NASEO
National Association of State Energy Officials

NATIONAL ASSOCIATION OF REGULATORY UTILITY COMMISSIONERS
DEDICATED TO PUBLIC SERVICE
1889

# DER INTEGRATION & COMPENSATION INITIATIVE

# WORKSHOP: INTEGRATED DISTRIBUTION SYSTEM PLANNING FOR ADERS

May 1, 2024

# Problem Statement

Current and anticipated growth of distributed energy resources (DERs) and introduction of aggregated DERs into wholesale markets as a result of Order 2222 is fundamentally changing the way the grid is planned and operated.

Policy makers and regulators will increasingly need to evaluate, consider, and establish the rules and requirements as well as enabling policies and programs to bring these resources online safely and fairly to provide retail and wholesale services.

New myriad technical and economic issues will require new information and tools to make informed decisions related to the connection, technical operation, and compensation of aggregated distributed energy resources---in the distribution, bulk power system, and wholesale energy markets.

# DER-I&C Initiative Description

Convene and support state members to understand the impact of their decision making related to the connection, operation, and compensation of aggregated DERs.

NARUC and NASEO will provide information, tools, access to experts, and peer sharing opportunities that assist members with FERC Order 2222 implementation in RTO/ISO regions and State oversight of transmission-distribution-customer (TDC) coordination outside of RTO/ISO regions.

**Objectives:**

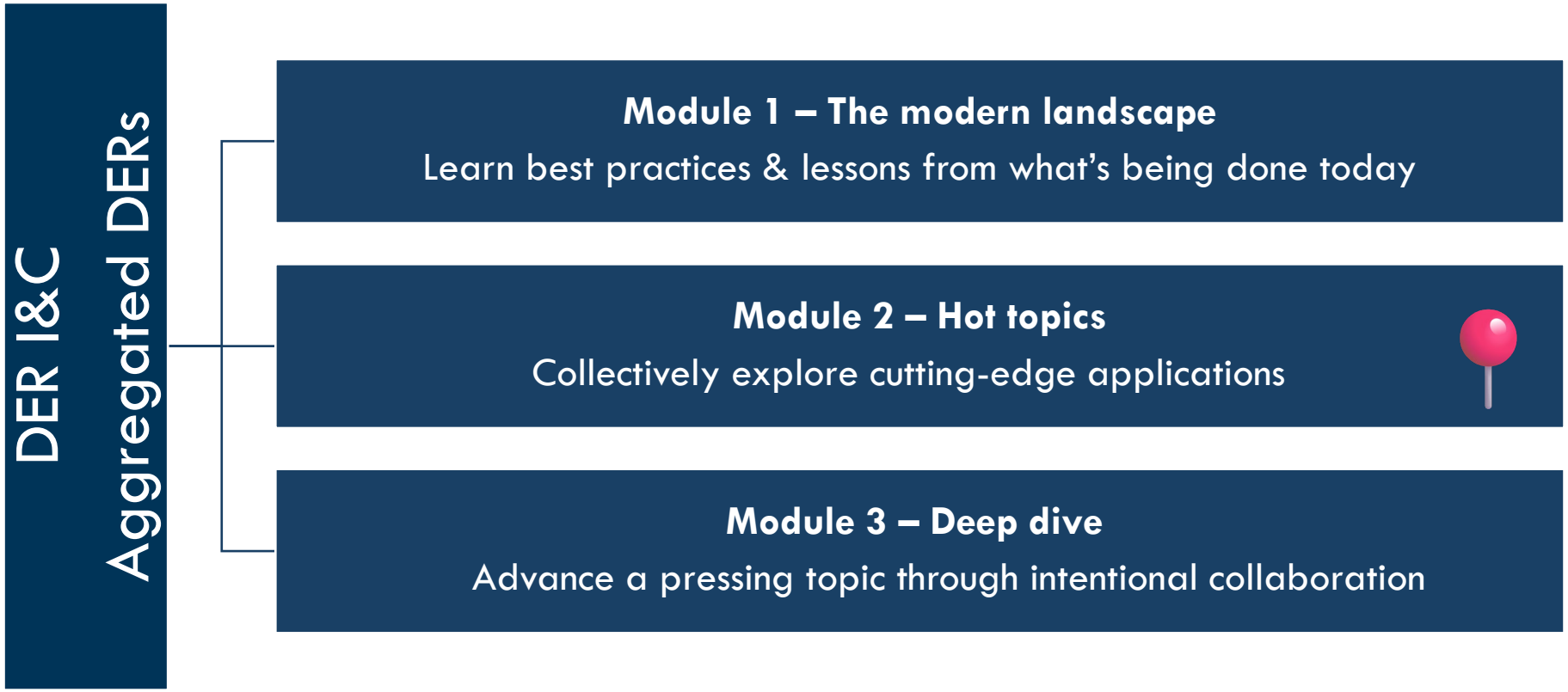
- Inform key state decision makers
- Raise and evaluate risks and opportunities of different decision options
- Bring different perspectives to the table

**Advisory Group:**

An advisory group of 10 NARUC and NASEO members representing diverse regional perspectives help guide the project.

# Curriculum Design 2023-24

The DER I&C Initiative 2023-24 curriculum is designed around three sequential modules



# Module 2: Hot Topics

***Collectively explore cutting-edge applications***

Module 2 begins with **three mini workshops** in March through May 2024:

- Workshop 1: **Leveraging Federal Funding for ADERs,** March 26th,
- Workshop 2: **ADER Interconnection,** April 4th
- **Workshop 3: Integrated Distribution System Planning for ADERs, May 1, 2024, 2-4pm ET**

All Registrations and Recordings at: **https://www.naruc.org/core-sectors/energy-resources-and-the-environment/der-integration-compensation/**

# Today's Agenda

## Objectives:

- ❑ **Learn about new resources and opportunities for support** from DOE and the national labs on integrated distribution system planning (IDSP)
- ❑ **Surface examples** of how IDSP processes are showing up in participants' jurisdictions today
- ❑ **Build an inventory of needs and questions to be answered** that could advance IDSP practices and support participants' goals and objectives.

## Agenda:

| Time (ET) | Session |
|---|---|
| 2:00-2:10pm | **Welcome:** DER I&C initiative overview, agenda for today |
| 2:10-2:35pm | **DOE Presentation + Q&A,** *Joe Paladino* Interest poll |
| 2:35-3:00pm | **Berkeley Lab Presentation + Q&A,** *Lisa Schwartz and Guillermo Pereira* |
| 3:00-3:25pm | **Breakout #1:** Surfacing on-going work & gaps/needs |
| 3:25-3:50pm | **Report out #2:** Surfacing challenges & gaps/needs |
| 3:50-4:00pm | **Reflection, Closing, and what's ahead** |

U.S. DEPARTMENT OF ENERGY
Office of Electricity

# Integrated Distribution System Planning

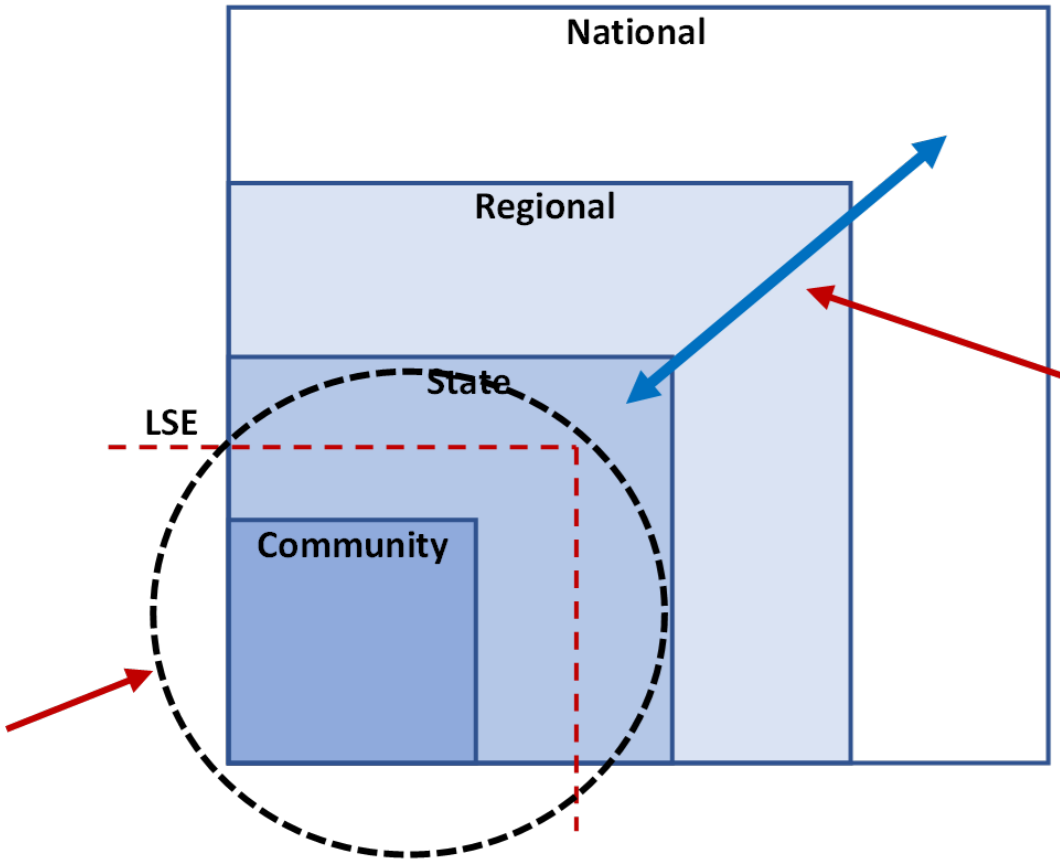
## Concepts and Considerations

Joe Paladino
Office of Electricity
US Department of Energy

**NASEO/NARUC DER Integration & Compensation Workshop**
**May 1, 2024**

# Scale of Integrated Planning

**Integrated planning is becoming essential for addressing complexity, uncertainty, and coordination. IDSP processes should address state/community objectives and align with regional planning efforts.**




Alignment of community and state strategies with regional, multi-state strategies

IDPs align community and state policy goals into multi-year investment strategies

# Integrated Distribution System Planning

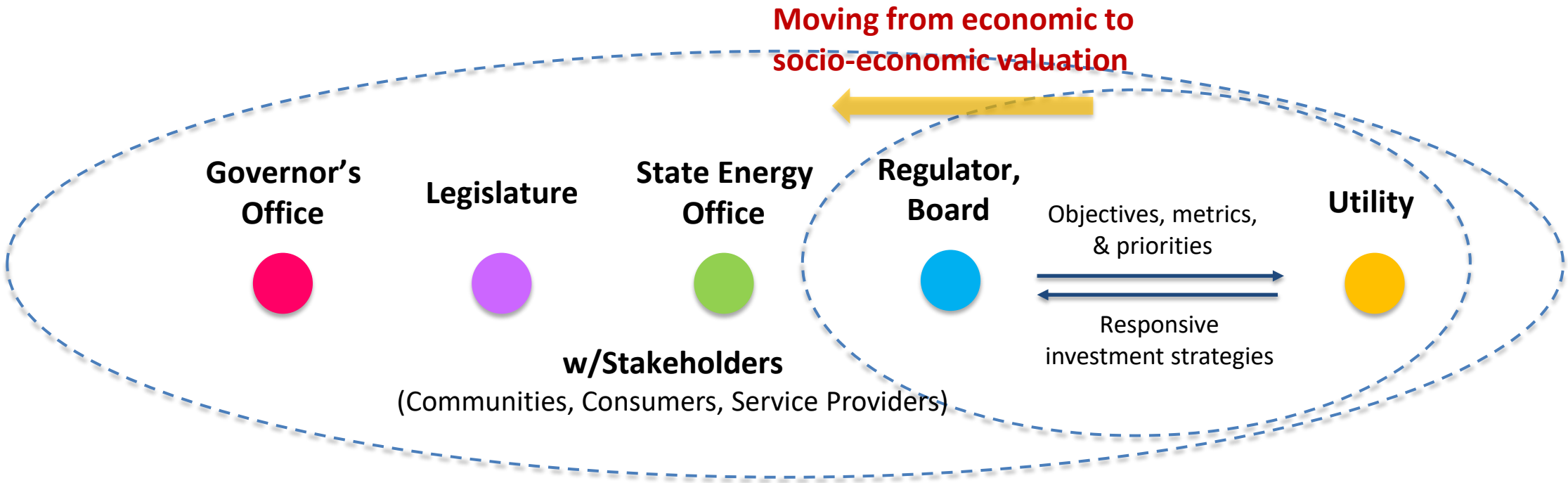
**An integrated distribution system planning process provides a decision frameworkto enable the formulation of long-term, grid-investment strategies that address policy goals and priorities, consumers' needs, and evolution at the grid edge.**


**Key considerations:**

- Convergence of state energy policy objectives and priorities with utility/3rd-party planning processes
- Integration of customer and 3rd-party systems with utility systems
- Coordination, control, and application of distributed energy resources (DERs)
- Improvement in reliability, resilience and operational efficiency
- The application of advanced sensing, communications, control, data/information management, and computing technologies to enable the above
- The application of grid architecture to ensure the building of a coherent system that is scalable
- Business process redesign to support effective planning, grid operations, and market operations

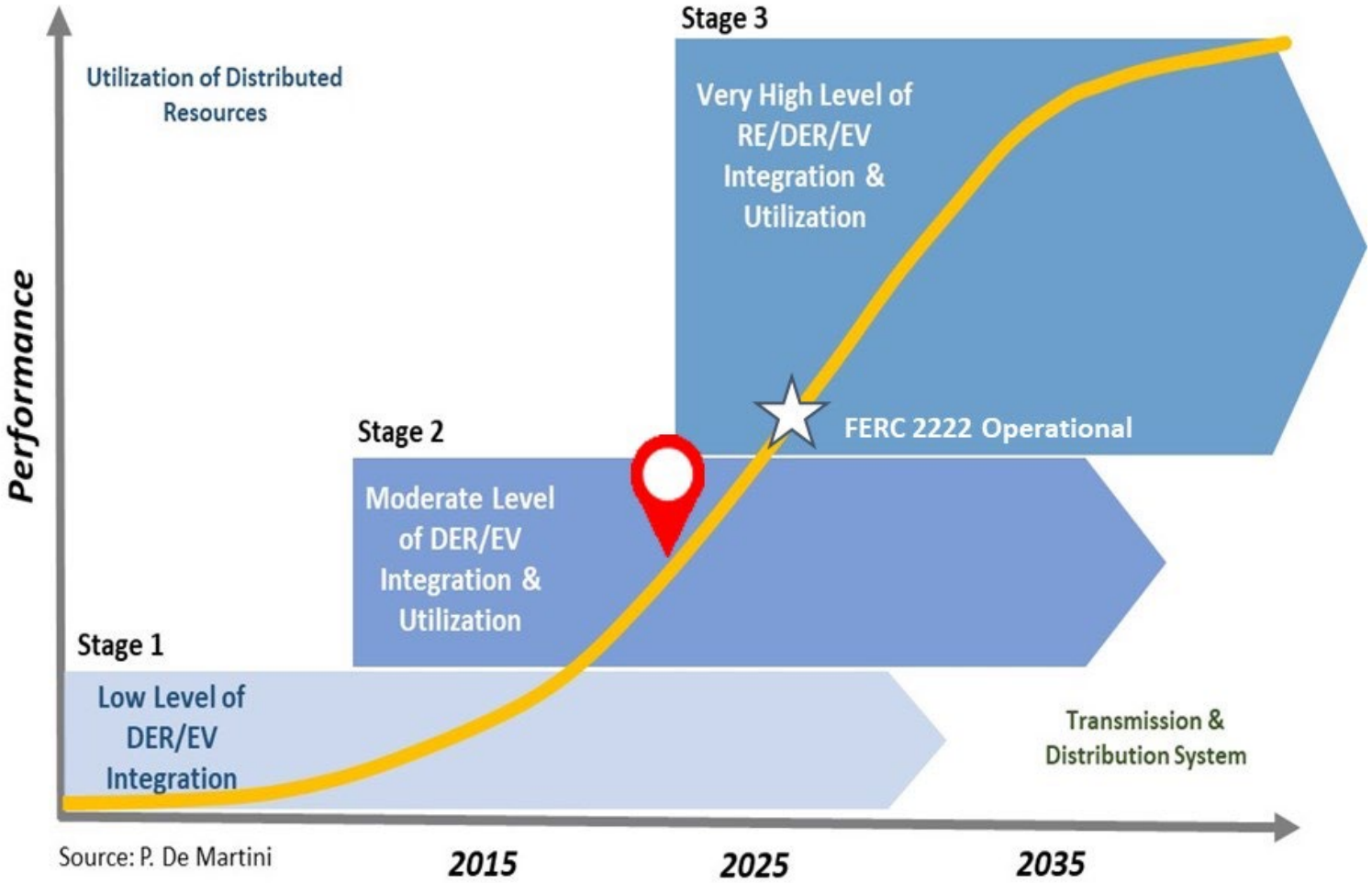
# Formulation of Objectives and Priorities

**The shift towards evaluating grid investments based on socio-economic issues, e.g., resilience and equity concerns, will require collaborative efforts among community and state officials with their stakeholders to formulate objectives, metrics, and priorities to guide the efforts of utilities**



# Distribution System Evolution

## Increased use of distributed energy resources means additional complexity in grid planning and operations



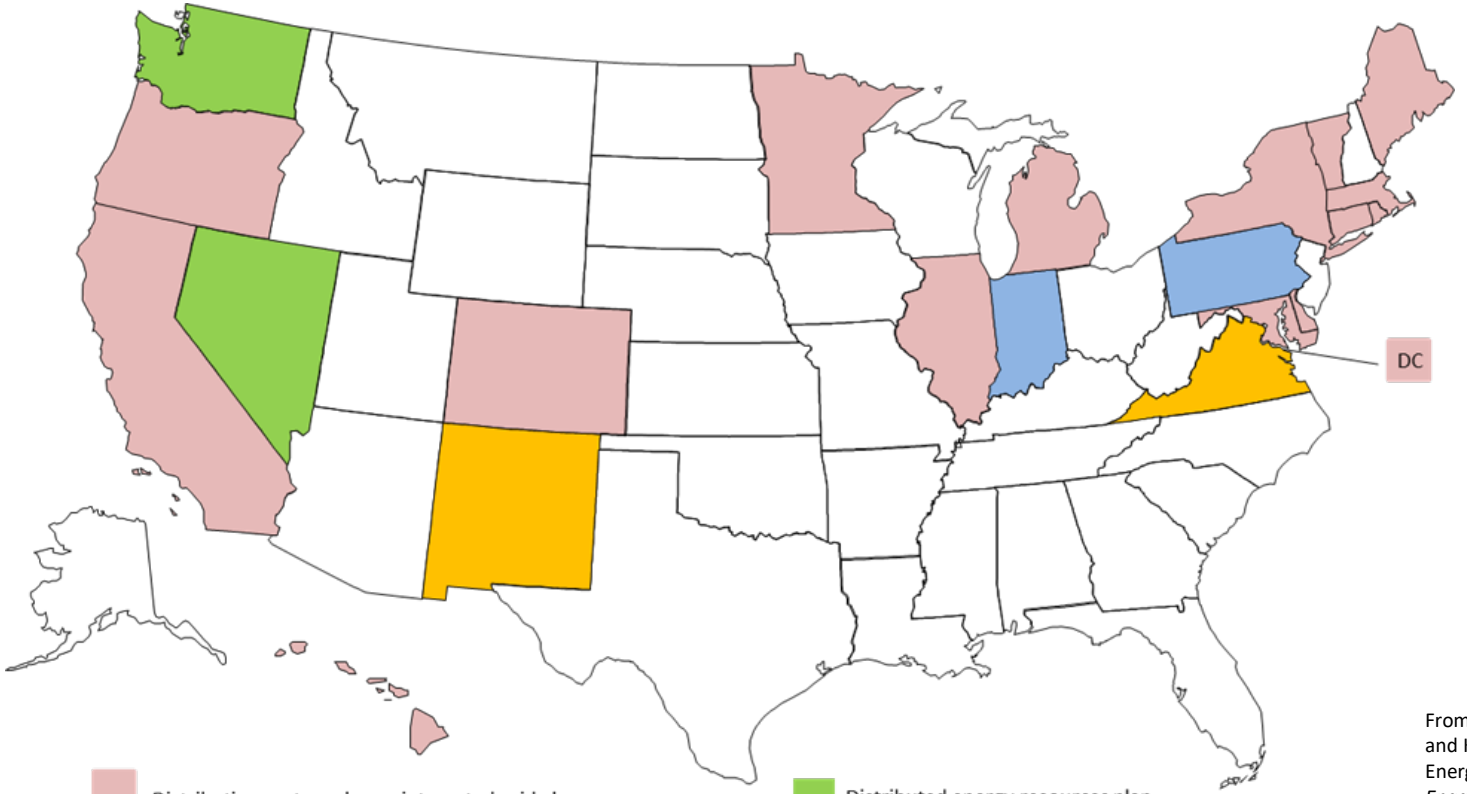

**Stage 3: High DER/EV adoption; optimization and orchestration of DERs for the provision of grid services; alternative grid and ownership structures, including community microgrids; interjurisdictional coordination of markets, planning, and operations**

**Stage 2: Moderate DER adoption; emphasis on use of DERs as load-modifying and energy resources; IDP and grid modernization required to enable real-time visibility and operational use of DERs**

**Stage 1: Low DER adoption; emphasis on reliability, resilience, and operational efficiency; no material change to infrastructure, planning, and operations**

# State Requirements for Filing Distribution System Plans

## The practice of integrated distribution system planning is evolving and not universally or consistently applied across the U.S.




*Some states that require distribution system plans also require grid modernization plans (e.g., Minnesota and California).
**Indiana also includes storage.

From: S. Murphy, L. Schwartz, C. Reed, M. Gold, and K. Verclas. National Association of State Energy Officials. *State Energy Offices' Engagement in Electric Distribution Planning to Meet State Policy Goals*. 2023. Available online at: https://www.naseo.org/Data/Sites/1/documents/tk-news/naseo_electric-distribution-planning-final.pdf.

# IDSP Inputs and Outputs

**Load and DER Forecasting:**
- Load growth due to electrification, data centers, and new construction
- DER adoption (PV, ES, GEB, etc.)
- Moving towards more spatial and temporal granularity (feeder level) and probabilistic analysis

**Climate/weather risk assessment:**
- Forecasts of weather parameters, e.g., T, rainfall, drought, wildfire risk
- Understanding interdependencies, e.g., electricity and natural gas
- Determination of priorities re: protection of critical infrastructure, services, and vulnerable populations

**Community & State Policy Goals, Objectives, and Priorities:**
- Reliability
- Resilience
- Equity
- Environmental
- Efficiency
- Affordability
- Economic Development

**In**

**Bulk-Level Resource and Transmission Planning**

**Distribution System Analysis & Prioritization:**
- **Asset Planning** (infrastructure build-out to meet load growth and needs for reliability and resilience)
- **Grid Modernization** (sensing, communication, control, computing investments) to support DER integration and utilization, including coordination requirements to support their participation in grid and market operations at scale. Includes:
  - DER valuation and compensation mechanisms
  - Application of grid codes (DER-utility operations)
- **RD&D Strategy** to address future grid function needs
- Mapping to community/state goals, objectives, & priorities
- Coupling of distribution and regional planning
- Prioritization given constrained budget

**Out**

**Annual Plan (3 years)**

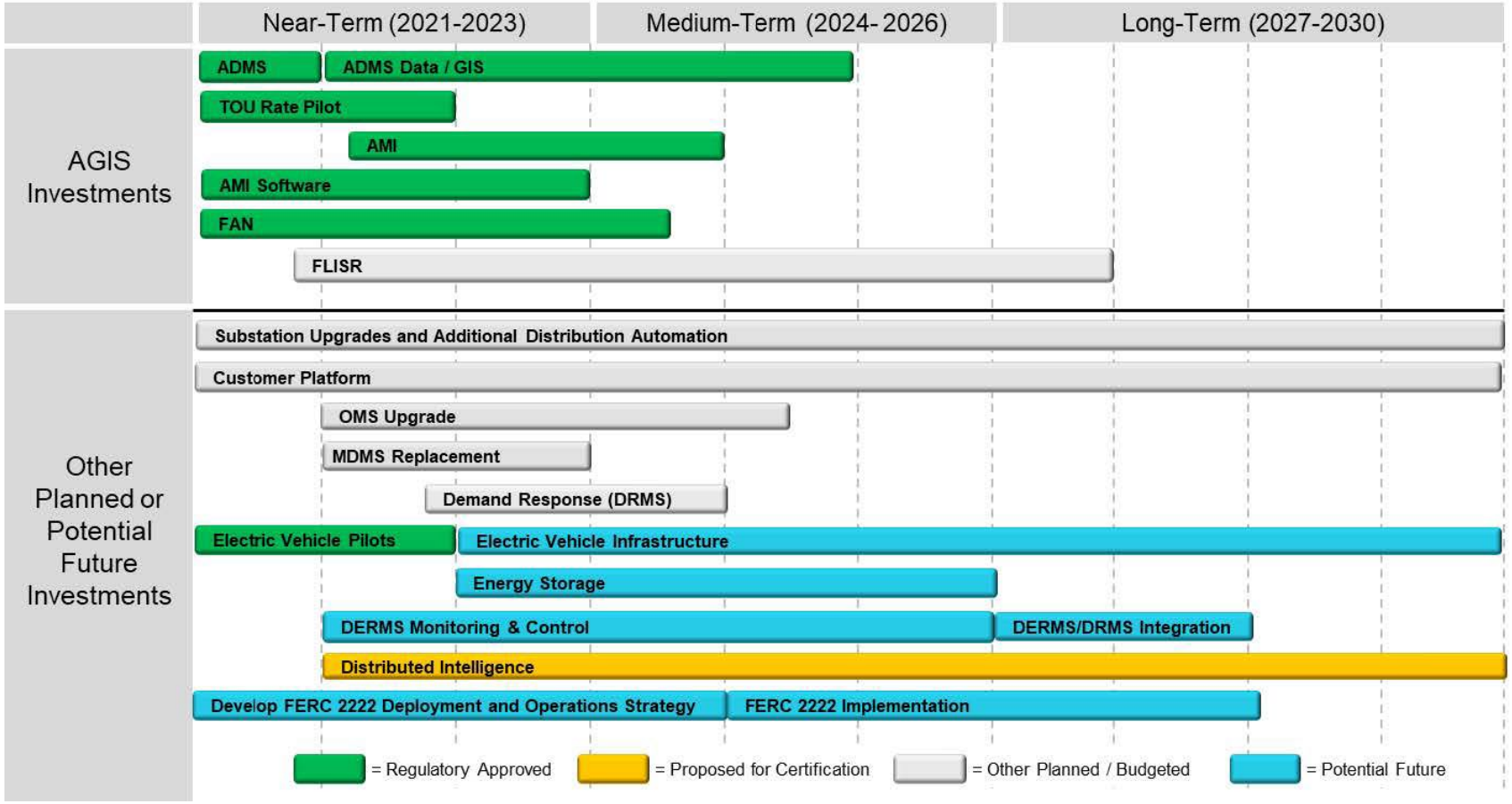
**Integrated Distribution Plan (5 - 10 years)**

**Grid Modernization Strategy and Implementation Plan**

**Note:** Iterative process with stakeholder engagement

# Xcel Energy 10-Year Grid Mod Roadmap (2021)

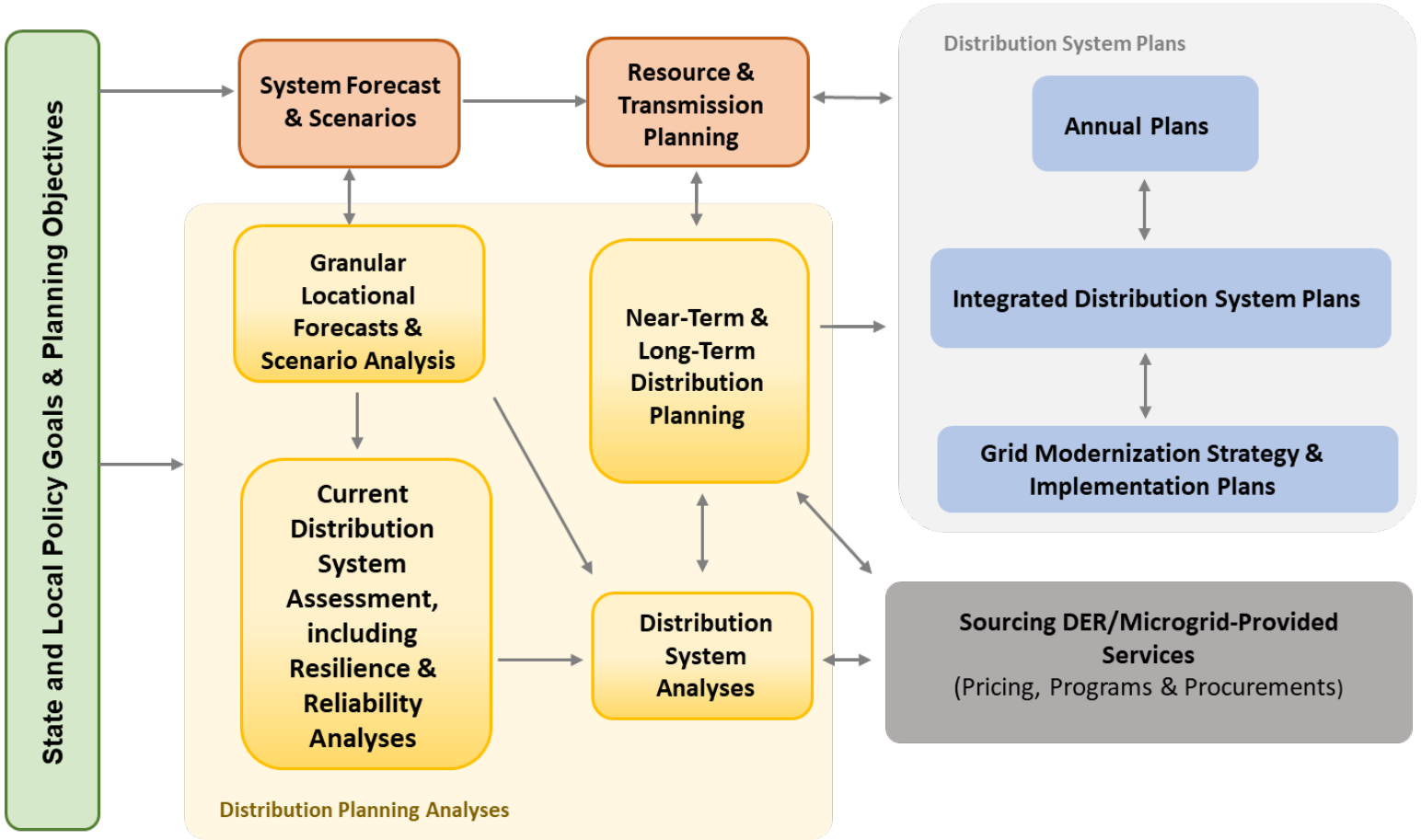
## Xcel Energy's roadmap reflects a staged and proportional technology deployment strategy based on need




Source: Integrated Distribution Plan 2022-2031, Northern States Power Company, Xcel Energy, November 2021, searchDocuments.do (state.mn.us)

# Stakeholder Engagement

## DOE is working with stakeholders across the country, including utilities and regulators, to advance IDSP processes and practices




Adapted from Modern Distribution Grid Guidebook, DSPx Volume 4, June 2020, PNNL: Grid Architecture - Modern Distribution Grid Project

# OE/LBNL Website


This framework helps decisionmakers to develop holistic grid investment strategies that address community and state policies and increasing complexity at the grid edge

The integration and utilization of distributed energy resources owned by multiple entities requires standard processes for coordinating grid operations

Determining future distribution system designs will require a holistic understanding of needed functional and structural requirements.

https://www.energy.gov/distribution-grid

# Thank You

**Joe Paladino**
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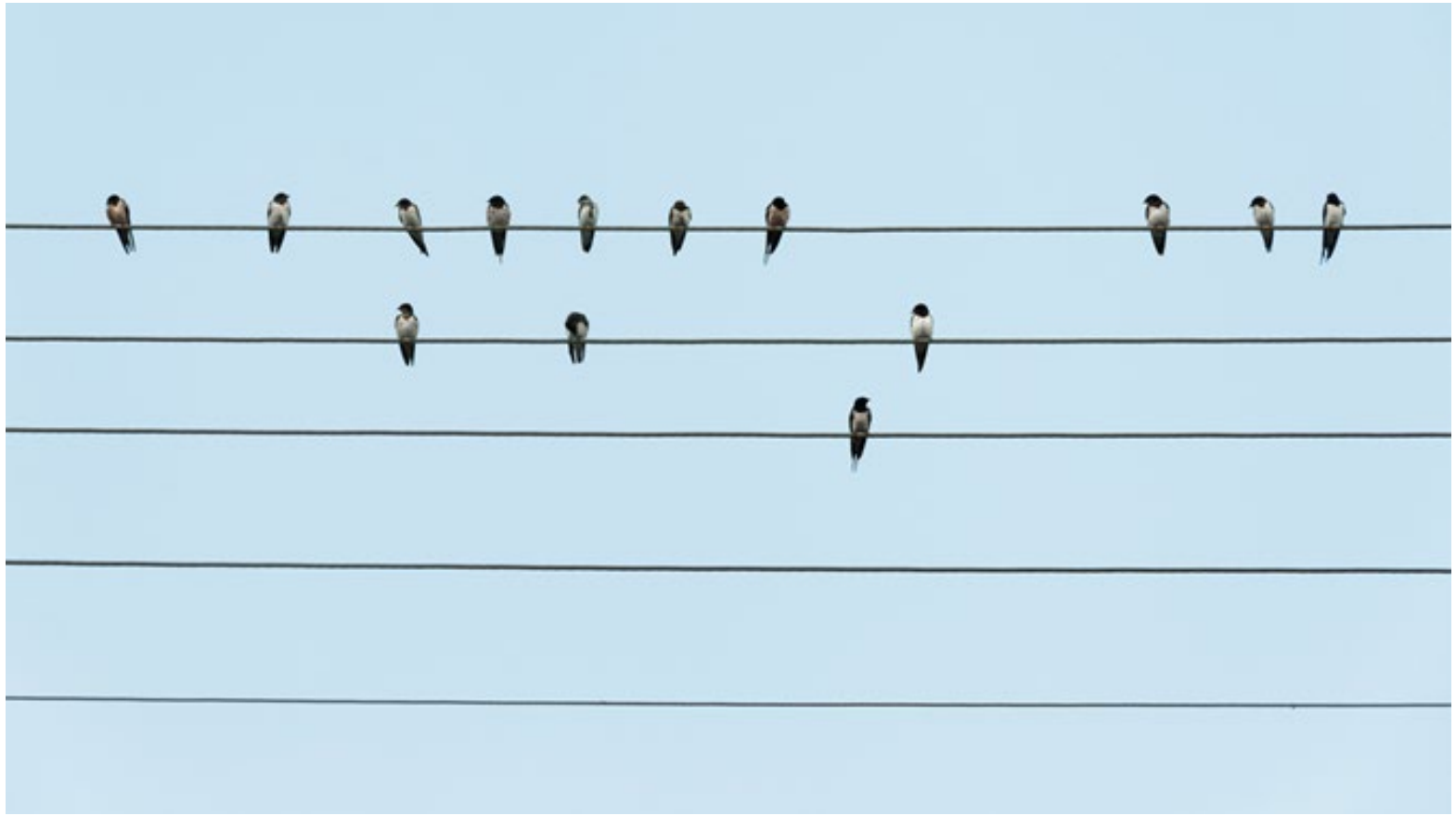


# Q&A

- Use the chat function to type out your answer
- Use the “Raise Hand” feature on Zoom to elevate your question
- Come off mute to ask your question

# IDSP Sub-topics for today's breakout discussions:

- Translating community and state goals and policies into IDSP guidance
- Aligning distribution planning and other planning efforts
- Strategies for forecasting load and DER adoption
- Assessing reliability and resilience of the distribution system
- Sourcing solutions to meet customer and grid needs (pricing, programs, procurement)
- Using distribution planning to inform grid modernization and prioritization of investment

## Poll Questions:

- Which of the following sub-topics would be most relevant to your day to day?
- Which of the following sub-topics is the most challenging or faces the most challenges in your jurisdiction?

**Is there anything related to integrated distribution system planning in your jurisdiction that is equally or more important that is not included on this list?**

# Poll Everywhere

# Integrated Distribution System Planning
## *Interactive Framework and State Requirements*

Lisa Schwartz and Guillermo Pereira

NARUC/NASEO Workshop

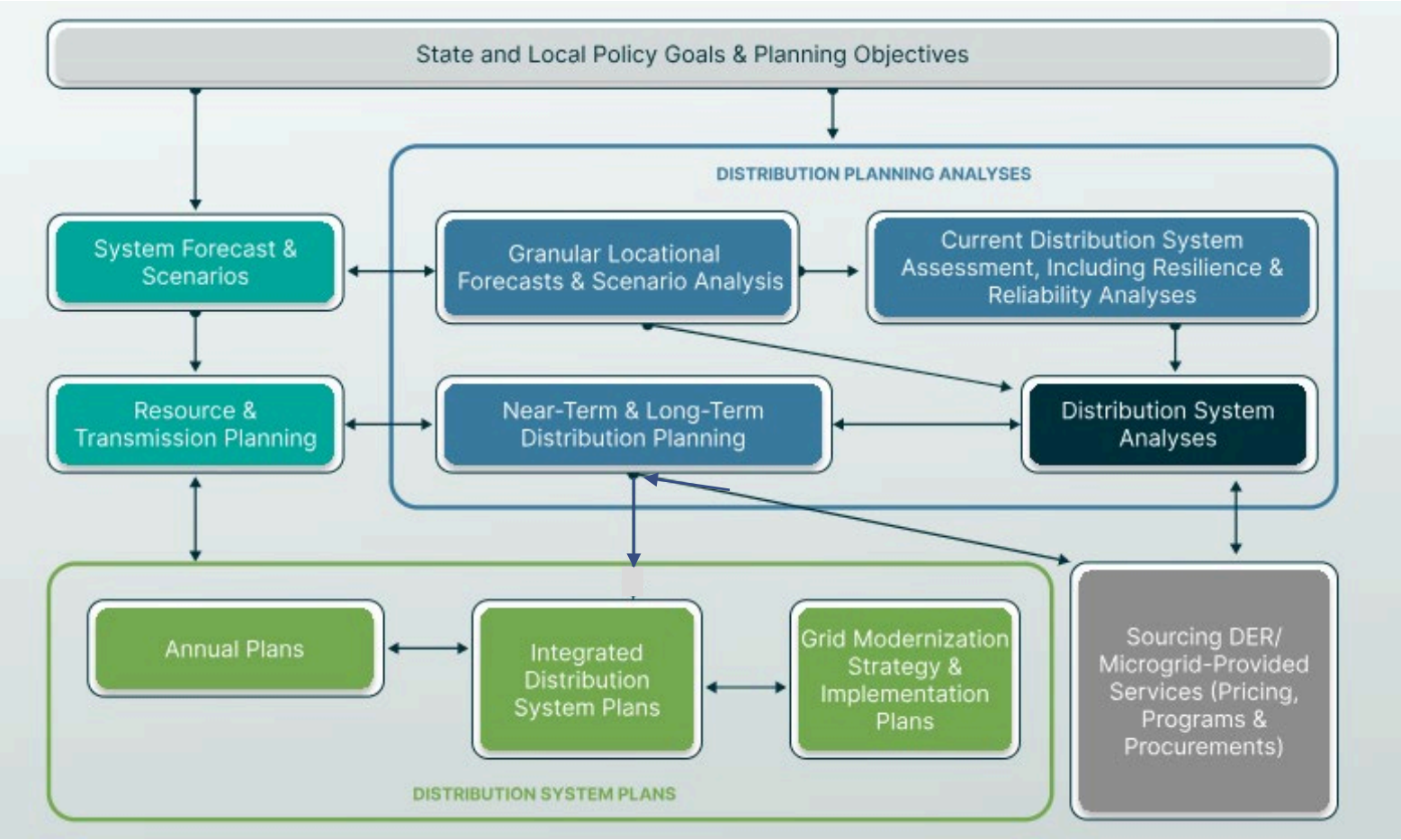
Integrated Distribution System Planning for Aggregated Distributed Energy Resources

May 1, 2024

# Interactive IDP Framework

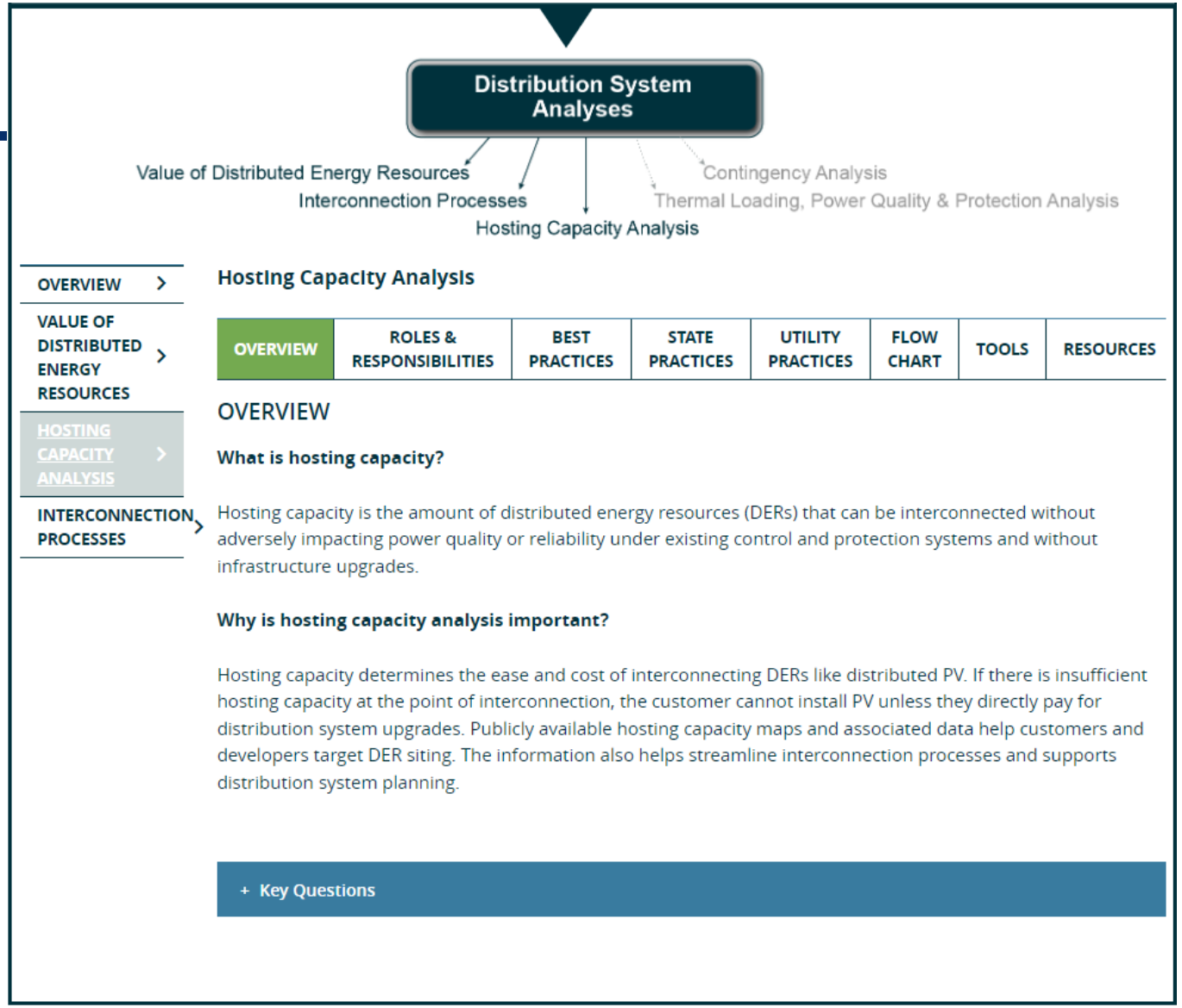
# Topics

- Hosting Capacity Analysis
- Value of DERs
- Interconnection
- Forecasting Loads and DERs/EVs
- Distribution Investment Strategy
- Functional Requirements Analysis
- Procurements
- Geotargeting Programs
- Stakeholder Engagement
- Equity Considerations
- Multi-Objective Decision-making
- Cost-Effectiveness Framework for Investments
- Threat-Based Risk Assessment
- Worst-Performing Feeder Analysis
- Asset Management Strategy
- Coordinated Planning
- Scenario Analysis



# What's included for each topic?

- Overview
  - What is it?
  - Why is it important?
  - Key questions (Q&A)
- Roles and Responsibilities
- Best Practices
- State Practices
- Utility Practices
- Flow Chart (e.g., inputs/ outputs)
- Tools
- Annotated Resources List

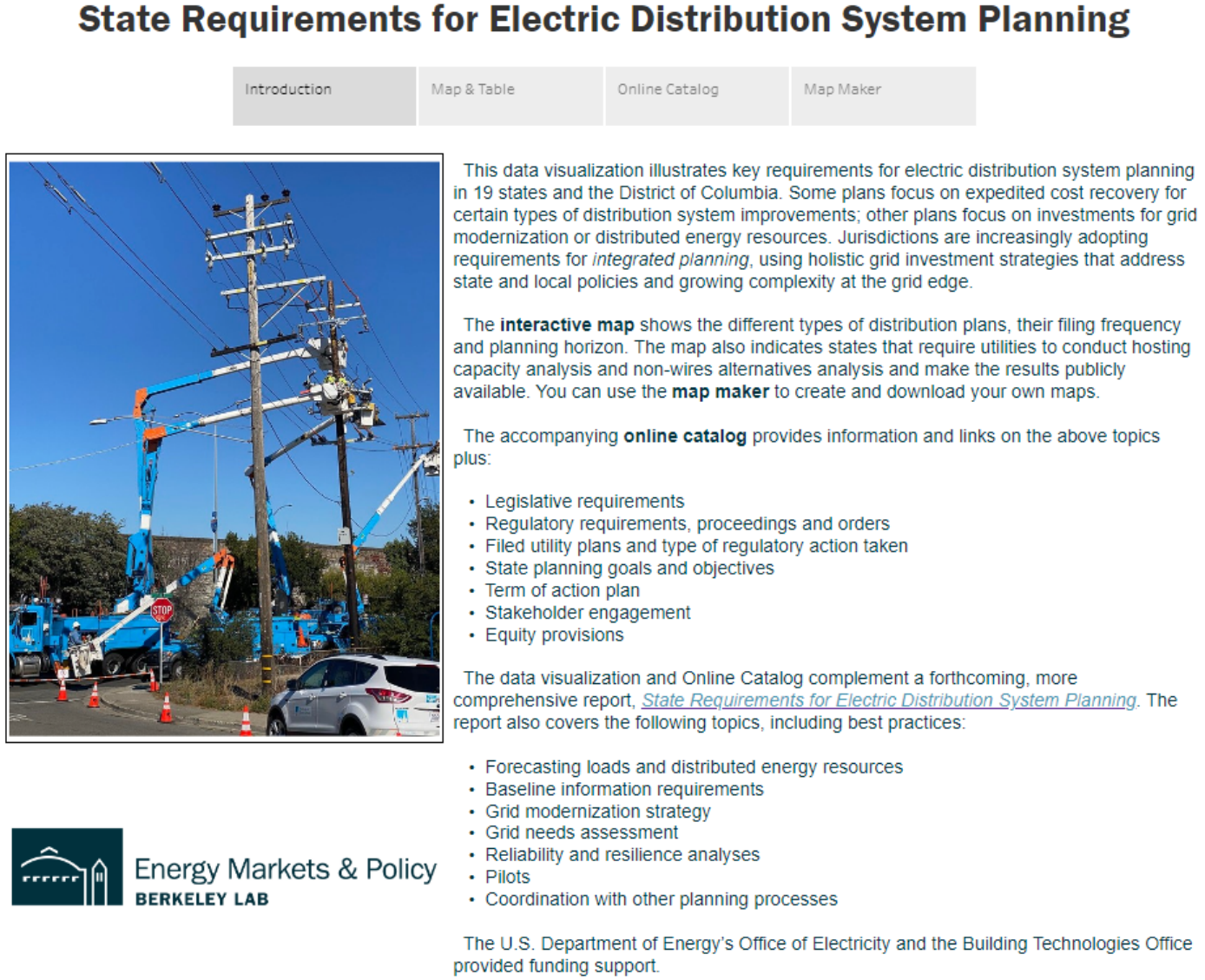


# State Distribution Planning Requirements: Data Visualization, Online Catalog and Report

# Data Visualization and Online Catalog (1)

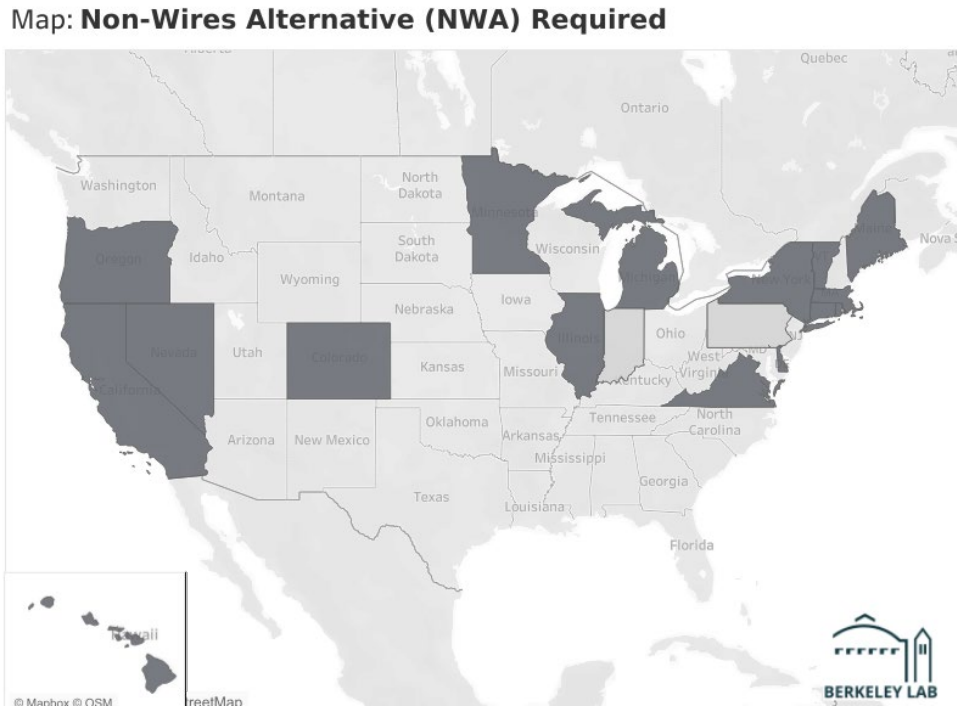
- Grid-edge resources are a major motivator of state requirements for distribution planning.
- Berkeley Lab's new dataviz and online catalog summarize legislative and regulatory requirements for electric utilities to file some type of distribution system plan in 19 states and DC.
- PUCs reviewed and validated the information presented.
- Berkeley Lab will update the information in the Fall.

**https://emp.lbl.gov/state-distribution-planning-requirements**



# Data Visualization and Online Catalog (2)

- Data visualization provides **an interactive interface** to identify state-by-state requirements for:
  - Types of distribution plans filed
  - Filing frequency
  - Planning horizon
  - Non-wires alternatives
  - Hosting capacity analyses
- Users can create **customized maps** for embedding in other web content or exporting to documents
- **Online catalog and document library** provide detailed information by state:
  - Legislative and regulatory requirements, proceedings, and orders
  - Filed utility plans and type of regulatory action taken
  - State planning goals and objectives
  - Term of action plan
  - Stakeholder engagement and equity provisions

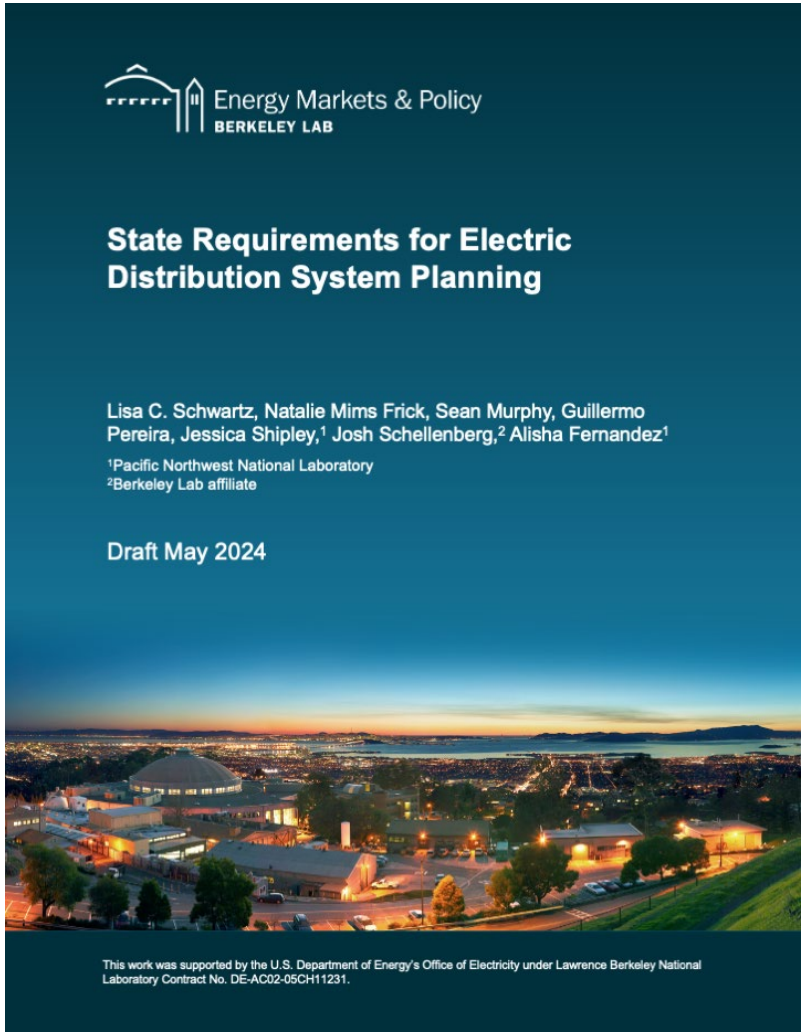


# Forthcoming report on state IDP requirements

- State goals and objectives
- Procedural requirements
- Stakeholder engagement
- Forecasting loads and DERs
- Hosting capacity analysis
- Baseline information requirements
- Grid modernization strategy
- Grid needs assessment
- Non-wires solutions
- Reliability and resilience analyses
- Equity
- Pilots
- Coordination with other planning processes

Reviews state requirements and utility approaches and offers best practices.

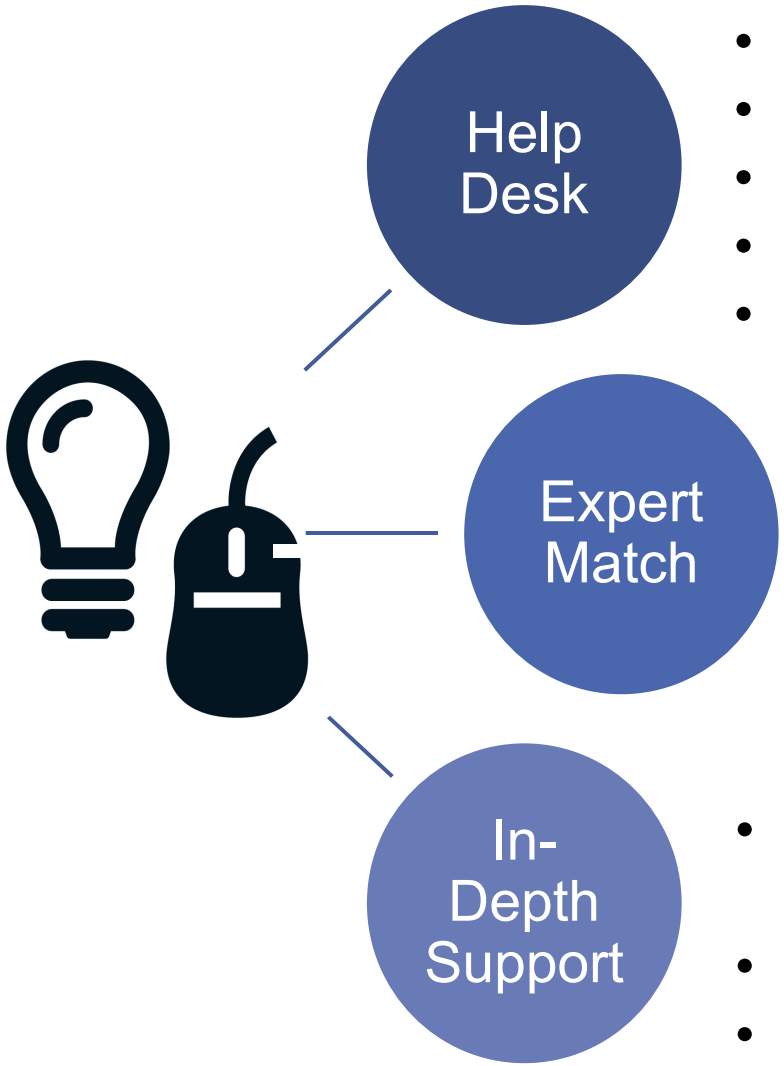
Includes links to legislation; regulatory requirements, proceedings, and orders; and filed utility plans.



# Technical Assistance for States

**For more information on the State Technical Assistance Program, please visit:**
**https://emp.lbl.gov/projects/state-TA-program**

# State Technical Assistance Program on Electricity Topics




- Online intake form w/ rolling Lab screening
- Connect to PM* within 2 business day to clarify request
- Connect to an SME** within 5 business days
- SME provides up to 4 person-hours of support
- Intake form and support available starting **March 2024**

- Online intake form w/ rolling review by Labs
- Connect to PM within 2 business day to clarify request
- Connect to an SME within 5 business days
- SME provides up to 80 person-hours of support
- Intake form available **March 2024** with TA starting in **April**

- Detailed application form w/ planned 9-month work cycle by Labs & DOE, with limited opportunity for mid-cycle review
- Team of SMEs provide 80+ person-hours of support
- Detailed application due **June 2024** with TA starting in **August**

**State Technical Assistance Program:** https://emp.lbl.gov/projects/state-TA-program

# Technical Assistance Topics

*While the program can answer questions and provide support on virtually any electricity-related topic, it is focused on addressing PUC and SEO inquiries in the following key topical areas:*

- Integrated Grid Planning & End-Use Technology Integration
  - Planning for End-Use Adoption (DERs – EVs, buildings & industry, PV, energy storage) & Load Forecasting
  - Electric Infrastructure Expansion (Behind-the-meter, Distribution, Bulk Power System)
  - Regional Coordination with Bulk Power System Operators
- End-Use, Distribution, and Bulk-Power Operation
  - System Visibility, Control, and Communications
  - Institutional Roles and Responsibilities (Aggregator vs. Distribution Utility vs. Distribution System Operator)
  - End-use Device Integration & Flexibility (Including Codes, Standards, and Best Practices)
- Electricity Markets & Compensation
  - Enabling Flexible End-use Technology Participation in Electricity Markets (EV Managed Charging, Building Demand Response, Behind-the-Meter Storage, etc.)
  - Evolving Retail and Wholesale Services, Participation Models, and Compensation
- Resource Adequacy, Reliability, and Resilience
  - Resource Adequacy in the Energy Transition
  - Reliability in a Predominately Inverter-Based Resource Environment
  - Extreme Weather Given Increased Electrification

**State Technical Assistance Program:** https://emp.lbl.gov/projects/state-TA-program

## Disclaimer



## Copyright Notice

# Q&A

- Use the chat function to type out your answer
- Use the “Raise Hand” feature on Zoom to elevate your question
- Come off mute to ask your question

# Breakout Overview – round 1 of 2

Self-select breakouts:

- **Join the breakout group covering the topic that's most relevant to your work today or in the future**
- *Try to have ~8 people in a breakout. If you see one is crowded, please select another.*

| Breakout Group Topic | Breakout Group Name |
|---|---|
| Translating community and state goals and policies into IDSP guidance | Group 1: translating goals & policies |
| Aligning distribution planning and other planning efforts | Group 2: dx planning |
| Sourcing solutions to meet customer and grid needs (pricing, programs, procurement) | Group 3: sourcing solutions |
| Using distribution planning to inform grid modernization and prioritization of investment | Group 4: grid mod+ |

# Breakout Overview – round 2 of 2

Self-select breakouts:

- **Join the breakout group covering the topic that is most challenging or most unknown for your jurisdiction**
- *Try to have ~8 people in a breakout. If you see one is crowded, please select another.*

| Breakout Group Topic | Breakout Group Name |
|---|---|
| Translating community and state goals and policies into IDSP guidance | Group 1: translating goals & policies |
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| Using distribution planning to inform grid modernization and prioritization of investment | Group 4: grid mod+ |

# What's Ahead

We've completed Module 2!

All Registrations and Recordings at: **https://www.naruc.org/core-sectors/energy-resources-and-the-environment/der-integration-compensation/**

**Stay tuned for more information about Module 3 to start in summer!**

# Thank you for joining today!

## Upcoming members-only NARUC-NASEO Events:

- Microgrids State Working Group Webinar: Improving Energy Resilience with Rural and Remote Microgrids, May 7, 2024, 2:00-3:00pm ET
- Grid-interactive Efficient Buildings (GEB) and NASEO Industrial Working Groups Joint Forum: Industrial Demand Flexibility, June 11, 2024, 3:00pm-4:30pm ET (virtual)
- Regional energy equity workshops: Mid-Atlantic, May 8-9, 2024 in Arlington, VA; Southeast, June 20-21, 2024 in Charlotte, NC

**Register to join the new "TA for States" DOE / National Lab technical assistance webinar on May 3, 2-3pm ET / 10-11am PT to learn about new support opportunities for your work or apply now: https://emp.lbl.gov/projects/state-TA-program/**

## CONTACT US


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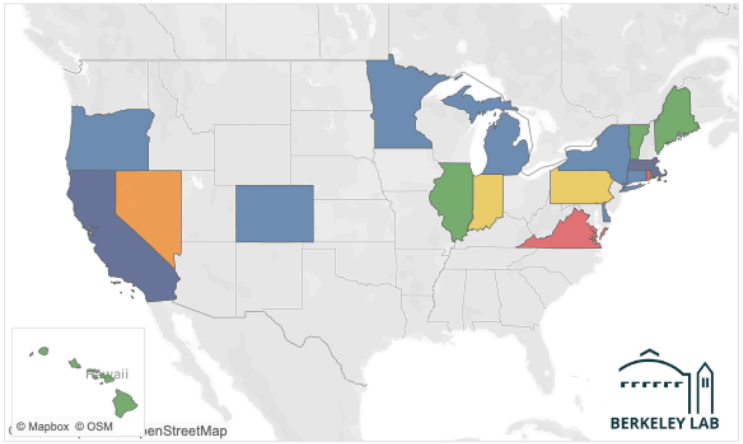
**www.naruc.org/core-sectors/energy-resources-and-the-environment/der-integration-compensation/**

# Extra Slides

# State Requirements for Electric Distribution System Planning

Introduction | Map & Table | Detailed Table | Map Maker

## Map: Type of Plan




For details on state policies and regulations, click here.

**Choose map**
- (•) Type of Plan
- ( ) Hosting Capacity Analysis (HCA) Required
- ( ) Non-Wires Alternative (NWA) Required

- Distributed energy resources plan
- Distribution system plan
- Grid modernization plan
- High DER Future
- Integrated grid plan
- T&D improvement plan

**Select Type of Plan**
- (•) (All)
- ( ) Distributed energy resources plan
- ( ) Distribution system plan
- ( ) Grid modernization plan
- ( ) High DER Future
- ( ) Integrated grid plan
- ( ) T&D improvement plan

**Frequency of filing (years)***
1 — 5

**Planning horizon (years)***
3 — 20

* Could be a range of years. Check the "Detailed Table" tab for more details.

State policies and regulations on integrated distribution system planning are evolving. To submit comments, corrections, or additions to this data, please write to us at:

idp@lbl.gov

| State | Distributed energy resources plan | Distribution system plan | Grid modernization plan | High DER Future | Integrated grid plan | T&D improvement plan | NWA | HCA |
|---|---|---|---|---|---|---|---|---|
| California | | ● | ● | ● | | | ● | ● |
| Colorado | | ● | | | | | ● | ● |
| Connecticut | | ● | | | | | ● | ● |
| Delaware | | ● | | | | | ● | |
| District of Columbia | | ● | | | | | ● | ● |
| Hawaii | | | | | ● | | ● | ● |
| Illinois | | | | | ● | | ● | ● |
| Indiana | | | | | | ● | | |
| Maine | | | | | ● | | ● | ● |
| Maryland | | ● | | | | | | |
| Massachusetts | | ● | ● | | | ● | ● | ● |
| Michigan | | ● | | | | | ● | ● |
| Minnesota | | ● | | | | | ● | ● |
| Nevada | ● | | | | | | ● | ● |
| New Mexico | | | ● | | | | | |
| New York | | ● | | | | | ● | ● |
| Oregon | | ● | | | | | ● | ● |
| Pennsylvania | | | | | | ● | | |
| Rhode Island | | | ● | | | ● | ● | |
| Vermont | | | | | ● | | ● | ● |
| Virginia | | | ● | | | | ● | |
| Washington | ● | | | | | | ● | |

# State Requirements for Electric Distribution System Planning

Introduction | Map & Table | Online Catalog | Map Maker

| | Instructions: To follow a link, double click on the cell, then select the link. To open this sheet in a new window click here. | Type of Plan | Legislation<br>State Legislation | Proceedings:<br>Commission Requirements | Proceedings:<br>Filed Utility Plans | Proceedings:<br>Commission Proceedings on Filed Utility Plans | Proceedings<br>Links to Commission Proceedings on Filed Plans | Proceedings:<br>Commission Orders on Filed Plans<br>*May include requirements for future plans* | Plan Details:<br>Planning Goals and Objectives | Plan Details:<br>Frequency of Filing | Plan Details:<br>Planning Horizon |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **California** | | Distribution system plan | AB 327 (2013) initially required the California Public Utilities Commission (CPUC) to establish Distribution Resources Plan (DRP) requirements. | Docket 14-08-013:<br>In 2014, the CPUC issued an order instituting a rulemaking on DRP. In February 2015, the CPUC provided guidance on DRP filings.<br><br>The CPUC established three tracks:<br>Track 1 – Hosting capacity and locational value methods and initial pilots<br>Track 2 – Additional demonstration pilots related to (a) location benefits, (b) distribution operations with DERs, and (c) microgrids<br>Track 3 – Three policy issues: (a) Distributed Energy Resources (DER) Adoption and Distribution Load Forecasting, (b) Grid Modernization Investment Guidance, and (c) A Distribution Investment Deferral Process<br><br>In 2018, the CPUC issued an Order on Track 1 and Track 3 (D. 18-02-00), requiring utilities to submit an annual Grid Needs Assessment to identify grid needs in annual distribution system planning for distribution planning areas: Distribution Capacity, Voltage Support, Reliability (Back Tie), and Resiliency (Microgrid). The CPUC also issued an Order in 2018 on revised Track 2 demonstration projects:<br>http://docs.cpuc.ca.gov/SearchRes.aspx?DocFormat=ALL&DocID=190737689 | 2021 plans: Docket nos. A.15-07-002; 15-07-003; 15-07-006 | Rulemaking R.14-08-013<br><br>SCE – A.15-07-002<br>SDG&E – A.15-07-003<br>PacifiCorp – A.15-07-005<br>PG&E – A.15-07-006<br>Liberty Utilities – A.15-07-007<br>Bear Valley – A.15-07-007<br><br>Supplanted by R.21-06-017: The three large investor-owned utilities (IOUs) submitted Grid Needs Assessments (GNAs) and Distribution Deferral Opportunity Reports into this docket. | The PUC approved the utilities' 2021 DRPs on Sept. 9, 2021, D.21-09-005. | D. 17-02-007 in docket 14-08-013 addressed Track 2 Demonstration Projects and approved PG&E's proposed Demonstration Projects C and D; approved SCE's proposed Demonstration Projects C and D; and approved SDG&E's proposed Demonstration Projects C and E.<br><br>D.17-09-026 addressed Track 1 (methodological issues) for Demonstration Project A (Integration Capacity Analysis – ICA) and Demonstration Project B (Locational Net Benefit Analysis – LNBA) and adopted the ICA use cases for online maps and interconnection streamlining, as well as for distribution planning. The decision also adopted Locational Net Benefits Analysis use cases for: (1) Public Tool and Heat Map; (2) prioritization of candidate distribution deferral opportunities as part of the Distribution Investment Deferral Framework; and (3) providing location-specific avoided transmission and distribution (T&D) inputs into the Integrated Distributed Energy Resources distributed energy resource (DER) Avoided Cost Calculator for cost effectiveness evaluation, informing DER incentive levels and other applications.<br><br>D.18-02-004 in January 2018 addressed the issues identified in Track 3, Sub-track 1 (Growth Scenarios) and Sub-track 3 (Distribution Investment and Deferral Process) and adopted the Integrated Energy Policy Report demand forecast with updated Distributed DER forecasts. The Commission ordered the IOUs to use these forecasts for their 2018-19 distribution planning cycle. The Commission also ordered the IOUs to implement the Distribution Investment Deferral Framework as an annual planning cycle to select distribution upgrades for potential deferral through the competitive solicitation of DERs. In addition, the Commission directed the IOUs to implement DER growth scenarios and the ICA for distribution planning processes.<br><br>The CPUC issued an Order on Track 1 and Track 3 (D. 18-02-00), requiring utilities to submit annual Grid Needs Assessments to identify grid needs for distribution system planning for the following areas: Distribution Capacity, Voltage Support, Reliability (Back Tie), and Resiliency (Microgrid). | 1. Modernize the grid by enabling two-way flows of energy and energy services<br>2. Enable customer choice of new technologies and services<br>3. Animate opportunities for DERs to realize benefits by providing services to the grid<br><br>Key Principles (2014 order establishing DRP requirements):<br>Distribution planning should start with a comprehensive, scenario-driven, multi-stakeholder planning process that standardizes data and methodologies to address locational benefits and costs of distributed resources.<br>California's distribution system planning, design, and investments should move towards an open, flexible, and node-friendly network system (rather than a centralized, linear, closed one) that enables seamless DER integration.<br>California's electric distribution system operators should have an expanded role in electric system operations (with CAISO) by acting as a technology-neutral marketplace coordinator and situational awareness and operational information exchange facilitator while avoiding any operational conflicts of interest.<br>Flexible DER can provide value today to optimize markets, grid operations, and investments. California should expedite DER participation in wholesale markets and resource adequacy, unbundle distribution grid operations services, create a transparent process to monetize DER services, and reduce unnecessary barriers for DER integration. | 2 years | 10-13 years |
| **California** | | High DER Future | N/A | Order closing Docket 14-08-013; Order opening Docket 21-06-017<br>R.21-06-017 – Order Instituting a Rulemaking Regarding DERs (2021) | SCE: 2nd Amended GNA/Distribution Deferral Opportunity Report (DDOR) plan filed on 11/1/23.<br>SDG&E: GNA/DDOR plan filed 8/15/23<br>PG&E: GNA/DDOR plan filed 8/15/23 | Docket 21-06-017 | Docket 21-06-017 | None to date | Track 1 broadly focuses on high-level policy issues involving distribution system operator roles and responsibilities, as well as IOU and aggregator business models.<br>Track 2 focuses on near-term evolution and improvement of adopted DRP frameworks, analytic tools, and planning processes for more holistic distribution planning processes.<br>Track 3 focuses on grid modernization investments in the near- and medium-term, operationalizing smart inverters to leverage advanced functionality to provide grid services and furth aligning general rate case (GRC) filings with planned infrastructure investments identified during distribution planning. | TBD | TBD |

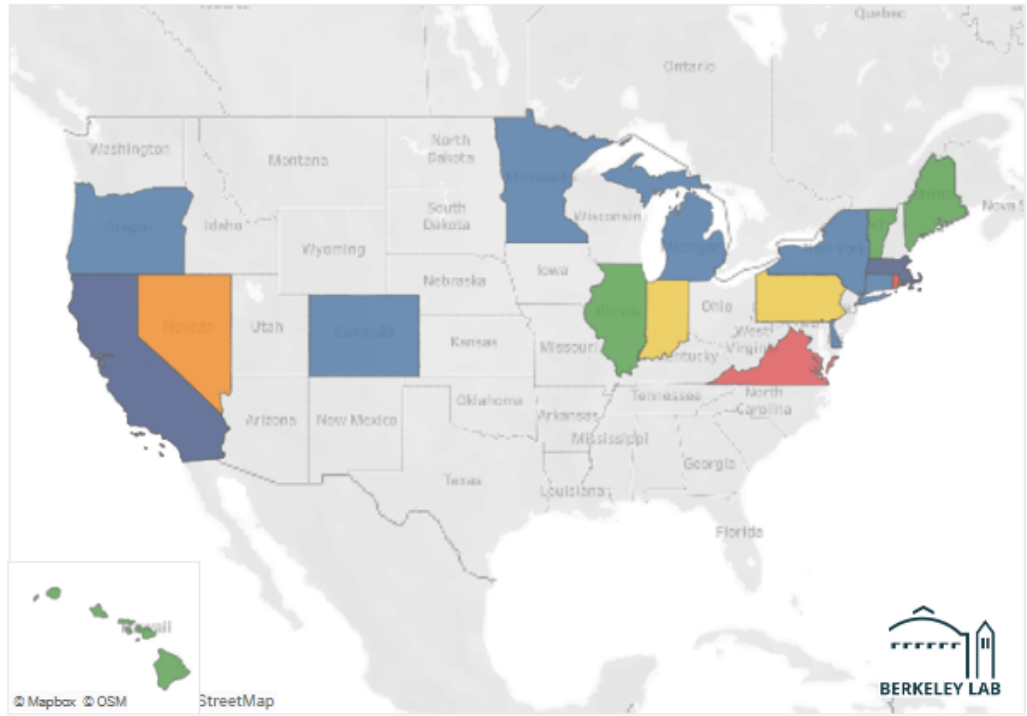
# State Requirements for Electric Distribution System Planning

Introduction | Map & Table | Online Catalog | Map Maker

## Map Maker

*Use the filters to create maps based on the type of planning requirement, the frequency of filing, and the planning horizon. Then you can export, embed, or print the maps using the "download" and "share" controls at the bottom right corner, or with a screen capture command.*

Map: **Type of Plan**




Choose map
- (•) Type of Plan
- ( ) Hosting Capacity Analysis (HCA) Required
- ( ) Non-Wires Alternative (NWA) Required

- Distributed energy resources plan
- Distribution system plan
- Grid modernization plan
- High DER Future
- Integrated grid plan
- T&D improvement plan

Select Type of Plan
- (•) (All)
- ( ) Distributed energy resources plan
- ( ) Distribution system plan
- ( ) Grid modernization plan
- ( ) High DER Future
- ( ) Integrated grid plan
- ( ) T&D improvement plan

Frequency of filing (years)*
1 — 5

Planning horizon (years)*
3 — 20

* Could be a range of years. Check the "Detailed Table" tab for more details.

Note: State policies and regulations on integrated distribution system planning are evolving. To submit comments, corrections, or additions to this data, please write to us at idp@lbl.gov.

Energy Markets & Policy
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From the Berkeley Lab report *State Requirements for Electric Distribution System Planning*. For more research on Integrated Distribution System Planning visit https://emp.lbl.gov/integrated-distribution-system-planning