

Bridging the Transmission Gap

The State of Interregional Transmission in the United States



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WRI is a global research organization working to improve people's lives, protect nature and halt climate change.

There are significant challenges facing today's power system



Growing electricity demand:

Rising for the first time in decades, driven by data centers, industrial electrification, EVs



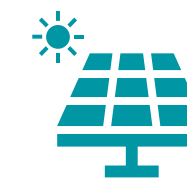
Rising costs:

Prices outpacing inflation, driven by fuel prices, grid upgrades and replacement of aging infrastructure, and extreme weather recovery



Increasing extreme weather:

Storms, heat waves, and cold snaps pushing regional grids to emergency conditions



Changing generation mix:

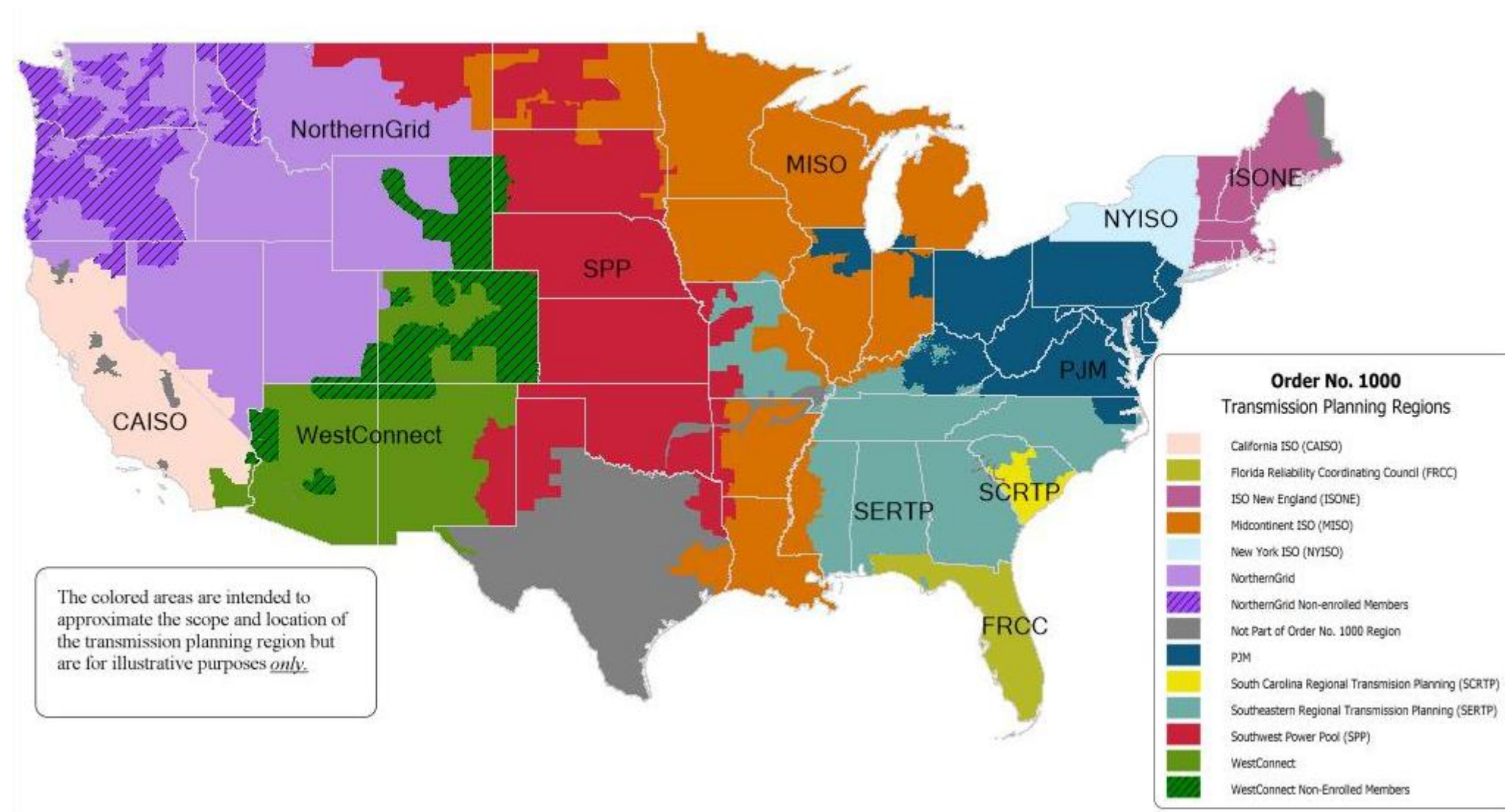
State policies and low costs are driving record wind, solar, and storage, but the best sites are far from demand and stuck in queues



Outdated, congested grid:

Built decades ago for local plants, now a bottleneck to access to cheaper, cleaner power

The U.S. grid addresses these issues through a patchwork of regions, each planning mostly for itself



- **12 individual planning regions:** Each is required by FERC Order 1000 to produce its own regional transmission plan
- **Different governance structures:** Some are run by independent grid operators like PJM and MISO, while others, in the Southeast and much of the West, are groups of utilities
- **Three separate interconnections:** East, West, and Texas operate as nearly independent grids, with very limited ties between them
- **Planning stops at each border:** Each region plans primarily for needs inside its own footprint

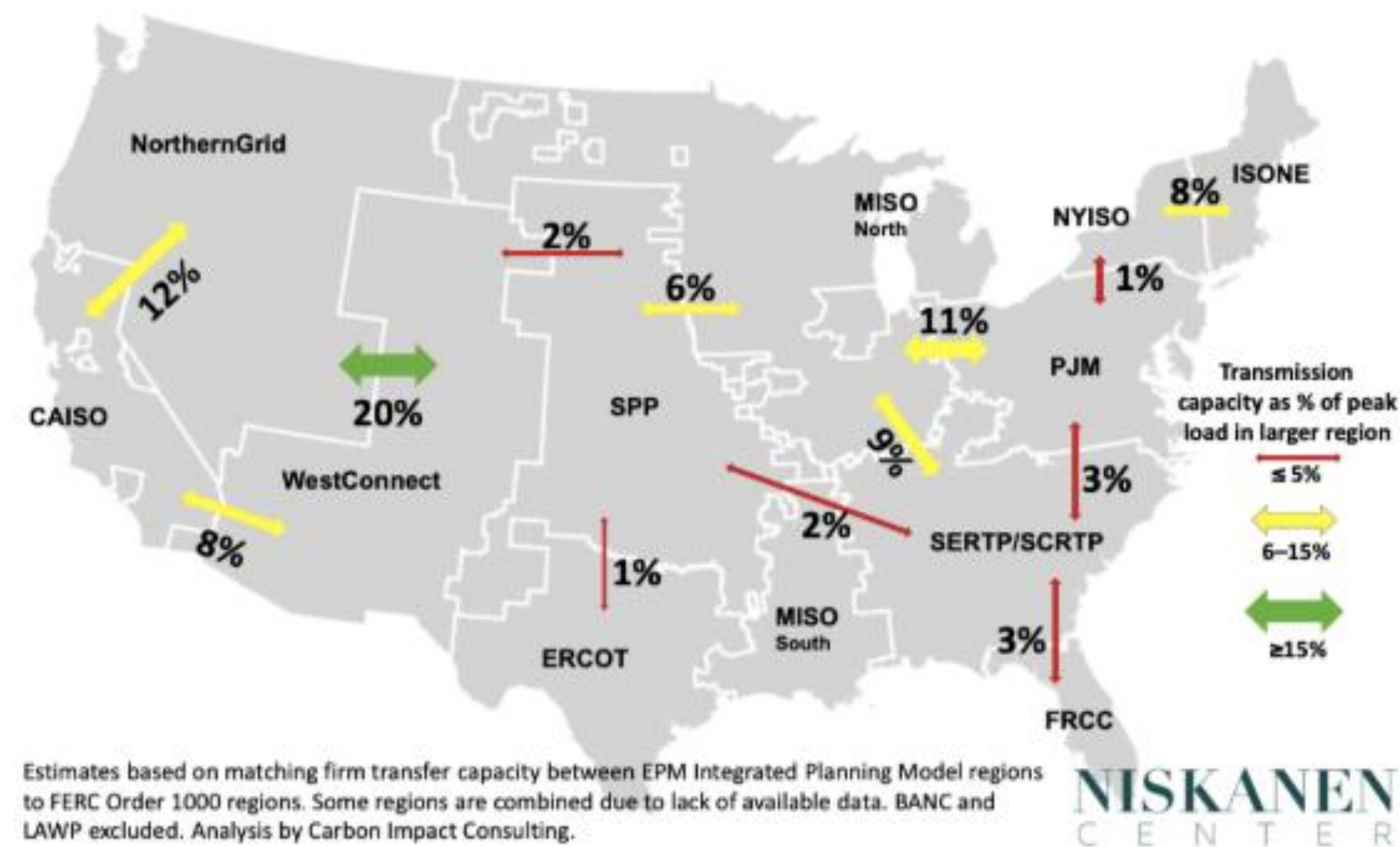
Transmission is planned at three scales, with increasing difficulty and timelines

	Local	Regional	Interregional
Footprint	One utility's service territory	Multiple utilities or states within one planning region	Two or more planning regions
Who plans it	The utility	The regional planner, under FERC rules	Both regions: each must approve the line and agree on a cost split
Benefits counted	Commonly justified by reliability standard, alone	Reliability, cost savings, and public policy; seven benefits required in long-term plans	No common set defined
Typical project	5-10 mile 69kV line between 2 towns	Cardinal-Hickory Creek: a 102-mile line from Iowa to Wisconsin	Grain Belt Express: an 800-mile, 5 GW line from Kansas to Indiana (SPP>MISO>PJM)
Relative difficulty in development	Low	Medium-High	Very High

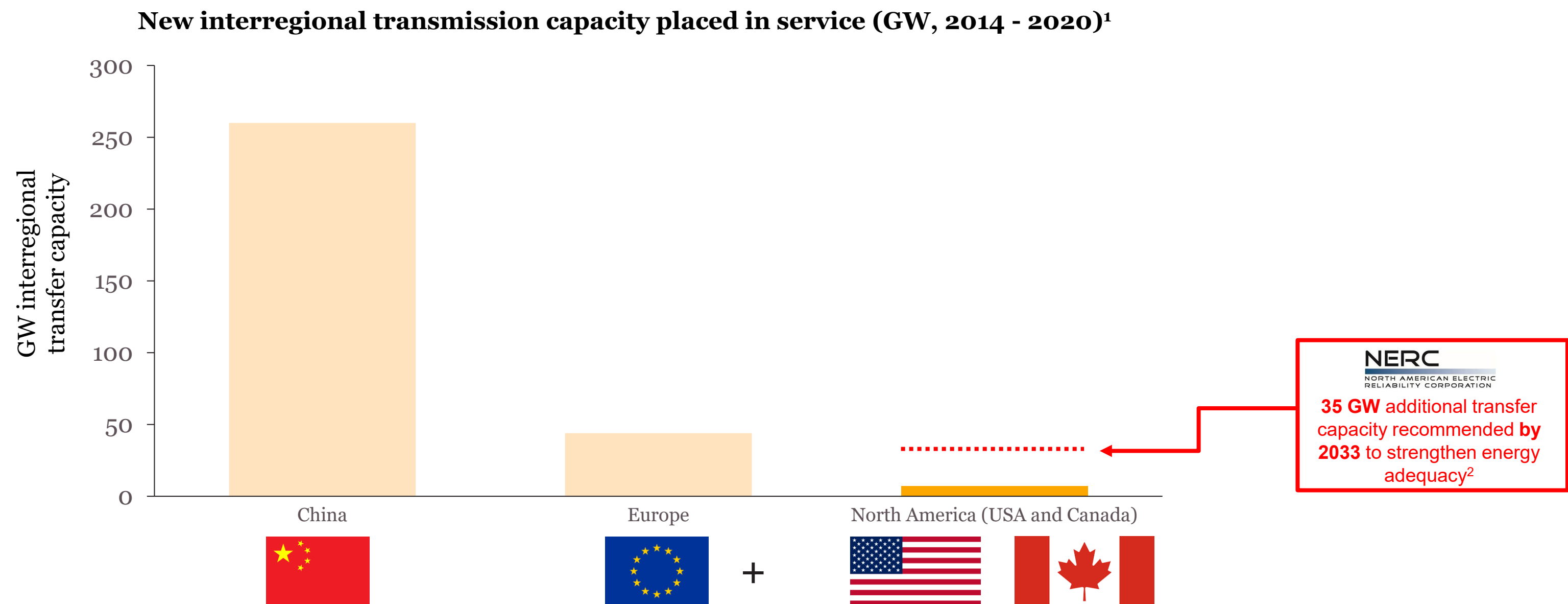
1) Source: R Street Institute, “Need for Speed: An Analysis of Speed to Market and Cost Results of Competitive Transmission: Part 2—Timing” (2) Source: ACEG, “Macro Grids in the Mainstream: An International Survey of Plans and Progress”; Grain Belt Express expected to take ~19 years once complete;

U.S. grid regions are barely connected: most can share under 10% of peak demand with a neighbor

10 of 13 connections are under 10% of peak demand, and two are just 1%



The US is falling behind, with China, Europe building 5-80x more interregional Tx



Regions need far more transfer capacity, but transmission construction remains too low

The need: More capacity between regions

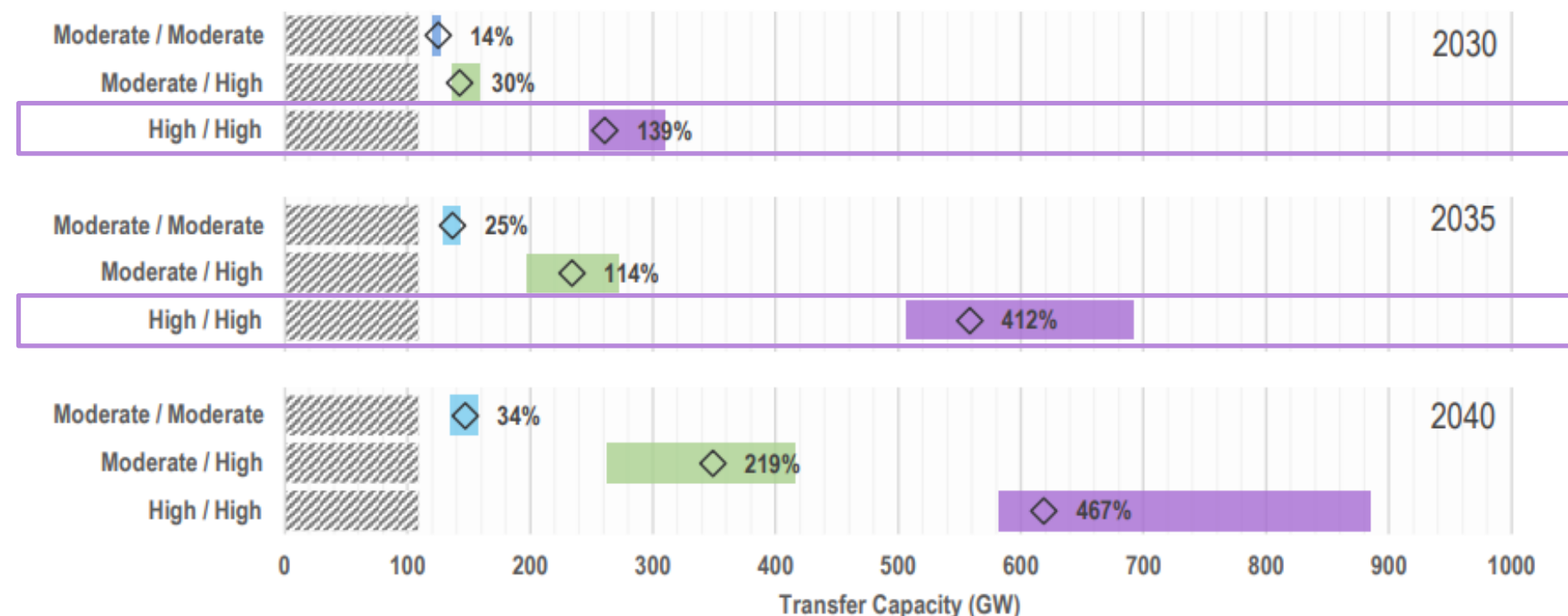
Interregional transfer capacity needs to increase by **2x by 2030, 5x by 2035** to meet high load growth, high renewable demands

Interregional Transfer Capacity needs in 2035 vs 2020¹

Anticipated interregional transfer capacity for contiguous United States

Median % growth compared to 2020 system shown

⌘ Currently Installed ■ Range of anticipated need ◇ Median of anticipated need

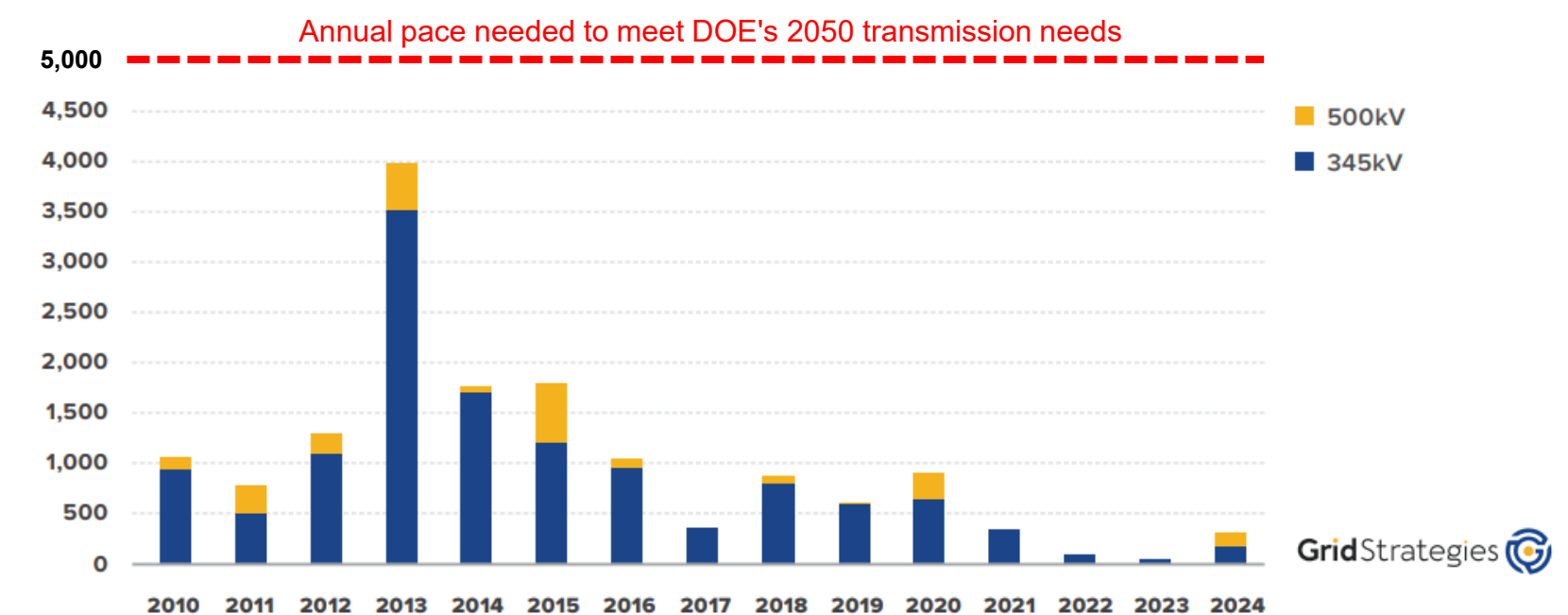


The reality: construction across all transmission has slowed



The U.S. needs roughly **5,000 miles** of new high-capacity transmission per year. In 2024 it built fewer than **900 miles²**

FIGURE 1 | Miles of new 345 kV+ transmission lines built over the last 15 years



Many actors decide pieces of an interregional line with significant, but none is solely responsiblethe whole

Simplified for illustration. Roles can vary by state, region, and project

		PLAN		PAY		PERMIT		BUILD
		Set planning rules	Identify needs, select lines	Set cost-sharing method	Approve rates and cost recovery	Certify needs and routes	Environmental and land permits	Finance and build
Federal Regional State/local	FERC	●		●	●	● *		
	Department of Energy		○			● *		○
	Federal land and resource agencies						●	
	Each regional planner		●	●				
	Each state crossed		○	○	●	●	●	
	Local and tribal governments					●	●	
	Utilities and developers		○		○	○	○	●

● Decides or acts ○ Consulted, proposes, or supports * Authority set in law, not currently in effect (no DOE corridors designated)

Barriers slowing or preventing interregional transmission

Regulatory and permitting	Financial and incentives	Planning and operational
• Every state on the route must approve separately • No NIETCs designated, so FERC cannot override state denials • Federal and state reviews run in sequence, not in parallel • Lawsuits can challenge approved projects for up to six years • Merchant developers face unique obstacles from lack utility status, interconnection processes, and market valuation	• Regions have no agreed method to split costs • Incentive misalignment: utilities earn more on local projects • Right-of-first-refusal rules favor incumbent utilities • Higher risk than local or regional lines; revenue years away	• No entity is responsible for planning between regions • No mandate requires regions to plan jointly • Regions use different data, models, and benefit measures

Despite barriers, connecting regions provides clear benefits to individual ratepayers and the system at large



Cheaper power

Low-cost generation reaches higher-priced regions instead of getting stuck behind bottlenecks



Avoided buildout

Regions back each other up when demand peaks at different times, so each builds less



Higher reliability

Power flows in from unaffected regions during extreme weather, cutting outages



Competitiveness & security

Moving power across regions helps the grid serve new load; provides redundancies and backup power as needed



Emissions reduction

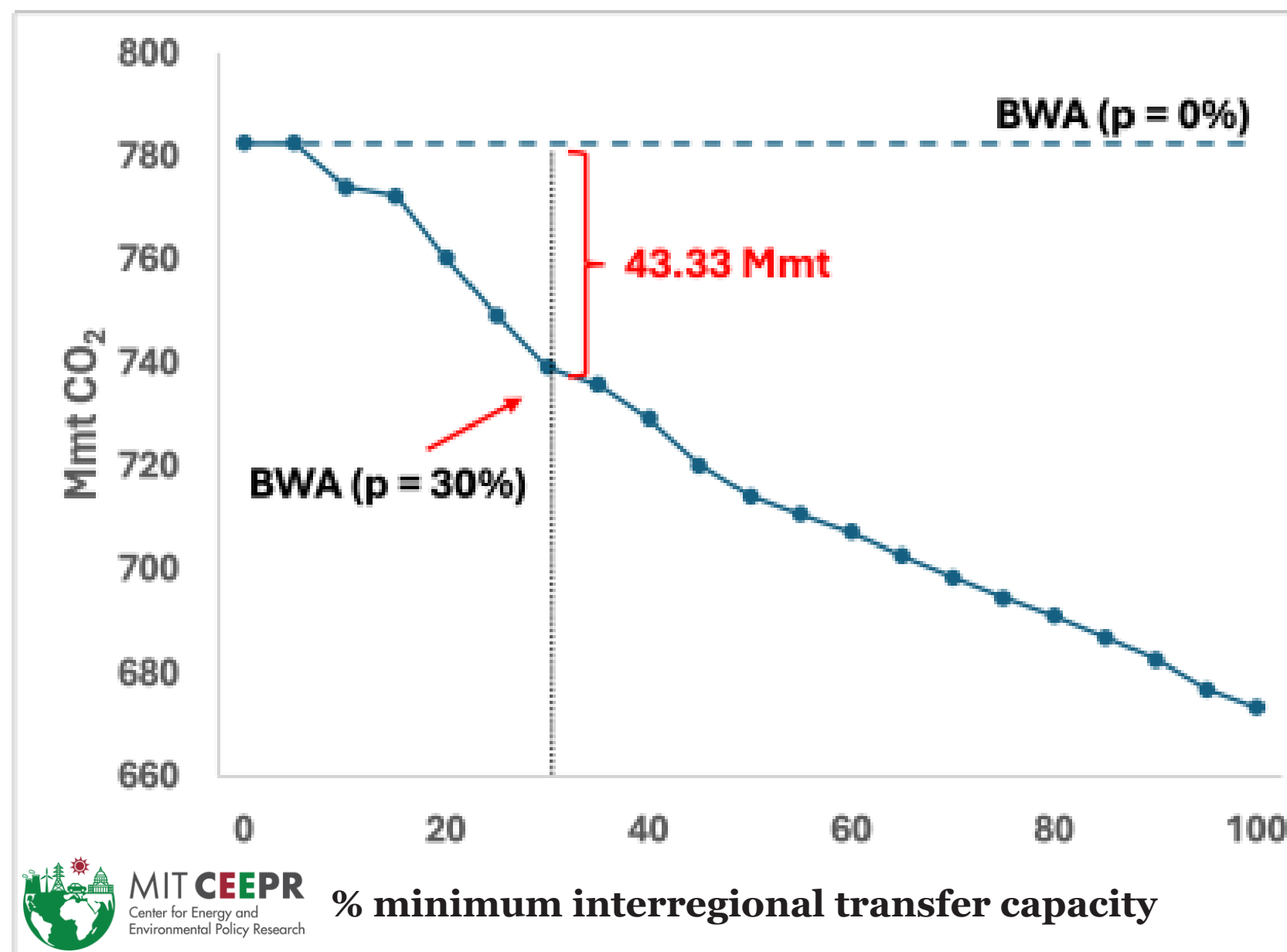
Wider access to cheaper, cleaner generation cuts emissions significantly

To be covered by Rachel

Covered in later slides

Interregional transmission could significantly cut emissions by enabling more clean power

Total Emissions per MITC % under Current Policies



Requiring 30% minimum transfer capacity between regions could decrease emissions by 40+ million tones, **equivalent to 9 million cars per year** by:

- **Linking clean energy** from areas of cheap generation to high-population
- **Balancing weather variations** by sharing regional surplus clean energy
- **Avoiding high-emitting backup power** from gas peaker plants



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Thank You.

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