

Accelerating Clean Energy @ Scale

NREL helps translate community energy ambitions into actions.

Rooted in inclusive community engagement, Accelerating Clean Energy @ Scale (ACES) brings together NREL's experience, expertise, and capabilities to illuminate pathways for clean, affordable, equitable, secure, and resilient energy systems. Through customized, holistic modeling and analysis, we uncover insights and collaboratively develop strategies that address communities' unique energy- system goals and diverse stakeholder priorities. NREL provides support in evaluating and implementing community-selected options, as well as assistance for workforce development.

Harnessing successes from completed energy transitions, NREL leverages best practices and proven methodologies to enable more communities to achieve their clean energy goals, quickly and effectively. ACES can scale this agile approach to support diverse and wide-ranging ambitions—from small communities to regional collaboratives—building momentum toward a national equitable, clean energy economy.

An Equitable Energy Future

The U.S. administration's goal of a carbon-free power sector by 2035 is supported in part by the grassroots commitments of more than 170 cities and communities to achieve 100% renewable power. To reduce risks, bolster resilience, strengthen local economies, and address inequalities, businesses and communities are pursuing ambitious clean energy initiatives.

To move from ambitions to actions, communities need in-depth energy-sector expertise and insight. As a U.S. DOE research lab, NREL offers unbiased, best-in-class analysis and modeling capabilities supported by decades of scientific and applied research, expertise, and partnerships.

Insights Address Community Goals

ACES begins with engagement—understanding the perspectives, challenges, and priorities of communities, utilities, investors, and other stakeholders. This connection informs data-driven, technically sound analysis resulting in insight into partnership opportunities, investment strategies, technology possibilities and scenarios, and equity considerations needed to accomplish energy goals. These analyses also illustrate tradeoffs—helping communities understand and evaluate the synergies among renewable energy technologies, smart devices, distributed energy resources, electric mobility, and clean fuels.

NREL codevelops actionable options with each community by applying the latest data, tools, and innovations:

Decision Science: Unparalleled understanding of decision-making under uncertainty, e.g., investments, social system dynamics, and rapid technological change.

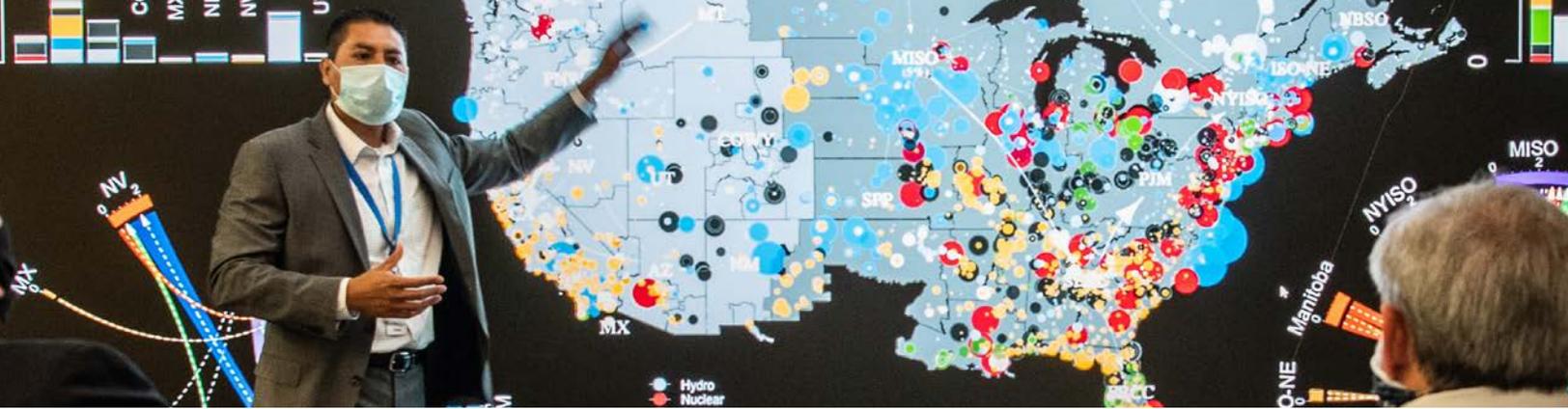
Data, Tools, and Scientific Analysis: In-depth data gathering to inform cohesive, customized engineering, economic, environmental, and energy analysis, e.g., techno-economics, supply chain, and climate.

Modeling and Demonstration: An algorithmic and code infrastructure that supports integrated, multisector, and cross-temporal and spatial energy analysis.

Stakeholders can evaluate and validate complex options at scale through the emulation and demonstration provided by NREL's experimental research platform—Advanced Research on Integrated Energy Systems (ARIES). These combined capabilities of ACES and ARIES empower stakeholders to assess and implement energy-system decisions with confidence, from end to end.

Working Together for Success

ACES develops partnerships, accelerates pivotal decisions, and shares resources for technology innovations, capacity building, and commercial solutions. We provide support—including workforce development—to implement solutions, leveraging public and private funds to enable infrastructure and other investments.



Communities benefit from NREL's understanding of the complex dynamics of energy sector planning and implementation decisions. As an objective and noncommercial convener of energy leaders, NREL has helped more than 2,000 businesses, utilities, tribes, and communities—many of which are historically underserved—advance their clean energy goals with support from a broad range of private- and public-sector sponsors.

ACES also leverages the experience, networks, and models of successful programs and initiatives such as Wind Powering America, Clean Cities, the Solar Energy Innovation Network, Energy Transitions Initiative, Innovation Incubator, and the Energy Executive Leadership Academy, and others.

From Ambitions to Actions

Leading U.S. jurisdictions and companies continue to reach out to NREL to help advance their economic, environmental, and engineering initiatives. Examples include:

City of Los Angeles: In support of the city's goal to reach reliable, 100% renewable energy by 2045, NREL provided rigorous analysis and technology expertise to inform decision-making toward economic growth, energy security, and equitable access to clean electricity resources.

Fond du Lac Band of Lake Superior Chippewa: Tribal leaders and members worked with NREL to understand the economics of individual energy projects, which led to a broader plan and positioned the tribe as a regional leader in energy and air-quality.

Peña Station NEXT: NREL developed foundational software that integrates building energy load modeling with distribution system modeling to enable Colorado's first microgrid on a zero-energy campus.

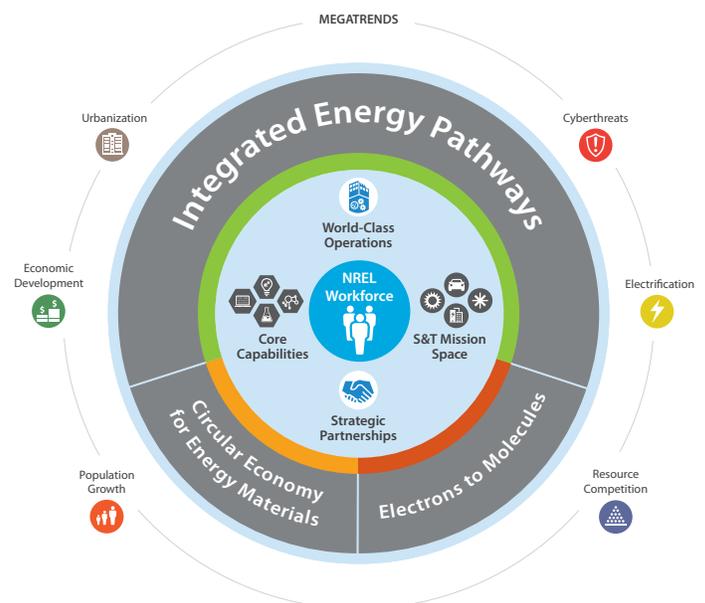
State of New York: State leaders turned to NREL for neutral analysis of options as they embarked on their ambitious program to achieve 100% carbon-free electricity by 2040 and economy-wide, net-zero carbon emissions by 2050.

Kingston, New York: The city partnered with a foundation and NREL to explore equity-centered pathways to increase resilience and job opportunities in achieving their 100% clean energy goals.

NREL's experience from thousands of deep analytic and technical support interactions with communities helps ensure that critical programs and investments are optimized toward economic revitalization and U.S. energy leadership. Across the diverse urban, rural, and tribal regions of the country, ACES prioritizes local conditions and opportunities crucial to transitioning energy systems to be equitable, clean, secure, and resilient.

Ultimately, ACES positively impacts millions of people, including those who are historically underserved, by revitalizing local economies, creating and transitioning jobs, increasing energy security and affordability, advancing equity, reducing emissions, and building energy system resilience.

Contact NREL Executive Director for Strategic Public-Private Partnerships Doug Arent at doug.arent@nrel.gov to learn more.



NREL's 10-Year Plan: A Vision for the Future