



# NARUC

National Association of Regulatory Utility Commissioners

# Integrating Resilience Planning in Distribution System Plan Filings

NARUC/NASEO/LBNL Distribution System Planning  
Peer-Sharing Webinar

May 14, 2026

# AGENDA

- NASEO and NARUC intros
- Presentations
  - Myles Collins– Berkeley Lab
  - Stephen Capozzi– CT PURA
  - John Parks – CO Energy Office
- Interactive break-out sessions
- Q&A w/ SMEs





# About NASEO

- The only national non-profit association for the governor-designated energy officials from each of the 56 states and territories
- Serves as a resource for and about the State Energy Offices through topical committees, regional dialogues, and informational events that facilitate peer learning, best practice sharing, and consensus building
- Advances the interests of the State and Territory Energy Offices before Congress and the Administration
- Learn more at [www.naseo.org](http://www.naseo.org)

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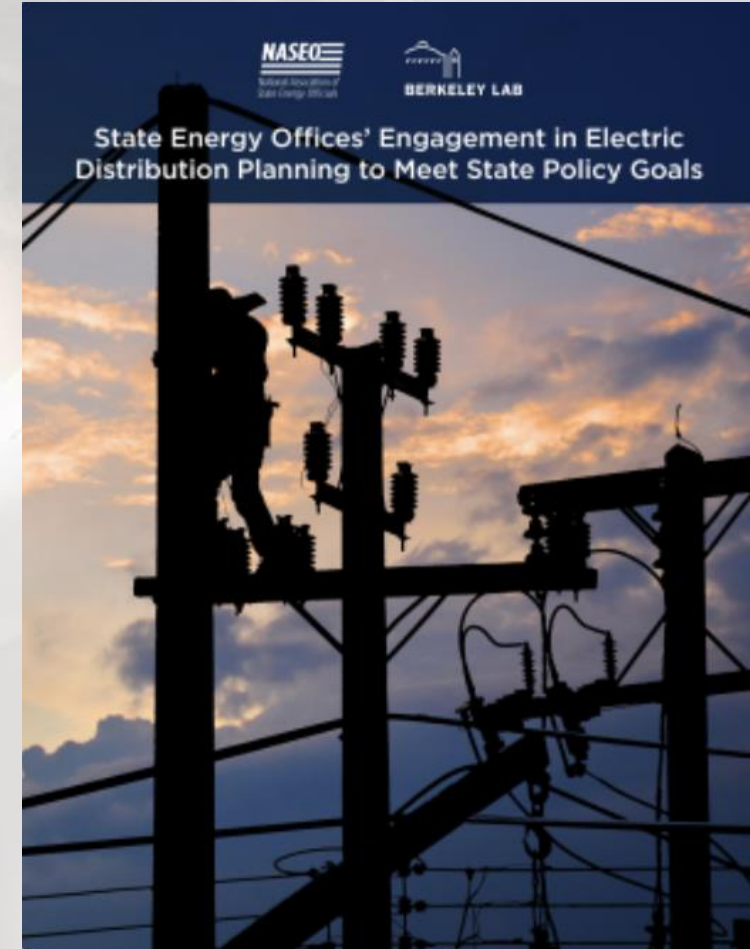
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# NASEO Resources

- [NASEO National Energy Screening Project Webinar: Introduction to NESP Resources and Tools](#)
- [NASEO Distribution Planning Training for State Energy Offices](#)
  - Distribution Planning Fundamentals
  - Engagement with Utilities and Industry Partners
  - Examples of State Energy Office Engagement in Distribution Planning
  - Resources and Tools



# EXISTING NARUC RESOURCES ON DISTRIBUTION SYSTEM PLANNING

- Late 2024-early 2025 in-person trainings “2.0” Planning for Load Growth and Local Resources – [Action Planning Workshop Reference](#)
- Late 2024 Virtual Workshops “Planning for a Modern Distribution System” - [Planning for a Modern Distribution System - NARUC](#)
- Late 2023-early 2024 in-person trainings “Distribution System Planning and Resilience” - [Regional Training: Planning for Distribution Systems, Distributed Energy Resources, and Resilience | Energy Markets & Planning; IDSP Training March 2024](#)
- Early 2023 Peer-sharing webinars on IDSP - [Peer-Sharing Webinars for Public Utility Commissions on Integrated Distribution System Planning - NARUC](#)





Energy Markets & Planning  
BERKELEY LAB

# Incorporating Threat-Based Resilience Planning into Distribution System Planning

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Myles Collins, Lawrence Berkeley National Laboratory

Peer-Sharing Webinars for Public Utility Commissions and State Energy Offices on Distribution System Planning

May 14, 2026

*This work was funded by the U.S. Department of Energy's Office of Electricity under Contract No. DE-AC02-05CH11231.*

# Agenda

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- Background and objectives for upcoming Berkeley Lab report
  - Authors: Myles Collins, Arthur Mallet Dias, Paul De Martini, and Lisa Schwartz
  - The final report, when available, will be posted [here](#).
  - We'll be happy to send you the draft report and get your feedback. Let us know your interest in the chat box or email [mtcollins@lbl.gov](mailto:mtcollins@lbl.gov).
- State requirements
- Integration framework and typology
- Utility examples
- Emerging utility best practices



# Background and Objectives

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- States and utilities are aiming to improve resilience to threats posed to electricity grids from severe weather, earthquakes, and physical threats.
- Energy affordability also is a key issue, with some regions of the country experiencing rapid increases in electricity prices in recent years, particularly in the residential sector.
- Resilience planning and distribution system planning are largely siloed, and methodologies for these processes may not align.
- This study discusses transitioning from siloed planning to an integrated process that jointly identifies and prioritizes grid solutions and implements them efficiently to deliver reliable and resilient local grids at lower cost to ratepayers.
  - Presents a framework that states and utilities can use to advance affordability and grid performance by integrating resilience into broader distribution system planning (DSP)
  - Identifies emerging best practices within this framework
  - Analyzes case studies that illustrate how integrated resilience and distribution system planning makes the overall process more efficient and effective



# State Requirements

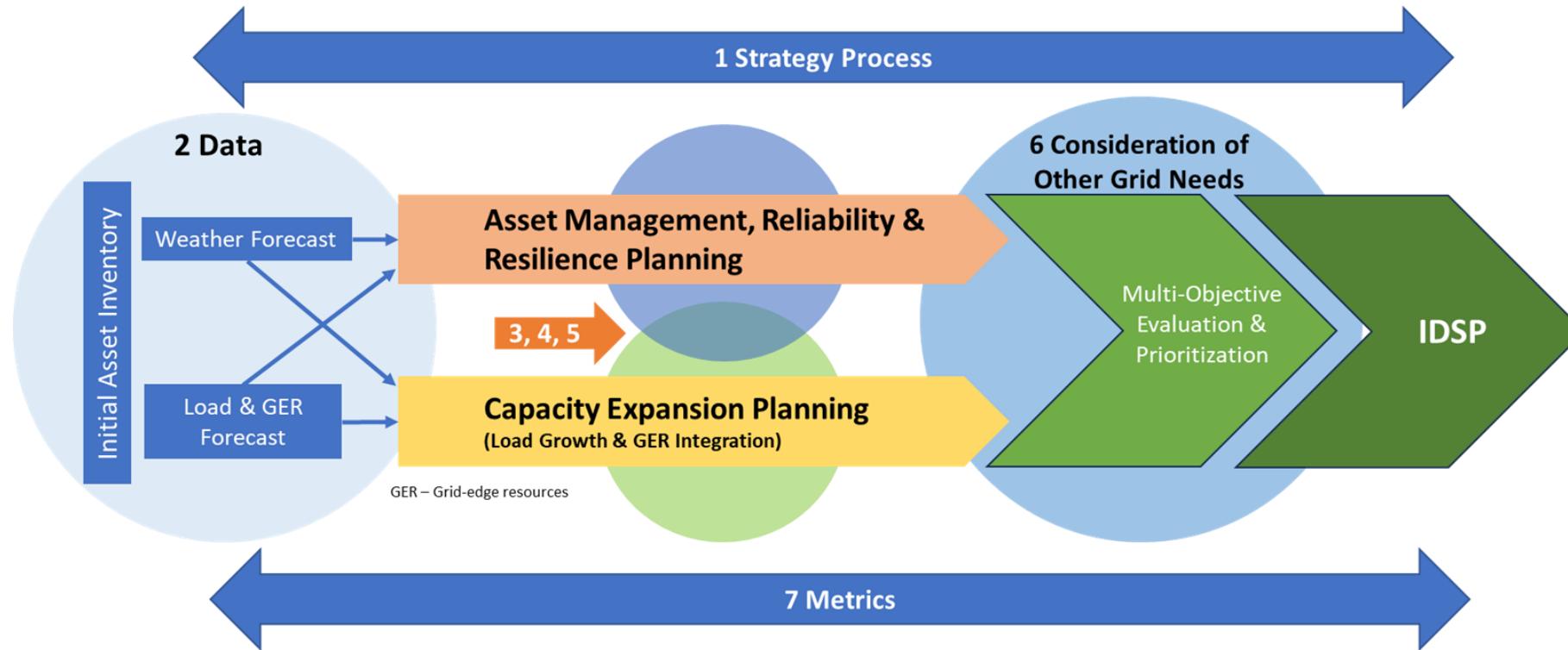




# Integration Framework and Typology



# Distribution System and Resilience Planning Integration Framework



1. **Strategy Process:**  
Explanation of how resilience fits into distribution system planning process
2. **Data:**  
Sources of information for resilience planning and other DSP analyses
3. **Threat Assessments:**  
Vulnerability or risk assessment of distribution system assets, operations, and processes
4. **Solution Identification and Prioritization:**  
Evaluation of potential solutions to mitigate threat risk
5. **Optimization Opportunities:**  
Coordination between planning processes to implement projects
6. **Consideration of Other Grid Needs:**  
Methods for efficiently addressing multiple planning objectives
7. **Metrics:**  
Measuring investment performance to improve resilience

# Three Approaches to Integration of Distribution and Resilience Plans\*

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## Stated Plans for Future Integration

- Utilities discuss their plans for addressing resilience and integrating the plans in future planning cycles

## Enhanced Reliability Analysis\*\*

- Utilities, accustomed to performing annual reliability planning, adapt reliability planning methods to resilience

## Resilience Integration in Distribution System Plans

- Utilities integrate elements of resilience planning in distribution system planning, and the integration is evident in the filed plans

\*Applies to Threat Assessments, Solution Identification and Prioritization, Optimization Opportunities, Consideration of Other Grid Needs, and Metrics (not all levels are relevant to all of these categories)

\*\*See Extra Slides for an example

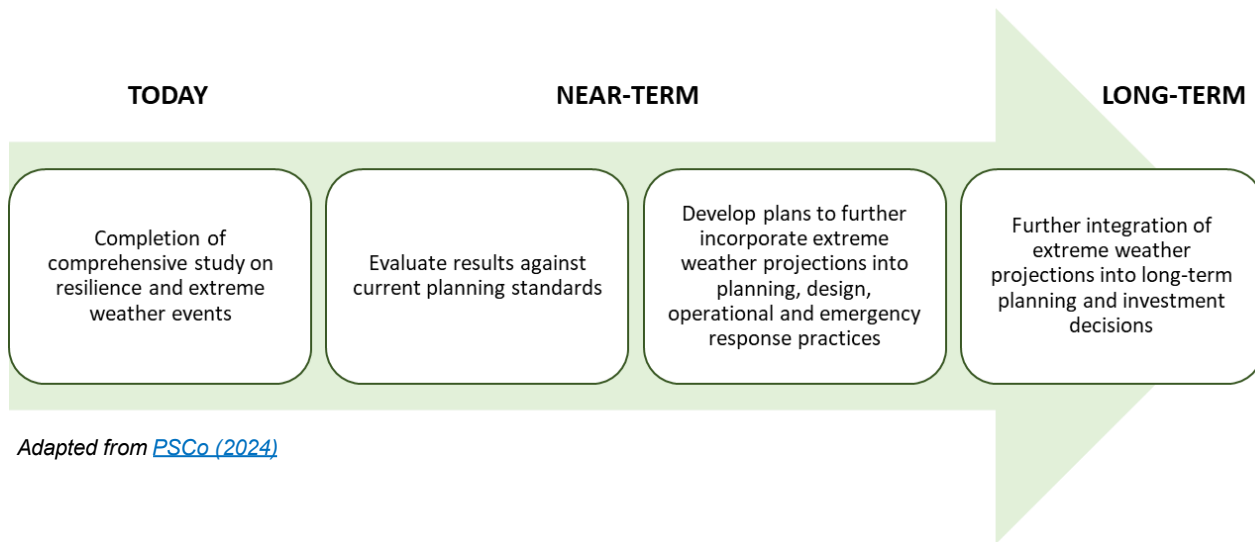


# Utility Examples



# Strategy Process

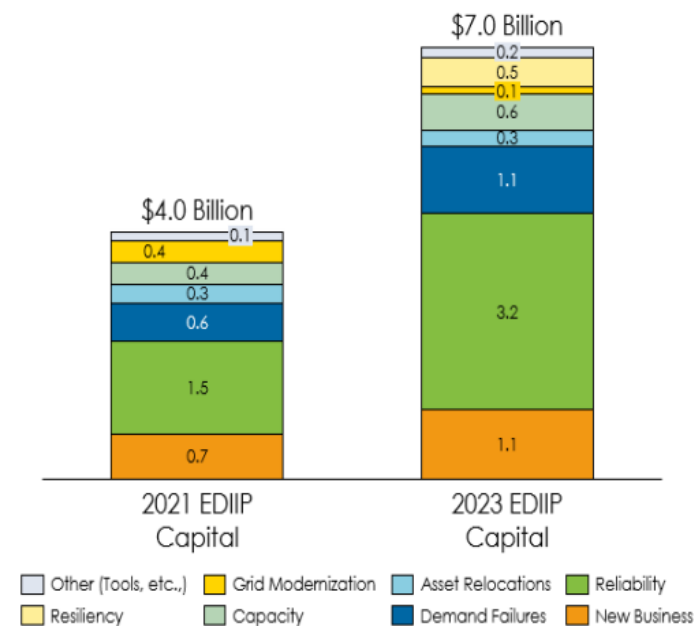
- All of the DSPs included in the deep-dive review mentioned resilience as an objective.
  - ▣ Including resilience to wildfire, extreme weather, earthquakes, and physical and cyber\* threats
- Example: [Public Service Company of CO](#) mentions integration of resilience into existing DSP processes as an objective.



Adapted from [PSCo \(2024\)](#)

\*Cybersecurity is not included in DSPs given the sensitivity of the data and is not in scope for this study.

## Consumers Energy Investment Financial Plans (2024-2028)

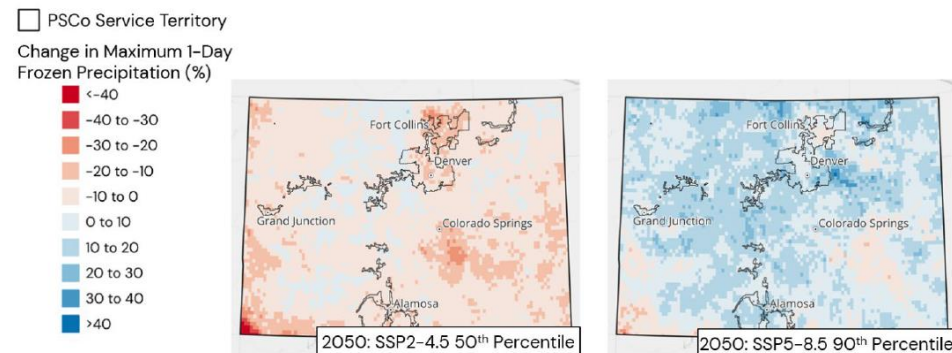


Source: [Consumers Energy \(2023\)](#)

- DSP summarizes overall investment strategy
- Driven primarily by increased investments in reliability and to a lesser extent by resiliency investments and expanding capacity for load growth

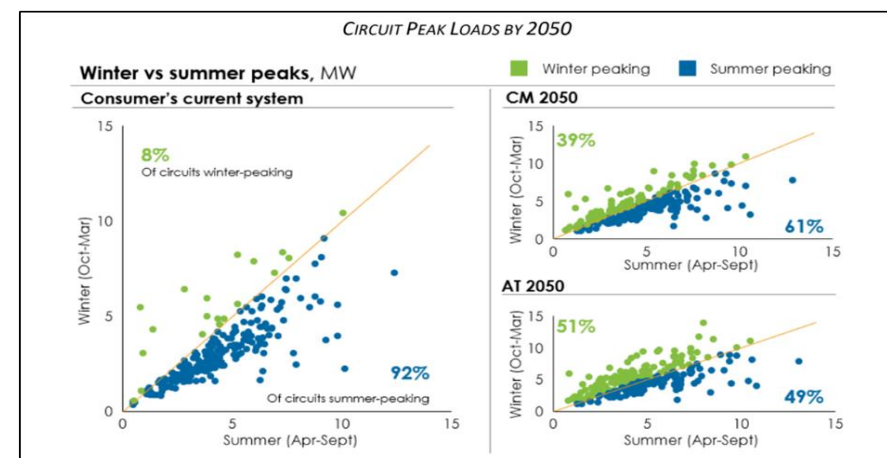
# Data

- Data for projections
  - ▣ Downscaled global projections
  - ▣ Scenarios
  - ▣ Hazard data
- Data collection for situational awareness
  - ▣ Measure and monitor
    - Detection / weather
    - Light Detection and Ranging (LiDAR) for vegetation management
    - Drone tech in conjunction with sensing capabilities
  - ▣ Restoration effectiveness



**PSCo - projected percent change in the max. 1-day frozen precipitation amts by 2050**

Source: [PSCo \(2024\)](#)



**Consumer Energy's peak load forecast for different circuits under 2 scenarios**

Source: [Consumers Energy \(2023\)](#)



# Threat Assessments





- Vulnerability assessments examine the impact of threats to utility operations and processes – in addition to physical grid assets
- Examples
  - [Duke Energy](#) resilience and adaptation report includes a risk score for various process areas related to DSP, such as load forecasting and capacity planning (upper figure).
  - [National Grid](#) assesses distribution operations and planning functions across various threats. The study finds that high temperatures have a potential impact on load forecasting and capacity planning (lower figure).

Table 3. 2050 projected vulnerability priority ratings for asset and operations planning groups.

Process Area	Risk Score
Asset Management	High
Load Forecasting	Medium
Capacity Planning	Medium
Reliability Planning	Medium
Emergency Response	Low
Workforce Safety	Low
Vegetation Management	Low

Source: [Duke Energy \(2023\)](#)

Table 15. Identified climate hazards with potential impacts on operations and planning functions

OPERATIONS AND PLANNING FUNCTIONS	High Temperature 	High Winds 	Inland Flooding 	Ice 
Emergency Response	✓	✓	✓	✓
Vegetation Management		✓	✓	✓
Workforce Safety and Methods	✓	✓	✓	✓
Reliability Planning	✓	✓	✓	✓
Load Forecasting	✓			
Capacity Planning	✓			

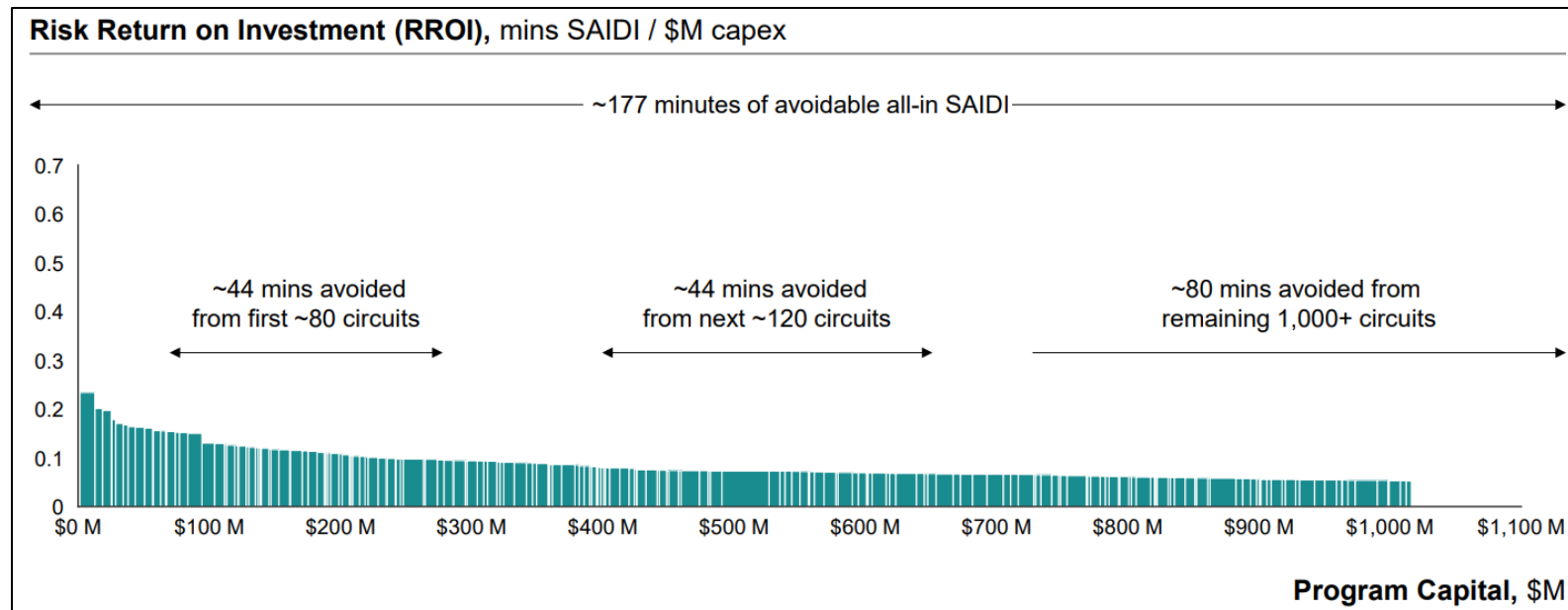
Source: [National Grid \(2023\)](#)



# Solution Identification and Prioritization – Risk Return on Investment

## Louisville Gas & Electric and Kentucky Utilities

- Solution portfolio developed by ordering solutions from highest to lowest risk return on investment and establishing resilience performance targets



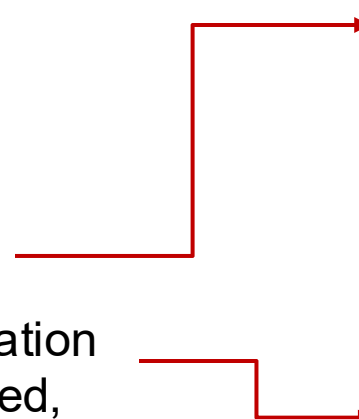
Source: [LG&E and KU \(2025\)](#)



# Consideration of Other Grid Needs

## DTE Electric – Global Prioritization Model

- Valuing and balancing multiple objectives
- Formal prioritization framework applied consistently across all investments
- Investments receive a score (0–100) across multiple dimensions
  - ▣ In most cases, scoring is based on BCR
- SAIDI and SAIFI reduction
- Major event risk mitigation from substation outage events is included as a weighted, quantifiable factor



*DTE Electric's investment prioritization framework components*

Impact Dimension	Drivers	Weight
<b>Reduce Electrical Hazards</b>	<ul style="list-style-type: none"> <li>• Reduction in wire down events</li> <li>• Reduction in secondary network cable manhole events</li> </ul>	3
<b>Overload Relief</b>	<ul style="list-style-type: none"> <li>• Elimination of overloaded equipment</li> </ul>	
<b>SAIDI</b>	<ul style="list-style-type: none"> <li>• Reduction in duration of outage events</li> </ul>	
<b>SAIFI</b>	<ul style="list-style-type: none"> <li>• Reduction in frequency of outage events</li> </ul>	2
<b>Regulatory Compliance</b>	<ul style="list-style-type: none"> <li>• MPSC staff's recommendation (March 30, 2010 report) on utilities' pole inspection program</li> <li>• Docket U-12270 – Service restoration under normal conditions within 8 hours</li> <li>• Docket U-12270 – Service restoration under catastrophic conditions within 60 hours</li> <li>• Docket U-12270 – Service restoration under all conditions within 36 hours</li> <li>• Docket U-12270 – Same circuit repetitive interruption of fewer than five within a 12-month period</li> </ul>	
<b>Major Event Risk</b>	<ul style="list-style-type: none"> <li>• Reduction in extensive substation outage events that lead to a large amount of stranded load for more than 24 hours</li> </ul>	
<b>Capacity Relief</b>	<ul style="list-style-type: none"> <li>• Elimination of system capacity constraints</li> </ul>	
<b>Investment in EJ Communities</b>	<ul style="list-style-type: none"> <li>• Percent of customers impacted by investment in EJ communities</li> </ul>	
<b>O&amp;M Avoidance</b>	<ul style="list-style-type: none"> <li>• Trouble event reduction and truck roll reduction</li> <li>• Preventive maintenance investment reduction</li> </ul>	1
<b>Capital Avoidance</b>	<ul style="list-style-type: none"> <li>• Trouble event reduction and truck roll reduction</li> <li>• Reduction in capital replacement either during equipment failures or avoided planned capital work</li> </ul>	

Source: [DTE \(2023\)](#)



# Metrics

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- Utilities and industry organizations are developing and experimenting with resilience-focused metrics and indices.
  - Network Resiliency Index - “models the relative strength of each network by calculating the probability of failure of multiple associated feeders within a network over time, as caused by individual component failures” ([ConEd, 2023](#))
  - Average customer interruptions per major event ([LG&E and KU, 2025](#))
  - “CEMI4R2” and “CEMI7R3,” which are the portions of customers experiencing at least 4 sustained interruptions per year for 2 consecutive years and 7 sustained interruption per year for 3 consecutive years, respectively ([Delmarva, 2024](#))
- Researchers and industry groups are exploring other new metrics that are not yet tracked in utility plans.
  - Dual-metric framework, consisting of a “resistance” and a “recovery” component ([Levy et al., 2025](#))
  - Average log event cost and annual log cost resilience index ([Ahmad and Dobson, 2025](#))
  - IEEE Storm Resilience Metric ([IEEE, 2020](#))



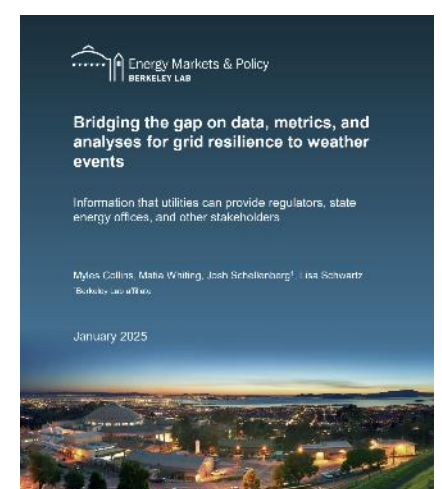
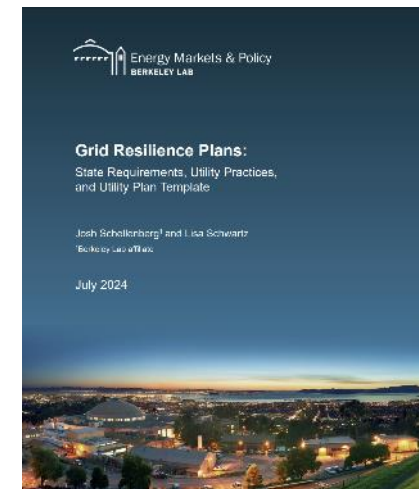
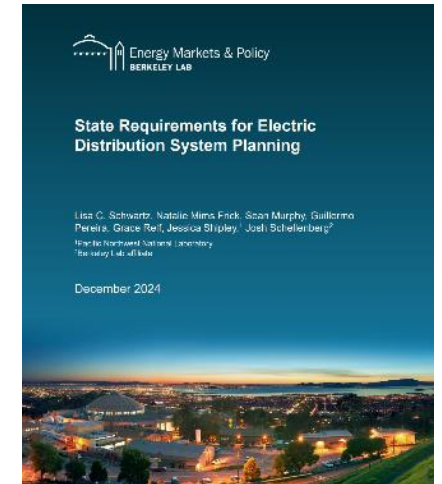
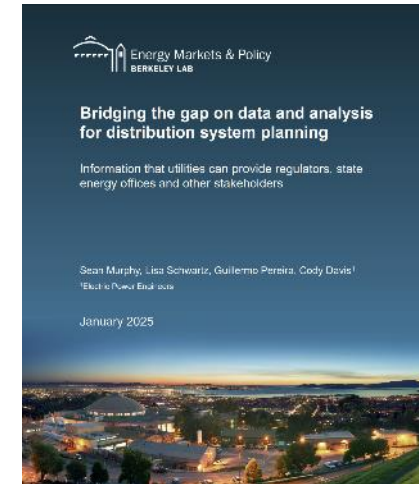
# Emerging Utility Best Practices

# Emerging Best Practices for Integrating Resilience and Distribution System Planning

Integration Point	Emerging Best Practices
<b>Strategy Process</b>	<ul style="list-style-type: none"> <li>• Explain how resilience currently fits into a utility's distribution system planning process and how its role is expected to evolve over time</li> <li>• Specify the objectives that will be used to assess and prioritize planned distribution system expenditures and provide a roadmap for achieving these objectives</li> </ul>
<b>Data</b>	<ul style="list-style-type: none"> <li>• Use consistent data sources and scenarios across planning functions</li> <li>• Document data sources and assumptions</li> <li>• Plan for anticipated extreme weather conditions</li> <li>• Leverage advanced sensing technologies to improve situational awareness and accelerate restoration</li> </ul>
<b>Threat Assessments</b>	<ul style="list-style-type: none"> <li>• Assess the impact of threats to existing planning processes</li> <li>• Leverage existing reliability planning processes and analyses to assess threats</li> </ul>
<b>Solution Identification and Prioritization</b>	<ul style="list-style-type: none"> <li>• Conduct initial cost-effectiveness screening and then prioritize resilience investments in order to facilitate their integration into the broader distribution system planning process</li> <li>• Use tradeoff curves or similar forms of data visualization to help utility and regulatory decision-makers identify optimal levels of investments</li> <li>• Make explicit connections with distribution system planning when resilience planning occurs through other means</li> </ul>
<b>Optimization Opportunities</b>	<ul style="list-style-type: none"> <li>• Integrate resilience-prioritized hardening investments into traditional distribution planning and capacity upgrade cycles to reduce costs and customer impact</li> <li>• Coordinate project implementation between the existing physical system and capacity expansion planning</li> <li>• Balance immediate reliability and resilience gaps with longer-term, systemic grid needs</li> </ul>
<b>Consideration of Other Grid Needs</b>	<ul style="list-style-type: none"> <li>• Explore frameworks for comparing risk reduction across multiple planning objectives, including resilience</li> <li>• Evaluate alternatives to traditional infrastructure upgrades to reduce costs and mitigate grid resilience risks</li> <li>• Involve stakeholders in selecting and weighting planning criteria</li> </ul>
<b>Metrics</b>	<ul style="list-style-type: none"> <li>• Collect and analyze power interruption data with as much geographic granularity as possible</li> <li>• Determine baselines for key metrics to measure the performance of grid investments</li> <li>• Develop new metrics for assessing grid resilience</li> </ul>

# Additional Resources

- [Bridging the Gap on Data and Analysis for Distribution System Planning](#)
- [State Requirements for Electric Distribution System Planning](#) (includes a review of filed utility plans for leading practices)
- [Distribution planning practices catalog](#) (updating ~late May)
- [Grid Resilience Plans: State Requirements, Utility Practices, and Utility Plan Template](#)
- [Bridging the Gap on Data, Metrics, and Analyses for Grid Resilience to Weather Events](#)
- [Interruption Cost Estimate \(ICE\) Calculator](#) – Online tool for estimating interruption costs and/or the benefits associated with reliability improvements
- [Power Outage Economics Tool \(POET\)](#) – Economic model to estimate economic impacts of widespread, multi-day outages across an entire region
- [Berkeley Lab Integrated Distribution System Planning website](#)



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# Extra Slides



# Distribution System Plans – Deep-Dive Review

State	Plan Name	Utility Plans Reviewed
California	Grid Needs Assessment, Distribution Deferral Opportunity Report	<a href="#">Southern California Edison (SCE) (2024)</a> <a href="#">Pacific Gas &amp; Electric (PG&amp;E) (2024)</a>
Colorado	Distribution System Plan	<a href="#">Public Service Company of Colorado (PSCo) (2024)</a>
District of Columbia	Annual Consolidated Report	<a href="#">Pepco (2025)</a>
Georgia	Rate case filing	<a href="#">Georgia Power (2022)</a>
Hawaii	Integrated Grid Plan	<a href="#">Hawaiian Electric Company (HECO) (2023)</a>
Illinois	Multi-Year Integrated Grid Plan	<a href="#">Ameren Illinois (2024)</a> <a href="#">Commonwealth Edison (ComEd) (2024)</a>
Indiana	6-Year Electric Plan	<a href="#">Duke Energy (2024)</a>
Kentucky	Rate case filing	<a href="#">Louisville Gas &amp; Electric and Kentucky Utilities Company (LG&amp;E and KU) (2025)</a>
Massachusetts	Electric Sector Modernization Plan	<a href="#">Eversource (2024)</a> <a href="#">National Grid (2024)</a>
Michigan	Distribution Grid Plan	<a href="#">DTE Electric (2023)</a>
Michigan	Electric Distribution Infrastructure Investment Plan (EDIIP)	<a href="#">Consumers Energy (2023)</a>
Minnesota	Integrated Distribution Plan	<a href="#">Northern States Power Company (2023)</a>
New York	Distributed System Implementation Plan	<a href="#">Consolidated Edison (ConEd) (2023c)</a>
Oklahoma	Rate case filing	<a href="#">Oklahoma Gas &amp; Electric (OG&amp;E) (2021)</a>
Oregon	Distribution System Plan	<a href="#">Portland General Electric (PGE) (2024)</a>
Pennsylvania	Distribution System Plan	<a href="#">UGI Utilities (UGI) (2024)</a>
	Long-Term Infrastructure Improvement Plan	<a href="#">PECO Energy Company (PECO) (2024)</a>
Virginia	Integrated Resource Plan	<a href="#">Dominion (2024) - Part 1/2 and Part 2/2</a> <a href="#">Appalachian (2022) - Part 1/3, Part 2/3, and Part 3/3</a>

# Solution Identification and Prioritization – Example of Enhanced Reliability Analysis

Stated Plans for Future Integration

Enhanced Reliability Analysis

Resilience Integration in Distribution System Plans

## Eversource

- Investigated outage data during major storms in past 4 years
- Methodology prioritizes highest criticality events (many customers impacted, multiple events, and long duration events)
- Root cause analysis
  - From 2019-2022, 25% of major event customer minutes interrupted (CMI) were related to reclosers and breakers' operations
- Solutions
  - Impacted zones grouped in 3 tiers of criticality
  - Highest criticality items paired with highest impact solutions
  - Impact of resilience mitigation quantified as impact on all-in SAIDI

### SAIDI improvements (%) and per mile costs of each resilience mitigation

Tier	Criteria	Measure	All-in SAIDI Improvement	Cost (\$M/mile)
I	Impacted zones with 300,000 or more CMI per event on average	Undergrounding	98%	4
II	Impacted zones with less than 300,000 and more than 150,000 CMI per event on average	Aerial Cable	82%	2.2
III	Impacted zones with less than 150,000 average CMI per event—with bare wire	Bare wire to tree wire conversion	50%	1.1
	Impacted zones with less than 150,000 average CMI per event—with insulated wire	Resilience Tree Work (RTW)	35%	0.1

Source: [Eversource \(2024\)](#)



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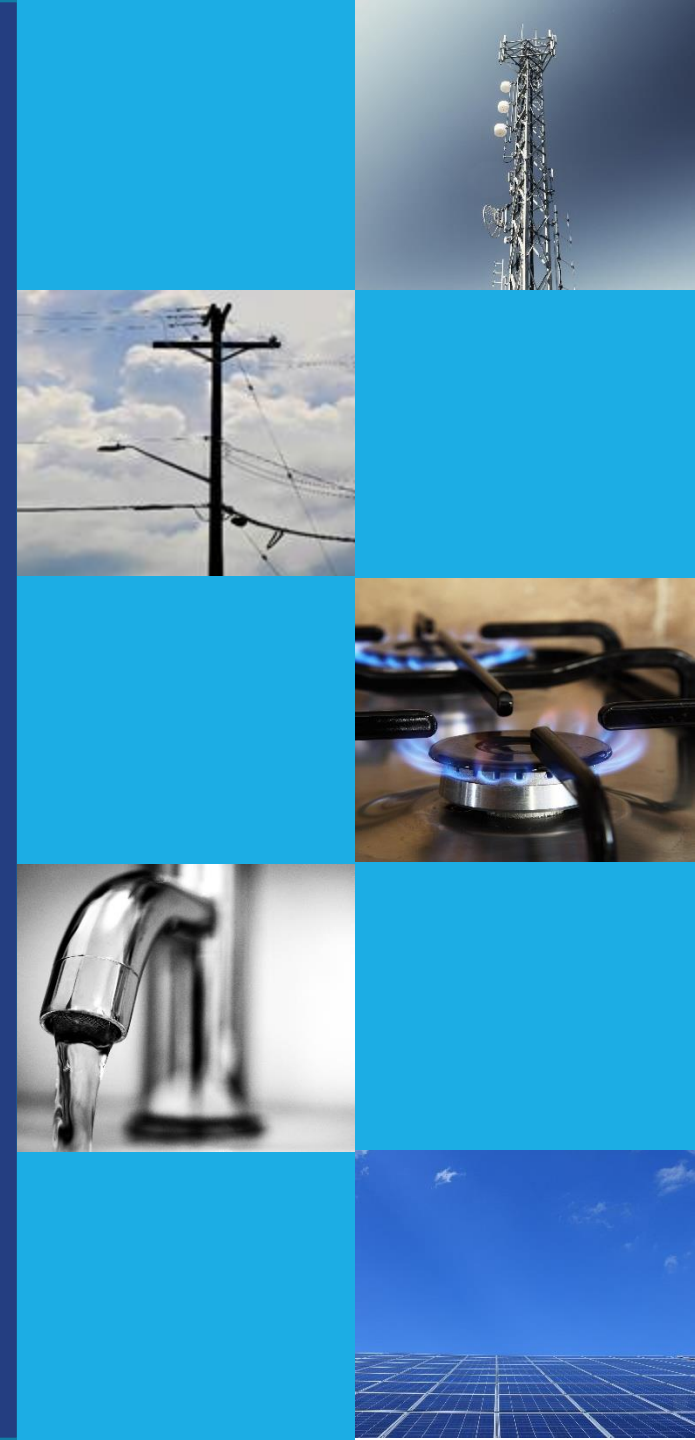


# Integrating Resilience into Distribution System Planning

Stephen Capozzi

Public Utilities Regulatory Authority

May 14, 2026



## Resilience Program Investigation ([Docket No. 17-12-03RE08](#))

Provide customers with a more resilient, reliable, and secure commodity

- Improving the cost-effectiveness of current reliability and resilience programs can mitigate future rate increases

1.

Improve resilience against gray-sky and dark-sky events

2.

Identify system and customer vulnerabilities to prioritize resilience programs

3.

Maximize benefits and return on investment for customers

4.

Establish minimum staffing standards as a resilience measure



# Timeline of Extreme Weather

- Pre 2011 – Minimal Catastrophic Events
- 2011/2012 – Three Major Events
  - Hurricane Irene (2011)
  - Snowstorm (2011)
  - Sandy (2012)
- 2012-2014 – Number of Investigations
- 2019 – Initiated Investigation into Resilience Practices
- 2020 – Tropical Storm Isaias
- 2022 – Completion of Resilience Investigation



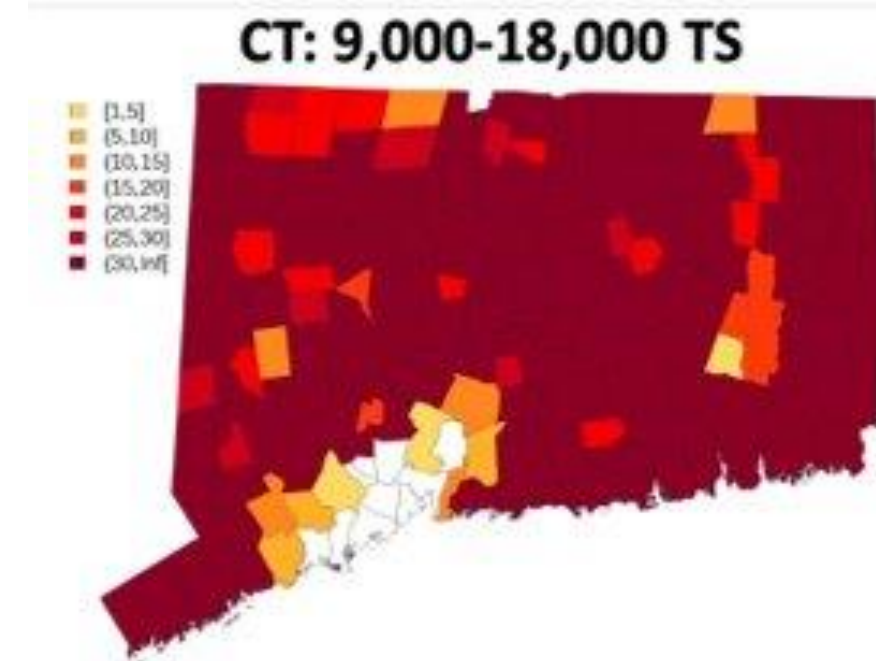
# Identification of System and Customer Vulnerabilities

Criteria	Category	Rank
All-in SAIDI (for last four years)	Outage-based	Primary
All-in SAIFI (for last four years)		
All-in CAIDI (for last four years)		
Major Storm-only SAIDI		
Major Storm-only SAIFI		
No. of Customers per Zone		System Characteristics
Mainline length		
Density and Type of Vegetation		
Feeder Type: Backbone or Lateral		
Feeder ties		
Site Access Difficulty (e.g., hard to access right-of-ways)		
Municipal Priorities including Blocked Roads	Community Priorities	
No. of Commercial and Industrial Customers per Zone		
Located in Distressed Municipality		
Located in Environmental Justice Community		
No. of Life Support Customers		



# Selection of Resilience Measure and BCA

Category	Data	Methodology
Program Costs	Capital Expenditures	\$ / mi. (VM, UG, Aerial Cable, etc.)
Assumed SAIDI Reduction	Customer minutes Interrupted	UConn Damage Prediction Model
5-Year Resilience Benefit*	Avoided Interruption Costs	<a href="#">Interruption Cost Estimator (ICE)</a>
	Avoided Storm Restoration Costs	Historical Restoration Costs
	Avoided Vegetation Management (VM) and Pole Costs	Anticipated Avoided Costs
10-Year Resilience Benefit*	Avoided Interruption Costs	
	Avoided Storm Restoration Costs	
	Avoided VM and Pole Costs	
5-Year BCA		
10-Year BCA		
20-Year BCA		
30-Year BCA		



# Evaluating Resilience Program Effectiveness



## Classify Event Intensity

- ▶ Gray Sky (150+ in 20 yrs)
- ▶ Dark Sky (4 in 20 yrs)

## Gather Data by Zones

- ▶ Hardened Zone
- ▶ Non-Hardened Zone
- ▶ VM-only Zone
  
- ▶ Differentiate for Overhead and Underground

## Data

Total Customer Min. Interrupted	Outage
No. of Customer Outages	
Estimate of Lost Load	
C&I Customer Min. Interrupted	Outage
No. of C&I Customer Outages	
Estimate of Lost Load	
Time to Restore 50% customers	Outage
Time to Restore 90% customers	
Critical Facility Min. Interrupted	Emergency Response
Critical Facility Outages	
Life Support Cust. Min Interrupted	
Life Support Outages	
No. of Fire/Police Priorities	
Avg. Time to Respond FPS	System
No of Blocked Roads	
No. of Distribution Line Miles	
No. of Trees Cleared	System
No. of Pole Failures	

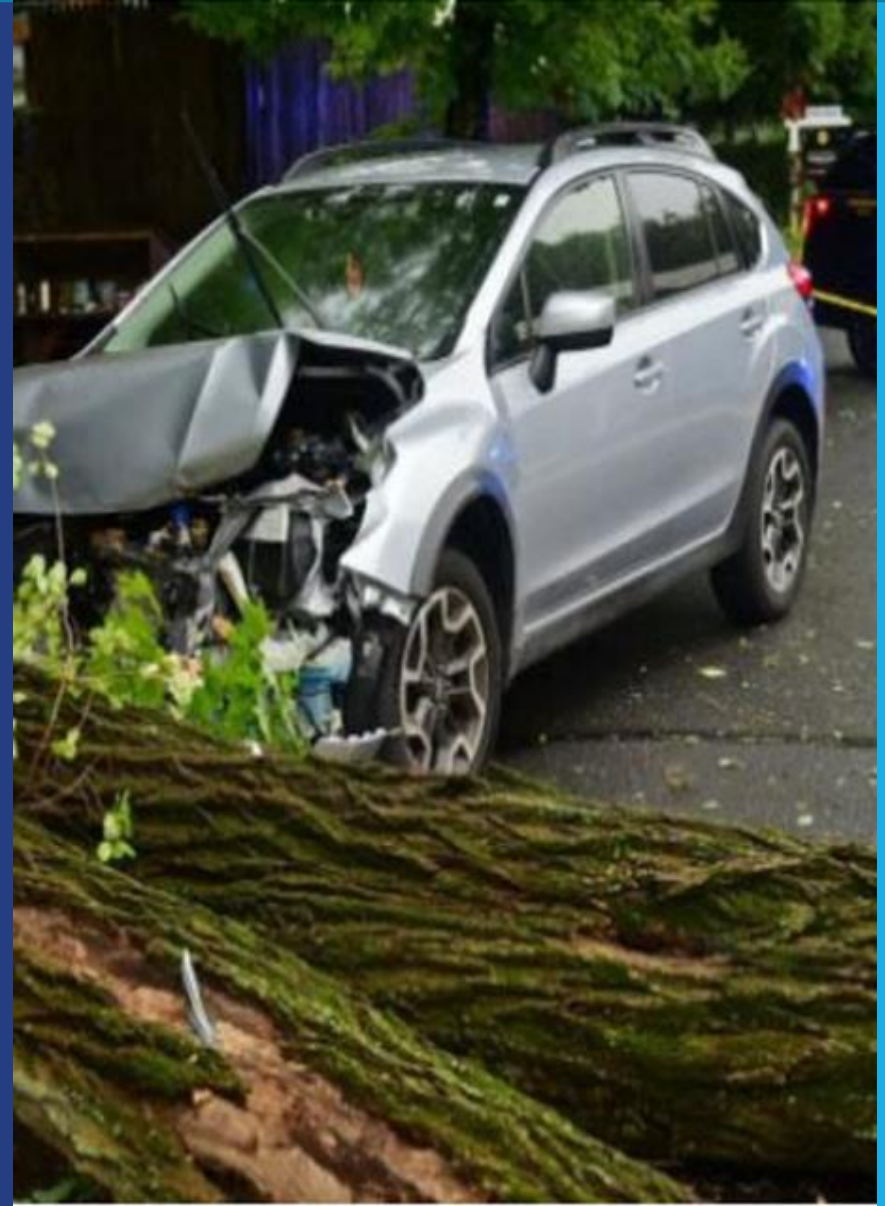


# Lessons Learned

- Involve emergency responders and community officials in proceeding
- Take initiative and issue a straw proposal
- Involve other utilities (water, wastewater, telecom, gas)

# Challenges

- Contentious regulatory environment impeded interactions with utilities
- Resilience Program based required filing in rate case which has not happened for one EDC



# Colorado Resilience Planning

**John Parks**

Grid Resilience Program Manager  
Colorado Energy Office

**NASEO - NARUC - LBNL**

**Integrating Resilience in DSP**

May 14, 2026

## Agenda

**01**

*Historical Need - Wildfires*

**02**

*Current Drought Conditions*

**03**

*Resilience Planning*

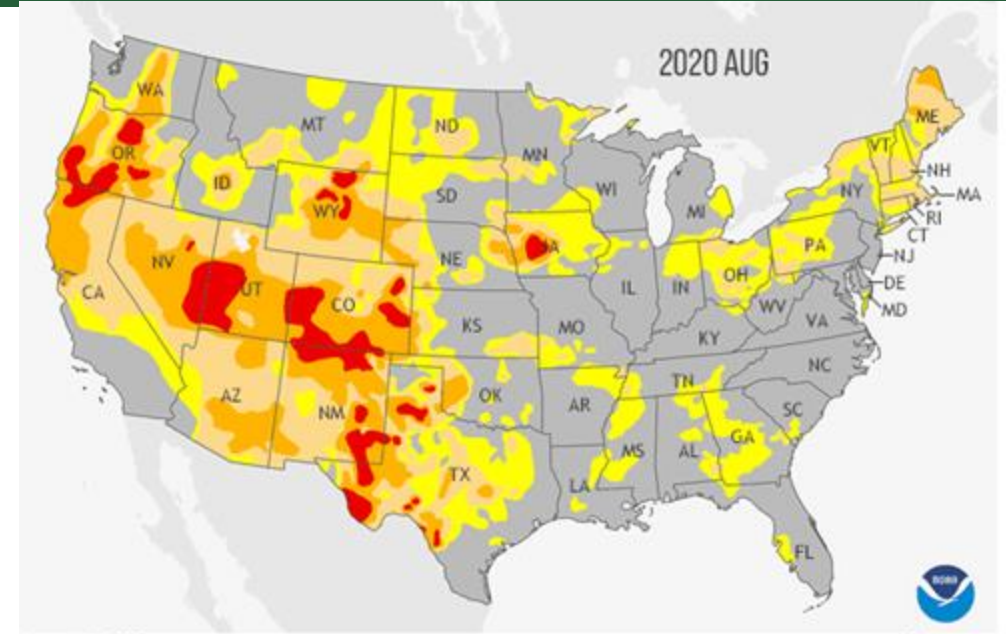
- Colorado Resilience Framework
- Grid Resilience Program
- Microgrid Roadmap
- GRACI & Grid Resilience Report

**04**

*Future-Focused Distribution System Planning*

# The Arid West and Wildfires

- Wildfires are part of western ecology.
- Fires have been overly suppressed resulting in overabundance of fuel.
- Climate change in the west has brought increased heat & decreased precipitation, soil moisture.
- 2020 was our worst wildfire season yet.



August 11, 2020  
Climate.gov  
Data: NDMC

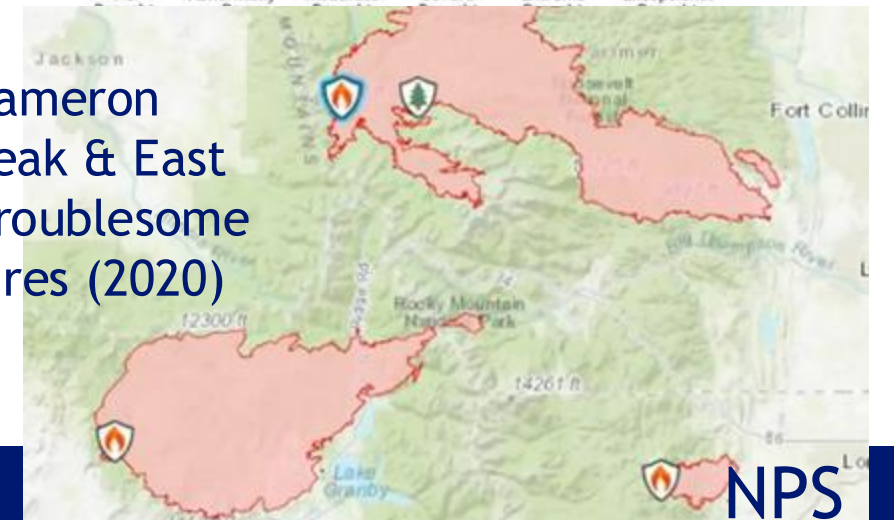
No	Abnormally	Moderate	Severe	Extreme	Exceptional
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VS.

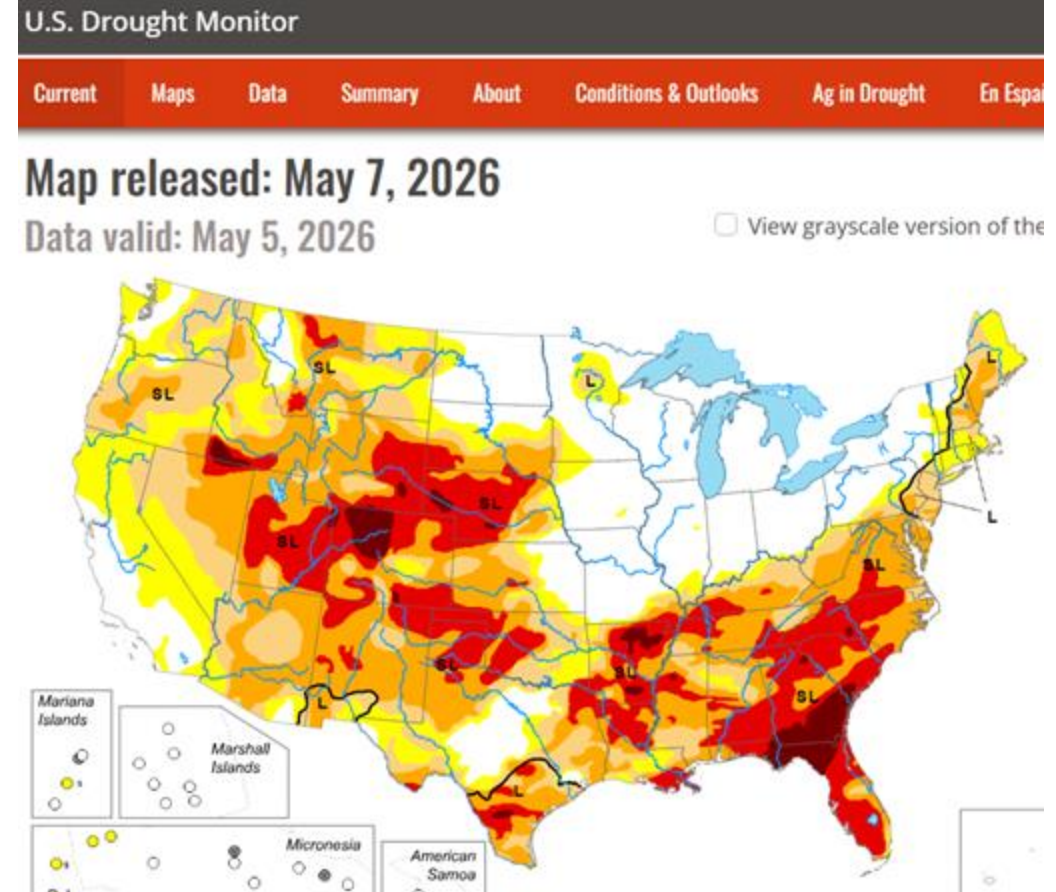
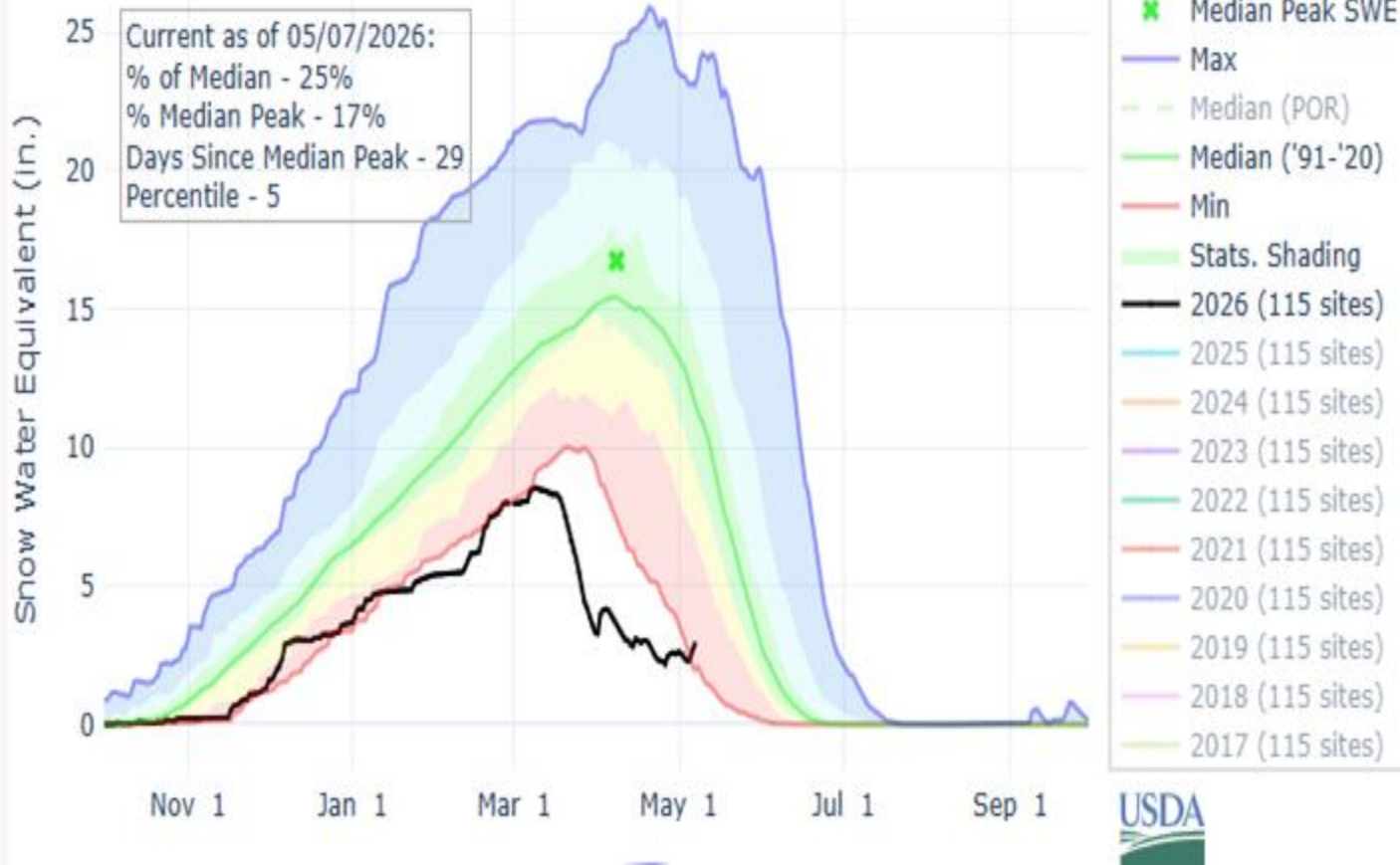


Cameron Peak & East Troublesome Fires (2020)



# Current Historic Drought Conditions

## Colorado Snow Water Equivalent



*Winter of 2025-2026 had the lowest Colorado snowfall in recorded history.*

# Wildfires are not limited to the WUI anymore



**Marshall Fire, Boulder Co. (2021)**

Source: Colorado Newsline

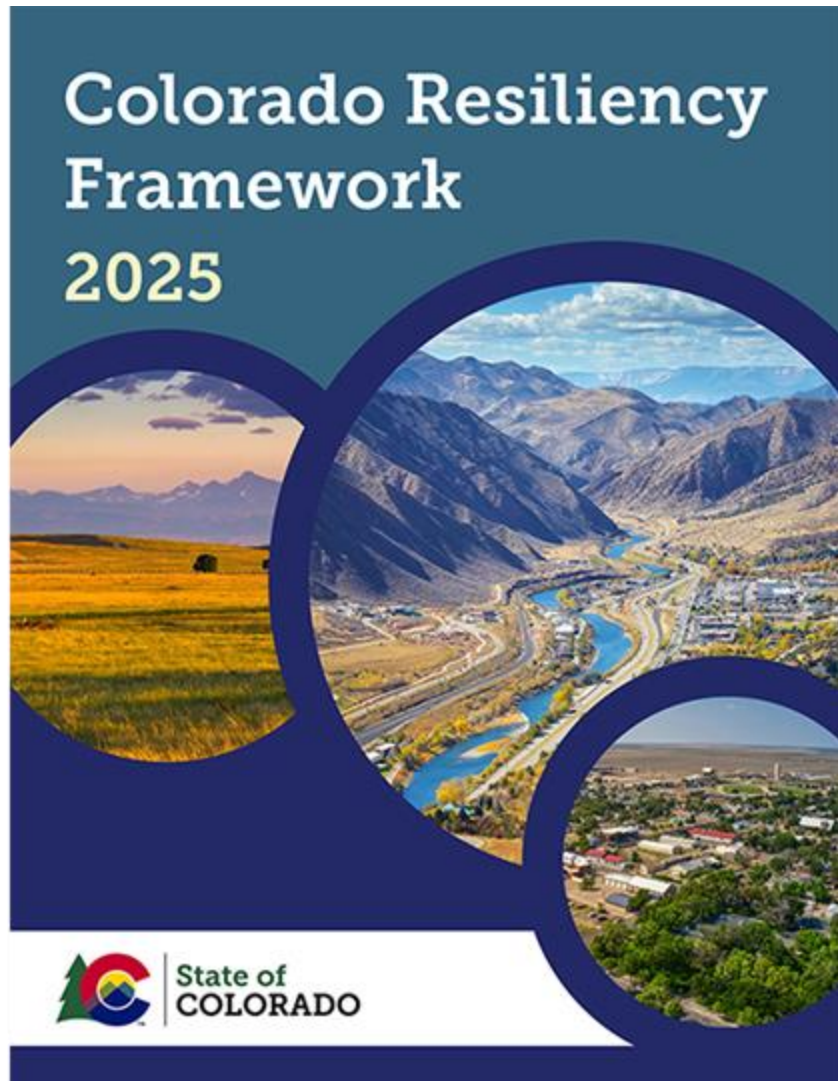


**Los Angeles Fires (2025)**

Source: ABC News

*Wildfire resilience requires action & coordination across many sectors.*

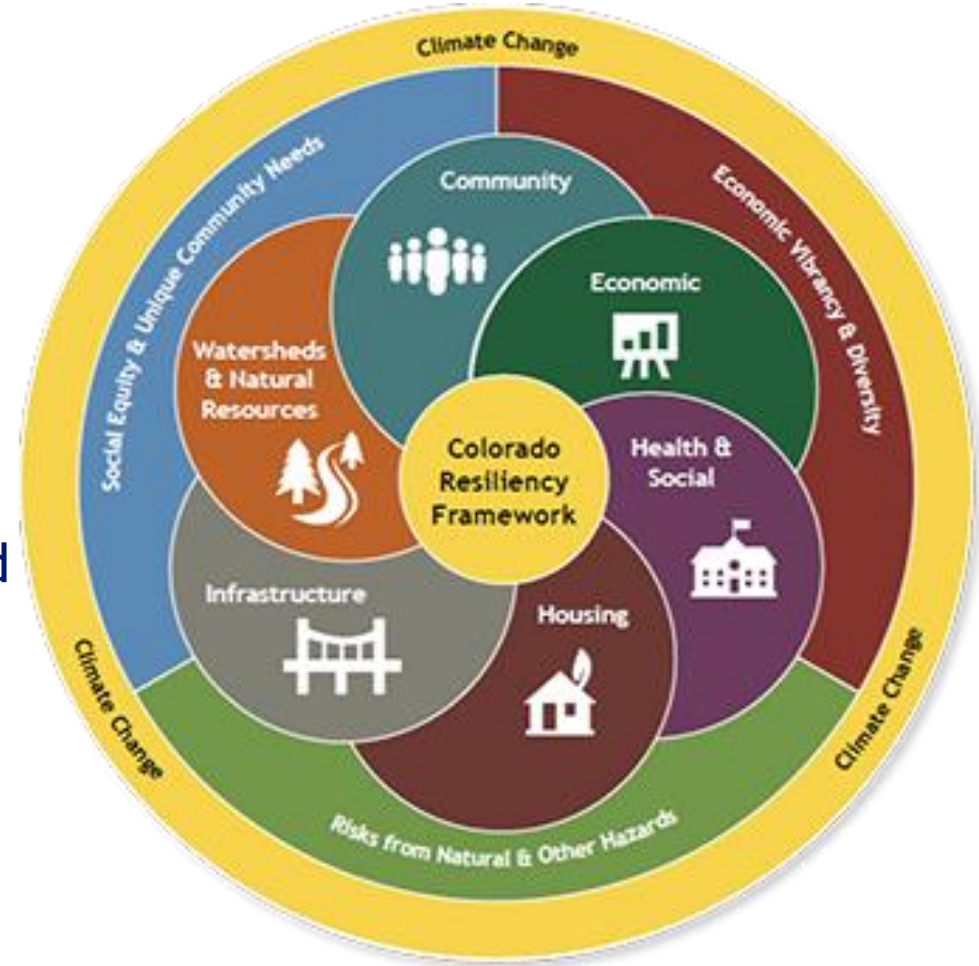
# Colorado Resiliency Framework



First state in 2015

Updates in 2020,  
2025

Resilient Critical  
Infrastructure added  
in 2025



# Colorado Resiliency Framework - Strategies

1. Expand Colorado Resiliency Office's technical assistance, Future-Ready State Agencies, to better integrate resilience into State agencies.
2. Attract and leverage funding opportunities, focusing on streamlining resilience-related State funding to make it easier for applicants.
3. Improve and align decision-making resources, tools, technical assistance and communication strategies to advance resilience actions.

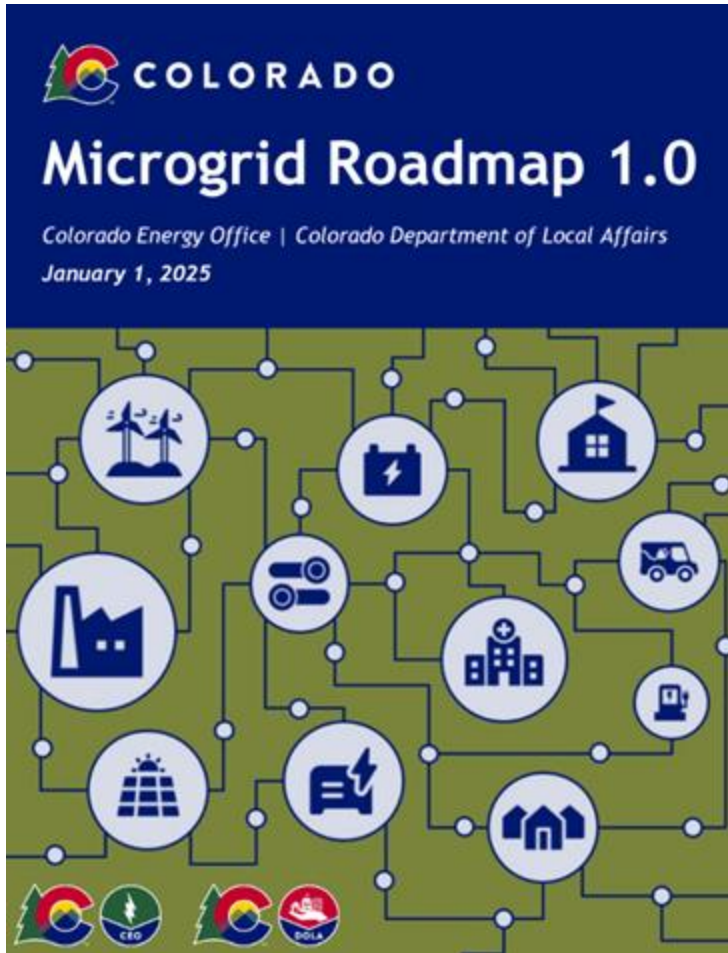


## How Grid Resilience is Defined in Colorado:

“The ability of the distribution grid to withstand and reduce the magnitude and/or duration of disruptive events, which includes the capability to anticipate, absorb, adapt to, and/or rapidly recover from such an event.”

Colorado Revised Statute 723-3-3527

# Microgrid Roadmap (2025)



- Classification of Microgrid scales
  - Level 1 - Single Building Microgrid
  - Level 2 - Partial Feeder or Campus Microgrid
  - Level 3 - Full feeder or Community Microgrid
- Benefits
  - Improve Resilience & Reliability
  - GHG emission reduction
  - Reduce Costs
- Challenges
  - Rules: Interconnection, ROW access, Owners
  - Valuing Grid Services and Benefits

# Colorado Grid Resilience Projects

[See full project list here](#)



Grid Hardening



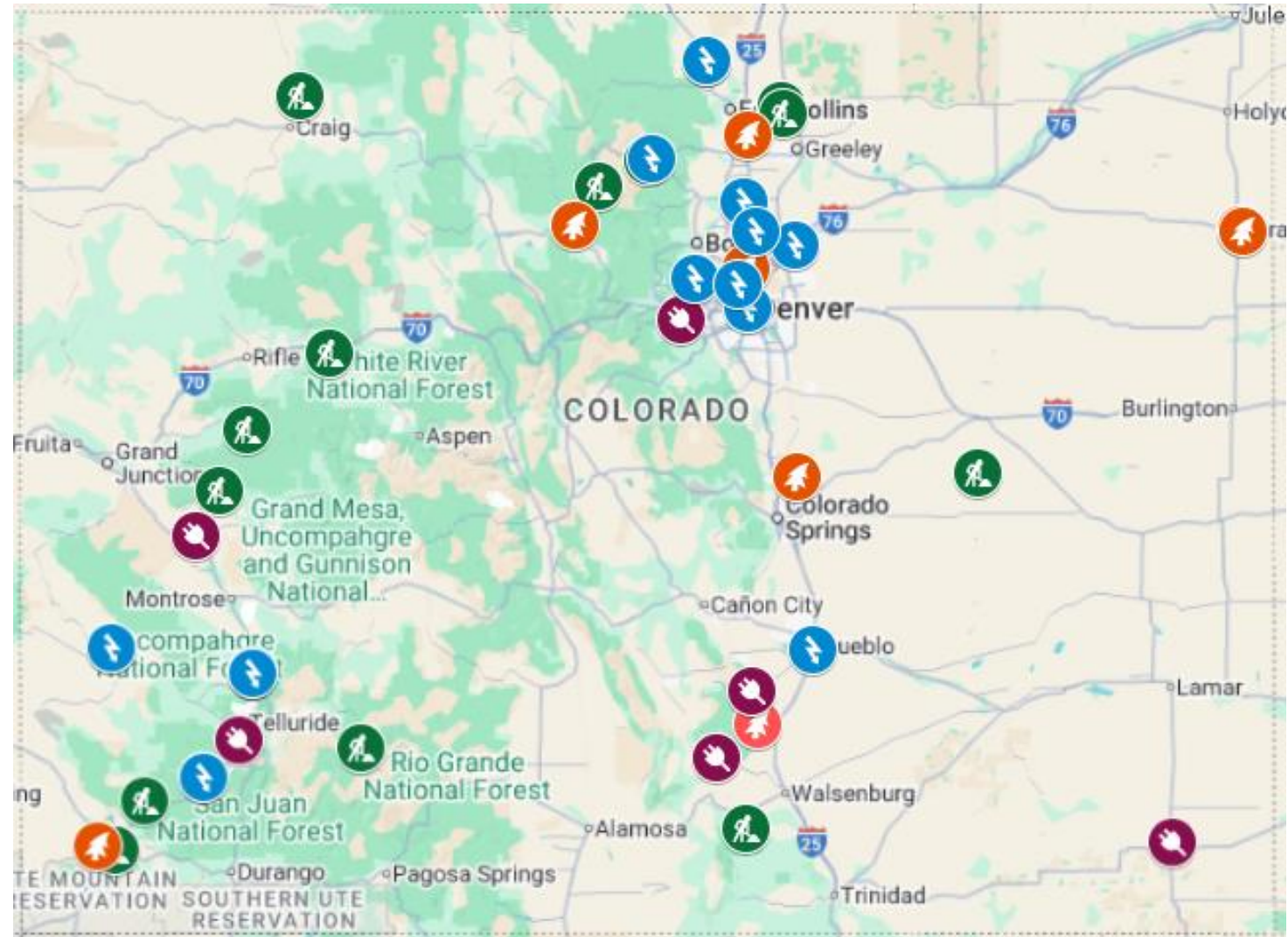
- Advanced Grid Monitoring



- Microgrid Planning



- Microgrid Construction



# Yampa Valley Electric Grid Hardening Project



Automatic reclosers



Fire protective wrap



## Vegetation Management

- Project cost: \$1,331,916
- Grant : \$998,937
- Completion : January 2026

# Drone Fire & Veg. Mgmt. - Mountain Parks Electric



- Project cost: \$347,767
- Grant : \$463,690
- Completion : December 2025

Hired contractor flew drones to inspect all of MPEI's 23,000 distribution poles to identify any and all issues (hardware, vegetation encroachment, conductors, etc).

# Resilience Planning in Distribution System Planning



## State of the Grid Report

COLORADO



Energy & Resources | Networks

May 2025

## Grid Resilience Analysis and Climate Change Impacts (GRACI)

- DSP needs to be forward thinking with climate models.
- Wind and wildfires are biggest risk to grid.
- Utility investments need to prioritize protections against wind, wildfire and vegetation.

# Let's Increase our Resilience!

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