ENERGY TRANSITIONS INITIATIVE
U.S. Department of Energy

Partnership Project

Resilience in ETI and ETIPP

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OFFICE OF STRATEGIC PROGRAMS | SOLAR ENERGY TECHNOLOGIES OFFICE
WATER POWER TECHNOLOGIES OFFICE | OFFICE OF ELECTRICITY

Vulnerable communities, unique challenges

Many r**emote, island, and islanded communities** seek to transform their energy systems and shore up their vulnerabilities

Remote

Flooding and erosion pose imminent threats to critical infrastructure in 30+ Alaska villages

Island

Maine islanders face electric bills 4X national average due to aging infrastructure, few scalable options

Islanded

The coastal-Washington Tahola village (Quinault Indian Nation) re-located due to climate change and natural disaster vulnerabilities.

Overcoming these challenges and reducing risk requires **ramping up resilience**—often with **limited resources and capacity**.

Create & Sustain Clean Energy Leadership

- **Champions of clean energy economy**
  - Leverage long-standing partnerships Hawaii, USVI, et al.
  - Cultivate channel partners (RMI, ETIPP)
  - Solve novel technical and policy questions (Labs)

- **Community-wide engagement**
  - Promote equitable access to process & benefits
  - Recognize that projects FAIL without this engagement (e.g., RUS)
  - Distribute lessons learned

DOE & National Lab Analysis Capabilities

Fuels/Interdependencies
- LNG Infrastructure
- Telecom Infrastructure
- Solar Resource and Supply Curves

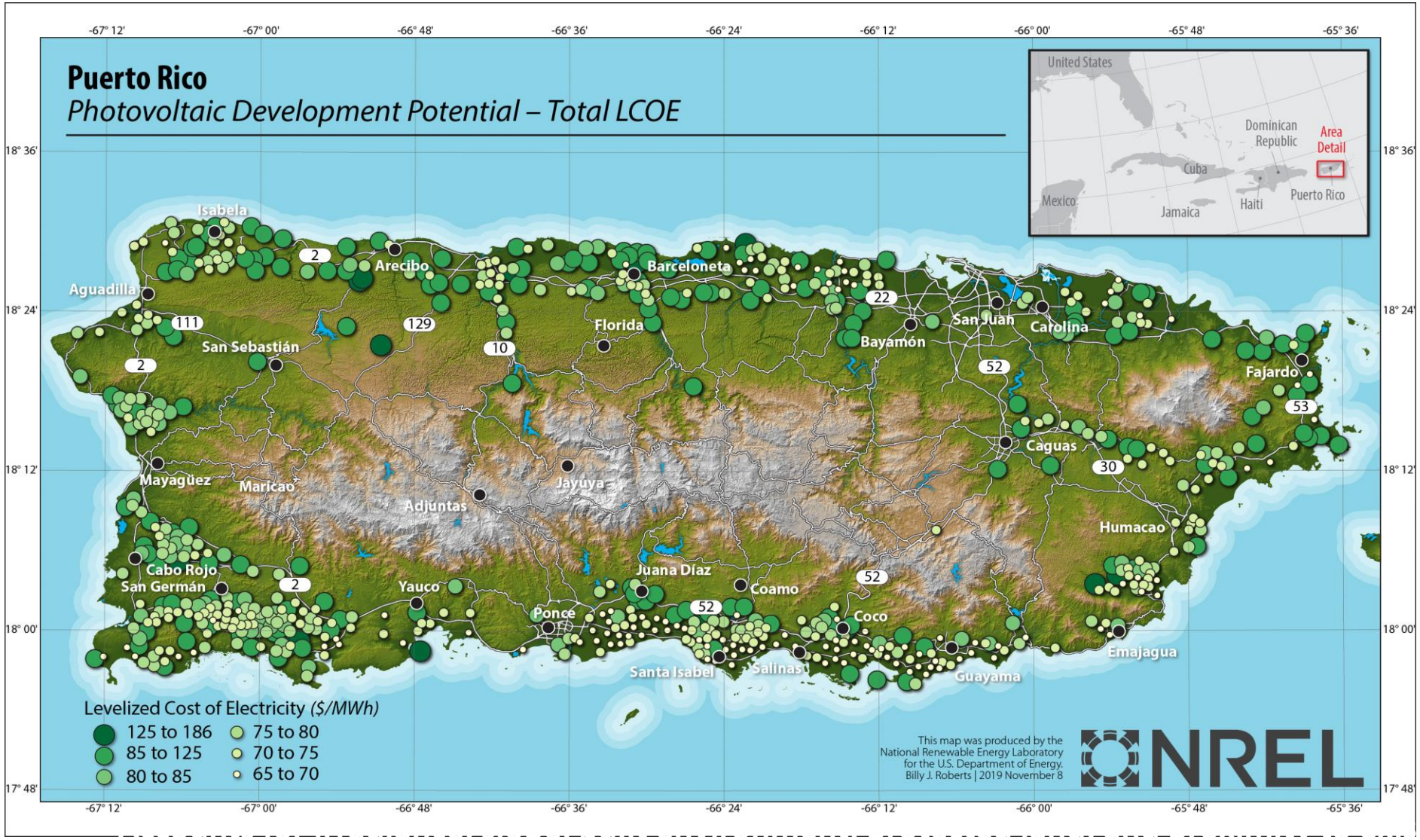
Bulk Power System
- Investment Support Tools
- Capacity Expansion Modeling (AURORA)
- Production Cost Modeling (FESTIV)
- System Stability Modeling (Epfast)
- Dynamic Modeling (MAFRIT)

Transmission
- Protection and R/T Info
- Risk-Based Contingency Analysis
- Grid Asset Benefit-Cost Evaluations

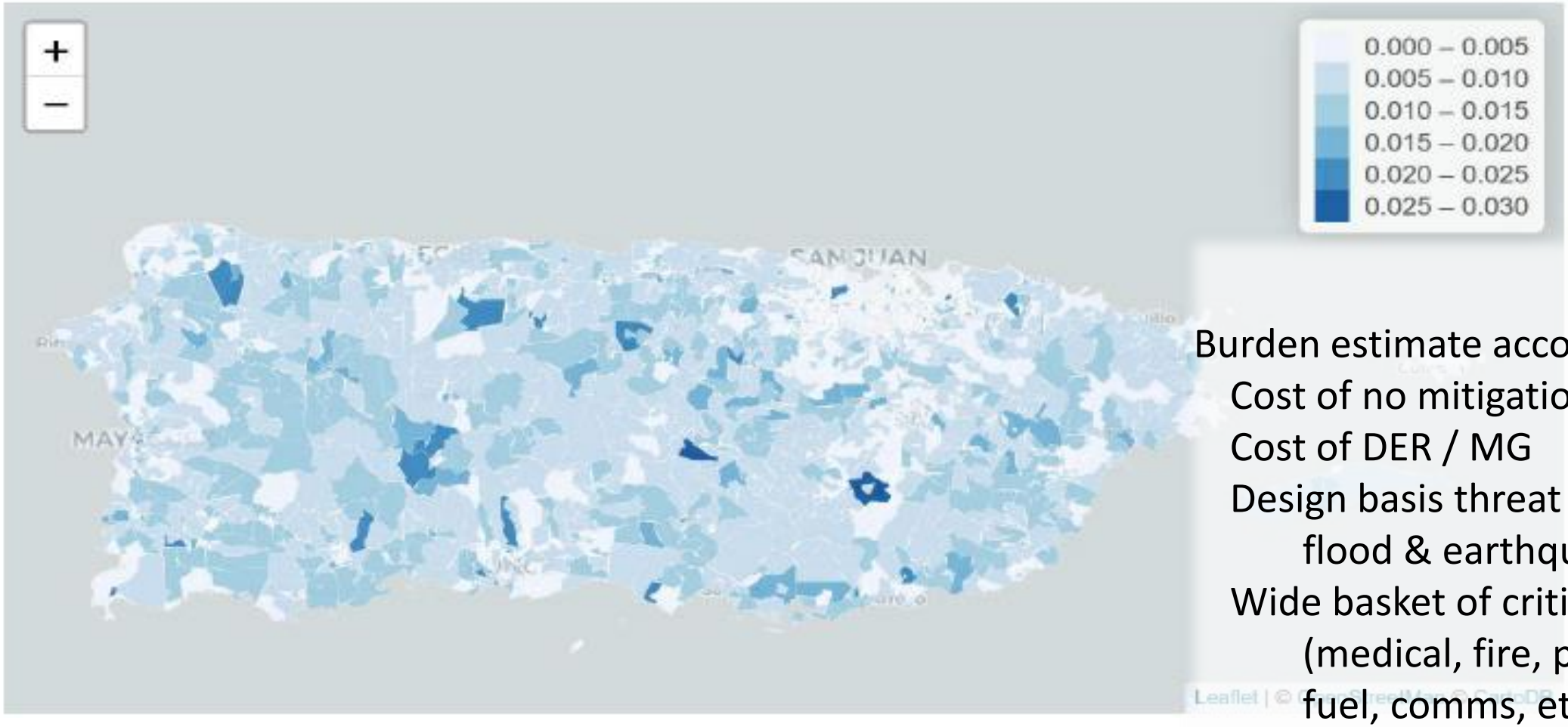
Distribution & Edge
- System Advisory Model & PVWatts
- DER Interconnection Standards
- DER Feeder Hosting Methodology
- GIS Resiliency Improvement Tool

Lead Lab Key:
- ANL
- NREL
- ORNL
- PNNL
- SNL

Example: Solar Development Potential



Burden to Access All Critical Services in one of the Cost-Effective Portfolios (SNL)

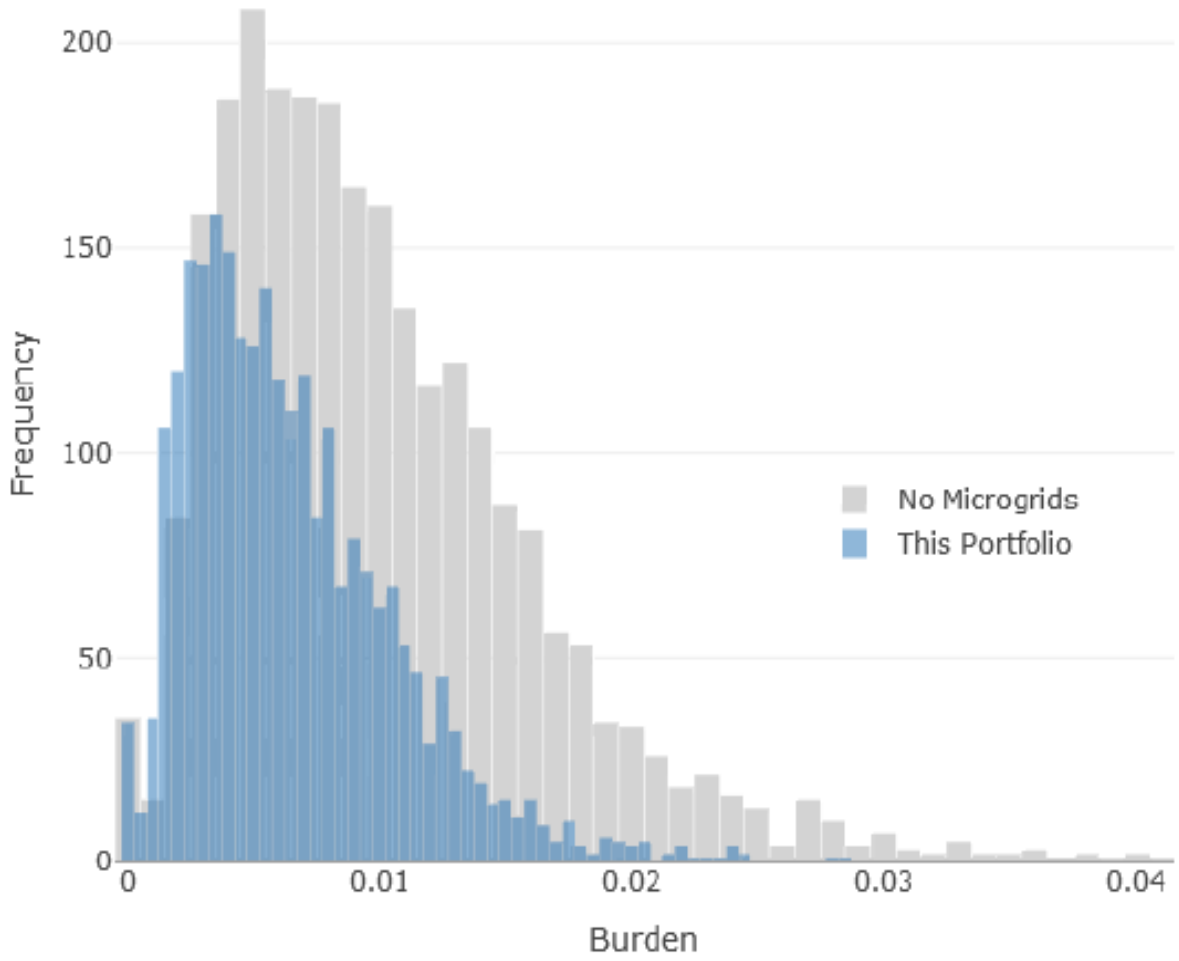


Burden estimate accounts for:

- Cost of no mitigation
- Cost of DER / MG
- Design basis threat of storm, flood & earthquake
- Wide basket of critical services (medical, fire, police, water, fuel, comms, etc.)

Microgrids Are Key Resilience Strategy (SNL)

- DER & MG portfolio docks the tail of event impacts
- Assures energy supply to life-saving/sustaining services
- 159 sites for ~$1100mn, hybrid NG/diesel & PV, BESS
- MG interconnection rules not established, can build from IEEE 2030.7
- NREL reviewed DER interconnection processes



Partnership Approach

Energy Transitions Initiative Partnership Project (ETIPP)

ETIPP provides **tailored, holistic, technology-neutral technical assistance, strategy, and solutions** based on ETI's proven framework

Community priorities

Remote, **island**, and **islanded** community energy and infrastructure **challenges, values,** and **goals**

+

Partnership approach

Deep energy-sector **experience**, **expertise** of the **national labs** + **local, trusted stakeholder organizations**

→

Energy assessment and planning

Provide **resources** and **on-the-ground support**

→

Resilient energy systems

Knowledge sharing → **lessons learned, use cases** → future application

High-impact, replicable energy transitions rapidly scalable to any geographic region or type of community

Partnership approach

Communities (8-12)
Unique challenges, values, goals

Regional Partners (5)
Local, trusted, community-based

- **Stakeholder engagement and outreach**
- Translate technical content
- Share learnings, support use-case development

National Labs (4)
Deep energy-sector experience, expertise

- **Technology-neutral technical assistance**
- Identify and advance strategic, tailored solutions
- Address challenges, build capacity, and accelerate sharing of best practices and innovations

U.S. DOE Offices (4)
Funding, support, expertise

- **Support energy assessment, planning, and operations** to achieve energy-resilient communities
- Foster **cross-technology collaboration**, planning, and solutions

Current ETIPP Communities

Designing Impactful Place-Based Work

4 Key Questions

1. How do place-based programs select places and subject matter, conceptually and in practice?
2. How do we align DOE mission and priorities with local need?
3. How do we efficiently coordinate inside HQ?
4. How can we improve the process of building a PB program?
    - Functions, mechanisms, program models, audiences

Thank you!