



Transportation Research at Argonne

The U.S. Department of Energy's (DOE's) goals call for increasing the efficiency and productivity of energy use while limiting the environmental impacts. In support of these goals, Argonne's Transportation Technology Research and Development Center (TTRDC) brings together scientists and engineers from many disciplines to find cost-effective solutions to the problems of foreign oil dependency and greenhouse gas emissions.

As one of the DOE's lead laboratories for research in hybrid powertrains, batteries, and fuel efficient technologies, Argonne's transportation program is critical to advancing the development of next-generation vehicles. The TTRDC's overall goal is to work with DOE, other federal agencies, and industrial partners to put new transportation technologies on the road that improve the way we live and contribute to a better, cleaner future for all.

Argonne transportation research covers several areas:

- ▶ Advanced Batteries
- ▶ Hybrid Electric and Plug-in Hybrid Electric Vehicles
- ▶ Advanced Engines
- ▶ Alternative Fuels
- ▶ Vehicle Systems
- ▶ Smart Grid
- ▶ Recycling
- ▶ Applied Materials Research
- ▶ Hydrogen and Fuel Cells

Argonne transportation researchers have won dozens of awards and hold hundreds of patents. Argonne's team approach brings researchers from eight different Argonne divisions together to address transportation problems. Their work is supported by world-class facilities such as:

- ▶ The Advanced Photon Source, with a dedicated Transportation Beamline
- ▶ Engine Research Facility
- ▶ Battery Analysis and Diagnostics Laboratory
- ▶ Fuel Cell Test Facility
- ▶ Tribology Laboratory
- ▶ Vehicle Recycling Pilot Plant



Both electric and plug-in hybrid electric vehicles are tested at the Advanced Powertrain Research Facility, providing an unbiased, consistent and practical approach to evaluating electric vehicles.

- ▶ Advanced Powertrain Research Facility
 - 4-wheel Drive Dynamometer Test Facility
 - 2-wheel Drive Dynamometer Test Facility
 - Modular Automotive Technology Testbed
 - Through-the-Road PHEV Prototype Test Vehicle
 - Battery Systems Hardware-in-the-Loop
 - Engine Systems Hardware-in-the-Loop
 - Power Electronics Lab
 - Battery Smart Charging Lab

Working with the U.S. transportation industry, Argonne researchers help improve processes, create products and markets and provide cost-effective transportation solutions in support of DOE goals. As the "go-to" vehicle assessment center for both government and industry, the TTRDC's research results are used to:

- ▶ Assist the auto industry in the development and optimization of their advanced technologies
- ▶ Help the DOE benchmark petroleum displacement, current technologies and future transportation goals