

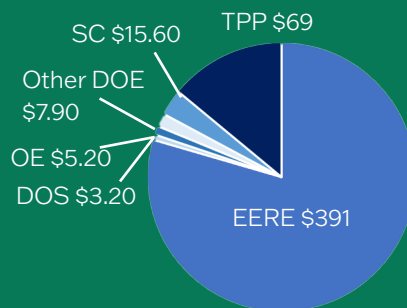
AT A GLANCE: NATIONAL RENEWABLE ENERGY LABORATORY



National Renewable Energy Laboratory (NREL) is DOE's primary National Laboratory for renewable energy and energy efficiency R&D. The laboratory delivers impactful scientific discoveries, innovations, and insights that transform clean energy technologies, systems, and markets. Also, the laboratory's research focuses on engineering of energy efficiency, sustainable transportation, and renewable power technologies and provides the knowledge to integrate and optimize energy systems. Finally, NREL's mission space delivers foundational knowledge, technology and systems innovations, and analytic insights to catalyze a transformation to a renewable and sustainable energy future.

FUNDING BY SOURCE

FY 2019 Costs (in \$M)
Total Laboratory Operating Costs: \$491.8
DOE/NNSA Costs: \$420.2
TPP (Non-DOE/Non-DHS) Costs: \$71
TPP as % of Total Laboratory Operating Costs: 14.5%
DHS Costs: \$0.6



CORE CAPABILITIES

- Computer Science and Analysis*
 - Advanced Computer Science, Visualization, and Data
 - Decision Science and Analysis
- Innovation and Application*
 - Biological and Bioprocess Engineering
 - Chemical Engineering
 - Mechanical Design and Engineering
 - Power Systems and Electrical Engineering
- Foundational Knowledge*
 - Applied Materials Science and Engineering
 - Biological Systems Science
 - Chemical and Molecular Science
- System Integration*
 - Systems Engineering and Integration
 - Large-Scale User Facilities

FACTS

Location: Golden, Colorado
Type: Single-program Laboratory
Contractor: Alliance for Sustainable Energy, LLC
Site Office: Golden Field Office
Website: nrel.gov

PHYSICAL ASSETS

630 acres
58 buildings and 4 trailers (owned)
\$503,332,504 replacement plant value
1,082,068 GSF in buildings/trailers (owned)
169,949 GSF in leased facilities (five buildings, whole or partial)

HUMAN CAPITAL

2,265 FTE and part-time employees
27 joint faculty
189 postdoctoral researchers
79 undergraduate students
85 graduate students
39 facility users
2 visiting scientists

MISSION UNIQUE FACILITIES

- Battery Thermal and Life Test Facility
- Controllable Grid Interface Test System
- Distributed Energy Resources Test Facility
- Energy Systems Integration Facility
- Field Test Laboratory Building
- High-Flux Solar Furnace
- Hydrogen Infrastructure Testing and Research Facility
- Integrated Biorefinery Research Facility
- Outdoor Test Facility
- Renewable Fuels and Lubricants Laboratory
- S&T Facility
- Solar Energy Research Facility
- Thermal Test Facility
- Thermochemical Process Development Unit
- Thermochemical Users Facility
- Vehicle Testing and Integration Facility
- Wind Dynamometer Test Facilities
- Wind Structural Testing Laboratory
- Wind Turbine Field Test Sites

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ACCOMPLISHMENTS



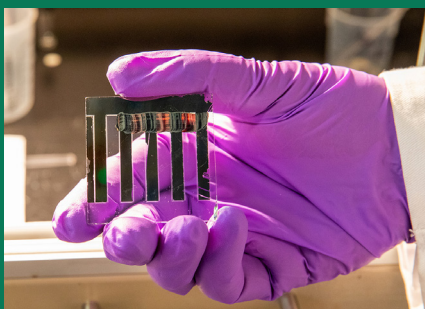
Unique Facilities: Centers for Bioenergy, Energy Systems Integration, Photovoltaics, and Wind

Centers for Bioenergy, Energy Systems Integration, Photovoltaics, and Wind - NREL is home to three national research centers—the National Bioenergy Center, the National Center for Photovoltaics, and the National Wind Technology Center, which is located at NREL's Flatirons Campus. The laboratory is developing the latter, which offers specialized facilities and provides technical support critical to the development, primarily, of wind energy, to allow for testing at the 20 megawatt (MW) scale. Other unique facilities at NREL include the 185,000-square-foot Energy Systems Integration Facility (ESIF), which is the only facility that can conduct integrated MW-scale testing of the components and strategies needed to reliably move significant amounts of clean energy onto the electrical grid.



Tech-to-Market Highlight: Record Year for Technology Partnerships

Tech-to-Market Highlight: Record Year for Technology Partnerships - NREL is the only National Laboratory dedicated to the research, development, commercialization, and deployment of renewable energy and energy efficiency technologies. The laboratory accelerates the commercialization of energy technologies through licensing and partnerships with industry. NREL just closed the books on the best partnership year in its history, inking nearly 300 new, high-impact agreements. The laboratory now has more than 900 active technology partnerships with 500+ unique partners across businesses, governments, nonprofits, and academia. NREL has executed 260+ licenses since 2000 and has approximately 700 patented or patent-pending technologies—plus 250+ software solutions available for licensing. For the U.S. and beyond, our analysis informs policy and investment decisions leading to more resilient, reliable, and efficient energy systems. With objective, technology-neutral analysis, NREL aims to increase understanding of energy policies, technologies, and more to address U.S. economic and other priorities.



Research Highlight: Circular Economy, Electrons to Molecules, and Integrated Energy Pathways

Research Highlight: Circular Economy, Electrons to Molecules, and Integrated Energy Pathways - NREL's research vision centers around three critical objectives. A circular economy for energy materials focuses on reducing waste and preserving resources through the design of materials and products with reuse, recycling, and upcycling in mind from the start. Electrons to molecules explores the use of renewable, affordable electricity as the driving force for the conversion of low-energy molecules (e.g., water) to generate other molecules that could be used as chemicals, materials, fuels, or energy storage. Integrated energy pathways focuses on replacing today's outdated grid with a modern, intelligent infrastructure that, for one, looks to expand our options for mobility. One highlight, among many, from NREL's research vision, has involved building on their ground-breaking discovery of perovskites' use in solar cells. A team of NREL researchers has uncovered a change in chemical composition shown to boost the longevity and efficiency of a perovskite solar cell by resisting a stability problem that has so far thwarted the commercialization of perovskites.