

Distributed Energy Resource Interconnection

National Association of State Energy Officials: Energy-Based Economic Development State Working Group

Grace Relf, Lawrence Berkeley National Laboratory

November 24, 2025

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Agenda

Introduction and Background

Distributed Energy Resource (DER) Interconnection Solutions – Foundational Practices

- Data sharing
- Interconnection procedures and standards
- DER Interconnection Solutions – Support for Economic Development
 - Coordination with grid planning
 - Workforce development

Questions States Can Ask and Actions to Consider



Introduction and Background



i2X Mission

To enable **simple, fast, and affordable** interconnection while enhancing the **reliability and security** of our electric grid.



Stakeholder Engagement



Data & Analytics

**Focus
today**



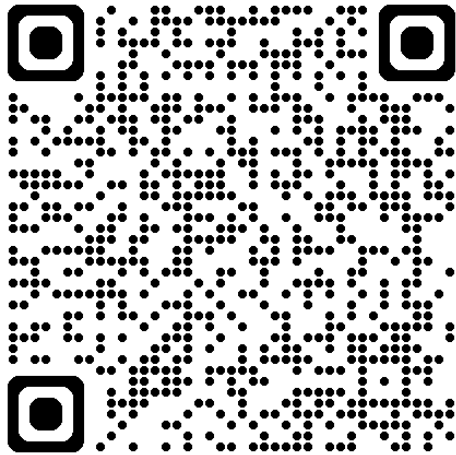
Strategic Roadmaps



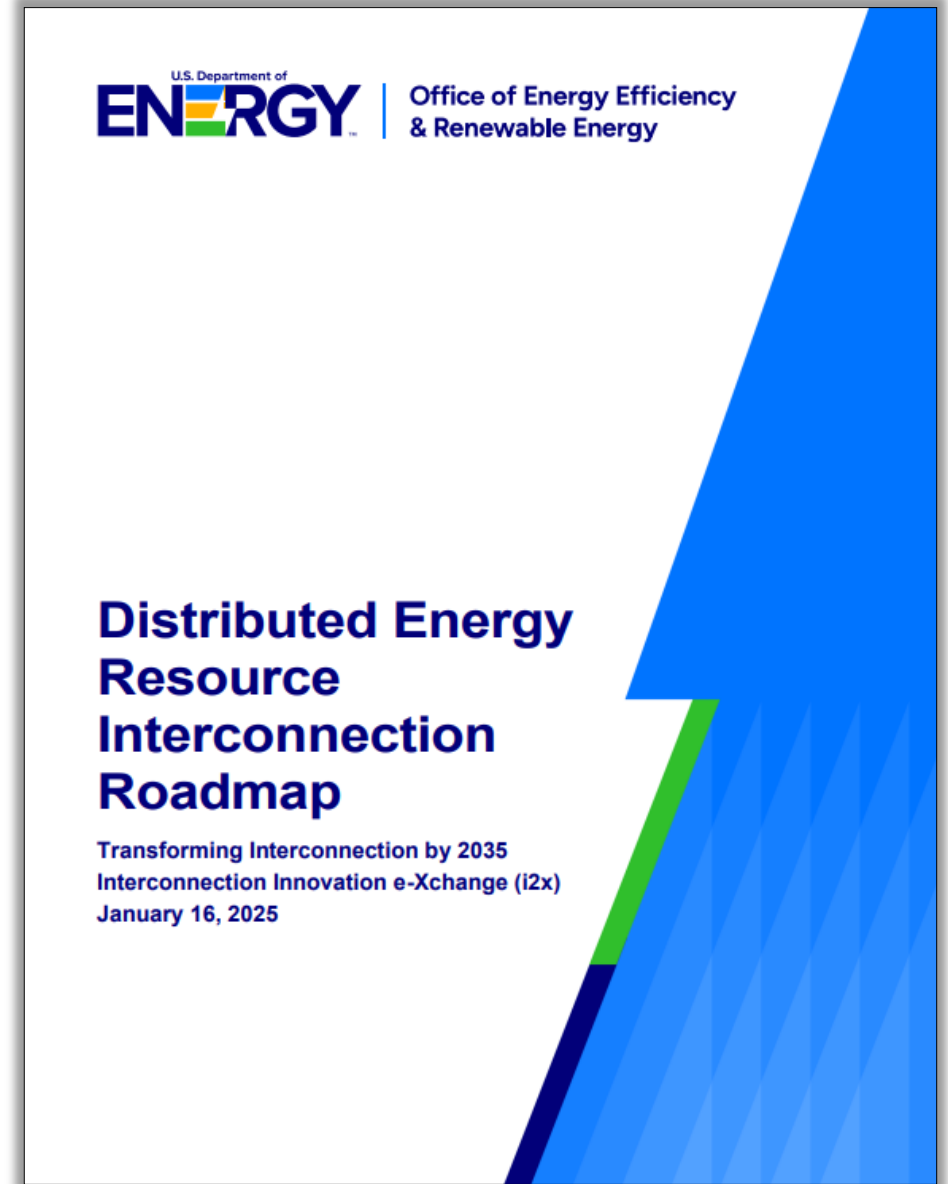
Research & Innovation



Distributed Energy Resource Interconnection Roadmap



The roadmap serves as guide to key actions that stakeholders could take, within the next five years and beyond, to implement solutions to distribution-level interconnection challenges.



Measurable Success Targets for 2030

Interconnection processes align well with local, state, and customer's goals

	Target	System Size*	2030 Target Value
Timing	(1) Median time from DER interconnection request to agreement [§]	< 50 kW	Within 1 day [†]
		50 kW–5 MW	< 75 days
		≥ 5 MW	< 140 days
Access	(2) Completion rate from entering the queue to execution of interconnection agreement	< 50 kW	> 99%
		50 kW–5 MW	> 90%
		≥ 5 MW	> 85%
Data	(3) Availability of public state-level interconnection queue data	All	50 states, Washington, D.C., and territories have public, detailed, and current queue data
Reliability	(4) No BPS disturbance events exacerbated by inaccurate DER modeling	All	0
Resilience	(5) Lower Customer Average Interruption Duration Index (CAIDI) [‡]	All	25% improvement (e.g., from 4 to 3 hours per occurrence)

* System size thresholds will vary across utilities and jurisdictions.

§ For systems that do not trigger system upgrades.

† Defined as 1 business day.

‡ CAIDI with loss of load removed but major event days included.

Value of Improved Interconnection

Expedites system and broader benefits of DERs

- Avoided system costs
- Delivery of grid services
- Reduced air pollutants
- Contributions to grid reliability and resilience
- Improved customer choice
- Increased market competition

Improves customer experience

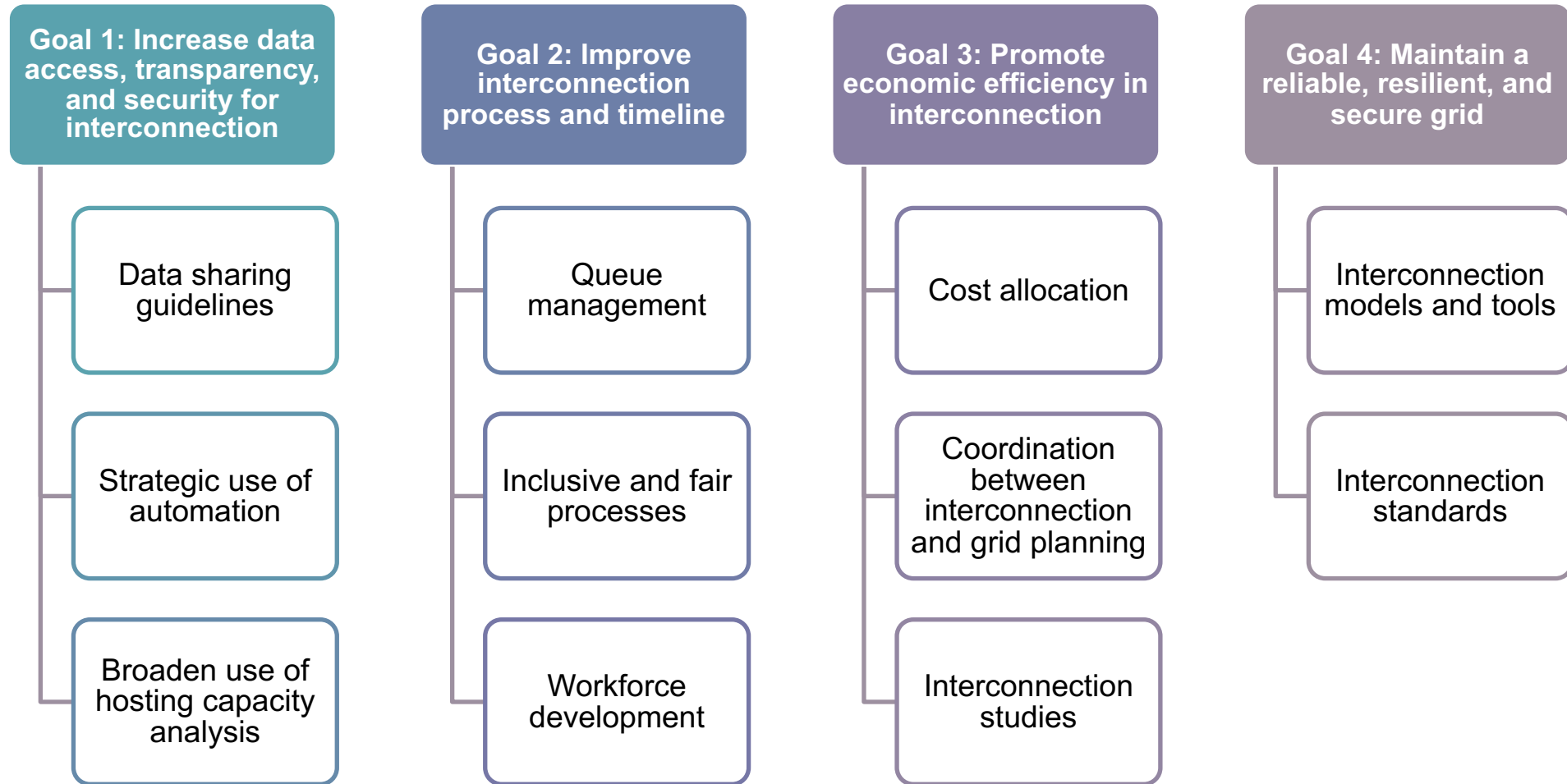
- Reduced time and cost to interconnect
- Expedited bill savings and utility customer resilience
- Greater satisfaction with utility

Supports DER development

- Identification of favorable areas for interconnection
- Reduced uncertainty for interconnection costs and timelines
- Improved process efficiencies for better business outcomes
- Contributions to economic growth and workforce development



i2X DER Interconnection Roadmap



Selected Roadmap Solutions – Foundational Practices

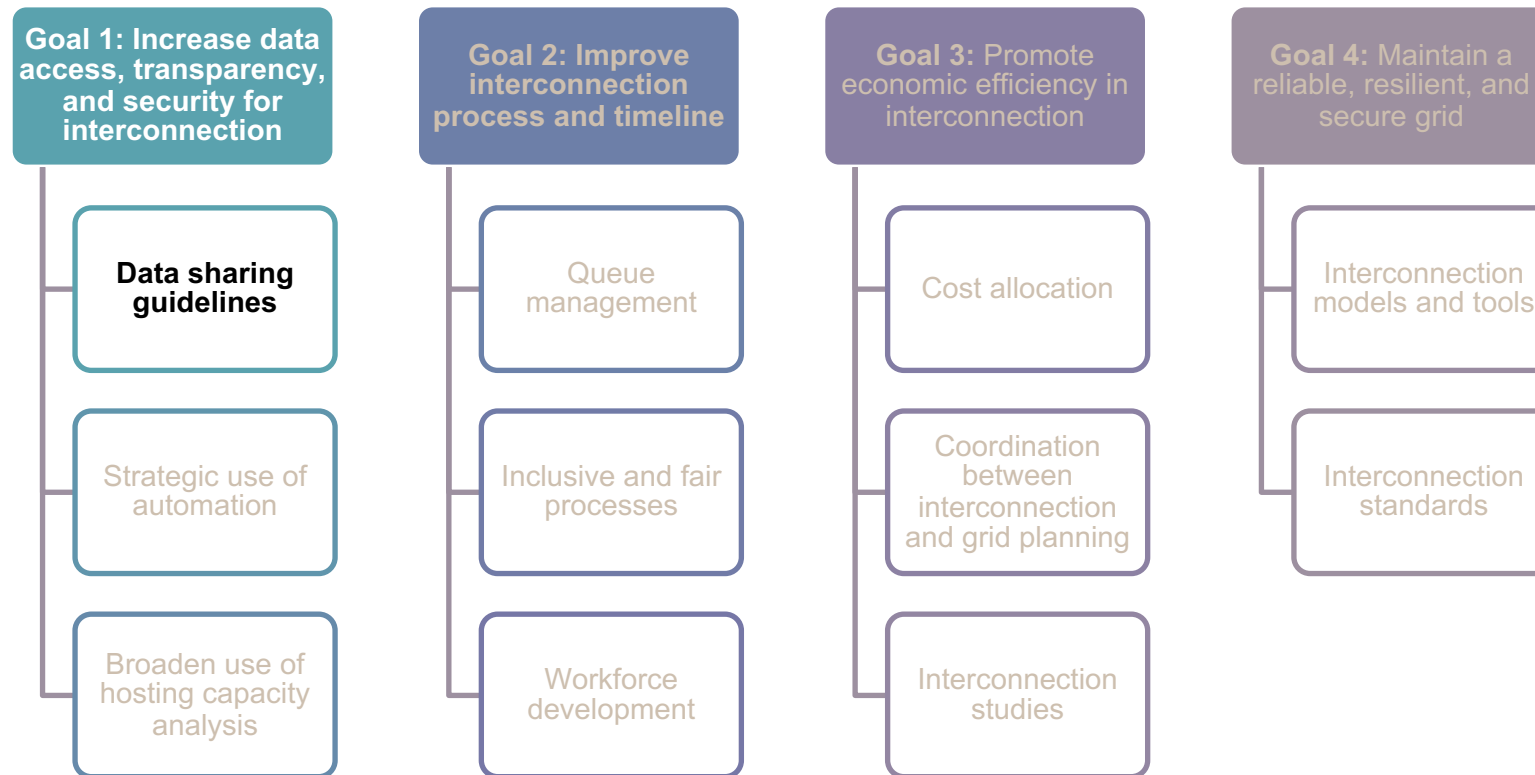


Increased Data Access, Transparency, and Security

Interconnection data are foundational to enable many solutions in the Roadmap.

Regulators play a key role in establishing expectations for providing data on grid condition and hosting capacity that consider costs to produce data, value created, and customer privacy.

Stakeholders are critical to identifying what data are useful and can provide data in certain cases.



Source: [DER Interconnection Roadmap](#)



Data Sharing Guidelines

Considerations for guidelines

- Clarify data required from utilities, developers, and other stakeholders
- Consider sensitivity of data and taking appropriate precautions
- Consider tradeoffs between granularity and frequency of updates with resource intensity
- Develop accessible and secure data sharing platforms

Public reporting sites for interconnection queue data support transparency.

State Energy Offices and industry can support regulators and utilities by sharing data needs and use cases and reviewing and providing feedback on utility data.

DER Applications	Generated by Utilities
<ul style="list-style-type: none">• Technology• Rated power (kW)• Stored energy (kWh)• IEEE 1547 Reactive Power Category, commonly referred to as “voltage and reactive power capability”⁵⁹• IEEE Std 1547 Disturbance Category, commonly referred to as “voltage and frequency ride-through capability”• Location (census block group)	<ul style="list-style-type: none">• Queue position• Application date and interconnection agreement date• Dates of system impact study start and completion• Construction completion date and permission to operate date• Status (active, operational, withdrawn, suspended)• Technical screen failures and results, if applicable⁶⁰• Group study status, if applicable• Estimated cost of studies and fees (\$ quoted by the utility)• Estimated cost of all system upgrades, including facilities charges and network upgrades (\$ quoted by the utility)• Final cost of interconnection, including costs of all studies and any required system upgrades (\$ billed by the utility)

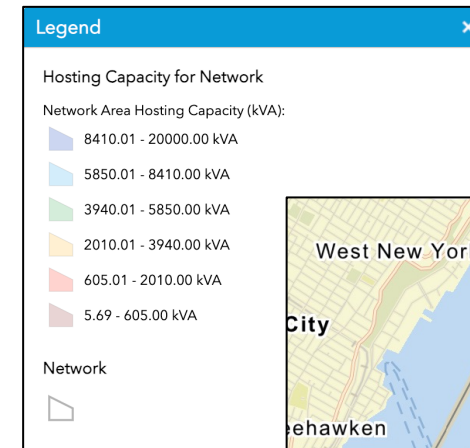
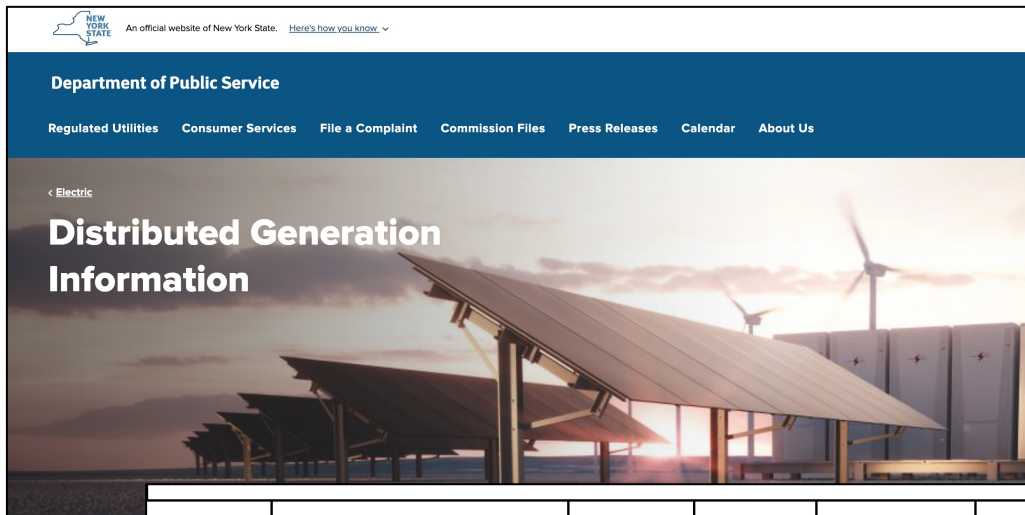
Sources: [NARUC Grid Data Sharing Playbook](#), [DER Interconnection Roadmap](#)



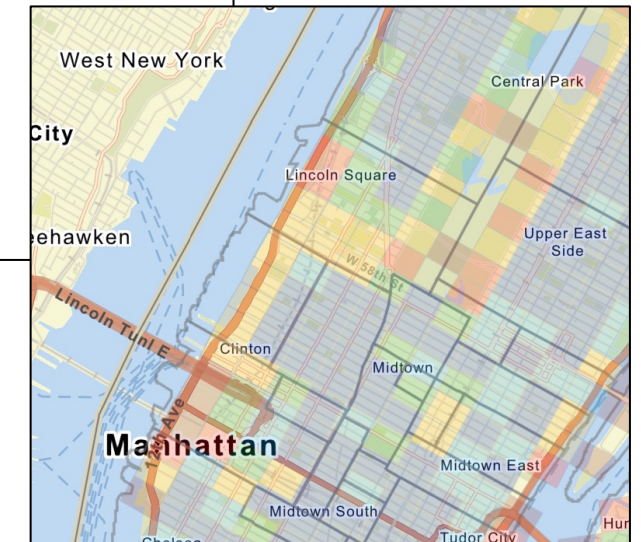
Data Sharing: State Example

New York State provides consolidated interconnection information on a public webpage.

- The page links to standard and utility-specific interconnection requirements, hosting capacity maps, interconnection queue data, and other resources.
- New York’s standardized queue data provide equipment, timeline, and cost information.



Company	Developer	Application / Job #	Division	City/Town	County	Zip Code	NYISO Load Zone	Circuit ID	Substation
CECONY	MOMENTUM SOLAR	SDG-80851	CENY-BK	Brooklyn	Kings	11234 J		4809	Bensonhurst_2
CECONY	NYSS LLC	SDG-80850	CENY-SI	Staten Island	Richmond	10314 J		1R81	FRESH_KILLS
CECONY	Green Hybrid Energy Solutions, Inc.	SDG-80849	CENY-W	White Plains	Westchester	10601 I		WHITE2	White_Plains
CECONY	MOMENTUM SOLAR	SDG-80848	CENY-W	Yonkers	Westchester	10703 I		99U4	Granite_Hill
CECONY	MOMENTUM SOLAR	SDG-80847	CENY-W	Yonkers	Westchester	10704 I		79U3	Granite_Hill
CECONY	MOMENTUM SOLAR	SDG-80846	CENY-Q	Springfield Gardens	Queens	11413 J		9573	Jamaica
CECONY	MOMENTUM SOLAR	SDG-80845	CENY-Q	Jamaica	Queens	11435 J		5Q42	Jamaica



Source: [New York Department of Public Service](#), [ConEdison](#)

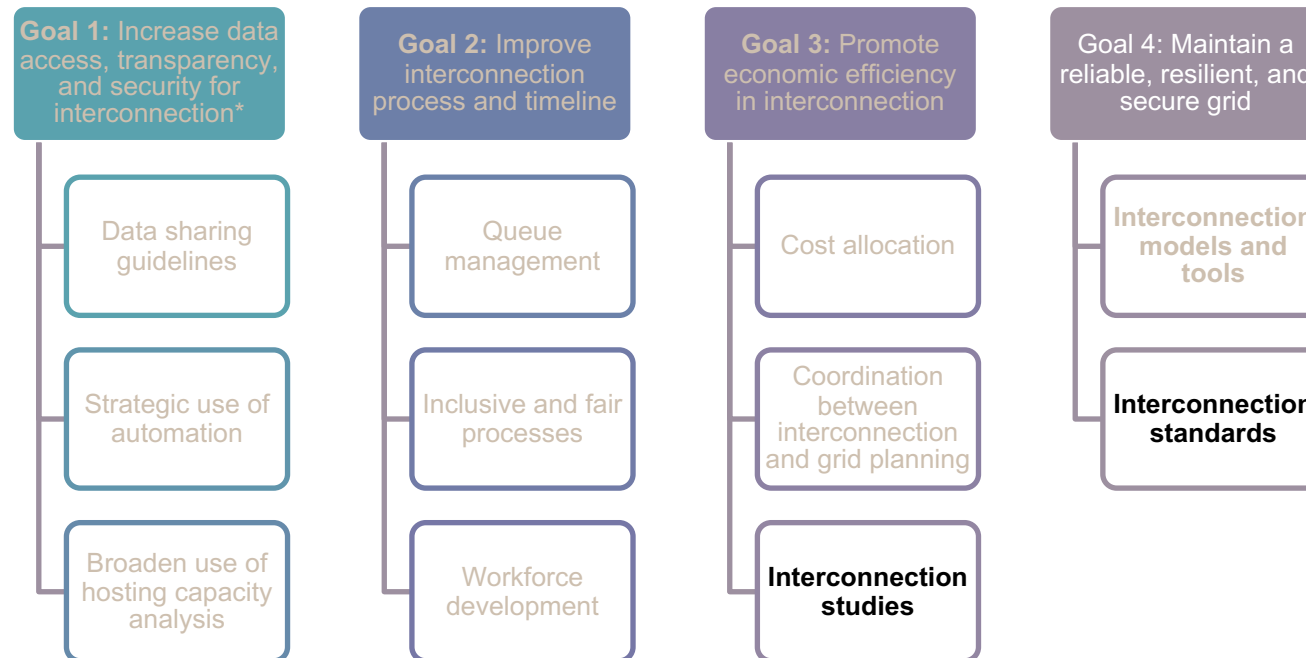


Interconnection Procedures and Technical Standards

Clear and updated interconnection tariffs and technical standards create a foundation for consistent implementation of good practices and enforcement of regulations.

State Energy Offices and industry can encourage utilities to draw on leading practices and participate in working groups to consider issues such as:

- Interconnection procedures, technical standards, modeling, and tools
- Interconnection study requirements and processes



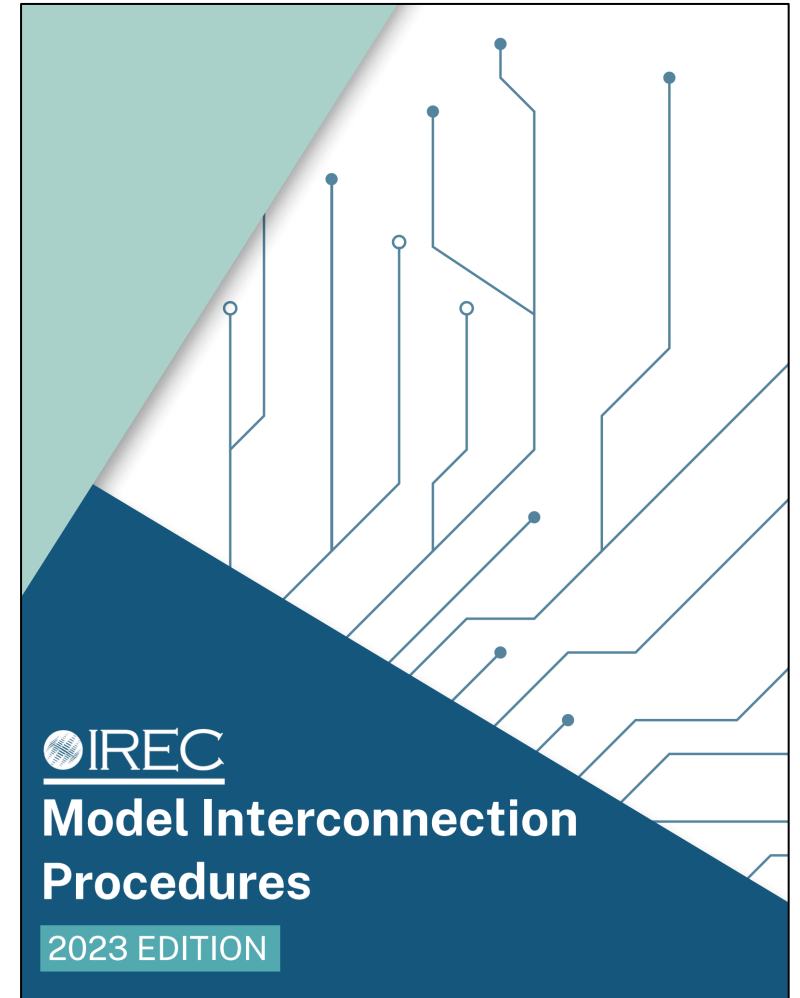
Source: [DER Interconnection Roadmap](#)



Model Procedures

Interconnection procedures provide best practices for studying and screening technologies, differentiated by interconnection types (e.g., generation vs. storage, by size, fast-track).

- Regulators can set time limits on the total interconnection timeline or steps within the interconnection process.
- Requirements can be formalized in tariff updates.
- Enforcement of timelines is important.
- State Energy Offices and industry can participate in working groups to determine where to cut time in the process.



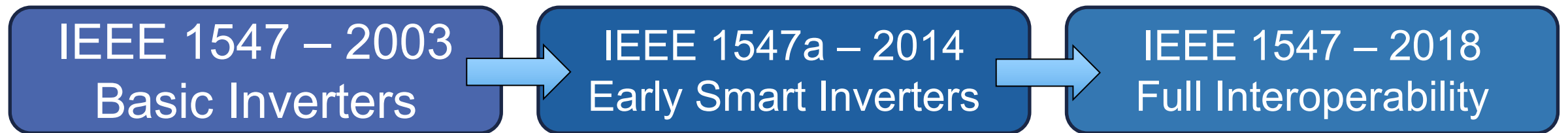
Source: [IREC Model Procedures](#)



Industry Technical Standards

Technical standards define how DERs can connect to the grid.

- Standards have evolved over time.
- The latest standard (1547-2018) defines how inverters can provide grid service functions like voltage and frequency support, and communications.
- Visibility into DER behavior minimizes potential negative grid impacts and helps maximize value of these resources on the system.



Source: [Cody Davis, Electric Power Engineers](#)



Selected Roadmap Solutions: Support for Economic Development

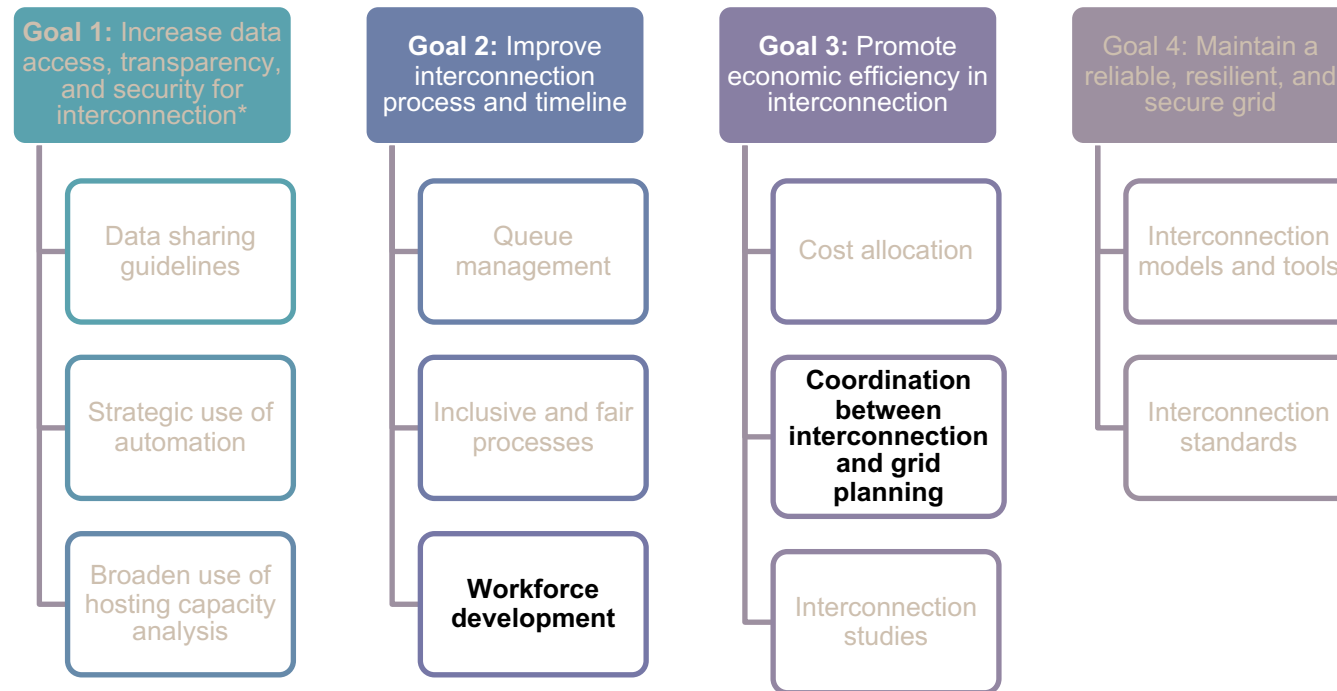


Improve Processes and Promote Economic Efficiency in Interconnection

Growth in DERs and loads are driving the need for utility distribution system investments.

- Separate processes for consideration of distribution system upgrades in distribution planning and interconnection create inefficient outcomes.
- State Energy Offices and industry can encourage coordination across interconnection and planning processes and support emerging interconnection approaches like flexible interconnection.

Workforce development supports the technical expertise needed to conduct interconnection processes.



Source: [DER Interconnection Roadmap](#)



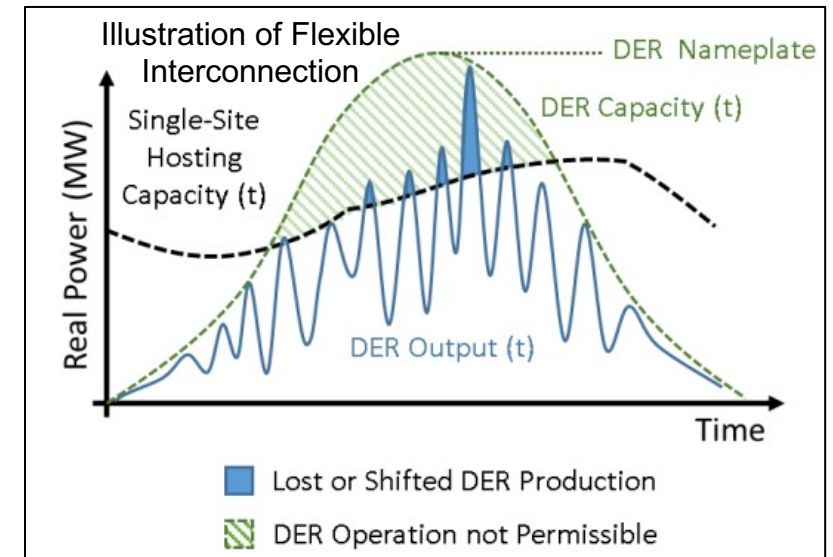
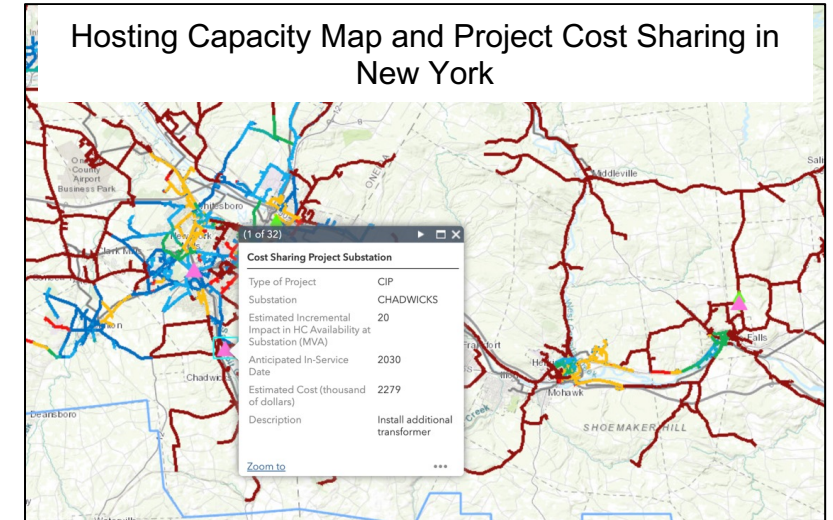
Coordination Between Interconnection and Grid Planning

Effective planning can improve interconnection outcomes through granular load and DER forecasting, data sharing, and alignment of timelines across processes.

Consideration of interconnection data in grid planning can help identify constrained areas and identify mitigations.

- Proactive planning allows interconnection customers and ratepayers to efficiently share the cost of upgrading areas where infrastructure is needed to serve growing loads and local resources.
- Flexible interconnection identifies limits on system use to avoid the need for some upgrades and often helps projects to interconnect more quickly and economically.
- Combining and automating interconnection processes with new service requests supports efficient interconnection for new developments that include DERs as part of the design.

Sources: [EPRI](#), [Cody Davis](#), [Electric Power Engineers](#), [National Grid New York](#)



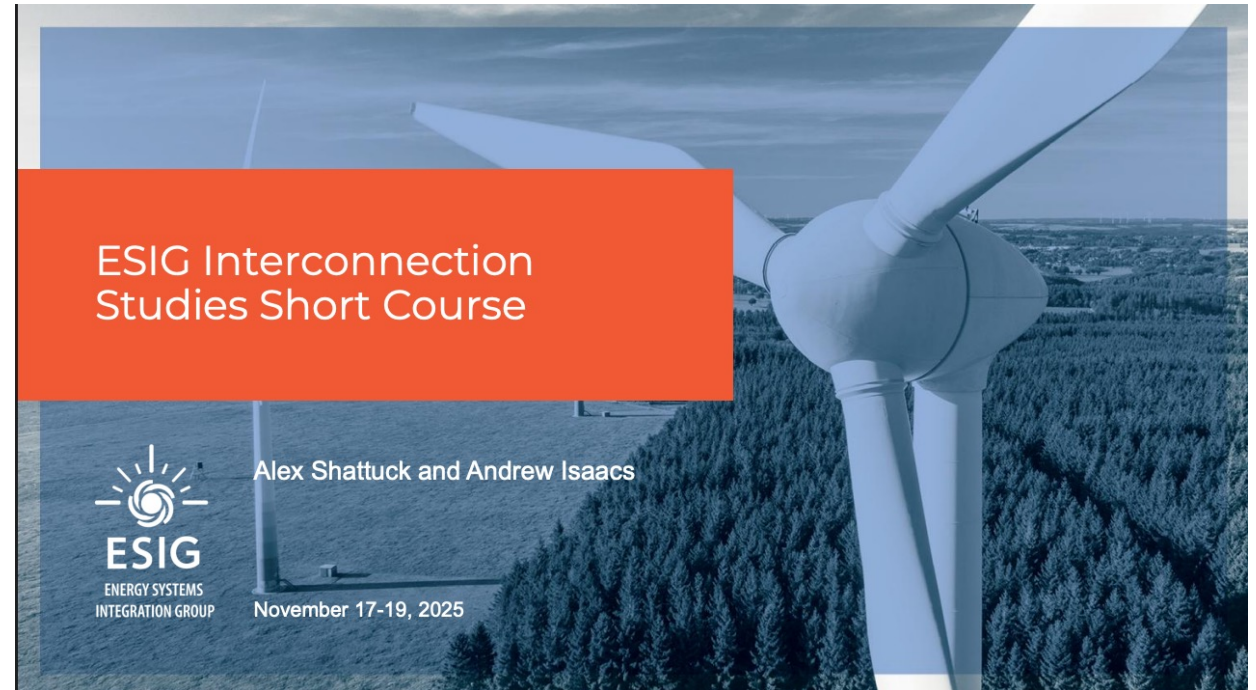
Workforce Development

Interconnection activities require diverse skillsets and expertise (e.g., engineering, regulatory).

Utilities, public utility commissions, and state energy offices need skilled workers to handle an increasing number of applications to interconnect local resources.

Solutions include:

- Assess interconnection workforce needs.
- Provide continuing workforce education.
- Conduct targeted outreach to recruit skilled workers for interconnection-related jobs and retain skilled workers.



Slides and recordings [here](#)

Sources: [DER Interconnection Roadmap](#)



Wrap Up



Questions States Can Ask

Has the state/utility adopted the current version of the IEEE 1547 Standard (2018)? If not, what process steps would be needed to update the standard to this standard?

What are the steps in the utility's interconnection process and how long does each take? How can wait times be reduced?

How are DER interconnections being screened and studied? What improvements can be made?

How does the utility staff its interconnection management team, and do they have sufficient resources?

What hosting capacity and other grid data do the utilities currently make available to DER developers and the public? What would the utility need to do to provide more granular data and more frequent updates — and what are the costs and benefits?

How are utilities coordinating grid planning with interconnection processes?

What is the current cost allocation method for DER interconnection? What methods might be tested to improve economic efficiency?

Could the utilities use dynamic flexible interconnection to reduce wait times and interconnection costs? What technologic or process hurdles may need to be overcome?



Actions to Consider

State Energy Offices and Other Stakeholders

Provide feedback on usefulness of interconnection tools, educational materials, and data sets

Participate in forums considering updates to interconnection standards and processes, cost allocation, and distribution planning practices

Participate in planning proceedings to encourage coordination with interconnection processes

Share information from other states

Encourage utilities to pursue or pilot leading and emerging best practices



Resources for More Information

DOE Interconnection Innovation e-Xchange, [Distributed Energy Resource Interconnection Roadmap, 2025](#)

DOE Interconnection Innovation e-Xchange, [Interconnection Resources](#)

Interstate Renewable Energy Council (IREC), [IREC Model Interconnection Procedures 2023](#)

Building a Technically Reliable Interconnection Evolution for Storage (BATRIES), [Solutions to Improve Energy Storage Interconnection](#)

IREC, [IEEE 1547-2016 Adoption Tracker](#), 2024

L. Schwartz, G. Pereira, P. De Martini, J. Schellenberg, J. Ball, N. Mims Frick, L. Kiboma, D. Narang, J. Keen and M. Ingram, [Berkeley Lab Interactive Decision Framework for Distribution System Planning](#) (2024)

- See “Interconnection” section in “Distribution System Analyses” box

G. Pereira, G. Relf, M. Whiting, N. Mims Frick, and L. Schwartz, [Online catalog of state distribution planning requirements](#), 2025

Forthcoming Berkeley Lab technical reports on cost allocation for DER interconnection, automating DER interconnection, and interconnection queues, timelines and costs



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The Interconnection Dilemma:

A DOE Roadmap for Unlocking Queue
Backlogs

Will Gorman

November 2025

*NASEO Energy-Based Economic
Development Working Group*

This work was funded by the Interconnection Innovation e-Xchange (i2X), a U.S. Department of Energy initiative under Contract No. DE-AC02-05CH11231. The views and opinions of the authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof, or The Regents of the University of California.

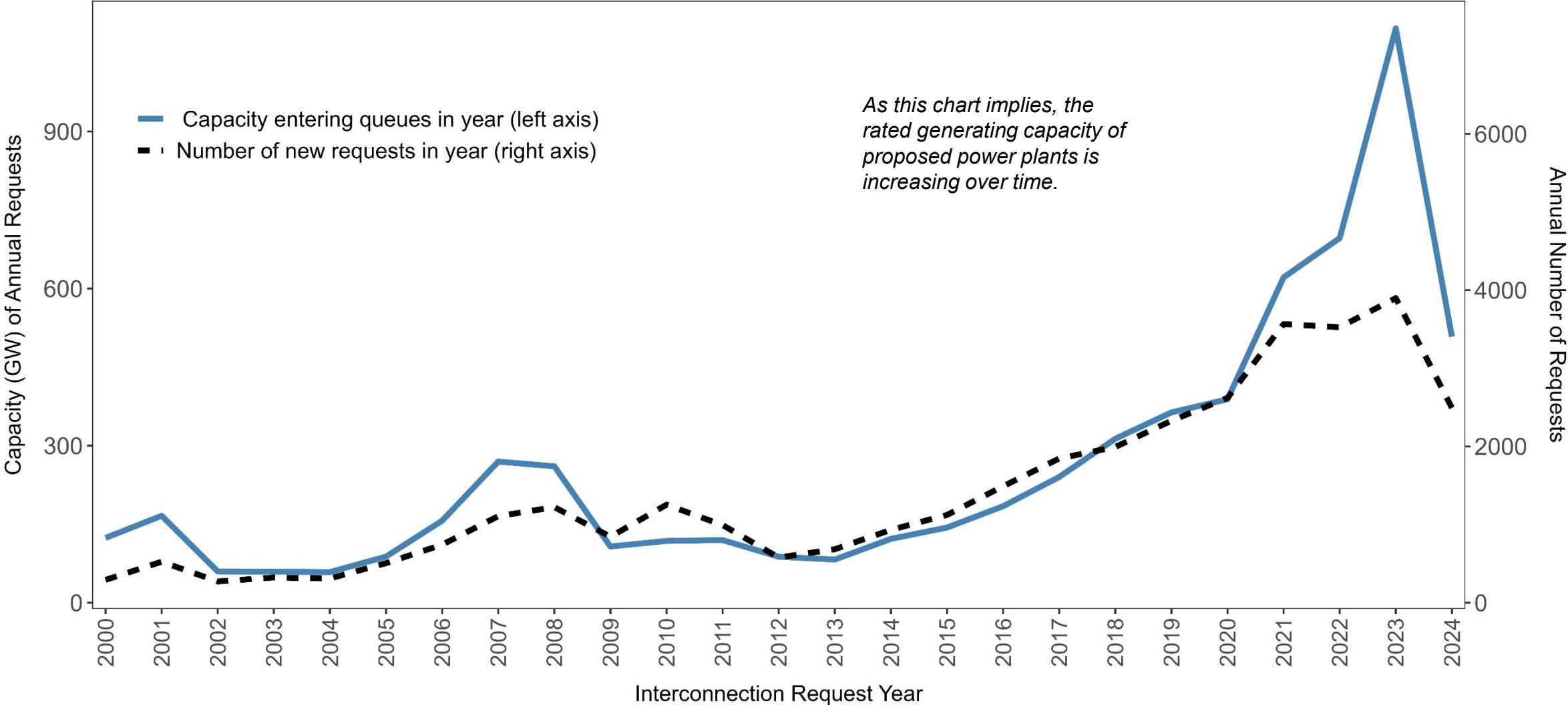
Image source: Vecteezy.com

Outline

- Status of U.S. Interconnection Queues and Evidence of a Problem
 - ▣ Volume
 - ▣ Withdrawals
 - ▣ Timelines
- DOE i2X Program Roadmap: Opportunities for Reforms and Solutions

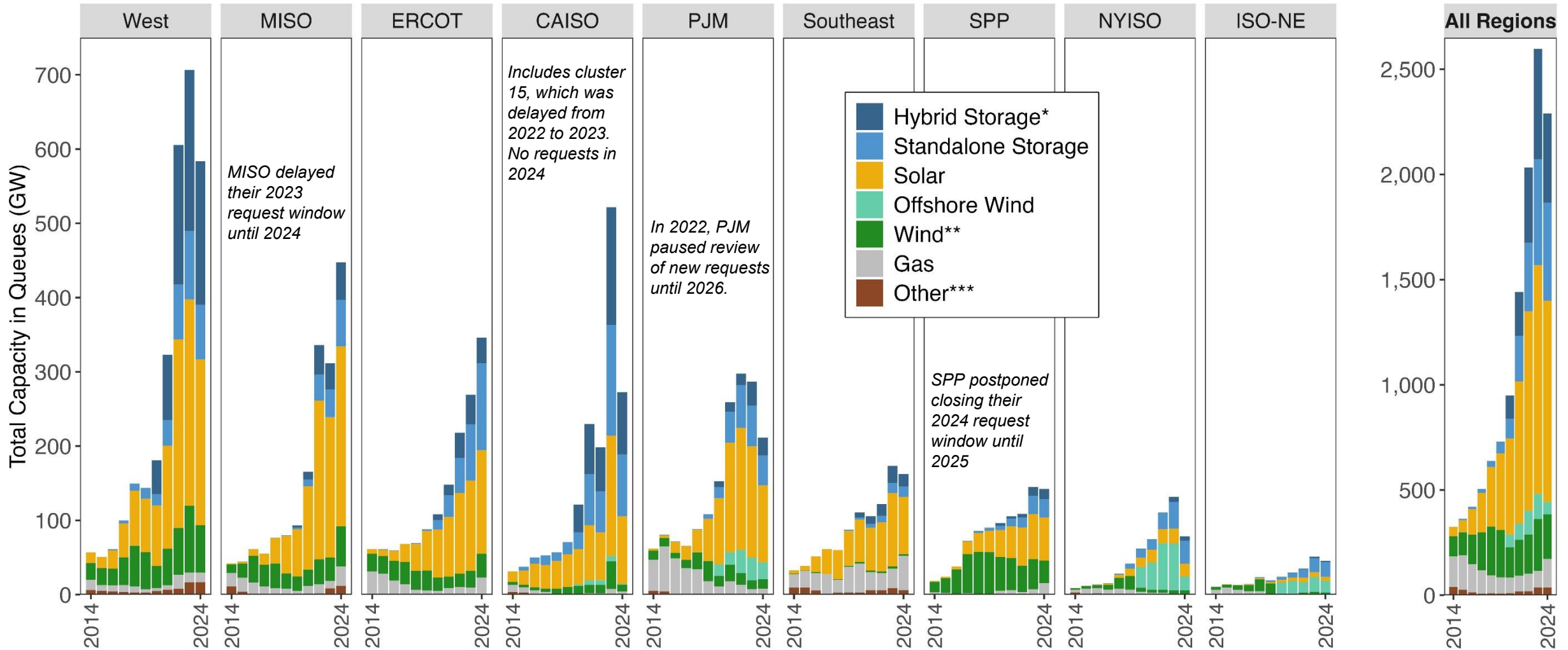
*I will focus on **transmission interconnection**, not distribution/DER interconnection
(which my colleague Grace will cover)*

Annual interconnection requests surged from 2013-2023, but slowed in 2024; Still, nearly 2,500 requests representing over 500 GW were added in 2024



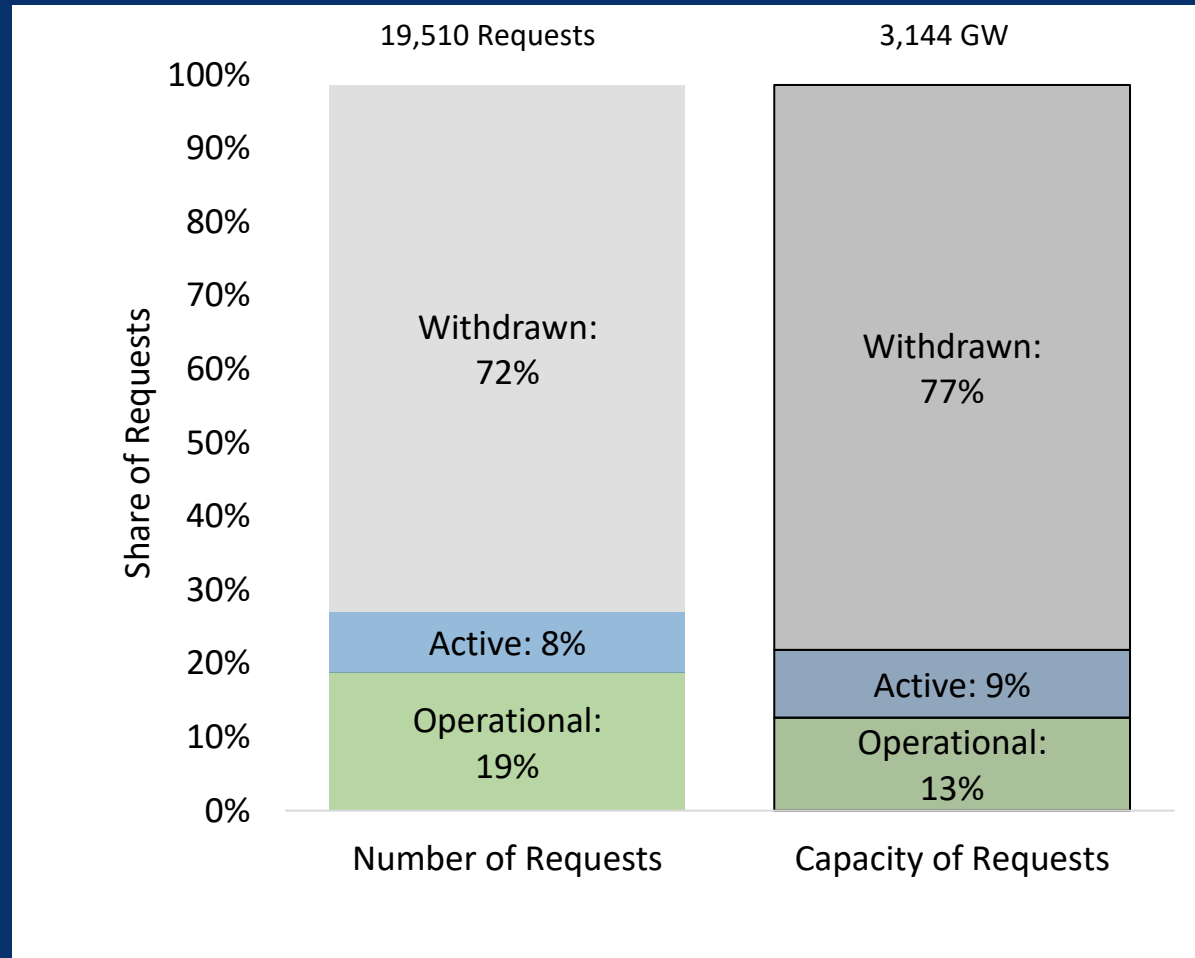
Notes: (1) This total annual volume includes projects with a current queue status of "active", "suspended", "withdrawn", or "operational". (2) All values – especially for earlier years – should be considered approximate.

Active queue capacity is highest in the non-ISO West, followed by MISO. Several regions have paused or delayed new requests as reforms are implemented

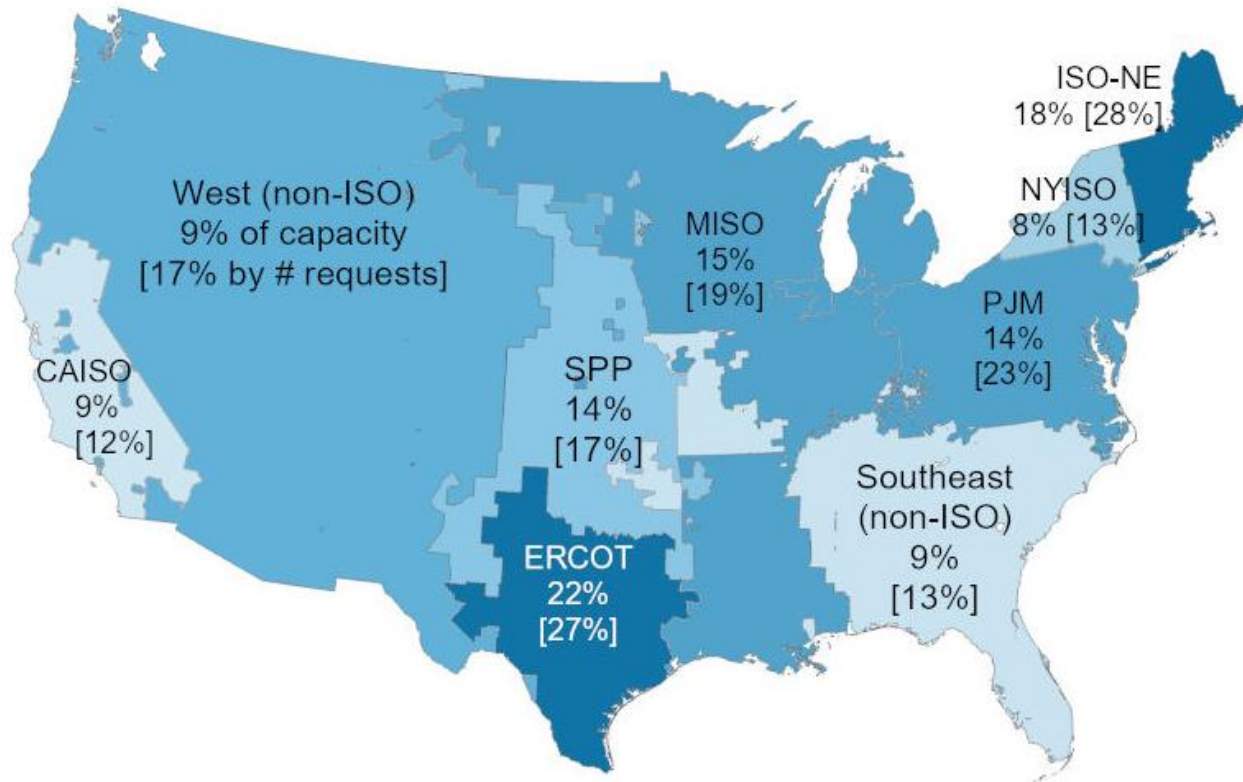


Notes: (1) *Hybrid storage capacity is estimated for some projects using storage:generator ratios from projects that provide separate capacity data, and that value is only included starting in 2020. Storage duration is not provided in interconnection queue data. (2) **Wind capacity includes onshore and offshore for all years, but offshore is only broken out starting in 2020. (3) ***Other in this chart includes Coal, Nuclear, Hydro, Geothermal, and Other / Unknown. (4) Not all of this capacity will be built.

Evidence of a Problem #1: Low Completion / High Withdrawal

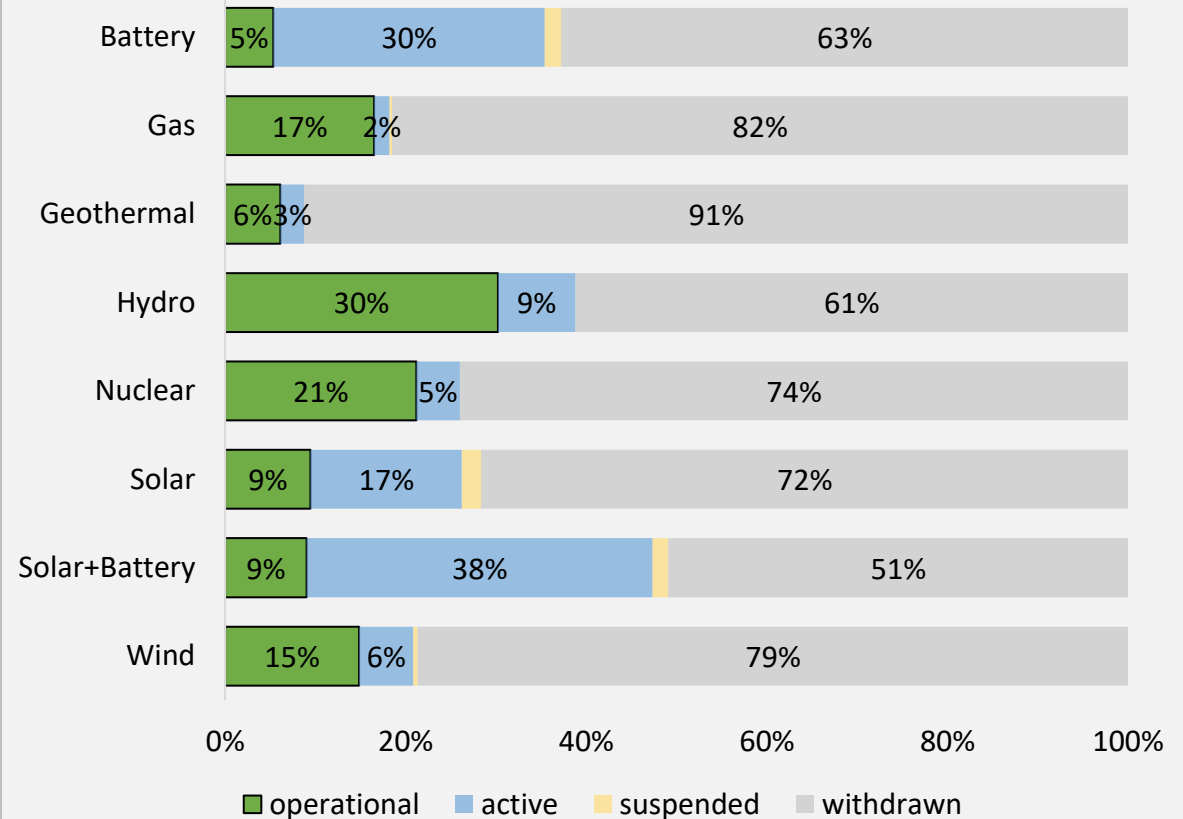


Variation in completion rates across regions and by generator type: New England and Texas have highest historical completion rate



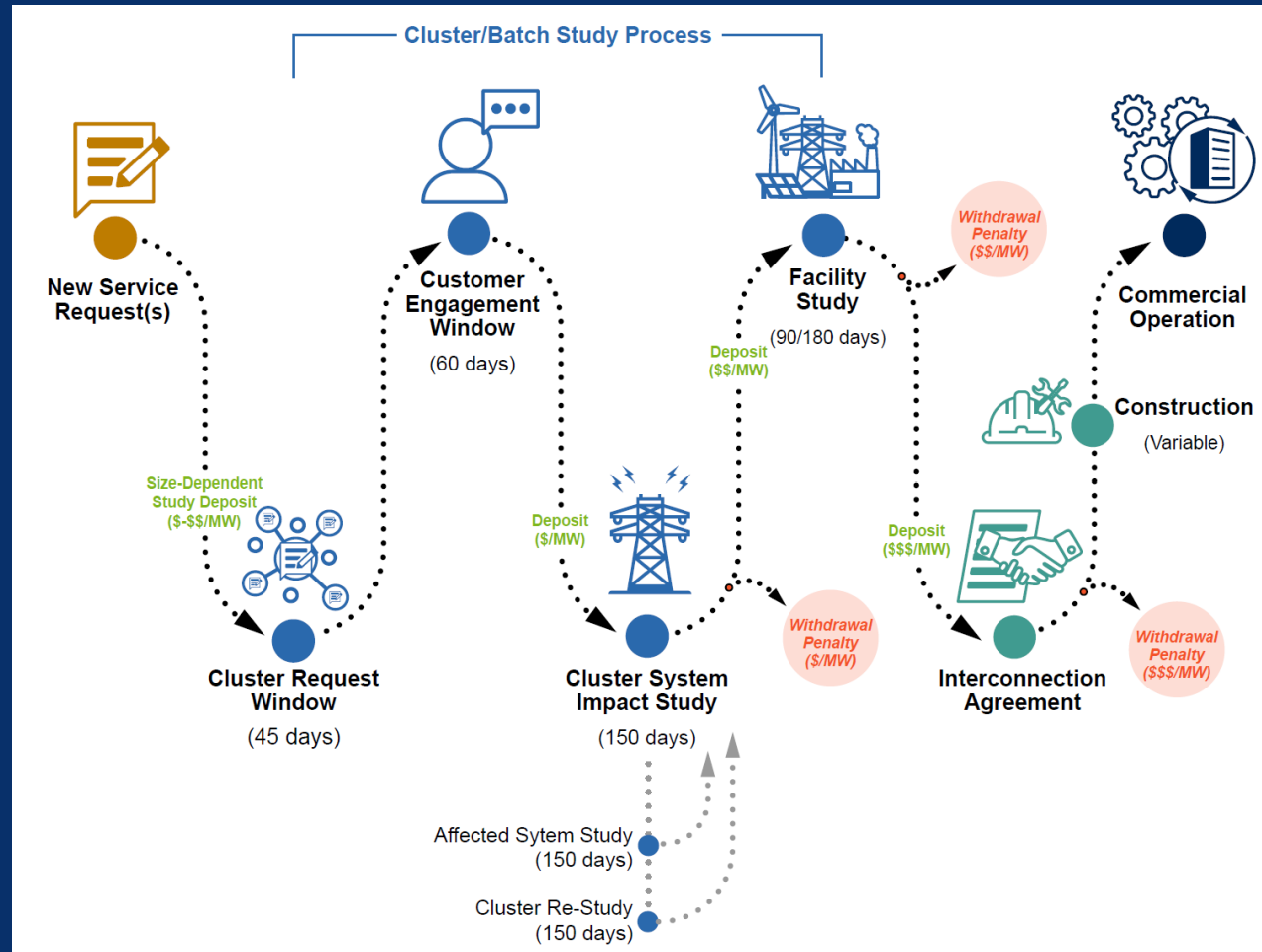
By Capacity of Requests

Current Status for Capacity Submitted 2000-2019

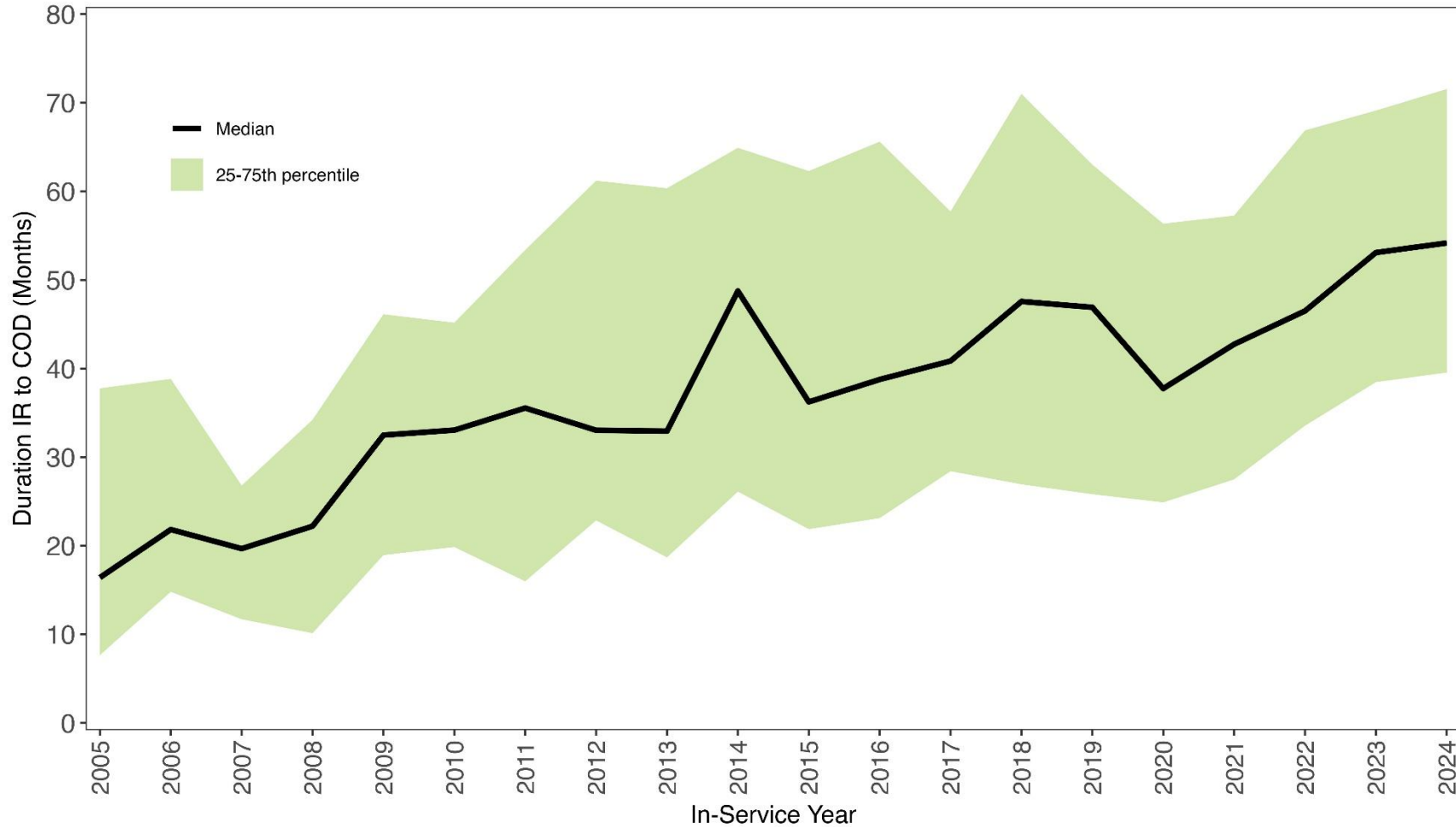


Notes: (1) Capacity-weighted completion rates are shown first, completion by number of requests shown in brackets [.] (2) Percentages only include projects requesting interconnection from 2000-2019. (3) Includes data from 7 ISOs and 32 non-ISO balancing areas which provide comprehensive status information.

Evidence of a Problem #2: Increasing timelines



The median duration from interconnection request (IR) to commercial operations date (COD) continues to rise: 55 mo. for projects completed in 2024

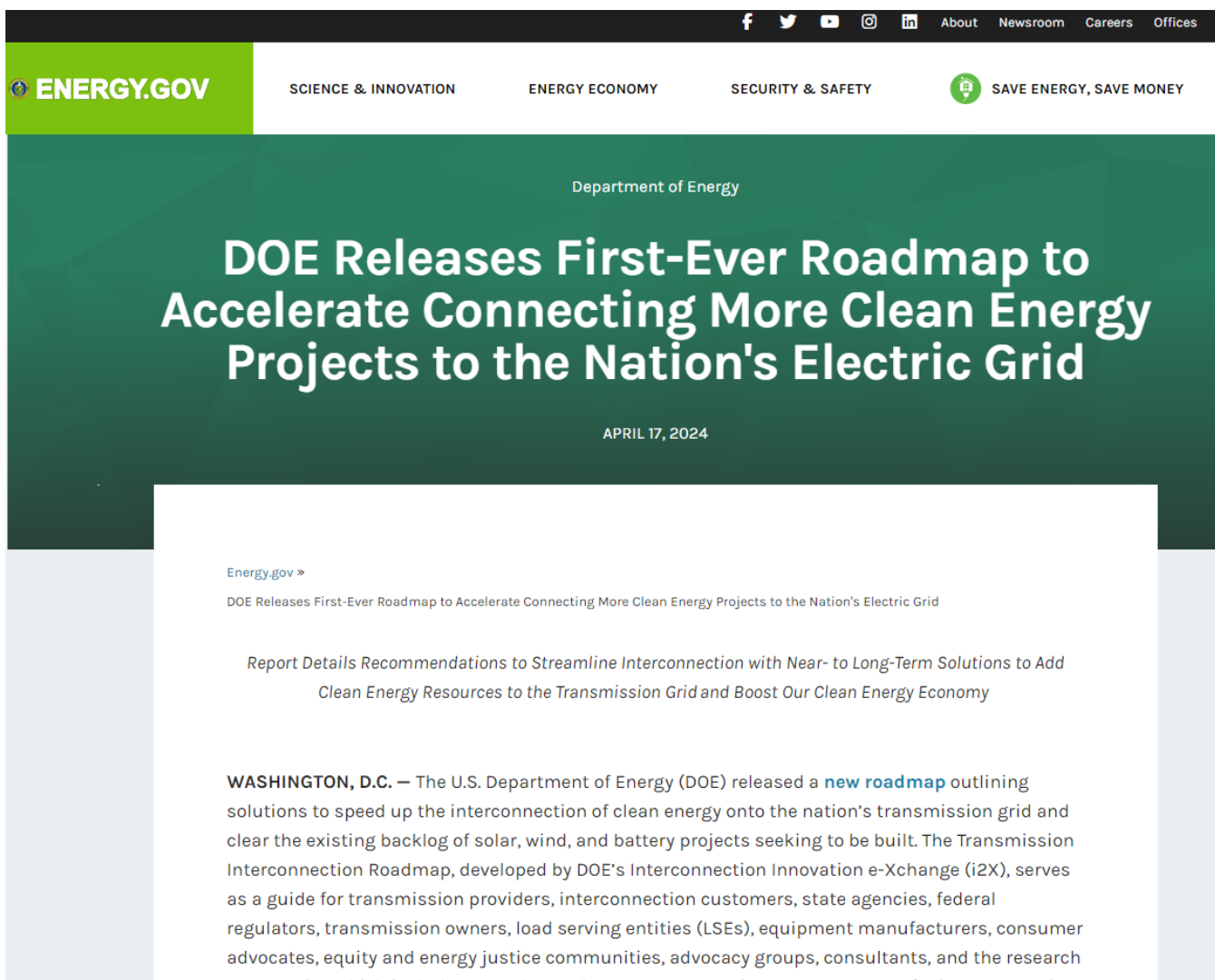


Sample Size (# requests) by Region and Year							
Region	2018	2019	2020	2021	2022	2023	2024
CAISO	8	11	8	18	13	12	7
ERCOT	62	76	79	139	91	95	144
NYISO	3	10	1	4	9	4	0
PJM	67	55	92	50	35	63	60
Southeast	4	4	29	36	31	43	46
SPP	15	9	27	15	7	4	0
West	6	2	2	9	10	7	7

Notes: (1) The majority of the 2024 data sample for this analysis came from ERCOT (55%), which typically has relatively shorter durations (see next slide); (2) Includes data from 5 ISOs and 17 non-ISO BAs representing 72% of all operational projects in our sample. (3) Duration is calculated as the number of months from the queue entry date to the commercial operations date.

Brief Introduction of Key Solutions

Roadmap released last year identified solutions to unlocking interconnection backlogs



The screenshot shows the Energy.gov website with a green header and navigation menu. The main content area features a dark green background with white text. The article title is 'DOE Releases First-Ever Roadmap to Accelerate Connecting More Clean Energy Projects to the Nation's Electric Grid', dated April 17, 2024. Below the title, there is a link to the full report and a summary of the roadmap's purpose.

ENERGY.GOV

SCIENCE & INNOVATION ENERGY ECONOMY SECURITY & SAFETY SAVE ENERGY, SAVE MONEY

Department of Energy

DOE Releases First-Ever Roadmap to Accelerate Connecting More Clean Energy Projects to the Nation's Electric Grid

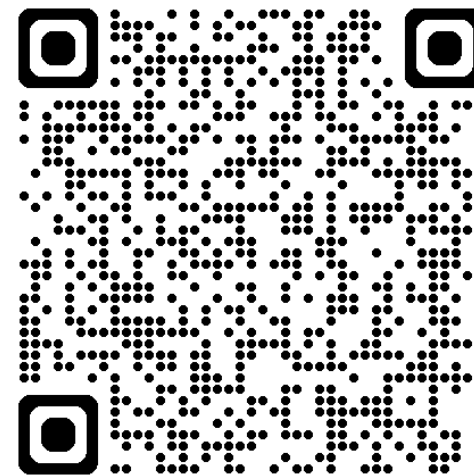
APRIL 17, 2024

[Energy.gov »](#)

DOE Releases First-Ever Roadmap to Accelerate Connecting More Clean Energy Projects to the Nation's Electric Grid

Report Details Recommendations to Streamline Interconnection with Near- to Long-Term Solutions to Add Clean Energy Resources to the Transmission Grid and Boost Our Clean Energy Economy

WASHINGTON, D.C. — The U.S. Department of Energy (DOE) released a [new roadmap](#) outlining solutions to speed up the interconnection of clean energy onto the nation's transmission grid and clear the existing backlog of solar, wind, and battery projects seeking to be built. The Transmission Interconnection Roadmap, developed by DOE's Interconnection Innovation e-Xchange (i2X), serves as a guide for transmission providers, interconnection customers, state agencies, federal regulators, transmission owners, load serving entities (LSEs), equipment manufacturers, consumer advocates, equity and energy justice communities, advocacy groups, consultants, and the research



“There is unlikely to be any document for years to come reflecting such a comprehensive set of [interconnection] solutions”

- Tyler Norris

Final Roadmap is available now. See <https://www.energy.gov/eere/i2x> for more information.

In total, there are 35 solutions identified in the roadmap

Process Solutions

Queue Management

2.3 Automate parts of the *interconnection* process, such as data input and validation, and data sharing across processes and models.

2.5 Create new and expand *fast-track options* for interconnection (e.g. surplus, generator replacement, energy-only)

2.6 Consider *market-based approaches* to rationing interconnection access

Affected System Studies

2.7 Increase *voluntary collaboration on affected system studies*

Workforce Development

2.11 Assess scale of *interconnection workforce growth requirements*

Economic Efficiency Solutions

Cost Allocation

3.2 Ensure that generators have option to be *re-dispatched rather than paying for network* upgrades (energy-only projects)

Planning Coordination

3.4 More closely *align interconnection and transmission planning* processes

Interconnection Studies

3.6 Continue to develop *new best practice study methods*, and harmonize methods to adapt to a changing generation mix

3.7 Explore options for generator self-funding of their *own interconnection studies*

Reliability Solutions

Models and Tools

4.1 Require submission of *verified EMT models* for all IBRs, and develop *screening criteria* to determine when EMT studies are necessary within a region

4.4 Advance *computational speed* of interconnection reliability assessments

Interconnection Standards

4.5 Adopt comprehensive set of generation interconnection requirements consistent with *IEEE Standard 2800-2022*

4.8 Evaluate *cybersecurity concerns* during the interconnection process

Contact:

Will Gorman (wgorman@lbl.gov)

More Information:

- Visit <https://emp.lbl.gov/queues> to download the data used for this analysis and access an interactive data visualization tool
- Visit https://emp.lbl.gov/interconnection_costs for related research on interconnection costs

Acknowledgements:

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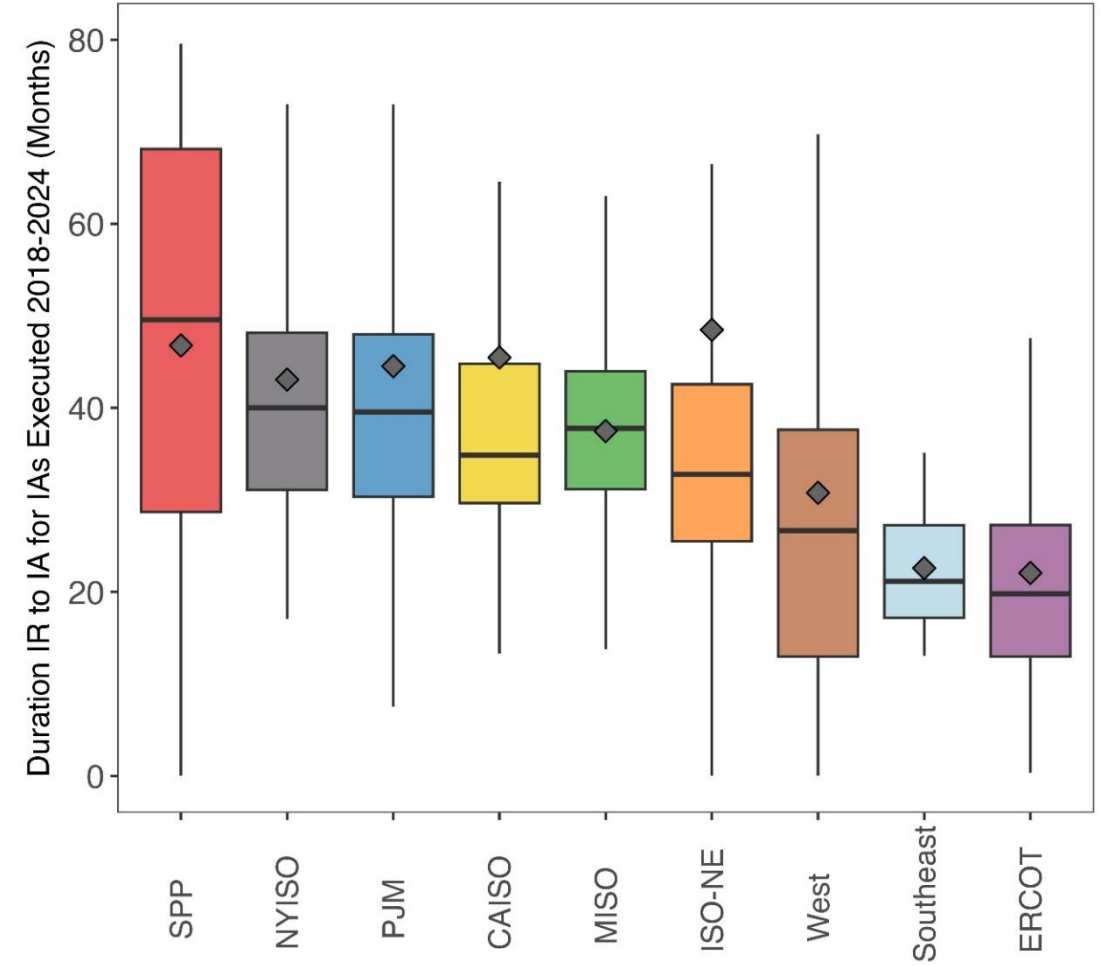
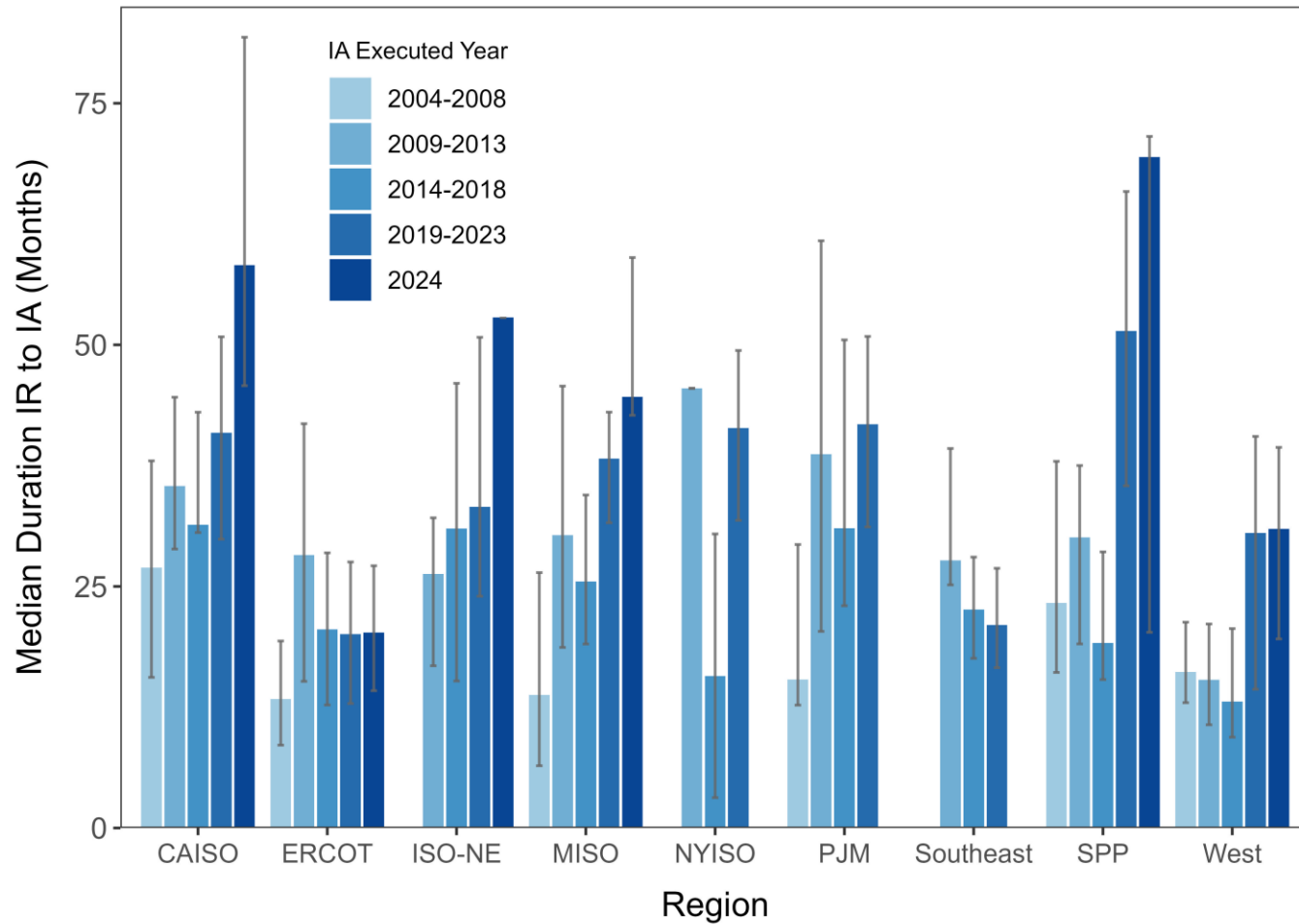
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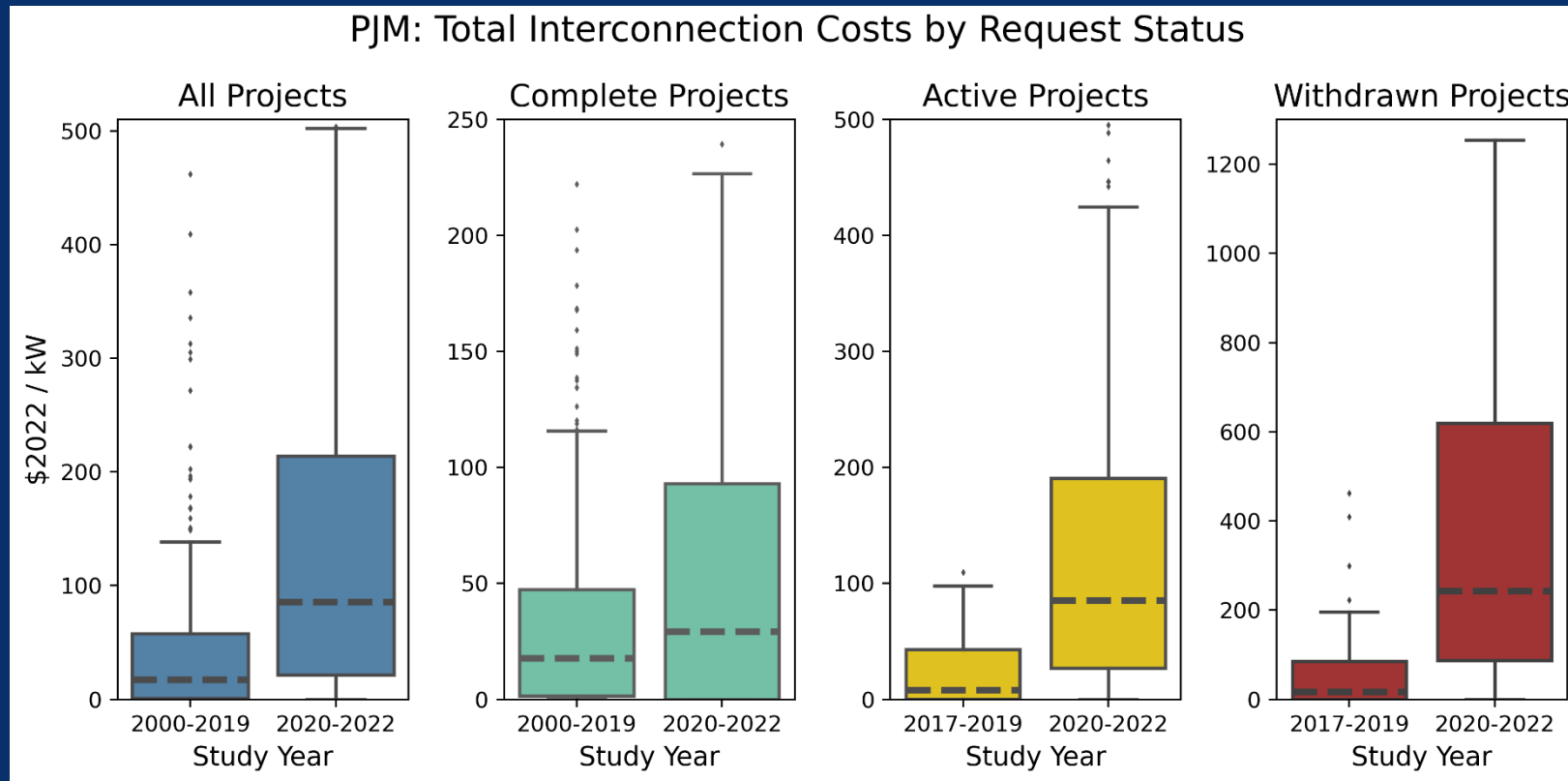
Appendix

IR to IA duration is typically longer in FERC-jurisdictional ISOs. Texas and the non-ISO regions (Southeast and West) have faster processing times



Notes: (1) Sample includes 4,393 projects from 7 ISO/RTOs and 5 non-ISO balancing areas with executed interconnection agreements since 2005. (2) The majority of the 2024 data this analysis are from ERCOT (57%). (3) Not all data used in this analysis are publicly available. (4) Date of IA execution for projects with IA agreement completed in 2023-2024 was not accessible in database format from PJM.

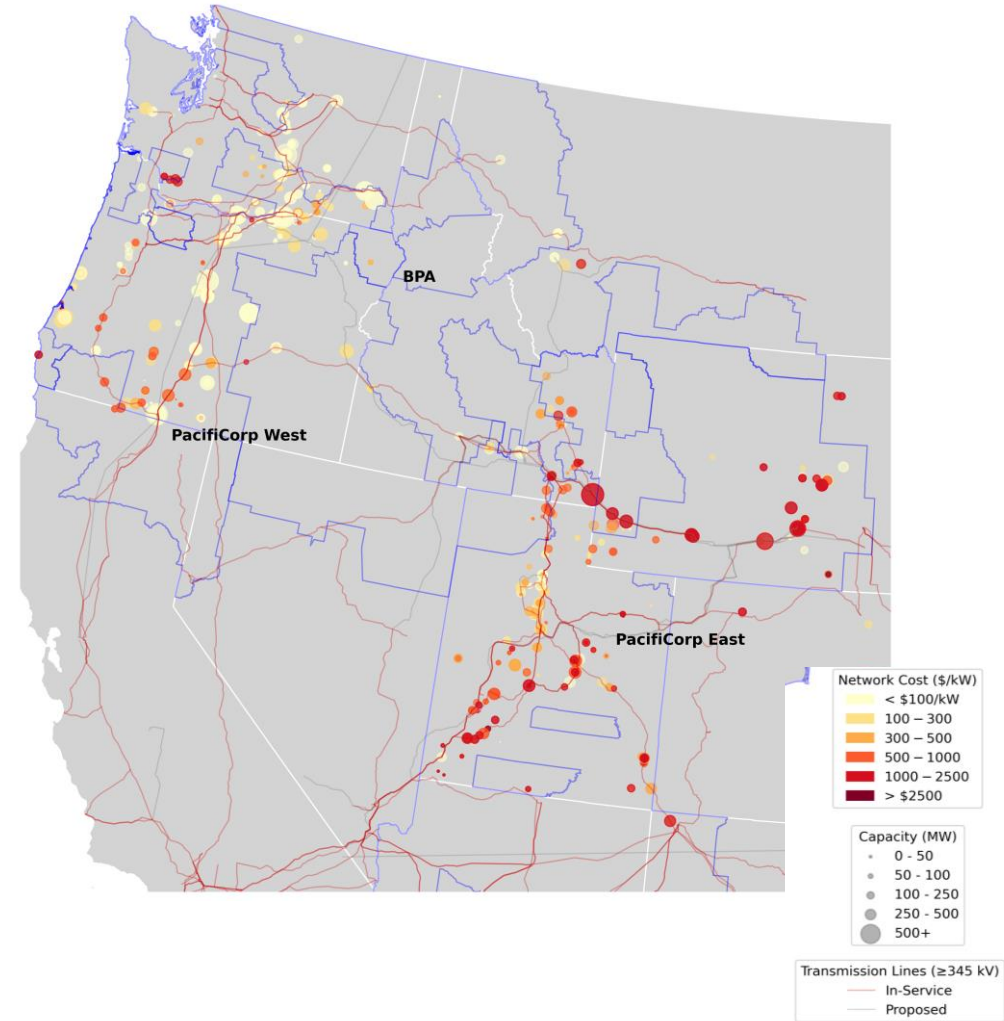
Evidence of a Problem #3: Increasing cost to connect



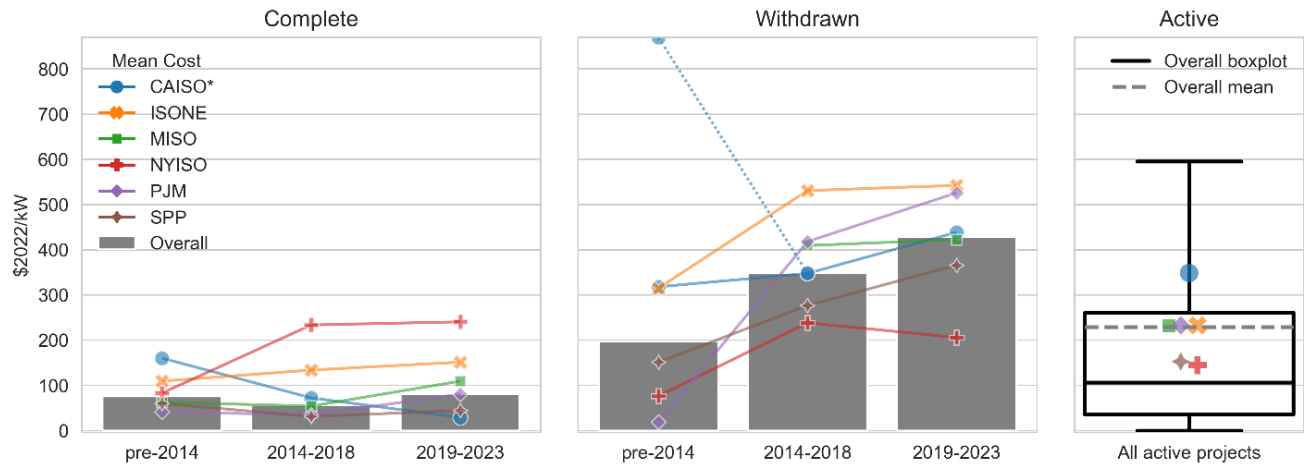
ISO-specific briefings and underlying project cost data available at https://emp.lbl.gov/interconnection_costs

Interconnection costs have increased since the early 2000s and are higher for projects that ultimately withdraw

- The maps show network upgrade costs. The location of recent interconnection requests are based on estimated POI coordinates. We distinguish projects by capacity (circle size) and network upgrade interconnection costs (color).
- Projects with high interconnection costs tend to be located along the same transmission lines, especially in southern Utah and Wyoming.



Increasing Interconnection Costs



Many factors likely contributed to the reduction in new requests and cumulative active queue capacity in 2024

Federal Reform: FERC Order 2023

- ▣ Many balancing areas transitioning to cluster studies
- ▣ Requires higher at-risk deposits from developers
- ▣ Requires 90% site control to submit request; 100% site control at facility study phase

ISO Reforms and Delays

- ▣ **CAISO:** Interconnection Process Enhancement
- ▣ **PJM:** Transition cycle process
- ▣ **SPP:** Postponed request window closing

Higher Withdrawal Rates

- ▣ In addition to reduced new requests, several regions experienced significant withdrawal rates in 2024, likely due to reforms (see left) as well as policy and market drivers.

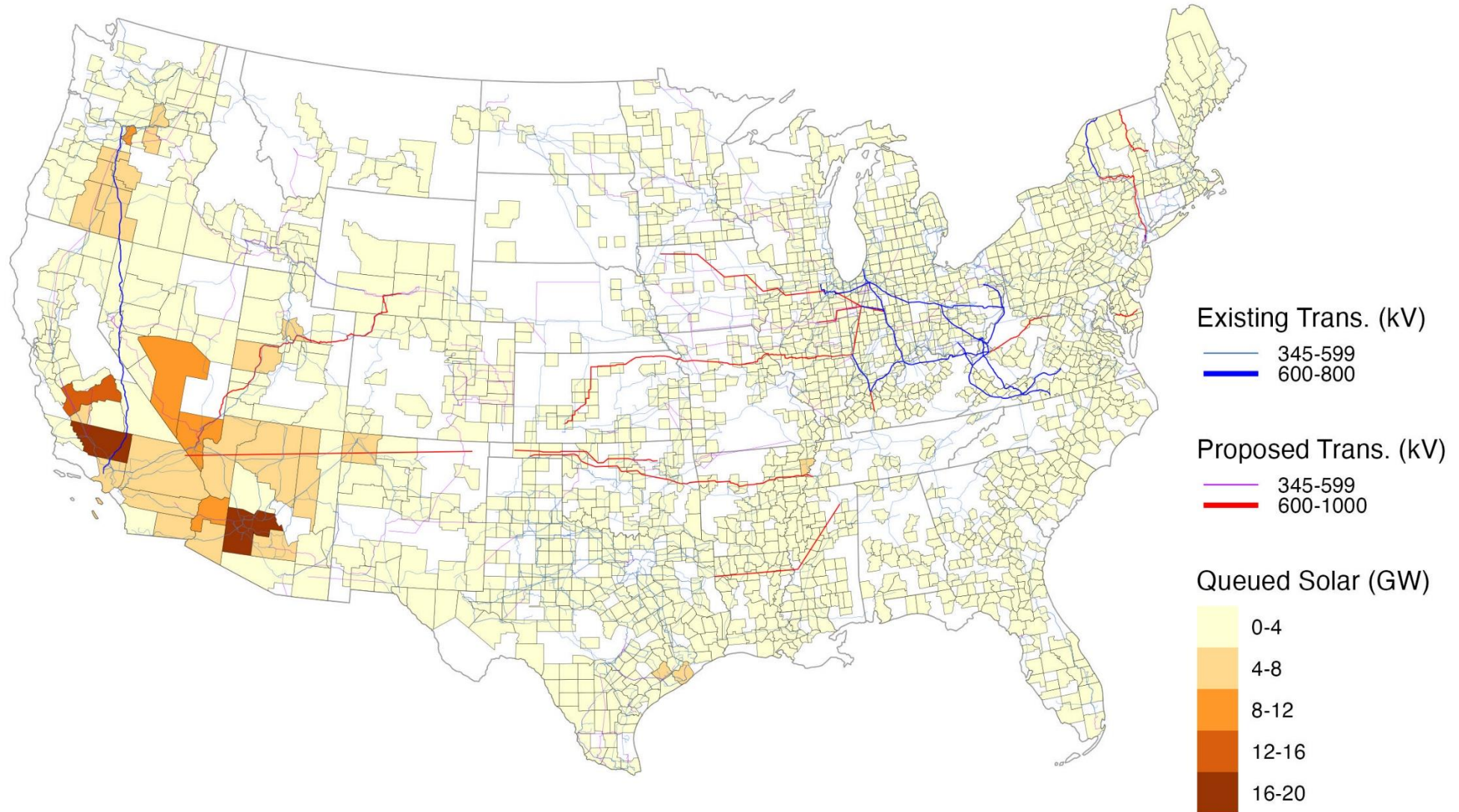
High Interconnection Upgrade Costs

- ▣ Limited available transmission capacity has resulted in high network upgrade costs for new requests, which contributes to high withdrawals and may deter developers from submitting new requests
- ▣ See LBNL's related research on interconnection costs:
https://emp.lbl.gov/interconnection_costs

Balancing areas included in data:

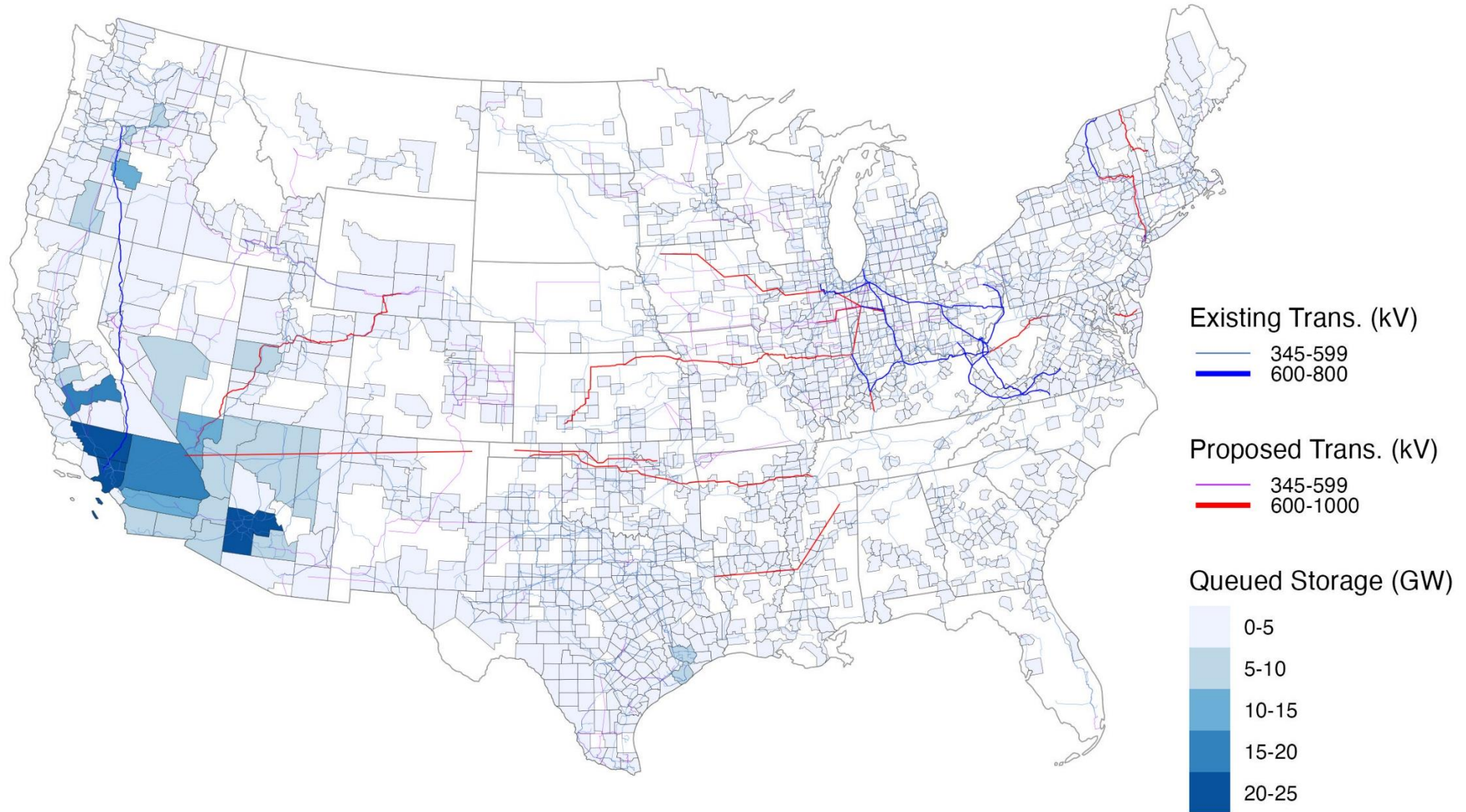
ISO/RTOs	Southeast (non-ISO)	
CAISO	Associated Electric Coop.	Jacksonville Electric Authority
ERCOT	Dominion	LG&E & KU Energy
ISO-NE	Duke Carolinas	Orlando Utilities Commission
MISO	Duke Florida	Santee Cooper
NYISO	Duke Progress	Seminole Electric Coop.
PJM	Duke/Progress	Southern Company
SPP	Florida Power & Light	Tampa Electric Co.
	Georgia Transmission Corp.	Tennessee Valley Authority
West (non-ISO)		
Arizona Public Service	Idaho Power	Portland General Electric
Avista	Imperial Irrigation District	Public Service Co. of CO / Public Service Co. of NM
Black Hills / Black Hills Colorado	L.A. Dept. Water & Power	Puget Sound Energy
Bonneville Power Admin.	Minnkota Power Cooperative	Sacramento Municipal Utility District
Chelan PUD	Navajo-Crystal	Salt River Projects (5 entities)
Cheyenne Light Fuel & Power	NorthWestern	Tacoma Public Utilities
Colorado Springs Utilities	NV Energy	Tri-State G&T
El Paso Electric	PacifiCorp	Tucson Electric Power
Grant PUD	Platte River Power Authority	WAPA (5 entities)

Active solar capacity in queues at the end of 2024, by county



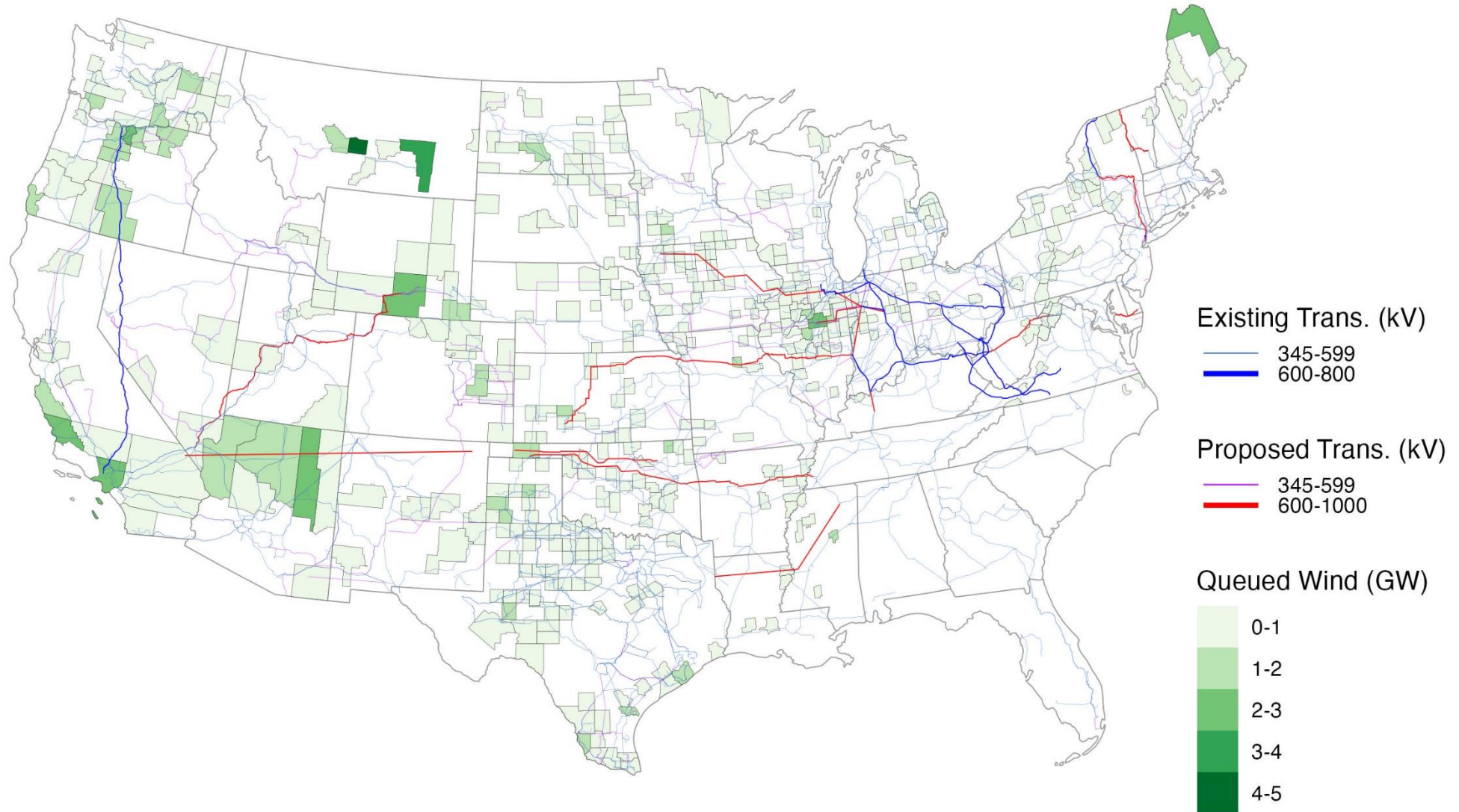
Notes: (1) Includes “active” interconnection requests only. (2) County was missing or could not be determined for 0.7% of active solar requests. (3) Transmission line data from Hitachi Velocity Suite. (4) See <https://emp.lbl.gov/queues> to access an interactive data visualization of these maps

Active storage capacity in queues at the end of 2024, by county



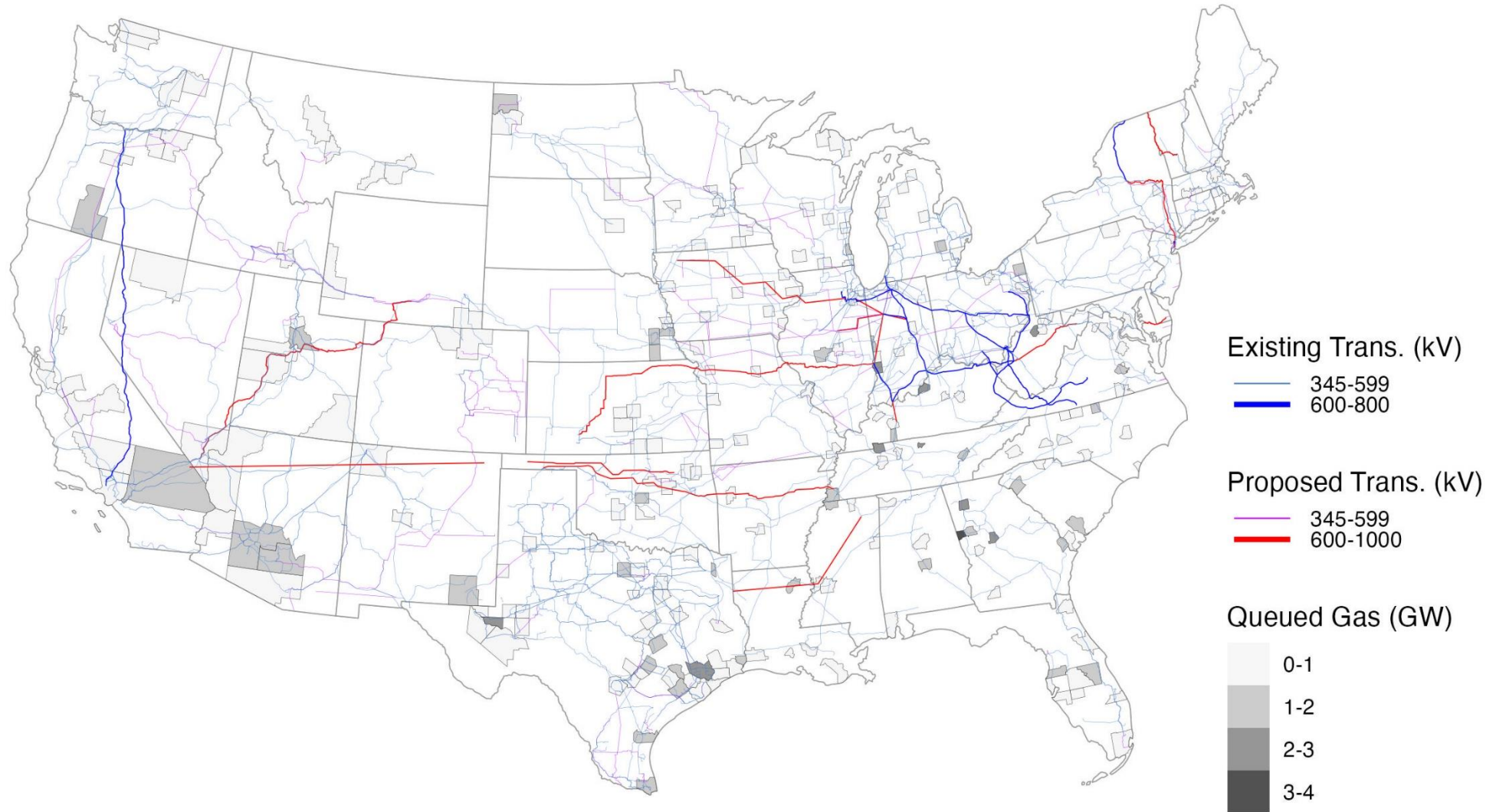
Notes: (1) Includes “active” interconnection requests only. (2) County was missing or could not be determined for 0.3% of active storage requests. (3) Transmission line data from Hitachi Velocity Suite. (4) See <https://emp.lbl.gov/queues> to access an interactive data visualization of these maps

Active wind capacity in queues at the end of 2024, by county



Notes: (1) Includes “active” interconnection requests only. (2) County was missing or could not be determined for 7.6% of wind requests. (3) Transmission line data from Hitachi Velocity Suite. (4) See <https://emp.lbl.gov/queues> to access an interactive data visualization of these maps

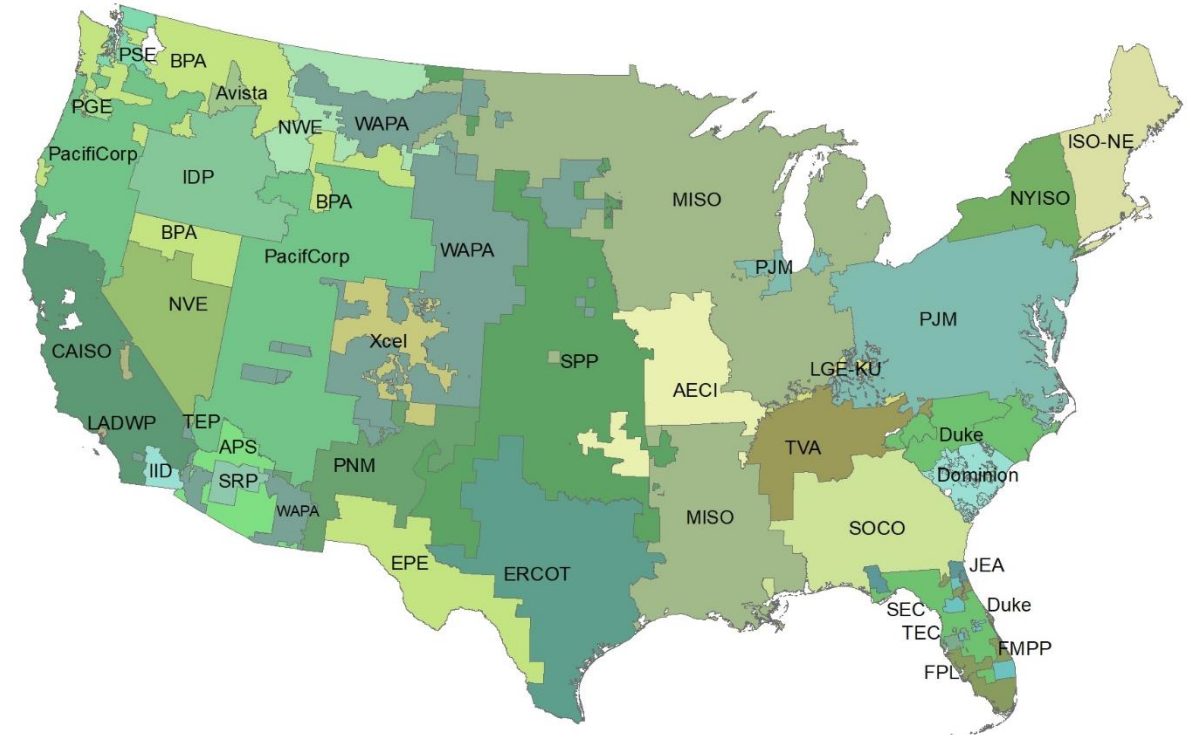
Active gas capacity in queues at the end of 2024, by county



Notes: (1) Includes “active” interconnection requests only. (2) County was missing or could not be determined for 1.1% of active gas requests. (3) Transmission line data from Hitachi Velocity Suite. (4) See <https://emp.lbl.gov/queues> to access an interactive data visualization of these maps

Data Sources

- Data collection led by [Interconnection.fyi](https://interconnection.fyi)
- Data collected from interconnection queues for 7 ISOs / RTOs and 49 non-ISO balancing areas (including utilities and Power Marketing Administrations), which collectively represent ~97% of currently installed U.S. electric generating capacity
 - Includes projects that connect to the bulk-power system, not distribution-connected or behind-the-meter¹
 - Includes projects in queues through the end of 2024
- Substantial data cleaning, standardization, and QA/QC conducted by LBNL and Interconnection.fyi teams
- The full sample² includes:
 - 4,432 “operational” projects (~511.8 GW)
 - 10,303 “active”³ projects (~2,290 GW)
 - 546 “suspended”⁴ projects (~113.6 GW)
 - 20,921 “withdrawn” projects (~3,924 GW)



Coverage area of entities for which data was collected
Data source: Homeland Infrastructure Foundation-Level Data (HIFLD)
Note that service areas can overlap
No data collected for Hawaii or Alaska

A full list of included balancing areas can be found in the appendix

Notes: (1) There are different processes for transmission- and distribution-system interconnection. This report only covers transmission interconnection. (2) The full ‘Queued Up’ data sample can vary somewhat year-over-year – particularly as missing records or data fields are filled in over time. (3) “Active” requests include those that are actively requesting or undergoing grid interconnection studies, as well as those that have already executed interconnection agreements but have not yet reached commercial operations. (4) The implication of “suspended” differs by balancing area but generally means the request is on hold; see slide 24 notes for detail.

FERC Order 2023¹ overhauled the interconnection process, and many RTOs are proposing or implementing major interconnection process updates and reforms²

Interconnection Reforms in FERC Order 2023

- **Cluster studies; first ready, first served**; higher **deposits & readiness** criteria for developers
- **Timeline, process, and reporting** requirements for transmission providers; **Financial penalties** for delays
- Visual representation (**heatmaps**) of **available transmission capacity**
- Improved and standardized process for **affected system studies**
- Improved procedures and **flexibility for storage and hybrid resources**
- Consideration of **alternative transmission technologies (GETs)**
- Compliance filing deadline: **May 2024**

Major ISO/RTO Reforms & Updates

CAISO

- Interconnection Process Enhancements (IPE) (*approved by FERC Oct. 2024*).
- Prioritizes requests where transmission system has available existing or planned capacity and limit requests in a study area based on planned transmission capacity.
- Delayed Cluster 16 request application window from April 2024 (new date TBD) due to queue volume and reforms (thus, no new requests in 2024).

PJM

- Implemented transition from serial first-come, first-served queue process to a first-ready, first-served clustered cycle approach, grouping projects into three-phase cluster cycles for studying and allocating interconnection costs (*approved by FERC Nov. 2022*).
- New requests received in 2024 were not immediately available for study as they were still processing the backlog through the transition process.
- New one-time only fast-track process for high resource adequacy projects (*approved by FERC Feb. 2025*).

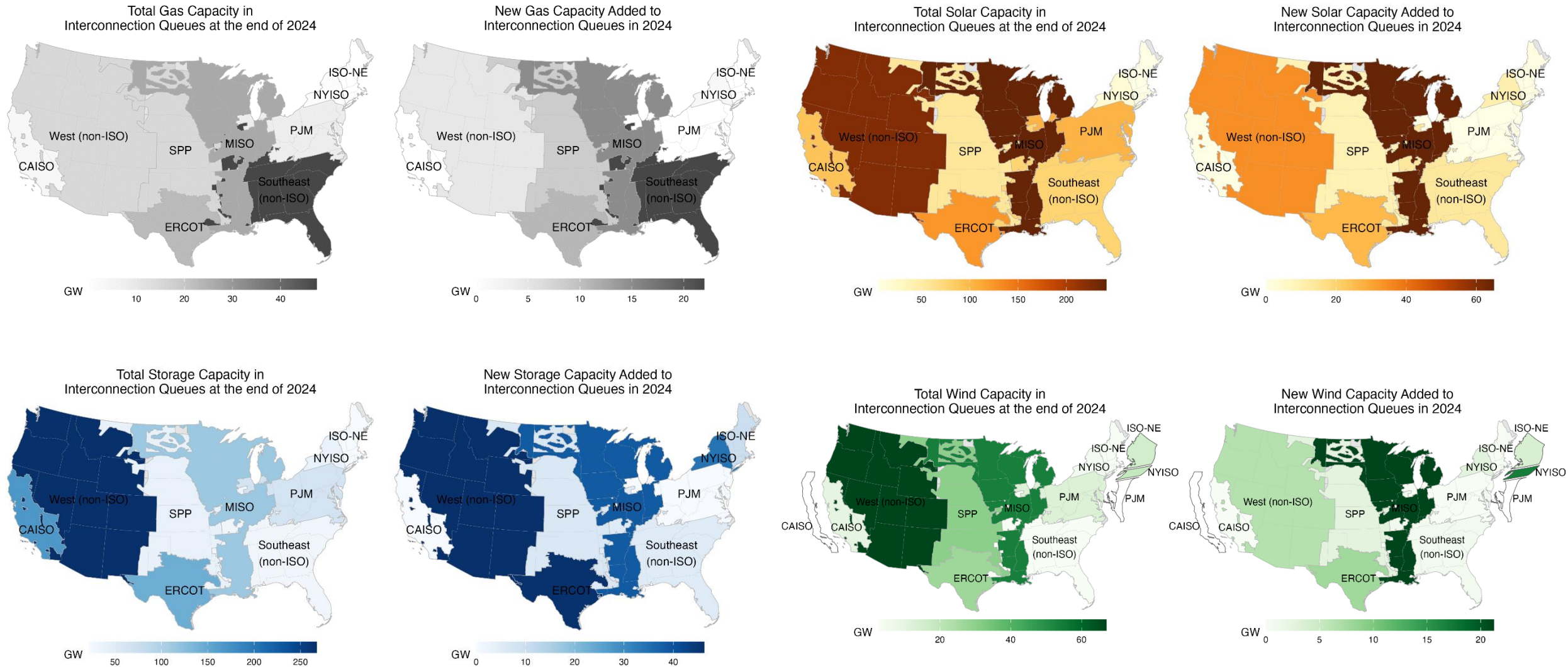
MISO

- Increased milestone payments, adopted an automatic withdrawal penalty, and expanded site control requirements for interconnection facilities (*approved by FERC Jan. 2024*).
- Proposal to cap total queue size was approved by FERC (*January 2025*).

SPP

- Filed a waiver to postpone closing of 2024 queue request window until March 2025, and defer opening the 2025 request window until April 2026 (*approved by FERC Oct. 2024*).

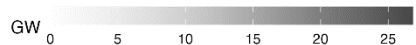
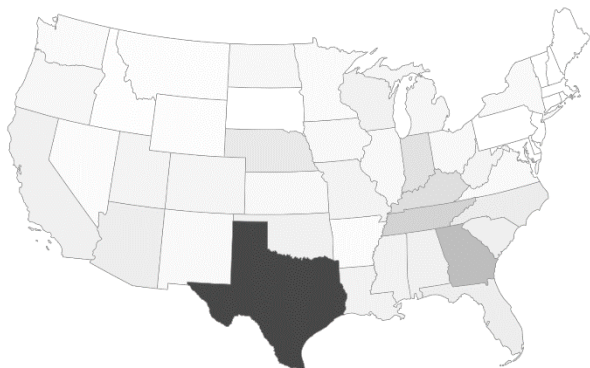
Active gas requests are primarily in the Southeast; solar is widespread, with less in SPP and Northeast; storage requests highest in the West but growing in ERCOT and MISO; most wind in the West and MISO



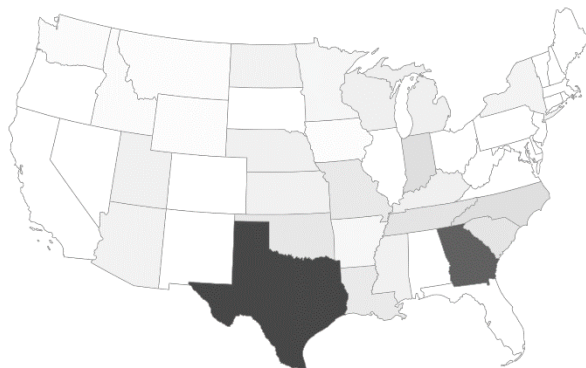
Note: Proposed and ongoing reforms in CAISO, SPP, and PJM resulted in few (or no) new requests in those regions in 2024 (see slide 8)

Texas is a very strong market across all resources. Gas requests are primarily in Texas and the Southeast. Solar requests exist in every state, but most capacity in the Southwest.

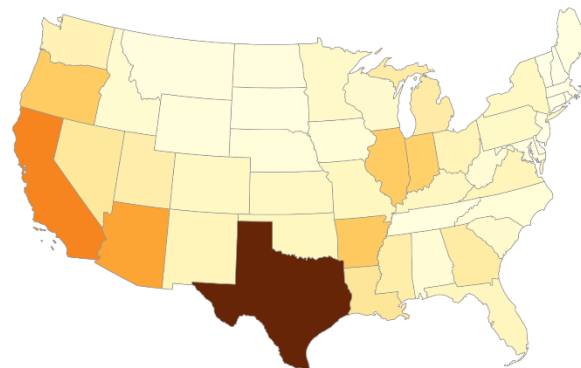
Total Gas Capacity in Interconnection Queues at the end of 2024



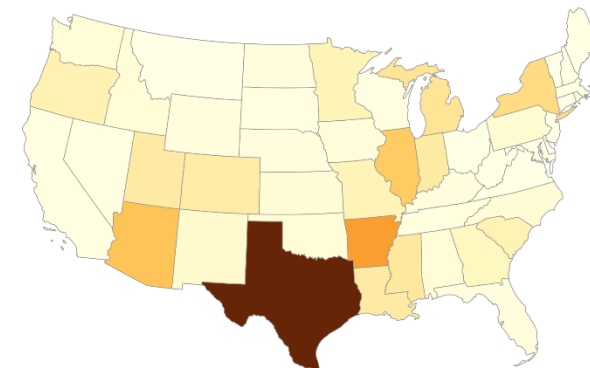
New Gas Capacity Added to Interconnection Queues in 2024



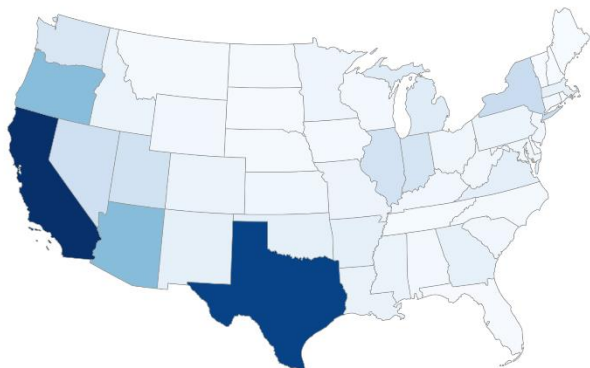
Total Solar Capacity in Interconnection Queues at the end of 2024



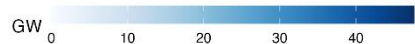
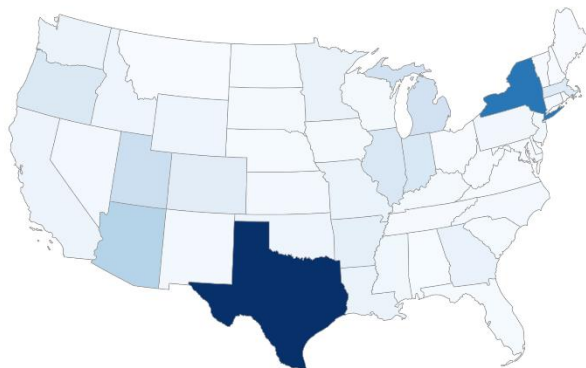
New Solar Capacity Added to Interconnection Queues in 2024



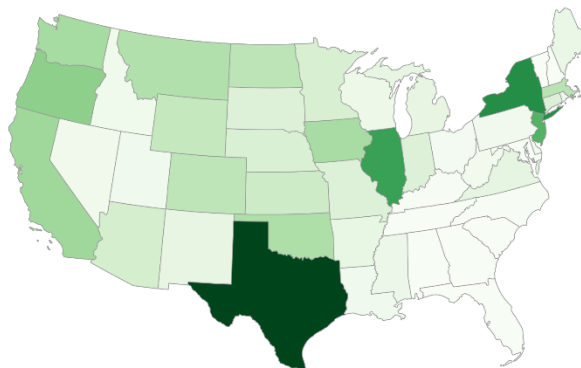
Total Storage Capacity in Interconnection Queues at the end of 2024



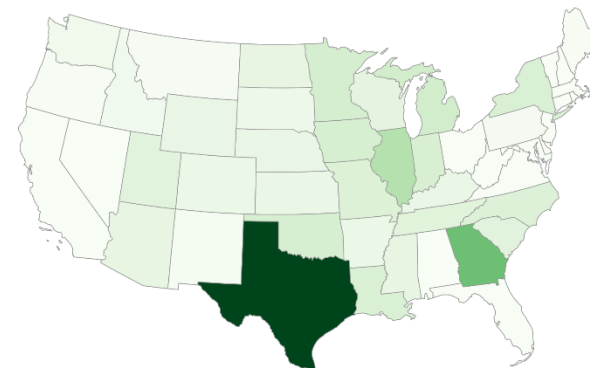
New Storage Capacity Added to Interconnection Queues in 2024

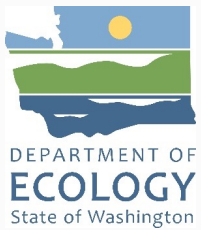


Total Wind Capacity in Interconnection Queues at the end of 2024



New Wind Capacity Added to Interconnection Queues in 2024





Interagency Clean Energy Siting Coordinating Council

NASEO State Energy-Based Economic Development Working Group

May 20, 2025

HB 1216 (2023)

- Interagency Clean Energy Siting Coordinating Council
- [Rural clean energy economics and community engagement study](#) (Commerce)
- [Evaluation of state agency siting and permitting processes for clean energy projects](#) (Commerce)
- Update of the statewide predictive archaeological model (DAHP)
- Study on options to [consolidate clean energy applications and permits](#) (Ecology)
- [New optional clean energy coordinated permitting process](#) (Ecology)
- [Programmatic environmental impact statements for onshore wind, solar, green hydrogen](#) (Ecology)
- Process for designating clean energy projects of statewide significance (Commerce)

Interagency Clean Energy Siting Coordinating Council Members



- Ecology (Co-lead)
- Commerce (Co-lead)
- Energy Facility Siting Evaluation Council (EFSEC)
- Environmental Justice Council Staff
- Governor's Office (GOV)
- Governor's Office for Regulatory Innovation & Assistance (ORIA)
- Governor's Office of Indian Affairs (GOIA)
- Washington Department of Agriculture (WSDA)
- Washington Department of Archaeology and Historic Preservation (DAHP)
- Washington Department of Fish & Wildlife (WDFW)
- Washington Department of Natural Resources (DNR)
- Washington State Department of Transportation (WSDOT)
- Washington Utilities and Transportation Commission (UTC)

Council Purpose and Objectives

- The Council DOES
 - Coordinate between agencies for consistency and effectiveness
 - Identify actions to improve clean energy siting and permitting
 - Provide annual updates and recommendations on clean energy efforts to the Governor and legislature
 - Advise and support agency work
- The Council does NOT
 - Make decisions on projects, siting, funding, individual agency actions, or statewide policy

Council Meetings

- Monthly virtual meetings
- One or two in-person workshops each year
- Agendas and notes are posted on the [Council's website](#)
- Topics vary based on current agency work and trends

Example meeting topics:

- Transmission capacity and permitting
- Battery energy storage systems overview, trends, and safety
- Council workplan and engagement planning
- Agency roundtable updates

Annual Legislative Report (October)

- Report to the Governor and Legislature includes:
 - Updates on work to advance the development of clean energy at the federal, state, and local level
 - Areas where additional work is needed
 - Recommendations for improving the efficiency and effectiveness of clean energy and transmission siting and permitting

2025 Siting Council Recommendations

- **Address transmission capacity limitations**
 - Establish a state entity to develop and finance transmission projects
 - Develop transmission siting and permitting tools
 - Improve the capacity and efficiency of existing transmission infrastructure
- **Support clean energy development**
 - Support clean energy development that does not require transmission connections
 - Incentivize existing energy infrastructure upgrades
 - Promote Tribal clean energy projects
- **Improve permitting through meaningful engagement and planning**
 - Provide long-term funding for Tribal project review
 - Engage with Tribes on categorical exemptions under the State Environmental Policy Act
 - Support local governments in clean energy planning
 - Assess lands available for energy development
- **Support community engagement**
 - Develop community engagement tools
- **Address emerging technologies**
 - Support local government response to emerging technologies
 - Identify and resolve obstacles to developing geothermal energy resources

Council Website

- Background
- Engagement opportunities
- Meeting agendas and notes



The screenshot shows the Department of Ecology website. The header includes the Department of Ecology logo and navigation links for Regulations & Permits, Research & Data, Blog, and Contact Us. A secondary navigation bar lists Home, Air & Climate, Water & Shorelines, Waste & Toxics, and Spills & Cleanup. The main content area is titled 'Regulations & Permits > Environmental review > Clean energy > Council'. A left sidebar under 'Environmental review' lists 'Clean energy', 'Programmatic EIS', 'Clean Energy Coordinated Permit Process', and 'Council' (which is selected). The main content features the heading 'Clean Energy Siting Council' followed by a paragraph: 'In partnership with the state Department of Commerce, we are leading a group of state agencies to identify actions to improve siting and permitting of clean energy projects in Washington.' Below this is another paragraph: 'The council meets monthly to identify policy-level issues, coordinate among agencies, and discuss options for improving permitting processes. The council does not make decisions on specific projects. Instead, it is a coordination council and develops annual legislative reports with recommendations. Agendas and meeting notes are posted regularly on this page.' A section titled 'Council objectives' follows, with the text: 'The council tracks the progress of efforts to improve siting clean energy projects, and supports planning for clean energy and interagency coordination. The council also develops annual legislative reports with recommendations to the state Legislature.'

<https://ecology.wa.gov/regulations-permits/sepa/clean-energy/council>



Thank you

Dan Siemann

daniel.siemann@commerce.wa.gov