Sandia National Laboratories

ENERGY EQUITY & ENVIRONMENTAL JUSTICE

Making a difference in society, especially overburdened and underserved communities has been a key part of Sandia National Laboratories' commitment to deliver exceptional service in the national interest. These energy equity and environmental justice (EEEJ) efforts have made an impact on the strength of many successful and long-standing partnerships. Here we highlight examples of recent contributions in four areas: **advancing research and development for EEEJ methods and tools, community-engaged research, education and workforce development, and supporting governmental EEEJ strategy.**

Sandra Begay-Campbell, a Sandia researcher and member of the Navajo Nation, talks with Sandia interns at the Pueblo of Acoma about how a photovoltaic panel works to generate electricity.

Advancing Research and Development for EEEJ Methods and Tools

Sandia is developing new research methods and tools to analyze the social aspects of energy transition and climate change. Sandia's research combines models of natural and infrastructure systems with models that evaluate how society could be impacted by changing climate and energy sources. By doing so, Sandia's tools enable quantitative analysis of the impact that large-scale acute and cumulative power disruptions have on communities, and the comparative analysis of mitigation and adaptation options.

- **Energy Transitions Initiative Partnership Project (ETIPP) Partner Network** – Sandia serves as technical assistance partner for the Department of Energy's (DOE) Energy Transitions Initiative Partnership Project (ETIPP). ETIPP works with remote, island, and islanded communities seeking more resilient, reliable, and less costly energy options.
- **Social burden metrics and methodologies** – Sandia is a leading developer of performance-based resilience metrics and methods for quantifying the societal benefits of resilience efforts. These concepts have been refined over time and validated in multiple locations across the United States. Sandia also has helped advance the adoption of these metrics and methods into energy infrastructure planning, informing national efforts to incorporate resilience into regulatory and investment planning processes.
- **Resilience Node Cluster Analysis Tool (ReNCAT)** – Sandia developed the Resilience Node Cluster Analysis Tool (ReNCAT) to facilitate regional and local planning for locally deployable energy infrastructure investments, such as distributed generation, energy storage, and microgrids. ReNCAT allows planners to specifically consider how societal resilience is impacted by energy investment portfolios.

Community-Engaged Research

For decades, Sandia has developed and maintained long-term partnerships and direct collaboration with communities across the U.S. to build capacity, as well as to provide decision and deployment support to enable an equitable, resilient, and sustainable energy transition. These place-based efforts are integral to the labs' mission to develop and transition innovative technologies to market and provide benefits to the community.

- **Tribal energy technology assistance** – Sandia has led DOE's ongoing technical assistance to tribal communities for over 25 years and has delivered benefits to 16 tribal nations through long-term partnerships.
- **New Orleans energy resilience** – In partnership with the City of New Orleans, Louisiana, Sandia is planning and developing equity-focused resilient microgrids. This partnership successfully applied social burden methods that are now being piloted in other jurisdictions and settings.
- **Puerto Rico energy partnerships** – Sandia has integrated several projects to evaluate energy transition options and develop local technical capacity. These two-way, multi-year partnerships with underserved communities and universities are responsive to community needs, informative to energy policy, and demonstrative of broadly replicable research, development, demonstration, and deployment (RDD&D).
- **Alaska partnerships** – Sandia has maintained a long-term, physical presence in Alaska, building strong partnerships with stakeholders to advance the understanding of climate change in the Arctic and its implications for local communities and national security.

Left: Sandia researchers have developed tools to enable quantitative analysis of the impact that large-scale acute and cumulative power disruptions have on communities, and the comparative analysis of mitigation and adaptation options.
Above: The Minority Serving Institutions Partnership Program (MSIPP) offers internships to help develop Sandia's future workforce in critically important areas of science, engineering, technology, and mathematics (STEM).

Education and Workforce Development

Sandia maintains long-term partnerships with multiple minority-serving institutions. These partnerships support STEM education, strengthen our workforce, and expand education and career opportunities for historically underrepresented students. A portion of these efforts specifically seek to secure the future talent pipeline for the NNSA laboratories and plants complex. These efforts have substantially added to Sandia's culture of diversity and inclusion.

- **NNSA Minority Serving Institution Partnerships Programs** – Sandia has contributed significantly to the NNSA Minority Serving Institution Partnership Program (MSIPP). Currently, Sandia is engaged in seven NNSA MSIPP consortia, which involve over 20 Historically Black Colleges and Universities, Hispanic-Serving Institutions, and Tribal Colleges and Universities. Long-term strategic partnerships have grown out these consortia, such as the recent Cooperative R&D Agreements (CRADA) with the University of Puerto Rico-Mayaguez.
- **Securing Top Academic Research & Talent with Historically Black Colleges & Universities (START HBCU) Program** – Sandia is focused on increasing diversity through career pathways. The START HBCU Program cultivates partnerships with specific academic institutions to increase research collaboration and to expose diverse groups of students to the impact they can have working at a national laboratory. Universities currently in the START HBCU Program include Florida A&M University, Norfolk State University, North Carolina A&T University, and Prairie View A&M University.
- **Indian Energy Program** – Sandia manages DOE's Indian Energy Intern Program, which provides internship opportunities for American Indian/Alaska Native college students to work on energy analysis and technical assistance activities in partnership with tribal communities. The program has served more than 45 students with at least 25 different tribal affiliations.
- **New Mexico Small Business Assistance (NMSBA) Program** – Sandia provides New Mexico small businesses facing technical challenges access to Lab expertise and capabilities through the New Mexico Small Business Assistance (NMSBA) Program. Since 2000, Sandia and Los Alamos National Laboratories have provided $71.7 million in technical assistance to 3,135 businesses, enabling 9,710 jobs to be created and retained across the state's 33 counties.
- **New Mexico Clean Energy Resilience and Growth (NM CERG) Cluster** – Launched in 2022, the New Mexico Clean Energy Resilience and Growth (NM CERG) Cluster is an effort targeting clean energy technology companies and providing them with the support they need to succeed. Sandia will provide technical feasibility testing and evaluation to the clean energy companies in NM CERG cohorts.

Sandia participates in several initiatives designed to create educational opportunities in technical areas for minority students.

Supporting Government EEEJ Strategy

Sandia engages with federal, state, and local entities to inform policy and decisions involving the inclusion of EEEJ objectives into government programs and initiatives.

- **Informing DOE implementation of the Justice40 initiative** – Sandia lends expertise to partners and sponsors as they operationalize the Justice40 (J40) initiative — a federal plan to deliver 40% of the overall benefits of climate investments to overburdened and underserved communities. Specifically, Sandia has assisted the DOE J40 team with these efforts through workshops and other engagements on state-of-the-art EEEJ-informing resilience metrics. Sandia also contributes to the DOE "EEEJ R&D Roadmap" project. This roadmap project seeks to describe the fundamental advancements necessary for EEEJ impact evaluation across the landscape of various DOE activities.
- **Informing DOE program goals based on Sandia's learning from previous place-based projects** – Sandia advises DOE programs and other partners on community-focused engagement and analysis methodologies to address energy-equity challenges through the Grid Modernization Laboratory Consortium (GMLC) Institutional Support team.

For more info: energy.sandia.gov/eeej

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