



NASEO-NARUC Microgrids State Working Group Microgrids Action Planning Workshop

Bethesda, Maryland
October 3-4, 2023

Thank you to the U.S. Department of
Energy Office of Electricity for their
support of this event

Day 2 Agenda

- Welcome Remarks – Commissioner Bonnie A. Suchman, Maryland Public Service Commission
- State Spotlight: Colorado Microgrids for Resilience Program
- Session 4: Microgrids and Critical Infrastructure
- Overview of State Microgrid Policy, Programmatic, and Regulatory Framework
- Break
- State Action Planning Workshop/Working Lunch



Workshop Objectives

- Convene State Energy Offices and Public Utility Commissions for peer sharing and information exchange on the programmatic, policy, and regulatory opportunities and barriers for microgrids development
- Spotlight innovative state actions that have led to successful microgrid installations
- Conduct action planning and identify next steps for State Energy Offices and Public Utility Commissions to accelerate deployment of microgrids in support of other state priorities such as grid resilience and transportation electrification





Comm. Bonnie A. Suchman Maryland Public Service Commission

State Spotlight: Colorado Microgrids for Resilience Program



**Moderator: Kelsey Jones, Senior Program Manager,
NASEO**

**Julia Masters, Microgrids for Community Resilience
Program Manager, Colorado Department of Local
Affairs**

**John Parks, Policy Analyst, Electricity Markets and
Transmission, Colorado Energy Office**

NASEO Workshop 2023

Colorado Energy Reliability & Microgrids for Community Resilience

October 4th, 2023



COLORADO
Resiliency Office
Department of Local Affairs



COLORADO
Department of Local Affairs

Grid Resiliency in Colorado - BIL 40101d

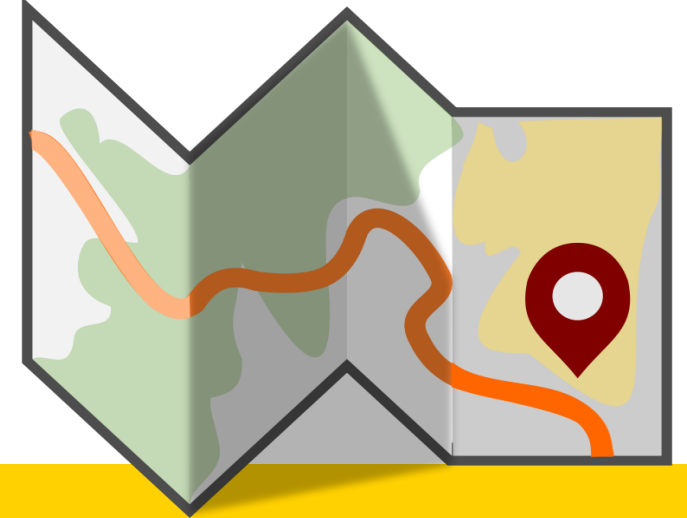
Programs supported by formula funding allocation from DOE (BIL 40101d):

- [Microgrids for Community Resilience \(MCR\) Grant Program](#) (\$10M)
- [Grid Hardening for Small and Rural Communities Grants](#) (\$4M)
- [Advanced Grid Monitoring Grants](#) (\$2M)
- [Microgrid Roadmap](#) (\$200k)



Colorado Microgrid Roadmap - [HB 22-1249](#)

- Interagency approach, contractor-led
- Identify communities at highest risk of power outages
- Recommend process improvements for Microgrid development
 - (site selection, tech support, financial, administrative, legislative, etc.)
- **Stakeholder meetings: November 2023-February 2024**
- Draft due July 2024, Final due January 2025



Background: Microgrid for Community Resilience Grant

- In 2022, [HB22-1013](#) set aside \$3.5M for supporting rural utilities to plan for and develop microgrids
 - Colorado Rural Electric Association (CREA) was strongly involved in the push for this legislation
- Eligible applicants are electric cooperatives and municipal-owned utilities serving rural communities.
- Focused specifically on community resilience and uplifting communities with social, climate, or infrastructure vulnerabilities



Selection Criteria

01	Demonstrates the greatest community need, benefit, and collaboration
02	Reduces vulnerabilities and increases grid reliability and resiliency
03	Local commitment and readiness

Tools for Assessing Vulnerabilities

The Colorado Resilience Office created a mapping tool to help applicants understand and emphasize their vulnerabilities. Projects in eligible communities that meet those criteria will be prioritized.

Main data sets:

1. **Climate vulnerabilities:** Climate vulnerability flag (Colorado EnviroScreen), National Risk Index (FEMA), U.S. Drought Monitor
2. **Socioeconomic vulnerabilities:** Environmental Justice flag (Colorado EnviroScreen), Justice40 (federal)
3. **Infrastructure vulnerabilities:** asked for own data, optional layers of substations and grid



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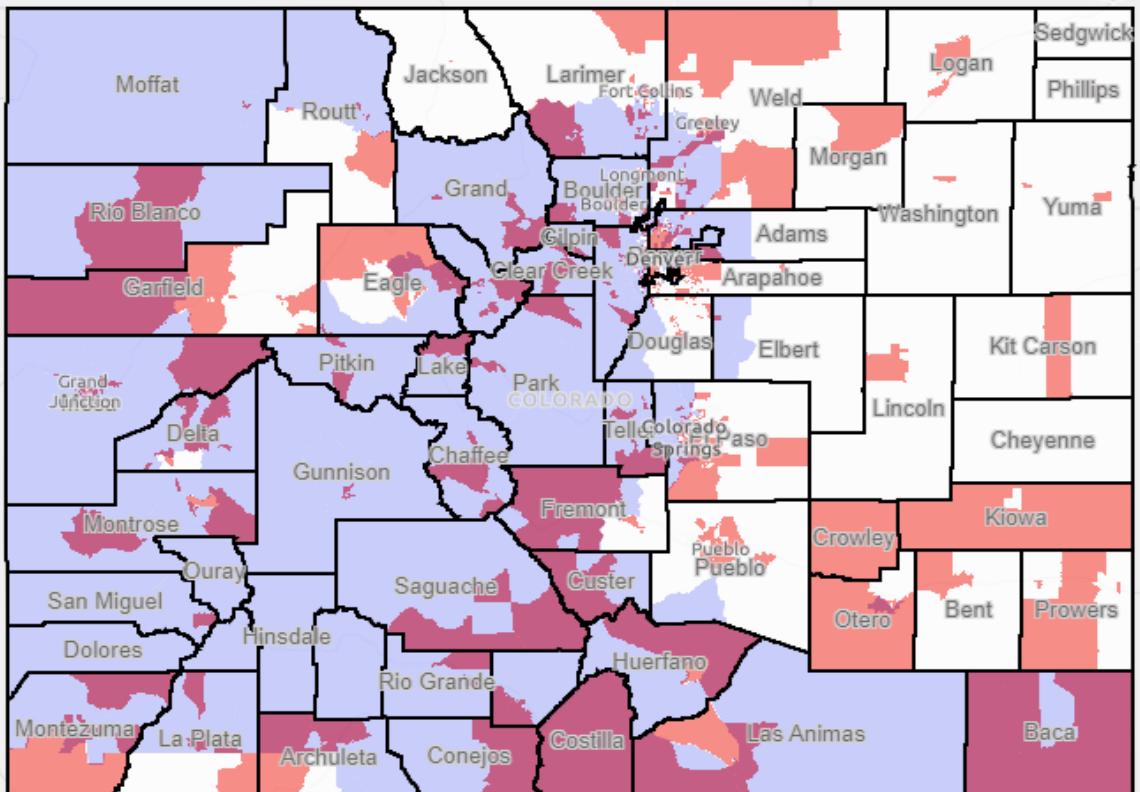
Home

History

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Rock Springs

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Farmington

Layer List

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Layers

☒ Counties

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☐ Census Places

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☒ Colorado Environmental Justice Flag

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☐ Justice40 Tracts

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☐ Colorado EnviroScreen

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☒ Climate Vulnerability Flag

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☐ National Risk Index Census Tracts

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☐ USA Drought Intensity - Current Conditions

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☐ Monthly Drought Outlook

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☐ Hospitals

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☐ Local Law Enforcement Locations

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☐ Substations

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☐ Power Plants

...

☐ The National Map Fire Stations & EMS Locations (USGS 2022) - Fire Stations EMS Stations

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☐ Electric Power Transmission Lines

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☐ Electric_Retail_Service_Territories

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[Available here](#)

Social vulnerability

Climate risks & vulnerabilities

Relevant infrastructure

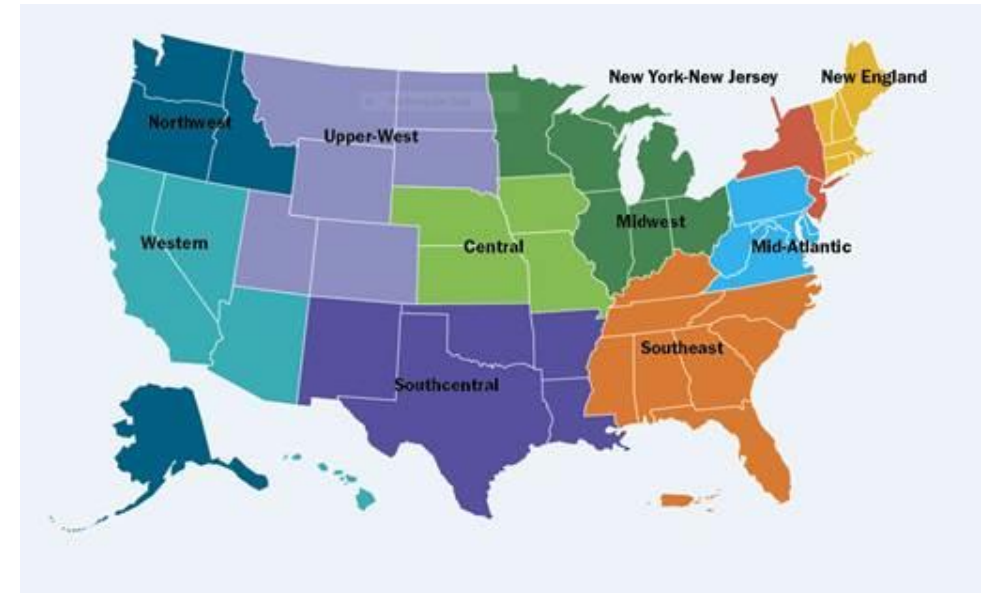
Building an Equitable Program from Inception to Launch

- Integrate throughout the program:
 - Program intention & design
 - Eligibility & Selection - priority / points related to
 - Serving DI communities
 - Encouraging letters of support from representatives
 - Requirements (e.g., reduced match)
- Allow data to guide outreach, technical assistance, and support to DI communities



DOE CHP Technical Assistance Partnerships (CHP TAPs)

- **End User Engagement**
Partner with strategic End Users to advance technical solutions using CHP as a cost effective and resilient way to ensure American competitiveness, utilize local fuels and enhance energy security. CHP TAPs offer fact-based, non-biased engineering support to manufacturing, commercial, institutional and federal facilities and campuses.
- **Stakeholder Engagement**
Engage with strategic Stakeholders, including regulators, utilities, and policy makers, to identify and reduce the barriers to using CHP to advance regional efficiency, promote energy independence and enhance the nation's resilient grid. CHP TAPs provide fact-based, non-biased education to advance sound CHP programs and policies.
- **Technical Services**
As leading experts in CHP (as well as microgrids, heat to power, and district energy) the CHP TAPs work with sites to screen for CHP opportunities as well as provide advanced services to maximize the economic impact and reduce the risk of CHP from initial CHP screening to installation.



www.energy.gov/chp



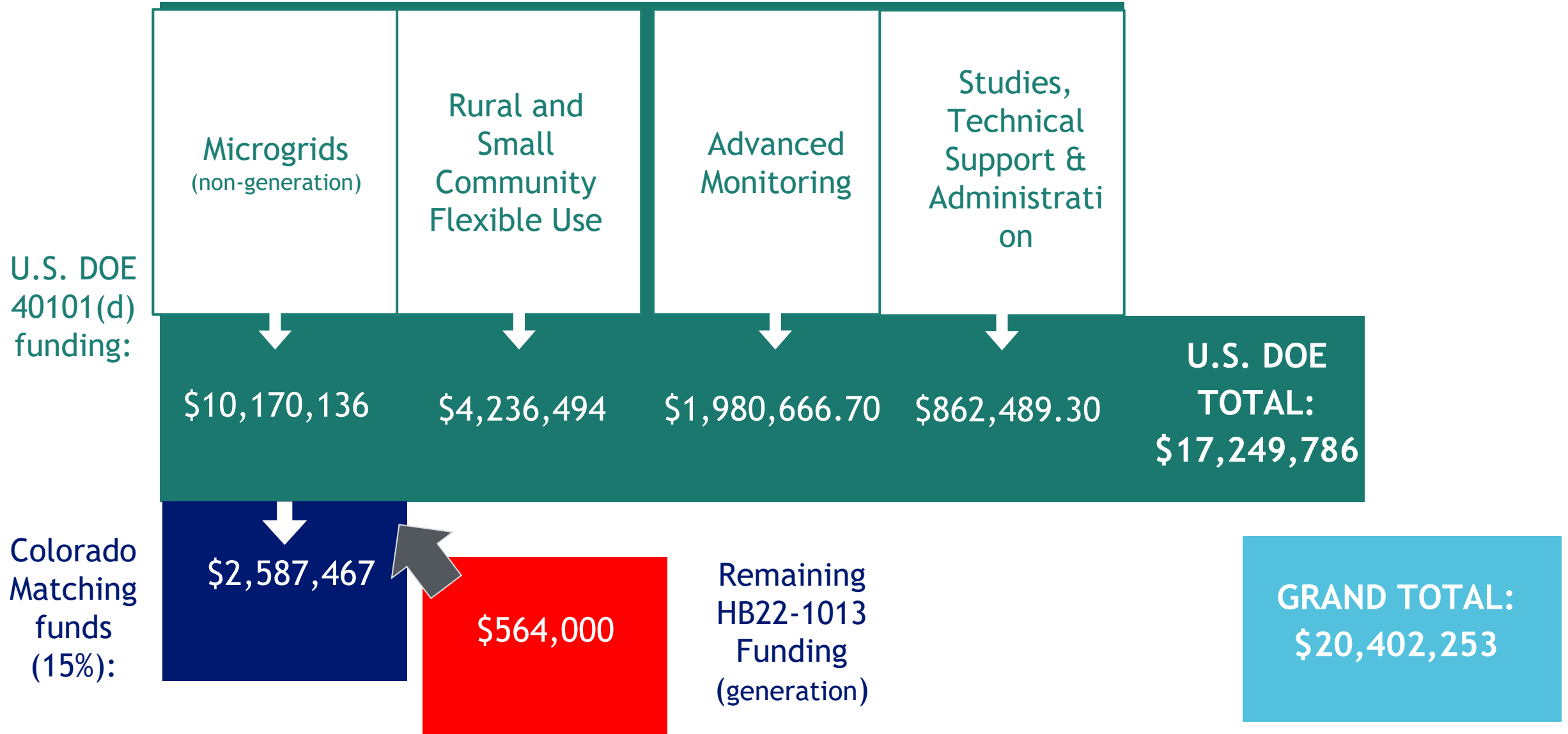
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MCR Funding to Date

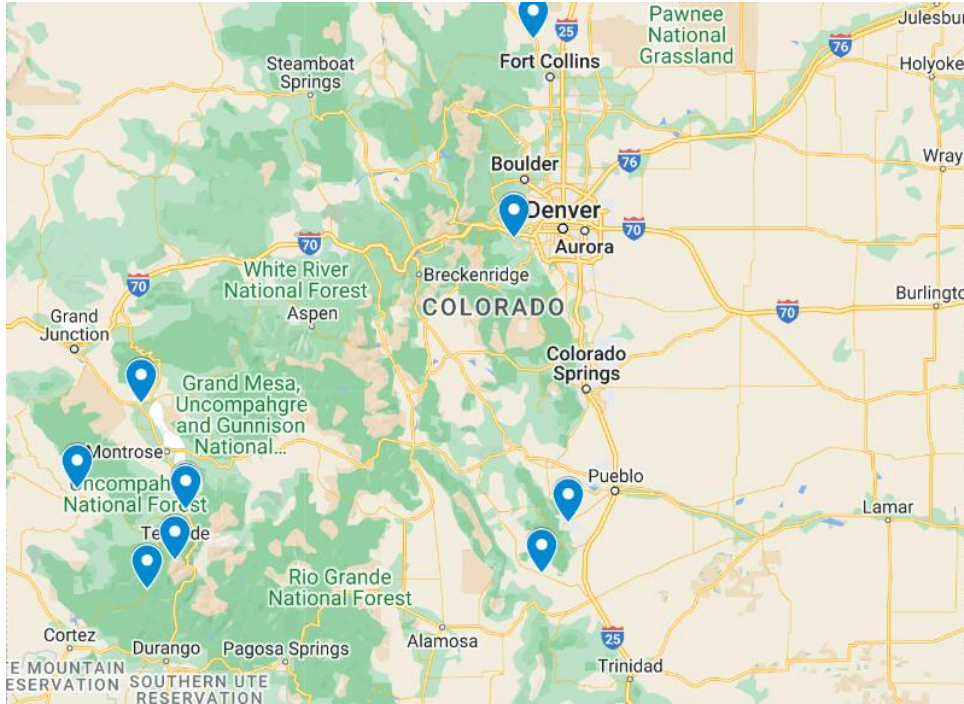
- The Department of Local Affairs has run one full round of planning grants (8 awards granted), and has recently launched the next round of [construction/planning grants](#), open through November 16th, with a public engagement [session](#) on October 5th
 - DOE's 40101d Formula Funding infused this program with additional funds for construction/planning grants
- This process has highlighted the importance of regional/service-wide territory approach for some utilities



2 Year Budget - FY 2022 & FY 2023



MCR Planning Grants Awarded (July 2023)



[See the full list of all 8 planning grants funded in Round 1](#)

Communications Resilience

San Miguel Power Authority

Solar/storage microgrid dedicated to supporting the utility's critical communications equipment.

Economic Resilience

Poudre Valley Rural Electric Association

Solar/storage/backup generation microgrid installed on the Livermore Fire Station and supports a range of economic and community-based facilities.

Grid Resilience

City of Delta

Adding heat and Power (CHP) generation source to support community's grid in event of shortfall or prolonged outage



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Example MCR Grant Projects

Project Type	Planning	Construction/Implementation
Examples uses	<p>Establish community's potential for microgrid projects, including scale, size, and cost</p> <p>Evaluate existing infrastructure vulnerability through resiliency criteria</p> <p>Develop recommendations to integrate resiliency criteria into forthcoming energy projects</p>	<p>New microgrid facilities, including shovel-ready projects. Priority will be given to projects leveraging pre-existing assets. Projects are technology agnostic, and can include funding* for:</p> <ul style="list-style-type: none">• Energy storage (batteries, vehicle to grid battery storage, pumped hydro, geothermal)• Microgrid controller• Replacing old generation components with new components of the same type in order to ensure weatherization/resilience, such as wind turbine blade replacement or damaged solar cells within an existing solar farm. <p>For HB1013 funding, new generation is an eligible use of funds.</p>

Barriers/Challenges

- Funding challenges
 - Limited funding available, can only support so many projects
 - Eligibility of funds (federal formula funding prohibits generation funding, while state allows it)
- Supporting various utilities at different stages of their grid resiliency planning; some have strong internal efforts, others are facing more conservative leadership
- Eligible applicants: because the State funding is exclusive to utilities, we have come across towns, municipalities, and counties that are eager to dive into this work but cannot do so with our funding without their utility buy in



Session 4: Microgrids and Critical Infrastructure



Moderator: Jeff Loiter, Technical Director, NARUC
Center for Partnerships & Innovation

Karen Lasure, Energy Development Specialist, West
Virginia Office of Energy

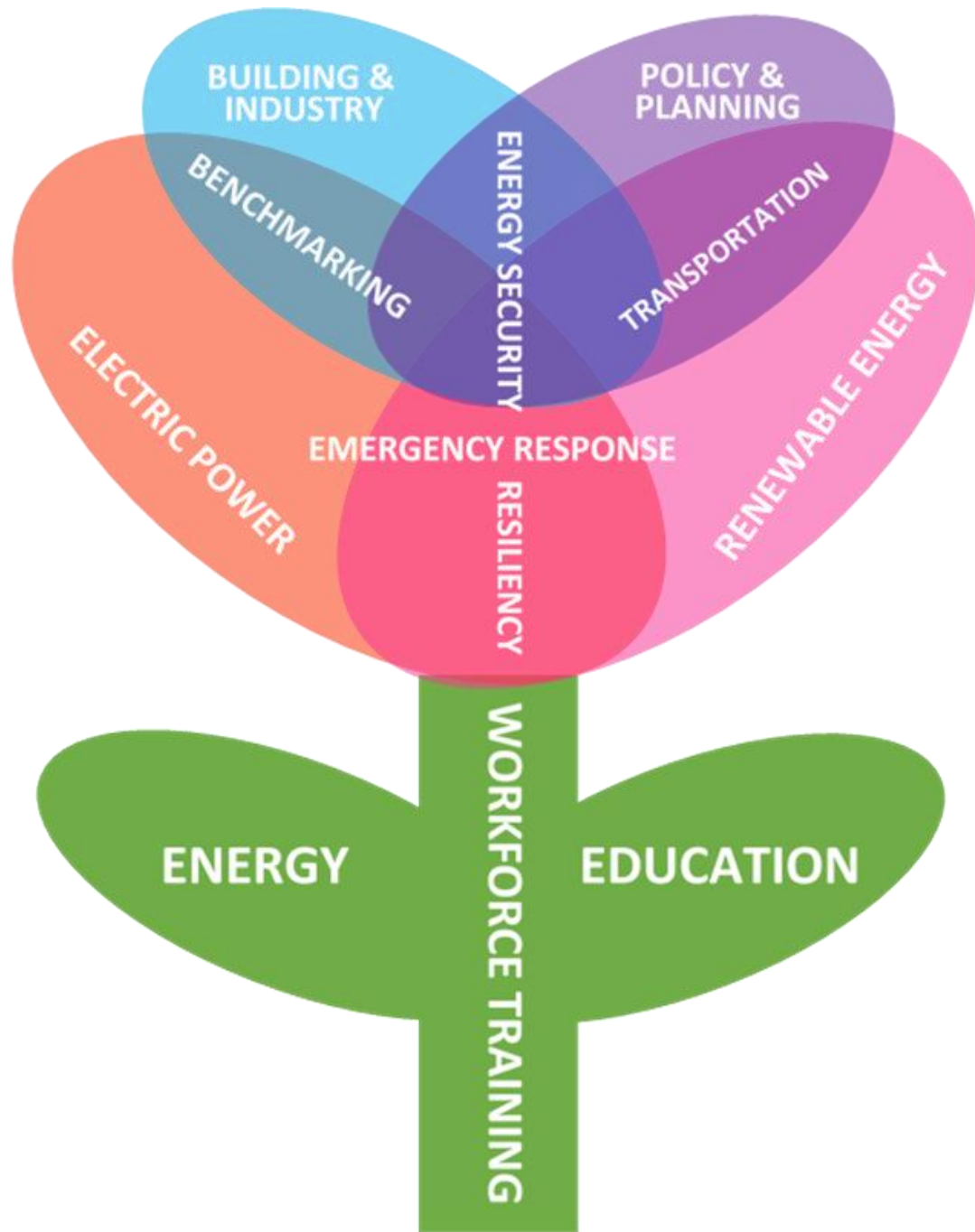
Murali Baggu, National Renewable Energy Laboratory

Megan Levy, Office of Cybersecurity, Energy Security,
and Emergency Response, U.S. Department of Energy



West Virginia Microgrids for Resilience Study

In West Virginia, floods, derechos, and ice storms prompted the Federal Emergency Management Agency (FEMA) to put a permanent federal response team in the state. Through a cooperative effort, the West Virginia Office of Energy ("WVOE") and SEPA conducted a microgrid study to identify opportunities for deploying microgrids to increase the overall resilience for the state.



Our mission and role

...the formulation and implementation of energy initiatives designed to advance energy resource development opportunities and services throughout West Virginia.

- Support and promote a variety of energy related projects/program
- Provide education, training and technical assistance

Feasibility Studies and Assessments

- **Solar on Abandoned Mine Lands** with MU CEGAS
- **Geothermal Mine Pool Study** with MU CEGAS
- **Carbon Capture Use and Storage Assessment** with WVU Energy Institute
- **WV State Energy Plan** with Northeast Energy Efficiency Partnership
- **Microgrids for Resilience Study** with Smart Electric Power Alliance
- **WV Energy Security Plan** with Midwest Energy Efficiency Alliance

Objectives of the Study

Identify areas of the state and specific sites where WVOE can facilitate the deployment of microgrids and other solutions for resilience.

Understand how natural hazard risks, critical infrastructure, disadvantaged communities and community interest align with utility operations and planning to establish tiers of resilience need and microgrid suitability across the state.

Engage with key stakeholders to collect relevant datasets and input to conduct a comprehensive microgrid suitability and economic assessment.

Align with the White House's Justice40 Initiative, FEMA BRIC program, IIJA, and other federal and state funding opportunities for enhanced grid and community resilience.

SEPA takes a **three-phased approach** when prioritizing and evaluating potential microgrids for resilience.

Landscape Review

Stakeholder Engagement
Data Collection
Gap Analysis

GIS Microgrid Suitability

Critical Facilities & Natural Hazard Risk
Energy Equity & Environmental Justice
Utility Planning and Operational Constraints

Microgrid Deployment Strategy

Determine Microgrid Application & Technology
Prioritize Microgrid Locations
Conduct Microgrid Design & Cost Analysis

Breaking Down GIS Microgrid Suitability



4,181

Critical Sites Considered



353

Prioritized Site-Specific
Microgrids



14

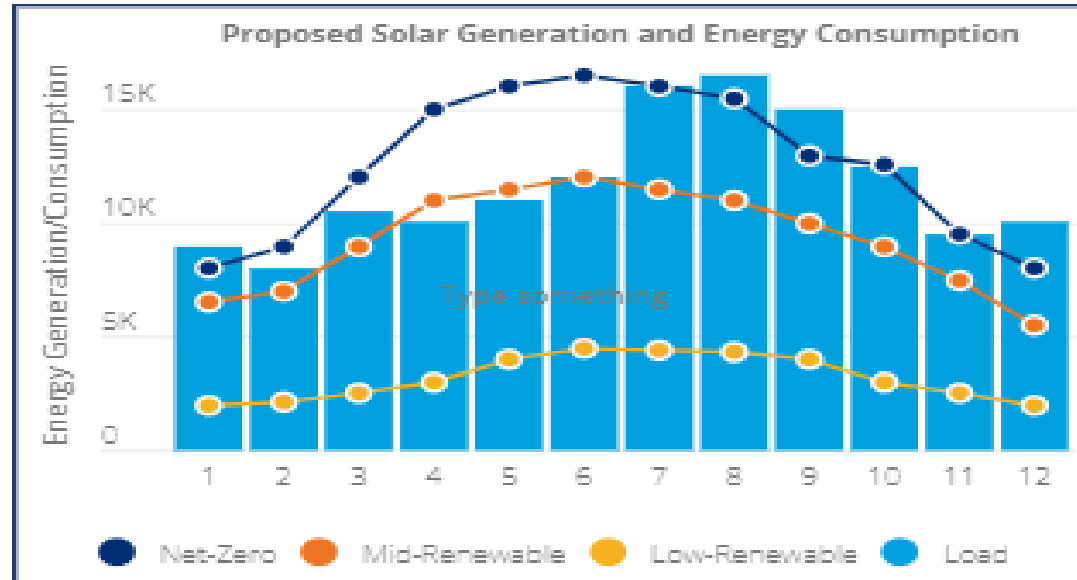
Prioritized Community
Microgrids

SITE SUITABILITY CONSIDERATIONS:

- Does not have backup sources of power generation
- Serves critical infrastructure
- Serves a facility that dually functions as a designated emergency shelter
- Located within a census tract with a high combined annualized frequency of the natural hazard risks
- Located within high-risk flood zones
- Located within a census tract with a high population density
- Located within an Appalachian Regional Commission-defined at-risk/distressed area
- Located within a U.S. DOE and U.S. DOT-defined disadvantaged community
- Located within an area with historic reliability constraints
- Serves a utility-defined essential customer
- Located within a 10-mile radius of transmission substations with frequent unscheduled emergency outages

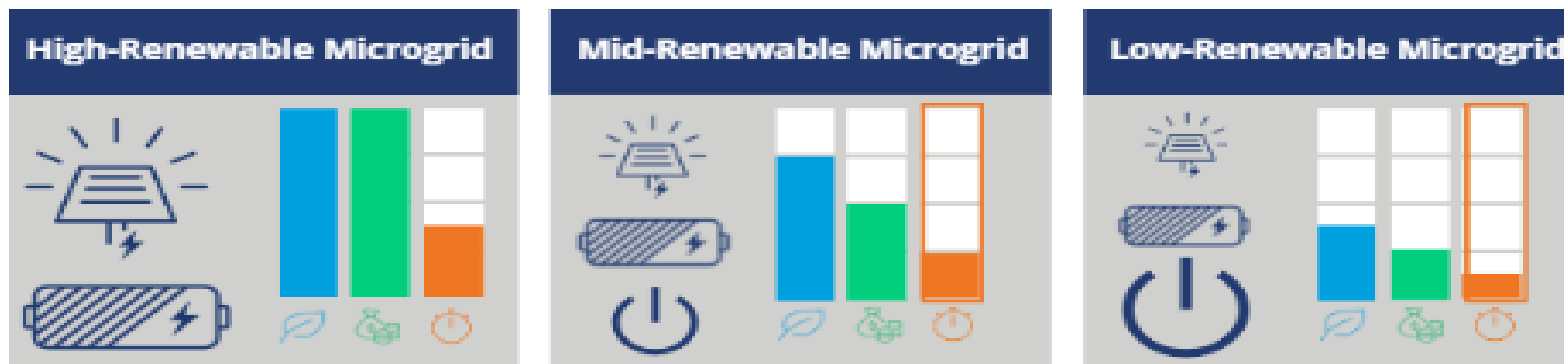
Microgrid Scenario Development

For each critical facility type, SEPA carried out a comparative analysis for three different microgrid scenarios for high-, mid-, and low-renewable components with different cost projections and islanding capabilities.



In order to size the microgrid scenarios for each critical facility type, SEPA examined the energy consumption of each facility type and proposed solar on-site generation that would offset 100% (high-renewable/net-zero), 75% (mid-renewable), or 25% (low-renewable) of the facilities' consumption on an annual basis.

Based on load analysis, microgrid scenarios of solar PV, battery energy storage, and standby generation were developed. Each scenario varies in its resilience benefit, project economics, and emissions reduction potential.

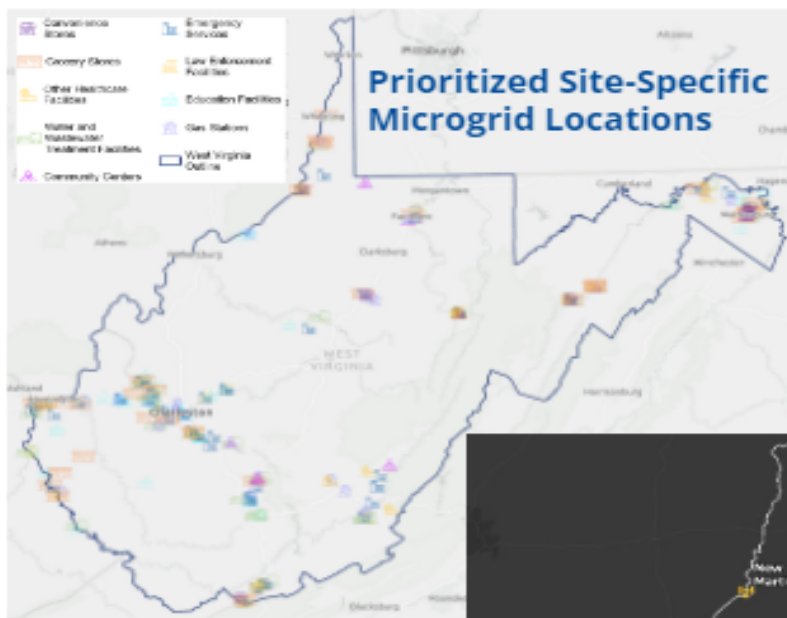


🌿 Emissions reduction potential (%) 🌱 Economics \$/watt ⌚ Carbon-free islandable duration

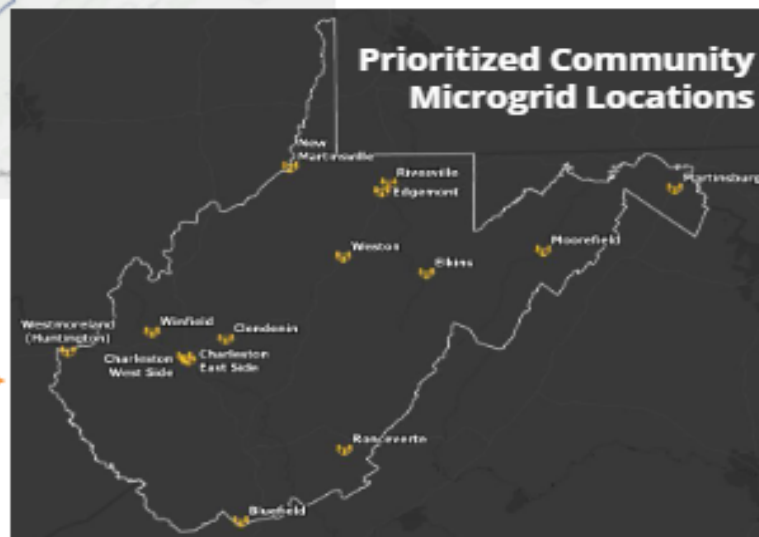
⌚ Fossil Fuel islandable duration

Developing a Microgrid Deployment Strategy

The goal of the microgrid deployment strategy is to prioritize and evaluate potential microgrid sites and applications that are able to island critical loads within the most vulnerable areas of the state and have access to essential services during power outages.



Site-specific microgrids are set up as a single customer microgrid serving FEMA lifelines, resilience hubs and essential business.



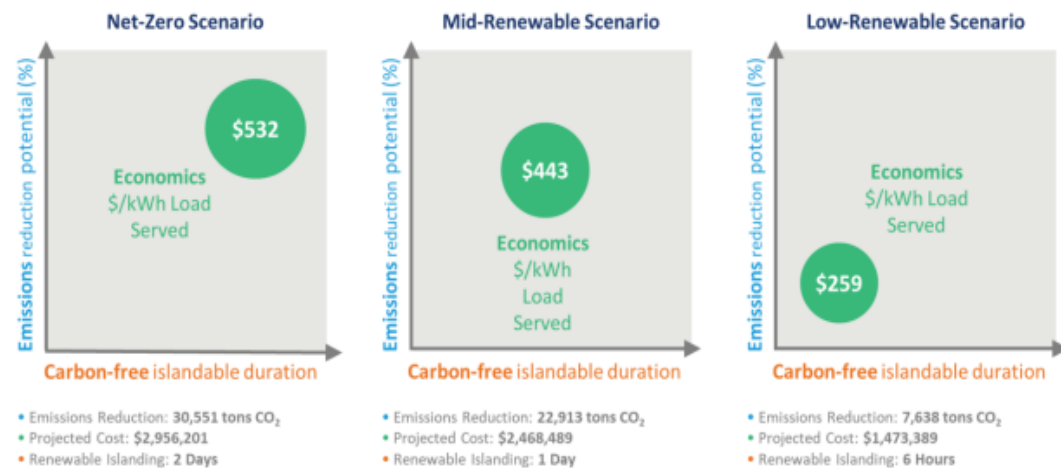
Community microgrids are set up as a microgrid serving multiple critical sites and/or customers

Clendenin

The Clendenin community microgrid includes three critical facilities within its electrical boundary:

- Educational Facility (Clendenin Elementary School)
- Law Enforcement Facility (Clendenin Police Department)
- Emergency Services (Clendenin Volunteer Fire Department)

Figure 5. 27 - Comparative Analysis of Conceptual Microgrid Scenarios for the Clendenin Site



Source: Smart Electric Power Alliance, 2022



Assessing Energy Resilience Opportunities in West Virginia

Detailed analysis of identifying resilience needs by census tract to
prioritize resilience investments

Smart Electric Power Alliance | September 2022

<https://storymaps.arcgis.com/collections/575f313f08f847e4bab271953947d212?item=1>



Microgrids and Critical Infrastructure

Dr. Murali Baggu, Laboratory Program Manager – Grid Integration

NASEO-NEMA Microgrids Workshop
Microgrid Action Planning Workshop
October 3 - 4, 2023, Bethesda / Silver Spring, Maryland

Microgrid R&D At a Glance

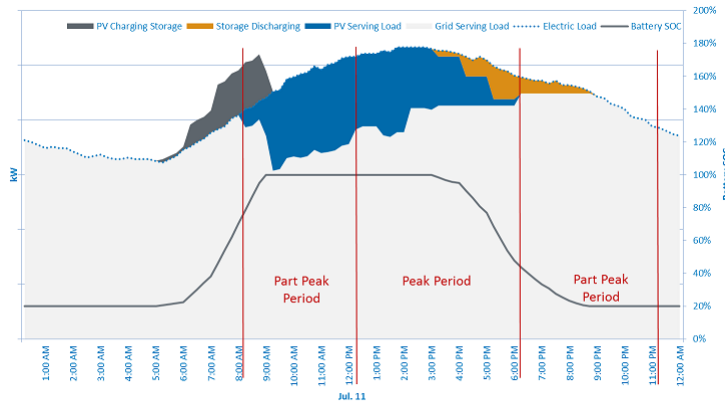
- The DOE Office of Electricity (OE) microgrid strategy envisions microgrids as the building blocks of the bulk power system
- DOE microgrid R&D is highly collaborative, spanning nearly all offices and involving many state and regional organizations
- Microgrid R&D is intertwined with clean energy technologies, which enable local generation and storage.
- In FY 2022 and 2023, DOE allotted at least \$471 million to programs related to resilience for critical infrastructure and isolated communities. Many of the projects pertained directly to microgrids.

How DOE Labs Help



Lab demonstration

- Device validation
- Superlab experiments
- Digital twins
- System



Technical assistance and system planning

- Cost and design optimization software
- Stakeholder engagement
- Decision support tools



Modeling and simulation

- Scenario forecasting
- System comparison
- Deployment

Major Recent Microgrid Programs

- Office of Clean Energy Demonstration's (OCED's) **Energy Improvements of Remote Areas Program**. Resilient field deployments in areas with less than 10,000 residents.
- DOE **Communities Local Energy Action Plan (LEAP)**. Dedicated to energy transitions in underserved communities.
- DOE **Clean Energy to Communities (C2C)** provides tailored decarbonization support in communities from rural to urban.
- Solar Energy Technologies Office **Renewables Advancing Community Energy Resilience (RACER)** supports solar and storage solutions that prevent power disruptions

OE Microgrid Program White Papers

- 1 Overall Program Vision and Objectives**
- 2 Transmission & Distribution Co-Simulation of Microgrid Impacts and Benefits**
- 3 Building Blocks for Microgrids**
- 4 Microgrids as a Building Block for Future Grids**
- 5 Advanced Microgrid Control and Protection**
- 6 Integrated Models and Tools for Planning and Designs with Operations**
- 7 Enabling Regulatory and Business Models for Broad Microgrid Deployment**

Microgrids for Critical Infrastructure

- U.S. military bases rely on DOE expertise for clean and resilient microgrid designs.
- Puerto Rico is approaching the redesign of its power system with microgrids and local restoration as a focus



Image Credit to Fabio Andrade

Microgrids for Energy-Burdened Communities

- Recent \$14.7 million FOA from Office of Electricity is targeted specifically at microgrids in underserved and indigenous communities.
- The OE project DynaGrid includes a deep assessment of neighborhood needs and energy burden to enable equity-cognizant microgrid configurations.



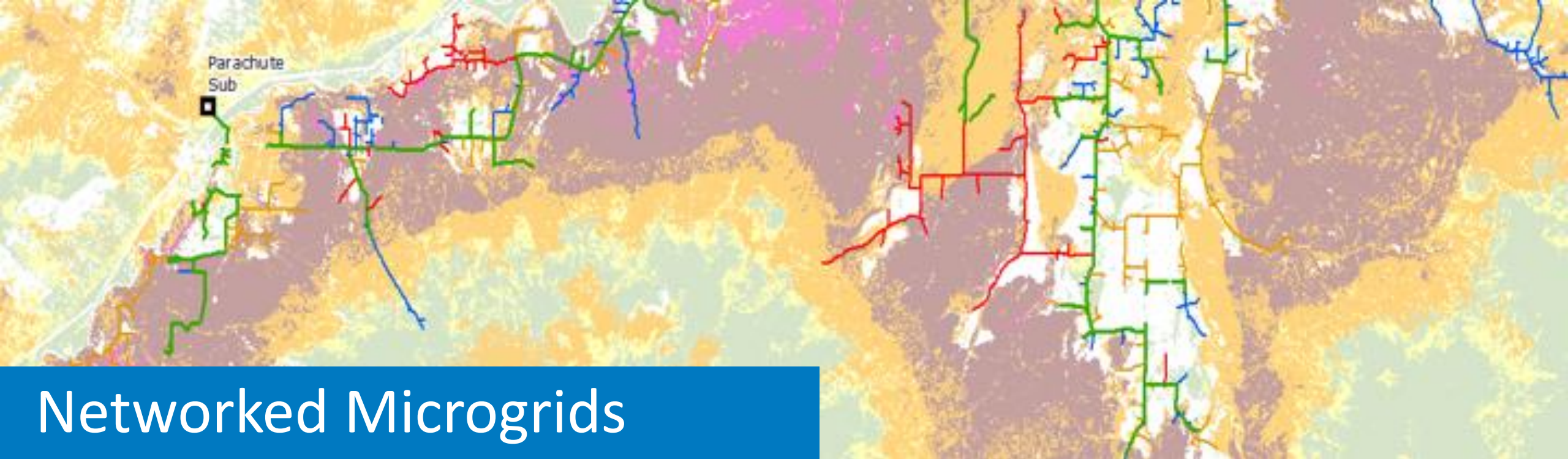
Image Courtesy of DTE



Microgrids for Remote Communities

- DOE's Energy Transitions Initiative Partnership Project (ETIPP) has clarified microgrid investments for dozens of remote and island U.S. communities since 2021.
- The “RADIANCE” project resulted in deployment of advanced metering infrastructure and precision load control for the remote fishing city of Cordova, Alaska.

Image courtesy of USDA Forest Service Alaska Region



Networked Microgrids

- Multiple DOE efforts are designing controls, hardware architectures, and operating principles to coordinate and connect multiple microgrids.
- The “Resilience of Networked Microgrids” project produced core algorithm for networked microgrid restoration. The approach won an R&D 100 award in 2023 and is being incorporated into NRECA open modeling framework.

Image courtesy of Holy Cross Energy

Energy Assurance for Critical Infrastructure (EACI)



Caitlin
Murphy



Tucker
Oddleifson

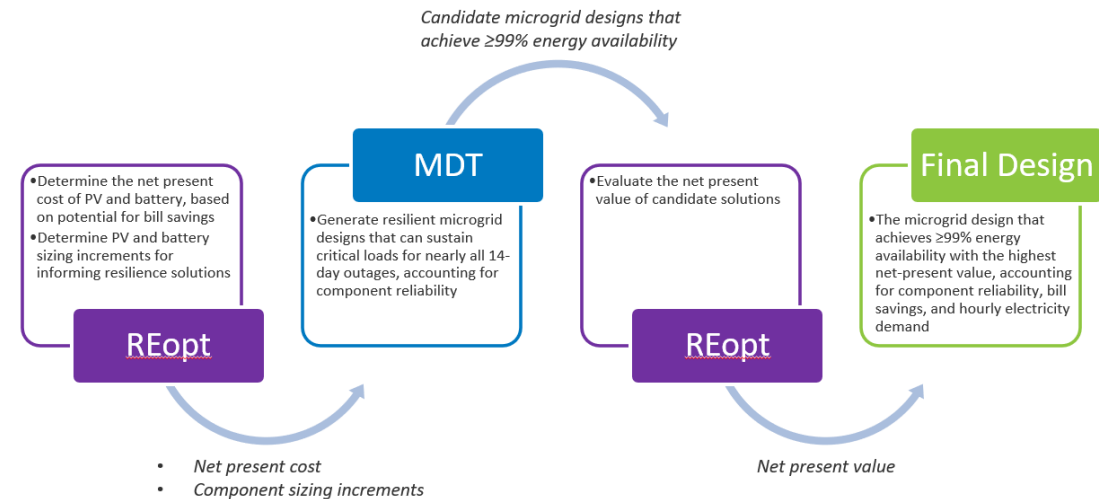


Dan Olis



Bill Becker

Summary: Model Linkages and Information Flow for “Co-Optimized” Microgrid Design



Combined microgrid design tools empower systems planners.

Explored combination of tools to balance the various motivations for investing in backup power

- Microgrid Design Toolkit (MDT) from SNL: identifies and characterizes alternative designs
- REopt: determine the optimal renewable energy mix, given certain economic and reliability objectives
- Explored how microgrid design solutions varied on resilience versus economic performance
- Then worked to co-optimize the two—SNL adopted REopt for future MDT analyses
- Future work: building on work to account for future climate conditions in microgrid modeling

Communities Local Energy Action Program (LEAP)



Carishma
Gokhale-
Welch



Alison
Holm




Debbie
Meixner

PARTNERS: Communities LEAP is supported by a technical assistance provider network that includes National Labs and other subcontractor subject matter experts.



- **NREL is the primary technical assistance program coordinator**, managing overall delivery of TA to communities, from a complex partner network.
- Through the **pilot program**, 24 communities will receive technical assistance and capacity-building support to create action plans that:
 - Reduce air pollution
 - Increase energy resilience
 - Lower utility costs and energy burdens
 - Provide long-term jobs and economic opportunities

 Currently in the **project definition and work planning stage**. This will culminate in a scope of work before kicking off implementation.

Clean Energy to Communities (C2C)

Community Participants

6

In-depth analysis

77

Peer cohorts

50

Expert match



Technical assistance helps communities close the gap between clean energy ambitions and deployment.

- 133 communities engaged.
- Technical assistance helps communities develop a realistic, validated plan for their desired energy transition based on robust modeling and analysis that lowers the risk of implementation.
- Analysis supported by Simulation and Emulation for Advanced Systems (SEAS) software, winner of a 2023 R&D 100 Award.

A satellite view of Earth at night, showing the Western Hemisphere with city lights glowing across the continents. The sun is visible on the left horizon, creating a bright glow and lens flare effect.

Thank you

www.nrel.gov

NREL/PR-5C00-84428

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Photo from iStock-627281636





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NASEO-NARUC Microgrids Workshop

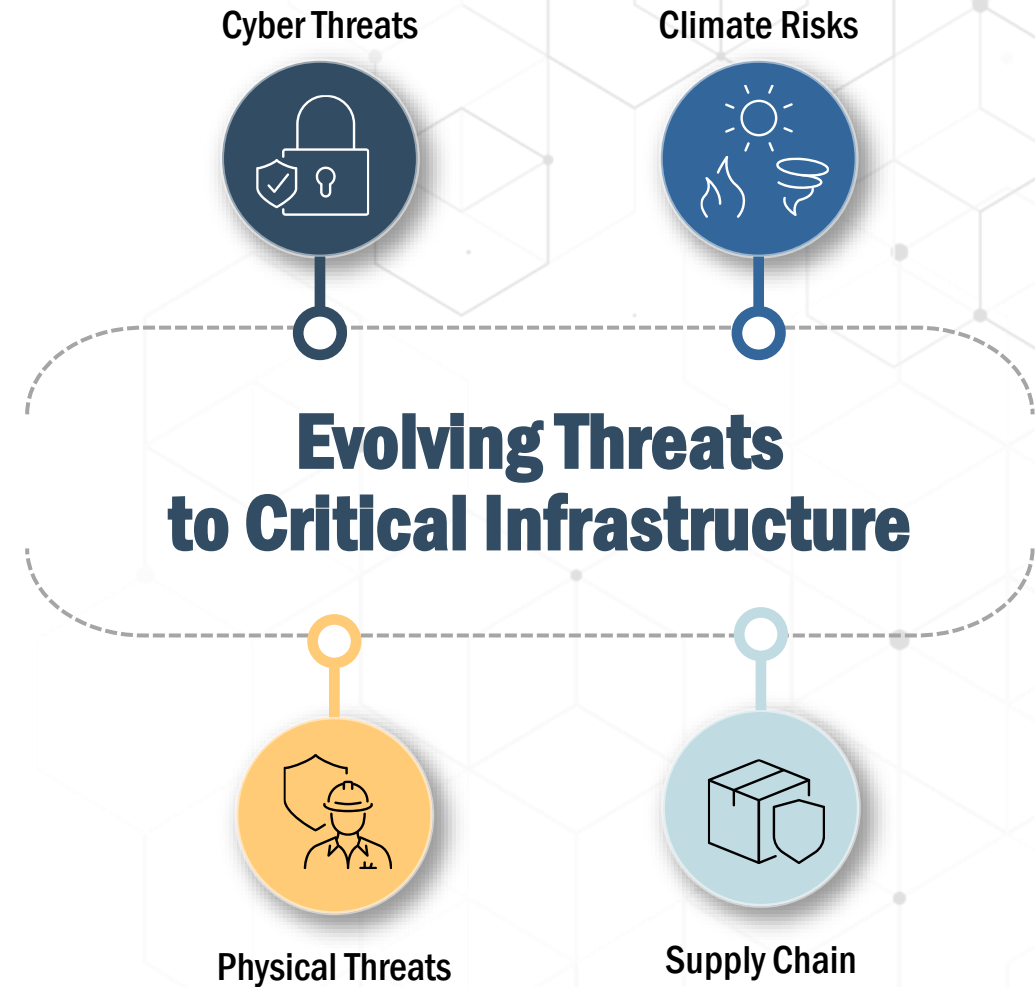
Megan Levy, SLTT Project Manager

October 4, 2023



CESER Mission & Energy Threat Landscape

To enhance the security of U.S. critical energy infrastructure to all hazards, mitigate the impacts of disruptive events and risk to the sector overall through preparedness and innovation, and respond to and facilitate recovery from energy disruptions in collaboration with other Federal agencies, the private sector, and State, local, tribal, and territory governments.



State Energy Security Plans (SESP) 40108

Purpose

State energy security plans—

- 1) assess the existing circumstances in the State
- 2) propose methods to strengthen the ability of the State, in consultation with owners and operators of energy infrastructure in the State to:
 - **secure** the energy infrastructure of the State against all **physical and cybersecurity threats**;
 - **mitigate the risk** of energy supply disruptions to the State; and to **enhance the response** to, and **recovery** from, energy disruptions; and
 - ensure that the State has **reliable, secure, and resilient energy infrastructure**.

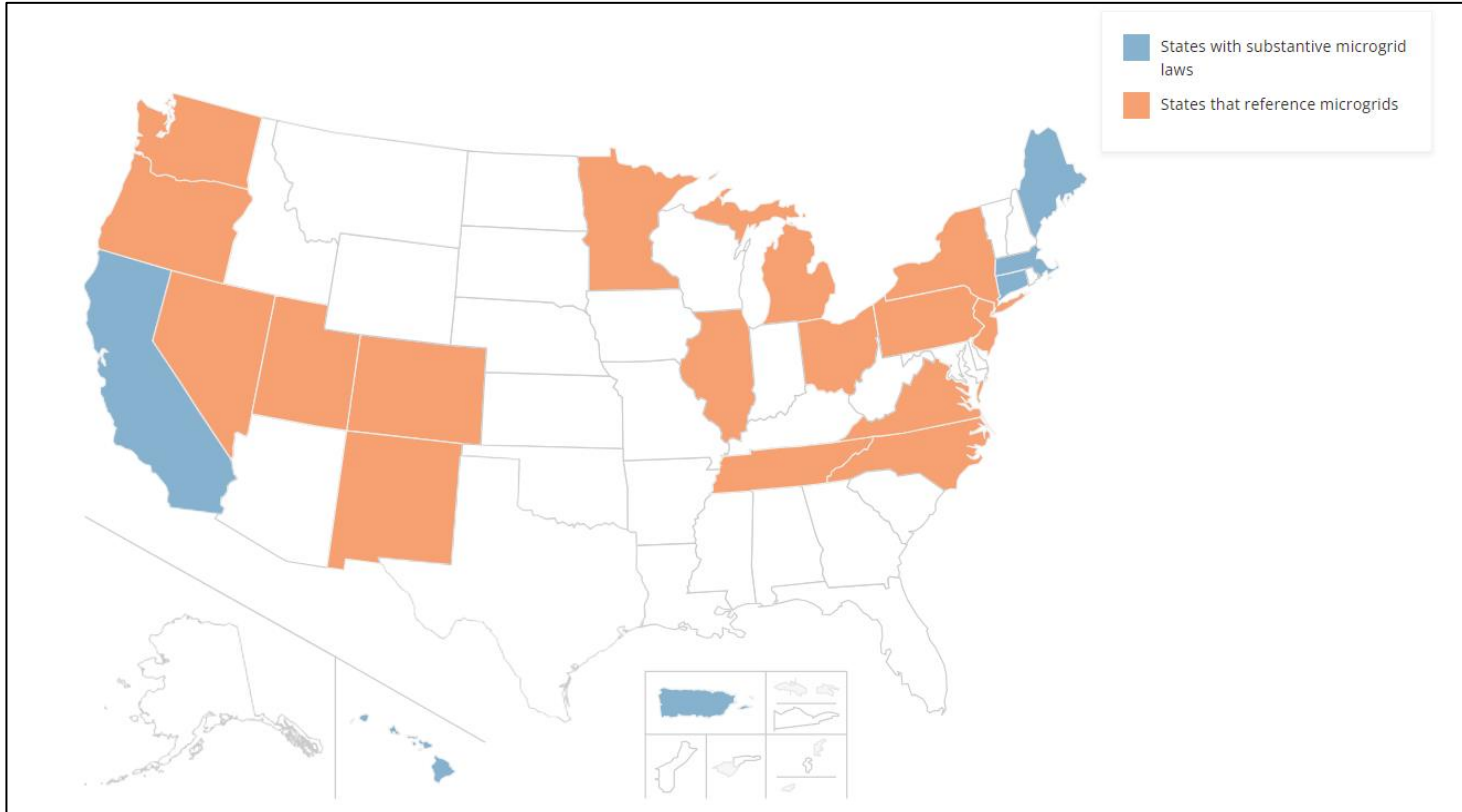
*Section 40109 provides \$500 million in financial assistance for states, contingent upon SESP meeting Congressional requirements.

Contents

A State energy security plan **shall**—

- 1) address all energy sources and regulated and unregulated energy providers;
- 2) provide a State energy profile, including an assessment of energy production, transmission, distribution, and end-use;
- 3) address potential hazards to each energy sector or system, including physical threats and vulnerabilities; and cybersecurity threats and vulnerabilities;
- 4) provide a risk assessment of energy infrastructure and cross-sector interdependencies;
- 5) provide a **risk mitigation** approach to enhance reliability and end-use resilience; and
- 6) Address
 - A. **multi-State & regional coordination, planning, and response; and**
 - B. **coordination w/ Indian Tribes w/ respect to planning and response; and**
 - C. to the extent practicable, encourage mutual assistance in cyber and physical response plans.

Microgrids as Mitigation



State Examples

- California Blue Lake Rancheria Microgrid
- New York Prize
- New Jersey Energy Resilience Bank
- Wisconsin Critical Infrastructure Microgrid & Community Resilience Center Grant Program

Spotlight: Bad River Band of Lake Superior Chippewa

Microgrids as Mitigation

- 2016 floods caused massive emergency, extensive power outages at critical facilities such as the Health & Wellness Center, Administration Buildings, and Wastewater Treatment Plant



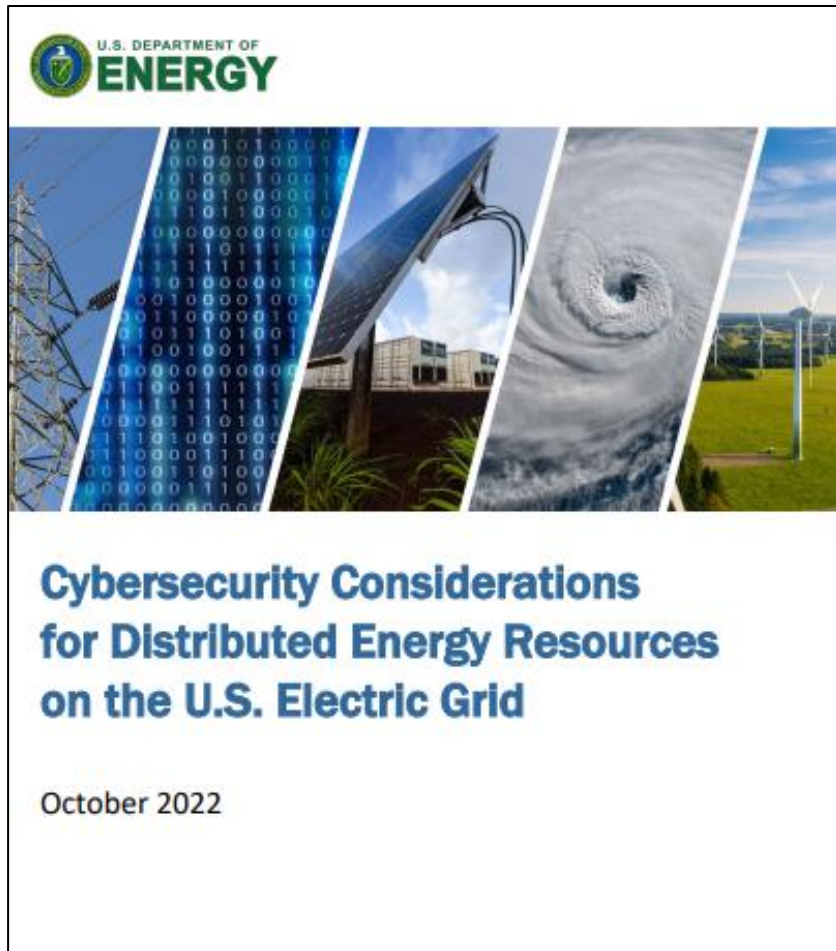
Ishkonige Nawadide Solar Microgrid Project



Photo from Daniel Wiggins, Jr.

- \$2 million grant from DOE Indian Energy installed 500k Solar and more than 1000 kwh of storage, linked critical loads.

Cybersecurity Reports



[Link to DER Cybersecurity Considerations Report](#)

Electrical Distribution System Congressional Report In-Progress

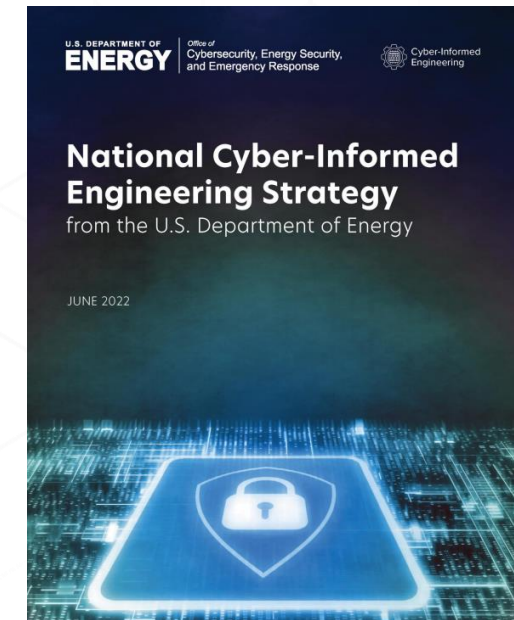
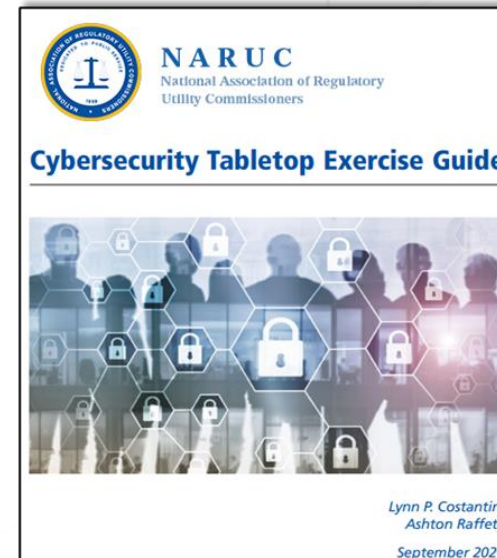
- CESER is working with NREL on a Report to Congress authorized in IIJA Section 40121.
- The report will assess the priorities, policies, procedures and actions needed to take to enhance the cybersecurity of the electrical distribution system.
- CESER and NREL convened a stakeholder information sharing session that included input and participation from federal agencies, state regulators, and industry stakeholders.

CESER's Cybersecurity Resources

Tools and Technology



Capacity Building



CESER Supported Resources



State Action Guide for Energy Resilience Projects Under FEMA's Building Resilient Infrastructure and Communities (BRIC) Program and Other Hazard Mitigation Assistance (HMA) Programs

Quick Guide

November 2022



U.S. DEPARTMENT OF
ENERGY Office of
Cybersecurity, Energy Security,
and Emergency Response

Microgrids: State Policies to Bolster Energy Resilience



Introduction

The United States faces a growing threat from natural disasters and energy infrastructure is in the line of fire. The electric grid is considered especially important because power is required to maintain the functionality of most critical infrastructure sectors—those deemed vital to the economy, public health and safety.

The threat from nature disasters has grown in intensity and frequency. The previous decade was far and away the most destructive since the federal government began tracking these events in 1980—both in terms of the frequency of events and their destruction. In 2021 alone, there were 20 separate “catastrophic disasters,” causing total losses of nearly \$180 billion.

State Governance, Planning, And Financing To Enhance Energy Resilience

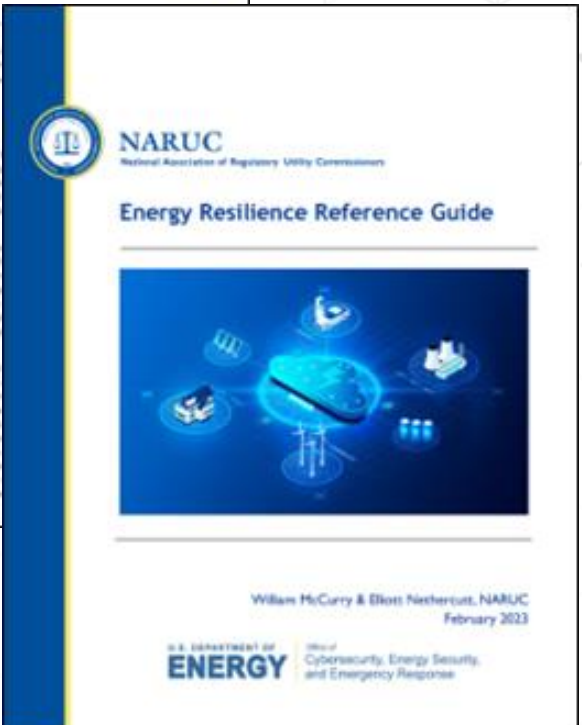
This guide provides examples of state-wide resilience consultations, resilience planning, organizational funding and financing options across

Introduction

From 2011 to 2020, the United States faced an average cost of \$12 billion. Beyond infrastructure, and particularly major natural disasters can increase energy costs, require expensive repairs and improvements. For the guide, NARUC and are defining resilience as the ability to withstand disasters, recover, and restore high quality and to a more improved state.

There is energy infrastructure are not just physical. Cyber attacks on businesses \$1.5 billion in 2019. Energy companies are the third most targeted of cyberattacks, just behind the manufacturing and financial sectors, experiencing 11.1% of all cyberattacks in 2020. Through or both, many of these attacks did not affect energy supply or delivery. 2021 Cyber Threat Intelligence report, which noted the full-scale attacks on the East Coast, underscores the potential severity of the risk to the energy sector.

The costs and impacts of disasters affecting energy infrastructure are not felt evenly across an economy or population. Communities of lower income communities, and communities on the front lines of climate change tend to bear a disproportionate burden in terms of costs, time, resources needed to return to normalcy, health impacts, and loss of lives. Natural disasters and malicious attacks become more frequent and more powerful to already disadvantaged communities and people, some shifting attention away from emergency planning to systems made vulnerable to an incident. Energy resilience planning, however, must go beyond, as in meeting to hazard mitigation costs to dollars for recovery.



[SLTT Program Resource Library | Department of Energy](#)

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U.S. DEPARTMENT OF
ENERGY

Office of
Cybersecurity, Energy Security,
and Emergency Response



Overview: *State Microgrid Policy, Programmatic, and Regulatory Framework*

Kelsey Jones, Senior
Program Manager, NASEO

State Microgrid Policy, Programmatic, and Regulatory Framework

October 4, 2023

Kelsey Jones, Senior Program Manager, NASEO

Photo Courtesy of RL Martin



State Microgrid Policy, Programmatic, and Regulatory Framework (August 2023)



NARUC
National Association of Regulatory Utility Commissioners



**State Microgrid Policy, Programmatic,
and Regulatory Framework**
NASEO-NARUC Microgrids State Working Group



Kelsey Jones, NASEO
Will McCumy and Kiera Zitelman, NARUC
August 2023



NASEO
National Association of
State Energy Officials

- High level of interest from policymakers in resilience investments
- PUCs and State Energy Offices tasked with translating into programs, policies, rules, and regulations for microgrids
- *Framework* provides examples of State Energy Office and PUC approaches, highlights common steps and challenges, and discusses unique responsibilities
- For PUCs and State Energy Offices: support awareness of microgrid efforts in other states, exchange best practices
- For stakeholders: understand the role of PUCs and State Energy Offices in designing and implementing programs and regulations

Legislative Activity

- California SB 1339
- Colorado HB 22-1249, HB 22-1013
- Oregon HB 2021
- North Carolina SB 509

Programs may also advance without legislative activity, under existing PUC / State Energy Office scopes of authority

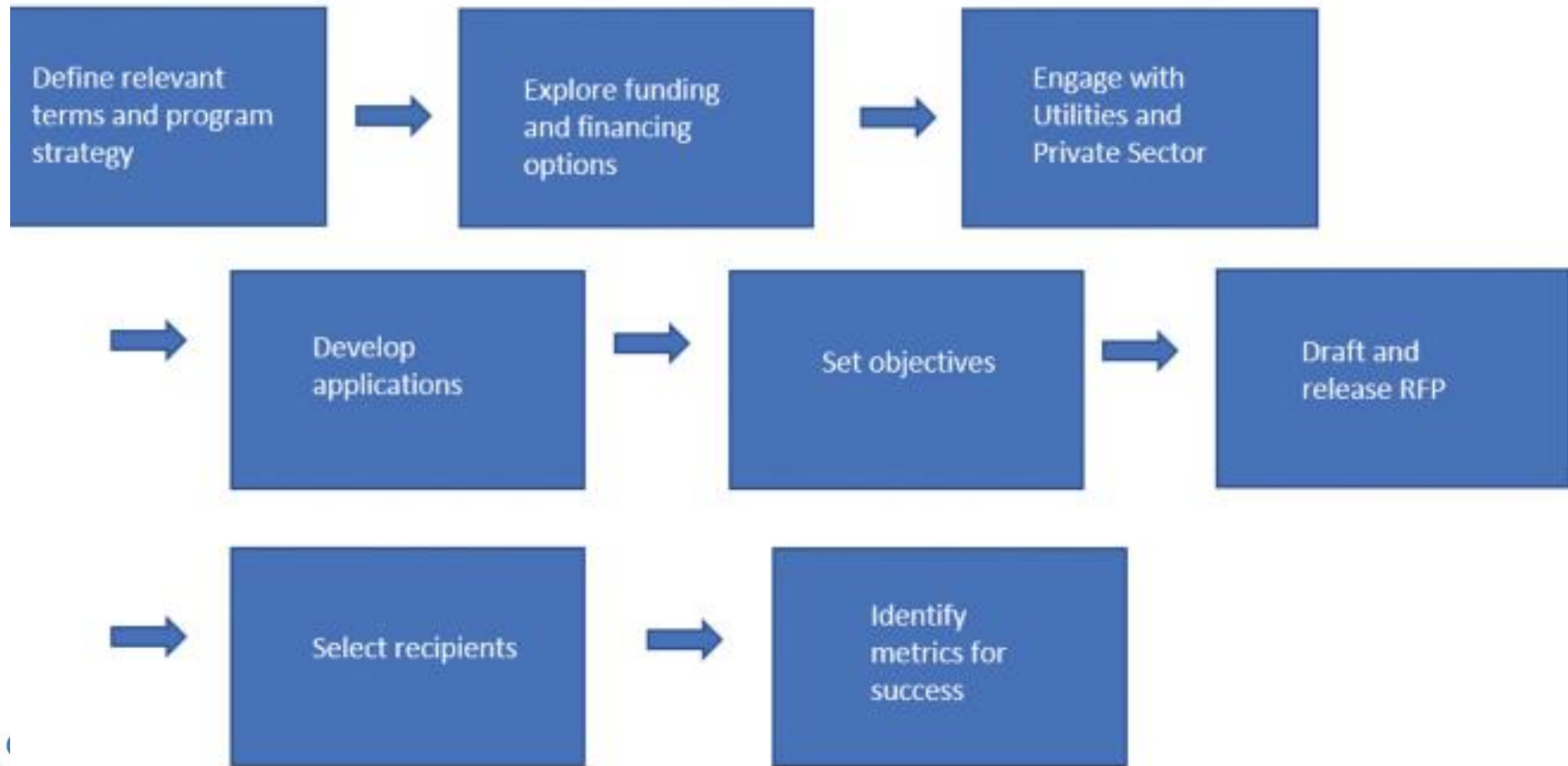
Starting Points

Stakeholder
engagement

Technical
assistance

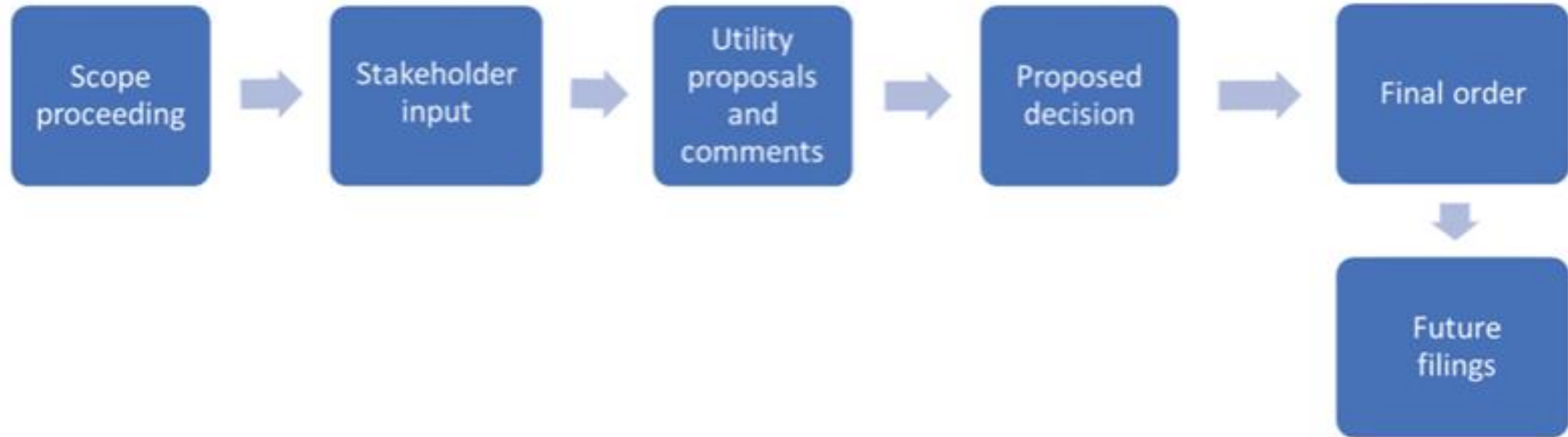
State Microgrid Policy, Programmatic, and Regulatory Framework (August 2023)

Figure 1: Example - State Energy Office Steps for Developing a Microgrid Program



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Figure 2: Example Regulatory Process

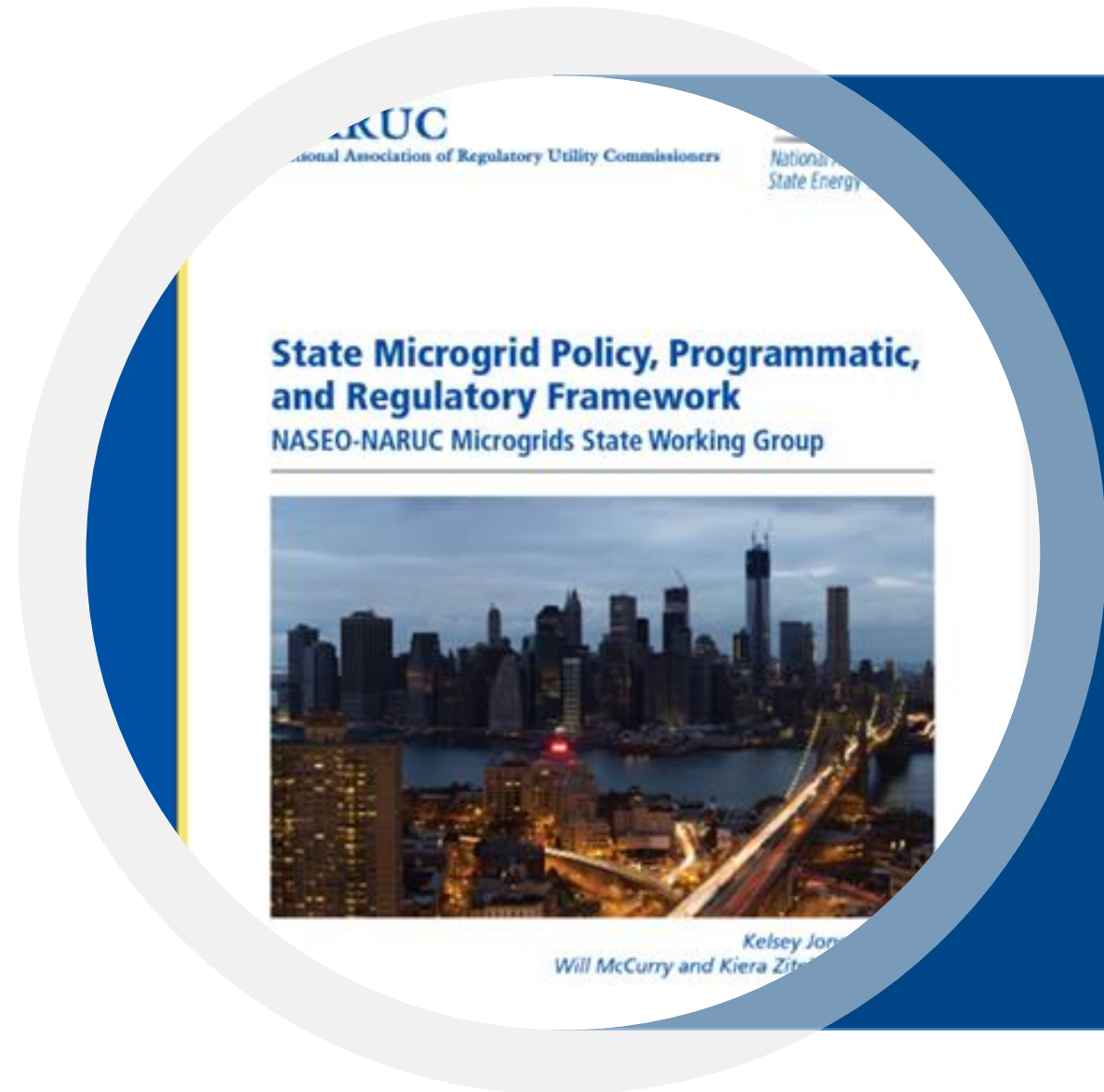


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Access this publication here:



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State Action Planning Workshop/Working Lunch



Barriers and Challenges to Implementing Microgrids

Regulatory/Legislative

- Prohibitions or complications for a multi-customer microgrid considered “public utility”
- Regulatory structures that support microgrids
- Incorporating microgrids in utility planning
- Defining and incorporating equity and EJ goals into microgrid development

Financial/Economic/Business

- Identifying and valuing the benefits that microgrids provide
- Ownership and operational models that align incentives and compensation to utility, developer, host, ratepayers, and society
- Optimizing the capital stack
- Leveraging public funding for microgrid projects that may have private components

Operational/Administrative

- Moving from pilot or “one-off” projects to replicable models
- Progressing from feasibility studies to built projects
- Siting
- Navigating utility concerns regarding safety and cybersecurity



Thank you!

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