

Lawrence Livermore National Laboratory

Science and Technology on a Mission

Tarabay Antoun

Energy and Homeland Security Program Manager
Global Security Directorate

24 February 2026

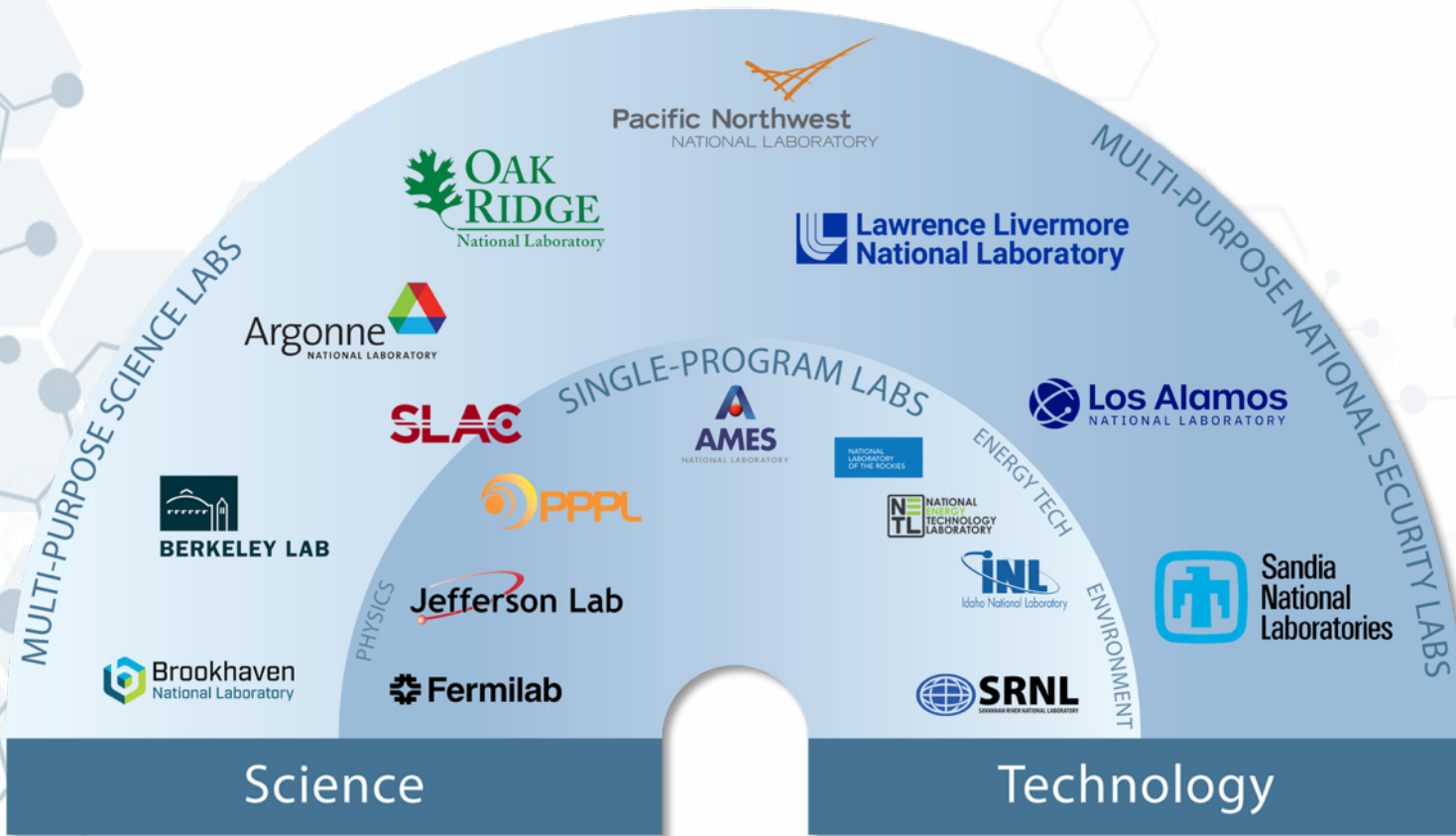
- LLNL established in 1952
- ~9,340 LLNS employees
- 1 square mile and 502 facilities
- Annual budget: ~\$3.7B
- Operated by LLNS, LLC for U.S. Dept. of Energy
(LLNS: University of California, Bechtel, BWXT, and Amentum)



Experimental Test Site
(11 square miles near Tracy, CA)



The DOE operates 17 National Laboratories



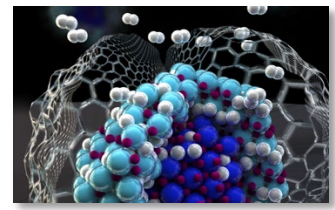
- Major scientific user facilities; >87,000 employees
- Largest funder of basic research in the physical sciences and energy research
- 16 of 17 are FFRDCs* and GOCOs*
- Extensive university and industry partnerships, and student programs



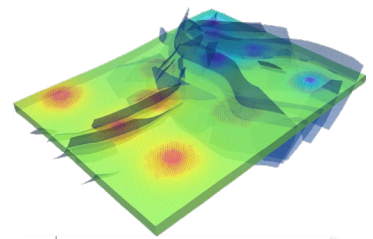


energy@LLNL

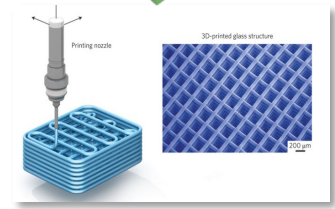
Complex materials under operating conditions



Subsurface energy applications



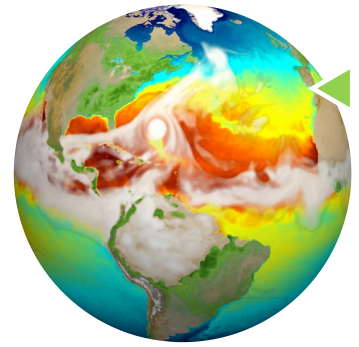
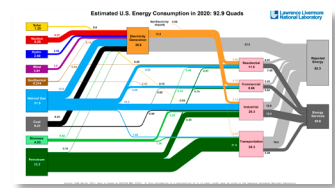
Energy materials and manufacturing



Security of cyber-physical energy systems



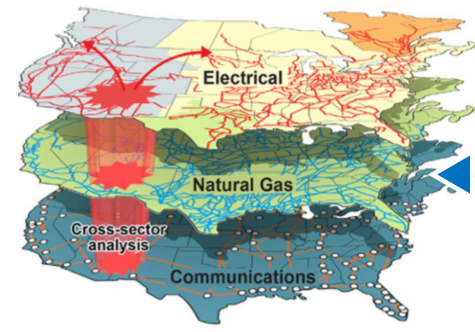
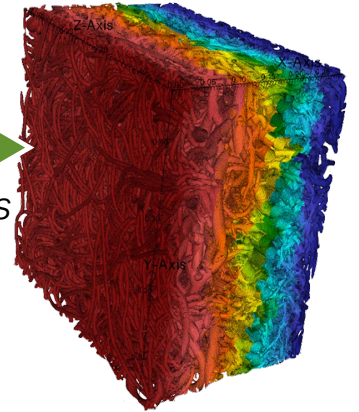
Energy flow charts



LLNL lead • 8 DOE Labs • 7 Universities



LLNL lead • 9 DOE Labs • 50 Industry Partners

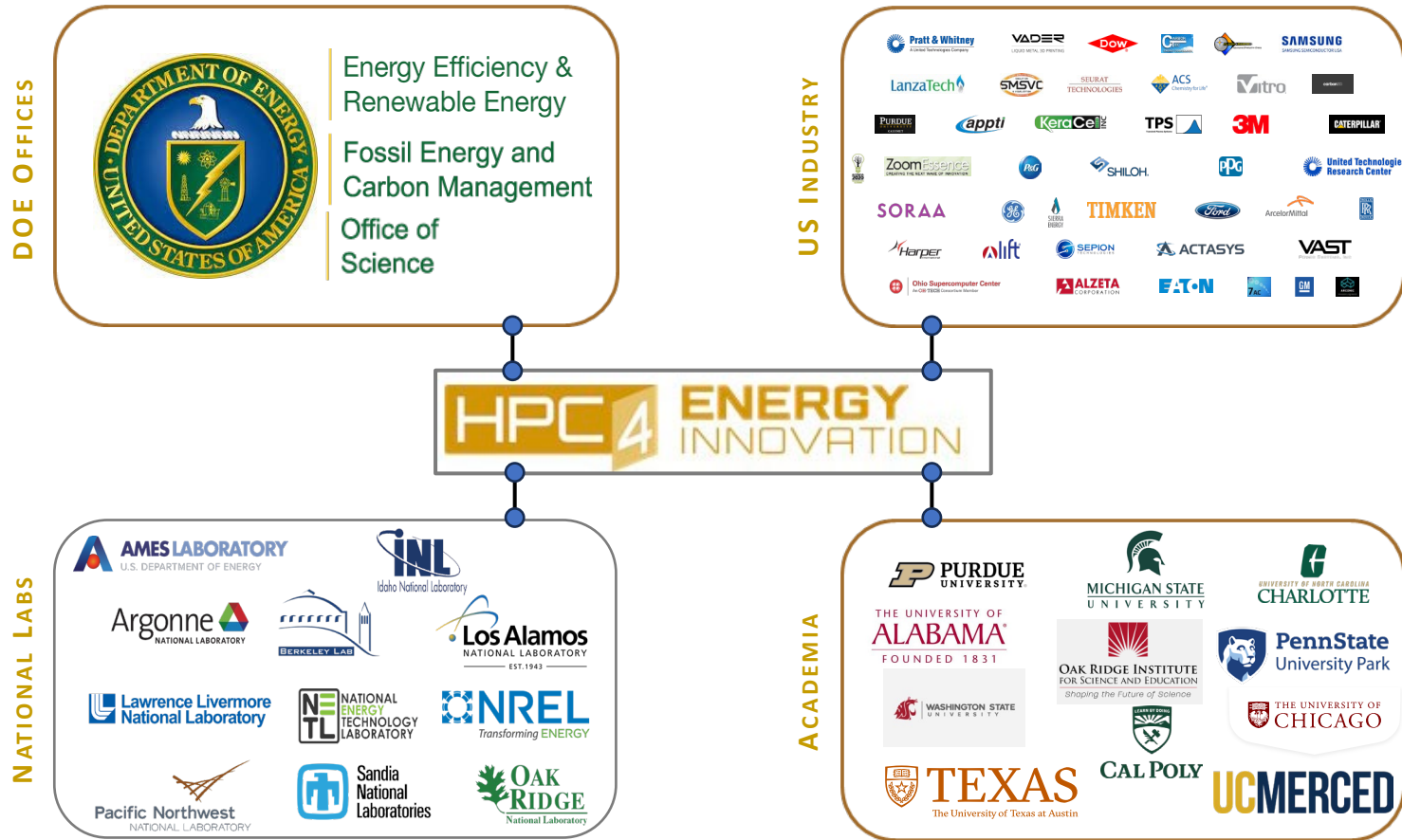


North American Energy Resilience Model (NAERM)

LLNL lead • 8 DOE Labs • Industry Partners

From basic research to applied science and engineering, we leverage LLNL core scientific capabilities to accelerate development and deployment of abundant, affordable, reliable, and resilient domestic energy

HPC4EI strengthens the S&T foundation of DOE national labs and accelerates innovation in US industry

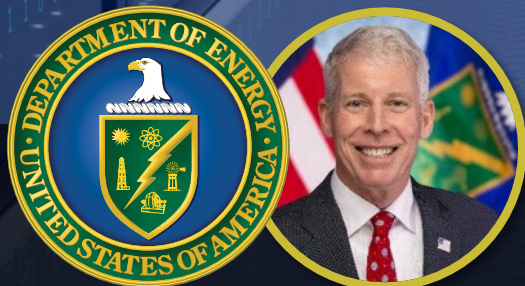


- connect the DOE HPC ecosystem to US industry
- Accelerate energy innovation
- Transfer capabilities from national labs to industry
- Transfer knowledge from industry to national labs
- Develop practical tools
- Generate useful and comprehensive data sets
- Train students and postdocs

Artificial Intelligence

LLNL is employing AI to enhance scientific understanding and mission delivery in all our mission areas

- Foundational development
- Application of methods
 - Inertial confinement fusion
 - Advanced manufacturing
 - Drug design
 - Strategic deterrence
 - Materials synthesis
 - Model safety and trust
- Data Science Institute
 - Workforce development
 - Summer Institute
 - Open Data Initiative
 - Consultation services
- Partnerships with Industry
 - DOE launched the *Genesis Mission* on December 1, 2025
 - Science jam sessions and continuing discussions with Microsoft, OpenAI, Nvidia, Meta, Anthropic, XAI, and Google
 - LLNL work to strengthen AMD open software stack for AI
 - LANL / Nvidia system with classified Open AI models

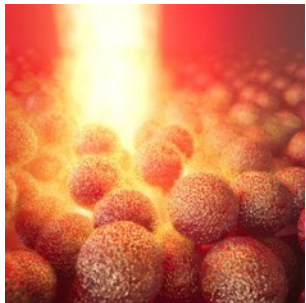


Secretary Wright has said “AI is the next Manhattan Project ... it’s critical that we win this race as well. ... It’s hard to overstate the importance and the impact AI will have in defense, in economics, in science.”

The Livermore Valley Open Campus (LVOC)



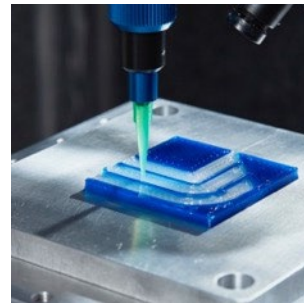
Building and expanding collaborations
with industry, academia, and community



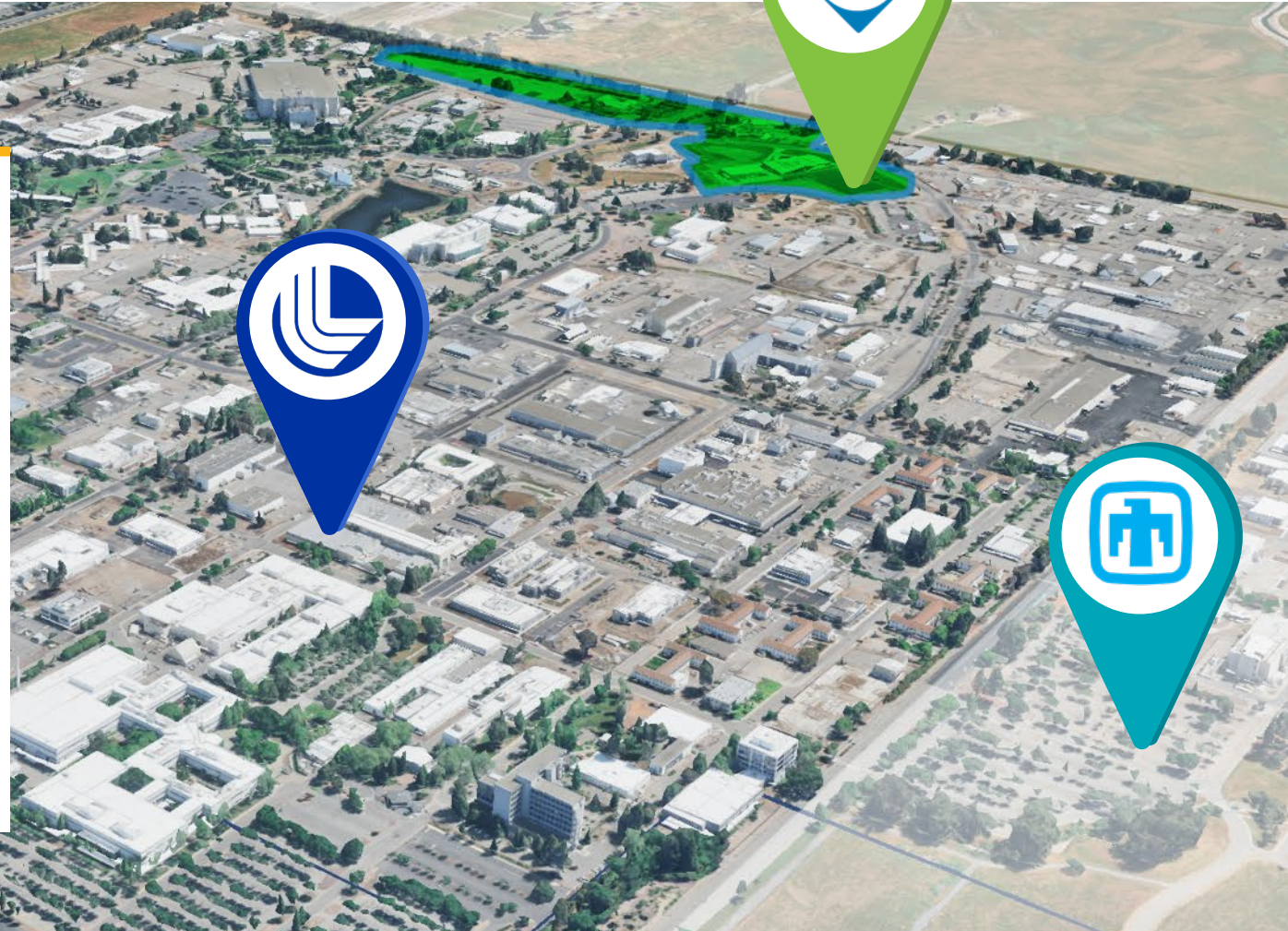
CAPABILITIES



EXPERTISE




FACILITIES



A woman with long blonde hair, wearing safety glasses and a light blue lab coat, is focused on her work in a laboratory. She is wearing purple nitrile gloves and is using a pipette to transfer liquid into a multi-well plate. The plate is placed on a circular metal tray with a red perforated edge. The background shows a laboratory setting with blue lighting and various pieces of equipment.

Science and Technology on a Mission

 Lawrence Livermore
National Laboratory