Improving Transparency in Electric Distribution System Planning to Support Affordability

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Introduction

- 22 states, the District of Columbia and Puerto Rico have distribution system planning requirements. However, all electric utilities conduct distribution system planning annually to assess physical and operational changes needed to deliver safe and reliable electricity service to customers.
- Communities can engage in distribution system planning, or other utility planning proceedings that have distribution system analyses, to achieve their energy goals, such as improved affordability or reliability.
- Engaging with communities and other stakeholders in the distribution system planning process can improve the quality of proceedings and outcomes, develop broad support, and build trust among parties. Collaboratively identifying solutions outside of contested proceedings can save time and reduce costs for all parties involved.
- This deck serves as a resource to communities interested in learning more about distribution system planning and how they can engage in the process.

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Acronyms

DER	Distributed Energy Resources	HCA	Hosting Capacity Analysis
DG	Distributed Generation	IDSP	Integrated Distribution System Planning
DSM	Demand Side Management	IRP	Integrated Resource Planning
DSP	Distribution System Planning	NWA	Non-Wires Alternatives
EV	Electric Vehicles	PUC	Public Utility Commission
GNA	Grid Needs Assessment	PSC	Public Service Commission

The Who, What, Why, & How

Understanding the Opportunities & Benefits

Who this is for: Intended audience

Community organizations and stakeholders interested in utility planning and how to engage in these processes to achieve local energy goals – regardless of whether your state has formal distribution system planning (DSP) requirements.

Why does community engagement in DSP matter? (1/3)

The distribution system provides electricity to homes and businesses, and DSP determines where upgrades and investments are made.

Grid investments shape reliability, resilience, and affordability.

DSP influences who can access resources such as distributed generation and storage, energy efficiency, electric vehicle (EV) connected to the distribution grid and microgrids.

DSP decisions inform local infrastructure, reliability, and resilience investments; and access to local energy.

Why does community engagement in DSP matter? (2/3)

Community input → ensures planning reflects affordability, fairness, and local knowledge.

Engagement in planning processes → allows stakeholders to inform utility investments and grid design.

Participation in regulatory proceedings (including DSPs) → creates formal opportunities to share visions and align with broader goals.

Why does community engagement in DSP matter? (3/3)

Utility plans drive which grid investments are made every year

- DSP determines which local electricity investments are made within your community in the near-term (1-5 years) and long-term (5-20 years).
- DSP and its associated planning processes determine millions of dollars in investments that may provide benefit and value to your community.
- DSP may be able to support local goals such as increased access to resilience or preferred generation technologies.

Your community has influence on local energy investments.

In this presentation we will explore:

"How can utility planning and grid investments reflect your community's local priorities and goals?"

What can you learn from this report?

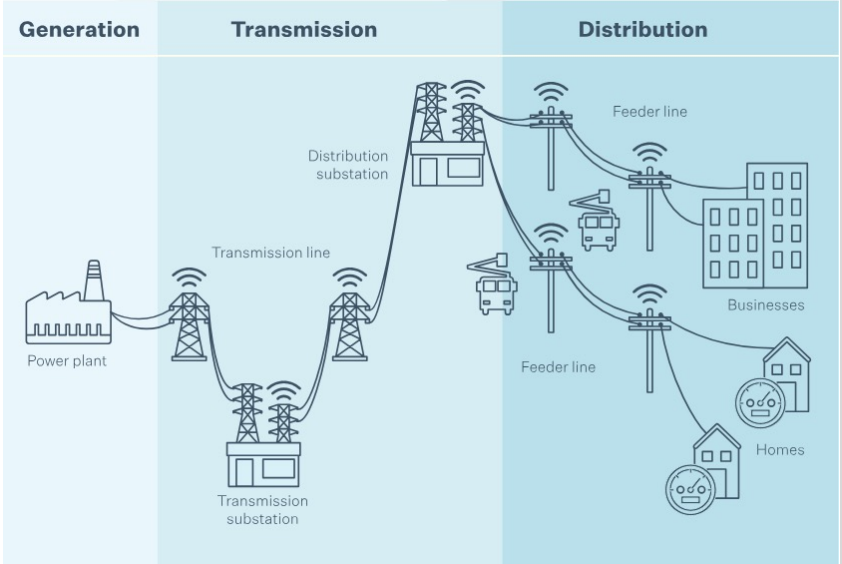
- ✓ **Who** is involved, and what their role in DSP
- ✓ **What** DSP is and why it matters
- ✓ **When** DSP happens and when you can participate
- ✓ **Where** DSP occurs (regulatory, geographic, organizational)
- ✓ **Why** your community's priorities can be part of decisions
- ✓ **How** to get started with effective engagement

The Basics

Overview of the distribution system

The three segments of the electric system

- **Generation**: Where electricity is produced
  - Power plants, solar farms, wind turbines
- **Transmission**: The 'highways' carrying power long distances
  - Hundreds of miles at high voltage
- **Distribution**: The 'local roads' delivering power to your home
  - Poles and wires around your neighborhood (***WHERE DSP FOCUSES***)
- Watch U.S.Department of Energy's Electricity Grid Basics to learn more



Source: PGE's 2021 DSP

The distribution system close-up (1/2)

- The distribution system is the network of poles and wires in your neighborhood.
- It transports electricity to and from homes and businesses.
- This part of the electric power grid has the most direct impact on local communities.

> "The distribution system is the portion of the electric system that is composed of medium voltage (e.g., 69 kilovolts (kV) to 4 kV) sub-transmission lines, substations, feeders, and related equipment that transport the electricity commodity to and from customer homes and businesses and that link customers to the high-voltage transmission system."

Source: DOE 2020

The distribution system close-up (2/2)

- Key components
  - Medium voltage lines, substations, feeders and related equipment.
  - Includes physical equipment as well as information, communications, and operations technologies.
  - Connects to the transmission system.

Source: LBNL

Figure Source: PNNL

Why is the distribution system changing?

- Traditionally, electricity systems were **designed for one-way power flow** from **large centralized generators** (like power plants) to **geographically dispersed distant consumers.**
- **With DERs the grid is evolving** to enable **bidirectional** flow.
- This shift requires **advanced control** and **automation** to manage power flowing in **both directions** and **maintain grid stability.**
- Power now flows from both centralized generators ***AND*** distributed resources back to consumers and the grid.

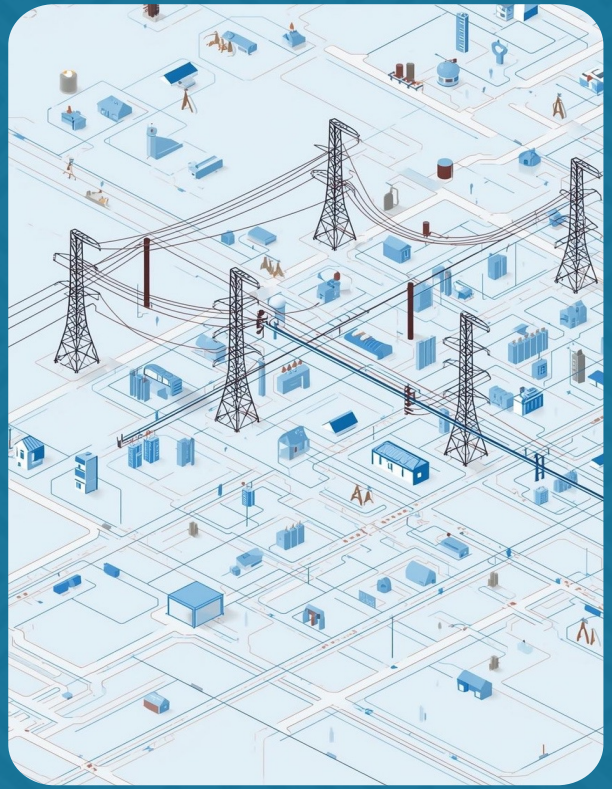
What are DERs?

Includes “distributed generation (DG) resources, distributed energy storage, demand response, energy efficiency, and EVs that are connected to the electric distribution power grid.”

Source: DOE

The Planning Processes

How Utilities Plan for Distribution System Investments



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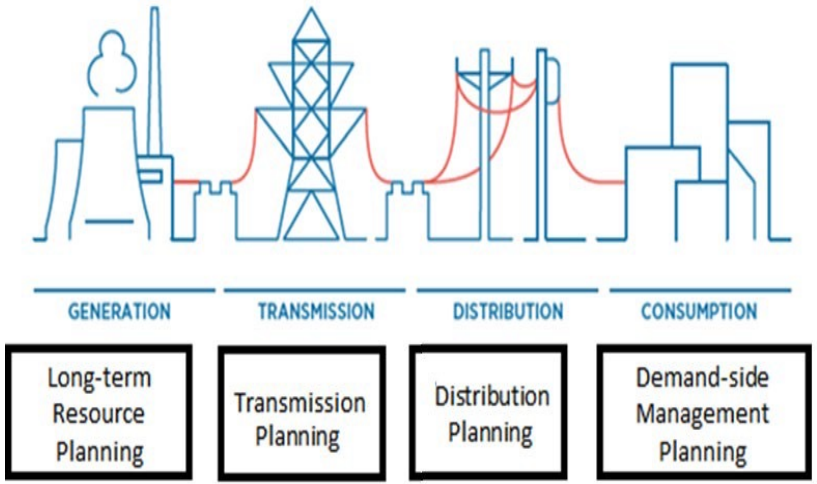
The four types of utility planning

For more information on these planning process click on the links.

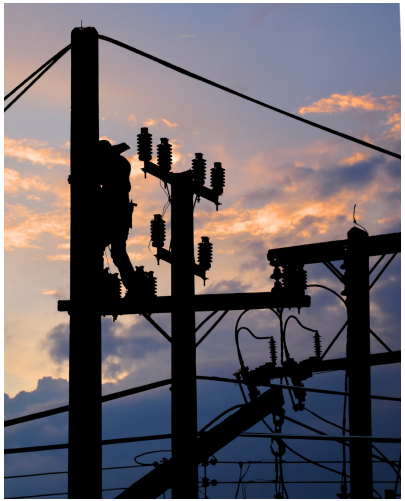
1. Integrated Resource Planning (IRP): Long-term supply (10-20 years)
2. Transmission Planning: High-voltage backbone
3. Distribution System Planning (DSP): Local grid ← ***WE WILL FOCUS ON THIS***
4. Demand-Side Management (DSM): Energy efficiency and demand response



Source: LBNL 2023

Types of distribution system plans

- **Distribution improvement plan** – Enables expedited cost recovery for specified types of system improvements.
- **Grid modernization plan** – Strategy linking technology deployment roadmap to objectives.
- **Distributed energy resource (DER) plan** – Considers ways to increase deployment and integration of cost-effective DERs.
- **Integrated distribution plan** – Systematic approach to enable long-term grid investment strategies that address state and utility objectives, consumers' needs, and evolution at the grid edge — ideally, coordinated with bulk power system planning.



iStockphoto/son1789

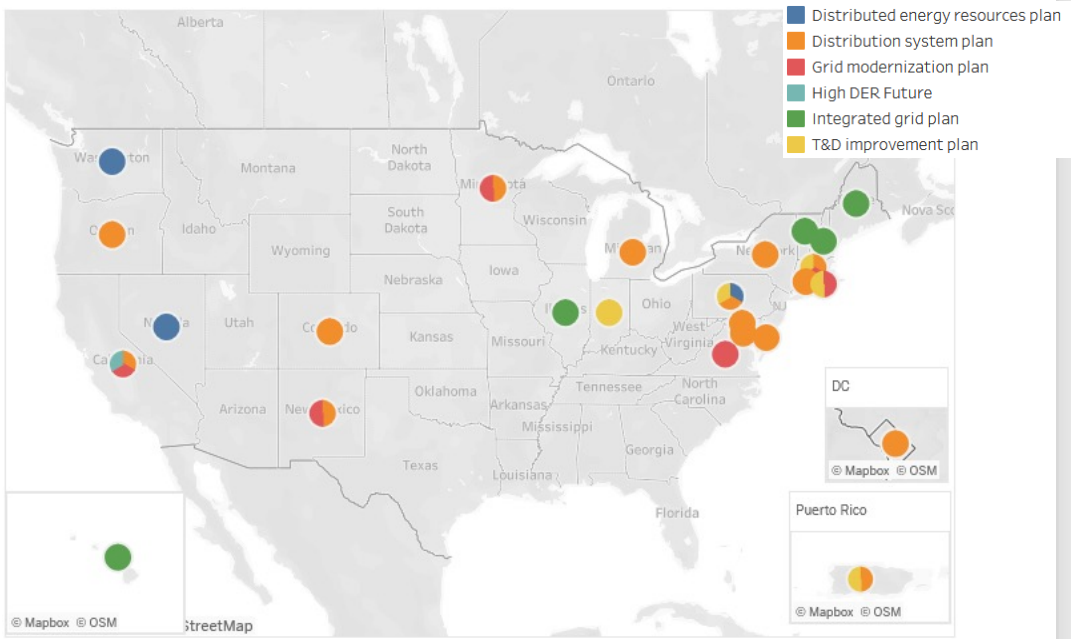
Source: Lisa Schwartz, LBNL

States with DSP requirements: This is *your* window of opportunity

22 states, the District of Columbia and Puerto Rico require some type of electric distribution system planning

Source: LBNL State Distribution Planning Requirements

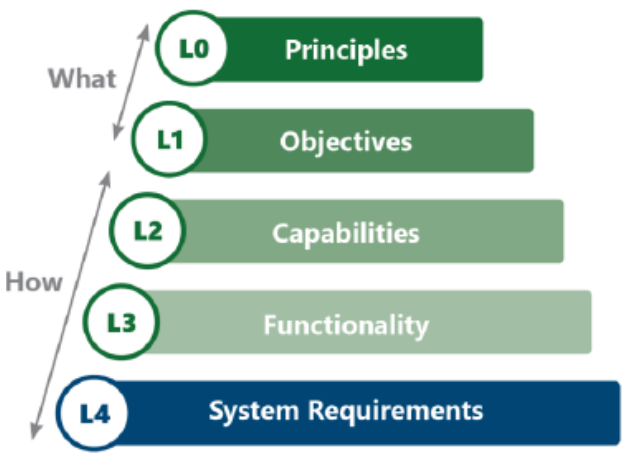
- Most states require some type of long-term plan for bulk power systems.
- 15 states require grid resilience plans.
- Planning is typically siloed.
- Coordinating and integrating across plans can optimize grid investment strategies and address growing complexity at the grid edge.



What is *integrated* distribution system planning?

- A decision framework to enable formulation of long-term investment strategies for local grids, addressing state and local objectives, consumers' needs, and evolution at the grid edge.
- State goals and objectives define **long-term, high-level outcomes** for grid planning.
- That determines **grid capabilities** needed, which in turn establish **distribution system functionality and system requirements**.
- Grid planning objectives
  - **Traditional regulatory goals** — safety, reliability and affordability.
  - **Other objectives** include greater resilience to new threats, reducing air pollution, improving asset utilization, and better integration and utilization of grid-edge resources.
- Grid planning objectives also reflect the importance of **transparency and stakeholder engagement**.

Source: Lisa Schwartz, LBNL



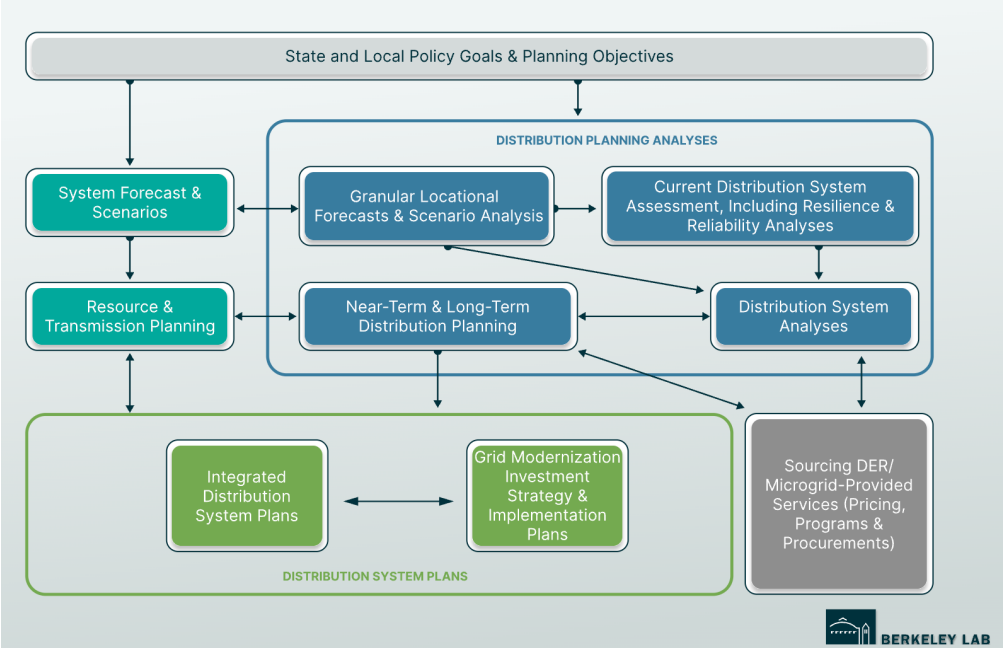
Source: DOE 2020

Integrated distribution system planning framework

At the highest level, the IDSP process brings together **annual distribution planning analyses** with **long-term strategic investments** that help meet customer needs and policy goals. This includes the following basic elements:

- Identifying near-term and longer-term objectives and planning criteria
- Performing best practice engineering analysis
- Determining incremental grid needs, system changes, or changes to existing plans
- Identifying and evaluating potential solutions using risk-based engineering-economic methods

Integrated Distribution System Planning Framework

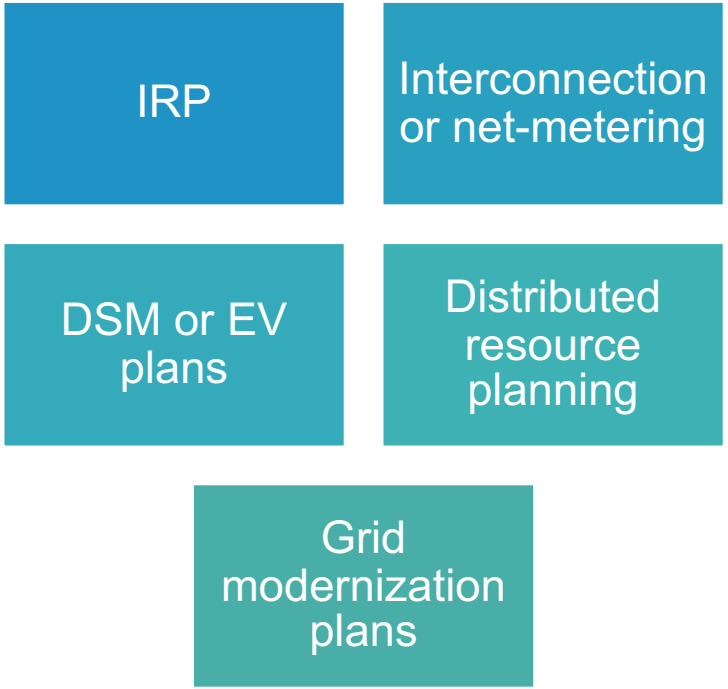


To use the interactive features of the integrated distribution system planning framework click here.

Source: LBNL

Not a DSP state? You can still engage

Even in states without formal DSP requirements, utilities still conduct planning efforts that address many of the same issues, giving stakeholders meaningful opportunities to participate.



What Is Decided in DSP?

Six Technical Topics that Shape Your Community

Technical topics discussed in this presentation that shape your community

Non-Wires Alternatives (NWA)

Innovative solutions instead of new poles/wires

Hosting Capacity Analysis (HCA)

Maps of where renewable energy, EV charging and storage can connect to the grid

Load & DER Forecasting

Predicting future energy demand and DER adoption

Grid Needs Assessment (GNA)

Identifying which areas on the grid need upgrades

Scenario Analysis

'What-if' planning for different potential energy futures

Measuring Reliability & Resilience

Data on grid performance and vulnerability

Each topic name is a link to additional information in the appendix.

How your community can drive impact and shape the grid (1/3)

Regulatory decisions about grid infrastructure can have long-term and differing impacts on communities. By participating in DSP, stakeholders can help achieve local goals in four ways:

How your community can drive impact and shape the grid (2/3)

GRID INVESTMENT TIMING & LOCATION

When and where grid investments are made

Active participation in DSP helps shape more **effective local energy outcomes**. Utility investments may be prioritized in communities where there is strong alignment with local goals, **advancing both reliability** and **resilience** across all communities.

HOSTING CAPACITY TRANSPARENCY

Where DERs can connect

Meaningful engagement can **strengthen granularity and frequency of hosting capacity maps**, improving accuracy of where DERs can be added with **minimal grid impact and costs**. This can result in smarter siting decisions that **maximize local benefits** and **minimize costs**.

How your community can drive impact and shape the grid (3/3)

DER ACCESS

How DER programs are designed and implemented

Community and stakeholder participation can inform better DER program design, influence **incentive structures**, **geographic targeting**, and **program priorities** to deliver the **greatest value** where it is **needed most**.

RELIABILITY & RESILIENCE

Informing investments that strengthen local needs within a community or neighborhood

Community and stakeholder engagement and participation can inform DSP processes related to **reliability and resilience planning** and investments reflect community priorities and goals.

Who Participates?

DSP Stakeholder Engagement

Stakeholder engagement: Overview

What Is It?

A collaborative approach where utilities engage communities, local governments, and stakeholders to influence the design and implementation of electric grid planning and upgrades

Who Participates?

Communities, advocacy groups, businesses, local governments

How It Works

Town halls, workshops, working groups, data portals

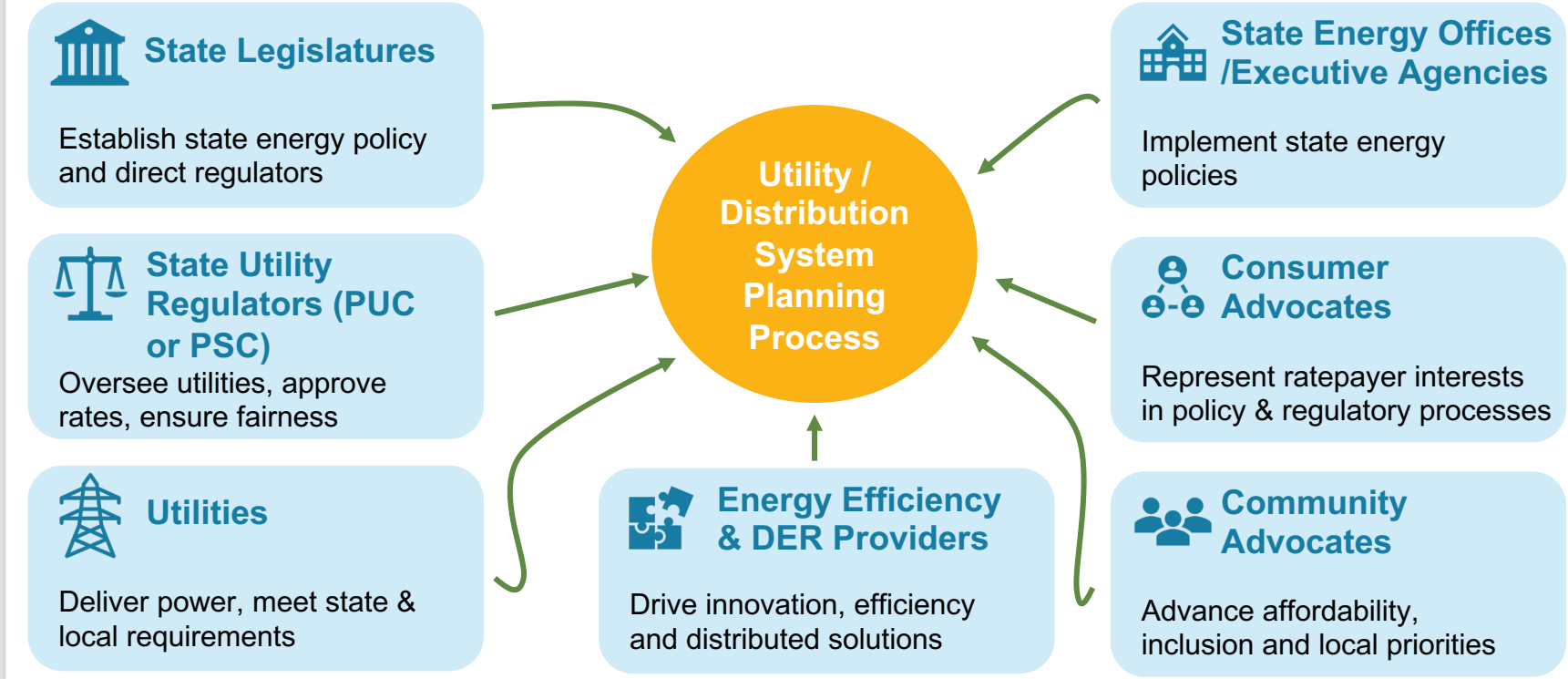
Why It Matters

Ensures plans reflect stakeholder needs and priorities

How to effectively engage in DSP

Requires starting early to build relationships, using multiple communication channels, grounding decisions in stakeholder priorities, and documenting shared learnings.

Who participates?



Why all these players matter

- ✓ No single group has all the answers
- ✓ Better decisions when diverse perspectives are included
- ✓ Utilities bring technical expertise
- ✓ Communities and stakeholders bring local knowledge and priorities
- ✓ Regulators bring public interest perspective

Result: Grid investments that work for **everyone**

States with DSP stakeholder engagement requirements (1/2)

13 states include provisions for DSP stakeholder engagement:

CA CO HI IL MA ME MI

MN* NV NY OR WA MD

Key Finding: The majority of states require utilities to share information with stakeholders and gather feedback **before filing the distribution system plan.**

*Minnesota reference is Order in Docket 18-251, August 30, 2018, available in Minnesota eDockets).

Each state name is a link to the DSP stakeholder engagement requirement source document.

States with DSP stakeholder engagement requirements (2/2)

Below are examples of stakeholder requirements that states may adopt:

MINIMUM MEETINGS

Specify the minimum number of stakeholder meetings utilities must hold before plan filing.

States: CO, IL, MA, MN, OR

REQUIRED TOPICS

Certain topics must be discussed at stakeholder meetings, such as virtual power plants.

States: CO, IL, MN

WORKING GROUPS

Establish formal working groups to provide structured, ongoing stakeholder participation in DSP development.

States: DC, HI, WA

WORKSHOPS

Voluntarily host informational workshops as part of the distribution system planning process.

States: MI, OR

Continued improvement and reporting

- Across 6+ states, utilities must report on stakeholder engagement in filed plans.
- Regulators increasingly require documented processes, feedback, and outcomes.

Colorado
Describe stakeholder engagement process in filings

New York
Include engagement info in topical sections of IDSP

Illinois
Third-party report on stakeholders, discussions & consensus

Rhode Island
Include meeting minutes in least-cost procurement filings

Minnesota
Detailed stakeholder process summaries and collaboration requirements

Massachusetts
Metrics, equity goals, and stakeholder advisory inclusion

How it works

DSPs often require stakeholder engagement to ensure transparency and participation

- These processes invite participation from local governments and communities within regulatory processes.
- They **emphasize two-way information sharing** — utilities share data and plans, while stakeholders share insights, priorities, and feedback to shape outcomes.

Engagement approaches range from informal to formal

- **Informal forums**: dedicated working groups, town hall meetings, webinars, or in-person workshops.
- **Formal structures**: institutionalized stakeholder collaborative groups, externally organized working groups, and data sharing portals.

Where to Begin

When and How to Participate in Distribution System Planning Processes

When to engage

Stakeholder engagement can occur at various stages of the DSP through informal and formal channels

PRIOR TO DSP FILINGS

Example: NY PSC — Required utilities to file a plan and timeline for stakeholder engagement

AFTER DSP FILING

Example: California PUC — Established the Distribution Planning Advisory Group to advise utilities on selection of distribution deferral opportunities and provide input on development of competitive solicitations for DERs to meet those needs

FUTURE DSPS

Example: Nevada PUC and Michigan PSC — Required collaboration on technical processes such as locational net benefits and non-wires alternatives analysis

See Appendix A for additional examples of DSP stakeholder engagement.

How it works

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Examples of engagement approaches (1/2)

- **Stakeholder facilitation, education and transparency** ensure that all participants can engage meaningfully and confidently in regulatory processes, regardless of their technical background or resources.
  - **Facilitation** creates space for collaboration, helping diverse stakeholders communicate effectively, bridge differences, and work toward shared solutions.
  - **Education and transparency** provide stakeholders with the knowledge, tools, and clarity needed to understand regulatory timelines, data, and decision frameworks.

For more information on public participation, see the **Procedural Information Appendix**.

Facilitation

Examples: MA, NY, NARUC

See Appendix: Procedural Information for more details

Education & Transparency

Examples: CA, CO, OR

See Appendix: Procedural Information for more details

Examples of engagement approaches (2/2)

- **Public comment** ensures transparency and accountability by bringing community perspectives, experiences, and local priorities into regulatory decision-making.
  - Provides stakeholders voice that grounds regulatory decisions in real-world impacts.
- **Intervening** allows stakeholders to formally participate in proceedings, present evidence, and challenge proposals, ensuring that diverse interests are represented and considered.
  - Offers a structured way to inform outcomes through evidence and advocacy.

Public comment

Examples: ME, MI

See Appendix: Procedural Information for more details

Formal Intervention

Examples: MN, HI

See Appendix: Procedural Information for more details

What Engagement Looks Like in Practice

Illustrative Examples of How Communities Can Engage in DSP

Contributions from Kathryn Chelminski

NWA examples

See Appendix B for all examples

Illinois

Coalition pushed for greater urgency in screening and procuring NWA.

Commission directed utility to address NWA concerns with stakeholders in workshops.

Minnesota

The City of Minneapolis requested more aggressive pursuit of demand response and increased stakeholder involvement in utility planning processes.

Commission required utility to meaningfully engage with communities on NWA prioritization.

New York

City advocated for NWA prioritization and collaborative approach to designing solutions that meet local needs.

Commission initiated collaborative effort with utility and stakeholders on policy goals and program alignment.

New York: NWA & local collaboration

What Stakeholders Did

NYC filed detailed comments in the 2018 Distribution System Implementation Plan (DSIP) docket (16-M-0411) on need for NWAs in ConEd's plans and prioritization of solutions that benefit local communities.

Key Requests

- Include potential DER siting locations that provide benefits beyond load relief
- Prioritize NWAs improving local air quality and community benefits
- Incorporate energy storage into system operations
- Include planned NWA solicitations
- Consider cost impacts and timelines

NYC Filed comments on Nov. 19, 2018; NYPSC Order p. 9

Outcome

Commission to initiate collaboration between ConEd and stakeholders to develop policy goals and prioritization rubric for valuing policy criteria. Commission encouraged utilities to work with municipalities on NWA design aligned with greatest system need and local priorities.

Key Takeaway

NYC's comments and priorities to advance NWAs in ConEd territory were focused on the needs and benefits associated with deploying more NWAs. Additionally, they reflected partnership with local communities and were well-received by the Commission.

Commission's Direction

- Develop ongoing collaboration between utilities and stakeholders
- Create policy goals and prioritization rubric for valuing policy criteria
- Alignment of NWA programs and process is needed to enable innovative DER opportunities (p. 9 of NYPSC Order)
- Ensure programs designed with local stakeholder input

NYPSC Order p. 22-24

HCA examples

See Appendix C for all examples

Illinois

Coalition pushed for detailed HCA and flexible interconnection approaches.

Commission directed utility to develop dynamic hosting capacity plan and include it in future workshops.

Michigan

Advocacy organization requested better HCA on circuits serving environmental justice communities.

Commission required annual HCA map updates and publication for public access.

Minnesota

City recommended HCA that identifies service gaps and targets investments in marginalized areas.

Commission required utility to incorporate community metrics into hosting capacity mapping and data disclosure.

Illinois: Hosting capacity analysis & flexible interconnection

What Stakeholders Did

JNGO coalition filed comments on ComEd's HCA maps in the Illinois Commerce Commission's (ICC's) Multi-Year Integrated Grid Plan (MYIGP) docket (22-0486). Their Initial Brief referenced a memorandum of understanding (MOU) with ComEd outlining vision for flexible interconnection and dynamic hosting capacity.

Key Requests

- Develop a written plan for implementing Flexible Interconnection approaches
- Scale programs and incorporate them into planning and operational practices
- File a plan and report progress through Commission's Interconnection Working Group

Initial brief ELPC JNGO, p. 15; MOU JNGO Ex. 3.01 filed 5/23/24

Outcome

ICC Staff recommended ComEd add further details to HCA maps and develop dynamic hosting capacity plan. Hosting Capacity/Flexible Interconnections made topic for future Interconnection Working Group workshops.

ICC Final Order, p. 187

Key Takeaway

Stakeholder involvement yielded positive outcomes in the final Order making progress toward the key JNCO priorities on HCA. Stakeholder testimony and technical recommendations resulted in Commission direction to improving HCA and implementing flexible solutions. Using an MOU to document shared vision strengthened stakeholder credibility.

Stakeholder Group

The Joint NGOs (JNGO) are a coalition of environmental organizations including Environmental Law & Policy Center, Environmental Defense Fund, Natural Resources Defense Council, Union of Concerned Scientists, and Vote Solar.

Load and DER forecasting examples

See Appendix D for all examples

Massachusetts

Advocacy organization requested consistent forecasting assumptions across utilities and better explanation of modeling choices for load and demand response.

Commission directed utilities to use consistent modeling assumptions and provide forecast comparisons for transparency and reliability assessment.

Minnesota

City recommended DER forecasting aligned with local energy goals and federal incentive programs to better predict adoption rates and grid impacts.

Commission required utility to provide standalone DER forecasts and incorporate community energy and environmental goals into distribution planning.

Minnesota: DER forecasting aligned with local goals

What Stakeholders Did

City of Minneapolis filed comments in the Minnesota PUC IDP docket (E002/M-23-452) on DER adoption forecasting aligned with the City's goals.

Key Requests

- In addition to evaluating LoadSEER forecasts, consider DER adoption trends in markets with established emissions reduction and clean transportation goals
- Double adoption rate assumptions when factoring in federal funding (e.g., Inflation Reduction Act) for EVs and solar
- Analyze new federal incentives for space and water heating electrification
- Reflect energy and environmental goals of Minnesota communities in planning

City of Minneapolis comments filed March 1, 2024, p. 2

Outcome

Commission required Xcel to provide standalone DER forecasts, evaluate forecast accuracy, and incorporate community energy/environmental goals. Additionally, they must reflect how local goals are incorporated into distribution planning with consideration for beneficial electrification.

MNPUC Order, p. 23 and 7

Key Takeaway

Linking DER forecasting to community environmental goals resulted in Commission requirements for utility transparency and integration of local priorities. Stakeholder comments that connect technical forecasting issues to broader policy goals are more likely to be adopted.

Stakeholder Strategy

City of Minneapolis Planning: Reduce environmental pollution by 2030, making Minneapolis carbon neutral by 2050; including reducing emissions, planting trees, creating green jobs, improving energy efficiency, integrating community needs into environmental action.

Additional information on Minnesota's Integrated Distribution Planning can be found here.

GNA and scenario analysis example summary

See Appendix E for all examples

Michigan

Advocacy organizations requested better grid diagnostic data and community engagement in distribution planning scenarios.

Commission required utility to incorporate pre- and post-filing stakeholder outreach and community engagement opportunities.

Minnesota

City recommended scenario analysis prioritizing community-focused investments and alignment with environmental goals and federal incentives.

Commission required utility to reflect energy and environmental goals of communities in distribution planning and DER scenario analysis.

New York

City advocated for holistic distributed energy resource (DER) methodology reflecting benefits beyond load relief and incorporating energy storage planning.

Commission called for more details on grid needs and comprehensive energy storage plans for system operations.

New York: Grid needs assessment & DER valuation (1/2)

What Stakeholders Did

New York City (NYC) filed comments in NY PSC's Docket 16-M-0411 on Con Edison's Distribution System Improvement Plan (DSIP). Their comments aligned with New York State environmental goals (100% zero-emission electricity by 2040) and NYC environmental priorities.

Key Requests

- **Holistic DER Methodology:** Reflect total value of distributed energy resource (DERs) beyond load relief including greenhouse gas emissions reduction
- **Air Quality & Public Health:** Prioritize DER deployments in poor air quality zones and environmental justice areas
- **Multi-Benefit Analysis:** Identify DER locations providing benefits beyond grid relief and ensure NWAs provide environmental and economic co-benefits
- **Energy Storage:** Incorporate energy storage into system operations for grid stability and resilience

NYC Comments filed Jan 9, 2017, p. 8 and Nov 18, 2018, p. 5

Policy Context

New York State's CLCPA Goals: 100% zero-emission electricity by 2040. NYC responsible for a third of the state's energy consumption. NYC has additional goals to reduce fossil fuel dependence, develop clean energy workforce, increase grid resilience, relieve congestion.

Why This Matters

NYC's comments connected distribution planning to the state's environmental legislation and the city's environmental community priorities, demonstrating that grid needs assessment must account for broader policy goals and community benefits, not just load relief.

New York: Grid needs assessment & DER valuation (2/2)

Outcome

NY PSC Order highlighted the need for more details and data on the needs of the distribution system to enable informed decision-making and create opportunities for DER providers. The Commission stated that utilities have “advanced a limited number and variety of energy storage projects” without a “robust and comprehensive plan for fully understanding and productively employing storage any time soon.”

NY PSC Order, p. 29

Commission Direction

- Directed utilities to provide more diagnostic data on grid needs
- Called for comprehensive energy storage planning for system operations
- Recognized energy storage as potential "grid-side enhancement"
- Emphasized importance of multi-benefit analysis for DER siting and NWAs

NY PSC DSIP Order (Docket 16-M-0411)

Key Takeaway

NYC emphasis on a holistic DER valuation and energy storage planning contributed to Commission requirements for better grid diagnostic data and comprehensive storage strategies. This outcome generally aligns with NYC interests to incorporate storage in system operations and support multi-benefit DER deployment.

Why This Worked

- Connected distribution planning to the state’s environmental legislation (CLCPA)
- Framed grid needs through community impact and environmental justice lens
- Proposed specific multi-benefit evaluation methodology
- Emphasized energy storage as critical grid asset
- Sustained engagement over multiple filings (2017 and 2018)

Measuring reliability and resilience examples

See Appendix F for all examples

Michigan

Coalition advocacy on reliability metrics, tree trimming, and distributed energy resources (DER)/ Non-Wires Solutions (NWA) value for long-term reliability improvement.

Commission required comprehensive reliability maps with historical data, GIS analysis, and industry-standard metrics; directed focus on DER, NWA, and reliability benefits.

Minnesota

The city advocated for resilience planning with attention to vulnerable populations experiencing longer-duration outages.

Commission required utility to address resilience for vulnerable populations and critical customers (hospitals, first responders) during extended outages.

Michigan: Reliability in distribution system planning

The Challenge

Communities in Michigan faced reliability concerns due to frequent power outages and poor communication from DTE (Detroit Edison).

The Approach

- For the 2023 DSP, DTE increased stakeholder engagement to gain deeper insights from customers, communities, and technical stakeholders.
- DTE responded by offering regular meetings with federal, state and local representatives, community leaders from faith-based institutions, social service agencies, and advocacy organizations.
- Residential customers suggested DTE communicate more on regulatory matters and infrastructure updates related to improving reliability in immediate communities.

The Results

Based on stakeholder feedback, DTE created a reliability-focused Empowering MI blog site and sent targeted emails to customers about work happening in their area.

DTE also created Electric Reliability Improvement Maps showing work on tree trimming, utility pole maintenance, grid modernization, and other projects (DTE 2023: 199; Frick and McAdams 2025).

Grid modernization investment summary

See Appendix G for all examples

Massachusetts

Coalition advocated for better cost-benefit analysis and community benefit agreements in grid investment strategy framework.

Department explicitly recognized stakeholder concerns and outlined need for clearer cost-benefit analysis proposals with community engagement requirements.

Oregon

Regulatory order mandated proactive stakeholder engagement and community-centered planning for Non-Wires Alternatives (NWAs) and grid modernization.

Order 24-421 requires utilities to collaboratively develop community engagement plans addressing community goals and clean energy priorities.

Massachusetts: Cost-benefit analysis & community benefits agreements

What Stakeholders Did

Joint Intervenors Coalition filed comments in MA DPU's Electric Sector Modernization Plan (ESMP) docket (24-10) on net benefit framework and community benefits agreement proposals.

Key Concerns & Requests

- **Cost-benefit modeling:** Utilities did not reflect full impact to ratepayers; models were incomplete
- **CBA clarity:** Need clearer proposals for community benefit agreements with host communities
- **Net benefit analysis (NBA):** Utilities improperly applied NBAs only to incremental ESMP investments, not all investments
- **Community participation:** Requested further details on source of funding, project eligibility, mitigation measures, and compensation

CLF, Acadia, GECA Reply Brief, p. 2-3 and Initial Brief May 17, 2024

Outcome

DPU explicitly recognized Acadia Center comments on NBA. Department agreed methodology was unclear on NBA implementation and identified four key issues: (1) determining appropriateness of entering a NBA, (2) cost caps per NBA, (3) types of community benefits, (4) cost recovery approach. The DPU required further stakeholder engagement to be held.

MA DPU ESMP Final Order, p. 381

Key Takeaway

Coalition filing resulted in explicit Department recognition of stakeholder concerns and outlined roadmap for future engagement on NBA. Highlighting gaps in utility cost-benefit analyses prompted regulator scrutiny and requirements for clearer frameworks.

Joint Intervenors Coalition Members

Acadia Center: Research and advocacy for clean energy and modern grid. **Conservation Law Foundation (CLF):** Legal nonprofit advancing environmental protection. **Green Energy Consumers Alliance (GECA):** Nonprofit alliance for clean energy policy.

Strategy Used

Multi-organization coalition filing detailed technical comments on cost-benefit methodology, combined with strategic reply brief addressing specific gaps. Proposing concrete improvements (broader investment application, clearer NBA methods) increased likelihood of adoption.

Questions?

Q&A

Appendices

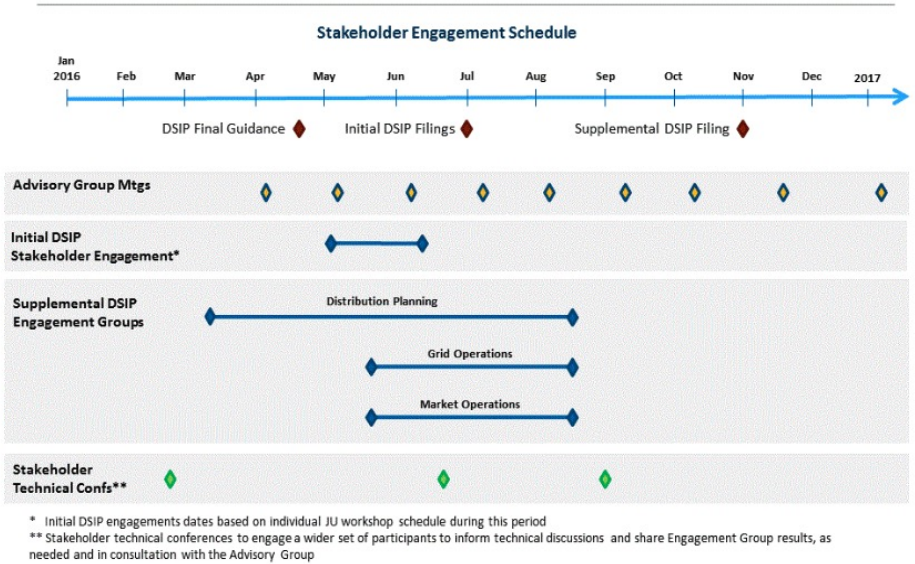
A-G

Appendix A

DSP Stakeholder engagement

CO, HI, IL, MA, ME, MN, NY, OR, WA: Engagement prior to DSP filings

- Nine states require regulated utilities to engage stakeholders before they file plans (CO, HI, IL, MA, ME, MN, NY, OR, WA).
- For example, **the New York PSC** adopted guidance for Distributed System Implementation Plans (DSIP) in 2016, directing that the utilities file a plan and timeline for stakeholder engagement during development of their first plans.



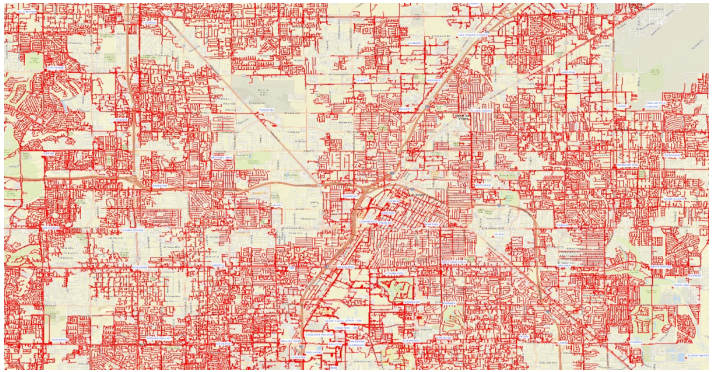
CA, MN, OR: Engagement after the DSP is filed

Source: Andrea Piacquadio

- The California PUC established the Distribution Planning Advisory Group to advise utilities on selection of distribution deferral opportunities and provide input on development of competitive solicitations for DERs to meet those needs.
- Minnesota PUC staff can determine if an additional stakeholder meeting is needed after the utility's IDP is filed to gather input.
- Oregon PUC staff holds ongoing technical workshops and a technical working forum to support collaboration between interested parties.

HI, MA, MI, MN, NV: Engagement when considering changes for future DSP filings

- As states and utilities gain experience with DSP processes, stakeholder engagement is evolving (e.g., HI, MA, MI, MN and NV)
- For example, **Nevada** PUC has requirements for NV Energy
  - Convene a process to address stakeholder concerns related to its 2022 IRP
  - Collaborate with stakeholders on locational net benefits and NWA related to its 2022 Distributed Resource Plan (DRP) update
- Another example is **Michigan** PSC's requirement for DTE
  - Based on feedback from stakeholder engagement in the distribution planning process, DTE created reliability improvement maps (figures on the right).



Source: *NVE DRP Locational Net Benefits Analysis Map*

Exhibit 17.1.1 Electric Reliability Improvement Map (DTE Service Territory)

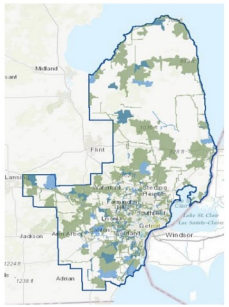
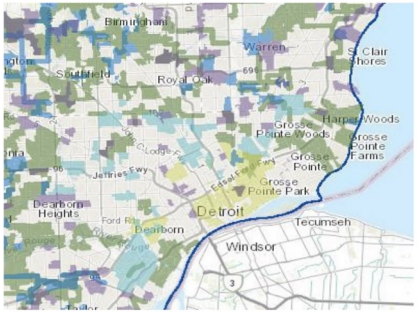


Exhibit 17.1.2 Electric Reliability Improvement Map (Metro Detroit)



Source: DTE Electric

CO, IL, NY, RI: Requirements for continued improvement & reporting

Colorado

Requirement: Regulated utilities must include a description of their stakeholder engagement process in filed plans.

Format: Narrative description of process and outcomes.

New York

Requirement: PSC Staff guidance for 2023 DSIP filings recommended that each topical section include information about stakeholder engagement.

Topics: Grid planning, forecasting, grid operations, EVs, storage, energy efficiency, clean heat integration.

Illinois

Requirement: At the conclusion of required workshops on Multi-Year Integrated Grid Plans, an independent third-party facilitator submits a report.

Report includes:

- Stakeholders involved
- Discussions held
- Proposals presented
- Areas of consensus
- Areas of disagreement

Rhode Island

Requirement: Least-cost procurement plans filed with PUC must include minutes of public meetings.

Who files: Office of Energy Resources and Energy Efficiency and Resource Management Council.

Must include: Minutes of public meetings and presentations made at Council meetings.

Massachusetts: Stakeholder engagement framework

GMAC Recommendations to Utilities

- **Goals & metrics:** Develop clear reporting on successful measures
- **Advisory inclusion:** Include Clean Energy Stakeholder Advisory Group (CESAG) in Advisory Council
- **Impacted community focus:** Place CESAG within Working Group
- **Impacted community definitions:** Specific and consistent definitions
- **Reporting metrics:** Quantifiable reporting metrics to measure benefits

Key Points

- 5 total recommendations made
- Focus on vulnerable populations and accountability
- Emphasis on measurable outcomes

Utility Response & Compliance

- **Action:** EDCs incorporated meaningful revisions to ESMPs
- **Response format:** Provided explanations for each recommendation
- **Adoption rate:** Utilities adopted 4 of 5 GMAC recommendations (with modifications)
- **DPU finding:** EDCs **complied** with engagement requirements

Department of Public Utilities Guidance

- **Expectation:** Make appropriate efforts to invite stakeholder feedback
- **Ongoing collaboration:** Engage CESAG on improvements and lessons learned
- **EDC awareness:** Companies understand importance of vetting ESMPs with stakeholders and community organizers

"The EDCs [electric distribution companies] are fully aware of the importance of vetting these ESMPs with stakeholders and community organizers, both during their development, and through their future implementation."

Source: EDC filing

Minnesota: Stakeholder requirements

MINNESOTA INTEGRATED DISTRIBUTION PLANS (IDPS)

2021 IDP Order: Dockets M-21-694 and M-23-452

- **Requirement:** File summary of stakeholder process
- **Timeline:** List next steps by August 2023
- **Minimum meetings:** At least 4 stakeholder meetings
- **Xcel action:** Held 6 meetings to cover all plan content

Topics Generated by Stakeholders

- How to prioritize projects
- Reflecting distribution constraints in forecasting
- Reflecting benefits of distributed solar (DS) for reducing peak
- Considering multi-value projects

2023 IDP Order Requirements

- **Host additional discussions:** On cost-benefit analysis approaches
- **Report findings:** In 2025 IDP filing
- **Collaborate with stakeholders on refinement:** Planned net load methodology
- **Evaluate approaches with stakeholders:** alternative approaches, seasonal factors, alternative planned net load
- **Report results:** In 2025 IDP filing
- **Refine the planned net load methodology**

DER Stakeholder Outreach (2023)

- **Robust outreach:** Specifically for DER owners/operators
- **Describe:** Engagement process, materials, DERMS info
- **Report:** Feedback received and how utility addressed it

Illinois: Engagement example

CITY OF CHICAGO'S POSITION

The **City of Chicago** intervened in the ICC MYIGP Proceeding 2022 to advance its energy goals (Docket 22-0486).

The city argued that **DER deployment** is essential for achieving carbon reduction targets.

CITY OF CHICAGO 2022 ENERGY GOALS

- Reduce carbon emissions 62% by 2040
- Increase renewables 20 MW and 150 MW energy storage by 2025
- Encourage 3 GW energy demand reduction by 2035

Source: Chicago Action Plan

ICC RESPONSE

ICC acknowledged: "The Commission takes the City's recommendation under advisement. The Commission appreciates ComEd's commitment to participate in any future proceeding on this topic."

Source: ICC Order, p. 318

OUTCOME & IMPACT

City's intervention acknowledged by ICC and incorporated into official record for future proceedings.

Demonstrates how **participation** enables discussion of community goals, and includes them as part of ongoing regulatory grid planning discussions.

Michigan: Engagement example

PUBLIC INPUT

Michigan residents submitted comments to DTE's DSP highlighting frequent outages and inadequate infrastructure (Docket U-20147)

Personal experiences: Customers discussed the hardship experienced due to frequent outages and lack of communication regarding the outages, inadequate infrastructure and generally poor reliability on the system

- "We lose power so many times a year. Just in 2023 alone we've been without power for a total of 432 hours."
- "We have 7 kids and lost hundreds of dollars of food due to the power outage. We had to leave our home because there was no heat."

STAKEHOLDER RECOMMENDATIONS

Citizens' Utility Board

Called for detailed outage reporting (SAIDI, SAIFI, CAIDI) by grid component and better outage mapping in their supplemental comments

Solidarity & Abrams

Their joint comments emphasized that outages fall disproportionately on certain communities and urged alignment with marginalized community indicators

REGULATORY OUTCOMES

Michigan PSC acknowledged reliability concerns and required improved data collection and benchmarking

Commission expressed concern over the development of a "normal-weather SAIDI" metrics, finding the process to be a slippery slope and challenging to understand

Commission directed utilities to report on detailed data collection metrics and enhance mapping analyses to compare reliability performance

Result: Clear alignment between public feedback and regulatory action with written comments shaping utility planning

Maine: Stakeholder engagement to establish priorities

PUBLIC INPUT PROCESS

In 2022, **Maine PUC** held 13 workshops and stakeholder meetings to identify grid plan priorities (Docket 22-00322)

January 2024: PUC solicited input on:

- Forecasting & Scenario Planning
- Hosting Capacity Maps
- Solutions Evaluation
- EEEJ Impacts

STAKEHOLDER PERSPECTIVES

Island Institute emphasized need to: (MPUC Final Order Attachment B)

"Prioritize reliability and resilience improvements, optimize data quality for distribution system planning, and promote flexible management of consumer resources"

REGULATORY OUTCOMES

PUC Order explicitly references stakeholder feedback on reliability, resiliency, and affordability

Commission prioritized assisting in minimizing the cost of energy available to consumers “ensuring that rates are just and reasonable to customers and public utilities, and reducing GHG emissions” (page 20 of Final Order)

Stakeholder input directly shaped regulatory priorities and grid plan requirements

New York: Stakeholder engagement to develop DSP content

The Joint Utilities of New York took a structured approach to provide ample opportunity for stakeholders to participate in developing distribution system integrated plan content and provide input.

ADVISORY GROUP COMPOSITION

About 20 organizations representing a broad range of stakeholders, including utilities, regulators, DER providers, NYPA, NYISO, IPRNY, environmental advocates, and customer groups

STAKEHOLDER ENGAGEMENT PROCESS

Multiple engagement groups around three main topic areas—DSP, Grid Operations, Market Operations—with open meetings, webinars, and posted materials

PARTICIPATION & GOVERNANCE

All meetings followed confidentiality and antitrust guidelines to promote open dialogue while protecting proprietary information

ENGAGEMENT OPPORTUNITIES

- **Advisory Group:** Guide priorities and sequence for stakeholder discussions
- **Stakeholder Conferences:** Share engagement group outcomes and Joint Utilities plans
- **Utility-specific Workshops:** Present utility-specific plans for discussion
- **Engagement Groups:** Create shared understanding through technical discussions
- **Joint Utilities Website:** Provide transparency and meeting notifications

Source: Joint Utilities of NY 2016

Appendix B

Non-Wires Alternatives (NWA)

What are NWA?

Technology solutions that enable utilities to "defer, mitigate, or eliminate the need for some traditional system investments at locations where distribution capacity is insufficient to meet expected future need."

Source: Schwartz et al., 2024, State Requirements for Electric Distribution System Planning

Non-Wires Alternatives (NWA) summary

Illinois

Coalition pushed for greater urgency in screening and procuring NWA.

Commission directed utility to address NWA concerns with stakeholders in workshops.

Minnesota

The City of Minneapolis requested more aggressive pursuit of demand response and increased stakeholder involvement in utility planning processes.

Commission required utility to meaningfully engage with communities on NWA prioritization.

New York

City advocated for NWA prioritization and collaborative approach to designing solutions that meet local needs.

Commission initiated collaborative effort with utility and stakeholders on policy goals and program alignment.

Illinois: Non-Wires Alternatives (NWA)

Joint Non-Governmental Organizations (JNGO) Stakeholder Action

JNGO coalition filed comments in the Illinois Commerce Commission (ICC) Multi-Year Integrated Grid Plan (MYIGP) docket (22-0486) on ComEd's NWA proposal in their Initial Brief.

Key Request

- Act with more urgency in screening and procuring NWAs
- Cited Illinois policy CEJA and the high priority on adoption of NWAs and other non-traditional grid sources
- Use a new, more aggressive reporting framework that ensures fairness and affordability

NGO Initial Brief, p. 18 and 28

Outcome

The ICC agreed with intervenors that ComEd lacked urgency in reviewing NWAs. The Commission directed ComEd to address these concerns with stakeholders in stakeholder workshops.

ICC Final Order in Docket 22-0486, p. 202-203

Key Takeaway

Filing comments resulted in direct Commission action. The ICC incorporated stakeholder feedback into its Order and required ConEd to meaningfully engage with communities on NWA prioritization. This demonstrates how strategic filings can move utilities toward policy priorities that benefit coalition members.

Related Resources

- ICC Docket 22-0486
- JNGO Initial Brief
- ICC Final Order

Stakeholder Comments

“Several of JNGO’s recommendations in this case are targeted towards this statutory goal, including Mr. Balakumar’s recommendations regarding Hosting Capacity, Flexible Interconnection, DER Orchestration, NWA, and a Virtual Power Plant program”

Page 18 in ELPC JNGO Initial Brief; see also JNGO Ex. 8.0 RGP (Balakumar Rebuttal)

Minnesota: Demand response & NWA

Stakeholders Action

City of Minneapolis filed comments in the 2023 Integrated Distribution Plan (IDP) docket (E002/M-23-452) recommending a more aggressive pursuit of demand response and increased stakeholder involvement.

Key Requests

- Aggressively deploy NWAs as cost-effective solution for grid flexibility and resilience
- Provide a comment period for Request For Proposals (RFPs) to ensure variety of solutions considered
- Include factors beyond cost and risk (emissions pace, community benefits, impacts)

Minneapolis comments filed March 1, 2024; MNPUC Order Sept 16, 2024, E002/M-23-452, p. 22

Outcome

Commission required Xcel to conduct Request For Information (RFI) to assess feasibility of planned NWA solicitation, directly addressing Minneapolis' request.

Key Takeaway

Strategic comments requesting involvement in procurement processes led to Commission requirements for broader stakeholder consideration. Requesting a comment period or RFI review process can ensure diverse solutions are evaluated based on community priorities.

Why This Worked

- Specific request for RFP comment period
- Linked to identified community need (grid flexibility)
- Proposed evaluation criteria aligned with state priorities

Additional information on Minnesota's Integrated Distribution Planning can be found here.

New York: NWA & local collaboration

What Stakeholders Did

NYC filed detailed comments in the 2018 Distribution System Implementation Plan (DSIP) docket (16-M-0411) on need for NWAs in ConEd's plans and prioritization of solutions that benefit local communities.

Key Requests

- Include potential DER siting locations that provide benefits beyond load relief
- Prioritize NWAs improving local air quality and community benefits
- Incorporate energy storage into system operations
- Include planned NWA solicitations
- Consider cost impacts and timelines

NYC Filed comments on Nov. 19, 2018; NYPSC Order p. 9

Outcome

Commission to initiate collaboration between ConEd and stakeholders to develop policy goals and prioritization rubric for valuing policy criteria. Commission encouraged utilities to work with municipalities on NWA design aligned with greatest system need and local priorities.

Key Takeaway

NYC's comments and priorities to advance NWAs in ConEd territory were focused on the needs and benefits associated with deploying more NWAs. Additionally, they reflected partnership with local communities and were well-received by the Commission.

Commission's Direction

- Develop ongoing collaboration between utilities and stakeholders
- Create policy goals and prioritization rubric for valuing policy criteria
- Alignment of NWA programs and process is needed to enable innovative DER opportunities (p. 9 of NYPSC Order)
- Ensure programs designed with local stakeholder input

NYPSC Order p. 22-24

Appendix C

Hosting Capacity Analysis (HCA)

What is hosting capacity analysis?

"HCA models existing grid conditions and simulates power flow at various levels of DER penetration to determine hosting capacity for generation, battery storage or new loads such as EV charging."

HCA is conducted by utilities to determine the capacity of DERs that can interconnect at a specific point on the grid without adversely impacting power quality or reliability under existing control and protection systems.

Source: Murphy et al 2025

Hosting Capacity Analysis (HCA) summary

Illinois

Coalition pushed for detailed HCA and flexible interconnection approaches.

Commission directed utility to develop dynamic hosting capacity plan and include it in future workshops.

Michigan

Advocacy organization requested better HCA on circuits serving environmental justice communities.

Commission required annual HCA map updates and publication for public access.

Minnesota

City recommended HCA that identifies service gaps and targets investments in marginalized areas.

Commission required utility to incorporate community metrics into hosting capacity mapping and data disclosure.

Illinois: Hosting capacity analysis & flexible interconnection

What Stakeholders Did

JNGO coalition filed comments on ComEd's HCA maps in the Illinois Commerce Commission's (ICC's) Multi-Year Integrated Grid Plan (MYIGP) docket (22-0486). Their Initial Brief referenced a memorandum of understanding (MOU) with ComEd outlining vision for flexible interconnection and dynamic hosting capacity.

Key Requests

- Develop a written plan for implementing Flexible Interconnection approaches
- Scale programs and incorporate them into planning and operational practices
- File a plan and report progress through Commission's Interconnection Working Group

Initial brief ELPC JNGO, p. 15; MOU JNGO Ex. 3.01 filed 5/23/24

Outcome

ICC Staff recommended ComEd add further details to HCA maps and develop dynamic hosting capacity plan. Hosting Capacity/Flexible Interconnections made topic for future Interconnection Working Group workshops.

ICC Final Order, p. 187

Key Takeaway

Stakeholder involvement yielded positive outcomes in the final Order making progress toward the key JNCO priorities on HCA. Stakeholder testimony and technical recommendations resulted in Commission direction to improving HCA and implementing flexible solutions. Using an MOU to document shared vision strengthened stakeholder credibility.

Stakeholder Group

The Joint NGOs (JNGO) are a coalition of environmental organizations including Environmental Law & Policy Center, Environmental Defense Fund, Natural Resources Defense Council, Union of Concerned Scientists, and Vote Solar.

Michigan: Hosting capacity analysis & DER access

What Stakeholders Did

UCC filed detailed comments in Michigan PSC's docket on distribution investment and maintenance plans (U-20147) addressing hosting capacity analysis needs.

Key Requests

- Stakeholder input on proactive investments related to resolving HCA and how to prioritize them
- Better HCA on circuits in environmental justice (EJ) communities
- Identify where distribution system has sufficient capacity for new DERs
- Integrate HCA into Electric Distribution Investment Plan (EDIIP) to ensure sufficient EJ analysis
- Plan grid upgrades to accommodate projected DER growth

UCC comments filed 2/16/24, p. 28; MI PSC Order p. 141

Outcome

MI PSC required HCA maps to be published and updated annually or more frequently to provide useful interconnection information to parties wishing to connect to the grid (p. 141 of MI PSC Order).

Key Takeaway

Requesting transparent, publicly-available HCA led to Commission requirement for regular map updates. This ensures communities can access critical information for DER deployment planning and identifies marginalized community gaps in interconnection capacity.

Stakeholder

The Urban Core Collective (UCC) is a collection of historically marginalized Michigan communities focused on improving living conditions, advocating for clean and affordable energy.

Minnesota: Hosting capacity & local investment

What Stakeholders Did

City of Minneapolis filed comments in the 2023 Integrated Distribution Plan (IDSP) docket (E002/M-23-452) on Xcel's HCA and investment prioritization.

Key Requests

- Identify hosting capacity service gaps by analyzing if HCA serves all communities and neighborhoods
- Target investments in historically marginalized areas using community metrics overlay
- Include opportunities for rooftop solar, beneficial electrification, and EVs
- Layer hosting capacity maps with vulnerable population and community benefit data

City of Minneapolis comments filed March 1, 2024, p. 2

Outcome

Commission required annual HCA filings. Xcel must identify interconnection for DER deployment and describe data sources and methodologies for DER screens.

Key Takeaway

Requesting HCA analysis overlaid with vulnerable population metrics resulted in Commission requirements for data transparency and methodology disclosure. This ensures HCA directly supports equitable DER deployment in communities that need it most.

Strategy Used

Linking technical HCA to underrepresented population priorities and community benefits. Specific recommendation to layer community metrics with HCA maps gave Commission concrete approach to integrate impacted communities into interconnection planning.

Additional information on Minnesota's Integrated Distribution Planning can be found here.

Appendix D

Load and DER Forecasting

What are load and DER forecasting?

"Load forecasting is the process of determining the quantity of energy and power that customers will use at a future point in time. The process considers changes to load due to DERs and other technologies that change customer usage patterns." (Source: *LBNL)*

DER forecasting is the process of estimating future DER adoption, including the type, location, duration, temporal profile and use case. (Source: *Warner 2024*)

"Together, load and DER forecasting can be used to estimate future demand, the quantity of local generation/storage will be present, how those resources will impact demand patterns, and how the net demand on the grid will evolve (Source: *LBNL 2025)*.

DER & load forecasting summary

Massachusetts

Advocacy organization requested consistent forecasting assumptions across utilities and better explanation of modeling choices for load and demand response.

Commission directed utilities to use consistent modeling assumptions and provide forecast comparisons for transparency and reliability assessment.

Minnesota

City recommended DER forecasting aligned with local energy goals and federal incentive programs to better predict adoption rates and grid impacts.

Commission required utility to provide standalone DER forecasts and incorporate community energy and environmental goals into distribution planning.

Massachusetts: Load & DER forecasting consistency

What Stakeholders Did

Acadia Center filed comments in the Massachusetts DPU Electric Sector Modernization Plans (ESMP) docket (MA DPU Docket 24-10) requesting consistent forecasting assumptions across utilities.

Key Requests

- **Load forecasting:** Require consistent modeling assumptions and provide explanations for modeling choices in future ESMPs
- **DER forecasting:** Address insufficient explanations for differing assumptions on demand response, electrification, and transportation
- **Demand Forecasts:** Require separate modeling for all three demand forecasting windows
- **Forecast Analysis:** Provide forecast comparisons and variance analysis between utilities

Acadia Center Initial Brief filed May 17, 2024, p. 28-29

Outcome

MA DPU directed utilities to provide comparison of forecasted versus actual demand by component; including variances between forecast windows and separately modeling three forecast windows for demand response (not in ISO-NE) and energy efficiency with efficiency building code impacts.

ESMP Final Order, Aug 29 2024, p. 139-141

Key Takeaway

Requesting transparency of comparative forecasting methods resulted in requirements for consistent assumptions across utilities and better documentation. This enables stakeholders and regulators to assess forecast reliability and identify gaps in modeling assumptions.

Stakeholder Group

Acadia Center is a research and advocacy organization committed to advancing clean energy and a modern grid through evidence-based solutions.

Strategy Used

Requesting comparative analysis and transparent methodology allowed stakeholders to frame technical issues as matter of regulatory oversight and transparency; making it easier for regulators to adopt recommendations.

Minnesota: DER forecasting aligned with local goals

What Stakeholders Did

City of Minneapolis filed comments in the Minnesota PUC IDP docket (E002/M-23-452) on DER adoption forecasting aligned with the City's goals.

Key Requests

- In addition to evaluating LoadSEER forecasts, consider DER adoption trends in markets with established emissions reduction and clean transportation goals
- Double adoption rate assumptions when factoring in federal funding (e.g., Inflation Reduction Act) for EVs and solar
- Analyze new federal incentives for space and water heating electrification
- Reflect energy and environmental goals of Minnesota communities in planning

City of Minneapolis comments filed March 1, 2024, p. 2

Outcome

Commission required Xcel to provide standalone DER forecasts, evaluate forecast accuracy, and incorporate community energy/environmental goals. Additionally, they must reflect how local goals are incorporated into distribution planning with consideration for beneficial electrification.

MNPUC Order, p. 23 and 7

Key Takeaway

Linking DER forecasting to community environmental goals resulted in Commission requirements for utility transparency and integration of local priorities. Stakeholder comments that connect technical forecasting issues to broader policy goals are more likely to be adopted.

Stakeholder Strategy

City of Minneapolis Planning: Reduce environmental pollution by 2030, making Minneapolis carbon neutral by 2050; including reducing emissions, planting trees, creating green jobs, improving energy efficiency, integrating community needs into environmental action.

Additional information on Minnesota's Integrated Distribution Planning can be found here.

Appendix E

Grid Needs Assessment and Scenario Analysis

What is a grid needs assessment?

"A grid needs assessment (GNA) is an output of distribution system analysis that transparently identifies specific grid deficiencies. Identified grid needs are documented with information such as a description of the deficiency, associated engineering characteristics, and timing of the need. The GNA is the starting point for developing solutions to address each grid need, which may include grid upgrades or NWAs that employ pricing, programs, or procurement."

Source: Schwartz et al., 2024, State Requirements for Electric Distribution System Planning

What is scenario analysis?

"Scenario analysis is a well-established approach to assess the potential impact of various plausible future events and to develop plans that are more flexible or robust. Scenarios are not predictions. Rather, they inform the flexibility needed in plans and test their robustness under different potential conditions. There are two methods: (1) a set of alternative futures and (2) a probabilistic range of futures within a set of bookend futures. The objective is the same for both methods." (Source: LBNL)

GNA and scenario analysis example summary

Michigan

Advocacy organizations requested better grid diagnostic data and community engagement in distribution planning scenarios.

Commission required utility to incorporate pre- and post-filing stakeholder outreach and community engagement opportunities.

Minnesota

City recommended scenario analysis prioritizing community-focused investments and alignment with environmental goals and federal incentives.

Commission required utility to reflect energy and environmental goals of communities in distribution planning and DER scenario analysis.

New York

City advocated for holistic distributed energy resource (DER) methodology reflecting benefits beyond load relief and incorporating energy storage planning.

Commission called for more details on grid needs and comprehensive energy storage plans for system operations.

Michigan: Scenario analysis & grid needs assessment

What Stakeholders Did

Urban Core Collective (UCC) and Citizens' Utility Board (CUB) filed comments in Michigan PSC docket (U-20147) on distribution investment plans addressing grid needs scenarios and community engagement. CUB requested reporting on outage statistics by specific grid components and outage cause to guide cost-effective investment.

Key Requests

- **UCC:** Accelerated transition scenario as primary assumption and improved community engagement in planning phase
- **CUB:** Specific diagnostic data about grid health and use of customer-centric approach with advanced metering infrastructure (AMI) data to identify problem clusters
- **Both**: Report outage statistics by specific grid component and cause as well as evaluate cost-effectiveness of investments

UCC comments filed Feb 16, 2024; CUB comments filed Oct 20, 2021

Outcome

Commission expressed concern over company's reliability metrics (normal-weather SAIDI); required adherence to IEEE Std 1366-2022; encouraged use of data on severe weather impacts collected as part of Case No. U-21122. Commission directed incorporation of pre- and post-filing stakeholder outreach opportunities.

MI PSC Order, p.146

Key Takeaway

Requesting specific diagnostic data and improved metrics prompted Commission to require better data transparency and community engagement. Combining technical expertise with community concerns strengthened stakeholder arguments.

Stakeholder Group

UCC: Historically marginalized communities focused on clean and affordable energy. **CUB:** Nonprofit advocating for utility customer rights across Midwest.

Strategy Used

Two different organizations approaching the same issue from different angles (transition planning and consumer protection/technical data). This diversity of perspectives made arguments more compelling to regulators.

Minnesota: Scenario analysis aligned with local goals (1/2)

What Stakeholders Did

City of Minneapolis filed comments in Minnesota PUC IDP docket (E002/M-23-452) on scenario analysis aligned with the City's carbon neutrality and environmental community goals.

Key Requests

- **Targeted Community Investment:** Serve communities equally and target investments where needs are greatest
- **Access to Benefits:** Leverage DERs and NWAs to provide resilient power, cost savings, jobs for low-income communities
- **Local Government Goals:** Overlay hosting capacity with local environmental/energy goals to identify needed investments
- **Adoption Forecasting:** Double DER adoption rate assumptions accounting for federal funding (e.g., Inflation Reduction Act) and incentives

City of Minneapolis comments filed March 1, 2024, p. 1-3

City Strategy & Context

Minneapolis Goals: The City's goals to cut environmental pollution by 2030 and achieve carbon neutrality by 2050 also included reducing emissions, planting trees, creating green jobs, improving energy efficiency, and integrating community priorities into environmental action. The City engaged in this process to ensure utility scenario planning helps advance these goals.

Specific Recommendations

- Require Xcel to evaluate feeders for Integrated Volt Var Optimization (IVVO) cost-effectiveness under Minnesota Cost-Benefit Test
- Consider forecasts for EV adoption, building electrification, distributed generation adoption
- Reflect energy/environmental goals of Minnesota communities in planning
- Provide standalone forecasts for demand response, load flexibility, energy efficiency

Supplemental comments, p. 1

Minnesota: Scenario analysis aligned with local goals (2/2)

Outcome

MN PUC Order (Sept 16, 2024, E-002/M-23-452) required Xcel to:

- Report all DERs and DER forecasts in future Integrated distribution plans (IDPs)
- Evaluate accuracy of LoadSEER forecasts using IDP scenarios for grid capacity sensitivity analysis
- Provide standalone forecasts for demand response, load flexibility, energy efficiency
- Detail how energy and environmental goals of communities served are reflected in planning
- Include consideration of local/community goals and beneficial electrification in distribution planning

MNPUC Order, p. 23 and 7

Implementation Requirements

Xcel must provide EV forecasting scenarios for base, medium, and high adoption cases. Distribution generation planning must account for local goals and beneficial electrification, demonstrating how utility planning serves community needs and environmental objectives.

Key Takeaway

Linking scenario analysis to community goals resulted in Commission requirements for transparent connection between utility planning and local environmental/energy priorities. Stakeholders framed technical planning issues within broader policy goals which increased the likelihood of Commission adoption.

Why This Worked

- Specific, measurable recommendations (DER adoption rates)
- Connected to city's official policy
- Addressed community dimensions of distribution planning
- Proposed concrete methodology (overlay hosting capacity with community goals)
- Aligned with state environmental/energy policy priorities

New York: Grid needs assessment & DER valuation (1/2)

What Stakeholders Did

New York City (NYC) filed comments in NY PSC's Docket 16-M-0411 on Con Edison's Distribution System Improvement Plan (DSIP). Their comments aligned with New York State environmental goals (100% zero-emission electricity by 2040) and NYC environmental priorities.

Key Requests

- **Holistic DER Methodology:** Reflect total value of distributed energy resource (DERs) beyond load relief including greenhouse gas emissions reduction
- **Air Quality & Public Health:** Prioritize DER deployments in poor air quality zones and environmental justice areas
- **Multi-Benefit Analysis:** Identify DER locations providing benefits beyond grid relief and ensure NWAs provide environmental and economic co-benefits
- **Energy Storage:** Incorporate energy storage into system operations for grid stability and resilience

NYC Comments filed Jan 9, 2017, p. 8 and Nov 18, 2018, p. 5

Policy Context

New York State's CLCPA Goals: 100% zero-emission electricity by 2040. NYC responsible for a third of the state's energy consumption. NYC has additional goals to reduce fossil fuel dependence, develop clean energy workforce, increase grid resilience, relieve congestion.

Why This Matters

NYC's comments connected distribution planning to the state's environmental legislation and the city's environmental community priorities, demonstrating that grid needs assessment must account for broader policy goals and community benefits, not just load relief.

New York: Grid needs assessment & DER valuation (2/2)

Outcome

NY PSC Order highlighted the need for more details and data on the needs of the distribution system to enable informed decision-making and create opportunities for DER providers. The Commission stated that utilities have “advanced a limited number and variety of energy storage projects” without a “robust and comprehensive plan for fully understanding and productively employing storage any time soon.”

NY PSC Order, p. 29

Commission Direction

- Directed utilities to provide more diagnostic data on grid needs
- Called for comprehensive energy storage planning for system operations
- Recognized energy storage as potential "grid-side enhancement"
- Emphasized importance of multi-benefit analysis for DER siting and NWAs

NY PSC DSIP Order (Docket 16-M-0411)

Key Takeaway

NYC emphasis on a holistic DER valuation and energy storage planning contributed to Commission requirements for better grid diagnostic data and comprehensive storage strategies. This outcome generally aligns with NYC interests to incorporate storage in system operations and support multi-benefit DER deployment.

Why This Worked

- Connected distribution planning to the state’s environmental legislation (CLCPA)
- Framed grid needs through community impact and environmental justice lens
- Proposed specific multi-benefit evaluation methodology
- Emphasized energy storage as critical grid asset
- Sustained engagement over multiple filings (2017 and 2018)

Appendix F

Measuring Reliability and Resilience

How are reliability and resilience measured?

"Resilience analysis focuses on preventing, responding to, and recovering from natural and human-caused hazards, including storms, floods, drought, extreme temperatures, ice storms, hurricanes, sea level rise, wildfires, seismic events, and physical attacks. Reliability analyses focus on understanding the performance of the distribution system, including the duration and frequency of outages experienced by customers." (Source: LBNL)

Measuring reliability and resilience examples

Michigan

Coalition advocacy on reliability metrics, tree trimming, and distributed energy resources (DER)/ Non-Wires Solutions (NWA) value for long-term reliability improvement.

Commission required comprehensive reliability maps with historical data, GIS analysis, and industry-standard metrics; directed focus on DER, NWA, and reliability benefits.

Minnesota

The city advocated for resilience planning with attention to vulnerable populations experiencing longer-duration outages.

Commission required utility to address resilience for vulnerable populations and critical customers (hospitals, first responders) during extended outages.

Michigan: Reliability & resilience maps

What Stakeholders Did

The Michigan Environmental Council, Natural Resources Defense Council, Sierra Club, and Citizens Utility Board of Michigan (MNSC) coalition (filed joint comments on the importance of DERs and NWAs on reliability and tree trimming. City of Ann Arbor also filed comments on inadequate tree trimming and reliability management.

Key Requests

- **MNSC:** Underlined importance of DERs and NWAs for improving reliability; request more analysis on tree trimming effectiveness
- **Ann Arbor:** Advocated for significant investment in grid improvements (electrification, DG and storage growth)
- **Both**: Requested better reliability metrics and data and use of industry standards/best practices

U-20147 filings; See MI PSC Order p. 142

Outcome

Commission required data-based review including historical reliability metrics, safety incidents, operations and maintenance (O&M) spending, historical outage events, overlay maps of investments, and EJ mapping analysis. Required adherence to IEEE Std 1366-2022 for reliability indices. Additionally, the Financial Incentives and Disincentives workshop evaluated potential reporting metrics in Case No. U-21400.

MI PSC Order, p. 142-149 and Exhibit A

Key Takeaway

The Coalition filing provided alignment and strong representation on reliability priorities. Multiple stakeholders filing the same issue from different angles strengthened advocacy effectiveness. The Commission expressed concerns over “normal-weather SAIDI” metric and incorporated specific data requirements and mapping approaches.

Coalition Approach

A multi-organizational coalition combining consumer protection (CUB) with environmental perspectives (MEC, NRDC, Sierra Club). This diversity demonstrated broad stakeholder support for reliability improvements through distributed solutions.

Strategy Lessons

- Coalition comments provide stronger representation than individual filings
- Multiple stakeholder perspectives (consumer, environmental) strengthen case
- Specific technical recommendations (IEEE standards, mapping approaches) more likely to be adopted

Minnesota: Resilience and reliability planning

What Stakeholders Did

The City of Minneapolis filed comments in Xcel Energy's Integrated Distribution Plan (IDP) docket (E002/M-23-452) that focused on reliability and resilience concerns.

Key Takeaway

The City of Minneapolis filed comments expressing concern with prolonged outages affecting vulnerable populations. The comments were aligned with research and other stakeholder filings and proved to be an effective strategy for community-focused regulatory outcomes.

Key Arguments

- Specific areas of the system experience significantly longer outage durations than other Xcel customers
- Referenced research showing the impact of long-duration outages in vulnerable populations
- Suggested the utility perform hosting capacity analysis addressing community needs; improvements to reliability maps and vegetation management

City of Minneapolis comments filed March 1, 2024, E002/M-23-452

Why This Worked

- Framed reliability as resilience issue for vulnerable populations
- Cited research on disparate outage impacts
- Specific data on outage duration disparities in specific areas of the grid
- Proposed concrete solution to track and address vulnerable population restoration
- Leveraged official city goals as policy foundation
- Aligned with other stakeholder comments for a consistent message

Outcome

MN PUC acknowledged stakeholder concerns regarding resilience for vulnerable populations and critical customers and required Xcel to provide discussion of how it tracks, protects, and considers restoration of vulnerable populations and critical customers during extended outages.

MNPUC Order, p. 6

Implementation

The MN PUC required Xcel to address resilience and restoration for hospitals, first responders, and other critical customers during extended outages in its next IDP.

Appendix G

Grid Modernization Technology Investments

What are grid modernization investments?

"Grid modernization is a fundamental component of DSP. In addition to upgrading distribution grid capabilities to achieve traditional objectives like reliability, operational efficiency, and safety, modern grids are needed to meet other state policy goals, including better integration of DERs and decarbonization.

Grid modernization investments span advanced monitor and control technologies (e.g., substation automation and home area networks), communications (e.g., field area networks), applications and systems (e.g., Advanced Distribution Management Systems), data management systems, planning and analytics (e.g., hosting capacity tools and DER interconnection management systems), and customer-facing systems (e.g., DER interconnection portal). These investments must be aligned with traditional asset planning and integrated with other planning objectives and DSP processes." (Source: LBNL)

Grid modernization investment summary

Massachusetts

Coalition advocated for better cost-benefit analysis and community benefit agreements in grid investment strategy framework.

Department explicitly recognized stakeholder concerns and outlined need for clearer cost-benefit analysis proposals with community engagement requirements.

Oregon

Regulatory order mandated proactive stakeholder engagement and community-centered planning for Non-Wires Alternatives (NWAs) and grid modernization.

Order 24-421 requires utilities to collaboratively develop community engagement plans addressing community goals and clean energy priorities.

Massachusetts: Cost-benefit analysis & community benefits agreements

What Stakeholders Did

Joint Intervenors Coalition filed comments in MA DPU's Electric Sector Modernization Plan (ESMP) docket (24-10) on net benefit framework and community benefits agreement proposals.

Key Concerns & Requests

- **Cost-benefit modeling:** Utilities did not reflect full impact to ratepayers; models were incomplete
- **CBA clarity:** Need clearer proposals for community benefit agreements with host communities
- **Net benefit analysis (NBA):** Utilities improperly applied NBAs only to incremental ESMP investments, not all investments
- **Community participation:** Requested further details on source of funding, project eligibility, mitigation measures, and compensation

CLF, Acadia, GECA Reply Brief, p. 2-3 and Initial Brief May 17, 2024

Outcome

DPU explicitly recognized Acadia Center comments on NBA. Department agreed methodology was unclear on NBA implementation and identified four key issues: (1) determining appropriateness of entering a NBA, (2) cost caps per NBA, (3) types of community benefits, (4) cost recovery approach. The DPU required further stakeholder engagement to be held.

MA DPU ESMP Final Order, p. 381

Key Takeaway

Coalition filing resulted in explicit Department recognition of stakeholder concerns and outlined roadmap for future engagement on NBA. Highlighting gaps in utility cost-benefit analyses prompted regulator scrutiny and requirements for clearer frameworks.

Joint Intervenors Coalition Members

Acadia Center: Research and advocacy for clean energy and modern grid. **Conservation Law Foundation (CLF):** Legal nonprofit advancing environmental protection. **Green Energy Consumers Alliance (GECA):** Nonprofit alliance for clean energy policy.

Strategy Used

Multi-organization coalition filing detailed technical comments on cost-benefit methodology, combined with strategic reply brief addressing specific gaps. Proposing concrete improvements (broader investment application, clearer NBA methods) increased likelihood of adoption.

Oregon: Community engagement in grid modernization

What Stakeholders Did

The Energy Advocates engagement efforts in Oregon Docket UM 2005 (Order 24-421) resulted in regulatory order mandating proactive community engagement in DSP for NWA and grid modernization.

Regulatory Requirements Established

- **Proactive engagement:** Utilities must proactively engage stakeholders on NWA and larger projects in impacted communities
- **Collaborative data sharing:** Utilities must develop and share datasets and metrics to guide community-centered planning
- **Local government involvement:** Engagement of local governments and Tribal nations on NWA and other DSP policies
- **Solutions identification:** Concept proposals must utilize a Community Engagement Plan addressing specific community factors

Order 24-421, Docket UM 2005

Community Engagement Plan Requirements

- Community interest in clean energy planning and projects
- Community energy needs and desires
- Community barriers to clean energy opportunities
- Energy burden within the community
- Community demographics
- Carbon reductions from NWA verses incumbent generation
- Process for utilities and stakeholders to set inclusive goals

Order 24-421, Solutions Identification Requirements

Energy Advocate Members

Green Energy Institute at Lewis & Clark Law School, Community Energy Project, NW Energy Coalition, Oregon Solar + Storage Industries Association, Mobilizing Climate Action Together, Coalition of Communities of Color, and Oregon Citizens' Utility Board

Key Takeaway

Oregon's regulatory order demonstrates how sustained stakeholder advocacy can result in broad, systemic requirements for inclusive community engagement in all grid modernization planning. This order sets precedent for mandatory community participation frameworks.

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