

ABOUT

Pacific Northwest National Laboratory

Pacific Northwest National Laboratory, located in southeastern Washington State, is transforming the world through courageous discovery and innovation.

PNNL's science and technology inspires and enables the world to live prosperously, safely, and securely. Our researchers collaborate to advance science and solve complex problems in energy, the environment, and national security – as well as move technology solutions to market.

PNNL employs more than 4,000 staff members with a \$1 billion annual budget. Since 1965, PNNL has been operated by Battelle on behalf of the U.S. Department of Energy.

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DISCOVERIES IN ENERGY & ENVIRONMENT

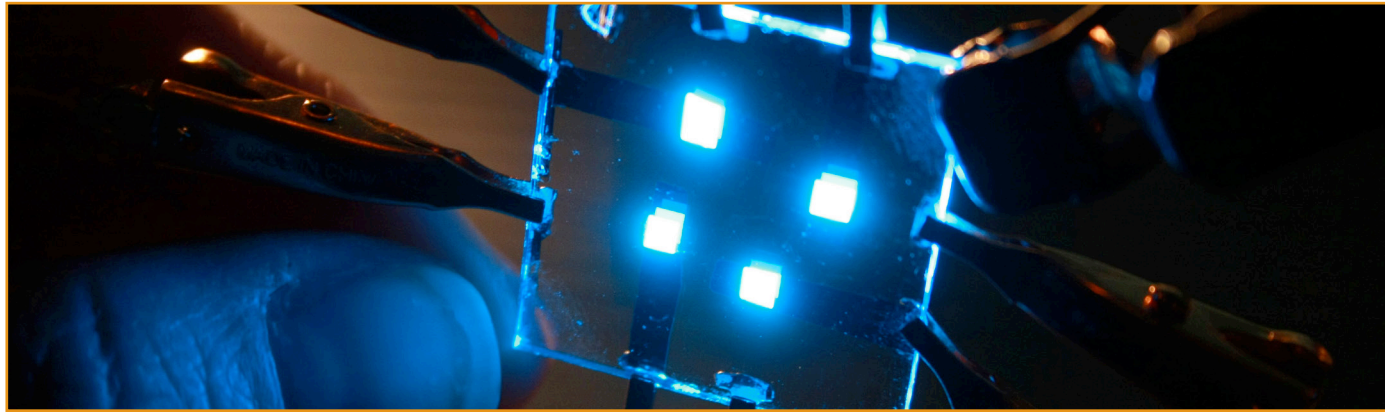
The 1,000 scientists, engineers and professional staff in the Energy and Environment Directorate at the Pacific Northwest National Laboratory are intent in our pursuit of answers to the nation's most challenging problems. Our mission is unique in its diversity, from discovering efficient sources of renewable energy to providing scientifically defensible solutions for legacy nuclear waste at the Hanford site.

Success for us means working with partners to drive remarkable results to the market. We do this in service to the U.S. Department of Energy and in collaboration with government sponsors, industry customers, universities, research institutions, and our fellow national laboratories.

Rooted in a broad understanding of complex systems, our innovations provide crucial pieces to bigger puzzles. These accomplishments often are relatively invisible to the typical consumer, yet are key to products including the compact fluorescent light bulb that shines safely for years, the catalytic exhaust component that reduces a vehicle's carbon emissions, and the home appliance that meets higher energy efficiency standards.

Our strategically focused research, analysis, and technological contributions are saving the nation billions of dollars in energy costs. We are dedicated to a cleaner future, restored environment, and a stronger economy.

Customer Focus. Exceptional People. National Impact.



ENERGY EFFICIENCY AND RENEWABLE ENERGY

Delivering distinctive science and technology solutions for efficient and sustainable energy

At PNNL, we believe that greater energy efficiency throughout buildings, improved technologies for enabling renewables – such as wind, water, solar, and biomass – and new vehicle technology, including storage systems for electric vehicles, can lead to timely solutions to our nation's energy challenges. We are a team of chemical, environmental, and materials scientists, economists, and engineers who are finding more efficient ways to use energy resources in transportation, buildings, and industry, and in advancing clean, renewable energy.

Our researchers are working to drive down the costs of clean energy technologies, overcome challenges to large-scale renewable energy deployment, and revolutionize buildings as energy assets. Science, engineering, and supporting analysis at PNNL enables the efficient and sustainable use of energy resources, reduces petroleum consumption and carbon emissions, and integrates renewable energy with the grid.



ELECTRICITY INFRASTRUCTURE

Defining and delivering the 21st century grid

Even as buildings and appliances become increasingly efficient, demand for electricity in the United States is still expected to grow nearly 30 percent by 2040. To help DOE transform the aging power grid into one that is efficient, reliable, and secure – the “smart grid” of tomorrow – PNNL's system-wide approach to grid modernization uses information technology for greater sensing, communications, and control throughout the power system. In this not-too-distant future, energy technology meets information technology for a resilient grid architecture as big as the Internet, but faster – with unprecedented updates at all levels: generation, transmission, distribution, and end use.

Simultaneously, flexible grid-scale energy storage options are needed that can accommodate intermittent renewable power sources, smart assets, and increasing demand. Our strengths in material synthesis and characterization, systems engineering, and grid analytics are delivering new technologies for increased grid flexibility and storage to embrace all energy futures. And anticipating unprecedented consumer engagement, we are also identifying new market, regulatory, and system control approaches to meet the vital needs of our nation's energy future.

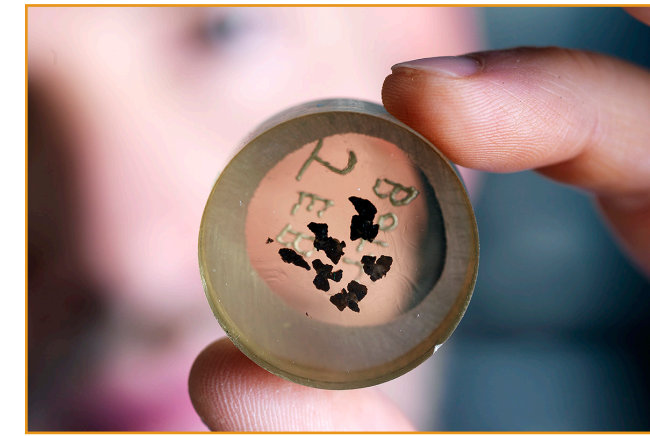


ENVIRONMENTAL HEALTH AND REMEDIATION

Reducing the cost and risk to resolve the most challenging legacy waste issues

Producing nuclear material to support America's war efforts – from World War II's Manhattan Project through the Cold War – now represents the most technologically challenging and costly mission facing the DOE: remediation of radioactive and hazardous waste contamination at former weapons production sites across the nation. Today, PNNL leverages 50 years of nuclear processing and chemical separations expertise, and integrates it with subsurface and predictive science to address this worldwide 21st century challenge.

In partnership with DOE and its contractors, PNNL plays a critical role in reducing the cost, risks, and timeline of cleanup at the Hanford Site. From waste immobilization and storage to contaminant monitoring and remediation, our scientists and engineers deliver safe and scientifically defensible systems-based approaches for solving environmental cleanup challenges, recovering environmental quality, and protecting human health. We also provide expertise to other national and international agencies and stakeholders faced with similar remediation challenges.

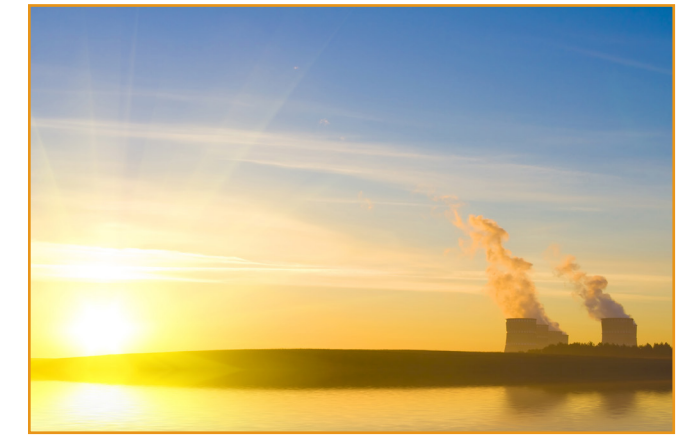


CLEAN FOSSIL ENERGY

Enabling safe and sustainable fossil fuel exploration, production, transportation, conversion, and end use

Despite global efforts to transition away from carbon-emitting energy sources like coal, oil, and natural gas, fossil fuels are projected to lead the global energy mix for the foreseeable future. Until the bridge to renewable energy is crossed, PNNL scientists and engineers are dedicated to reducing the impact of emissions – including greenhouse gases produced by fossil fuels – on Earth's atmosphere.

From fundamental process understanding to field-scale design and deployment, our researchers deliver advanced capabilities in subsurface science and simulation to enable safe and effective control of subsurface fluid injection and extraction. We also integrate chemistry, materials, and process engineering to develop technologies that more efficiently convert fossil hydrocarbons into power, fuels, and chemicals – all critical to environmentally and economically viable production and use of fossil energy.



NUCLEAR

Mobilizing interdisciplinary teams to advance safe and reliable nuclear power

Through a long and unique history in research and regulatory support across the nuclear fuel cycle, PNNL is a key national resource to help ensure the energy security of a nuclear-powered future. We specialize in a range of distinguishing capabilities, from waste form development and structural materials science to probabilistic risk assessment and advanced instrumentation and prognostics.

Our researchers are helping DOE advance the fuel, materials, and control technologies that will make small modular and advanced reactors viable and safe. At the same time, PNNL's diverse subject matter expertise supports the Nuclear Regulatory Commission in licensing these new technologies toward reality as an American energy source.