



NREL and DoD—Complementary Missions, Shared Goals

Comprehensive Energy Solutions

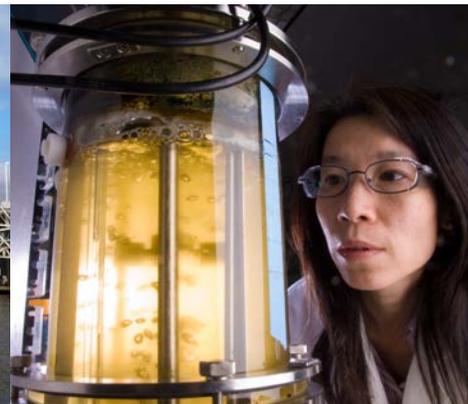
alternative energy sources • concept-to-prototype of cutting edge technologies
• **achieve energy surety** • strategic analysis • building technologies • systems integration • project development • **minimize risks** • drop-in biofuels • smart grid innovation • resiliency • net-zero energy installations • **reduce costs** • advanced vehicles • **meet energy goals** • state-of-the-art research facilities
• energy efficiency • support to operational environments • world-leading science in solar, biomass, and wind • strategic advisor

Partnering for a secure energy future

The National Renewable Energy Laboratory (NREL) supports DoD's mission to ensure energy security, reduce energy costs, decrease reliance on foreign oil, and achieve sustainability goals. NREL works with DoD to develop systems-level energy strategies and leading-edge technologies.

Through this partnership, NREL and DoD are focused on solutions that will:

- Ensure access to reliable supplies of energy to meet installation and operational needs
- Increase use of alternative energy supplies to provide diversified energy sources
- Validate technologies and provide systems-level analysis to increase surety and resiliency
- Improve energy efficiency and achieve rapid return on investments
- Integrate energy systems and match energy supply to demand, while securely transforming energy systems.



Collaboration in Action

NREL is advancing the science of renewable energy and energy efficiency technologies while building the resources to guide rapid deployment of utility-scale applications and integration.

As leaders in researching, developing, and coordinating energy solutions to power the nation's homes, businesses, and transportation, NREL is strategically positioned to help DoD accelerate the implementation of its clean energy initiatives, reduce costs, minimize risks in the field, and attain energy security.

NREL's critical capabilities support energy innovation in operational settings and at installations in four focus areas.

INNOVATION

NREL's fundamental research has led to breakthroughs in solar, wind, and biofuels that are helping transform how DoD meets its energy demands.

- Solar technology applications
- Energy efficient buildings
- Net-zero energy installations
- Drop-in biofuels
- Electric and alternative fuel vehicles
- Wind technology development

ENERGY PROJECT ASSISTANCE

NREL provides project assistance, energy use auditing and assessments, training, models, tools, and other resources to help DoD make smart decisions about implementing sustainable energy technologies that meet and exceed energy targets.

- Technical assessments
- Planning and implementation
- Measurement and evaluation

NREL's Laboratory of the Future

NREL is home to distinctive facilities for energy systems integration, solar, biofuels, and wind research, development, and demonstration. These support core programmatic activities for the U.S. Department of Energy and partners such as DoD to dramatically accelerate the development of technologies, tools, and processes.

For large-scale projects, highly-customized energy solutions and prototype development, DoD's use of the Energy Systems Integration Facility (ESIF) will advance efforts to achieve a sustainable and secure energy future.

The ESIF will be the first and only facility in the United States that can conduct integrated megawatt-scale research and development and hardware in-the-loop testing. The ESIF is a key reduction tool to safely move alternative energy technologies and energy integration systems onto the electric grid at the speed and scale required to meet national goals.



TECHNOLOGY VALIDATION

NREL collaborates with DoD to demonstrate leading-edge energy technologies at military test beds, enabling the rapid deployment of next-generation energy solutions. NREL's world-class research and test facilities enable DoD to conduct integrated megawatt-scale research and development and grid integration testing and validation of a variety of renewable energy and energy efficiency technologies.

- Advanced vehicles and fuels
- Biomass
- Buildings
- Electric infrastructure systems
- High-performance computing capabilities
- Hydrogen and fuel cells
- Photovoltaics
- Wind

ENERGY STRATEGY and POLICY SUPPORT

NREL provides technical analysis and input on energy strategies, from the installation and forward operating base levels to service-wide and national levels. Our capabilities include technical, economic, and policy analysis using proven models and credible data.

Through Energy Analysis, NREL offers expertise in developing decision-support software tools to complement DoD's focus on creating a strategic energy management infrastructure. Using proven models and credible data, our analysis capabilities include:

- Technology systems analysis
- Market analysis
- Policy analysis
- Sustainability analysis.

NREL: Helping advance the DoD energy mission

By collaborating with the country's only national laboratory solely dedicated to advanced renewable energy, energy efficiency, and energy systems integration, DoD can leverage NREL's facilities and expertise to accelerate achievement of energy goals.

NREL's support to DoD includes:

- Technology demonstrations at DoD test beds
- Drop-in, infrastructure-compatible biofuels
- Deployment of renewable and energy efficiency technologies
- Strategic energy management
- Energy system integrations
- Alternatives for operational energy security.

For more on how to work with NREL, contact: Stephen.Gorin@nrel.gov • 303-384-6216

NREL Supports a Vision for a National Energy System

The Built Environment

*Highly Efficient
Integrated Renewables*



Transportation Systems

*Highly Efficient,
Fuel Flexible*

Integrated Energy Systems



Electricity Generation Systems

*Distributed & Utility-Scale
Renewable Power*



Fuels Production Systems

Renewable Fuels

Front page photos: Denver Museum Nature and Science, NREL/PIX 18045; iStock/12812261; iStock/15629344. Inside pages: NREL/PIX 17394; iStock/11051853; Pat Corkery, NREL/PIX 16312; Illustration from SmithGroupJJR; Dennis Schroeder, NREL/PIX 19549. Back page: Robb Williamson, NREL/PIX 10856; John F. Martin, © GM Corp; iStock/5179938; iStock/6990005; Dennis Schroeder, NREL/PIX 17648