



State, Local, and Tribal Program Summary and Impact Report for Fiscal Year 2021

NREL's State, Local, and Tribal Program

Overview

Through the State, Local, and Tribal (SLT) Program, the National Renewable Energy Laboratory (NREL) supports the development of efficient, affordable, and resilient energy systems that address the infrastructure challenges, goals, and priorities of jurisdictions at every level. Helping communities address their greatest energy challenges as they transition to a clean and equitable energy system is a high priority for NREL. NREL provides support through development and delivery of trainings for workforce development or capacity building, adaptive tools, data, analysis, decision support, and direct technical assistance that enable communities to make informed, strategic energy decisions and plans.

The SLT Program is funded by the U.S. Department of Energy's (DOE's) Weatherization and Intergovernmental Programs, Energy Transitions Initiative, and Office of Indian Energy;

"The State, Local, and Tribal Program takes the research, analysis, and development of technologies that's being done at the lab and translates that information to tangible solutions for communities. This work has significant impact and our team is excited to be at the forefront of the clean energy transition, working alongside communities, tribal nations, and states."

—Eliza Hotchkiss, Acting SLT Laboratory Program Manager (FY 2021)



the U.S. Federal Emergency Management Agency (FEMA); and through direct agreements with communities. Some initiatives, such as the Energy Transitions Initiative Partnership Project, are funded by multiple DOE offices.

Leveraging expertise and innovations of nearly 200 researchers and staff across 16 centers at the lab, this multidisciplinary program represents the value of collaboration in solving complex energy challenges, achieving critical clean energy goals, and transforming the global energy economy.

This report provides a summary and resultant impacts of several key projects within the SLT Program in Fiscal Year (FY) 2021 (October 2020–September 2021).

"We are excited to be at the forefront in helping the nation meet its clean energy goals through engagement with communities at every scale."

—Juan Torres, Associate Laboratory Director, Energy Systems Integration



More than **1,000** states, local governments, and tribes supported since 2009

Supporting **5** DOE Offices and the Federal Emergency Management Agency (FEMA), plus various public-private partnerships



Nearly **200** contributing researchers and staff across **16** NREL centers

Key lab-wide collaborations: The Los Angeles 100% Renewable Energy Study (LA100), Puerto Rico recovery and planning efforts, Accelerating Clean Energy @ Scale (ACES), energy and environmental justice, resilience and cybersecurity, energy systems integration, Arctic strategy

> Learn more about the State, Local, and Tribal Program at nrel.gov/state-local-tribal/

A Just Transition to Clean Energy

Advancing Decades of Experience Meeting Communities Where They Are

NREL's vision is a clean energy future for the world. As such, the lab focuses on developing and delivering solutions that enable all people to participate in, and benefit from, a transition to sustainable energy.

NREL's SLT Program has played a pivotal role in advancing this vision. The SLT team has worked hand-in-hand with communities for decades, understanding their challenges and priorities, and integrating NREL's technical knowledge, data, analysis, and resources with local insights and expertise to codevelop holistic solutions tailored to each community's needs.

The Program's collaborative approach yields tangible outcomes and measurable results. Leveraging decades of successes and lessons learned, NREL is working to advance prosperity, security, and energy resilience while addressing the social, economic, and health burdens placed on some through energy systems.

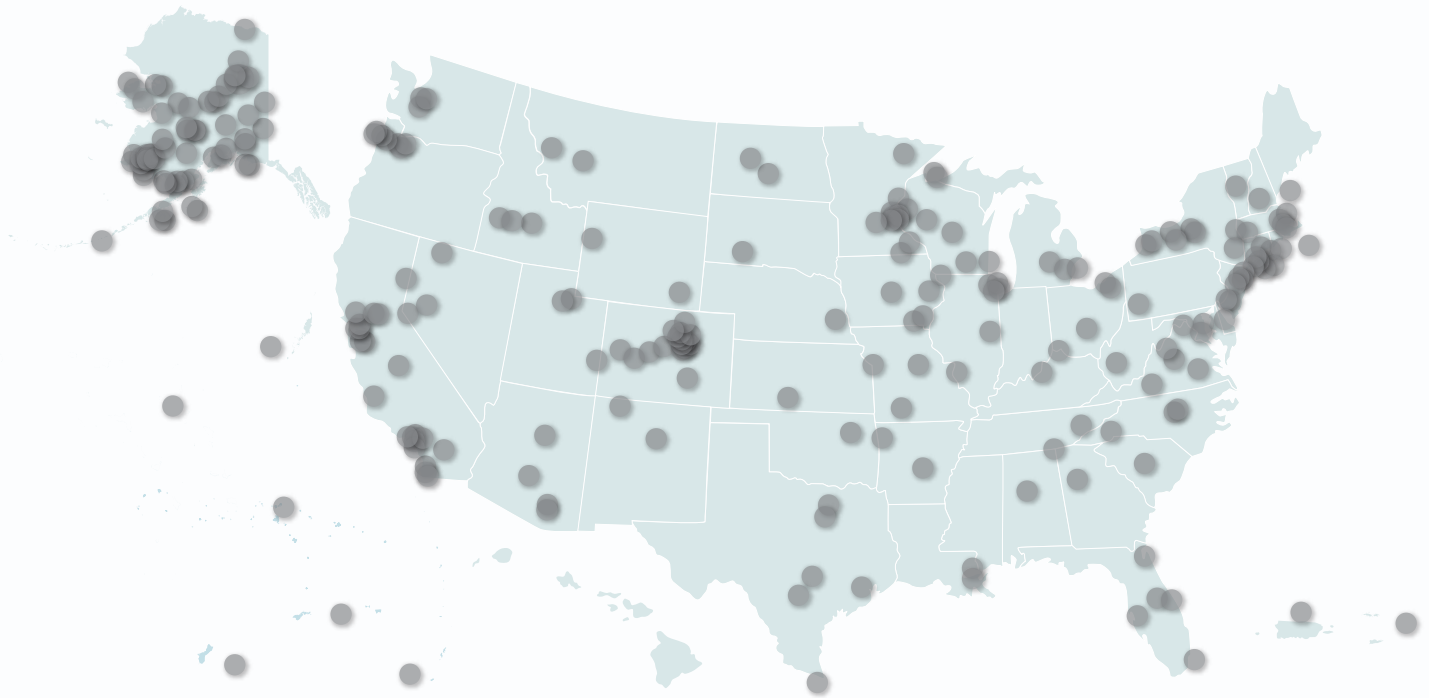
SLT team members are proud to be thought leaders supporting the broader lab-wide efforts to incorporate diversity, equity, and inclusion as foundational values that inform and guide NREL's transformational work. Combining SLT team experience and insights with those

of multidisciplinary academic and community experts on equity-informed energy and technology research, NREL focuses on energy justice from research and development (R&D), to data analysis and decision support, to energy system design, demonstration, and deployment.

"It's exciting to be at a point where our technologies, experience, partnerships and tools are poised to support a larger number of state, local, and tribal governments in taking data-informed steps toward their brighter future. In addition to on the ground needs, scaling up the efforts with a community focused approach enables us to inform national and economic priorities as well."



—Elizabeth (Liz) Doris, SLT Laboratory Program Manager



Through decades of partnerships, NREL has supported thousands of communities, utilities, and companies around the U.S. and its territories.

Customized Technical Support Services for States, Local Jurisdictions, and Tribes

NREL supports numerous federally funded efforts across the country. However, when federal programs are neither available nor the right fit for communities, the SLT Program offers jurisdictions an alternative approach to working with the lab through State, Local, and Tribal Technical Support Services Agreements. Through streamlined contracting and cost-effective pricing, such an option provides users customizable support and technical insight to navigate the complexities of clean energy planning. Users gain access to NREL's technical expertise, models and tools, and guided analysis to support data-driven, actionable energy decisions

that drive renewable energy, energy efficiency, and/or sustainable transportation projects.

Learn more at nrel.gov/state-local-tribal/technical-support-services.html

"There has been a long-awaited need for technical support services, and NREL is excited to be executing agreements and assisting states, communities, and tribes."



— Liz Weber, Technical Support Services Agreements Project Lead

Program Outreach and Communication

To increase awareness of and support for NREL's SLT Program capabilities and efforts, the Program takes a strategic approach to outreach and communications. The SLT Program leverages a variety of outreach methods to share project highlights and elevate impacts through newsletters, social media, blog posts, and news announcements. A few examples are highlighted below for FY 2021.

Outreach by the Numbers

Newsletter

Most popular link in newsletter



More than **5,200** subscribers

TOP 5
LARGEST OF
NREL'S 42 EMAIL
AUDIENCES

Social media

Social media top posts:



FOLLOW
NREL_CONDUIT
ON TWITTER!

Nearly **800** followers

Website

Top viewed website page:



Nearly **55,000** website visitors

31%
INCREASE
OVER FY20

SLT Subprogram Leads

The SLT Program has dedicated subprogram leads to oversee and coordinate focused areas of research and tasks, while upholding the overarching goals and mission of the lab. Here's what they say about the meaningful work of the SLT Program.



“ The SLT Program is where energy research turns into energy action, one community at a time.

—Jordan Burns, Energy Transitions Initiative Subprogram Lead



“ The SLT level is where the most ambitious clean energy goals are being made and achieved and where equity is increasingly prioritized in the transition. We're building on well over a decade of experience engaging with communities to codevelop place-based solutions.

—Megan Day, Partnerships and Technical Assistance Subprogram Lead

“ Our work at NREL supports DOE's efforts to reduce the energy burden on the economically disadvantaged population. Working with the passionate members of the Weatherization Assistance Program to accomplish these goals is truly inspiring.

—Chuck Kurnik, Weatherization Assistance Program Subprogram Lead

“ The NREL Tribal team embraces the spirit of two-way communication—that is, actively listening to tribes about their goals and objectives and ensuring that their voices are incorporated into any work we do.

—Kevin McCabe, Indian Energy Subprogram Lead



“ NREL's work with DOE's State Energy Program provides meaningful collaboration and crucial support that enables states and territories to meet local energy goals by maximizing the benefits of energy efficiency and renewable energy.

—Liz Weber, State Energy Program Subprogram Lead



Project Highlights

Many state, local, and tribal governments have developed ambitious energy goals but need assistance to realize those goals.

With funding from DOE, FEMA, and various public-private partnerships, NREL builds jurisdictional capability to use data to achieve desired energy and ancillary benefits (e.g., equity and resilient infrastructure). Foundational to this community-

based capacity building is the SLT Program's mission-driven work to provide actionable, context-specific information and decision support to communities through technical assistance and training, tools, data, and in-depth analysis.

The project summaries on the following pages highlight key SLT Program activities and outcomes in FY 2021.



Technical Assistance and Training

Energy Transitions Initiative Partnership Project Boosts Energy Resilience in Communities

Project Leads: Tessa Greco, Katrina Woodhams

NREL's Energy Transitions Initiative team helped launch the DOE Energy Transitions Initiative Partnership Project (ETIPP), a network of DOE offices, national labs and regional organizations that collaborates with remote, island, and islanded communities across the United States to advance their self-defined energy resilience goals.

ETIPP's pilot cohort includes 11 competitively selected communities ranging from Alaska and Hawaii to Maine and North Carolina. Each of the 11 communities will receive technical assistance with community-driven projects spanning buildings and critical facilities, distributed energy resources, hydropower, microgrids, solar, storage, tidal energy, and transportation.

ETIPP communities participated in virtual workshops on resilience and benefited from energy planning resources NREL and other national labs developed to support DOE's Energy Transitions Initiative, including the Energy Transitions Playbook. The Playbook guides communities through an iterative, five-phase energy planning process aimed at assisting communities with clean energy transition considerations.



"It's a win-win—environmentally impacted communities will benefit from cheaper, more reliable power in their homes and businesses while our country makes progress toward the Biden Administration's goal of 100% clean electricity by 2035."

— Secretary of Energy Jennifer M. Granholm



**The Alaska Longline Fishermen's Association based in Sitka, Alaska and the City of Sitka are both participating in ETIPP.*

Learn more about ETIPP and NREL's work with DOE's Energy Transitions Initiative at energy.gov/eere/energy-transitions-initiative and at nrel.gov/state-local-tribal/etipp-technical-assistance.html

A map of selected communities for the first round of ETIPP.



What is the most **rewarding** part of working on ETIPP?

"Knowing the assistance is directly impacting communities and their urgency to address the largest risk of today's shared global problem - climate change."

—Katrina Woodhams, ETIPP Project Lead (FY 2022)



"Undoubtedly, working with the amazing people embedded within communities, national labs, DOE, and our regional partners, all of whom are absolutely committed to seeing the energy transitions outlined by each community pushed toward the goals they want to achieve."

—Tessa Greco, ETIPP Project Lead (FY 2021)





Technical Assistance and Training

NREL Technical Assistance Fosters Tribal Energy Security and Sovereignty

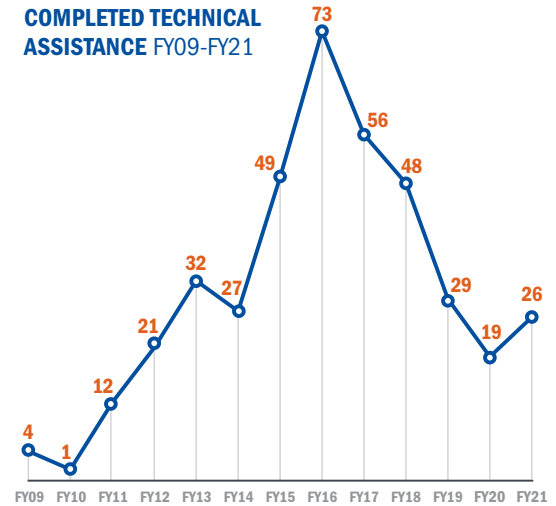
Project Leads: Tony Jimenez, Kevin McCabe

DOE's Office of Indian Energy's on-request technical assistance program works alongside Native American tribes and Alaska Native villages to advance their self-determined energy visions. The program provides various types of technical assistance, including strategic energy planning, technical analysis, and financial analysis. Working collaboratively with subject-matter experts from DOE, other national laboratories, and community-based partnering organizations, NREL provides tribes with unbiased technical assistance tailored to address their unique energy challenges, needs, and goals.

From October 2020 through July 2021, NREL fulfilled 26 tribal technical assistance requests aimed at strengthening tribal energy resilience, security, and sovereignty.

In July 2021, DOE awarded \$12 million in funding to 13 Native American and Alaska Native communities to deploy clean energy solutions on tribal lands. The majority of the awardees had previously received technical assistance directly from NREL or from DOE's Office of Indian Energy, underscoring the importance of building relationships with tribes and the success that can result.

COMPLETED TECHNICAL ASSISTANCE FY09-FY21



Including the 26 completed tribal technical assistance requests in FY 2021, NREL has supported completion of 389 total requests in the Lower 48 and Alaska alongside DOE's Office of Indian Energy.



What Partners Are Saying

“ Tony Jimenez and NREL [were] engaging and educational at the same time. The overview the services provided was very generous and easy to work with.”

—Ed Herndon, CEO, Chitina Native Corporation

“ NREL Tech Assistance has been extremely helpful for the Hopi Tribe in the past and has formed the building blocks of some major projects that are in development. We will certainly use the Tech Assistance program again in the future. Thank you!”

—Fletcher Wilkinson, Hopi Utilities Corporation



See how else NREL works hand-in-hand with tribal communities, helping them journey toward a clean energy future at [nrel.gov/state-local-tribal/decision-support-tribes.html](https://www.nrel.gov/state-local-tribal/decision-support-tribes.html)

Watch our video to see how NREL works with tribes: https://www.youtube.com/watch?v=l6tQF2njVWY&feature=emb_imp_woyt



Technical Assistance and Training

Circular Economy Technical Assistance Supports Businesses and Governments in Waste Management

Project Lead: Anelia Milbrandt

In collaboration with DOE's Advanced Manufacturing Office, Bioenergy Technologies Office, and the Environmental Protection Agency's Sustainable Materials Management Program, NREL's SLT team began work in FY 2021 to develop a visually engaging and easily digestible resource recovery planning report focused on wet and gaseous waste streams. Translating existing technical information provided by DOE and other experts, the report will offer geographically diverse case studies showcasing replicable solutions and technology deployments.

The resource is expected to be complete in FY 2022.

Virtual Training Course Provides Professional Development for Home Energy Professionals

Project Leads: Robin Burton, Chuck Kurnik

NREL's Weatherization team partnered with Simonson Management Services and Interstate Renewable Energy Council to develop and deliver two online training courses in Instructional Systems Design (ISD) for trainers and curriculum developers in the DOE Weatherization Assistance Program network. The six-week courses provided professional

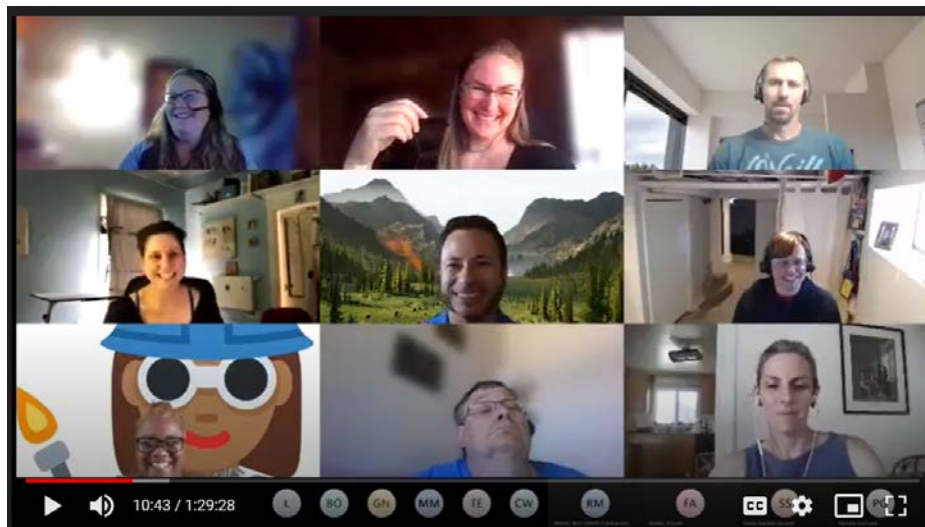
development to 31 WAP trainers and curriculum developers, representing 16 organizations across 13 states, supporting efforts to develop and deliver effective, learner-centered training to weatherization professionals across the nation.

NREL's Weatherization team supports and promotes high-quality work within DOE's Weatherization Assistance Program and the home energy retrofit industry. This support includes maintaining technical specifications and tools, developing approaches to strengthen workforce skills and qualifications, collaborating with training providers, and fostering continuous improvement throughout DOE's Weatherization Assistance Program. For more than a decade, NREL's efforts have supported consistent and efficient implementation of the program.

"We've gotten great feedback from participants who are already using what they learned in the ISD online course to develop or redesign learner-centered curricula and are paying it forward by teaching their colleagues how to apply what they learned."



—Robin Burton, Instructional Systems Design Training Project Lead



Instructional Systems Design virtual training.



Technical Assistance and Training

'Building Your Energy Team' Resources Support the Expanding Clean Energy Workforce

Project Lead: Robin Burton

NREL developed resources for state and local governments and K-12 schools to build their energy teams and improve their internal workforce capacity. Now publicly available through the DOE Weatherization and Intergovernmental Program's State and Local Solution Center, these resources support job development across the country as energy transition efforts ramp up at all levels of government.

View the resources at energy.gov/eere/slsc/building-your-energy-team

State-Targeted Efficiency Programs (STEPs) Identifies Success Factors in State Efficiency Leadership

Project Lead: Sherry Stout

In support of DOE's Weatherization and Intergovernmental Program's (WIP's) ongoing work to improve and optimize state energy efficiency programs, NREL sought to better understand how to catalyze investment in energy efficiency measures, weatherization upgrades, and renewable energy deployment. In an effort to identify leading STEP's for WIP to hold up as replicable models for other states, NREL compiled a set of program successes and recommendations based on interviews with 15 state energy office representatives. The resulting report outlined short- and long-term actions states can take to mitigate barriers to decarbonization and promote equity.

The report is expected to be released in early FY 2022.



NREL provides resources, training, and professional development opportunities for the nation's expanding clean energy workforce.

Photo from iStock 1327242052

NREL Supports Sustainable Wastewater Infrastructure of the Future (SWIFt)

Project Lead: Taylor Curtis

NREL and DOE launched the second phase of the SWIFt Toolkit Training, aiming to double SWIFt 1.0 activities by providing technical assistance and trainings in four critical areas (energy data management, energy efficiency improvements/advanced technology integration, project financing and strategic energy planning) to more than 200 small, rural wastewater facilities. As of June 2021, SWIFt 2.0 included more than 55 signatory partners representing more than 120 wastewater facilities across 29 states. SWIFt 2.0 aims to increase energy savings at these facilities by 5% in 3 years and 25% in 10 years (as defined in SWIFt 1.0 by DOE's Industrial Assessment Centers and Oak Ridge National Laboratory). Facilities interested in energy savings can sign up to participate in SWIFt Toolkit Trainings.

To learn more, visit betterbuildingsolutioncenter.energy.gov/swift-toolkit-training-wastewater-facilities

REopt Lite Improves Energy Efficiency & Resource Planning for Resilience

Project Lead: Emma Elqvist



In FY 2021, NREL added a new feature to the Renewable Energy Integration & Optimization (REopt) Lite web

tool that allows users to quickly evaluate the impact of energy efficiency measures on optimally sized distributed energy resources to guide cost savings and resilience. The load adjustment slider feature reminds users to consider energy efficiency projects in renewable energy planning and can be used to show associated cost savings.

View the REopt web tool at reopt.nrel.gov

Low-Income Energy Affordability Data (LEAD) Tool Provides Enhanced Decision Support for Tribal Energy Planning

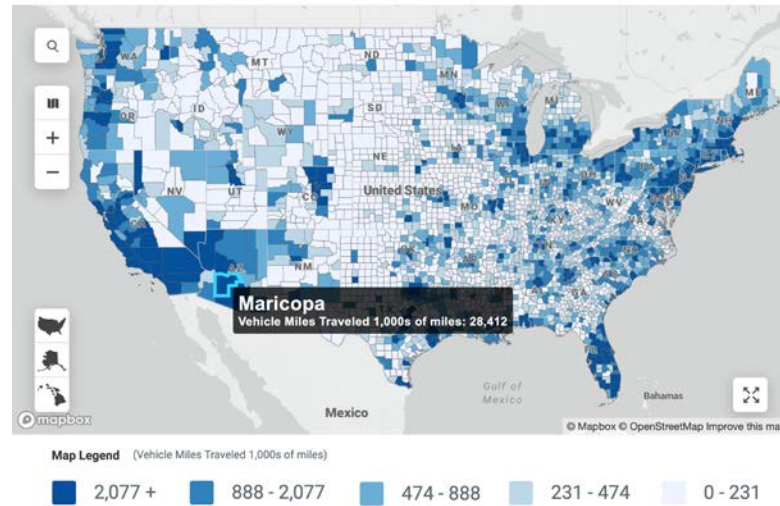
Project Lead: Aaron Vimont

In August 2021, the NREL SLT team expanded the Low-Income Energy Affordability Data (LEAD) Tool to include all 574 federally recognized tribal nations, providing data and insights that enable tribes to make informed, data-driven decisions that address high energy burdens (the percentage of income spent on energy bills) and advance their energy goals. The publicly available online, interactive platform provides users insight into various energy and housing characteristics within low- and moderate-income geographical regions, with detailed information on income, energy expenditures, fuel type, and housing type.

Visit the LEAD Tool at energy.gov/eere/slsc/maps/lead-tool



Personally Owned Light Duty Vehicle Miles Traveled - High Electrification Scenario



A transportation data visualization from the SLOPE Platform.

State and Local Planning for Energy (SLOPE) Platform Informs Jurisdictional Clean Energy Opportunities

Project Lead: Megan Day

In collaboration with NREL and nine DOE technology offices, the State and Local Planning for Energy (SLOPE) Platform delivers high-level, jurisdictionally resolved potential and projected data on energy efficiency, renewable energy, and sustainable transportation opportunities to enable data-driven energy planning.

In FY 2021, NREL's SLOPE team developed and launched a redesigned platform in response to user feedback. The platform now features more robust state-, county-, and city-level data and insights on sustainable transportation, residential and commercial rooftop solar photovoltaic (PV) potential, distributed solar PV and wind levelized costs of energy, hydropower potential, and geothermal heat pumps and district heating potential in existing and new construction.

Visit the SLOPE Platform at maps.nrel.gov/slope

Providing New Insight To Save Money and Energy Use in K-12 Schools

Project Lead: James Elsworth

NREL used census data, stakeholder input, and representative building energy models to estimate per-state utility and energy expenses in K-12 schools, filling in otherwise sparse data on the cost of energy for public schools at the state and national levels. NREL's work to model this critical data set will enable decisions related to state-level school energy efficiency policies or solutions that will have significant impacts, such as energy cost savings that can be invested elsewhere to enhanced learning environments for students.

Results from this analysis are expected to be published Fall 2021.



NREL analysis provides insight on energy use in K-12 schools. Photo from iStock 1223141903

Supporting States with Technology Action Groups (TAGs)

Project Leads: Liz Weber, Jordan Burns

NREL, in coordination with DOE's State Energy Program, launched the Technology Action Groups (TAGs) pilot, a collaborative multiyear effort to help states increase the impact of their work via two areas of focus:

1. **On-site Energy Systems at Critical Facilities** brings together nine states working to prioritize critical facilities for energy resilience investments.
2. **Main Street Revitalization** brings together four states working to stimulate local economies and reduce energy costs through energy efficiency projects performed by local professionals at main street businesses.

TAGs will provide states greater access to DOE resources, technical assistance through national labs, and funding through partnerships.

State-by-State Assessment Identifies Potential for Job Creation of Five Clean Energy Technologies

Project Lead: Sarah Truitt

States and local governments are weighing how to spur economic growth and stimulate job creation while simultaneously adapting to meet climate goals, modern energy codes, and energy demand. To address this challenge, NREL conducted a study that provides state-by-state job estimates associated with deployments of four clean energy technologies--energy efficiency, battery energy storage, solar PV and wind energy. The report includes an explanation of various jobs reporting methodologies, an industry brief for each technology (including national deployment trends and estimates), national employment figures, COVID-19 impacts, descriptions of occupations and credentials, and links to additional resources. The report will also include a fact sheet for each state showing job estimates in 2025 and 2030. The information will enable state and local governments to make informed decisions regarding workforce development investments to help their citizens identify opportunities and secure gainful employment in the clean energy economy.

The report will be released in early FY 2022.

"This data will help state and local governments determine where the in-state opportunities lie and target their workforce development investments to maximize opportunities for citizens."



—Sarah Truitt, *State by State Jobs Assessment*
Project Lead

The success of the State, Local, and Tribal Program at NREL would not be possible without the leadership of the following NREL staff:

State, Local, Tribal Program Management and Leadership Team

Juan Torres – Associate Laboratory Director for Energy Systems Integration

Elizabeth (Liz) Doris – Laboratory Program Manager

Eliza Hotchkiss – Acting Laboratory Program Manager (FY 2021)

Debbie Meixner – Project Controller

Chuck Kurnik – Subprogram Lead, Weatherization Assistance Program

Jordan Burns – Subprogram Lead, Energy Transitions Initiative

Kevin McCabe – Subprogram Lead, Indian Energy

Liz Weber – Subprogram Lead, State Energy Program

Megan Day – Subprogram Lead, Partnerships & Technical Assistance

Kerrin Jeromin, Beth Clark, Erica Rychwalski – Communications Leads

Laura Supple – Graduate Researcher

The researchers and staff who make NREL's SLT Program analysis, tools, technical assistance, and trainings possible include:

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