure to be updated.

A prototype PHEV is evaluated at Argonne's APRF.

The Solution

From 2006 to 2010, Argonne researchers led the SAE International task force charged with revising SAE J1711, the recommended practice for developing the fuel economy and exhaust emissions test procedures of HEVs and PHEVs. To update the uniform chassis dynamometer testing methods, Argonne's automotive research staff conducted several hundred tests on PHEVs in the lab's state-of-the-art Advanced Powertrain Research Facility (APRF).

The Results

SAE members approved the revised J1711 standard in June 2010. The U.S. Environmental Protection Agency (EPA) has recently issued proposed rulemaking for reporting the fuel economy of advanced vehicles that specifically references SAE J1711 on many of the technical procedures required for PHEV testing. The use of "utility factors" to derive final results was also taken from the Argonne-led SAE committee work.

The passage of SAE J1711 is an important accomplishment that will encourage and support the nation's move to electrified vehicles for petroleum savings.

With the completion of SAE J1711, Argonne is now focused on supporting the development of testing standards for all-electric vehicles, known as SAE J1634. Engineer Mike Duoba tests an all-electric Tesla to gather data for this effort.

"Until now, the fuel economy claims for plug-in hybrids were not calculated according to similar procedures, making car-to-car comparisons virtually impossible," **Argonne principal engineer Mike Duoba said. *"What makes this procedure—and other SAE-developed recommended practices—significant is that it represents the consensus procedures from many technical experts and that is why EPA typically considers them as the basis for the automotive regulations it promulgates."***

For further information, contact Mike Duoba, mduoba@anl.gov

March 2011