

Collaborative Approaches for Advancing Interregional Transmission

Prepared for NARUC

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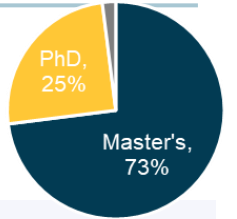
Energy+Environmental Economics

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Who is E3?

Thought Leadership, Fact Based, Trusted.

120+ full-time consultants | 30 years of deep expertise | Engineering, Economics, Mathematics, Public Policy...



San Francisco



New York



Boston



Calgary



Denver

E3 Clients

300+ projects per year across our diverse client base



Recent Examples of Relevant E3 Projects

Experience analyzing resource and transmission implications for **clean energy transitions** across the US

Transmission planning expertise for state agencies, system operators, and developers

Decades of support for **electric system planning** in **CAISO, ISO-NE, NYISO, ERCOT, MISO, SPP and PJM** including transmission planning

Maine and California projects with holistic **transmission analysis + stakeholder engagement**

NE States and System Operators: Policy, market, grid planning and regulatory strategic guidance across the Eastern Interconnection

National Grid: Conducted benefit analysis for the Clean Resilience Link interregional transmission project

ERCOT: Supported development of new congestion cost test for transmission valuation

WestTEC: Kicking off West-wide transmission planning exercise

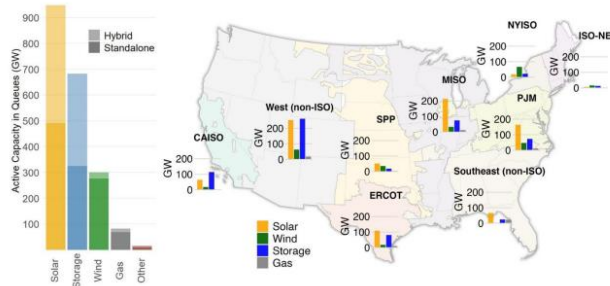
Agenda

- + Drivers of Interregional Transmission
- + Project Focus and Approach
- + Recent Federal Policy Developments
- + Interregional Transmission Challenges and Solutions
 - Planning
 - Permitting
 - Operations
- + Q&A

Drivers of Interregional Transmission

+ Need for interregional transmission is driven by:

Changing Energy Mix Reflected in Interconnection Queues



Increasing Expectations for Load Growth



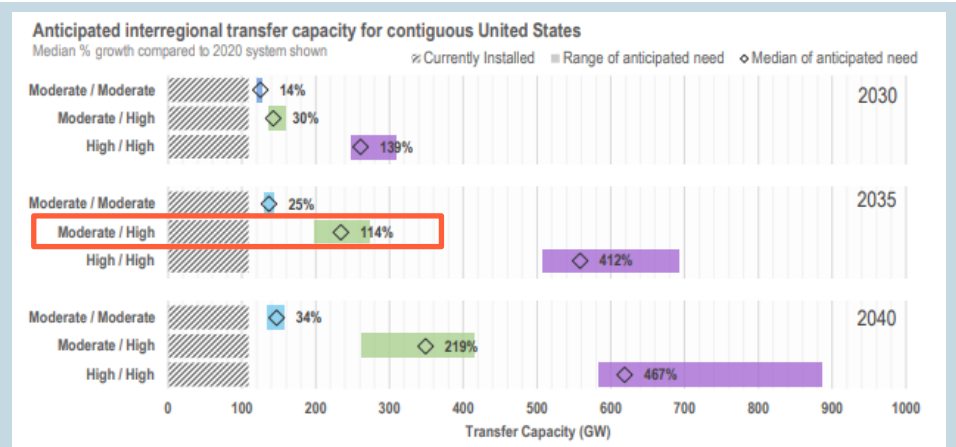
US electricity load growth forecast jumps 81% led by data centers, industry: Grid Strategies

Resiliency and Reliability Needs w/ Extreme Climate Conditions



+ DOE's Transmission Needs study identified it would be cost effective to more than double the amount of interregional transmission by 2035

- This figure is based on models assuming renewable energy expansion rates for achieving 80% clean energy by 2040



Project Focus and Approach

Research Question

What process reforms can be made to enable efficient identification and deployment of beneficial interregional transmission projects?

Approach

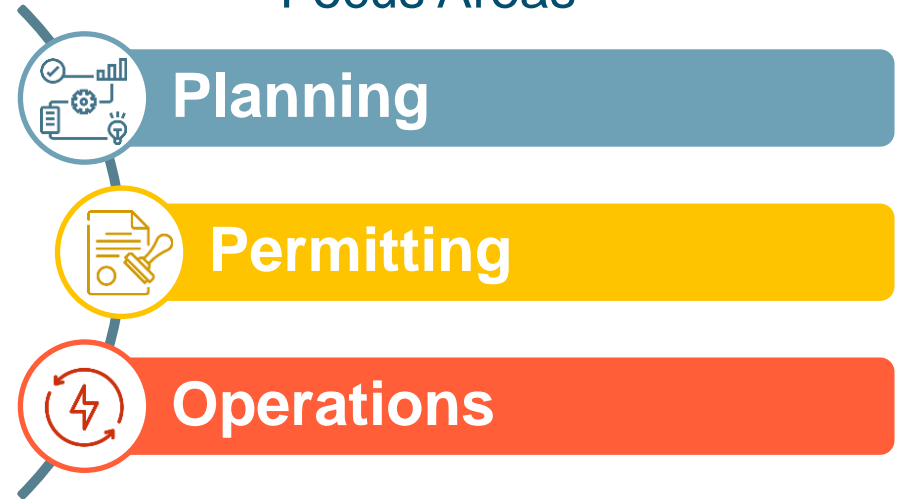
Literature Review

1. Academic publications
2. Government studies
3. Industry reports
4. Regional planning documents/tariffs

Interviews

1. State energy regulators
2. System operators
3. Transmission developers

Focus Areas



Target Solutions Actors



Recent Federal Policy Developments are Likely to Impact Interregional Planning and Permitting

187 FERC ¶ 61,068
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

18 CFR Part 35

[Docket No. RM21-17-000; Order No. 1920]

Building for the Future Through Electric
Regional Transmission Planning and Cost Allocation

187 FERC ¶ 61,069
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

18 CFR Parts 50 and 380

[Docket No. RM22-7-000; Order No. 1977]

Applications for Permits to Site Interstate Electric Transmission Facilities



APRIL 25, 2024

FACT SHEET: Biden-Harris
Administration Announces Key
Actions to Strengthen America's
Electric Grid, Boost Clean Energy
Deployment and Manufacturing Jobs,
and Cut Dangerous Pollution from the
Power Sector

FERC Order 1920 (May 13th)

- Reforming Regional Transmission Planning by requiring:
 - Using 20-year planning horizons
 - Performing scenario-based planning
 - Expanding benefit metric analysis
 - Considering alternative transmission technologies
 - Seeking support from states
 - Many more

FERC Order 1977 (May 13th)

- Codifies ability for FERC to utilize federal backstop permitting authority if a state denies a permit
- Enables NIETC to be established in areas expected to experience congestion
- Ensures federal permitting processes occur only after state permitting has completed
- Establishes new standards for engaging with public, landowners, Tribes, and EJ communities

White House's Flurry of Power Sector Actions (April 25th)

- Coordinated Interagency Transmission Authorization and Permits Program
- Transmission Facilitation Program expansion
- Categorical exclusions for projects using existing right of way
- Preliminary list of nominated NIETCs (May 8th)
- Many more

Planning Challenges

Challenges

+ Lack of planning motivators

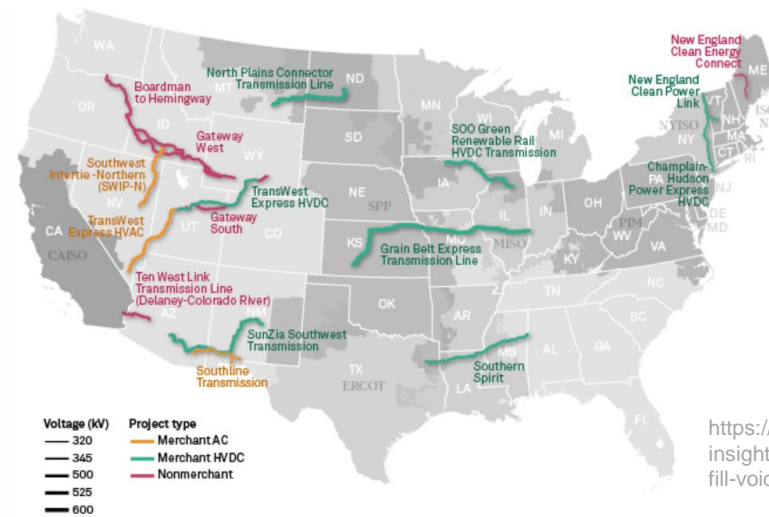
- Without an identified mutual transmission need, regions are unlikely to meaningfully collaborate

+ Cost allocation challenges

+ Planning process misalignment and analysis limitations

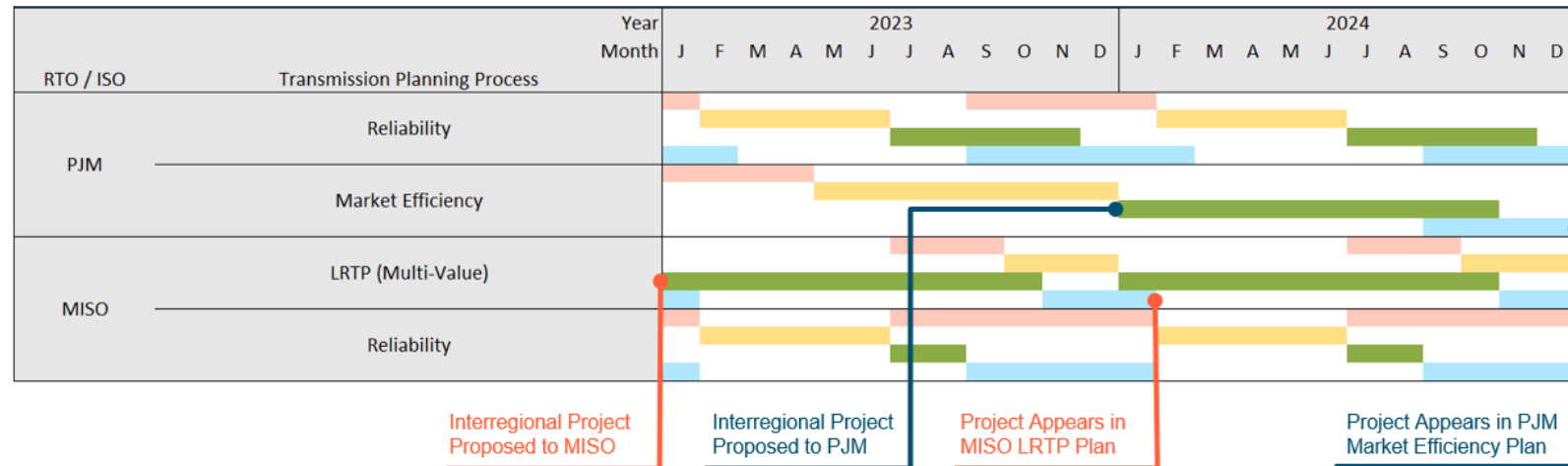
- Benefits quantification
- Planning methods
- Timelines
- Technical nature of planning

Majority of interregional projects in development are not produced via central planning efforts

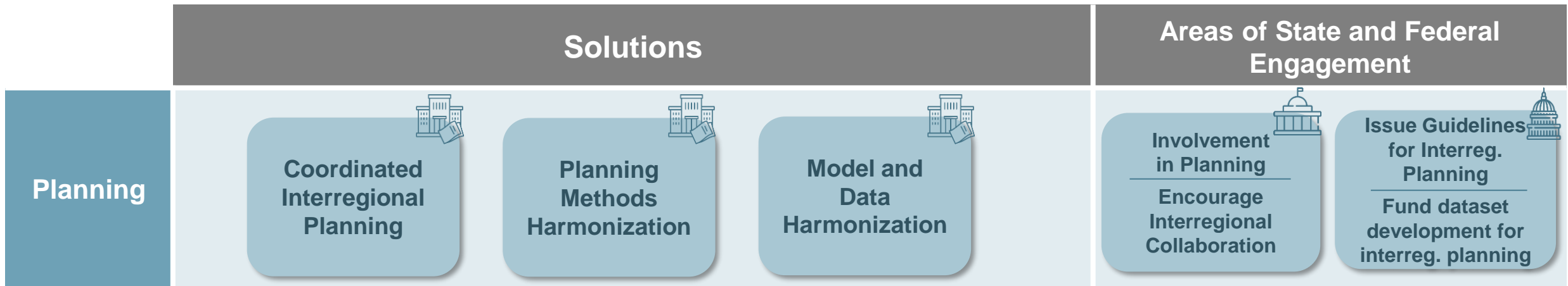


<https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/merchant-developers-fill-void-in-us-interregional-grid-build-out-76447354>

Planning cycle misalignment challenges collaboration between regions



Planning Solutions



Barrier: Lack of Planning Motivators

Solution: Planning regions could expand coordination between planning regions to identify planning motivators, determine joint transmission needs, and identify interregional transmission solutions.

Solution Examples: JTIQ, WestTEC

Barrier: Process Misalignment

Solution: Regions could align planning process timelines and interregional project solicitation so interregional projects can be evaluated in regional planning processes. They could also define best practices in transmission planning to ensure the best available projects are being identified.

Solution Example: New planning standards in FERC Order 1920

Permitting Challenges

Challenges

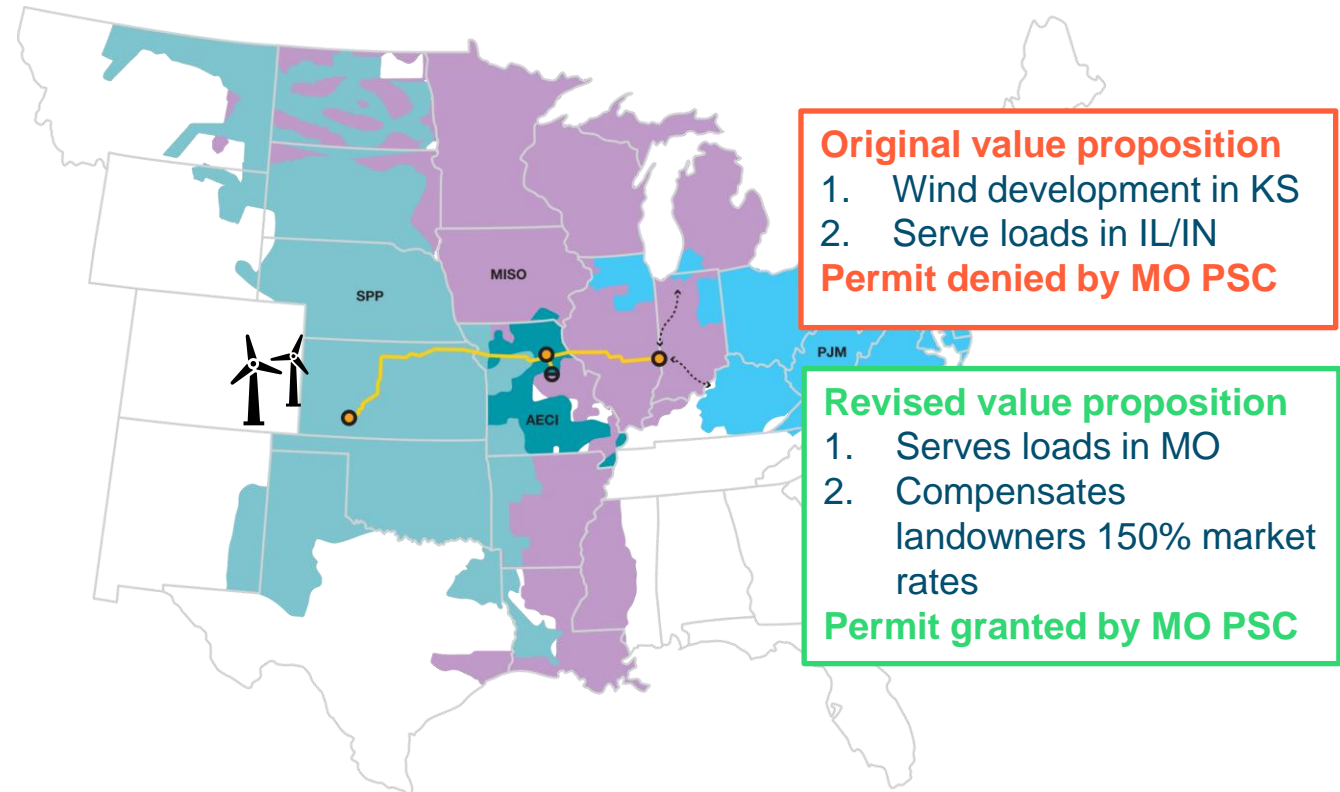
+ Redetermining Project Need

- Projects must prove to be in public interest in each state through which it passes
- State permitting entities often limited in ability to participate in planning analysis

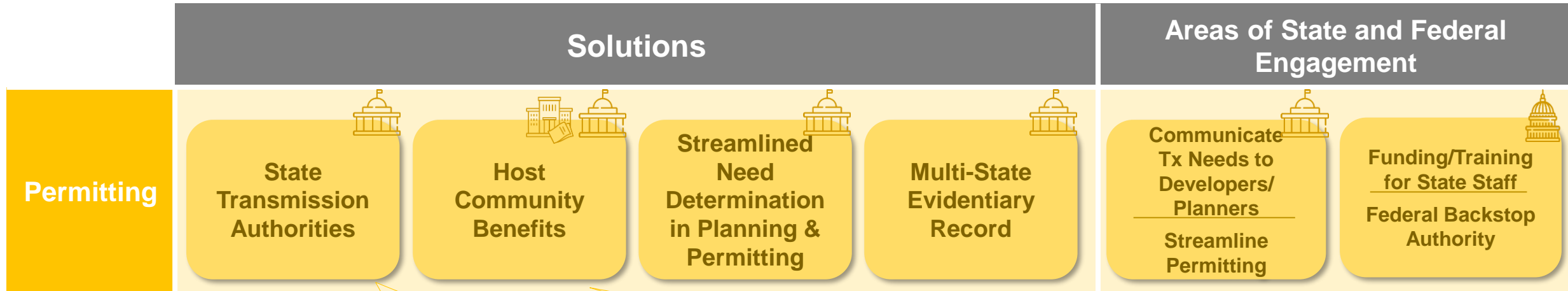
+ Passthrough Communities

- The burden of hosting projects is often not fully captured in project value propositions, creating natural opposition in permitting proceedings

The Grain Belt Express project crosses multiple regional boundaries and has undergone multiple permitting proceedings



Permitting Solutions



Barrier: State permitting entities often limited in ability to participate in planning and permitting analysis

Solution: State funding of special agencies to engage in transmission planning activities, analyze transmission needs, provide siting guidance to developers, and participate in or even fund transmission development.

Examples: New Mexico Renewable Energy Transmission Authority

Barrier: Passthrough community conundrum

Solution: Projects could be designed to provide non-energy benefits to host communities to ensure communities that bear the physical impact of a project also receive benefits. Options include providing jobs and job training, revenue sharing, and investment in capital projects, social programs, and economic development opportunities.

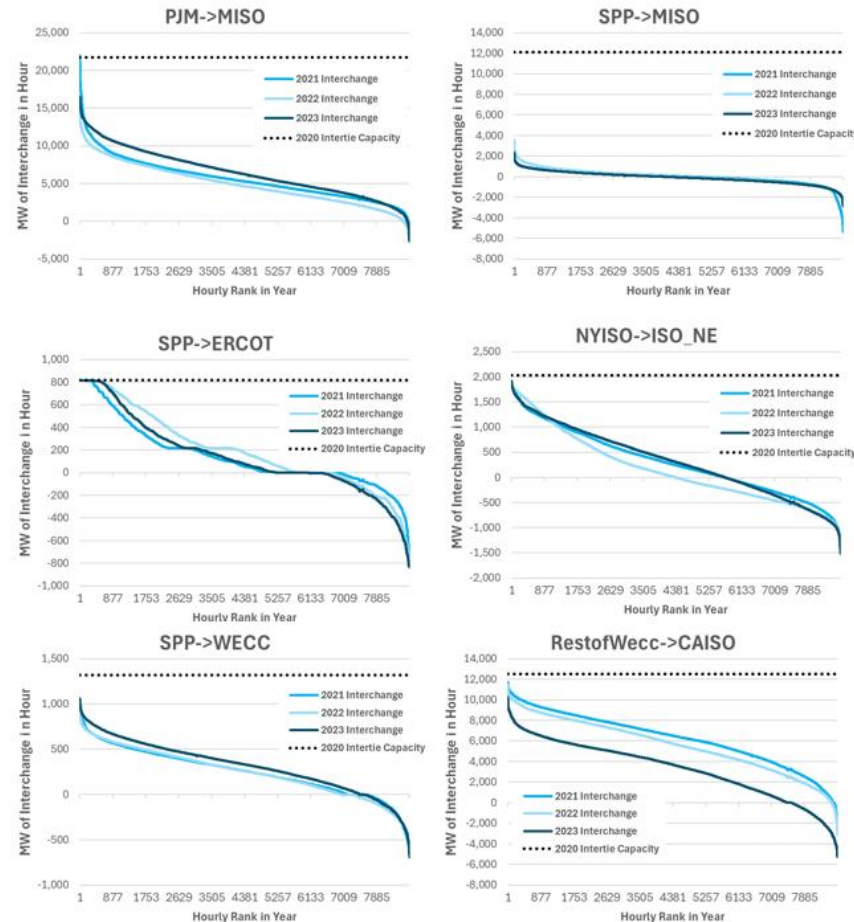
Example: NYSERDA's Tier 4 REC's Solicitation

Operations Challenges

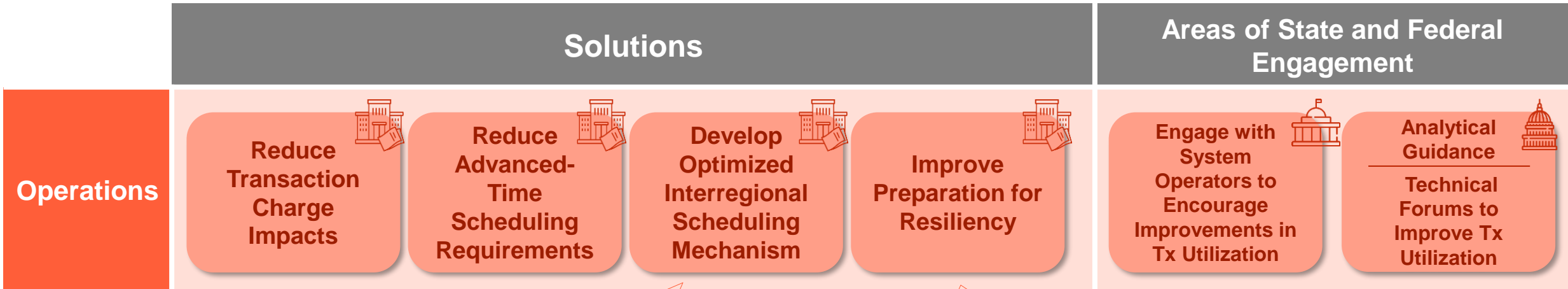
Challenges

- + **Transaction charges and scheduling cost limit beneficial exchanges**
- + **Interregional schedules that must be locked in ahead of the operating hour can lead to uneconomic transactions**
 - Actual conditions can change from the hour-ahead forecast
 - The longer that bids or self-schedules must be placed, the greater the risk of forecast error
 - Risk aversion to lock-in can reduce what each side makes available
- + **Uncertainty of interregional transactions**
 - Under-reliance on interregional transfers due to concern that other regions may modify planned transactions when grid is strained

Interregional interties have historically been underutilized potentially leaving operational cost and resiliency benefits unrealized



Operations Solutions



Barrier: Advanced-time transaction requirements can lead to uneconomic dispatch



















Solution: New operational mechanisms can optimize use of unutilized interregional transmission headroom.

Examples: Western Energy Imbalance Market, Europe’s market coupling efforts

Barrier: Uncertainty of interregional transactions

Solution: Neighboring market operators can work together to define possible emergency conditions and establish protocols for rapid communication and operations during periods of high resiliency need.

Summary

	Solutions				Areas of State and Federal Engagement	
Planning	 Coordinated Interregional Planning	 Planning Methods Harmonization	 Model and Data Harmonization		 Involvement in Planning <hr/> Encourage Interregional Collaboration	 Issue Guidelines for Interreg. Planning <hr/> Funding/Support, Potential Federal Planning Authority
Permitting	 State Transmission Authorities	  Host Community Benefits	 Planning Need Determination Acceptance for Permitting	 Multi-State Evidentiary Record	 Communicate Tx Needs to Developers/Planners <hr/> Streamline Permitting	 Funding/Training for State Staff <hr/> Federal Backstop Authority
Operations	 Reduce Transaction Charge Impacts	 Reduce Advanced-Time Scheduling Requirements	 Develop Optimized Interregional Scheduling Mechanism	 Improve Preparation for Resiliency	 Engage with System Operators to Encourage Improvements in Tx Utilization	 Analytical Guidance <hr/> Technical Forums to Improve Tx Utilization

Questions?



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