How the HPC4 Program Works

**Program Basics and Cost Sharing**
The program pays labs up to **$300K** (Demonstration Projects) to access HPC resources and expertise at laboratories; external partner provides at least 20% cost share (cash or in-kind).

**Concept Submission**
During a semiannual solicitation process, organizations may submit **two-page concept papers** describing ideas for projects of up to one year duration.

**Lab Principal Investigator**
If a concept is accepted, a lab principal investigator is assigned to help the organization develop a full proposal.

**Selection Criteria**
- Advancing the state of the art
- Technical feasibility and strength of team
- Industry impact
- Need for HPC systems

**Signed Agreement**
Following proposal approval, DOE provides the organization with a short-form cooperative research and development agreement (CRADA) to initiate the project.

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Facilitating industry access to the high-performance computing (HPC) capabilities and expertise of the U.S. DOE National Laboratories

High Performance Computing for Mobility (HPC4Mobility) is sponsored by the U.S. Department of Energy (DOE), Office of Energy Efficiency and Renewable Energy, Vehicle Technologies Office, Energy Efficient Mobility Systems Program

Organizing laboratories:

- Oak Ridge National Laboratory
- Argonne National Laboratory
- Berkeley Lab
- NREL National Renewable Energy Laboratory
- INL Idaho National Laboratory
- Lawrence Livermore National Laboratory

All DOE laboratories are eligible to participate.
Speeding up the discovery, design, and development of energy efficient mobility systems. Resulting impacts on transportation include reduced energy consumption, lowered costs, and improved accessibility.

**Challenges**

- Maximizing the energy efficiency and mobility benefits of connected and automated vehicles (CAVs) and new mobility services requires high performance computing (HPC) to process and analyze volumes of real-time transportation data
- Adaptive intelligent transportation system infrastructure operations in metropolitan corridors can be enabled by deep learning approaches that identify trends beyond human observations
- Coordinating and optimizing traffic across diverse geographic areas may introduce hundreds of thousands of vehicles and traffic management system units into a single computational model that requires HPC

**Resources**

- Access to HPC systems at the National Laboratories—including five of the world’s ten fastest computers
- Access to subject matter experts at the National Laboratories to run existing codes and assist with:
  - Artificial Intelligence, machine learning, and deep learning
  - Data interpretation/management and real-time analytics
  - Systems analysis and optimization
- HPC4Mobility intends to support demonstration projects and will also consider, larger, multi-institutional projects

**Benefits**

- Reduce the time and cost required for transportation infrastructure planning and decision-making, improving return on mobility system investments
- Optimize real-time control of intelligent transportation systems, reducing the energy, cost, and time associated with personal and freight mobility
- Accelerate the safe deployment of transportation systems that increase mobility energy productivity

**Contact Us**

For more information, please email hpc4mobility@ornl.gov