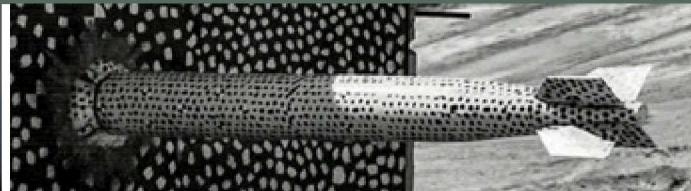


Designing Resilient Communities Project



3rd Semi-annual Stakeholder Advisory Group Meeting

PRESENTED BY

Summer Ferreira

Program Manager

Renewable and Distributed Systems Integration

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New York, NY
July 18-19, 2019



Sandia National Laboratories is a multimission laboratory managed and operated by National Technology & Engineering Solutions of Sandia, LLC, a wholly owned subsidiary of Honeywell International Inc., for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-NA0003525.

Welcome!

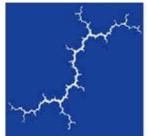
Project and Demonstration Partners



Sandia
National
Laboratories



nationalgrid



Synapse
Energy Economics, Inc.



University
at Buffalo
The State University
of New York



CLEMSON
UNIVERSITY

City + Utility Stakeholder Advisory Group



Dominion
Energy™



Hawaiian
Electric



LA
DWP



EVERSOURCE



Georgia
Power

conEdison

Input From Additional Stakeholders



CITY OF NEW ORLEANS



NIST



DLC
DUQUESNE LIGHT CO.



SIEMENS



Why Are We Here?

Help chart the path forward to enable practical, rigorous and replicable energy infrastructure planning that serves community resilience imperatives

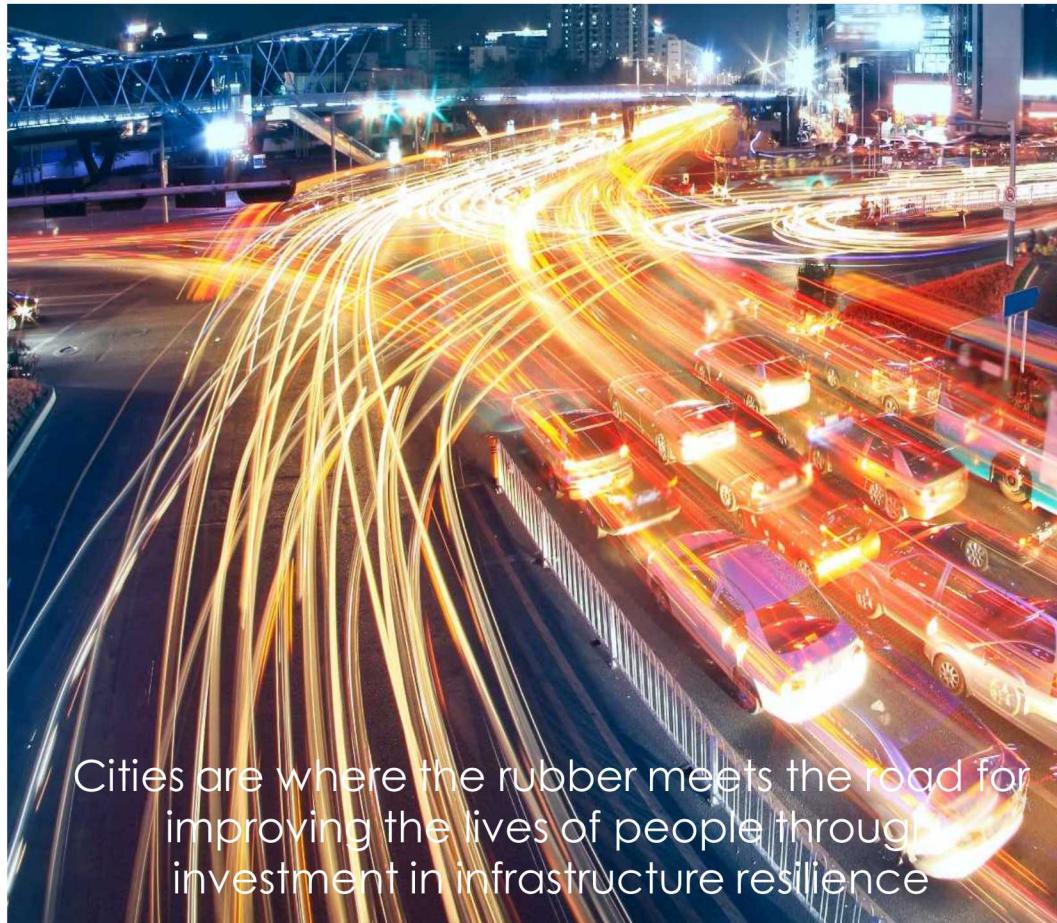
Energy as a enabler of all critical services

Role of cities is key

- Trends: Urbanization, increasing threats
- Resilience planning function – disconnect between municipal and utility planning process

A complex and challenging problem, multiple gaps

- Resilience-based metrics, methods and tools
- Regulatory and business models
- Stakeholder—who are they and what are their roles?
- Technology solutions



Why are we here, and what is our status?

Help chart the path forward to enable practical, rigorous and replicable energy infrastructure planning that serves community resilience imperatives through

- Consequence-based approaches to grid planning and investment,
- Field validation of technologies with partners
- Enabling distributed and clean resources to improve resilience

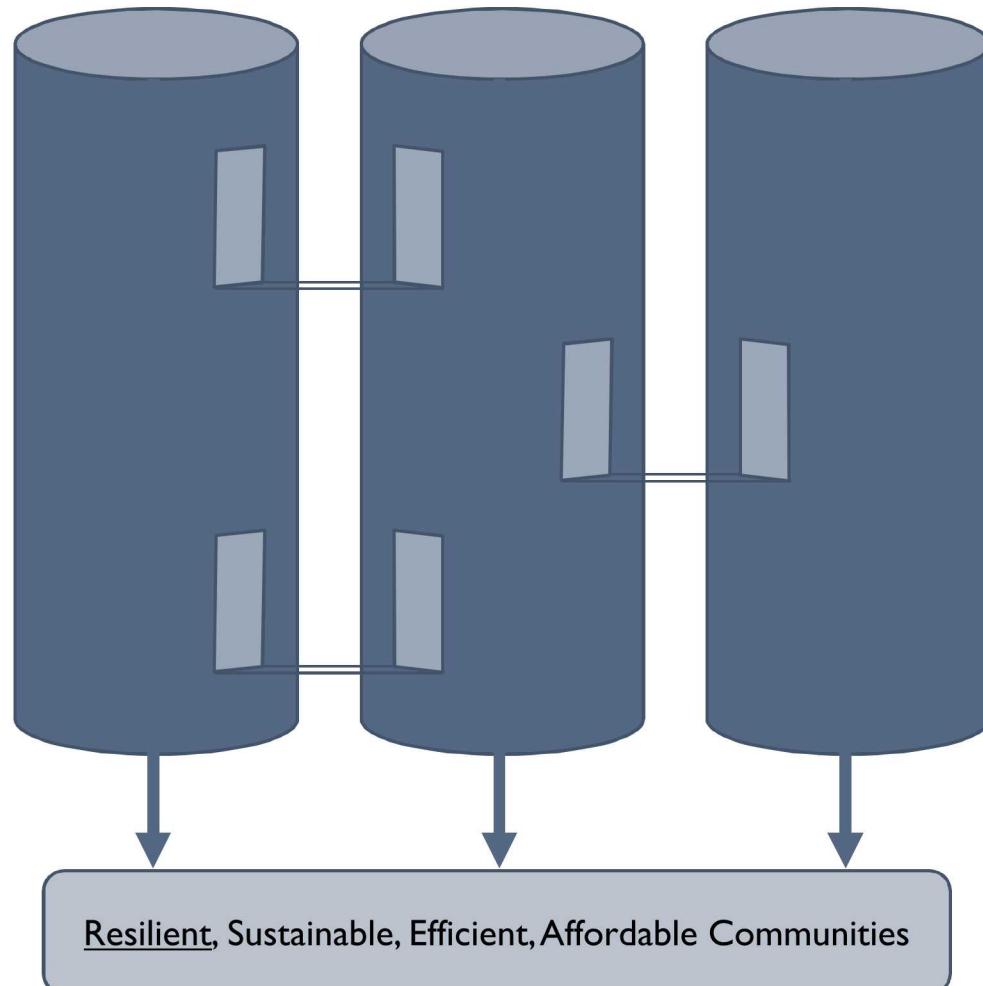
Objectives:

1. Design, validate, and release a framework for alignment of community resilience planning and grid investment planning
2. Demonstrate – with city/utility pairs – how to overcome the most critical technical challenges to (1)
3. Analyze – alternative regulatory frameworks and utility business models that may better internalize resilience benefits
4. Build – one or more community resilience nodes enabled by distributed energy resources

To Date:

- Two stakeholder advisory group meetings
- Progress developing the framework
- Progress overcoming the technical challenges to hardware demo

Community Resilience Planning Utility Investment Planning Regulatory Policymaking



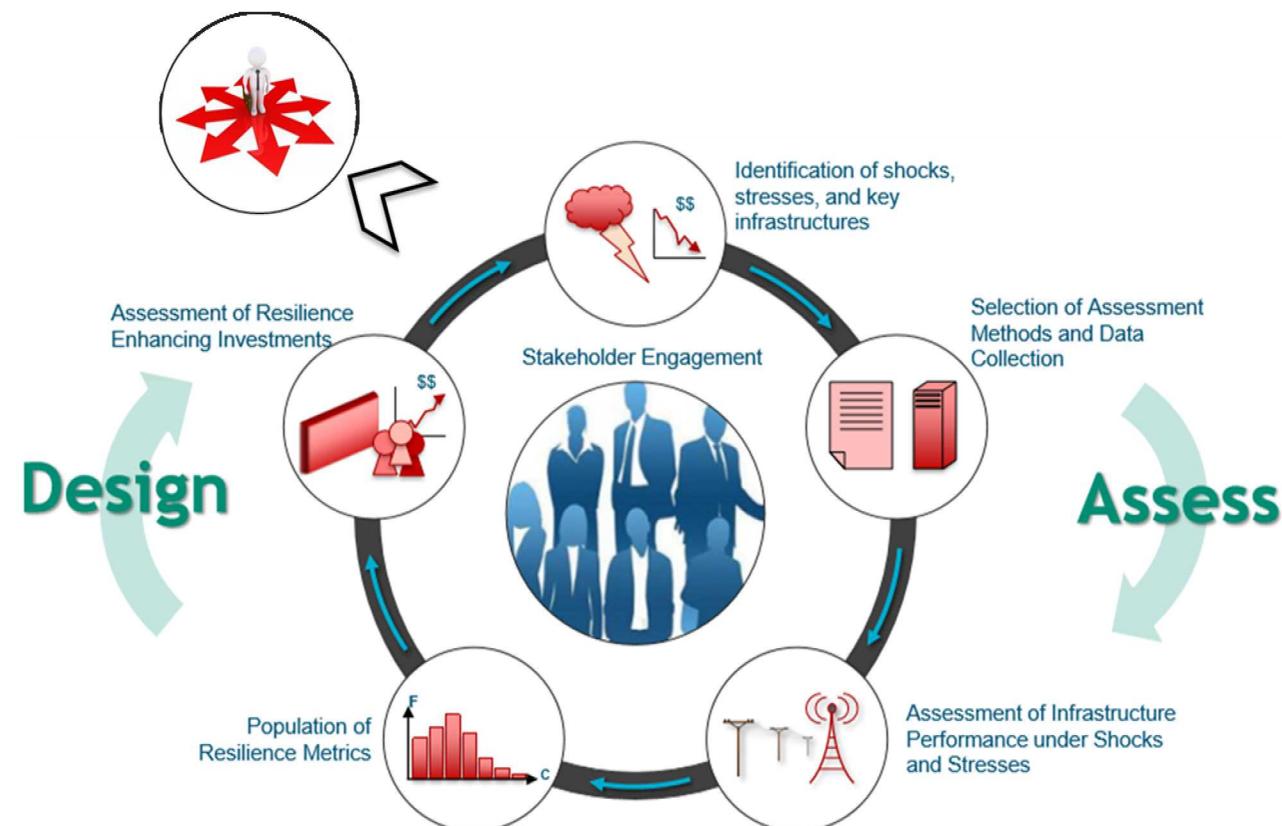
Designing Resilient Communities Project

Goals:

- Demonstrate a practical consequence-based approach to resilient grid infrastructure planning and investment
- Enable alignment of city and utility and investment planning
- Resilient Community Design Framework
- Stakeholder engagement
- Technology demonstration

Key partners:

- City of San Antonio, CPS Energy, National Grid
- UTSA, NMSU, Synapse Energy Economics
- RF 100RC and multiple cities through the SAG



Designing Resilient Communities Project

Core Sandia Project Team:

- Robert Jeffers, PI
- Robert Broderick, Co-PI
- Katherine Jones
- Vanessa Vargas
- Sara Peterson
- Mercy DeMenno

Contributors:

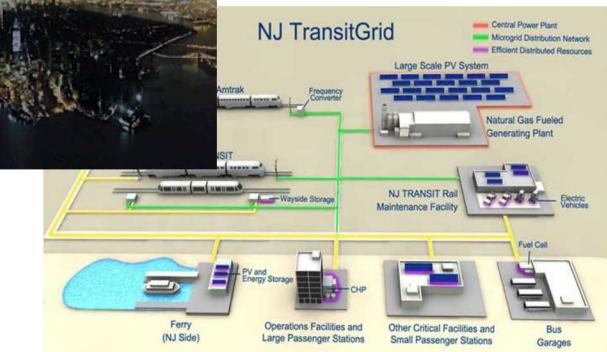
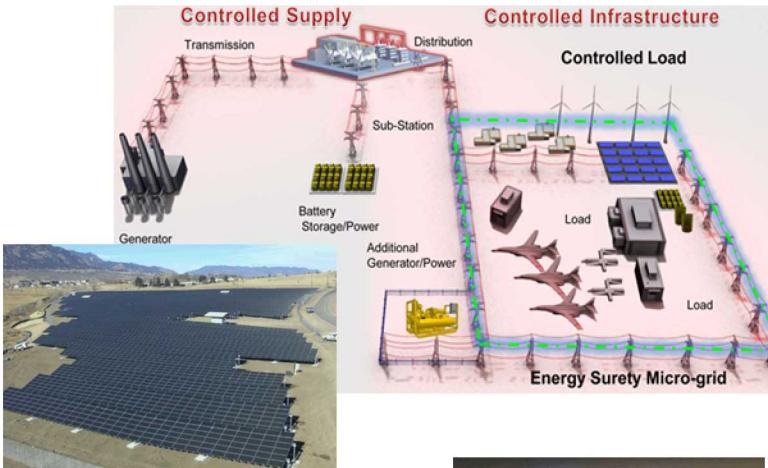


Sandia and Energy Resilience

Sandia National Laboratories is a national leader in the development of resilience solutions for Government and Civilian sectors

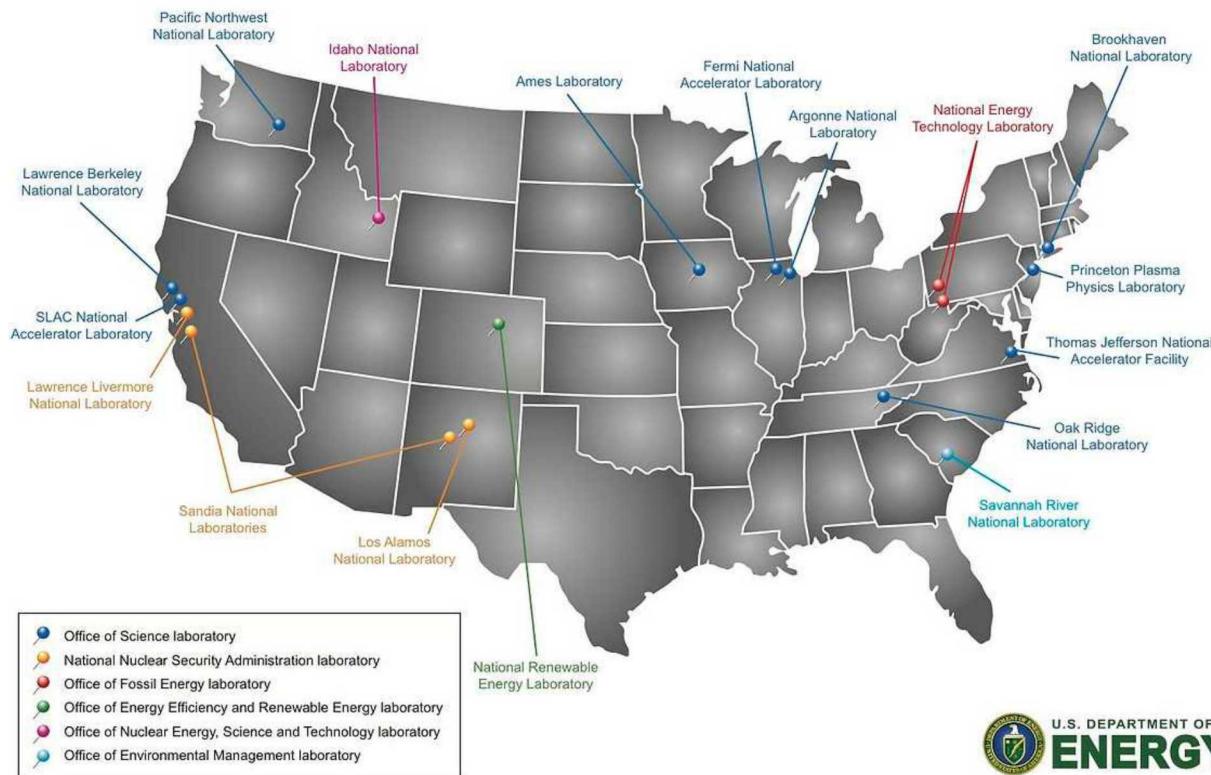
Broad applications and partnerships

- DOE, DHS and DOD
- Municipal and State agencies
- Research collaborations
- International interactions



Resilience – All Hands on Deck

Many DOE National Laboratories are actively working on infrastructure resilience topics



41 FFRDCs

There are 41 Federally Funded Research and Development Centers

25 R&D

25 are research and development labs

16 DOE

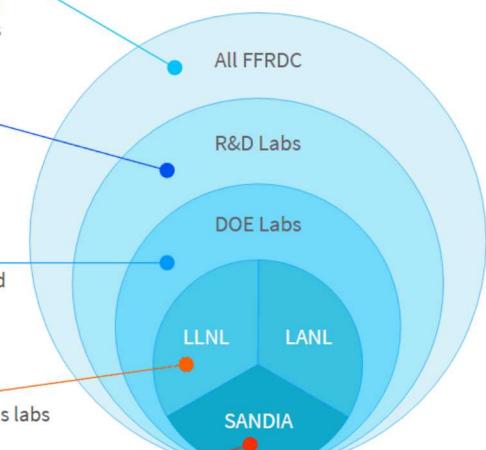
16 are DOE-sponsored FFRDCs

3 NW

3 are nuclear weapons labs

Sandia

Sandia is a DOE-sponsored FFRDC managed and operated by Sandia Corporation, a wholly-owned subsidiary of Lockheed Martin Corporation



Agenda

Thursday July 18, 8:30 – 5:30 PM

- Welcome & Introductions
- Framework Review and Discussion
- Project partner Work Supporting Framework Development

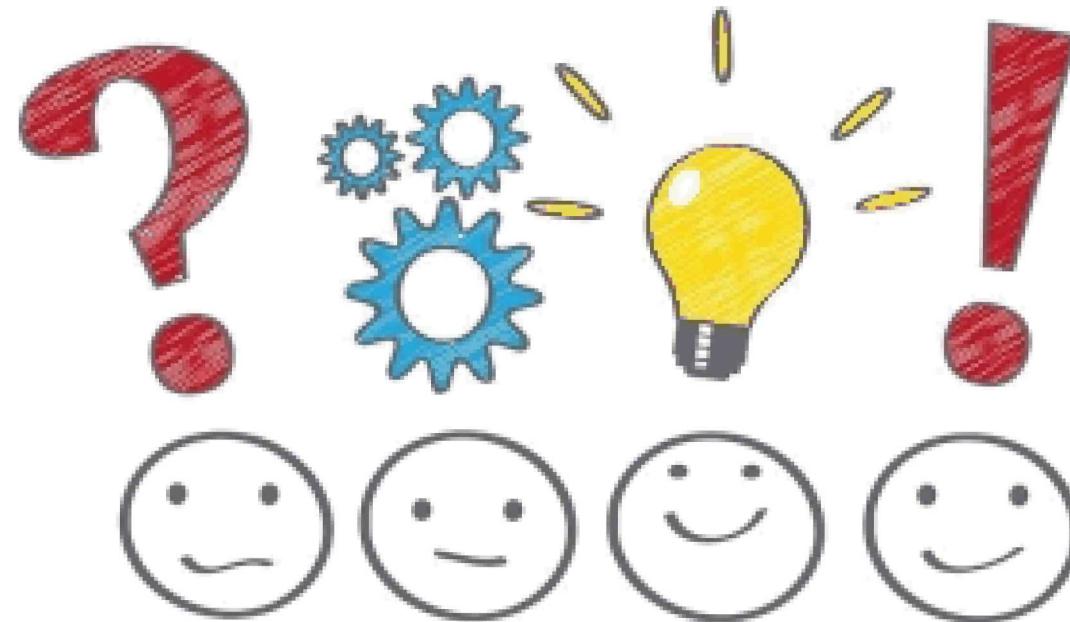
LUNCH

- Framework Application
- City & Utility Resilience Updates Roundtable
- Day 1 Discussion
- Optional Social Gathering

Friday July 19, 8:00 – 3:30 PM

- Review Day 2 Meeting Objectives and Agenda
- Working Group Overview
 - Working Group 1: Defining, Valuing, and Measuring Resilience Update (10 min) [City of Norfolk]
 - Group 2: Rethinking Regulatory Frameworks and Utility Business Models Update (10 min) [City of Honolulu]
- Concurrent Breakout Sessions
 - Working Group 1: Defining, Valuing, and Measuring Resilience
 - Working Group 2: Rethinking Regulatory Frameworks and Utility Business Models
 - Project Partner Working Meeting
- Day 2 discuss and Next Steps
- Optional NYU Microgrid Tour

Questions? Comments?



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