

# Workshop #3 Report Out

This document covers the report-out from Workshop #3, which took place on October 10, 2024 from 2-4:30 pm Eastern Time.

**This document summarizes the content covered in the workshop. For additional detail, please see the accompanying workshop slides and recordings.**

The workshop agenda included the following:

Session
<b>Welcome:</b> Overview of today
<b>Micro-Presentations:</b> Expert speakers and state practitioners will discuss how they evaluate utility's: <ol style="list-style-type: none"><li>1. NWS Screening Methodologies and CBA Frameworks</li><li>2. Proactive Investment Decision-Making</li><li>3. Hosting Capacity Analysis</li><li>4. Resilience Assessments</li></ol>
<b>Breakout activity:</b> Deeper dive into one of the four topics
<b>Breakout activity:</b> Deeper dive into one of the four topics (part 2)
<b>Reflection, Closing, and what's ahead</b>

**This report-out includes the following:**

- Summary of participant survey data on utility IDSP decisions
- Presentation summaries, questions, breakout discussions, and key resources for the four topics:
  - NWS Screening Methodologies and CBA Frameworks
  - Proactive Investment Decision Frameworks
  - Hosting Capacity Mapping and Data Sharing
  - Resilience Assessments

This cohort and associated activities are part of the DOE-sponsored NARUC-NASEO DER Integration and Compensation Initiative.



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## Planning for a Modern Distribution System

2024 Cohort

A NARUC-NASEO Initiative

# Summary of Participant Survey Data Utility IDSP Decisions

Participants felt most experienced evaluating Non-Wires Solutions (NWS) and Hosting Capacity Analysis & Data Sharing. Similarly, these were the two topics that participants felt utilities were most experienced with.

<b>Rate your <u>own organization's</u> experience in evaluating utility decisions on a scale of 1-5</b> (23 responses summarized below)	
<b>Topic</b>	<b>Average Score</b>
NWS Screening Methodologies and CBA Frameworks	2.7
Proactive Investment Decision Frameworks	2.2
Hosting Capacity Analysis and Data Sharing	2.7
Resilience Investment Decision Frameworks	2.3
<b>Rate how experienced you think <u>utilities</u> are with this framework or analysis on a scale of 1-5</b> (24 responses summarized below)	
<b>Topic</b>	<b>Average Score</b>
NWS Screening Methodologies and CBA Frameworks	2.9
Proactive Investment Decision Frameworks	2.3
Hosting Capacity Analysis and Data Sharing	3.0
Resilience Investment Decision Frameworks	2.2

# Non-Wires Solutions Screening Methodologies and CBA Frameworks

## Presentations

*Expert: Julie Michals (E4TheFuture) + Chris Neme (Energy Futures Group)*

*Applying the National Standard Practice Manual for NWS*

The presentation covered cost-benefit analyses (CBAs) for non-wires solutions (NWS).

Topic	Key Points
<b>Best Practices for applying CBAs to NWS</b>	<ul style="list-style-type: none"> <li>• DERs should be compared with other energy resources and treated consistently</li> <li>• Align cost-effectiveness tests with policy goals</li> <li>• Ensure symmetrical treatment of costs and benefits</li> <li>• Account for all relevant, material impacts</li> <li>• Conduct forward-looking, long-term analysis that captures incremental impacts</li> <li>• Avoid double-counting</li> <li>• Be transparent with analysis and results</li> <li>• Conduct CBAs separate from Rate Impact Analyses</li> </ul>
<b>Takeaways</b>	<ul style="list-style-type: none"> <li>• Primary cost-effectiveness tests should include:</li> <li>• All utility system impacts</li> <li>• All non-utility system impacts related to energy policy goals</li> <li>• The test should be applied consistently to all regulatory decisions on resource investment choices, including but not limited to NWS</li> </ul>
<b>About the National Energy Screening Project</b>	<ul style="list-style-type: none"> <li>• An E4TheFuture project</li> <li>• Built on California's 2001 cost-effectiveness manual (which mainly addressed EE), addressing growing concerns about the limitations of traditional cost-effectiveness tests</li> </ul>

*State Practitioner: Schuyler Matteson (NY DPS)*

*A state framework for evaluating Non-Wires Solutions*

New York created a framework for evaluating NWS/NWAs as they considered grid modernization. They created a societal cost test and a unified framework for utilities to evaluate potential NWSs.

Topic	Key Points
<b>Benefits</b>	<ul style="list-style-type: none"> <li>• Being able to compare NWS with traditional investments</li> </ul>
<b>What to consider</b>	<ul style="list-style-type: none"> <li>• Identifying new frameworks</li> <li>• Creating a societal cost test to inform evaluations</li> </ul>
<b>Barriers</b>	<ul style="list-style-type: none"> <li>• Utility may not provide the NWS</li> <li>• Challenging to manage external partners</li> <li>• Utilities cannot generate electricity in New York</li> </ul>

## Questions

Plenary questions on cost-benefit analyses for non-wires solutions:

Question	Answer
What would be an example of two technologies/investments that a utility would use a CBA for?	<ul style="list-style-type: none"><li>• Analysis of battery costs compared to traditional infrastructure must consider capacity benefits for (a) that portion of the distribution system, and (b) for electric generation needs for the system as a whole.</li><li>• Analysis should also include how NWS interact with state policy goals</li></ul>
Could an example be placing a battery in an area under capacity strain vs upgrading transmission lines and some offsetting of new generation?	<ul style="list-style-type: none"><li>• Yes, a BCA could be used in this example to compare alternative options. The BCA should also include all benefits of both options, for example, the battery option might have environmental benefits that the transmission solution does not, and they need to be counted.</li></ul>

## Breakout Discussions

Participants shared their level of experience on the topic of NWS CBAs and then asked the expert and state practitioner questions. Participants then reflected on the session and shared the next steps they plan to take to advance NWS in their states. See a summary of questions and answers below:

Question	Answer
Are NWSs being used for reliability?	<ul style="list-style-type: none"><li>• Folks are starting to use NWS to address reliability concerns</li></ul>
If you have a DER that you are using to alleviate a distribution system deficiency, how would that interact with an RTO? If all energy must be sold to the RTO market, but the market doesn't need the energy, just a small area of a few blocks, how does an RTO process that?	<ul style="list-style-type: none"><li>• The lowest voltage line that an ISO would secure is ~115kV</li><li>• Anything happening below these nodes are transmission modifiers</li><li>• One of the best things about NWSs is that you don't have to deal with the ISO interconnection process because the amount of energy is so small</li></ul>
How can a PUC incentivize a utility to invest in an NWS if the NWS is not in their best financial incentive?	<ul style="list-style-type: none"><li>• New York attempted to use "earning adjustment mechanisms" (EAMs) to address this</li></ul>

## Key Resources

National Standard Practice Manual (NSPM), 2020,  
<https://www.nationalenergyscreeningproject.org/national-standard-practice-manual/>

Locational Value of Distributed Energy Resources, 2021, <https://emp.lbl.gov/publications/locational-value-distributed-energy>

ConEd, Electric Benefit Cost Analysis Handbook Version 3.0, 2020,  
<https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7B991161C9-1125-4A47-81EA-BCD73081D327%7D>

# Proactive Investment Decision Frameworks

## Presentations

**Expert: Jeff Deason (LBL)**

### Considerations for Proactive Investing and How to Mitigate Risks

This presentation walked through the common risks associated with investing too early or too late in grid infrastructure upgrades, and gave strategies for how to mitigate those risks.

Topic	Key Points <sup>1</sup>
<b>Risks of investing too early</b>	<ul style="list-style-type: none"> <li>• Sub-optimal investment due to lack of perfect foresight</li> <li>• Inappropriate cost allocation</li> <li>• Stranded electricity distribution system assets</li> </ul>
<b>Risks of investing too late</b>	<ul style="list-style-type: none"> <li>• Sub-optimal investment due to time pressure to serve load</li> <li>• Delaying the pace of electrification</li> <li>• Revenue loss/delays to electric utilities</li> <li>• Locks in old technologies if new ones cannot interconnect</li> <li>• Miss meeting policy goals</li> </ul>
<b>How to mitigate risks</b>	<ul style="list-style-type: none"> <li>• Access to more granular grid data</li> <li>• Third party evaluation of load forecasts/distribution system investments</li> <li>• Require that NWSs are considered</li> <li>• Identify electrification-ready zones where capacity is available</li> <li>• Cost recovery mechanisms to provide faster resolution of distribution system investments</li> <li>• More thorough and forward-looking planning</li> <li>• Incentives to reward distribution system right-sizing</li> </ul>

<sup>1</sup> All “Key Points” listed are specific potential risks and mitigations

### State Practitioner: Tracy Dyke-Redmond (MA DPU)

#### Massachusetts created new requirements for electric sector modernization plans.

Tracy provided an update on the Electric Sector Modernization Plans (ESMPs) recently approved by the MA DPU.

Topic	Key Points
MA ESMP background	<ul style="list-style-type: none"> <li>• The ESMPs are the latest iteration of grid modernization planning and investment in Massachusetts. (For history on grid modernization in MA, see <a href="#">Grid modernization and AMI resources   Mass.gov</a>)</li> <li>• In 2022, the MA legislature required electric distribution companies to submit ESMPs to DPU once every five years. The companies filed their first ESMPs in January 2024.</li> </ul>
ESMP Requirements (not a full list; see G.L. c. 164, §§ 92B-92C for details)	<ul style="list-style-type: none"> <li>• Proactive investments</li> <li>• Plan for longer time horizons (through 2050)</li> <li>• Consider recommendations from Grid Modernization Advisory Council (a stakeholder group)</li> <li>• Summarize proposed and related investments, alternatives to those investments, and alternative financing approaches</li> <li>• Identify customer benefits of proposed investments</li> </ul>
Latest updates	<ul style="list-style-type: none"> <li>• The MA DPU approved the proposed ESMPs in Aug 2024 (see <a href="#">order</a>). MA DPU found that the ESMPs will provide a strategic roadmap for the EDCs’ investments in their electric distribution and transmission systems to enable an affordable, equitable clean energy transition</li> <li>• The approval did not address any costs or specific investments, rather whether the ESMPs met statutory requirement</li> <li>• MA DPU will consider ESMP cost recovery in a subsequent phase of the ESMP proceeding</li> </ul>

## Questions

Plenary questions on proactive investing:

Question	Answer
What does the approval process cover for these investments?	<ul style="list-style-type: none"> <li>MA DPU's approval only covers the strategic plans. The DPU <u>order</u> does not include cost recovery mechanisms or approval for specific investments</li> <li>No pre-approval of investments is in this <u>order</u></li> </ul>
What is included in the ESMP proceedings?	<ul style="list-style-type: none"> <li>The statute requires each company to develop an ESMP to proactively upgrade its electrical distribution system and, where applicable, transmission system to:               <ul style="list-style-type: none"> <li>Improve grid reliability, communications, and resiliency;</li> <li>Enable increased, timely adoption of renewable energy and distributed energy resources;</li> <li>Promote energy storage and electrification technologies necessary to decarbonize the environment and economy;</li> <li>Prepare for future climate driven impacts on the transmission and distribution systems;</li> <li>Accommodate increased transportation electrification, increased building electrification and other potential future demands on distribution and, where applicable, transmission systems; and</li> <li>Minimize or mitigate impacts on the ratepayers of the Commonwealth, thereby helping the Commonwealth realize its statewide greenhouse gas emissions limits and sub-limits under Chapter 21N.</li> </ul> </li> </ul>

## Breakout Discussions

Participants shared their level of experience on the topic of proactive investing and then asked the expert and state practitioner questions. See a summary of questions and answers below:

Question	Answer
How do Massachusetts DPU conduct their evaluation?	<ul style="list-style-type: none"> <li>MA DPU evaluated the ESMPs as a strategic roadmap</li> <li>Other considerations: Do utilities adequately consider alternatives? What are risks of investing too early or too late? How to set the right incentives for utilities, including consideration of cost containment incentives and performance mechanisms?</li> <li>Getting the incentives right is very important to get the timing of investment right.</li> </ul>
How are other states doing this?	<ul style="list-style-type: none"> <li>Some states are doing this via DSP processes</li> <li>No known "North Star" state</li> </ul>
What level of forecast do we need? How did Massachusetts determine that?	<ul style="list-style-type: none"> <li>The statute set certain requirements for forecasts: Three planning horizons for electric demand, including a 5-year and 10-year forecast and a demand assessment through 2050</li> <li>Intervenors critiqued the Companies forecasting approaches included in the ESMPs</li> <li>MA DPU determined that each company's ESMP complied with the statutory forecasting and demand assessment requirements</li> <li>MA DPU required the companies to provide a comparison of forecasted and actual demand, separated by categories by year, to allow the DPU and stakeholders to assess the reliability of each company's forecast</li> </ul>

## Key Resources

State	Docket Number / Law	Year	Scope	Summary of the action
CA	<a href="#">A 23 05 010</a>	2023	SCE Rate Case, including electrification load growth	This rate case includes \$1.5 billion in investments to support load growth, including transportation electrification, and consideration of different cost recovery mechanisms for proactive investments.
	<a href="#">R 23 12 008</a>	2023	Transportation electrification	This proceeding focuses on proactive planning for transportation electrification and will include the development prioritization criteria for planning needs.
	<a href="#">Resolution E-5167</a>	2021	Transportation electrification	This resolution enabled utilities to use their line extension policies to future-proof service connections for electric vehicle loads of non-residential customers by including additional capacity to avoid the need for upgrades in the future.
CO	<a href="#">23M-0464EG</a>	2023	Beneficial electrification and DER	This proceeding included a study of barriers to electrification and DERs and identified short- and long-term improvements needed to serve load growth.
MA	<a href="#">24-10, 24-11, 24-12</a>	2024	Electric Sector Grid Modernization Plans for National Grid, Eversource, and Unitil	These proceedings include utility proactive investment proposals to address load growth and consideration for adequate cost recovery mechanisms.
	General Laws, Chapter. 164, §§ <a href="#">92B-92C</a>	2022	ESMP Requirements	ESMP Requirements
MN	<a href="#">23-452</a>	2023	Xcel IDP/TEP, transportation electrification	This proceeding considers the need for proactive grid investments to address EV load growth.
	<a href="#">23-452</a>	2023	Electrification and DER	This proceeding established a commission-led workgroup to establish a proactive investment cost allocation framework for electrification and DERs growth.
NC	<a href="#">E-7, SUB 1276</a>	2023	Duke Rate Case, transportation electrification	This rate case includes \$26 million in proactive investments to serve EV fleet customers.
NY	<a href="#">23-E-007</a>	2023	Transportation electrification, MHDEV focused	This proceeding focuses on developing a proactive approach to deploying grid infrastructure for MHDEVs.
	<a href="#">24-E-0364</a>	2024	Transportation and building electrification	This proceeding focuses on developing a proactive approach to deploy grid infrastructure to meet transportation and building electrification needs.

# Hosting Capacity Mapping and Data Sharing

## Presentations

*Expert: Cody Davis (EPE)*

### **Needs and Leading Practices in Hosting Capacity Mapping**

The presentation covered how hosting capacity mapping can be useful, what elements make maps particularly helpful, and examples of well-designed maps.

Topic	Key Points
Goals of Hosting Capacity Mapping	<ul style="list-style-type: none"> <li>• Help DER Applicants identify cost-effective sites</li> <li>• Identify areas with existing constrained hosting capacity to support utility processes</li> <li>• Reduce the number of applications submitted at sites unlikely to result in completed projects due to capacity constraints</li> <li>• Give more information to DER applicants to help set expectations for potential interconnection costs and study timelines.</li> </ul>
Uses for Hosting Capacity	<ul style="list-style-type: none"> <li>• Allows developers to have more information and help set expectations:               <ul style="list-style-type: none"> <li>○ How many applications are in the queue, available hosting capacity, factor(s) driving hosting capacity limit</li> </ul> </li> </ul>
Assessing Hosting Capacity Effectiveness	<ul style="list-style-type: none"> <li>• Appropriate level of granularity</li> <li>• Types of information provided</li> <li>• Frequency of updates</li> </ul>
State Examples	<ul style="list-style-type: none"> <li>• Minnesota as a great example (small geographic areas w/ lots of info: circuit info, constraints, and queue info)</li> </ul>

## Questions

Questions from the plenary on Hosting Capacity Analysis:

Question	Answer
How do you help direct DERs to the most appropriate locations?	<ul style="list-style-type: none"> <li>• A lot of developers have become more sophisticated at using the map data that utilities are putting out there to know what to expect (developers can see how many projects are ahead of them in queue, which gives them a sense for how long it may take to receive approvals).</li> <li>• These maps are focused on getting information to larger developers, rather than residential customers</li> </ul>
How are utilities using information from the developers to plan where development is most likely to happen?	<ul style="list-style-type: none"> <li>• The first step is having information about where the constraints are on your system</li> <li>• May be used in planning or investment processes, depending on jurisdiction / requirements</li> </ul>
How often should maps be updated and what's a reasonable granularity?	<ul style="list-style-type: none"> <li>• Most important to get high quality data (GIS data and circuit models) and process set up at the start</li> <li>• Some data can be updated automatically, monthly or faster is ideal</li> </ul>
Do any maps include cost for interconnection information?	<ul style="list-style-type: none"> <li>• It would be very difficult to translate interconnection information to direct cost automatically</li> <li>• There is some hesitation from utilities to provide a cost estimate without someone reviewing it</li> </ul>

## Breakout Discussions

Participants shared their level of experience on the topic of hosting capacity analysis and then asked the expert and state practitioner questions. Participants reflected on the session and shared the next steps they plan to take to advance hosting capacity analysis in their states. See a summary of questions and answers below:

Question	Answer
What considerations for security need to be made?	<ul style="list-style-type: none"> <li>• There are several approaches to this:               <ul style="list-style-type: none"> <li>○ Some information, like substations, is already available on public platforms like Google Maps,</li> <li>○ Some utilities obscure the exact location of lines,</li> <li>○ Some states lock hosting capacity analysis behind an NDA/waiver, and</li> <li>○ Some states have a public version and an account-access-only version</li> </ul> </li> </ul>
Can the maps do utility-scale and/or individual granularity?	<ul style="list-style-type: none"> <li>• Most published maps are focused primarily on larger systems, which also have flexibility in site location.</li> </ul>
How can a commission address when there are feeders and utility is at capacity? How can they accommodate more?	<ul style="list-style-type: none"> <li>• This is a fundamental question about the obligation to serve – should residential customers expect to be able to add solar panels without running into system-level upgrade needs or costs? Should the cost of adding more load to the grid be socialized and if so, how? How does that translate to adding generation resources?</li> <li>• Should the utility invest to add capacity to a full feeder because a customer wants to be able to connect?</li> <li>• 3VO is a protection scheme used in distribution to help protect against issues caused by reverse power flow back to the transmission system. This can support high DER penetration on feeders and ensure safety.</li> </ul>
Are we seeing technology that can help resolve hosting capacity limitation hitting the market in meaningful way?	<ul style="list-style-type: none"> <li>• A few examples in Oregon: developers are adding batteries to reduce output capacity of their projects</li> <li>• Maps currently will not discriminate between 5MW of solar, battery, and solar+storage, since the map provides information on the largest amount of new power than can be imported or exported at a location. However, methods such as power control systems are being adopted to facilitate import/export limiting, which will allow AC-coupled storage to be treated as one coordinated resource rather than two separate resources. Power control systems can ensure the maximum import/export does not exceed a pre-set value (e.g., 5 MW max export for a 5 MW solar + 5 MW BESS), rather than relying on the combined nameplate values.</li> <li>• New Mexico recently allowed for limited export or non-exporting using power control systems</li> </ul>
Are hosting capacity analyses done in-house by utilities or do they hire consultants?	<ul style="list-style-type: none"> <li>• It has been done both ways               <ul style="list-style-type: none"> <li>○ For example, a utility may hire a consultant to build the methodology, tools, pipelines, and integrations</li> <li>○ But, there's a lot of items utilities usually do in-house such as maintenance, updating the maps each cycle, etc.</li> </ul> </li> <li>• There are existing, readily available tools out there: Siemens Maximal Hosting Capacity (ICA), and EPRI DRIVE are two</li> </ul>
What are 3 to 5 no-regrets actions for commissions to consider as they discuss HCA with their utilities?	<ul style="list-style-type: none"> <li>• Identify what can be done with the existing system and underlying infrastructure (e.g. queue tracking and application management system and tying the outputs into a hosting capacity map is an IT investment that pays dividends over the years)</li> <li>• Identify how good the models used to develop the map are (e.g. extensive circuit models in GIS make automation of processes easier)</li> <li>• Encourage utilities to list the “last updated” date on the map so users know how recent the data is</li> <li>• Have dialogues on what it takes to implement other pieces of data (e.g. technical, cyber, costs)</li> </ul>

## Key Resources

Lynn P. Costantini, Danielle Sass Byrnett, Benjamin Stafford, Christopher Villarreal, NARUC Grid Data Sharing Playbook, 2023, [https://pubs.naruc.org/pub/E2E50FD7-CD1B-62D5-1071-8D8362AD1E6D?\\_gl=1\\*1kw32iu\\*\\_ga\\*MTA0MTI0MTI5LjE2ODMyMjI3MDI.\\*\\_ga\\_QLH1N3Q1NF\\*MTczMTMyOTUyNS4yNC4wLjE3MzEzMjk1MjUuMC4wLjA](https://pubs.naruc.org/pub/E2E50FD7-CD1B-62D5-1071-8D8362AD1E6D?_gl=1*1kw32iu*_ga*MTA0MTI0MTI5LjE2ODMyMjI3MDI.*_ga_QLH1N3Q1NF*MTczMTMyOTUyNS4yNC4wLjE3MzEzMjk1MjUuMC4wLjA).

Cody Davis, Hosting Capacity Analysis and Distributed Energy Resource Planning, 2024, <https://epeconsulting.com/hosting-capacity-analysis-der-planning/>

Commonwealth Edison Hosting Capacity Map (More Effective Example), 2024, <https://exelonutilities.maps.arcgis.com/apps/webappviewer/index.html?id=d282a890afb34956a906ae224c9f708e>

Xcel Energy Minnesota Hosting Capacity Map (Highly Effective Example), 2024, <https://xeago.maps.arcgis.com/apps/webappviewer/index.html?id=a04c42c922664381a2d35ba12305eb2e>

# Resilience Assessments

## Presentations

**Expert: Pete Larsen (LBL)**

### *Valuing investments in resilience*

The presentation walked through a few example metrics to use when valuing resilience investments as well as general principles to consider in evaluations.

Topic	Key Points
Metrics	<ul style="list-style-type: none"><li>• Allow operators to understand performance of a system before and after an investment<ul style="list-style-type: none"><li>○ Example: cost of power interruptions</li></ul></li><li>• Important to choose metrics specifically relevant for each state (can be hundreds of metrics to choose from)</li></ul>
Evaluating Resilience Investments	<ul style="list-style-type: none"><li>• Information needed to evaluate reliability and resilience includes:<ul style="list-style-type: none"><li>○ Costs: (a) capital cost of the investment, and (b) annual operations and maintenance</li><li>○ Benefits: often avoided costs from public health, public safety, economic disruption, and national security</li></ul></li></ul>

**State Practitioner: Brandon Bowser (MEA)**

### *Best Practices for SEO Resilience Program*

Maryland funded grants for communities and organizations to design and build microgrids and other DER systems. The presentation provided background and lessons learned.

Topic	Key Points
Program Background	<ul style="list-style-type: none"><li>• Maryland program for microgrid and DER design and development<ul style="list-style-type: none"><li>○ Provides grants to communities and organizations</li><li>○ Grants range from \$12,000 to \$1,500,000</li></ul></li></ul>
Lessons Learned	<ul style="list-style-type: none"><li>• Grants to support project due diligence at pre-construction phase have proved to be highly beneficial to project development</li><li>• Allows utilities to support communities and local organizations</li><li>• Links stakeholders and builds compounding capacity</li><li>• Integrates energy resilience with overall resilience strategies</li></ul>

## Breakout Discussions

Participants shared their level of experience on the topic of resilience investing and then asked the expert and state practitioner questions. See a summary of questions and answers below:

Question	Answer
What is the distinction between reliability and resilience?	<ul style="list-style-type: none"><li>• Exist on a continuum: reliability is for shorter-term events not influenced by extreme weather, whereas resilience related to withstanding events larger and longer in scale</li><li>• Part of the same strategy (vegetation management helps reliability as well as resilience)</li><li>• Make investments to ensure critical systems do not lose power, or get power restored faster (e.g., hospitals, cooling centers)</li></ul>
What is reasonable for a utility to be spending on reliability and who should pay for the investments?	<ul style="list-style-type: none"><li>• Produce a calculation to directly attribute costs and benefits</li><li>• If all benefits go to ratepayers, it might make sense to have ratepayers cover the cost, whereas if the benefits are diffuse, it could be passed to taxpayers</li><li>• It's likely that the amount to spend on resilience will depend on region and sector</li></ul>
How are resilience plans coupled with IDPs?	<ul style="list-style-type: none"><li>• This could be a jurisdictional issue between what is up to the state versus the commission</li><li>• It is also helpful for communities to be leading these efforts</li></ul>

## Key Resources

Elisa Wood, What is a Microgrid? Microgrid Knowledge, 2023,

<https://www.microgridknowledge.com/about-microgrids/article/11429017/what-is-a-microgrid>

accessed on November 11, 2024

Resilient Maryland FAQ, Maryland Energy Administration, 2024,

<https://energy.maryland.gov/business/Documents/2.%20MEA%20FY24%20Resilient%20Maryland%20FAQs%20-%20v.1.1.pdf> accessed on November 11, 2024

Elisa Wood, Resources for policymakers researching microgrids, Microgrid Knowledge, 2022,

<https://www.microgridknowledge.com/about-microgrids/article/11427065/resources-for-policymakers-researching-microgrids> accessed on November 11, 2024

# Additional Resources

## Direct technical assistance

- For TA on distribution system planning and grid resilience planning: Contact Lisa Schwartz: [lcschwartz@lbl.gov](mailto:lcschwartz@lbl.gov)
- For TA on other electricity topics, please see: [Resources and Assistance for State Energy Offices and Regulators program](#)

## Upcoming training opportunities

- Next round of in-person IDSP trainings with NARUC and NASEO begin December 2024. Dates and locations of the trainings are listed below. **NARUC and NASEO will send out an announcement when registration opens for each of the trainings.**
  - *December 11-12, 2024 - East - Charlotte, NC*
  - *March 11-12 (or March 12-13), 2025 - Midwest (tentatively Detroit, MI)*
  - *April 23-24, 2025 - West (tentatively Salt Lake City, UT)*
- Next round of in-person grid resilience trainings with NARUC and NASEO begin in Q1 of 2025

## Publications and other online resources

- See Berkeley Lab's [website](#) for additional presentations and links to recordings for prior trainings (scroll below diagram to "Regional and state trainings and presentations")
- U.S. Department of Energy's [Distribution Grid Transformation website](#)
- State Requirements for Electric Distribution System Planning – [online catalog and interactive map](#) and forthcoming report covering more topics
- NARUC/NASEO [Blueprint for State Action](#) for comprehensive electricity planning

## Contact Information



### NARUC

Danielle Sass Byrnett:  
[DByrnett@naruc.org](mailto:DByrnett@naruc.org)

Jeff Loiter:

[JLoiter@naruc.org](mailto:JLoiter@naruc.org)

### NASEO

Kirsten Verclas:  
[KVerclas@naseo.org](mailto:KVerclas@naseo.org)

Rodney Sobin:

[RSobin@naseo.org](mailto:RSobin@naseo.org)

