Think Microgrid

STATE SCORECARD 2024

www.thinkmicrogrid.org
Cameron Brooks, Executive Director, cameron@thinkmicrogrid.org
Cole Triedman, Policy Director, ctriedman@thinkmicrogrid.org

TABLE OF CONTENTS

INTRODUCTION

In 2035, microgrids will be the core building block of a modern grid, in which the U.S. Department of Energy (DOE) has envisioned that 30-50% of electricity generation will be served by distributed energy resources (DER). Microgrids have a unique role in transforming the electric grid. The nation simultaneously faces increasing threats from extreme weather events and opportunities to electrify entire sectors of the economy and address ongoing inequities in energy access. Microgrids, which can aggregate many of the most profound capabilities DER has to offer, provide real and immediate solutions to a broad range of challenges.

Realizing the DOE's vision requires deliberate effort and thoughtful action across states and actors. Regulators, policymakers and industry stakeholders must create the appropriate structures to leverage market activity, encourage diverse investments and respond to the changing demands of consumers, companies, and communities. The DER paradigm shift requires policymakers to remove existential barriers and support a self-sustaining market. In many contexts, microgrids are helping realize this vision today, but the country has a long way to go.

Think Microgrid's 2024 State Scorecard expands upon the framework established by the 2023 State Scorecard. It incorporates new policy activity from utility commissions, legislatures, and state agencies across the country, highlighting policy successes while calling attention to the continued barriers to market enablement. Overall, the Scorecard depicts a landscape where states are incrementally driving progress, but also a landscape that remains largely unchanged.

The Scorecard is intended to provide both an informed assessment of where the country stands today and a roadmap to achieving a long-term policy vision supporting microgrid commercialization. Think Microgrid's research finds that even states that have taken dedicated approaches to microgrid policy and regulation have struggled to create attractive environments for diverse, scaled capital deployment. It suggests a clear need for state, community and industry leaders to identify and execute immediate and practical action today.

The Scorecard highlights notable new activities – while also depicting a landscape that remains largely unchanged

WHAT IS A "MICROGRID"?

Think Microgrid's 2024 Taxonomy Brief outlines a microgrid definition and classification methodology. Think Microgrid defines microgrids as intelligent aggregations of distributed energy resources (DERs) that can be coordinated to meet customer needs directly while supporting the operation of the larger grid as a single flexible and controllable entity. The core characteristics of this definition are aligned and complement the U.S. Department of Energy (DOE) and other authorities' definitions. There are three defining characteristics of a microgrid:

There are three defining characteristics of a microgrid:

1. INTERCONNECTED.

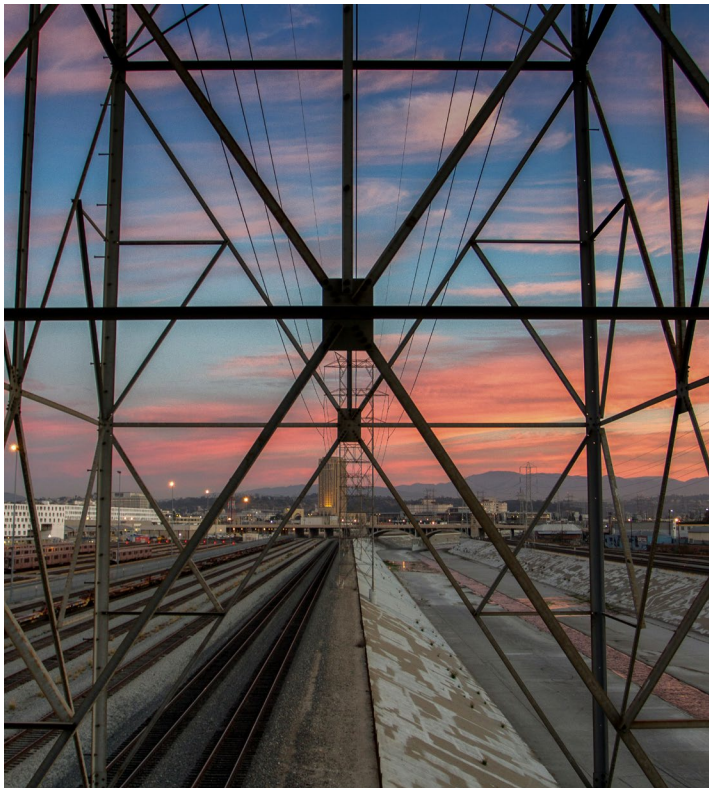
Microgrids represent a set of physically interconnected resources within a defined geography. Microgrids are interconnected to the larger grid at an identifiable point of interconnection (or "common coupling"), which is the interface between the grid operator and the customer.

2. INTELLIGENT.

Microgrids feature intelligent control systems that flexibly optimize energy demand and production. This intelligence allows the microgrid's component technologies to communicate flexibly and interactively with each other, orchestrating its internal resources and responding to grid signals. These capabilities distinguish microgrids from basic backup power systems.

3. INDEPENDENT.

Microgrids can seamlessly connect to and disconnect from the larger electric grid at its point of interconnection. This capability allows microgrids to provide resilience during network outages, price volatility, or other "black sky" events. In parallel, it enables microgrids to operate as flexible distributed energy and provide grid services under "blue sky" conditions and normal operations.



When the grid fails, microgrids can initiate island mode and supply electricity directly to critical loads or entire communities. During normal grid operations or grid-connected mode, microgrids can flexibly export power to the grid or reduce customer loads in response to real-time operational needs or grid conditions. This dual operational capability allows microgrids to support local energy needs and the entire grid system.

Think Microgrid's taxonomy classifies microgrids based on three basic characteristics: grid interconnection, customers, and ownership. **Grid interconnection** refers to where on the transmission or distribution grid a project is interconnected, measured by voltage. **Customers** distinguish between projects serving a single or multiple customers. **Ownership** distinguishes between the projects owned (or primarily owned) by private companies, public entities, and regulated utilities, recognizing that ownership models may be combined or otherwise nuanced. Various combinations of these classifications, or microgrid 'families', often correlate with standard microgrid use cases, which Think Microgrid defines to include:

1. INFRASTRUCTURE.

Load-intensive civic infrastructure including wastewater treatment plants, irrigation facilities, waste facilities, ports and transportation centers, and military bases.

2. INDUSTRIAL.

Load-intensive industrial facilities including manufacturing facilities, data and telecommunications centers, agriculture, and energy production.

3. UTILITY.

Utility facilities including substations, control centers, and remote loads (non-wires alternatives).

4. CIVIC SERVICES.

Buildings or campuses providing civic or critical services, such as police and fire stations, hospitals, community centers, libraries, prisons, and emergency response centers.

5. COMMERCIAL.

Commercial buildings or campuses including retail stores, shopping centers, offices, religious centers, hospitals, airports, and schools and universities.

6. RESIDENTIAL.

Residential neighborhoods and residential infrastructure, such as parks and transportation hubs.

Think Microgrid's Taxonomy Brief is a tool to define the microgrid landscape, which, as it scales, is increasingly moving from 'turnkey solutions' to standardization. The Taxonomy promotes shared language around microgrid characteristics. It also highlights how certain microgrid 'families' are flourishing while others face legal, market, or technological barriers. For example, multi-customer market segments are limited by state right-of-way laws, exclusive interconnection procedures, and uncertain or incomplete market access.

THE MICROGRID MARKET TODAY AND TOMORROW

Think Microgrid's research partner Wood Mackenzie maintains a national microgrid database and has leading visibility into domestic market trends, included related to asymmetric growth across microgrid families. Think Microgrid and Wood Mackenzie are working collaboratively to better understand the types of microgrids that can flourish in today's market and policy environments.

The domestic microgrid market continues to rapidly grow and diversify. The distribution of federal grants and tax incentives is significantly impacting the market. Meanwhile, customer demand is being dually driven by increasing heightening resilience needs and emergence of new customer classes, such as data centers. The microgrid market is as heterogeneous as ever, even as companies standardize and scale their approach to certain use cases. As the market evolves, growth is not occurring symmetrically – development in some microgrid 'families' is occurring rapidly in response to business and policy opportunities while others remain limited by various limitations.

Wood Mackenzie has updated its research and analysis since the 2023 Scorecard, illustrating new trends in the market. Wood Mackenzie analysis finds that US microgrid operational capacity reached 9 GW in 2024 Q3, following a 26% average annual growth rate since 2021, representing over 5,000 projects. 2024 has hosted the most domestic microgrid deployment to date with nearly 1000 MW installed.

Most projects deployed in 2024 were driven by reliability and resilience needs, consistent with the market historically. However, microgrids developed to defer transmission and distribution investments or integrate renewables and/or meet clean energy goals are occupying an increasing share of the landscape. Utilities incorporating microgrids into system planning and large-load prime power demand are driving new value stacks, with an average annual growth rate (AAGR) of 61% among utility-0wned projects.

Figure 1:

ANNUAL MICROGRID CAPACITY INSTALLED (MW)

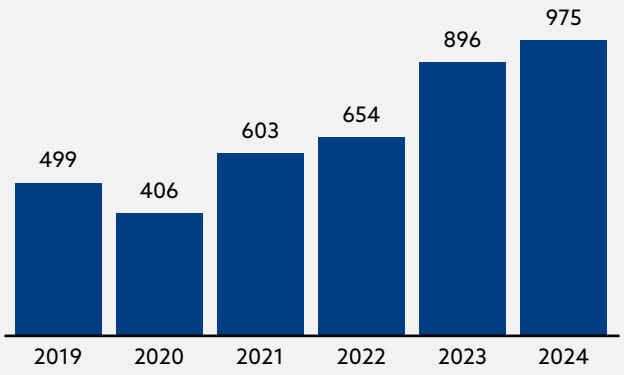
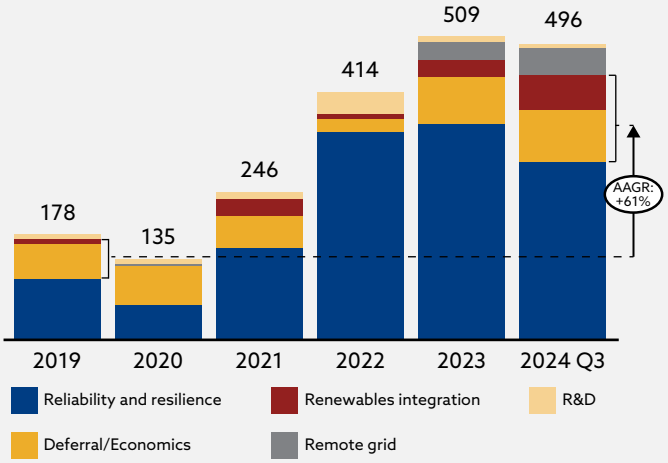


Figure 2:

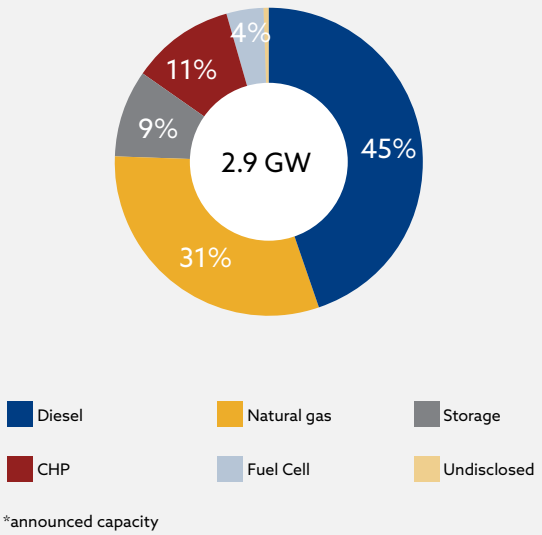
DISCLOSED MAIN DRIVERS FOR DEPLOYED MICROGRIDS (MW)



Renewable energy-driven microgrids are representing an increasingly large percentage of the market. Wood Mackenzie analysis finds that by 2028, microgrids integrating renewable energy generation and energy storage will constitute the majority of projects deployed.

Figure 3:

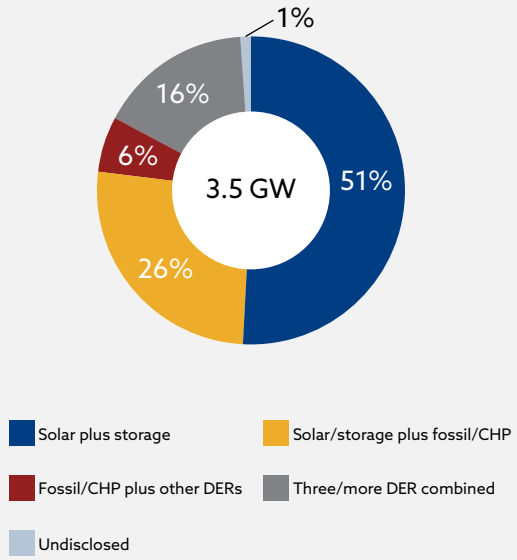
SHARE OF DER TECHNOLOGY FOR BASIC MICROGRIDS, 2018-2028a*



*announced capacity

Figure 4:

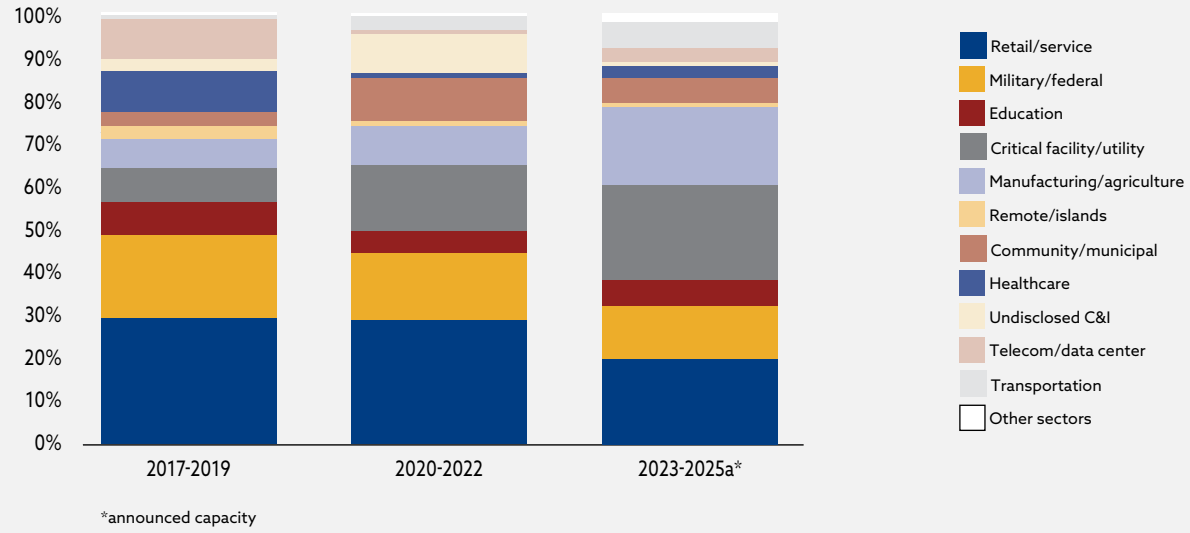
SHARE OF DER TECHNOLOGY MIX FOR ADVANCED MICROGRIDS, 2018-2027a



Many microgrids deployed or planned from 2023-2025 and tracked by Wood Mackenzie correlate with the six use cases defined in Think Microgrid's 2024 Taxonomy Brief. The data shows a well-distributed spread of activity across the defined commercial, civic services, utility, industrial, and infrastructure use cases, with limited deployment for residential use cases. Wood Mackenzie analysis finds that overall, microgrid investments are targeting more critical infrastructure, manufacturing facilities and large energy consumers.

Figure 5:

MARKET CAPACITY BY END-USER SEGMENTS



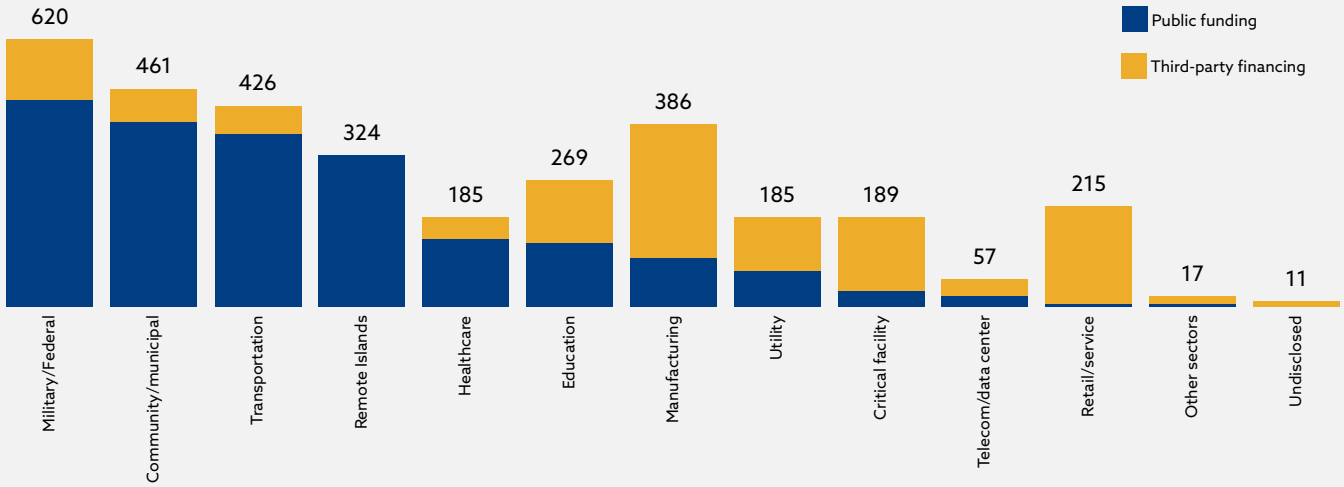
*announced capacity

Third-party financed projects are a growing part of the market share, and many of these projects have benefitted from public funding. Federal Inflation Reduction Act (IRA) tax credits, Infrastructure Investment and Jobs Act (IIJA) grants, and state grant and loan programs have injected a historic amount of capital into the market. Many funded projects are now operational or under construction.

Public funding has targeted military infrastructure, underserved communities and transportation, aligning resilience and decarbonization drivers. The increased deployment of private capital can be in part explained by financers becoming more comfortable with microgrid project risk and steadily increasing demand for resilience and prime power across the commercial & industrial sectors.

Figure 6:

DISCLOSED CAPACITY RECEIVING FUNDING OR FINANCED UNDER A THIRD-PARTY AS-A-SERVICE ARRANGEMENT (MW)



2024 SCORECARD

The following evaluation framework was developed in Think Microgrid's 2023 Scorecard. It has been expanded and iterated on based on engagement with regulators, policy makers and industry stakeholders hosted at Think Microgrid convenings. The 2024 Scorecard methodology continues the original structure while the scoring itself incorporates new policies, events, context, and expert feedback. The evaluation framework is comprised of five categories:

1. DEPLOYMENT:

Is there a robust market consisting of all forms of microgrids, from simple single-customer applications to more complex community microgrids?

2. POLICY:

Are there proactive and comprehensive efforts to establish clear objectives, modernize rules, and update regulatory frameworks?

3. RESILIENCE:

Is there a dedicated focus on practical opportunities to deploy microgrids that provide resiliency to customers, communities, and critical facilities?

4. GRID SERVICES:

Are there pathways to establish open markets for microgrid services so that investments from both utility ratepayers and private capital are properly supported and encouraged?

5. EQUITY:

Are there mechanisms for microgrid deployment to advance social equity and environmental justice, while driving decarbonization and clean air?

The 2024 Scorecard evaluates whether state activities represent meaningful progress toward the vision outlined by DOE and others. The Scorecard is intended to provide both an informed assessment of where the country stands today and a roadmap to achieving a long-term policy vision supporting microgrid commercialization. This requires identifying barriers to development, including statutory limitations, lack of market access, and more. It also involves identifying pathways for microgrid market commercialization supported by a healthy mix of capital and enabling diverse project development. In both Think Microgrid and the DOE's vision for a commercialized landscape, the benefits of resilience, decarbonization, equity, and economic development are maximized.

The Scorecard is intended to provide both an informed assessment of where the country stands today and a roadmap to achieving a long-term policy vision

The Scorecard utilizes a standard A through F grading system for each policy criteria, as defined below. Overall, the characteristics for each score (or 'grade') are designed to align with the following profiles:

GRADE	DESCRIPTION
A	The state is leading proactive, urgent action to pursue long-term reform of existing barriers across regulatory, legislative, and financial dimensions. State actions support robust and diverse microgrid deployment; microgrids are leveraged as a meaningful solution for the operational needs of the state electric grid and the fundamental architecture of the grid supports robust contributions from distributed energy resources and microgrids.
B	The state has established market design components, policy reform and programmatic solutions that include broad stakeholder engagement and clearly articulated goals for coordinated regulatory and agency activity. State actions have established frameworks that can be expanded upon and scaled.
C	The state exhibits limited or passive programmatic and pilot-level activity with little to demonstrate a coherent, coordinated implementation plan. Projects are generally financed by ratepayers and public grants.
D	No identifiable or meaningful activity that prioritizes or accommodates microgrid development and deployment.
F	Notably regressive or obstructive activities.

DEPLOYMENT

Think Microgrid's assessment of deployment is informed by microgrid deployment data provided by Wood Mackenzie. Deployment scores primarily reflect the overall capacity of each state's deployed microgrid capacity compared to its peak electricity demand. They also incorporate analysis of the taxonomic characteristics of deployed microgrids. These include analysis of whether microgrids deployed in each state employed diverse ownership models, served both single and multiple customers, and were applied to diverse use cases. These metrics are aligned with Think Microgrid's Taxonomy.

To approximate the electric load served by microgrids in each state, Think Microgrid compared the capacity of the microgrid fleet to the state's peak demand, identified via Energy Information Administration (EIA) Form 861 data. Think Microgrid compared EIA figures to the aggregate capacity of deployed microgrids as tracked by Wood Mackenzie (in MW). The resulting ratio, corrected for certain gaps in federal data, is the primary index used for evaluation and scoring in the Deployment category.

To determine the diversity of a state's deployed microgrids, Think Microgrid reviewed state data related to metrics developed in the 2024 Taxonomy Brief: ownership model (private, public, or utility); customer classes served (single or multiple); and use case. For each characteristic, we conducted a qualitative assessment to determine whether each state's landscape was diverse (e.g., within a within a 70/30 margin between customer types). Identified diversity across these three metrics was applied to elevate states on the edge of the peak demand percentage thresholds, and vice versa.

GRADE	DESCRIPTION
A	Microgrids serve a significant percentage (>10%) of overall capacity during periods of peak energy usage statewide. Deployed projects include diverse ownership models and capital deployed; size; customer classes served; and configurations. Deployment includes privately owned multi-customer microgrids advancing community resilience, decarbonization, equity, and economic development goals. >10%
B	Microgrids serve a somewhat significant percentage (1-10%) of overall capacity during peak energy usage periods. The characteristics of deployed projects are somewhat diverse. Few multi-customer community microgrid projects are deployed or limited to utility ownership. 1-10%
C	Microgrids serve a marginal percentage (<1%) of overall capacity compared to peak energy usage statewide. The state has at least one or several microgrids deployed beyond microgrids serving single commercial & industrial customers. <1%
D	No significant or coordinated activity identified. <0.1%

POLICY

Think Microgrid updated our comprehensive national review of major policy activities driving microgrid deployment and market access. These include three categories: a) Planning activities that identify opportunities for microgrids to serve grid needs, advance public policy goals, and remove barriers, b) Rule changes that remove barriers, streamline regulatory processes, or stimulate microgrid market growth, and c) Incentive of public financing opportunities that support the deployment of microgrids will advance state public policy goals. Effective microgrid policies support commercialization, or an ecosystem robustly incorporating private, utility ratepayer, and public sector capital. Effective policy promotes projects with diverse characteristics and advance resilience, decarbonization, equity, and economic development outcomes.

Effective microgrid policies support commercialization, or an ecosystem robustly incorporating private, utility ratepayer, and public sector capital

The 2024 Scorecard evaluates state policy based on three identified categories of planning, rule changes, and incentives. These categories address the following guiding questions:

PLANNING:

- Has the state established or is establishing a microgrid roadmap with clear policy recommendations?
- Has the state incorporated microgrid planning into other policy processes, such as prioritizing microgrids as a resilience or distribution modernization solution, integrating them into resource planning, or requiring utilities to identify dedicated zones that could benefit from microgrid deployment?
- Has the state established goals and metrics to evaluate the performance of microgrid deployment?

RULES:

- Has the state defined what is a microgrid? Has it defined categories or classes of microgrids?
- Has the state adjusted rules or created exemptions to right-of-way laws prohibiting energy transactions between separately metered entities (such as dedicated 'resilience enterprise zones')?
- Has the state established or clarified rules empowering cooperative and municipal utilities to develop innovative microgrids?

INCENTIVES:

- Does the state offer grants to plan and implement innovative, community, or public-purpose microgrid projects?
- Does the state offer low-interest loans for qualifying microgrid projects?
- Have public and private entities in the state successfully secured funding for microgrids from the Bipartisan Infrastructure Law (IIJA), such as through the Grid Resilience Investment Partnership (GRIP) program? Have state regulators required utilities to plan around and report on progress toward securing GRIP funding?

GRADE	DESCRIPTION
A	State policy actions related to microgrid planning, rule changes and reforms, and incentives have driven a robust microgrid market characterized by flourishing private, ratepayer, and public investment. States are promoting microgrid markets through multiple, parallel policy pathways. State policies have measurable outcomes, driving growth and deployment in key microgrid market segments.
B	Policies such as programs and tariffs exist and have impacted microgrid deployment, but primarily advance public and ratepayer capital and utility ownership models. Policy actions have focused on planning and incentives but have not addressed rules that present barriers to independent market growth. The state may have defined microgrids or identified microgrid types.
C	Policies such as narrowly defined programs, tariffs, or future investigations exist but have had limited impact on microgrid deployment, and primarily advance public and ratepayer capital and utility ownership models.
D	No significant or coordinated activity identified.

RESILIENCE

Planning for grid resilience is essential for building a grid that can withstand the pressures of the 21st century. This category incorporates a national review of regulatory activity, legislation, and state planning activities related to electric grid resilience. To score highly in this category, state policy activities must identify microgrids as a resilience solution in dedicated agency or regulatory planning processes. This includes the establishment of new state planning authorities or processes, execution of grid vulnerability assessments, requirements for utilities to publicly report distribution system data and maps, or other initiatives to plan microgrid deployment to serve community institutions, critical facilities, and outage-prone circuits. Effective resilience activities drive decarbonization by promoting the application of renewable energy and energy storage while recognizing the role of low-carbon resources that guarantee long-duration resilience, like small-scale natural gas generation, combined heat and power (CHP), or fuel cells. Effective policy allows communities to tailor microgrid configurations to localized resilience needs and other priorities.

Effective policy allows communities to tailor microgrid configurations to localized resilience needs

GRADE	DESCRIPTION
A	The state has developed robust, intersectional resilience plans and grid vulnerability assessments that identify microgrids as a key microgrid solution. State agencies have been created to address DERs as resilience solutions or put new planning processes in place. State regulators have established utility resilience planning requirements and incorporated the value of resilience into resource planning and related decisions. Regulators have required them to make distribution system data publicly available to empower third parties to plan projects that advance resilience. Microgrid projects have been studied or implemented based on resilience performance data, and state policy allows for flexibility in microgrid design to meet resilience needs.
B	The state office and public utility commission have each facilitated activity driving resilience planning, even if the activities do not explicitly facilitate microgrid planning or deployment as part of a state resilience strategy. State entities have engaged in some but not most of the above initiatives.
C	Either a state office or its public utility commission has facilitated activity driving resilience planning. The activities do not explicitly facilitate microgrid or distributed energy planning or deployment as part of a state resilience strategy.
D	No significant or coordinated activity identified.

GRID SERVICES

There are four potential market interfaces that any microgrid could engage with to receive compensation for services. The first are wholesale markets, which organize bulk power exchanges across much of the country's transmission system. Today, larger transmission or sub-transmission level microgrids are likely to directly bid energy into day-ahead, capacity, or other competitive markets. The second interface is retail tariffs, in which local distribution utilities compensate microgrids interconnected to their systems for energy or services. Few utilities have developed dedicated microgrid tariffs or value stacks. Retail tariffs may clarify existing utility programs or rates that microgrids can gain access to or create new compensation mechanisms. The third interface is distribution-level markets, which currently do not exist at scale. These would include independent entities facilitating direct exchanges of services for compensation between microgrids and energy users within a distribution circuit, localized region or grid operator. The last opportunity would be direct generator-to-user contracts, in which a microgrid operator could enter into private agreements with subscribing customers located near the system.

This category involves a review of active or developing retail tariffs, data about participation in wholesale markets, and information about independent or private market development. Effective retail tariffs can provide compensation pathways for a range of microgrid services, including energy exports during periods of excess generation, including during black sky events; load-shifting during peak demand periods (e.g., demand response, energy storage dispatch); voltage regulation and frequency response; resiliency services (e.g., outage mitigation, restoration time); and cost savings from utility distribution investment deferral or non-wires alternatives. Compensation for microgrid services can effectively utilize existing market mechanisms (e.g., net metering for blue sky energy export, programmatic opportunities for demand response) but often require specialized market designs to enable compensation for full microgrid value stacks. This category evaluates whether state markets (and wholesale market regions) have been effective in integrating microgrids into existing market mechanisms and whether they have taken steps to develop market designs that capture the full range of potential microgrid value stacks. Scoring in this category incorporates expert insight into the business case of interconnecting microgrids in various state market contexts.

GRADE	DESCRIPTION
A	State policy and regional authorities have provided pathways for microgrids to be compensated for a robust portfolio or stack of services, through diverse market mechanisms. If available, microgrids can bid energy services directly into wholesale or bulk power markets. Regulators have developed and implemented a retail microgrid tariff for a range of grid services that are broadly utilized by diverse microgrid projects. Core, everyday services such as clean energy export and energy storage management provide lucrative opportunities for microgrids to participate in the system. States may be considering open access laws that enable distribution-level markets between non-utility entities using private or utility-owned distribution infrastructure, or the development of an independent distribution system operator (DSO) to facilitate localized distribution grid services markets.
B	State is developing a retail microgrid tariff for multiple use cases including energy exports, islanding, and non-emergency grid services. Alternatively, microgrid deployment is supported by strong adoption of wholesale compensation mechanisms or microgrids have demonstrated considerable success in gaining compensation for grid services under existing retail tariffs or programmatic market designs.
C	State hosts program-specific or single-use case retail microgrid compensation mechanisms, microgrids have access to certain existing retail tariffs or programmatic market designs.
D	No significant or coordinated activity identified.

EQUITY

This category reviews states' prioritization of community microgrids, promoting equity outcomes across microgrid policy activities, and support for communities seeking support with project development and funding. Community microgrids can provide benefits including resilience, clean air, workforce development, and economic development to vulnerable communities. Maximizing these benefits requires identifying and/or mapping vulnerable communities and creating strategies to stimulate investment, empower community members to develop projects, and facilitate sustained benefits. States have taken varied approaches to supporting equity-focused community microgrid development. In some cases, statewide equity laws have provided mandates, carveouts, or directives for infrastructure that supports low-income, outage-vulnerable, rural, and tribal community resiliency and economic well-being. In other cases, specific state or regulator-approved programs incentivize or fund projects in dedicated communities. State agency programs have supported communities with funding or technical assistance to capture federal funding for microgrids. High-scoring states take a coordinated approach, tying all these strategies together.

GRADE	DESCRIPTION
A	State legislation has defined equity metrics such as income or demographic data and applied this information to guide intersecting approaches to microgrid planning. State programs or utility plans support community microgrid deployment based on equity metrics or outcomes. State authorities provide assistance, funding, and implementation support to communities as they develop microgrid plans and implement projects.
B	A state incorporates equity priorities into microgrid planning on a program-specific, project-specific, or ad-hoc basis. Alternatively, a state does not have equity-focused microgrid efforts but has enacted a statewide equity law that includes explicit implications for energy planning and utility regulation.
C	Microgrid deployment does not include any organized or explicit focus on microgrids as a tool to support vulnerable, disadvantaged or ignored communities.
D	No significant or coordinated activity identified.

FINDINGS

While some states receive an "A" for activity in specific categories, there is no state where an "A" is warranted. This reflects the continued status of the current microgrid policy landscape: states have taken innovative actions, but barriers still inhibit advancement toward commercialization. The level of deployment is nowhere close to establishing microgrids as the building blocks of an electric grid where DERs represent a ubiquitous resource for grid operations. Notable activities have taken place that advance toward or detract from progress toward commercialization. Ultimately, the landscape characterized in the 2023 Scorecard resembles the landscape today.

SCORES

Figure 7: State Scores

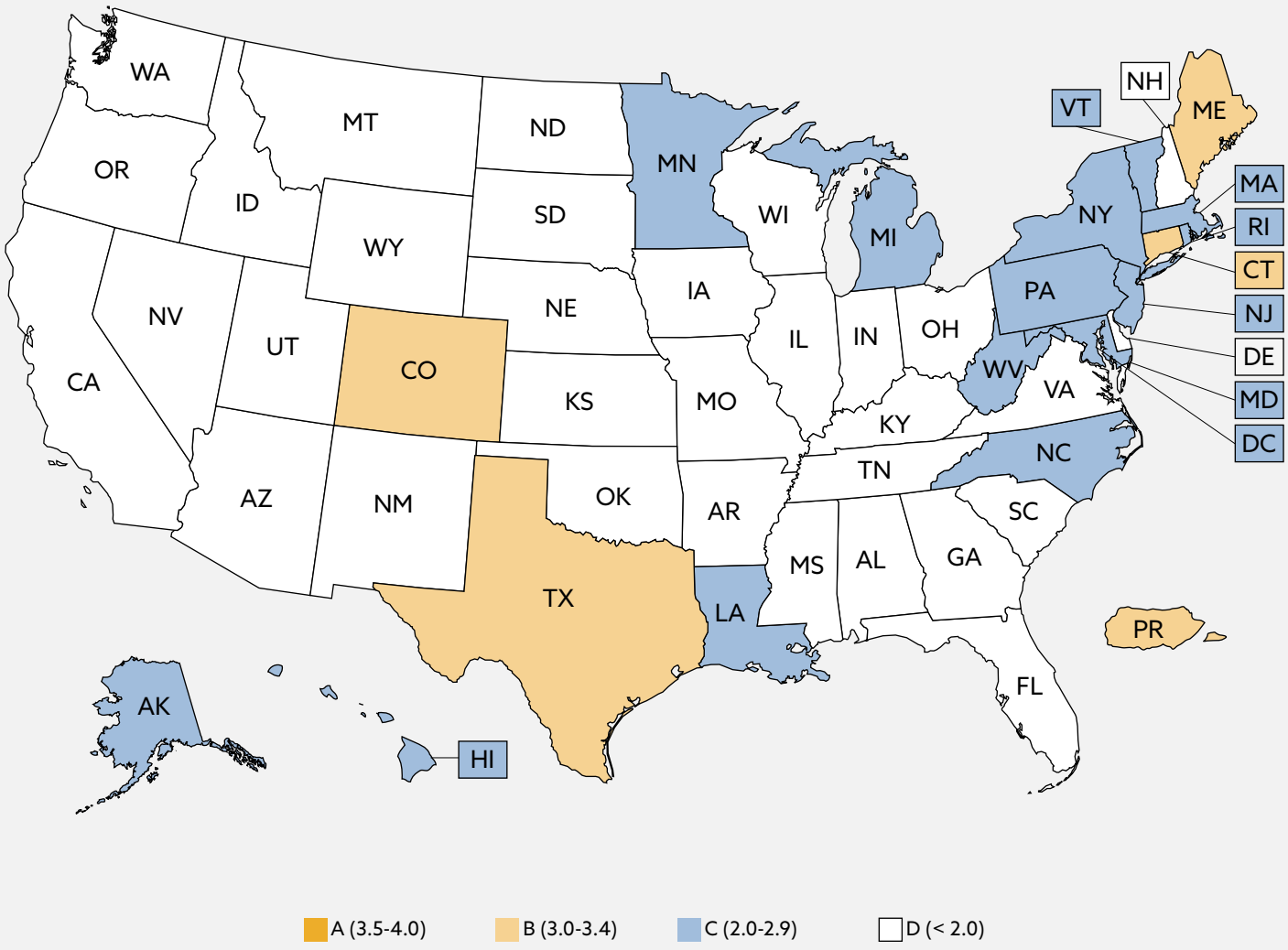


Figure 8: State Scores

STATE	DEPLOYMENT	POLICY	RESILIENCE	GRID SERVICES	EQUITY	TOTAL	GRADE	MOVEMENT
PR	4	3	3	3	3	3.20	B	▲
CO	2	3	3	3	4	3.00	B	
CT	3	3	3	2	4	3.00	B	
ME	3	4	3	2	3	3.00	B	▲
TX	4	3	3	3	2	3.00	B	
VT	3	3	3	2	3	2.80	C	▲
HI	2	3	4	2	3	2.80	C	▼
MD	3	3	3	2	3	2.80	C	▲
NY	3	2	3	2	4	2.80	C	
AK	4	2	3	1	3	2.60	C	
MA	3	2	2	3	3	2.60	C	▲
NJ	3	3	3	2	2	2.60	C	
MI	2	3	3	2	2	2.40	C	▲
MN	2	3	2	2	3	2.40	C	▲
WV	2	3	2	3	2	2.40	C	▼
RI	1	2	3	2	3	2.20	C	▲
LA	2	2	3	2	2	2.20	C	▲
DC	2	2	2	3	2	2.20	C	▼
NC	2	2	3	1	2	2.00	C	
PA	2	2	2	2	2	2.00	C	▲
CA	2	1	2	1	3	1.80	D	▼
NM	3	1	2	1	2	1.80	D	▲
OR	1	2	3	1	2	1.80	D	
KY	1	2	3	1	2	1.80	D	
IL	1	1	3	1	2	1.60	D	▼
SC	2	1	2	1	2	1.60	D	
WA	1	2	2	1	2	1.60	D	▼
WI	1	2	2	1	2	1.60	D	
FL	2	1	2	1	2	1.60	D	▼
AZ	2	1	1	1	2	1.40	D	▼
DE	2	1	2	1	1	1.40	D	
GA	2	1	1	1	2	1.40	D	
MO	1	1	3	1	1	1.40	D	
NH	1	2	1	2	1	1.40	D	▲
OH	1	1	3	1	1	1.40	D	▼
OK	2	1	1	1	2	1.40	D	
UT	2	1	1	1	2	1.40	D	
VA	2	1	1	1	2	1.40	D	▼
IA	1	1	2	1	1	1.20	D	
TN	1	1	1	1	2	1.20	D	▼
AL	1	1	1	1	2	1.20	D	
AR	1	1	1	1	2	1.20	D	▼
MS	1	1	1	1	2	1.20	D	
ID	1	1	1	1	1	1.00	D	
IN	1	1	1	1	1	1.00	D	
KS	1	1	1	1	1	1.00	D	
MT	1	1	1	1	1	1.00	D	
ND	1	1	1	1	1	1.00	D	
NE	1	1	1	1	1	1.00	D	
NV	1	1	1	1	1	1.00	D	
SD	1	1	1	1	1	1.00	D	
WY	1	1	1	1	1	1.00	D	

NOTABLE CHANGES

California. C to D.

California's reduction to a D is driven primarily by a November 2024 CPUC decision in its microgrid tariff proceeding, which drove score reductions in the "policy" and "grid services" categories. The decision approved multi-customer microgrid tariffs that are almost identical to one approved in Track 1 of the proceeding, which enabled the state's first utility-owned microgrid projects. After five years of investigation and review of a half a dozen alternative intervenor proposals, the CPUC limited multi-customer microgrid opportunities to a limited number of utility-owned projects. Planning and project finance will continue to rely primarily on ratepayer and taxpayer capital, while communities under pressure from poorly performing infrastructure, increasing electricity costs, geographic isolation or other risks, will be limited to utility-driven local resilience solutions. California's reduced deployment score reflects how the state's load growth is outpacing microgrid deployment and the CPUC limiting acceptable ownership models. Its reduced resilience score reflects poor utility resilience performance despite multiple approaches to regulatory and policy improvements. It also reflects the CPUC's decision to de-prioritize evaluating distributed energy non-wires alternatives in its Distribution Investment Deferral Framework (DIDF) process as ordered by the Administrative Law Judge in June 2024.

Hawaii. B to C.

Track 2 of the Hawaii PUC's microgrid services tariff proceeding has far exceeded beyond the timeline laid out in its procedural schedule. Experts near the proceeding have confirmed that the lack of notable activity on the record reflects a stalled regulatory effort. Meanwhile, experts in Hawaii explained that no microgrid project currently takes service under the tariff approved in Track 1 (information that affected our deployment analysis). The islands' deployed microgrid landscape is dominated almost entirely by residential and small commercial systems.

Maine. C to B.

The Maine PUC features a process for reviewing and approving third-party-owned multi-customer microgrids remains un-utilized. The PUC is also developing regulatory processes for grid planning,

which involve enhanced examination of Maine distribution system vulnerabilities and identify potential resilience investments. For example, its inquiry into resilience to storm-caused outages and distribution system damage requested that stakeholders compare undergrounding investments with customer-centered investments such as microgrids or distributed energy. These combined opportunities set the stage for diverse investment in Maine's distribution system.

Puerto Rico. C to B.

The Puerto Rico Energy Bureau (PREB) opened a proceeding to update its microgrid regulation, articulating an object of staying current with emerging technologies and initiatives. This open stakeholder process has promoted a rigorous examination of the first microgrid regulation in a United States jurisdiction. The regulation provides regulatory frameworks for several microgrid project configurations and allows single and multi-customer projects to export energy and services across rights of way during emergencies. The PREB is also overseeing an ongoing 'mini-grid optimization' proceeding in which it has required the commonwealth's distribution utility to develop an alternative, microgrid and non-wires alternative-forward investment plan to include distributional resilience.

Louisiana. D to C.

Louisiana entities are some of the most successful nationally in winning federal grants established via the Infrastructure Investment and Jobs Act (IIJA). These awards will drive significant microgrid development and other resilience investment, including $250M in matching funding for the community microgrid-focused Hubs for Energy Resilient Operations (HERO) Initiative. The New Orleans City Council agreed to hear a stakeholder proposal to leverage these federal awards and legal settlement funds to fund a network of grid-interactive microgrids in the city. The Louisiana PSC leveraged its draft resilience rule to approve a reduced Entergy distribution investment package that promotes resilience while reducing ratepayer burden, and the PSC's investigation into customer-centered options included further consideration of competitive commercial & industrial self-supply as part of the Phase 2 scope.

WHAT WE'RE WATCHING

Public incentives continue to drive microgrid deployment. Federal and state policies are incentivizing microgrid deployment to catalyze various public outcomes. Public and industry actors around the country have taken advantage of the first two rounds of federal Grid Resilience and Innovation Partnerships (GRIP) grants which were awarded to fund microgrid projects and networks across a dozen states. These projects are uniformly designed to enhance resilience, but each has subgoals including local decarbonization, grid flexibility, and field testing of new technologies. Meanwhile, the Texas PUCT is holding advisory committee meetings to implement legislation to administer $1.8B worth of low-interest loans for reliability-focused backup power resources, and state agencies are administering renewed phases of community resilience-focused microgrid grant programs in Connecticut, Maryland, Colorado, and elsewhere.

Communities are creatively pursuing local resilience. Communities are innovating new models of microgrid ownership and deployment to take their resilience future into their own hands. The 'resilience hub' model envisions resilient DER providing critical services at central community institutions during outages. This model is not new, but grassroots organizations are deploying the model at new scales. In New Orleans, the grid and its customers face heightened vulnerabilities to extreme weather. The distribution utility's solutions to these challenges, which include a fossil fuel-intensive peaker plant and ten-figure distribution investment proposals charged to ratepayers, have frequently been characterized as overwhelmingly expensive, unreliable, and unimaginative. Together New Orleans, a nonprofit coalition of faith-based organizations, has had immense success securing public, private, and charitable finance to deploy a network of dozens of microgrids at faith and community institutions around the city. These projects are interconnected to the local distribution utility's system and can gain compensation for energy export via net metering. They have additionally proposed a program to develop a compensation mechanism for energy storage management. Other community organizations and nonprofits are actively exploring how Together New Orleans' model can be applied across other networks of faith-based, community, and educational institutions, including examining where policy and market opportunities make or break financial viability.

Microgrids are being evaluated against traditional distribution investments. In utility investment proposals, regulators are evaluating microgrids as alternatives or complement to traditional grid hardening investments such as undergrounding or upgrades to poles, wires, and substations. After rejecting the Puerto Rico Electric Power Authority's (PREPA) resource plan, regulators in Puerto Rico required the utility and intervenors to comparatively analyze microgrids and other distributed energy investments against PREPA's billions of dollars of proposed traditional distribution investments. Studies in that ongoing proceeding have pioneered various analytical and economic approaches to understanding the 'microgrid value stack', finding that a microgrid-based approach to addressing distribution system needs could be significantly less expensive than PREPA's undergrounding-intensive proposal. In California regulatory proceedings, intervening stakeholders have presented evidence to the CPUC suggesting that microgrid investments beyond the scope of its current programmatic activity could serve as a significantly lower-cost approach to reliability and resilience than undergrounding investments proposed by utilities – which usually cost several million dollars per line-mile.

Should utility-owned microgrids be included in the rate base? Utility regulators are examining when the development of utility-owned projects should be charged to ratepayers, and which ratepayers. In Minnesota, regulators rejected Xcel Energy's proposal to develop community resilience-focused microgrids charged across its rate base, finding that poorly demonstrated equity benefits and cost-effectiveness did not adequately prove that projects were in the public interest. The commission is

reconsidering an updated proposal after Xcel cut the spending by two thirds with more data demonstrating the equity benefits of the projects. Similarly, intervenors challenged the cost-effectiveness of a proposed Arizona Public Service (APS) critical facility microgrid in Phoenix, which the ACC decided not to charge to ratepayers. Regulators in Vermont have extended their examination of Green Mountain Power's (GMP) petition to recover $30M from ratepayers to develop resiliency-focused microgrids and energy storage resources in poorly performing 'resiliency zones'. In workshops and hearings, PUC officials and other stakeholders have pressed GMP to justify the recovery of funds for these projects and to demonstrate the value they will provide on a locational basis. In these cases and others, we're watching how parties argue for or against utilities distributing costs for localized energy across the customer base, and whether any consideration of alternative ownership and financing models emerge for third-party-driven projects.

Microgrid roadmaps: what outcomes can be expected? The state of Colorado is developing the country's first state microgrid roadmap, with an initial draft released in June. Components of the draft plan, such as grid vulnerability maps to support future strategic microgrid siting, are very detailed. Other aspects, such as its consideration of barriers and associated policy solutions, are vaguer. We're watching for potential revisions that would provide a final roadmap with clearer applicability, such as recommendations to the legislature and PUC on various policy issues. Meanwhile, Rhode Island and New Hampshire have each commissioned not-yet-published studies scoping similar questions about microgrid integration. We are watching whether state microgrid planning will emerge as an effective tool to drive outcomes, and how. What are the most important aspects of state microgrid plans? What qualities or characteristics make state microgrid plans impactful?

'Leading' utility tariffs remain limited in scope and application. Utility regulators in Hawaii and California have each hosted years-spanning investigations to develop microgrid tariffs, both proceedings that represent some of the most concentrated stakeholder engagement on microgrid issues. Both states have approved single-customer tariffs and have open proceedings to develop second-phase multi-customer tariffs. However, stakeholders in Hawaii report that the existing tariff has yet to be utilized by an actual interconnected microgrid project and that the process to complete the phase two tariff is inactive with no plan for completion. In California, both the active single-customer and proposed multi-customer tariff operate within narrow bounds: each utility can only interconnect ten projects to their respective distribution system, for example. The CPUC's proposed decision on its multi-customer tariff further rejected alternative models presented by six industry and advocacy intervenors, upholding a right-of-way restriction that prohibits any neighbor-to-neighbor transactions and other limitations that collectively disincentivize projects owned by non-utility entities.

Microgrid deployment is not keeping pace with load growth. Wood Mackenzie data shows that for many states, increases in electricity demand is taking place at a faster rate than microgrid deployment. This trend is reflected in the deployment category score reductions in many 'C' and 'D' states, including California. Many state utility commissions are responding to mounting load growth pressures by approving massive utility grid-scale investments. For example, in April 2024 the Georgia Public Service Commission approved a Georgia Power plan to update its only year-old integrated resource planning, adding 1,400 MW of new oil and gas combined cycle generation.

POLICY IDEA BANK

Policymakers and community leaders can take concrete steps to overcome some of the most pressing barriers to microgrid market development, advance microgrid policy in their states, and improve their scores in future years.

During the past three years, Think Microgrid has led interactive discussions and organized events to identify opportunities for collaboration and progress. In the 2023 Scorecard, we provided five principles that could be addressed by a state microgrid roadmap aligned with the Scorecard's analytic framework. In 2024, several states are developing real microgrid roadmaps, but many barriers and solutions to microgrid market growth remain the same. Accordingly, in the 2024 Scorecard, we offer a broader set of discrete policy ideas or strategies.

'Microgrid policy' can be advanced by legislatures, regulatory bodies, or executives. Following Think Microgrid's 2024 policy workshop in Baltimore, MD, we consolidated an 'idea bank' of microgrid policy options available to legislators and other decision-makers. These generally fall into three categories: rule changes, planning, and incentives (these categories are reflected in the policy scoring methodology). Rule changes remove barriers to or stimulate microgrid market growth. Planning activities identify opportunities for microgrids to serve state needs and plan deployment to advance public policy outcomes. Incentives include public financing opportunities supporting the deployment of microgrids aligned with state public policy goals and market design supporting compensation for unique microgrid services.

Policymakers and community leaders can take concrete steps to over-come some of the most pressing barriers to microgrid market development

PLANNING AND DEPLOYMENT

Microgrid Roadmap

Direct the state utility commission, energy office, or equivalent authority to develop a microgrid roadmap surveying a comprehensive set of microgrid planning considerations and recommending policy actions. A roadmap should address where microgrids are needed from a grid perspective, desired from a customer perspective, and effective at achieving public policy goals. It should address existing policy and economic barriers inhibiting diverse market growth and evaluate legislative, regulatory, or other mechanisms to address them and stimulate the market. A roadmap may consider setting a microgrid deployment goal, framed by grid capacity or communities served by a certain date. Think Microgrid's 2023 State Scorecard (p. 20) recommends that state microgrid roadmaps act to 1) identify critical facilities, 2) enable multi- customer microgrids, 3) mobilize private capital, 4) open market access, and 5) prioritize equity. A roadmap should incorporate some or all of the subsequent legislative levers presented in this brief. Legislation in Colorado directed the state energy office to, in coordination with consultants, develop a comprehensive microgrid roadmap and present findings and recommendations to the legislature. Rhode Island included a similar appropriation as part of its 2024 annual fiscal budget, although its roadmap will be more narrowly focused on tariff development.

Office of Distributed Energy Planning

Direct the state executive to develop a dedicated Office of Distributed Energy Planning to establish DER deployment goals, evaluate grid capacity data and identify targeted circuits for development, create incentives or programs outlined in other legislative levers, evaluate and develop DER market designs, and provide guidance and reporting to state utility commissions and energy offices. Alternatively, appropriate funding to create a team within the state energy office to perform similar functions. While no state office today is explicitly dedicated to DER planning, the New York State Energy Research and Development Authority (NYSERDA) and Massachusetts Clean Energy Center (MassCEC) play unique roles researching and creating policy frameworks around cutting edge DER integration issues before they reach state regulatory commissions.

Grid Vulnerability Mapping

Require a state energy office or equivalent agency to conduct a comprehensive assessment of vulnerabilities across the state distribution grid. Conduct the assessment with in-house staffing or hire a consultant. If additional mapping resources exist in the state related to public policy goals, such as equity and environmental justice, integrate them into the assessment. Require the assessment to include a report to the legislature including recommended strategies for promoting microgrid deployment at grid locations identified as most vulnerable and/or highest priority. An alternative but related approach is to require utilities to disclose circuit-level hosting capacity data publicly or to qualified entities to empower market actors to plan microgrid where the grid is most fragile. Many states have required executive agencies to execute grid vulnerability assessments through legislative and other means, including Kentucky, West Virginia, Pennsylvania, and others. Many state agencies choose to hire external firms with expertise in such assessments to conduct these assessments. In many cases, without pre- established requirements for follow-up intervention, vulnerability assessments have been left with their recommendations unrealized. Many states require the publication or qualified access to hosting capacity data, but these processes have usually been developed through state utility commission processes.

RULES AND STATUTE REFORM

State Microgrid Definition

Direct the state utility commission, energy office, or equivalent authority to develop a state definition of microgrids, which includes definitions or classifications of specific microgrid types. Identifying microgrid types as applicable to a particular state's needs and deployment landscape may benefit from a stakeholder engagement process or formal investigatory proceeding; alternatively, state authorities can utilize Think Microgrid's 2024 Taxonomy Brief for a general microgrid definition and a framework for classifying microgrid 'families' based on interconnection level, ownership model, and customers served. To promote the deployment of private capital and best inform regulatory, planning, and programmatic decisions, statute should not define microgrids, even multi-customer microgrids, as rate-regulated public utilities. To date, state authorities have mostly developed microgrid definitions and classifications as part of broader programmatic or tariff design efforts. Colorado's microgrid roadmap legislation requires the state energy office to include a proposed statutory definition of microgrid.

Right-Of-Way Reform

Where relevant to be aligned with state local resilience and other public policy goals, allow third-party microgrid operators to transmit electricity across multiple properties if the project qualifies as a multi-customer microgrid based on state definitions and prioritized by policy. If deemed necessary, give the state utility commission parameters to review and approve right-of- way exemptions that meet certain criteria. Legislation in Maine exempts qualifying private multi- customer microgrids from the state right-of-way law and gives the state utility commission criteria to review and approve individual project applications, including related to size, technical feasibility, resources integrated, and more.

Resilience Enterprise Zones

Dedicate 'Resilience Enterprise Zones' that are exempt from right-of-way laws due to heightened economic or resilience needs. Provide a framework for the state utility commission to create rules, procedures, and tariffs to govern these Zones' interactions with the distribution grid. Prioritize private multi-customer microgrids for use cases that encourage private investment and economic development, address heightened resilience needs or vulnerabilities, or advance state public policy goals. Provide the state utility commission with tools to evaluate and select prospective zones and develop tariffs that facilitate bi-directional compensation for energy and services exchanged between a Zone, the distribution utility, and the transmission system operator. West Virginia legislation authorized the creation of two Business Development Districts, one to serve an industrial campus and one to be decided. The legislation requires Districts to have a positive economic impact, to reuse land previously used for coal mining, and to utilize 100% renewable energy. It gives discretion to the District owner to independently negotiate rates.

Authority to Provide Supplemental Service

Grant municipal utilities or other third-party entities the authorization to create a supplemental utility, or clarify allowable arrangements, roles, and responsibilities where they remain ambiguous or untested. Procedurally, this may make sense as state legislation or as a municipal referendum. Establish parameters for when a supplemental utility may be necessary, such as poor performance by the incumbent utility on affordability, resilience, decarbonization, or implementation of advanced technological capabilities and markets. The city of Ann Arbor, Michigan is designing a supplemental utility to improve service related to the goals outlined above. While that municipality has clear jurisdictional authority to take this step, the municipal government is holding a referendum vote to gain public approval.

Distribution System Operator

Require the state utility commission, energy office, or equivalent authority to study the efficacy of introducing an independent distribution system operator (DSO). Evaluate the roles a DSO could play coordinating and operating markets for circuit-level distribution system grid services, leading integrated distribution system planning, and distributed energy integration planning. Determine what grid technologies are necessary to facilitate nodal distributed energy markets, such as Advanced Distributed Management Systems (ADMS), Distributed Energy Resource Management Systems (DERMS), and Supervisory Control and Data Acquisition (SCADA) as well as advanced sensors, telemetry, etc. Require the relevant authority to utilize in-house staffing or hire a consultant to study the governance, responsibilities, mechanics, costs and benefits of an independent distribution system operator, including evaluation of DSOs in other nations (Australia, Canada). Develop recommendations for the legislature or regulator for whether introducing a DSO is in the public interest, and what the mechanics of that process would entail. Legislation in Maine required the Governor's office to contract a consultant to conduct a study as described above, which is still under development.

INCENTIVES AND FINANCE

Microgrid Services Tariff

Require the state utility commission to develop a tariff for microgrid-specific grid services to the distribution system (at the distribution level) through an investigation, rulemaking, or stakeholder engagement process. Establish goals of setting conditions and compensation mechanisms for grid services including but not limited to energy export during blue and black sky conditions, demand response, load flexibility and/or peak demand reduction, and utility distribution investment deferral. Depending on jurisdictional utilities' deployment of circuit-level grid data visibility equipment (such as ADMS, SCADA), integrate circuit-level locational pricing mechanisms. Aspects of tariff development may pair naturally with the development of distribution-level grid services tariffs with a utility microgrid program or implementation of performance-based ratemaking. California and Hawaii have taken steps to partially develop and implement distribution-level microgrid tariffs, but both efforts have resulted in limited or incomplete regulatory outcomes. Other states have simply developed non-microgrid specific market and program designs in which certain microgrids can reliably bid energy and services.

Community Microgrid Grants

Appropriate funding and require a state utility commission, energy office, or equivalent authority to develop and implement a community microgrid grant program to advance state public policy goals such as around resilience, climate, and equity. Use Think Microgrid's definition of community microgrid as presented in the Think Microgrid's 2024 Taxonomy Brief to frame eligible projects. Establish award criteria that prioritize projects that incorporate ownership models, compensation pathways, and technologies not yet commercialized in the state. Depending on state needs, program eligibility can be open or focus on certain customer sub-segments like critical facilities, emergency response-capable community centers, or schools. Allocate funding for application support to ensure that the communities that can benefit most are able to apply for funding. Once the awarded projects are operational for a determined amount of time, develop a report for the legislature summarizing lessons learned and how to further scale microgrid deployment in the state. States including Connecticut, Colorado, California and otherwise have developed community microgrid grant program, while a proposal before the City Council of New Orleans proposes a grid-interactive, third-party driven microgrid network to serve as part of a distributed power plant (DPP). In several other states like Maryland, Massachusetts, Washington, and Wisconsin, microgrids are an eligible technology in broader distributed energy or resilience programs. Connecticut's program, originally required by 2012 legislation and iterated by legislative and agency changes over the past decade, offers a strong model for the proposed parameters: it encourages multi-customer projects with various ownership models, requires projects to serve critical facilities, requires almost three weeks of guaranteed island-mode operations, and requires projects to meet low-emissions requirements.

Low-Interest Loans

Appropriate funding and require a state utility commission, energy office, or equivalent authority to develop and implement a program providing low-interest loans to support project financing and advance state public policy goals. Focus the legislative scope to address market segments where financing challenges are a primary barrier to microgrid deployment; usually segments where the introduction of private capital already is set up to flourish (e.g., single customer and campus). Consider pairing financing support programs with right-of-way reforms to extend towards supporting private multi-customer microgrid development. Texas legislation directs the state utility commission to develop and implement loans and/or grants to support the financing of private, resilience-focused, behind-the-meter microgrid projects and dispatchable EV bus-to-grid battery storage projects. Qualifying microgrid projects combine natural gas or propane generation with solar and battery storage resources and must be able to operate in island mode for 48 continuous hours.

2023-2024 STATE POLICY UPDATES

California.

A CPUC Administrative Law Judge (ALJ) initiated Track 5 of its microgrid rulemaking in August 2023, directing the state's utilities to submit multi-customer microgrid tariffs based on PG&E's existing Community Microgrid Enablement Tariff. The order and ensuing tariff proposals were criticized by intervenors who argued that, by not soliciting public input on the substance of multi-customer tariffs, the commission was bypassing due process. The Commission then invited third parties to submit alternative tariff proposals, which many did. In September 2024, the CPUC issued a proposed order accepting the utilities' proposals with limited modifications, while rejecting six alternative proposals submitted by advocates and industry stakeholders. The alternative proposals proposed ownership and compensation mechanisms for private multi-customer microgrids, methodologies to calculate locational valuation of resilience and other grid services, pathways for private contracting between microgrid operators and customers, and other non-utility driven approaches to microgrid commercialization. The CPUC argued for its rejection based on its commitment to California's statutory right-of-way or 'over the fence' law and concerns about cost-shifting, safety, lack of regulatory oversight, and otherwise.

Other regulatory activity in California was more tangentially relevant to its microgrid market. The CPUC's OIR to Consider DER Cost Effectiveness and Data Access has hosted relevant activity, including the CPUC approval of a test to evaluate the cost-effectiveness of DER programs. The CPUC approved a state plan to develop over 56 GW of new clean energy resources by 2035, which identifies a need for more detailed assumptions on distributed energy resources (DERs), including whether certain resources would be classified as zero-emissions in rules and programs related to achieving California's clean energy goals. The Commission noted that these definitional questions would be addressed in future resource planning cycles and other proceedings. The CPUC issued a decision changing its Virtual Net Energy Metering (VNEM) and Net Energy Metering Aggregation (NEMA) programs, for which certain microgrids qualify. The updated tariff prohibits onsite energy storage resources from charging from the grid but states that utilities should lead a process toward allowing grid charging to provide resiliency services. The decision is expected to lead to an overall decrease in compensation under the rate designs. Lastly, the Commission issued a resolution allowing for distributed energy resources (DER) to interconnect by using an energy export schedule known as the Limited Generation Profile (LGP). The LGP is designed to leverage grid data to maximize the use of existing hosting capacity and better quantify the ability of DER to reduce the need for infrastructure upgrades. The schedule is designed so that developers have more visibility into compensation opportunities as influenced by locational hosting capacity constraints.

Arizona

In March 2024, the ACC rejected a proposed Arizona Public Service (APS)-owned, ratepayer recovered critical facility microgrid proposed in APS' 2022 rate case. The decision incorporated intervenor arguments that the project was not sufficiently cost-effective to charge to ratepayers.

Colorado

A state team is developing Colorado's legislatively enabled state microgrid roadmap. The team released a draft roadmap in June 2024 that provides detailed grid vulnerability maps, prioritizing state regions that could benefit from microgrid deployment. The draft roadmap noted several microgrid policy approaches but fell short of articulating affirmative recommendations to the legislature or regulators for strategies to remove market barriers. The final roadmap is scheduled for release by the end of 2024.

Otherwise, the state legislature and regulators are each exploring the role of third parties in the electric system and the capabilities of a more interactive grid. The PUC approved a 50 MW Xcel-facilitated virtual power plant (VPP) program incorporating heterogeneous demand-side resources while the state legislature passed a law modernizing distribution system planning and requiring each regulated utility to file an updated VPP program that includes performance-based tariffs. The former program involves a competitive process to select a DERMS provider while the latter programs are required to incorporate third-party DER aggregation.

Connecticut

The Connecticut Department of Energy and Environmental Protection (DEEP) has released a stakeholder notice demonstrating its intent to scope and launch its latest installation of its Microgrid Grant and Loan Program, now encompassing grants for a broader set of resilience investments. Grants will be awarded with heightened zero-emissions and islanding requirements. The PURA established a proceeding to take a proactive role in ensuring that state entities submit applications for federal Grid Resilience and Innovation Partnerships (GRIP) funding. The PURA is facilitating utility Innovative Energy Solutions (IES) programs, which involves utilities partnering with third parties to pilot various approaches to distribution-level distributed energy (DER) market designs.

Hawaii

There have not been updates within Hawaii's microgrid services tariff proceeding, which has long exceeded its outlined procedural timeline and is stalled on its second phase.

Iowa

In response to an executive order, IUB opened an investigation examining how electric utilities in Iowa are ensuring that their systems are resilient to catastrophic failures and plan to manage summer peak loads. In the order, the IUB requested information on steps each utility is taking to prepare for weather events and grid failures, whether each utility has prepared a resilience plan, and whether each has identified resilience metrics. The IUB also asks questions related to peak load reduction planning and management of load-modifying resources (LMRs) in each service territory.

Louisiana.

In Louisiana, the PSC, regulated utilities, and community organizations are each taking parallel approaches to resilience. The resilience rule proposed by the PSC in August 2023, which outlined a process and guidelines for utility Grid Resilience Plans, still has not been approved. However, the commission integrated many substantive considerations developed throughout the rulemaking into its review of Entergy Louisiana's Future Ready Resilience Plan, which was filed before the proposed rule was finalized. In that proceeding, the PSC approved a fraction of Entergy's proposed $9.6B investment, which focused almost entirely on the distribution system, transmission system, and substation hardening and buildout. Meanwhile, third party advocates and community stakeholders have proposed a plan to the City Council of New Orleans to develop a network of grid-interactive resilience hub microgrids in the city. This plan would leverage funds from a settlement with local utility Entergy matched with funds allocated through the Infrastructure Investment and Jobs Act (IIJA). The PSC's customer-centered options rulemaking, which has been open since 2020, scoped a second phase that involves an examination of open access models to enable direct contracting between energy suppliers and industrial users as well as new opportunities for participation in MISO markets.

Maine

The Maine PUC is implementing new utility planning processes around climate, resilience, resource planning and grid modernization. It is currently reviewing climate change protection plans, within which each utility describes climate risks to the distribution system and proposes related resilience investments. Versant's plan passively mentions microgrids as a potential option. In parallel, the PUC opened an inquiry into resilience to storm-caused outages and distribution system damage, in which it requested stakeholders to comment on prospects for undergrounding investments or customer-centered investments such as distributed energy. In response to 2023, Maine is examining the possibility of a smart distribution operator to moderate distribution-level operations and markets. Maine legislation granting the PUC authority to approve clean, privately owned multi-customer microgrids up to 25 MW remains the only uncapped state regulatory process to exempt such projects from right-of-way restrictions. It is unclear whether developers have yet proposed projects through this mechanism.

Maryland

Maryland state agencies continue to facilitate programs that incentivize the development of microgrids and related technologies. The Maryland Energy Administration's (MEA) Resilient Maryland program has held several rounds of grants, leading to the development of over a dozen clean public-purpose microgrids. The Maryland PSC has also developed rules and market mechanisms related to its energy storage programs, as required by 2023 legislation. 2024 legislation exempted data centers from obtaining a Certificate of Public Necessity and Convenience (CPCN) for backup generation up to 2 MW, as long as the generation does not export energy onto the grid.

Massachusetts

Some of Massachusetts utilities' Electric Sector Modernization plans, which encompass billions of dollars of investment in a mix of traditional distribution hardening, grid modernization technologies, and non-wires alternatives, outline their visions for microgrid integration. Eversource presented plans to integrate microgrids on identified circuits on its distribution system and suggested its proposed DERMS investment was intended to enable microgrids and other distributed energy resources (DER) to provide grid services. In recent years, the Massachusetts DPU has been one of only a few utility commissions nationally to expand rather than roll back the state's net metering mechanism. For example, the ruling removed caps to annual net metering compensation for facilities serving on-site loads with capacities between 60 kW and either 1 MW (public) or 2 MW (commercial).

Michigan

The Michigan PSC has hosted workshops on resiliency and reliability as well as grid performance and interconnection. A series of resiliency and reliability technical conferences resulted in the PSC framing issues for future prioritization, which include extreme weather preparedness; developing a shared definition of energy resilience and a shared framework to value resilience investments; opportunities and barriers for the development of distributed energy, microgrid and load-flexibility resources; data and mapping issues; and performance-based ratemaking opportunities. The Distribution Grid Performance and Interconnection Work Group is evaluating a proposal to establish incentives and penalties of up to $10M to drive improved utility reliability performance, including service restoration and avoidance of repeated outages for vulnerable circuits and customers. DTE Energy and Consumers Energy have each proposed to develop utility-owned microgrids in their rate cases and distribution plans, and the City of Ann Arbor is creating a 'sustainable energy utility' that would provide supplemental local clean energy service in parallel with DTE's system. Finally, in November 2023 the Michigan legislature passed a suite of laws that target net zero emissions by 2040, including a goal to deploy 2,500 MW of energy storage by 2030 and expand a distributed energy resources (DER) compensation program.

New Hampshire

In May 2024, New Hampshire Governor Sununu approved legislation requiring the state Department of Energy to study microgrids. The microgrid study will examine issues including the definition of microgrids; opportunities for utility microgrid evaluation, recovery, and deployment; potential benefits of microgrids to New Hampshire; and barriers to microgrid deployment. The Department will report its findings to the legislature.

New York

Several pieces of proposed microgrid incentive legislation were introduced in New York in the 2023-2024 legislative session; none have been enacted. In June 2024, the New York DPS approved a a roadmap framework for New York to deploy six gigawatts of energy storage by 2030, which includes potential market reforms and new grid services opportunities, procurement and programmatic strategies, and future study areas. The DPS also initiated a Grid of the Future proceeding which is scoped to examine strategies for enhanced grid resilience and will begin with the development of a grid flexibility study evaluating capabilities and compensation for flexible distributed energy (DER) and virtual power plant (VPP) resources. As DERs, some microgrids in New York can access market opportunities via the Value of Distributed Energy Resources (VDER) value stack developed by the DPS, although many microgrids are not about to access VDER due to eligibility restrictions. Microgrids may soon have access to the Integrated Energy Data Resource (IDER) platform which is piloting centralized state data exchanges to support DER enablement.

Pennsylvania

The Pennsylvania PUC is hosting an ongoing proceeding related to the implementation of FERC Order 2222 implementation and the participation of aggregated distributed energy resources (DER) in wholesale markets. The PUC also issued an order and policy statement framing energy storage as a distribution asset. This order withheld from integrating stakeholder requests to establish state energy storage ownership categories to be used in regulation, implementing cost-effectiveness tests when evaluating storage for non-wires alternative uses, or requiring utilities or other actors to integrate energy storage assets for certain functions.

Puerto Rico

The PREB opened a proceeding to examine and potentially update its 2018 microgrid regulation, opening an opportunity for stakeholder feedback on its application. In its Mini-Grid Optimization proceeding, the PREB is evaluating microgrids, virtual power plants (VPP), and other distributed energy resource (DER) investments as alternatives to undergrounding and other traditional distribution investments. That proceeding, which was opened after the PREB rejected the Puerto Rico Electric Power Authority's (PREPA) proposed distribution plan, has examined several stakeholder proposals for evaluating the locational cost-effectiveness of microgrids and DER as alternatives for traditional investments.

Rhode Island

In its 2024 fiscal year budget, the Rhode Island governor's office appropriated funding to commission a report focused on strategies to integrate microgrids into Rhode Island's electric grid. The state legislature enacted legislation establishing an energy storage deployment goal of 600 MW by 2033 with associated activity to plan for and incentivize energy storage applications, and the RIPUC opened a proceeding aiming to develop an energy storage tariff. The Rhode Island Division of Public Utilities & Carriers (DPUC) also issued a proposed rule and notice of rulemaking to create performance standards for utility emergency response planning and service restoration.

Texas

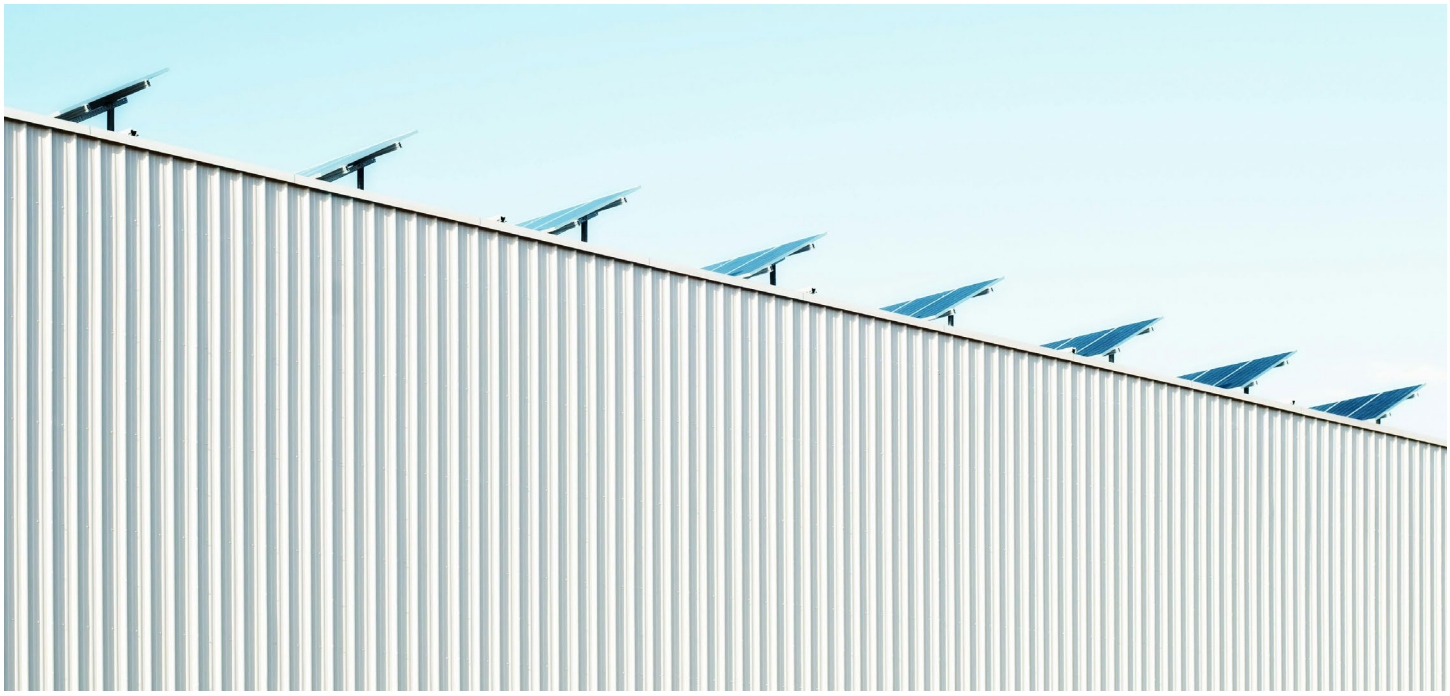
The PUCT created an advisory board to develop the Backup Power Package program included in its 2023 Texas Energy Fund legislation and will provide low-interest loans to behind-the-meter islandable backup power. The advisory board is scheduled to provide a report to the PUCT to implement the program before the end of 2024. In response to another piece of 2023 legislation, the PUCT approved a rule to facilitate utility Distribution System Resiliency Plans, which some Texas utilities have filed (without including microgrids as part of their investment portfolios). In response to stakeholder comments, the PUCT declined to define resiliency or various resilience assets including DER, finding such definitions to be out of the scope of the planning process. Relatedly, staff disagreed with commenters that the requirements limit the use of new technologies or methods and declined to require resiliency plans to include an analysis of the potential integration of DER or microgrids as resiliency alternatives. The PUCT also voted not to approve battery storage rules proposed by ERCOT, which would have enforced a minimum state of charge for energy storage resources to participate in ancillary services markets. Commissioner Cobos argued that the proposed state of charge requirements would slow energy storage deployment, keeping resources from entering the system amid increasing challenges related to load growth, variable solar generation, and extreme weather.

Washington

Washington passed legislation requiring utilities to file integrated system plans which in part forecast the potential for distributed energy resources (DER) to serve load and support their integration on the grid. The act does not address microgrids specifically.

Vermont

Green Mountain Power proposed, in addition to investments approved in its past rate case, an interim resiliency investment that includes $280M in storm hardening like undergrounding along with $30M in utility-owned microgrids and energy storage deployment in poorly performing 'resiliency zones'. The Vermont PUC has also issued a draft energy storage rule that would govern the installation, construction, and operation of energy storage facilities and aggregations in Vermont. The goals of the rule include streamlining and simplifying siting, interconnection, and registration of various energy storage types, co-locating energy storage resources with generation resources, and facilitating energy storage participation in utility tariffs and wholesale markets as independent or aggregated resources. The Vermont legislature established a new standard requiring the grid to be served by 100% renewable energy by 2030 and 5.8% served by distributed renewable energy by 2025 and passed a 'climate superfund' to recover costs related to climate damages to fund adaptation projects including microgrids.



THINK MICROGRID MISSION

Think Microgrid is a coalition that serves as the unified voice for the microgrid industry, highlighting the role that microgrids can play at this unique moment in history. Think Microgrid collaborates with regulators, political leaders, and communicators, supporting their understanding of how microgrid technologies work, their role in achieving policy goals, and how well-designed policy and regulatory reform can proactively address barriers that exist today. Think Microgrid is dedicated to asking difficult questions about the ever-evolving microgrid landscape. Our role is to steward a future that enables full microgrid commercialization and ensures that communities are positioned to capture the resiliency, climate, and equity benefits of microgrids.

Think Microgrid

Partners include:

ENCHANTED ROCK The Power is On.

EATON Powering Business Worldwide

PowerSecure

A Yokogawa Company PXiSE Energy Solutions

Bloomenergy

sunnova

Life Is On Schneider Electric