



Office of
ELECTRICITY

Speed to Power: Serving Growing Electric Loads Reliably, Affordably, and Quickly

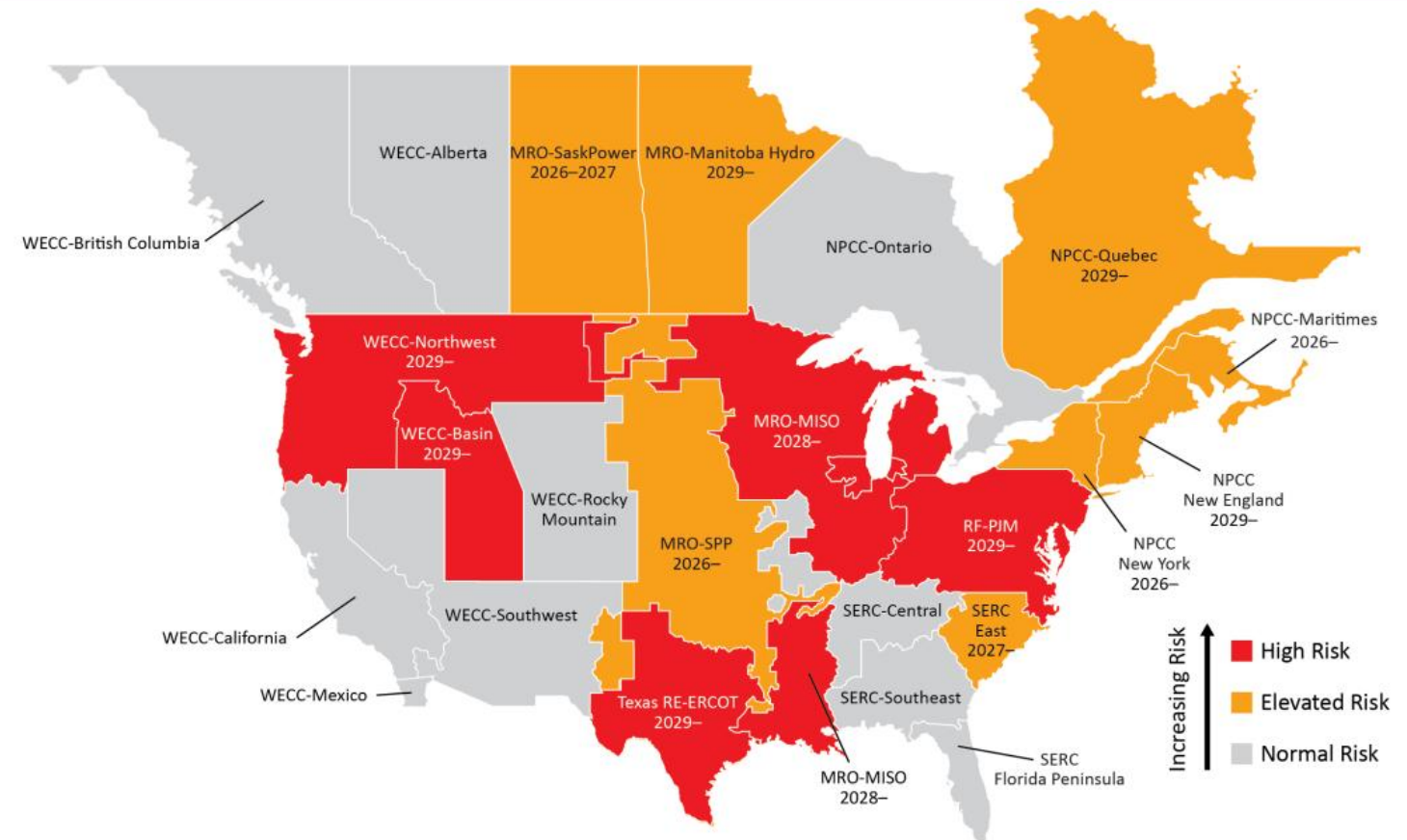
September 23, 2026

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Electricity Demand Growing at Increasing Rate

- NERC's long-term reliability assessment shows the expected 10-year summer peak-demand growth nearly doubled between the 2024 and 2025 assessment vintages
- Near-term EIA forecasts also show electricity consumption at record levels and continuing to rise
- Data center development and increased manufacturing activity are major drivers in commercial and industrial sectors



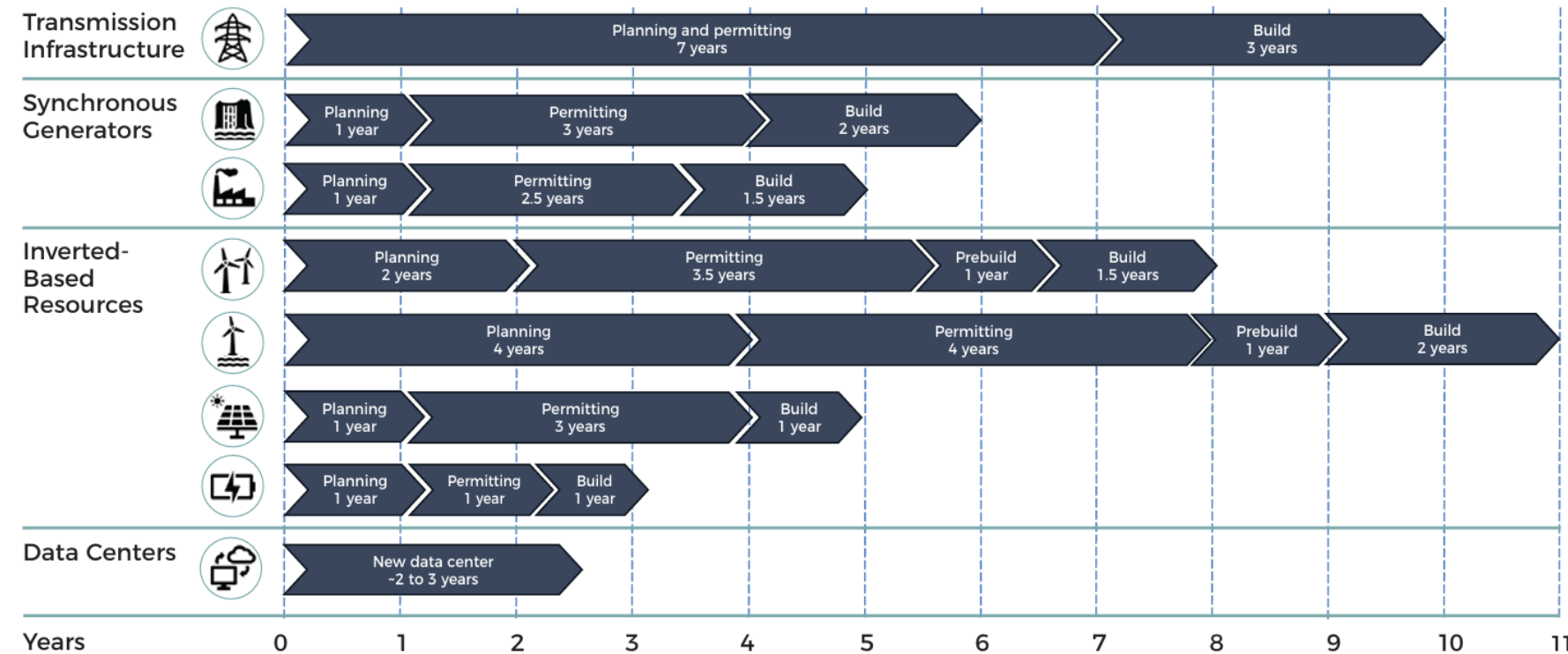
NERC LTRA Year	Forecast 10-year growth
2022	~55 GW
2023	~80 GW
2024	~132 GW
2025	~224 GW

Source: 2025 NERC Long Term Reliability Assessment

Power demand is growing faster than infrastructure timelines

- This timing mismatch creates a significant challenge for customers and grid operators
- Large loads arrive faster than grid operators can study, permit, finance, procure, and build new generation and transmission infrastructure
- Speed to Power is about closing this gap while preserving reliability and cost discipline

Illustrative Time to Market for Various Grid Projects



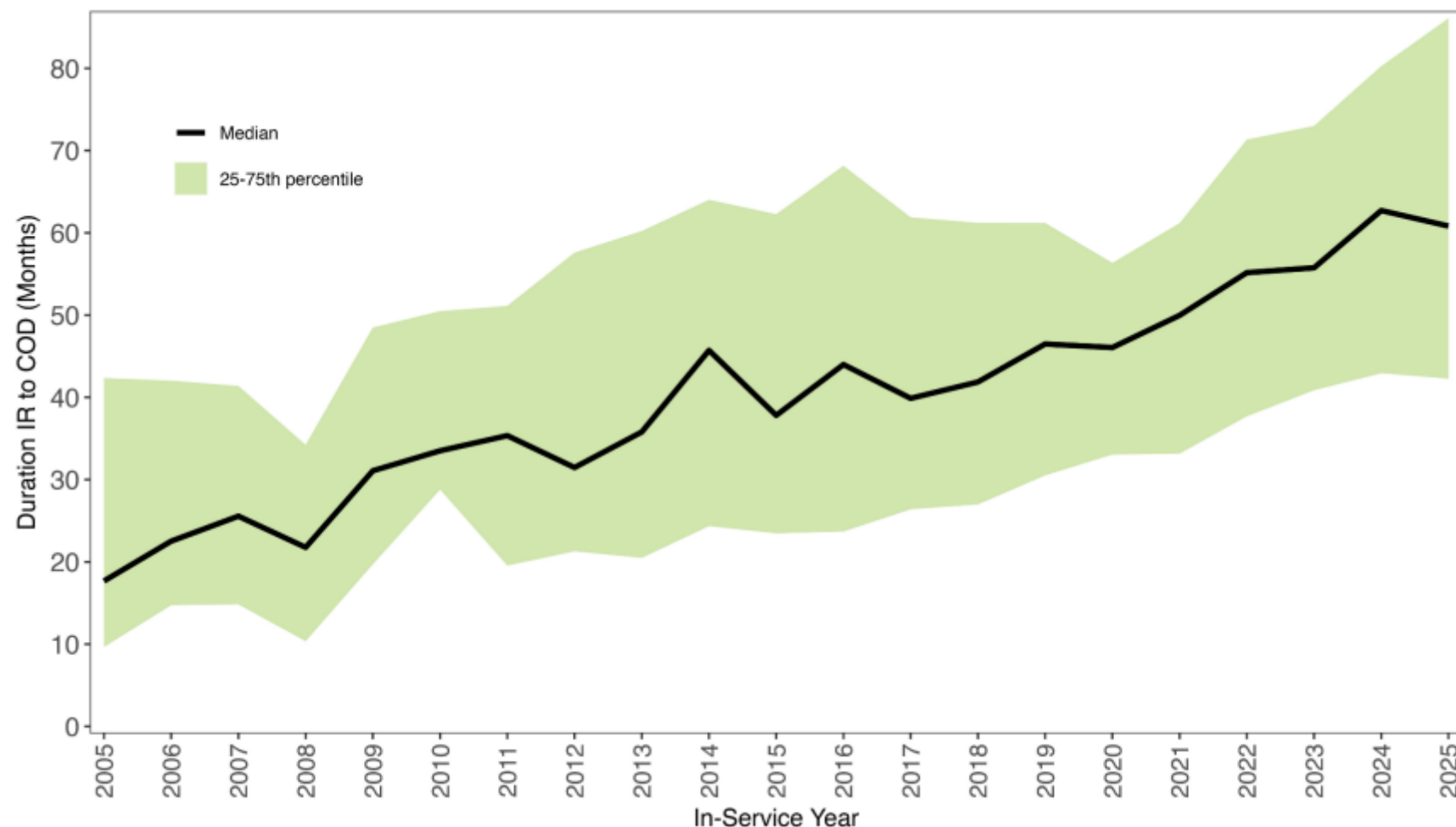
Timelines for grid infrastructure are not aligned with those for large load development, creating bottlenecks for grid supply of electricity. SOURCE: ADAPTED FROM S&P GLOBAL.

Source: Elevate Energy Consulting/GridLab, Practical Guidance and Considerations for Large Load Interconnections, 2025

Interconnection of New Generation Continues to Be Challenging

- Lawrence Berkeley National Lab estimates that 2,061 GW of generation and storage are in active interconnection queues at end of 2025
- Projects that reached commercial operations in 2025 had a median request-to-interconnection time of >5 years
- Historically, only 13% of capacity requesting interconnection between 2000-2020 reached commercial operation by end of 2025

Median Duration from Interconnection Request to Commercial Operations

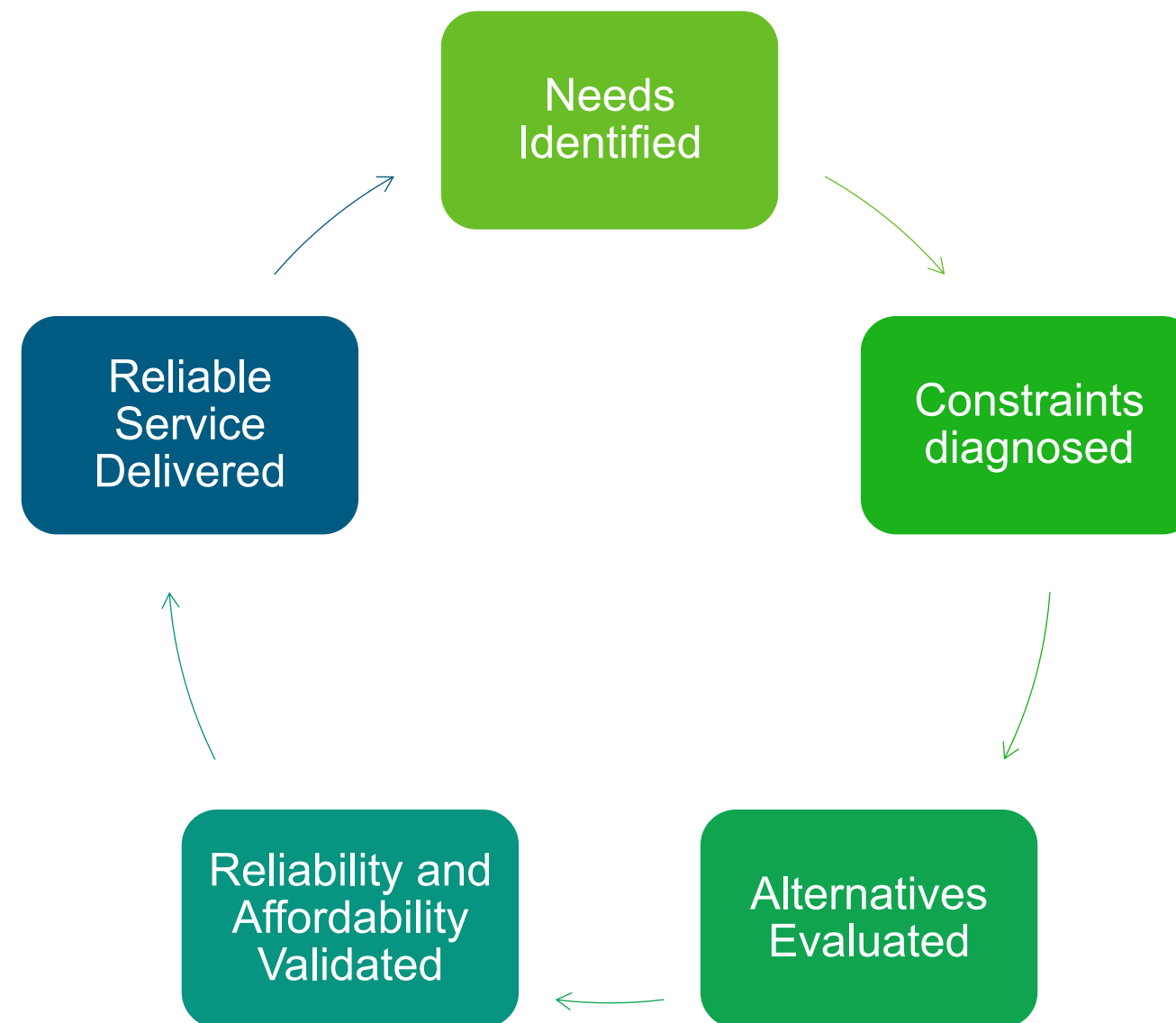


Notes: (1) Sample includes 3,310 projects from 6 ISOs and 19 non-ISO BAs that came online since 2005. (2) Duration is calculated as the number of months from the queue entry date to the commercial operations date

Source: LBNL Queued Up: 2026 Edition

Speed to Power means faster, cheaper, reliable service

- DOE's focus is reducing avoidable delay and accelerating deployable solutions while maintaining necessary engineering, reliability, cybersecurity, and public processes
- Earlier coordination, better analysis, more effective use of existing infrastructure, and faster deployment of commercially available solutions



DOE connects national perspective to practical grid action

- DOE's Office of Electricity works across the grid modernization lifecycle
- We bring research, analysis, planning, demonstrations, funding and finance, and technical assistance
- We support states, territories, Tribes, utilities, transmission owners, grid operators, storage providers, and other industry stakeholders

R&D and Tools	Analysis and Planning	Demonstrations	Funding and Finance	Scale
• National labs and industry partnerships develop models, controls, conductors, sensors, and grid operations tools	• DOE studies and performs national analyses of load growth, transmission needs, resource adequacy, resilience, supply chain challenges, and long-term grid options	• Pilots and field demonstrations test performance, integration, reliability, and replicability	• Federal investments and financing tools such as GRIP and SPARK support grid resilience, upgrades, and transmission development	• Technical assistance and permitting coordination helps states, utilities, and stakeholders apply lessons in their own planning contexts and scale up what works

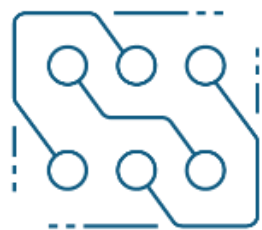
Getting more from the transmission system we already have

- Advanced transmission technologies are most compelling when they are tied to a specific constraint and fairly evaluated against conventional alternatives
- DOE/INL screening found roughly 20% of U.S. T&D lines could be candidates for reconductoring

Benefits and Constraints of ATTs

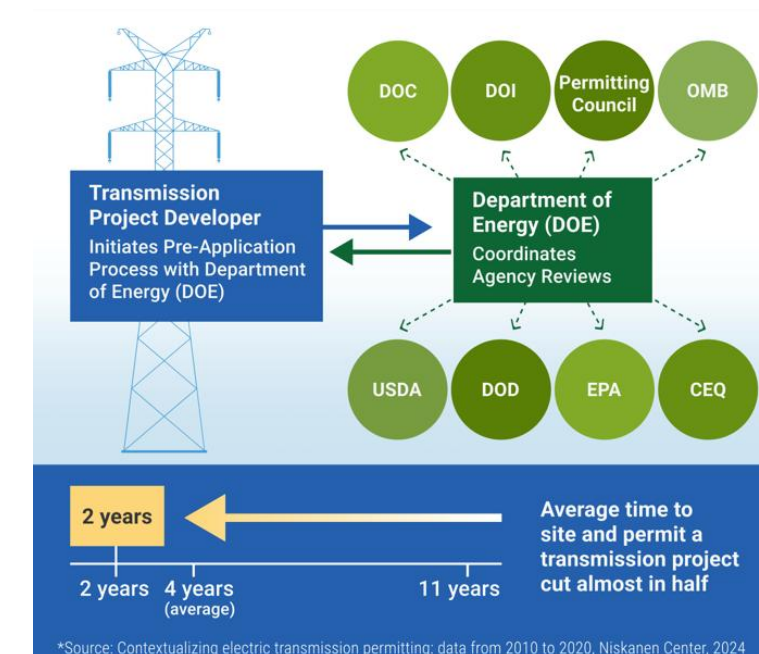
Tool	What it can change	What can still bind
Advanced conductors / reconductoring	Physical line ampacity and corridor capability	Structures, substations, protection, voltage, terminal equipment
Dynamic line ratings	Line ratings under actual conditions	Weather, contingencies, data quality, other equipment limits
Power-flow control	Distribution of flows across available paths	Total system capability, stability, voltage, dispatch rules
Topology optimization	Network configuration to relieve congestion	Switching feasibility, contingency criteria, operator coordination

DOE is using multiple tools to expand, modernize, and scale up grid capacity



GRIP: up to \$10.5 billion in competitive funding for grid resilience, flexibility, innovation, and modernization

SPARK: up to \$1.9 billion specifically for reconductoring and advanced transmission technologies



CITAP: Federal coordination process for qualifying transmission authorizations and permits

SPARK: Expected Performance Outcomes

Capacity Increase and Deliverability

- Demonstrated $\geq 50\%$ increase in power-carrying or transfer capability for physical upgrades or $\geq 25\%$ increase in transfer capability for operational and digital upgrades.
- Quantified increase in transfer capability to enable the deliverability of stranded or underused generation.
- Demonstrated ability to enable new or high-growth load areas, that may include data centers, industrial clusters, and manufacturing corridors.

Reliability and Resource Adequacy

- Measurable improvement in system reliability.
- Documented reduction in transmission congestion, losses, or curtailment during high-risk hours.
- Avoided capital costs to meet resource adequacy requirements in affected balancing area or planning region.
- Enhanced capability to share reserves or transfer across seams to strengthen regional reliability.

Affordability and Consumer Benefit

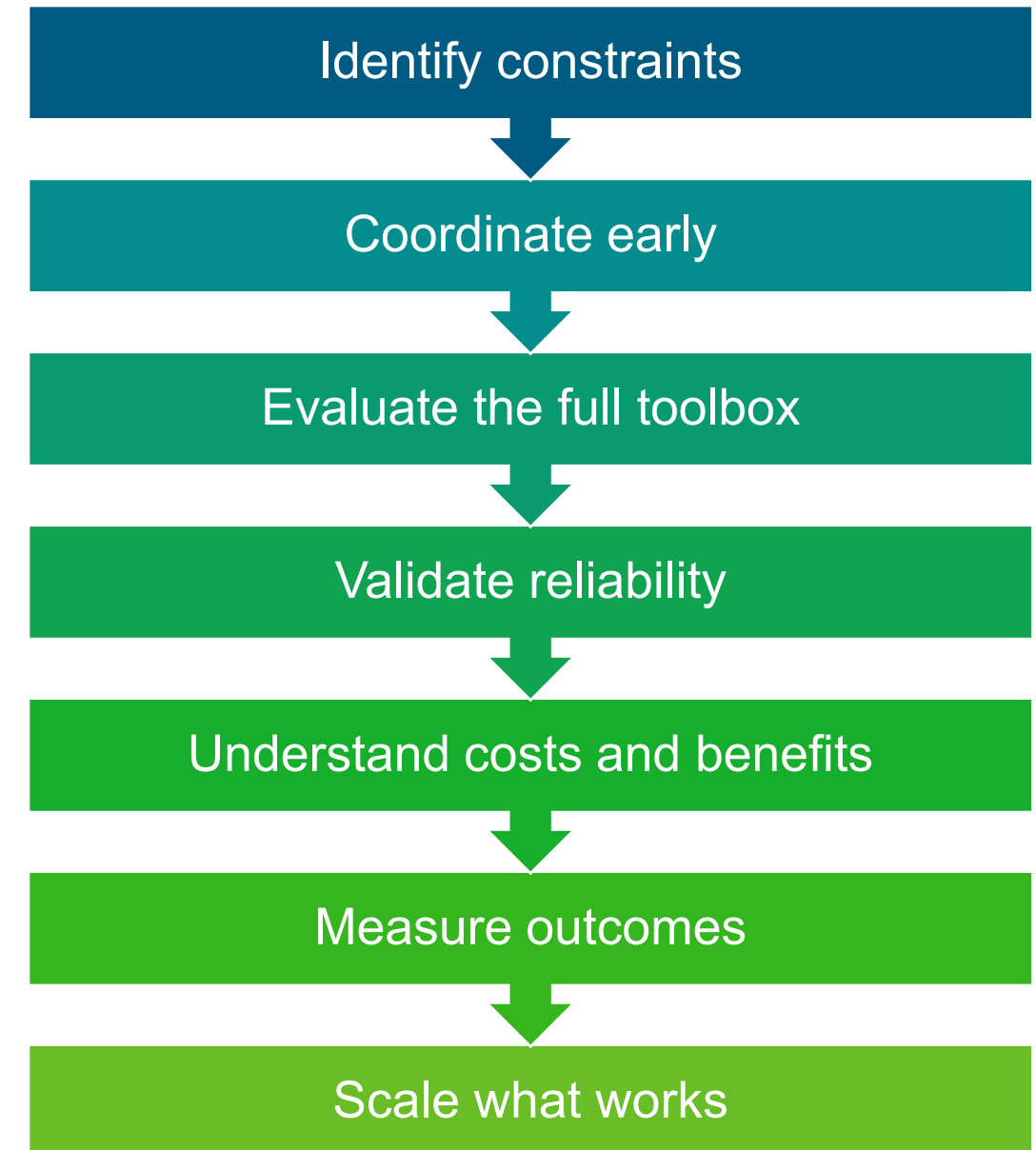
- Verified production or capital cost savings.
- Demonstrated cost-effectiveness relative to a new transmission build.
- Demonstrated mitigations and reductions to risk and uncertainty in operations.
- Demonstrated payback period ≤ 10 years.

Replicability and Scale-Up Framework (if applicable)

- Documented approach for replication and permitting acceleration.
- Demonstrated integration of data, models, or cost-benefit methods that can inform other DOE, state, or regional planning processes.

How can states encourage rigorous, timely evaluation without predetermining deployment?

- Consider whether speed to power is limited by generation, transmission, interconnection studies, permitting, supply chain, or other issues.
- Coordination across stakeholders can lead to more optimal and timely outcomes. Customers, utilities, grid operators, regulators, and federal partners need information on location, flexibility, modeling assumptions, reliability impacts, and other data to inform decision-making.
- Evaluating all feasible options is essential to ensuring an affordable solution that meets customer needs.
- Costs and benefits may be allocated in different ways among customers. This is a complex issue that involves both state and federal stakeholders.
- Proven solutions should be scaled up when they are successful. Avoid analysis paralysis and “death by pilot.”



Thank you

