



Grid Deployment Office

Customized Help and Expertise on Energy Resilience for States (CHEERS)

Grid Resilience Technologies for Municipal Utilities and Cooperatives in Illinois













Grid Resilience Priorities Discussion

Questions and Next Steps

Welcome and Introductions



Introductions

Converge Strategies

Erica Blevins, State Lead Matthew Aronoff, State Support Bella Briseño Elalfi, State Support Tom Calvert-Rosenberger, CHEERS Project Manager Adair Douglas, CHEERS Workshop Lead

CORN BELT ENERGY



State of Illinois

Claire Brinley, Program Manager, IFA/Climate Bank **Tanya Rabczak,** VP Legal, Regulatory and Policy, The Accelerate Group **Rebecca Goold,** President & Principal Consultant, 2R Group









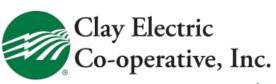












A Touchstone Energy" Cooperative ស





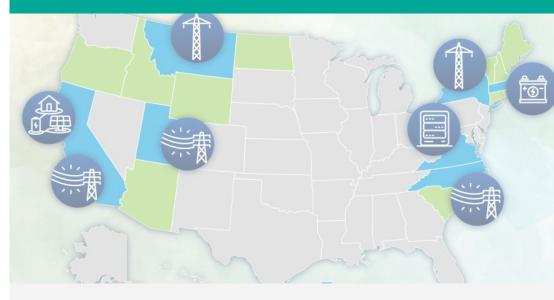


Customized Help and Expertise on Energy Resilience for States (CHEERS)

MISSION



CHEERS is a **community of practice** delivering grid resilience technical assistance to states. PROGRAMMING



CHEERS convenes an **annual Cohort** of states focused on implementing Bipartisan Infrastructure Law (BIL) Section 40401(d) ("Grid Resilience Formula Grants").



COHORT VALUE



States participating in CHEERS will have **access to tools**, **learning opportunities**, **a network of peers** from across the U.S., and **workshops** to enhance their own individual grid resilience projects and funding opportunities.

CHEERS Technical Assistance for Illinois

JAN - APR 2025



RESEARCH GRID RESILIENCE TECHNOLOGIES

Identify technologies of interest for municipal utilities and cooperatives.

Conduct grid resilience technologies research, highlighting the 40101(d) program. MAY 2025



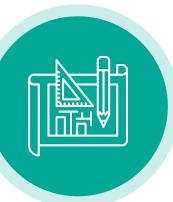
DEVELOP RESILIENCE PRIORITIES

Convene utilities from across the state to share funding opportunities and grid technology research.

Collectively identify resilience priorities and project ideas.



JUNE - JAN 2025



BUILD OUT 40101(d) SUPPORT MATERIALS

Conduct additional needs assessments, develop support materials for 40101(d) applicants, and collaborate with IFA on next steps.

Workshop Objectives

Share information on grid resilience programs and technologies with cooperatives and municipal electric utilities in Illinois.

Obj. 2

Obj.

Facilitate conversations on the resilience needs of municipal utilities and cooperatives and how the state can support the planning and execution of 40101(d) funding.

Obj. 3

Identify potential grid resilience projects eligible for the 40101(d) program that address resilience concerns in Illinois.



Workshop Tools Zoom

Tips for Workshop Engagement

Raise Hand during large group Q&A.

Use Chat for questions and comments outside of formal Q&A.

Mute Mic when you are not talking.

Use Camera to create an atmosphere of trust and relationship-building.

Calendar Invite has Zoom information to rejoin if you lose connection.



NON

IFA on Round 2 Funding



ILLINOIS FINANCE AUTHORITY

Grant Funding Opportunities May 20, 2025

ILINOIS CLIMATE BANK

Agenda:

- Climate Bank Overview
- 40101d Grid Resilience Formula Grants NOFO
- Small Utility Clean Energy Planning Grants NOFO
- Q&A
- Other IFA Resources



ts NOFO rants NOFO



THE IFA WAS DESIGNATED AS THE **CLIMATE BANK BY CEJA**



CLIMATE BANK PURPOSE

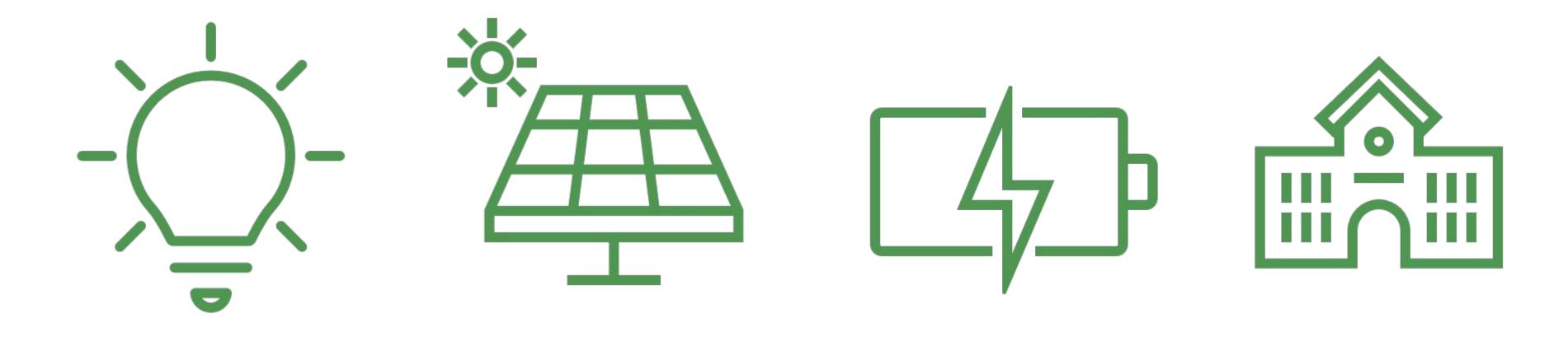
(1) the distribution of the benefits of clean energy in an equitable manner; (2) making clean energy accessible to all; and (3) accelerating the investment of private capital into clean energy projects in a manner reflective of the geographic, racial, ethnic, gender, and income-level diversity of the State. - Climate & Equitable Jobs Act, 2021 (20 ILCS 3501/850-15)

LLINOIS

Introducing the Illinois Climate Bank Website

The Illinois Climate Bank website is now live! Visit our website to learn more about these grant opportunities and additional financing programs supporting clean energy, decarbonization, and climate resilience across the state.

https://illinois-climate-bank.web.app/







40101(d) GRID RESILIENCE FORMULA GRANTS Program



40101(d) – Grid Resilience – Overview

GRID RESILIENCE 40101(d) FORMULA GRANTS

US DOE award \$40 M to State of Illinois over 5 years. \$24 million has been awarded for Y1, Y2 and Y3.



- **Grants:** IFA/CB will award grants to improve reliability and resilience
- Priority: Illinois Equity Investment Eligible Communities (EIEC <u>map</u>)





OPPORTUNITY:

- NOFO#2 open for pre-applications - due June 30
- IFA website
- NOFO •

Submission:

File pre-application through AmpliFund/GATA portal

40101(d) – Grid Resilience – NOFO#2

Available Funding: \$14,400,000

Expected amounts of individual awards: \$150,000 - \$8,000,000 per project.

- Project Period: Winter 2025-2032
- **Type:** Grant
- **Cost Match**:
 - Small utilities match 1/3 + 15%;
 - Large utilities and other entities match 1:1 + 15%

Small Utility

• sells more than 4,000,000 MWh electricity per year





Pre-applications due June 30, 2025

Example: if you are requesting \$1 million in federal funding for your project, and

Small Utility: provide a non-federal cost match of \$150,000 (15%) plus \$333,333 (1/3) for your project, so your total cost match would be \$483,333. Your total project value would be \$1,483,333.

Large Utility or any other Eligible Entity that is not a Small Utility: provide a non-federal cost match of \$1,150,000 (115%). Your total project value would be \$2,150,000.

Eligibility

Eligible Activities

- A. Weatherization (technologies and equipment)
- B. Fire-resistant technologies and fire prevention systems
- C. Monitoring and control technologies
- D. Undergrounding of electrical equipment
- E. Utility pole management
- F. Power lines relocation or reconductoring
- G. Vegetation and fuel-load management
- H. DER construction for enhancing system adaptive capacity

during disruptive events, incl.: a. microgrids; and

b. battery-storage subcomponents

- I. Adaptive protection technologies
- J. Advanced modeling technologies
- K. Hardening of power lines, facilities, substations, of other systems
- L. Replacing old overhead conductors and underground cables
- M. Other measures (as determined or approved by US DOE)



Non-Eligible Activities

Construction of a

Α.

Β.

- a. new electric generating facility
- b. large-scale battery-storage facility that is not used for enhancing system adaptive capacity during disruptive events

Cybersecurity

Non-Eligible Costs

•acquisition of land or easements

- federal funding or property as cost matchlobbying, union fees,
- •foreign travel, work performed outside

Eligibility

Eligible Entities

An alactric grid anarator	
 An electric grid operator, An electricity storage operator, 	wor
	арр
 An electricity generator, 	reci
• A transmission owner or operator,	•
 A distribution provider, 	•
 A fuel supplier, and 	•
 Other relevant entity, as may be determined 	•
by the Secretary of Energy.	•



Other Relevant Entity

- ois requested in its application and will rk with the Secretary of Energy to prove the following additional eligible ipients:
- Non-profit organizations,
- Units of local government,
- Critical facilities,
- Illinois Municipal Utilities Association (IMUA)
- Association of Illinois Electric
- Cooperatives (AIEC) as eligible recipients

Prioritized Project Types



COMMUNITY RESILIENCE HUBS

Community gathering places that can provide life-essential or other support services to communities during extreme weather and grid-related events.



CRITICAL FACILITY MICROGRIDS

Essential public services that serve large populations that would pose risks to public health & safety if they lost power for extended durations.

EMERGENCY EQUIPMENT SHARE

Support efforts of small municipal and co-op utilities to prepare for and quickly recover from storms by creating a hub of easy-to-access essential equipment that otherwise has long lead times.





COMMUNITY-DRIVEN INITIATIVES

Comprehensive efforts that address resilience needs of a community, that is driven by local community planning efforts. This could include seed funding for early-stage planning.

REPLICABLE INNOVATIVE PILOTS

New technology or implementation approaches that address grid resilience needs in new ways that would benefit for the deployment of replicable pilot projects and knowledge-sharing.

Budget Prioritization

To ensure that funding is allocated in accordance with the stated objectives, IFA/CB will follow the following matrix in selecting projects:

- Small Utilities that invest in EIECs
- 2. Other Small Utilities
- 3. Other eligible entities that invest in EIECs
- 4. Other projects (not specifically designed to benefit EIECs)



Simplified Application Process

Pre-application

Full Application (pre-selected projects)

- Register in GATA/AmpliFund
- Apply in AmpliFund: ullet
 - Applicant's Info (populate lacksquarefields)
 - 5-page Project Narrative ullet(upload)
 - Metrics, Timelines, \bullet Milestones (upload)
 - Budget (upload) lacksquare
 - Certify Compliance \bullet (populate fields)

- Register in SAM.gov
- Submit additional forms in AmpliFund:
 - Funding Application Form •
 - Cost-Match commitment ullet
 - Environmental Questionnaire
 - Waivers (foreign work, ulletBABA, etc.) if apply
 - USDOE Secretary "Other ● entity" designations
 - **DOE** Notification ullet



Additional Funding Cycles (NOFOs)

- May open for remaining funding
- First round applicants will receive feedback on resubmitting applications

Project Narrative

- 1. **Project Executive Summary.** What are objectives, activities, and outcomes?
- 2. **Project Location.** Where located and what communities benefit?
- 3. **Anticipated Customer Benefits and Equity.** Anticipated customer benefits, for which communities, and how it will reach historically underserved populations.

- 5. **Project timeline.** Overview in narrative and fill out in spreadsheet.
- 6. **Performance Measurement.** Overview in narrative and fill out in spreadsheet.
- 7. **Project Costs**. Overview in narrative and fill out budget spreadsheet.
- 8. Workforce and Labor standards. Describe proposed strategy.
- 4. Funding Objectives. How it meets the funding objectives, why is it not funded.

Tip: Focus on the description of the project benefits and demonstrate the likelihood of your ability to achieve them as a direct (or substantial) consequence of proposed activities. Describe how you will measure outcomes.



Reporting

Quarterly

- Spending
- Build Metrics
- Milestones
- Project Risks



Annually

Impact Metrics Training Workforce Development Community Outreach

Reporting Metrics: Quarterly Build Metrics

Miles of new distribution lines Miles of distribution lines undergrounded Miles of distribution lines of vegetation clearing Miles of distribution lines reconductored Distribution modifications Miles of distribution lines with other upgrades (specify in "Type" field what was upgraded) Number of distribution poles inspected Number of distribution poles replaced Number of distribution poles with other upgrades (specify in "Type" field what was upgraded)

Number of substations relocated Number of substations with added physical protection Number of substations with added sensors/monitors Substation Number of substations with elevated equipment **Modifications** Number of substations with upgraded equipment Number of substations with other upgrades (specify in "Type" field what was upgraded) Number of substations with redundant equipment





Reporting Metrics: Quarterly Build Metrics

Monitoring and control devices	Number of fault location, isolation and service restoration Number of other monitoring/metering devices installed Number of other protection or control devices installed
Mobile Units	Voltage rating of mobile substation (kV) Voltage rating of mobile transformers (kV)
Fuel supply	Percent increased energy storage capacity in reserve Percent increased energy storage capacity in reserve Percent increased energy storage capacity in reserve
Restoration equipment	Number of transportation assets purchased to assist equipment in "Type" field) Number of communications assets purchased to assi equipment in "Type" field) Number of other assets purchased to assist with pow "Type" field)
operating	Percentage of system migrated into new software sys "Type" field OMS, ADMS, SCADA, inventory manage other)



- ration (FLISR) devices installed
- ed
- ed

- ve fuel diesel
- e fuel propane
- e fuel gasoline
- with power restoration (specify
- sist with power restoration (specify
- ver restoration (specify equipment in
- stem (specify software system in ement, workforce management, or

Reporting Metrics: Quarterly Build Metrics

Capacity rating of hardened generation (MW) - photovoltaics Capacity rating of hardened generation (MW) - wind Capacity rating of hardened generation (MW) - diesel Capacity rating of hardened generation (MW) - natural gas Capacity rating of hardened generation (MW) - coal Capacity rating of hardened generation (MW) - nuclear Capacity rating of hardened generation (MW) - hydropower Average annual electricity produced of hardened generation (MWh) - photovoltaics Average annual electricity produced of hardened generation (MWh) - wind Average annual electricity produced of hardened generation (MWh) - diesel Average annual electricity produced of hardened generation (MWh) - natural gas Average annual electricity produced of hardened generation (MWh) - coal Average annual electricity produced of hardened generation (MWh) - nuclear Average annual electricity produced of hardened generation (MWh) - hydropower Percentage increase in pole inventory

Percentage increase in transformer inventory Inventory Percentage increase in equipment inventory (specify type of equipment in "Type" field) Expected lifetime of new equipment (specify equipment in "Type" field) Other (insert necessary info in "Type" field)

Hardened

Generation



Reporting Metrics: Annually Impact Metrics

	Largest outage cause
	Number of outages
	Hours to repair outages
	System Average Interruption Duration Index (SA
	Customer Average Interruption Duration Index (C
Outages	System Average Interruption Frequency Index (S
	Customer Average Interruption Frequency Index
	Number of individual customers with more than
	Number of individual customer outages that exte
	Number of critical services with outages that externation
	Hours of unmet load
	Average hours to restore 50% of customers
	Average hours to restore 90% of customers
	Average hours to restore 100% of customers
Damages	Outage recovery cost (\$)
	Hours line loading exceeded normal rating
	Number of poles damaged (specify pole type in
	Feet of conductor replaced (specify conductor ty
	Number of electrical components damaged (spe



AIDI) (CAIDI) (SAIFI) x (CAIFI) 5 interruptions end beyond 24 hours tend beyond 24 hours

"Type" field") ype in "Type" field) ecify in "Type" field)

Reporting Metrics: Annually Impact Metrics





- emergency centers benefitted by
- ices benefitted by project (specify
- fitted by project (specify service in
- es benefitted by project (specify
- fitted by project (specify service in
- tted by project (specify service in

Pre-applications Evaluation

Min. DOE Requirements

a) Result in CommunityBenefits (as discussed further below);

b) Be located in Illinois; and

c) Include required Cost Match

IL Priority Alignment

- Alignment with the Program
 Objectives & Metrics
- Expected impact on EIECs/DACs
- Expected Environmental/Public Health Benefits
- Contractor and Workforce Commitments

*Each category will be evaluated in the following three brackets: Poor (1-3 points), Fair (4-6 points), Strong (7-10 points), based on the description of the benefits in the project pre-application and the likelihood of the applicant's ability to achieve them as a direct (or substantial) consequence of the proposed project activities and to successfully measure these benefits. Project must also have **at least 7 points in Resilience category!**



Community Benefits

Must score at least 30/50 points with 10 max* points in each of the five Program Objectives categories

- 1) Resilience (7 pts a must)
- 2) Environment
- 3) Equity
- 4) Affordability
- 5) Safety

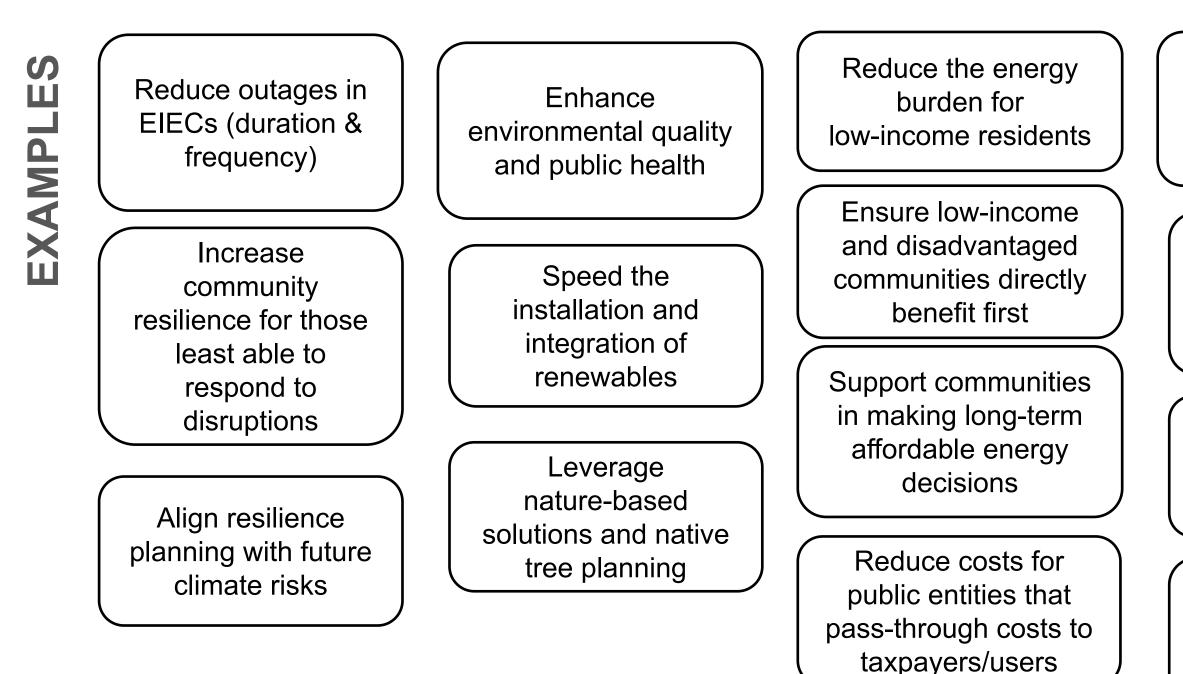
Resilience Program Objectives

OBJECTIVES

RESILIENCY

ENVIRONMENT

AFFORDABILITYTY





EQUITY

SAFETY & WORKFORCE

Increase access / opportunities for EIECs residents & businesses in

Build awareness and trust in grid/energy systems in frontline and EJ communities

Support communities and small utilities that lack capacity

Ensure equity in outage management processes, as well as planning Ensure the safe operation of the energy system

Prepare the workforce for emerging technology opportunities

Address health & safety limitations on building stock

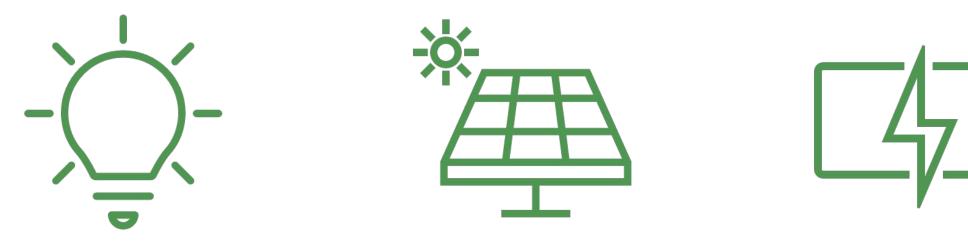
Protect homes from in-home hazards during flooding/disasters

Contact for Further Questions - Small Utility Planning

Climate Bank's website:

- IL 40101d Grid Resilience https://illinois-climate-bank.web.app/financing-programs/municipal-cooperative-utilities/40101d-g rid-resilience/
- Illinois Small Utility Clean Energy Planning: \bullet https://illinois-climate-bank.web.app/financing-programs/municipal-cooperative-utilities/clean-ene rgy-planning/

If you have further questions, please send them to <u>ClimateBank@IL-FA.com</u> by the date that questions are closing, listed in the program NOFO.















Other IFA Resources



Private Activity Bonds

IFA issues tax-exempt qualified private activity bonds for 501(c)(3) organizations and other conduit borrowers. Borrowers work with banks, underwriters, or placement agents of their own choosing.

State Small Business Credit Initiative

IFA provides low-cost financing to small businesses for eligible climate-related projects.

Commercial Property Assessed Clean Energy Bonds

IFA has statewide authorization to issue bonds and notes to fund eligible building improvements in any PACE area. Eligible improvements include energy efficiency, renewable energy, water use, and EV charging stations. Projects located in Cook County are not currently eligible.







Thank You!

If you have any other questions, please reach out to us at:

Claire Brinley, Program Manager at IFA/CB Email: <u>ClimateBank@IL-FA.com</u>

Tetyana Rabczak, VP Legal at The Accelerate Group Email: <u>Tanya@TheAccelerateGroup.com</u>

Rebecca Goold, President at 2R Group Email: <u>Rebecca@the2rgroup.com</u>





Grid Resilience Technologies

MO



35

<u>All Technologies Fundable Under 40101(d)</u>

Types of resilience investments permitted under the **Grid Resilience Formula Grant program**

Potential Investments include:

- utility pole management,
- hardening of power lines, facilities, substations, of ٠ other systems,
- undergrounding of electrical equipment, ٠
- replacement of old overhead conductors and ٠ underground cables,
- relocation of power lines or reconductoring of power ٠ lines with low-sag, advanced conductors,
- vegetation and fuel-load management,

- weatherization technologies and equipment,
- fire-resistant technologies and fire prevention systems,
- monitoring and control technologies,
- use or construction of distributed energy resources for enhancing system adaptive capacity during disruptive events, including microgrids, and batterystorage subcomponents,
- adaptive protection technologies, and
- advanced modeling technologies ٠

Grants under Section 40101(d) CANNOT be used for:

Construction of a new electric generating facility or large-scale battery-storage facility that is not used for enhancing system adaptive capacity during disruptive events; or cybersecurity.







Monitoring and Control (Smart Grid Equipment)

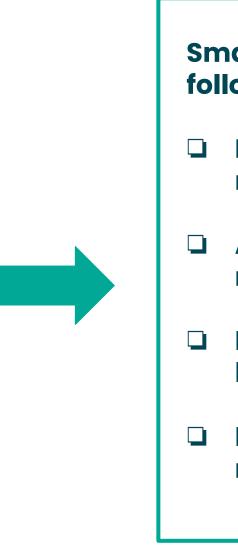
Technology Overview

A group of technologies that aim to monitor, control, and provide real-time insights into the electric grid.

Problem

Are you experiencing the following:

- Unrealized potential of existing infrastructure assets
- Current or looming electrification growth
- Lack of visibility into customer or member trends
- Challenges controlling distributed energy resources
- Lag time in detection of faults and equipment failure







Solution

Smart Grid Equipment provides the following resilience benefits:

- Real time monitoring and sensing to redirect load
- Automated fault detection and restoration
- Improved outage response with precise location and cause identification
- Integration of distributed energy resources for alternative generation

Monitoring and Control (Smart Grid Equipment)



40101(d) Applicability

Takeaway: an all-inclusive approach.

Examples of these technologies include:

- Protective relays and breakers
- Digital relays, smart reclosers, and early fault detection technologies
- Supervisory control and data acquisition (SCADA)
- Advanced metering infrastructure (AMI)
- Fault Location, Isolation, and Service Restoration (FLISR)
- Volt/VAR Optimization (VVO) Systems

Know Before Developing



Smart grid equipment is likely connected to the broader 'Internet of Things', which increases a threat surface area for attacks.



Smart grid equipment will only be effective if it can be processed with a strong fiber broadband network.



There is a learning curve to correctly use the equipment to avoid an 'information rich, data poor' scenario.



Requires wide-scale investments in grid sensors, systems integration, and communications infrastructure.





CYBERSECURITY RISKS

SUPPORTING INFRASTRUCTURE

NEW SKILLSET

HIGH COSTS

Subcomponents: Monitoring and Control Technologies

SCADA	Enhances grid resilience by providing rec automation of grid components, enabling isolate problem areas, and reroute powe
FLISR	Enhances grid resilience by enabling rap on the distribution network, minimizing th rerouting power around affected areas.
AMI	Provides granular, real-time data on elec quality across the network, allowing utiliti more quickly. This allows for faster restore
TripSavers	A type of recloser or automated fuse that attempts to restore power by interrupting avoiding permanent outages for momen
Intellirupter	A more advanced smart switch or reclos real-time communication, and integratic systems. It can coordinate with FLISR syst



eal-time monitoring, control, and ng operators to quickly detect faults, er to minimize outages.

pid identification and isolation of faults the impact of outages by automatically

ectricity usage, outages, and power ities to detect and pinpoint outages pration and reduced downtime.

at detects temporary faults and ng and then reclosing the circuit, entary issues.

ser, capable of precise fault detection, ion with distribution automation stems for intelligent decision-making.

Undergrounding Transmission and Distribution Lines

Technology Overview

The relocation of parts of electric power transmission and distribution systems from above ground to below ground.

Problem

Are you experiencing the following:

- Frequent outages due to natural hazards
- Existing or pursuing system monitoring capabilities
- Conducive environmental and subsurface conditions (not prone to flooding or geological activity)
- Community support for undergrounding





Solution

Undergrounding provides the following resilience benefits:

- Reduce vulnerability to disruption from extreme weather and wildfires Reduce overall system restoration times and interruption durations Reduce risks of damage from fallen overhead lines Improve aesthetics and garner community support
- Lower failure rates

Undergrounding Transmission and Distribution Lines



40101(d) Applicability

Examples of technologies include:

- Insulating materials
- Trenching construction technique
- Tunneling construction technique



Know Before Developing









HIGH COSTS

Requires a higher direct cost (materials, labor, administrative) of underground lines relative to overhead.

COMPLEX REPAIRS

Underground repairs generally take longer because accessing lines and locating faults is more difficult.

SHORTER LIFETIMES

Lifetimes can be 20-60% shorter due to excessive heat buildup and susceptibility to moisture.

NATURAL HAZARDS

Depending on the location, may be at risk from flooding and earthquake damage.

Preventive and Predictive Maintenance Technologies

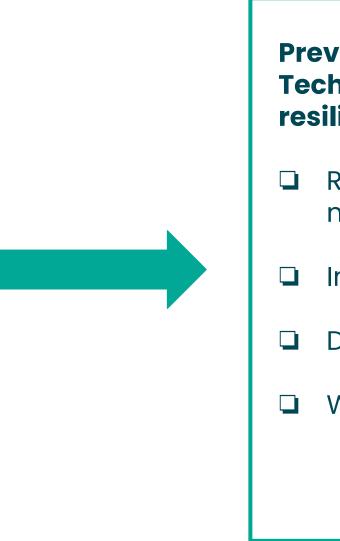
Technology Overview

Preventative and predictive maintenance technologies reduce the impact and occurrence of vegetation-related disruptions to the power system.

Problem

Are you experiencing the following:

- Numerous hazards to powerlines
- Increased maintenance costs
- Damaged, unhealthy or dead trees surrounding critical lines
- Prevalence of fast-growing invasive species







Solution

Preventative and Predictive Maintenance Technologies provide the following resilience benefits:

- Reduce outages across a wide range of mild to more extreme events
- Improve reliability
- Decrease maintenance costs
- Wildfire prevention

Preventive and Predictive Maintenance Technologies



40101(d) Applicability

Examples of technologies include:

- Tree pruning
- Tree removal
- Vegetation control
- Integrated vegetation management
- Widening rights-of-way
- "Enhanced" vegetation management

Know Before Developing



These are not always well-defined and may be subject to dispute by property owners.









UTILITY RIGHTS-OF-WAY

COMMUNITY SENTIMENTS

Tree measures may have aesthetic impacts that cause community resistance to them being undertaken.

Microgrids

Technology Overview

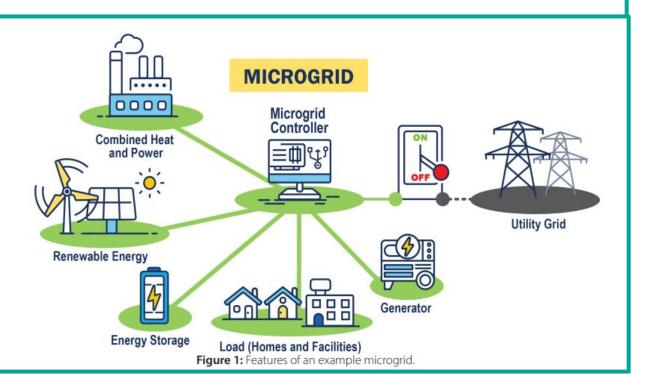
A group of interconnected loads and distributed energy resources within clearly defined electrical boundaries that acts as a single controllable entity with respect to the grid.

Problem

Are you experiencing the following:

- Frequent outages due to load shedding from your transmission provider
- Have a specific load within your service territory that cannot experience outages (critical infrastructure)
- Challenges meeting load demands during peak conditions
- Poor reliability rates

Mic foll L





Solution

Microgrid Equipment provides the following resilience benefits:

- Uninterruptible Power
- Grid Flexibility
- **Diverse Energy Sources**

Microgrids



40101(d) Applicability

Examples of technologies include:

- Batteries that will be used to supply electricity during disruptive events
- Equipment or management systems required to integrate existing generation sources and/or a battery into a microgrid
- Microgrid controller
- **Electric cables**
- Distribution equipment





Microgrid loads should be clustered so the entire distribution network is not duplicated. For example, a campus, business park, or cluster of buildings.



Utilities should work with customers/members to identify critical loads and work with critical load owners to find the best energy support option for the site.



Like any energy infrastructure, a microgrid requires bandwidth, expertise, and resources to keep it operational once its up and running.



Know Before Developing

HIGH COSTS

Microgrids can range from \$2 - \$5M per megawatt to develop. Microgrids can provide high ROI during times of need, but be aware of high up front and O&M costs.

IDENTIFIED LOAD GEOGRAPHY

DETERMINING CRITICAL LOADS

OPERATIONS AND MAINTENANCE

Contact Us







ERICA BLEVINS Technical Analyst eblevins@convergestrategies.com

TOM CALVERT-ROSENBERGER

Director

tcrosenberger@convergestrategies.com

MATT ARONOFF Senior Associate

maronoff@convergestrategies.com









ADAIR DOUGLAS Director

adouglas@convergestrategies.com

BELLA BRISEÑO ELALFI Associate

bbrisenoelalfi@convergestrategies.com