Grid Resilience and Innovation Partnerships Program (GRIP)

Selections Overview

Maria Robinson, Director, Grid Deployment Office
Colin Meehan, GRIP Project Manager, Grid Deployment Office

October 24, 2023
Housekeeping

Questions?
If you have technical questions – please put them in the chat box for the host.
Maria Robinson
Director, Grid Deployment Office
Agenda

GRIP Selections
1. Webinar notice/disclaimer
2. GRIP Selections Overview
3. GRIP Topic Area Information
4. Topic Area Project Spotlights
5. Themes and Trends

Next steps
What’s next for GRIP and GRIP Applicants?
GRIP Selections Overview

- The Bipartisan Infrastructure Law invests $10.5 billion in the Grid Resilience and Innovation Partnerships (GRIP) program.

- The first round of GRIP funding totals nearly $3.5 billion and will support 58 projects in 44 states across the U.S. This is the largest single direct investment in critical grid infrastructure in U.S. history.

- GRIP will catalyze $8 billion in public and private investment to enhance the nation's ability to deliver affordable, clean energy to American communities, prepare for extreme weather, and meet clean energy goals.

- GRIP will enable the addition of 35 GW of renewable energy, expanding U.S. renewable energy capacity by 10.5%.
GRIP Topic Areas
## Topic Areas Overview

<table>
<thead>
<tr>
<th>Program</th>
<th>Program Description</th>
<th>Eligible Entities</th>
<th>Selectees</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>40101c: Utility/Industry Resilience Grants</strong></td>
<td>Support activities that reduce the likelihood and consequence of impacts to the electric grid due to extreme weather, wildfire, or natural disasters</td>
<td>Grid operators, storage/generation operators, transmission owners/operators, distribution providers, fuel suppliers</td>
<td>• 16 projects (7 large/9 small)  • $919M federal investment  • $1.7B total investment</td>
</tr>
<tr>
<td><strong>40107: Smart Grid Grants</strong></td>
<td>Deploy and catalyze technology solutions that increase the flexibility, efficiency, reliability, and resilience of the electric power system, with particular focus on enhancing the system’s capabilities</td>
<td>Private entities, universities, states, tribes, local governments</td>
<td>• 34 projects  • $1.1B federal investment  • $2.5B total investment</td>
</tr>
<tr>
<td><strong>40103b: Grid Innovation Program</strong></td>
<td>Demonstrate innovative approaches to transmission, storage, &amp; distribution infrastructure and to harden &amp; enhance resilience and reliability and demonstrate new approaches to enhance regional grid resilience</td>
<td>States, Tribes, PUCs, and local governments</td>
<td>• 8 projects  • $1.4B federal investment  • Up to $4.3B total investment</td>
</tr>
</tbody>
</table>
Utility/Industry Resilience Grants (40101c)

Project Spotlight: Climate Adaptation Resilience Program

- **Selectee:** Hawaiian Electric
- **Location:** Hawai‘i Island, O‘ahu, Moloka‘i, Lana‘i, and Maui Island
- **Federal budget:** $95M
- **Total investment:** $190M
- **Project Description:** Hawaiian Electric will invest in a comprehensive and transformative hardening of the electric transmission and distribution system through seven different solutions that will limit damage from severe events such as hurricanes or wildfires and prevent conditions that could lead to such events. The project will decrease the likelihood of outages and decrease restoration times when outages occur.

- **Project Benefits:**
  - System-wide resilience against a range of unique and diverse hazards, including wildfires, hurricanes and lava flows.
  - Increased grid operations resiliency during severe events in disadvantaged communities (DACs) and rural or hard-to-service areas.
  - High-quality jobs, apprenticeship programs, and partnerships with local educational institutions.
  - Commitment to utilize union labor for all project work in accordance with existing Collective Bargaining Agreement with IBEW.

### Hardening Measures:

- Transmission Hardening
- Wildfire Monitoring
- Hazard Tree Removal
- Critical Pole Hardening
- Critical Circuit Hardening
- Lateral Undergrounding
- Control Center Hardening
Project Spotlight: Adaptable Grid Project

- **Selectee**: Oklahoma Gas & Electric Company (OG&E)
- **Location**: Oklahoma
- **Federal budget**: $50M
- **Total investment**: $102M

**Project description**: OG&E will create a smart grid platform that enhances grid system visibility, invests in autonomous controls, strengthens the grid against extreme weather, promotes the expansion of distributed energy resources, and enhances adaptability for future load within OG&E’s service territory serving 887,000 customers across 19 tribal tracts, 20 federally recognized tribes, and approximately 150 disadvantaged communities (DACs).

**Project benefits**:
- Three separate Community Benefits Agreements to support disadvantaged communities (DACs) and improve education and workforce planning
- 100% of project benefits will flow to DACs and Tribal lands impacted by extreme weather
- Creation of education and upskilling opportunities through existing relationship with local universities

**Anticipated Impacts**:
- Avoided Customer Outage Costs: $17M+ / year
- Avoided Customer Outage Minutes: 50M+ / year
- Significant job creation & workforce development opportunities
- Unlocking EVs and other grid edge technologies in rural areas
Project Spotlight: Joint Targeted Interconnection Queue Transmission Study Process and Portfolio (JTIQ)

- **Selectee:** Minnesota Department of Commerce
- **Location:** Iowa, Kansas, North Dakota, Nebraska, Minnesota, Missouri, South Dakota
- **Federal budget:** $464M
- **Total investment:** $1.3B
- **Project Description:** Innovative partnership to plan, design, and construct five transmission projects across seven states that will unlock 30 GWs of new generation, primarily wind and solar, and provide numerous interregional benefits, including scalable transmission solutions, new renewable generation, lower energy costs, enhanced community engagement, and workforce development.
- **Project benefits:**
  - Targeted training and other workforce development activities specific to disadvantaged communities (DACs), with direct financial support for travel and lodging for disadvantaged workers to access training
  - Development and deployment of a regional energy literacy education and engagement initiative
GRIP Selectee Themes and Trends
## Project Themes and Trends

<table>
<thead>
<tr>
<th>Description</th>
<th>Selectees and Funding Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Wildfire Resilience</strong></td>
<td>• 13 projects</td>
</tr>
<tr>
<td>GRIP projects around the country will make significant investments in</td>
<td>• $662.5 federal investment</td>
</tr>
<tr>
<td>wildfire resilience and mitigation projects and will deploy innovative</td>
<td>• $1.26B total investment</td>
</tr>
<tr>
<td>solutions to improve grid operators’ ability to approach wildfire</td>
<td></td>
</tr>
<tr>
<td>prevention, protection, mitigation, response, and recovery.</td>
<td></td>
</tr>
<tr>
<td><strong>Microgrids</strong></td>
<td>• 11 projects</td>
</tr>
<tr>
<td>GRIP projects will support investment in over 400 microgrids, which are</td>
<td>• $659.1M federal investment</td>
</tr>
<tr>
<td>a group of interconnected loads and distributed energy resources that can</td>
<td>• $1.4B total investment</td>
</tr>
<tr>
<td>provide electricity to a smaller community or region, which enhances the</td>
<td></td>
</tr>
<tr>
<td>resilience of the grid against extreme weather.</td>
<td></td>
</tr>
<tr>
<td><strong>Renewables Integration</strong></td>
<td>• 17 projects</td>
</tr>
<tr>
<td>GRIP projects will support further integration of renewables through</td>
<td>• $1.6B federal investment</td>
</tr>
<tr>
<td>technological deployments such as Distributed Energy Resources (DERs) and</td>
<td>• $3.6B total investment</td>
</tr>
<tr>
<td>Distributed Energy Resource Management platforms (DERMS) that will further</td>
<td></td>
</tr>
<tr>
<td>unlock renewable energy resources to the grid, as well as EVs, batteries,</td>
<td></td>
</tr>
<tr>
<td>and other devices.</td>
<td></td>
</tr>
<tr>
<td><strong>Community/DAC Impacts</strong></td>
<td>• 100% of projects have J40 commitments</td>
</tr>
<tr>
<td>All GRIP projects include a Community Benefits Plan (CBP) that outlines</td>
<td>• 84% of projects include labor union partnerships</td>
</tr>
<tr>
<td>how the project will invest in disadvantaged communities (DACs) and in</td>
<td></td>
</tr>
<tr>
<td>workforce development and labor engagement.</td>
<td></td>
</tr>
</tbody>
</table>
Renewables Integration

- GRIP projects include innovative clean energy solutions that will lead to an increased integration of renewable resources
  - Innovation was demonstrated through both technological solutions and creative approaches/strategies
- Proposals that involved renewable integration, generally involved the deployment of distributed energy resources (DERs) as part of larger projects that incorporated technologies more directly related to resilience and reliability
  - The use of DERs commonly allowed for increased renewable penetration without deployment of transmission infrastructure
- Many renewable integrating proposals incorporated reconductoring, but not as many projects incorporated the use of advanced materials which could further expand the impact of the proposals
- While High Voltage Direct Current (HVDC) was identified as a priority investment in this FOA, GRIP received fewer HVDC proposals than anticipated in this cycle
Confederated Tribes of Warm Springs will partner with Portland General Electric to upgrade a transmission corridor from 230kV to 500kV, unlocking 1.8GW of new generation and providing workforce development opportunities for tribal members.

Tri-State Generation and Transmission will implement DER management and an Energy Services Platform to manage over 200MW of distribution-sited clean generation and enable over 200MW of flexible load across CO, NE, NM, and WY.

National Grid in NY and MA will deploy cutting-edge DER and distribution system management tools to enable a transition to a fossil-free system by 2050.

Pecan Street will support the Delaware Electric Cooperative in increasing hosting capacity by ~10MW through flexible interconnection.

Allete will use state-of-the-art technology to upgrade HVDC converter terminals from 550MW to 1500MW.
Renewables Integration Project Spotlight: Connected Clean Powercity

► **Selectee:** Sacramento Municipal Utilities District
► **Location:** Sacramento County, CA
► **Federal investment:** $50M
► **Total investment:** $156.1M
► **Project Description:** Deployment of a multi-purpose intelligence system to an existing ADMS to create an energy ecosystem that lends both grid operators and increased visibility, management and control. The new intelligent ecosystem consists of four key elements that will be dispersed across small and large utilities in addition to Tribal partners in rural and urban communities.

► **Community Benefits:**
  ▪ >50% of project benefits will be realized in DACs
  ▪ Project case study chosen to optimize project impacts in tribal communities

**Project Key Elements:**

1. **Grid edge intelligence at scale**
2. **Advanced DERMS**
3. **OMS modernization**
4. **Enabling technology and systems**
Wildfire Resilience Investments

Projects that were most responsive to GRIP’s utility resilience goals provided clear demonstrations of how proposed investment responds to a specific threat or otherwise provides exceptional protection above and beyond “business as usual” reliability improvements.

Strategies developed demonstrate a comprehensive understanding of vulnerabilities and necessary resilience improvements while offering a range of possible solutions.

Proposed innovative solutions tended to improve grid operators’ ability to address most if not all the following high-level wildfire resilience strategies:

- **Prevention**: Avoid creating conditions that threaten the system
- **Protection**: Improve ability to withstand a threat without disruption
- **Mitigation**: Minimize extent of disruption experienced
- **Response**: Minimize impacts of disruption experienced
- **Recovery**: Accelerate return to normal operations
Wildfire Resilience Investments

<table>
<thead>
<tr>
<th>Federal Investment</th>
<th>Total Investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>$662.5M</td>
<td>$1.26B</td>
</tr>
</tbody>
</table>

PacifiCorp will use two GRIP projects to deploy wildfire detection and hardening measures throughout their territory (WA, OR, ID, WY, UT, CA)

Missoula Electric Cooperative will deploy distribution system automation and weather detection and forecasting to minimize wildfire risk

Holy Cross Electric will lead a group of 39 co-op utilities in a consortium approach to developing wildfire hardening and prevention best practices

Xcel will implement a portfolio of seven projects across CO, NM, and TX to reduce wildfire risk and impacts, including hardening, fire spread modeling, and EV-evacuation readiness
Project Spotlight: Wildfire Assessment and Resilience for Networks (WARN)

- **Selectee:** Holy Cross Electric Association
- **Location:** Arizona, California, Colorado, Idaho, Kansas, Minnesota, Montana, North Dakota, Nebraska, New Mexico, Oklahoma, Oregon, South Dakota, Utah, Washington, Wyoming
- **Federal budget:** $99M
- **Total investment:** $145M
- **Project Description:** Innovative, collaborative effort across 39 small, rural electric co-ops in high-threat areas for wildfires and deployment of technology that can quantify the expected direct impacts of utility-ignited wildfires
- **Community Engagement:**
  - At least 77% of WARN cooperatives to sign a statement committing to negotiate a community benefits agreement, good neighbor agreement, or similar agreement
  - Creation of a community partnerships team, where relevant community groups will engage with the cooperative
  - Create of 100 new full-time jobs
  - Organized labor support with majority of project labor to be provided by unions
  - Deployed technology and its resulting impacts will be focused primarily within the 171 DACs identified within the project area
Microgrid Investments

- GRIP will support the deployment of 400+ microgrids across the U.S.

- Proposals generally focused on microgrids to reduce risk on rural radial lines or to support DACs by both improving reliability and mitigating the impacts of extreme weather events.

- Projects demonstrated a strong demand for microgrids with batteries and installation of new protective devices:
  - Battery involved projects tend to support grid capacity and renewable integration.
  - Protective devices were mostly commonly reclosers, trip-savers, or substation breaker replacements.

- Majority of microgrid-involved projects proposed utility-operated microgrids, but both utility-operated and behind-the-meter microgrid projects will receive funding.

Microgrid project benefits:
- System Hardening
- Sectionalization, Adaptivity, and Control
- Visibility and Control
- Resilience and Adaptivity
- Grid Capacity and Renewables Integration
### Microgrid Investments

<table>
<thead>
<tr>
<th>Federal Investment</th>
<th>Total Investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>$659.1M</td>
<td>$1.4B</td>
</tr>
</tbody>
</table>

- **DTE** will deploy adaptive microgrids in DACs to support resilience and flexibility.
- **The Kit Carson Electric Co-op** will install battery-enabled microgrids in rural and tribal areas.
- **The Electric Power Board of Chattanooga** will build six microgrids in high-need neighborhoods.
- **PECO** will work with public entities to support critical facility resilience, including a microgrid, in Philadelphia.
Project Spotlight:

Louisiana Hubs for Energy Resilient Operations (HERO) Project

► **Selectee:** Louisiana Department of Natural Resources  
► **Location:** Louisiana  
► **Federal investments:** $249M  
► **Total investment:** $498.6M  
► **Project Description:** 385 resilient, community-based microsystems with far-reaching reliability, resilience, and clean energy benefits to critical infrastructure along hurricane evacuation routes. Benefits include enhanced energy security, reduction in CO2 emissions, permanent workforce opportunities, lessened energy burden, greater access to clean energy, and replicable model for other geographies.

► **Community Benefits:**
  - Investments focused on benefiting a subset of disadvantaged communities (DACs) in the state that are most vulnerable to and least able to respond to and recover from extended outages, based on income levels, flooding risk, and building loss risk.
  - Reduce the impact of long-duration outages in DACs by strategically investing in grid-interactive resilience projects.
  - 875 new graduates of workforce training, pre-apprentice, and apprenticeship programs by 2030
  - Project labor agreements with local labor unions and provide [Community Benefits Agreements](#) in requests for proposals (RFPs) to guide local hiring and engagement.
Community Benefits

- Across each of GRIP’s funding programs, successful projects included CBPs that shared and maximized the project’s benefits across disadvantaged communities.

- Other common elements across successful CBPs:
  - Substantive discussion of all four CBP elements (Community & Labor Engagement, Quality Jobs, DEIA, & Justice40)
    - Commitment to the inclusion of at least one SMART* milestone per budget period
    - Inclusion of opportunities to elicit and respond to community feedback at multiple stages of project deployment
    - Demonstrated intent to negotiate additional commitments if needed

*Specific, Measurable, Assignable, Realistic and Time-Related

Selected projects were responsive to all four CBP elements:

- Full Applicant Pool
- GRIP Selections
Fort Pierce Utilities Authority will improve resilience and upgrade obsolete assets while decreasing energy burden and increasing energy democracy in DACs.

Central Maine Power will reduce outage frequency by >40% for DACs and sponsor an apprenticeship program in partnership with IBEW 1837.

Liberty Utilities (CalPeco Electric) will create high paying jobs in DACs and modernize its operations for improved service in those communities.

Kaukauna Utilities will add BESS and upgrade existing hydro to enable a clean, resilient microgrid in a DAC.

Oklahoma Gas and Electric will deliver 100% of resilience and modernization benefits to DACs and tribal lands and create >1000 jobs across the supply chain.

Fort Pierce Utilities Authority will improve resilience and upgrade obsolete assets while decreasing energy burden and increasing energy democracy in DACs.

GRIP-funded CBPs will directly support DACs across the country.
Project Spotlight: Regional Grid Improvements to Address Reliability in Georgia with a Focus on Remote or Hard-to-Reach Communities

► Selectee: Georgia Environmental Finance Authority
► Location: Georgia
► Federal investment: $249M
► Total investment: $507M
► Project Description:
  ▪ Project combines transmission-level topology modernization (radial lines) with distribution-focused resilience improvements (microgrid/BESS)
  ▪ New transmission lines will serve 17 substations with enhanced reliability and resilience. The lines and substations were chosen to prioritized to maximize benefits in rural and disadvantaged communities and increase opportunities for solar development
  ▪ The Advanced Grid Control Systems will significantly improve the grid operators’ modeling, system control and real time resource analysis
► Community Benefits:
  ▪ Investments primarily benefit rural communities to ensure remote and hard-to-reach communities see a large impact from this project.
  ▪ Local and diverse suppliers identified, >25% of project budget will flow to MWBEs/DBEs

* Georgia Disadvantaged Census Tracts determined by the Council on Environmental Quality (CEQ) Climate and Economic Justice Screening Tool, found at https://screeningtool.geoplatform.gov/ceq/ceq_477-57_5.
GRIP Next Steps
GRIP 2 Goals: Lowering barriers to entry for future* GRIP applicants

► Eligibility Outreach and Messaging
  ▪ Encouraging vendor-driven or consortia applications
  ▪ Supporting small utilities and technology vendors to apply for larger projects across multiple service territories

► Streamlined Concept Paper Process
  ▪ Form-based and shorter page limits to give applicants an easier process with less time commitment
  ▪ Better feedback to applicants by providing guidance for ‘best fit’ GRIP programs in addition to specific feedback

► Increased Full Application Guidance
  ▪ Additional GDO/GRIP-led instructional webinars will occur throughout the application timeline
  ▪ Technical criteria are simplified and re-organized to clarify the review process for applicants
  ▪ Additional guidance identifying priority areas of investment for the GRIP 2 funding cycle
  ▪ Interviews will be offered to the largest ($) projects to allow for additional interfacing between DOE and applying project teams

*Next GRIP FOA to be announced before Jan. 1, 2024
Contact Us

https://www.energy.gov/gdo

GRIP@hq.doe.gov
Thank you!