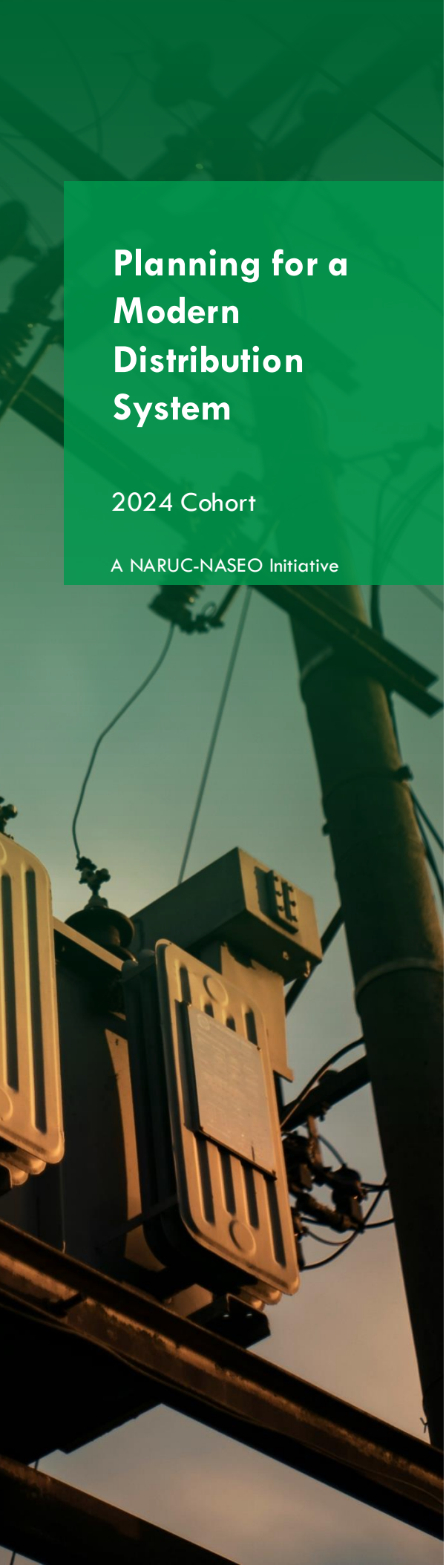

Planning for a Modern Distribution System

2024 Cohort

A NARUC-NASEO Initiative

Workshop #1 Report Out

This document covers the report-out from Workshop #1, which took place on August 13, 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
Welcome: Intro to workshop series, overview of today
Cross-cohort Connections: Meet your fellow cohort members!
Understanding the Challenges and Goals for Distribution Planning, RMI
Berkeley Lab Presentation: Translating State Policy Objectives into Distribution Planning Guidance, Lisa Schwartz
Breakout activity: Brainstorming Planning Guidance to Support Different State Policy Objectives
Reflection, Closing, and what's ahead

This report-out includes the following:

- Actions participants can take coming out of this workshop series
- Summary of participant workshop goals
- Summary of Berkeley Lab's presentation
- Summary of breakout activity discussions
- Additional resources

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

U.S. Department of Energy
Project Sponsor

National Association of Regulatory Utility Commissioners
Project Lead

National Association of State Energy Officials
Project Lead

RMI
Project Delivery Partner

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Actions participants can take coming out of this workshop series to enable modern distribution planning in their state:

Group	Actions They Can Take	Examples of State Actions
Regulators	• **Open a proceeding** to update/start the distribution planning process • **Update/develop principles or guidelines** for distribution planning • **Request data** on utility distribution planning processes • **Ask targeted questions** to the utility at the next IRP/rate case/distribution plan, etc. • **Approve/reject utility plans** • Set up or engage in distribution **grid modernization dockets** • **Approve pilots** for non-traditional solutions for distribution needs	• Connecticut PURA initiated docket for establishing a distribution planning process within a performance-based regulation framework • California PUC issued guidelines for the development of distribution resource plans • Illinois Commerce Commission rejected ComEd and Ameren Illinois' Integrated Grid Plans, noting that the utilities failed to comply with several components of Illinois' Climate and Equitable Jobs Act • The Michigan PSC directed its utilities to work with staff to develop NWA pilots
State Energy Offices	• Develop comprehensive **state energy plans** (set context for and inform future distribution planning) • **Conduct studies or reviews on DSP** and grid mod: planning objectives, procedural requirements, cost recovery, reliability and resilience, coordination with other proceedings, and data needs and analysis • **Convene stakeholder groups** to review & develop recs for DSP processes • **Administer grant programs** for distribution investments • **Participate in working groups** for distribution investments • **Participate in dockets** for distribution planning	• States like Washington, North Carolina, and New Jersey have comprehensive state energy plans • DC Department of Energy and Environment commissioned a study to assess the need for a new substation in the district. • Stakeholder groups include the Hawaii SEO's Energize Kakou and Massachusetts's Grid Modernization Advisory Council • Minnesota Department of Commerce recommended future plans explain how they with the MN PUC's planning objectives in their comments in a distribution plan docket.
Consumer Advocates	• **Participate in working groups** for distribution planning • **Participate in dockets** for distribution planning: recommend that PUCs establish clear objectives for distribution plans, etc.	• Consumer advocates are one of the participants in the Massachusetts Grid Modernization Advisory Council. • Consumer advocates participated and submitted comments in Colorado's proposed rules for distribution system planning docket.

Participant workshop goals:

Participants were asked to journal on the following prompt:

The role I play in distribution planning is X, the challenge my state is facing related to distribution planning is Y, and in the future I want my state's distribution plans to have/be Z.

Representative participant responses are categorized and summarized below:

1. Participants' desired characteristics of distribution plans	
Accurate	• Accurately value customer energy resources and protect non-participating customers • Incorporate accurate load growth and DER forecasts in distribution planning
Comprehensive	• Flexible enough to work for state's varying communities, including rural utility perspectives • Robust cost/benefit analyses comparing thermal generation and LCAs between NG facilities and RE/BESS facilities. • Include the full suite of cost, market, and performance data of candidate dispatchable emission free resources for use in electric sector modeling
Efficient	• Promote an efficient distribution system that contributes to the low carbon energy mix and minimizes necessary investments in the bulk system.
Iterative	• Updated regularly through an open public process that allows for ongoing improvement and refinement in plans.
Transparent	• Improve the access and transparency of utilities hosting capacity maps, so we can better plan grid upgrades to meet DER and electrification goals (and customer demand for both). • More transparent plans that clearly share utility forecasts and incorporate load management to minimize system costs • Make the energy policy process more accessible to external stakeholders, and reduce the information asymmetry with utilities • Address how utilities use DERs and grid mod investments to actually lower system costs, not just how they accommodate them on the system

2. Participants desired stakeholder engagement processes	
Information sharing	• Build a shared understanding of distribution system needs through an open and collaborative process
Load forecasting	• Collaborative stakeholder process to improve load forecasts
Increased Collaboration	• Make distribution planning more collaborative and less adversarial, similar to the IRP process. • Collaborative between states and utilities; providing more in-depth information

3. Participants desired plans to meet specific policy outcomes	
Reliability & resilience	• Build a shared understanding of distribution system needs through an open and collaborative process • Increase reliability and resilience
Equity & Affordability	• Provide information that enables prioritizing distribution system funding according to communities with highest needs and areas most vulnerable to natural hazards • Equitably distribute energy and associated costs. • Affordability and improved reliability balance in utility BCAs • Support state climate goals and balance affordability
Grid needs (load growth, DER integration)	• Align priorities of policy goals into distribution system planning to scale deployment of DERs • Have a distribution grid capable of meeting current and near-term future load • Have a transparent IDSP process that ensures utility is meeting state energy goals

Berkeley Lab Presentation: Translating State Policy Objectives into Distribution Planning Guidance

A summary of Berkeley Lab's presentation is below (slides provided separately, which include specific state examples). Additional resources are at the end of this document:

Policy goals and objectives for integrated distribution system planning (IDSP)

- State IDSP policy goals and objectives should determine the grid capabilities needed, which in turn establish distribution system functionality and requirements
- Example state policy goals and objectives that can be incorporated into distribution planning include:
  - Improving grid reliability and resilience*
  - Increasing customer choice and engagement
  - Accelerated deployment of new technologies and services
  - Supporting DER integration*
  - Reduced greenhouse gas emissions/supporting the clean energy transition*
  - Affordability and equity*
  - Economic development
  - Stakeholder engagement and transparency*

  *Discussed further during breakout groups

Translating state policy goals and objectives into IDSP guidance

- Strategies for providing distribution planning guidance include:
  - Identifying the state priorities that need to be addressed in a utility's distribution plan
  - Gathering information on utilities' current distribution system and planning practices
  - Getting input from experts and stakeholders
  - Hosting working groups to refine distribution planning requirements and address emerging issues around the distribution system
  - Laying out the agency's vision for distribution planning in a whitepaper
  - Making recommendations to utilities on draft plans
- To identify whether state policy goals and objectives are included in the distribution planning process, state decision-makers can look for the following:
  - Stakeholder and community interests should be reflected in plans, and regulators should be able to provide feedback to utilities on filed plans.
  - Utilities should consider all potential solutions to meet grid needs, using robust and transparent analysis.
  - Filed distribution system plans should include a roadmap for achieving state policy goals and objectives, with utility priorities and timelines. Utilities should also track and report on progress for implementing plans.
  - Filings should be well-organized and documented, specify how they meet regulatory requirements, explain how they are coordinated with other types of state and utility plans, and provide useful information for regulators and stakeholders.
  - The planning process should facilitate cost recovery of prudent utility investments in grid modernization and integration and utilization of distributed energy resources, and utility cost recovery requests should be clearly tied to achieving state goals and objectives and utility grid priorities.

Breakout Group Discussion Overview

Participants self-selected into one of four discussion groups on different policy objectives:

1. Resilience & reliability
2. DER Integration and utilization
3. Renewables goals
4. Transparency, improved stakeholder engagement, equity, and affordability

For the topic of their selection, participants brainstormed:

1. **Risks** what happens if this objective is not considered in distribution planning?
2. **Actions**: what actions could address these gaps?
3. **Metrics**: what metrics could you or other entities track to ensure distribution planning is supporting this objective?
4. **Analyses**: what analyses should a distribution plan include to support this objective?
5. **Additional information**: what general distribution system information can you request in order to support this objective?

Breakout Group Discussion Summary: resilience & reliability

1. Resilience & reliability

Risks: what happens if this objective is not considered in distribution planning?	• Reduced system integrity • Loss of life (e.g., from dependence on medical equipment) • Failing to deliver on an important need to customer • Can hurt businesses if they experience outages (economic implications) • If a future system is not reliable, people won't buy into the energy transition • Grid needs to be able to handle excess demand • PSPS events, veg management, prevent distribution system from causing hazards
Actions: what actions could address these gaps?	Risk: Loss of life • Redundancies (back-up generation) for critical facilities • Establishing community resilience hubs (charge devices, get information) • Strategic grid hardening (e.g. raising critical substations in a flood plain) Risk: Hinder energy transition • Incentives to balance any economic loss • Target investments to where the need is the greatest (e.g. where more EVs will come online) Risk: Prevent distribution system from causing disasters • Statewide prioritized funding - where do you get the best bang for your buck in upgrading distribution system (veg management) Other actions: • Resilience/reliability measures from the community. Have them set up a microgrid, private sector can also fill gaps - coordinate with utilities
Metrics: what metrics could you or other entities track to ensure distribution planning is supporting this objective?	• Frequency of events (e.g. outages) • SAIDI, SAIFI, CAIDI (more granular) • Worst performing circuits • Resilience SAIDI/SAIFI - measure separately • Customer experience score • Number of customers with islandable resources • Concentration of generation resources (e.g. located in a wildfire area) • Comparing old & new technology - are we getting our money's worth • Market prices - e.g. during high heat days, how does the system react?
Analyses: what analyses should a distribution plan include to support this objective?	• Assess location of generation resources • Valuing new vs. old tech • Risk assessment - historical weather data • Vulnerability assessment • Technology forecasting • Granular DER adoption - identifying best candidates for DERs • Detailed assessment of the current distribution system condition
Additional information: what general distribution system information can you request in order to support this objective?	• More granular outage data - customer level data • Telecom pole attachments - added weight to wood distribution poles (e.g. CA pole overloaded, led to wildfires)

Breakout Group Discussion Summary: DER integration & utilization

2. DER integration and utilization

Risks: what happens if this objective is not considered in distribution planning?	• More utility assets built and higher system upgrade costs for ratepayers • Capacity constraints and/or slower capacity increases for broader system • Inability to interconnect to grid • Inefficient management of demand • Difficulty in determining grid modernization requirements to enable their utilization and orchestration • Challenges meeting state clean energy and climate goals • Increased costs for DER project development • Difficulty in determining resource requirements • Overcompensation of DERs for services they aren't providing
Actions: what actions could address these gaps?	• Setting of regulations by the state lawmakers • Consideration of the whether the distribution system will have the capacity in the future to accommodate DERs • Constant engagement between stakeholders and utilities • Guidance on forecasting requirements (load, DER, EV, weather/climate parameters) • Guidance on approaches for undertaking risk assessments to guide the asset management strategy and how to effectively utilize DERs (e.g., microgrids) for improving reliability/resilience. Examples in practice today: • In Massachusetts, the Department of Public Utilities asked utilities to batch DER developers into a group & split costs across those. • In Colorado's ERP, the utility is required to plan for an 80% reduction in emissions. This led to more supply side proposals. Also saw increases in transmission into Denver Metro Area, which opened the question of how to leverage DERs in Denver. Lack of integration between ERP and distribution plans creates avoidable high-cost proposals. • Oregon is working with PUC to attach module with HCA and distribution planning tools so that stakeholder can provide input into the process
Metrics: what metrics could you or other entities track to ensure distribution planning is supporting this objective?	• Number of interconnection requests rejected • Distribution interconnection wait time • MW of DG interconnected • Percentage of constraint on feeders over time • Upgrade cost associated with DER interconnection • Building type, project tecs/technologies and siting locations timeline for interconnection • Grid services that DERs can provide (energy, capacity, ancillary services)
Analyses: what analyses should a distribution plan include to support this objective?	• Net load methodology (vs native load) • DER adoption scenario analysis (ex low, likely, high) • DER capacity and characteristics forecast as part of IRP • Location of dispatchable demand flexibility • Flexible interconnection enabling technologies and processes • Consider time of day DER is dispatchable (is DER supply coordinated with demand) • Hosting capacity for load and generation • Consider weather conditions for which DER is dispatchable
Additional information: what general distribution system information can you request in order to support this objective?	• List of DERs with individual system information/interconnection timelines • Reliability reports from the utilities • Utility feeder loading standards for load and generation • Interconnection wait times • Distribution upgrades made for DERs - paid by customers vs utility • Hosting capacity: Feeder and Substation Levels

Breakout Group Discussion Summary: Renewables goals

3. Renewables goals	
Risks: what happens if this objective is not considered in distribution planning?	• Only planning for load growth/ losing DER input • Higher costs • Less efficient renewable energy build out • Decreased reliability of distribution system • Less local control over energy production • Potential to overbuild for the reliability of the transmission system • Not mitigating the effect of large loads
Actions: what actions could address these gaps?	Risk: Higher costs • Develop tariff structures • Publish annual reports • BCA framework and metrics • Iterate several times between models for capacity expansion, transmission buildout, and local solutions to co-optimize costs • Fully integrate system planning from generation/ transmission to distribution (across institutions) Risk: Less efficient renewable build out • Initial modeling must include renewable energy goals and include in upfront optimization • Upgrade distribution grid infrastructure • Implement smart grid technologies (e.g., DERMS) • Ex-post review of investments' impacts on IDP goals (and need for data to do this/metrics) • Setting targets based on modeling Risk: Less local control over energy production/consumption • Stakeholder engagement • Ensure equitable access to renewable energy • Improve technical and economic feasibility of local load flexibility
Metrics: what metrics could you or other entities track to ensure distribution planning is supporting this objective?	• Interconnection costs/timelines (for both DER generation and building/vehicle energization) • Hosting capacity (locational values) data
Analyses: what analyses should a distribution plan include to support this objective?	• Load forecast as granular as possible (locational and temporal) • Scenario analysis (multiple iterations) • Cost and performance characteristics for dispatchable generation • Data/scenario publicly available and transparent methodology
Additional information: what general distribution system information can you request in order to support this objective?	• Longer time frame for planning • Transparent and similar planning criteria across utilities

Breakout Group Discussion Summary: Transparency, improved stakeholder engagement, equity, and affordability

4. Transparency, improved stakeholder engagement, equity, and affordability	
Risks: what happens if this objective is not considered in distribution planning?	• Further exacerbate energy burden • Expensive investments that benefit a few may take place - and everyone pays • Inability to know whether utilities are working towards achieving DSP goals • The utility controls the information and the ultimate outcome (and cost) • Potential missed opportunity for a lower cost solution • Risk that unforeseen capacity constraints, that weren't identified through the DSP process, become more costly to address and more of an imminent issue than they need to be • Number of households with a high energy burden increase; quality of life can be significantly impacted
Actions: what actions could address these gaps?	Need: Transparency into grid needs and range of solutions that could meet these needs • Consider time horizons for grid needs; what is needed in near-term vs long-term Need: Ability to evaluate investments in line with state priorities • Utilize LBNL resource to ensure equity is considered in investment plans • Stakeholder group that evaluates draft distribution plan before filed • After the plan is filed, allow stakeholder to comment on plan as well Risk: Increasing costs for customers not commensurate with benefits • Working on Grid mod rule, working towards specifying that there needs to be cost-benefit analysis for anything that is not a regulatory/statutory requirement
Metrics: what metrics could you or other entities track to ensure distribution planning is supporting this objective?	• Require that utilities disclose how they addressed feedback Note: number of stakeholder meetings is a poor metric
Analyses: what analyses should a distribution plan include to support this objective?	• Cost benefit analysis for all investments not required by statute/regulation (point to gold standard for utilities) • Require that stakeholders are involved on all sections on the process, including assumptions, needs assessments, solution ID - providing blueprint how that engagement could look
Additional information: what general distribution system information can you request in order to support this objective?	• Outcomes of stakeholder group that was formed • Request distribution system plans • Grid modernization plans • Detailed accounting on what was spent on the distribution system (feeder by feeder) • Clearer connection to rate case • Require a section on stakeholder engagement before submission and ongoing engagement regarding investments

Resources for more information

Direct technical assistance

- For TA on distribution system planning and grid resilience planning: Contact Lisa Schwartz: 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 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 Energy Offices' Engagement in Electric Distribution Planning to Meet State Policy Goals*
- State Requirements for Electric Distribution System Planning – online catalog and interactive map and forthcoming report covering more topics
- Interactive Decision Framework for Integrated Distribution System Planning
- *Grid Resilience Plans: State Requirements, Utility Practices, and Utility Plan Template*

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