Grid Analysis and Design for Energy and Infrastructure Resiliency for New Orleans

CHALLENGE

The heightened risk coastal cities like New Orleans, Louisiana (NOLA), encounter from hurricanes, floods, and other natural disasters is never farther than the memory of Hurricane Katrina. During such events, extended disruption of electric grid operations exacerbate interruption of energy intensive infrastructures vital to recovery, including flood control operations, water supply and treatment, transportation, emergency response, and banking. The resilience of communities is dependent on grid resilience.

This color-coded schematic of New Orleans indicates where critical infrastructure in the area does not exist (red); exists but is less than required by users (yellow); or exists and meets user-defined requirements (green).

APPROACH

Identifying approaches to effectively use local distributed generation and renewable energy resources as well as cost-effective grid resilience enhancements can help reduce the severity of power outage impacts and enhance community resilience for many U.S. coastal communities subject to similar threats and risks. This project will support the development of key electrical distribution system upgrades and advanced microgrid pilot projects that can help bolster community-level resilience for NOLA and other coastal U.S. cities. This project will provide detailed information and conceptual models that can help NOLA and other coastal cities prepare for, prioritize, and execute grid resilience projects. Data will be available to stakeholders from the following efforts:

- Infrastructure Impact Modeling and Analysis
- Resilient Power Distribution Modeling and Analysis
- Integration of Distributed, Renewable, Energy Storage, and Energy Efficiency Options
- Cost/Benefit Analysis.

At-A-Glance

PROJECT LEADS

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PARTNERS

- City of New Orleans
- Rockefeller Institute
- Entergy New Orleans
- US Army Corps of Engineers

TECHNOLOGY

- Infrastructure modeling
- Energy systems resilience
- Power system modeling
- Renewable energy
- Microgrids
- Energy and water infrastructure

BUDGET

$1 million

DURATION

June 2016 – March 2017

TECHNICAL AREA

Security and Resilience

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Rev. 2, September 2017

EXPECTED OUTCOMES

NOLA, the local electric utility Entergy, and relevant stakeholders will have a set of risk-informed, cost-effective recommendations for grid resilience enhancement. NOLA, Entergy, and state and federal agencies can use these recommendations to rank energy infrastructure improvement options and set improvement implementation and funding priorities. This effort will produce a template for other communities to use for increasing grid and community resilience.

LAB TEAM

Los Alamos NATIONAL LABORATORY

Sandia National Laboratories

Launched in November 2014 under the U.S. Department of Energy's Grid Modernization Initiative, the GMLC is a strategic partnership between DOE Headquarters and the national laboratories, bringing together leading experts and resources to collaborate on national grid modernization goals. The GMLC's work is focused in **six technical areas** viewed as essential to modernization efforts:

Devices and Testing | Sensing and Measurements | Systems Operations and Control
Design and Planning | Security and Resilience | Institutional Support