NREL Is Delivering Integrated Solutions for an Affordable and Secure Energy Future

The National Renewable Energy Laboratory (NREL) is the U.S. Department of Energy's primary national laboratory for energy systems research and development. As the energy systems laboratory, NREL's unique strength lies in developing and integrating a broad array of energy technologies into robust, resilient systems—bridging foundational research with practical applications to lower energy costs, drive economic growth, bolster national security, and deliver abundant and reliable energy.

Key Priorities

Harnessing America's Abundant Energy Supply

NREL's in-depth knowledge, unique facilities, and advanced modeling enables integration of next-generation and emerging energy technologies to:

- Capitalize on the use of America's abundant natural resources and materials.
- Build flexible and secure integrated systems that meet national energy needs.
- Expand energy access and give consumers choices for powering homes, cars, and businesses.

Strengthening America's Energy Supply, Delivery, and Use

NREL researchers use state-of-the-art facilities and artificial intelligence (AI) technology to provide integrated, real-time, data-driven forecasting to:

- Keep the lights on and vehicles moving for American consumers, businesses, government, and critical industries, even as energy demand rises.
- Advance national security, reduce vulnerability, and improve domestic supply chains.
- Enable energy systems to protect critical energy infrastructure against cyberattacks, weather events, and other physical threats.

Lowering Costs and Bolstering the Economy

NREL's innovative energy technologies, materials, and systems research improves manufacturing efficiency and availability to:

- Make energy affordable and accessible for consumers and industries.
- Lower production costs, create jobs, and sustain economic growth.
- Fuel and enhance U.S. expansion and competitiveness in global markets.

Collaborating To Accelerate Energy Innovation and Systems Integration

NREL's world-class capabilities enable partnerships with national security, defense, and other key federal stakeholders; state, local, and Tribal governments; industry; national laboratories; and research institutions to:

- Push the boundaries of scientific discovery and accelerate breakthroughs in energy innovation.
- Fast-track market-driven solutions, de-risk technologies, and overcome commercialization barriers.
- Support industry in developing and deploying secure, reliable, and resilient American technology.

Laboratory Highlights

Established in 1977

NREL has been applying its deep technical expertise and unique breadth of capabilities to drive the successful integration of our nation's energy resources and systems for **nearly 50 years**.

Four Locations

- South Table Mountain in Golden, Colorado (Main Campus)
- Flatirons Campus in Arvada, Colorado
- Alaska Campus in Fairbanks
- Offices in Washington, D.C.

Economic Impact

NREL's impact reaches every state in the nation and every part of the energy system. According to the University of Colorado Boulder's Leeds School of Business, NREL's economic impact on the nation totaled **$1.9 billion** in Fiscal Year 2023.

Awards

NREL scientists have earned **74 R&D 100 Awards**, known as the "Oscars of Innovation."

Partnerships

NREL maintains more than **1,100 active partnerships** with federal agencies, small and large businesses, educational institutes, and nonprofits, as well as state and local governments.

Patents and Software Records

To date, NREL's ever-expanding portfolio includes **750 patented technologies** and 700 commercial and open-source software records—all available for licensing.

People

NREL's workforce includes **nearly 4,000** researchers, postdocs, interns, and operations staff.

World-Class Facilities

- Energy Materials and Processing at Scale (Completion 2027)
- Energy Systems Integration Facility
- Field Test Laboratory Building
- Integrated Biorefinery Research Facility
- Research and Innovation Laboratory
- Science and Technology Facility

Research and Development Areas

NREL advances America's energy future through research and innovation. We develop technologies that increase efficiency, improve energy reliability, and support a strong, competitive economy in the following research and development areas.

Energy Systems Integration

- Energy Security and Resilience
- Grid Modernization
- Integrated Solutions for All Energy Sources

Transportation and Fuels

- Bioenergy
- Hydrogen and Fuel Cells
- Transportation and Mobility

Buildings and Industry

- Buildings
- Advanced Materials and Manufacturing
- Industrial Energy
- State, Local, and Tribal Governments

Energy Sources

- Geothermal
- Water
- Solar
- Wind

Cover image: Aerial view of the National Renewable Energy Laboratory (NREL) South Table Mountain (STM) campus from the east entrance.
Photo by Joshua Bauer and Bryan Bechtold, NREL 80565

NREL

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