Delivering Energy Storage Outcomes for Resiliency

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The U.S. Department of Energy's **Energy Storage for Resiliency Hubs** (ES4RH) initiative enhances the reliability, resilience, and affordability of the nation's electrical grid through strategic partnerships and local deployment of advanced energy storage systems to promote American energy independence and economic growth.

Program-Wide Achievements

Phase 1 Technical Assistance Outcomes

- Delivered tailored guidance on energy storage integration to 14 participants, enabling project scoping, feasibility studies, funding strategy development, and stakeholder coordination.
- Designed innovative energy storage solutions, supporting disaster response, baseload reliability, and long-term affordability for critical facilities, e.g., schools, hospitals, tribal facilities, and resilience hubs.
- Prioritized actionable outcomes, including lower energy costs, reliable critical services during outages, and support for workforce development.

Phase 2 Impact Assessment Progress

Four participants opted into individualized impact assessments to evaluate the tangible impacts of their energy storage projects. These assessments focus on measurable successes in four categories:

1. **Grid Benefits:** Enhancing grid reliability and reducing peak demand.
2. **Resilience Benefits:** Ensuring continuity of operations during disasters and prolonged outages.
3. **Economic Benefits:** Lower energy costs and freed-up budget.
4. **Workforce Benefits:** Supporting local training and job opportunities.

Fig 1: Location of Participants in Phase 1.

Challenges and Strategic Opportunities

Overcoming Barriers to Deployment

- **Utility Issues:** Streamline interconnection process for tribal and rural projects.
- **Workforce Shortages:** Expand training and certification for local deployment.
- **Funding Gaps:** Address by aligning projects with DOE programs and other financing initiatives.

Leveraging Opportunities

- Promote modular, flexible storage solutions to support critical infrastructure.
- Disseminate actionable strategies identified in Phase 2 assessments publicly to spark innovation and industry-wide adoption.
- Scale insights across future cohorts using standardized tools and frameworks.

Resilience Outcomes

A Resilient, Reliable, and Affordable Energy Future

Key Highlights from Participants (Phase 2 Impact Assessment)

Phoenix-Talent School District (OR):

- Deployment of on-site generation and storage systems at schools serving as Red Cross resilience hubs.
- **Outcomes:** Avoided school closures during power outages, reliable refrigeration for food and medications, accessible emergency shelter services, and reduced energy costs to reinvest into educational programs.

Hoʻāhu Energy Cooperative Molokai (HI):

- Deployment of off-grid nano-grids to supplement generators for rural homes.
- **Outcomes:** Reduced energy costs for families, improved daily life through reliable systems, and expanded local workforce trained in battery technologies.

Ayika Solutions, Harambee House (GA):

- Operational resilience hub serving as a lifesaving resource during outages while reducing utility costs.
- **Outcomes:** Accessible emergency shelter services, $30-$75 monthly savings reinvested into programs, and increased utilization of community meeting space.

Pine Point School, White Earth Nation (MN):

- Expanded local generation and energy storage at the school, serving as a resilience hub for the nearby population during outages.
- **Outcomes:** Walkable resilience hub for 245-400 residents during emergencies, reduced energy costs for the school, and training opportunities that promote energy awareness and career paths.

Measuring Impact

Impact Assessment Metrics Being Investigated

Participants are measuring project success through precise metrics tied to critical goals:

Grid Benefits:

- Reduction in peak demand during high-load periods and participation in demand response programs enhancing grid stability.

Resilience Benefits:

- Avoided service disruption for critical facilities such as schools, shelters, and hospitals, and operational effectiveness during grid outages (hours of sustained backup power, refrigeration for essential supplies).

Economic Benefits:

- Monthly savings on energy bills and funds redirected to programming and local investments.

Workforce Benefits:

- Number of trainees and certifications supported by energy projects and new curriculum introduced for energy education.

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