

Claritin for the Grid

Preventing Distribution System Congestion with Proactive Planning

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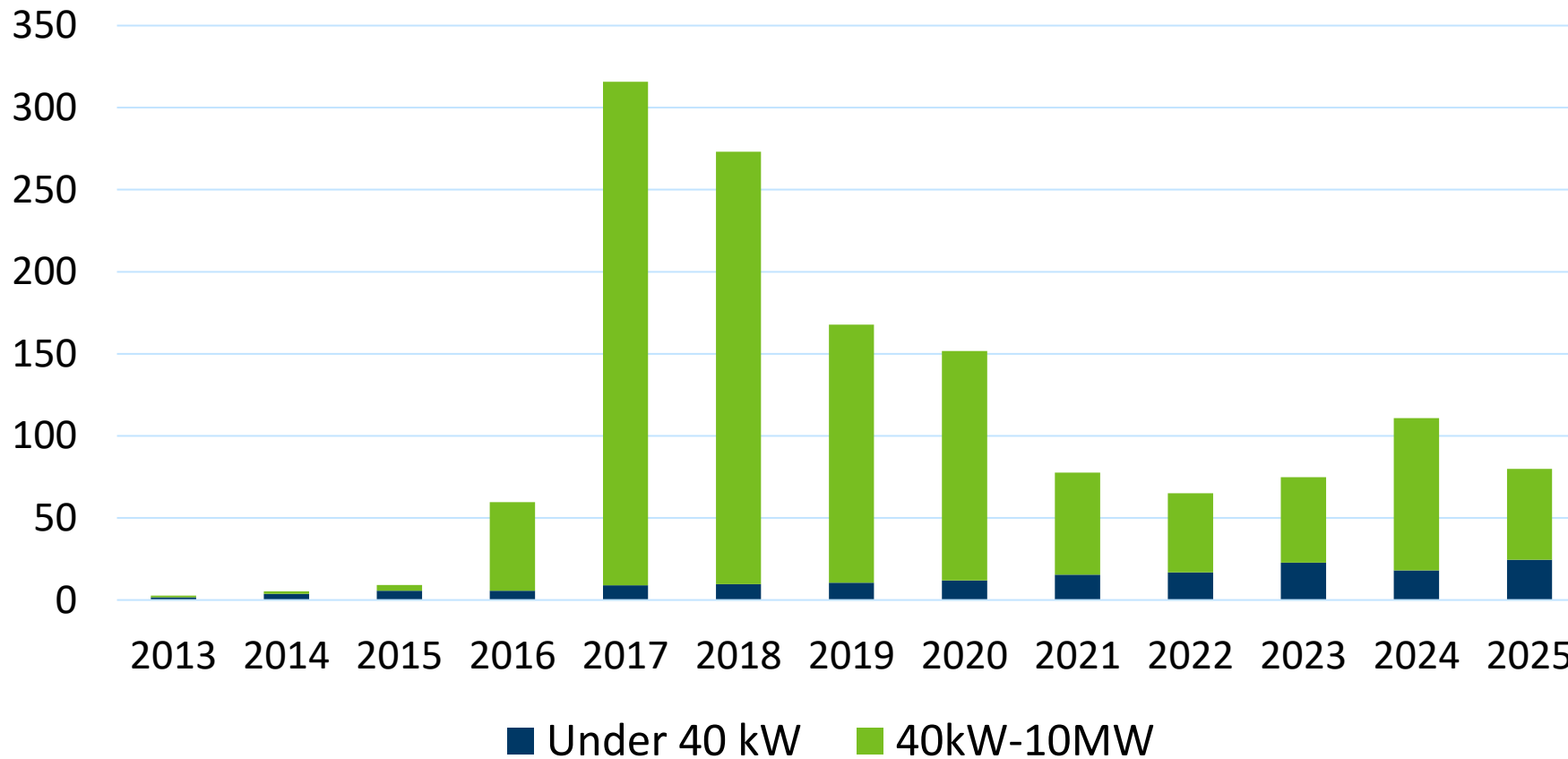
MINNESOTA

PUBLIC UTILITIES COMMISSION

The ideas expressed are the views of the presenter, and not the Minnesota Public Utilities Commission.

Early and Rapid DER Solar Adoption

Xcel Energy Annual DER Solar Additions (MW)



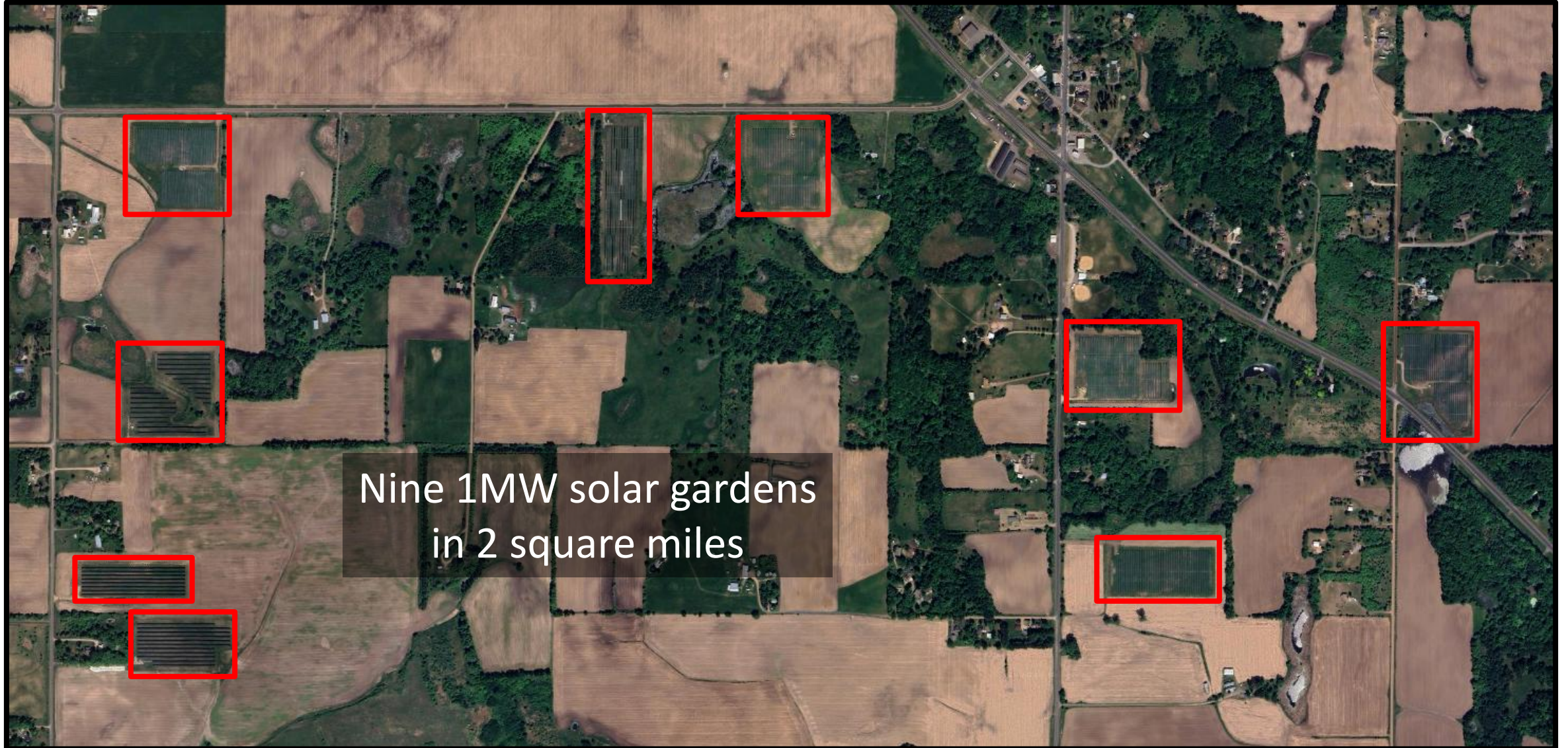
1.4 GW
interconnected

1.6 GW
in queue

Distribution System Congestion



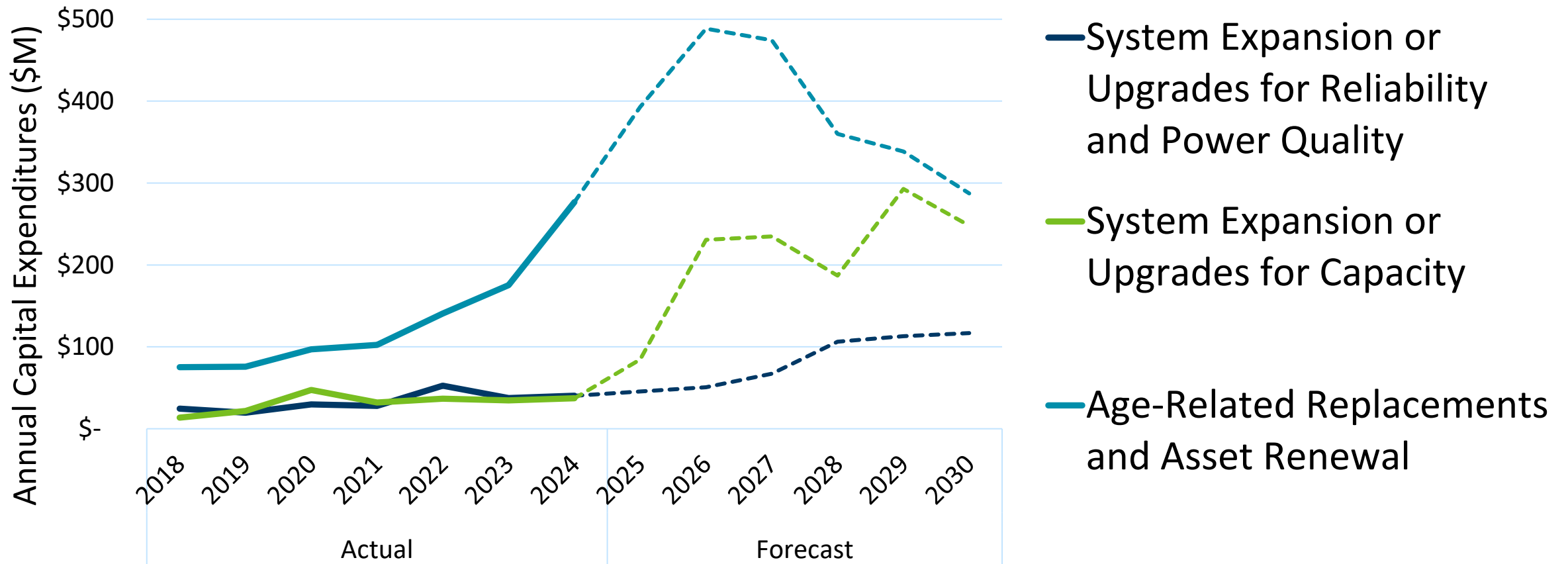
Distribution System Congestion



Nine 1MW solar gardens
in 2 square miles

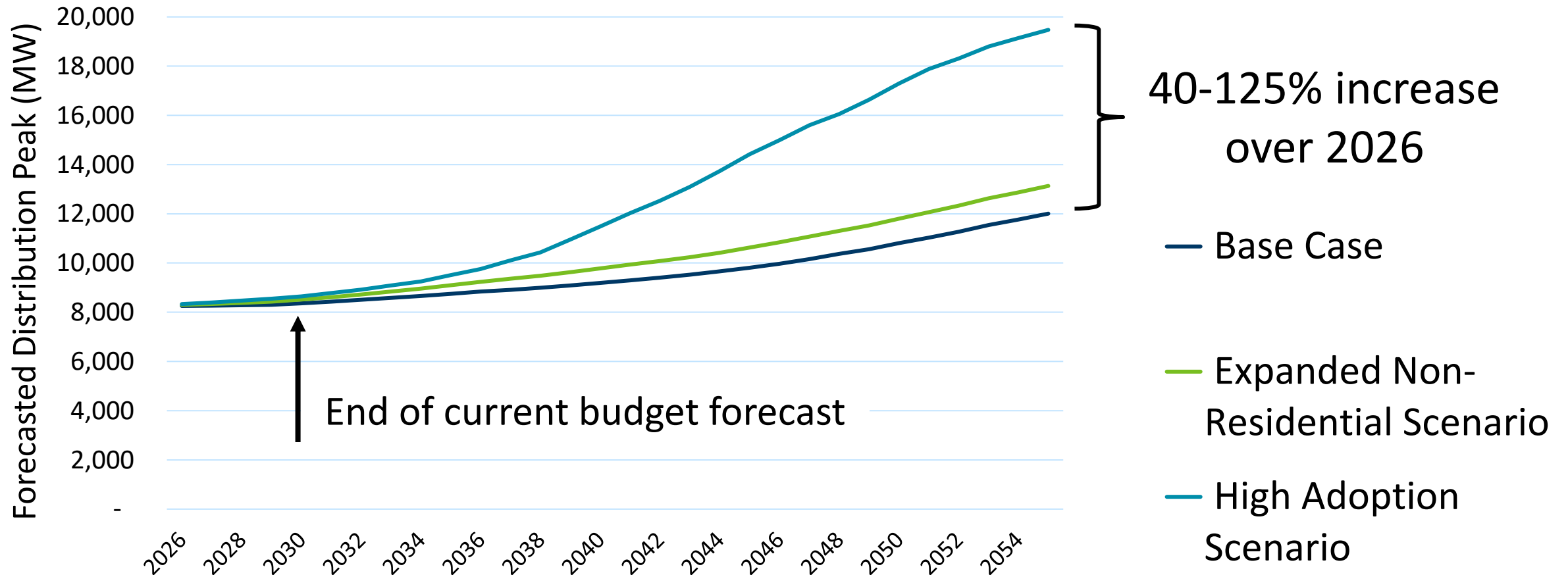
Increasing Distribution Budgets

Xcel Distribution Budget: Selected Categories



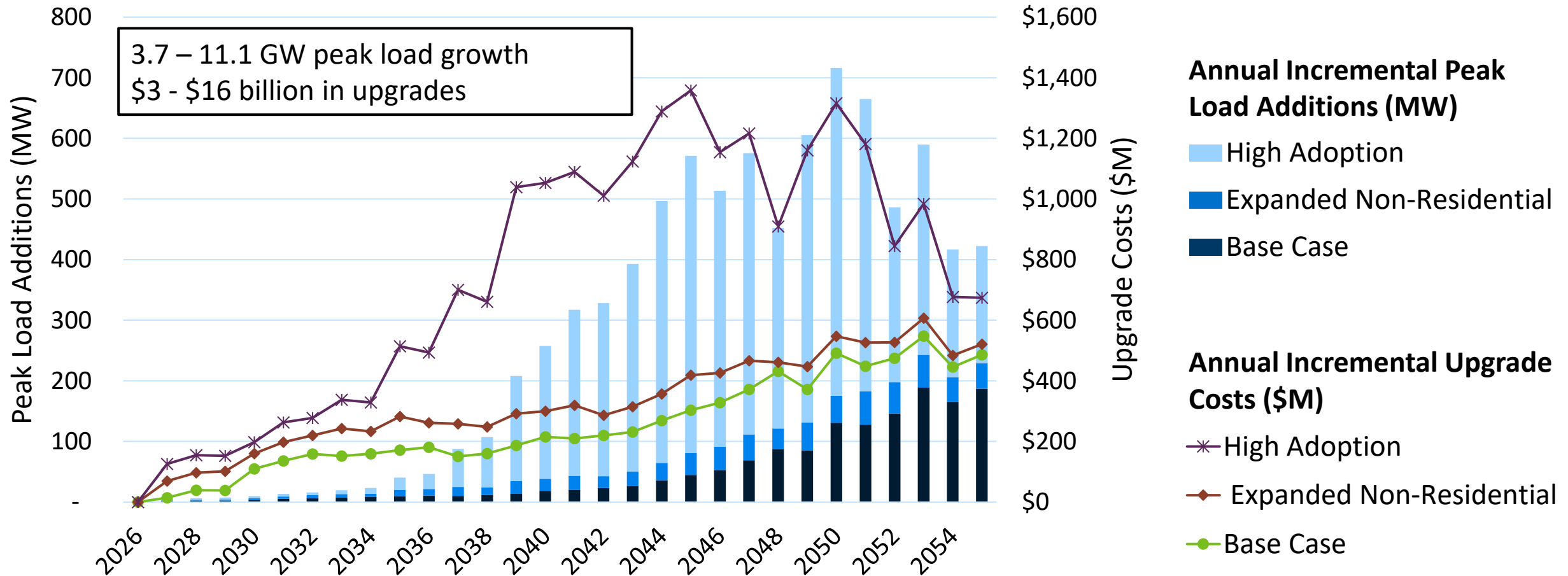
Significant Forecasted Load Growth

Xcel Energy Forecasted Distribution Net Peak Load (MW)



Substantial System Upgrades Expected

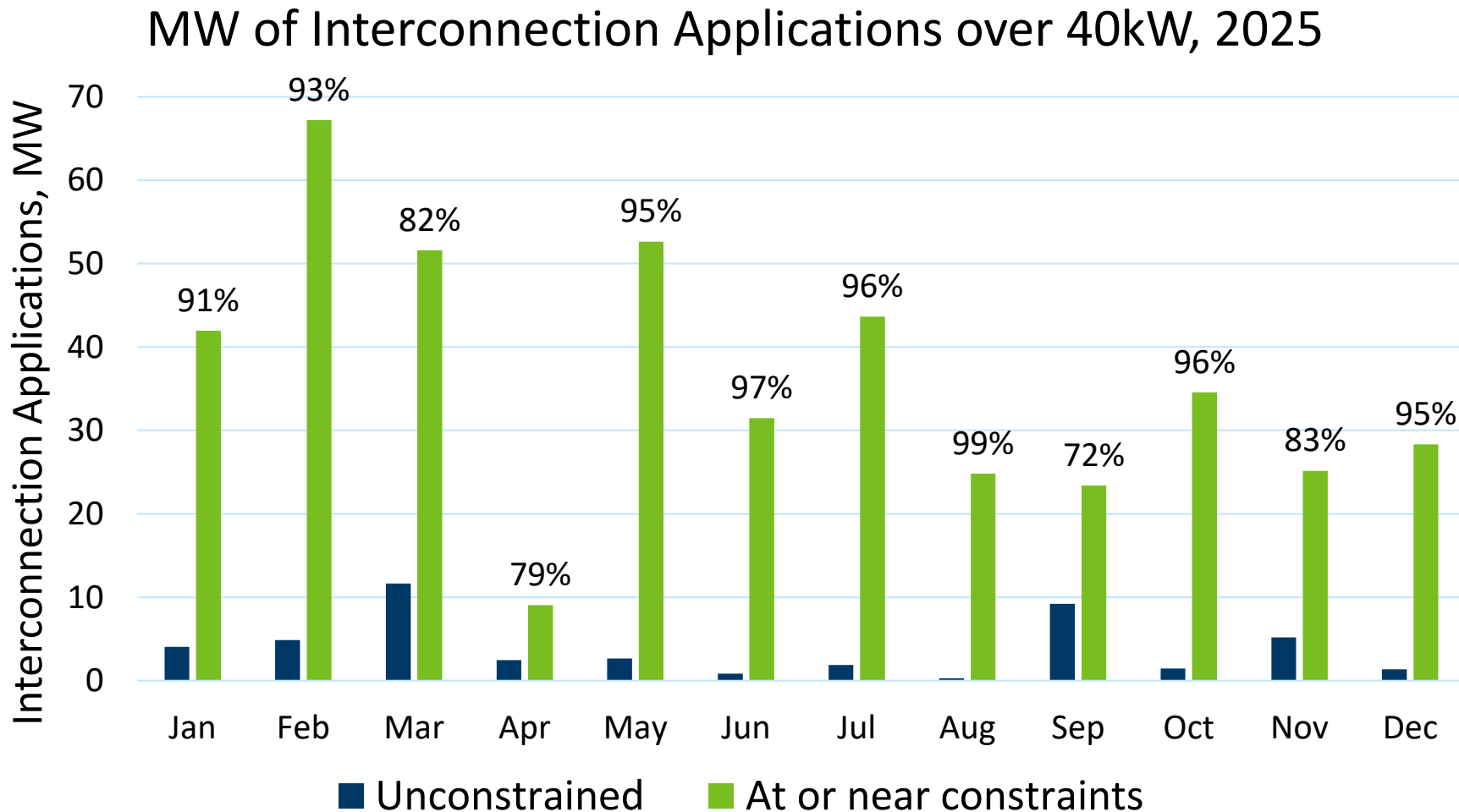
Incremental Load Growth and Upgrade Costs (MW, \$M)



Planning Improvements

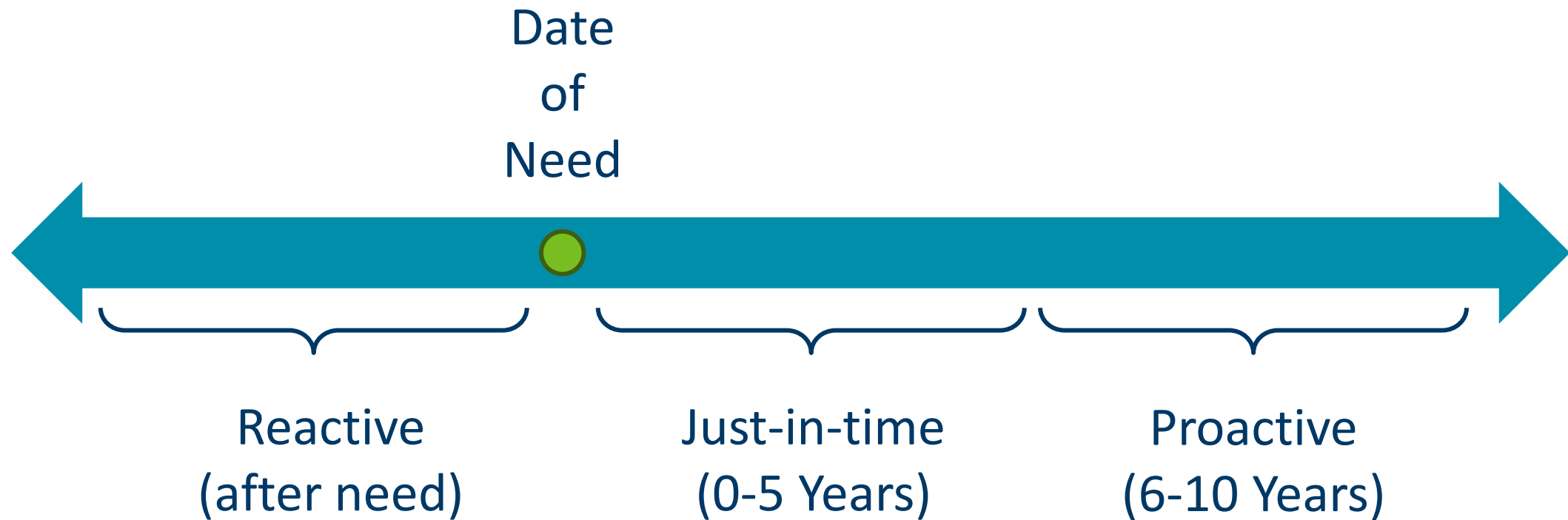
- ✓ Integrated Distribution System Planning
- ✓ Grid Modernization Investments
- ✓ Updated Interconnection Standards
- ✓ Interconnection Queue Improvements
- ✓ Hosting Capacity Analysis – Gen and Load
- ✓ Spatial Forecasting and Scenario Analysis
- Flexible Interconnection (in progress)
- DERMS (in progress)

Large DERs continue to apply constrained areas



434 out of 480 MW (90%) of Xcel Energy's large DER applications in the past year were in locations that are at or near capacity constraints

What is Proactive Planning?



Cost Allocation and Upgrades Framework

	Proactive Upgrades	Reactive Upgrades
Shared Cost Allocation	<ul style="list-style-type: none"> • Build upgrade budgets around forecasts • Assign costs to all ratepayers via typical class cost allocation • Benefits: reduces/eliminates wait time & upfront interconnection costs • Risks: assets not used and useful, cost shift to ratepayers 	<ul style="list-style-type: none"> • Upgrades in response to individual requests • Assign costs to all ratepayers via typical class cost allocation • Benefits: eliminates upfront interconnection cost; upgrades are used and useful • Risks: assets not used and useful, increase in interconnection wait time
Individually Allocated Costs	<ul style="list-style-type: none"> • Build upgrade budgets around forecasts • Individuals pay fee for share of interconnection upgrades • Benefits: reduces/eliminates wait time; cost ratepayers reduced via repayment from interconnection customers • Risks: assets are not used and useful; shifting costs of upgrades onto non-benefitting customers 	<ul style="list-style-type: none"> • Upgrades in response to individual requests • Individuals pay fee for share of interconnection upgrades • For the most part the model in place today • Benefit: ensures upgrades are used and useful • Risks: increased wait time and interconnection costs for interconnecting customers.

Proactive and Reactive Upgrade Frameworks

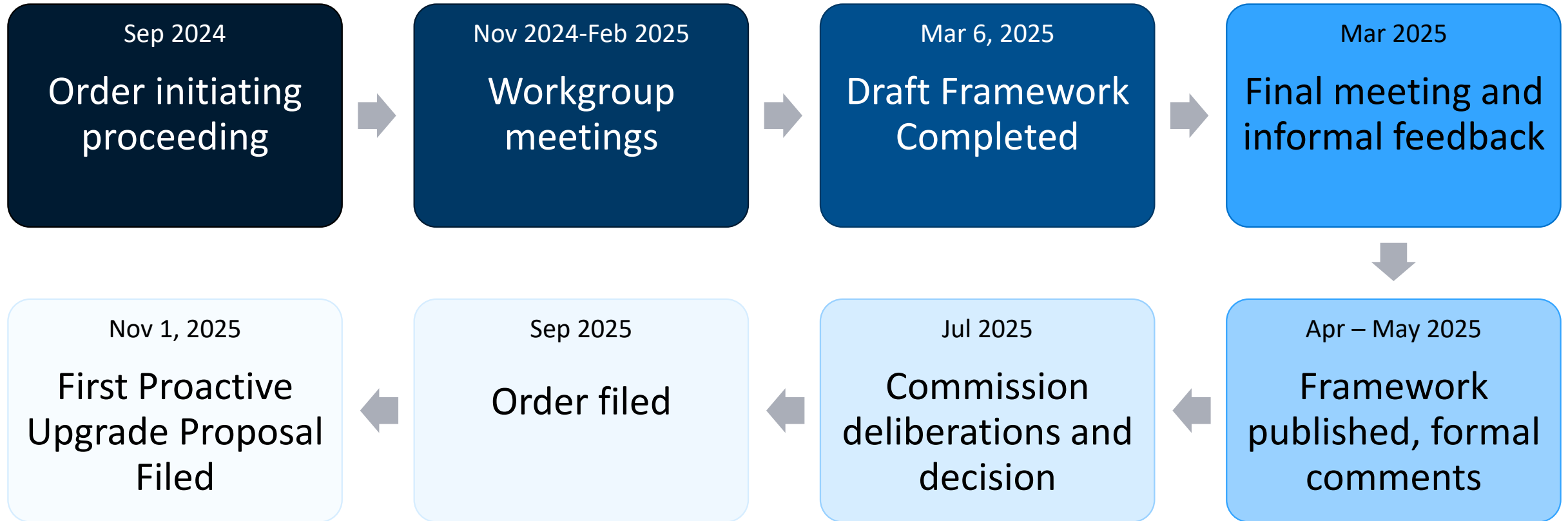
Reactive Distribution Upgrades (DSRUP)

- Docket 24-288
- Legislatively initiated
- Customer driven upgrades
- Upgrades made *after* customers indicate interest

Proactive Distribution Upgrades (PUP)

- Docket 24-318
- Commission initiated
- Forecast driven upgrades
- Upgrades made *before* specific customer indicate interest

Proactive Framework Development Process



Framework Takeaways

Tension Points

- Role of Flexible Interconnection/NWA
- Cost allocation
- Treatment of cost-share fee revenues
- Forecasting front of the meter generation
- Pre-filing stakeholder feedback and input

Process Wins

- Define end-product and key definitions at the outset
- Prioritize key topics and be willing to push some to subsequent phases
- Identify areas of agreement/disagreement instead of trying for consensus
- Draft language early, make use of subgroups

Topics

1. Incorporation of Front of the Meter Generation
2. Coordination and alignment with the Reactive-DER Cost Sharing Program
3. *Distributed Generation Engagement Group*
4. *Flexible Interconnection*
5. *Cost Allocation and Cost Recovery Principles and Methodologies*
6. *Capacity Reservation*
7. *Non-Location Specific Measures*

3/25/2026

Process

- Near term full workgroup meetings for priority topics
- On track to complete FTM Generation incorporation in April/May 2026
- 5 topics delegated to stakeholder led subgroups with longer lead time before full workgroup meetings in Fall 2026
- Goal to complete Phase 2 with enough time to incorporate in 2027 PUP filing

Thank You!

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