



# Macro Grid Initiative

An **ACORE** Program

**Barbara Tyrان, Director**

**AQPER Meeting**

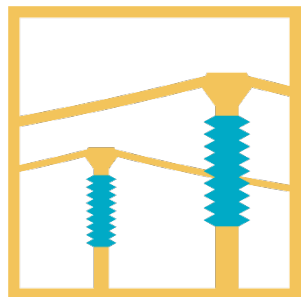
May 25, 2022





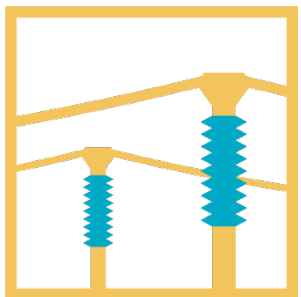
# Macro Grid Vision Statement

*Expanding and upgrading the nation's transmission network will deliver jobs and economic development, a cleaner environment, and lower costs for consumers.*

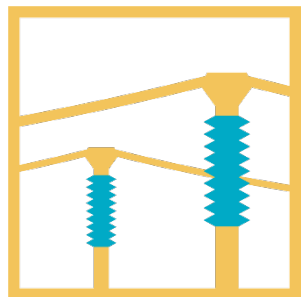
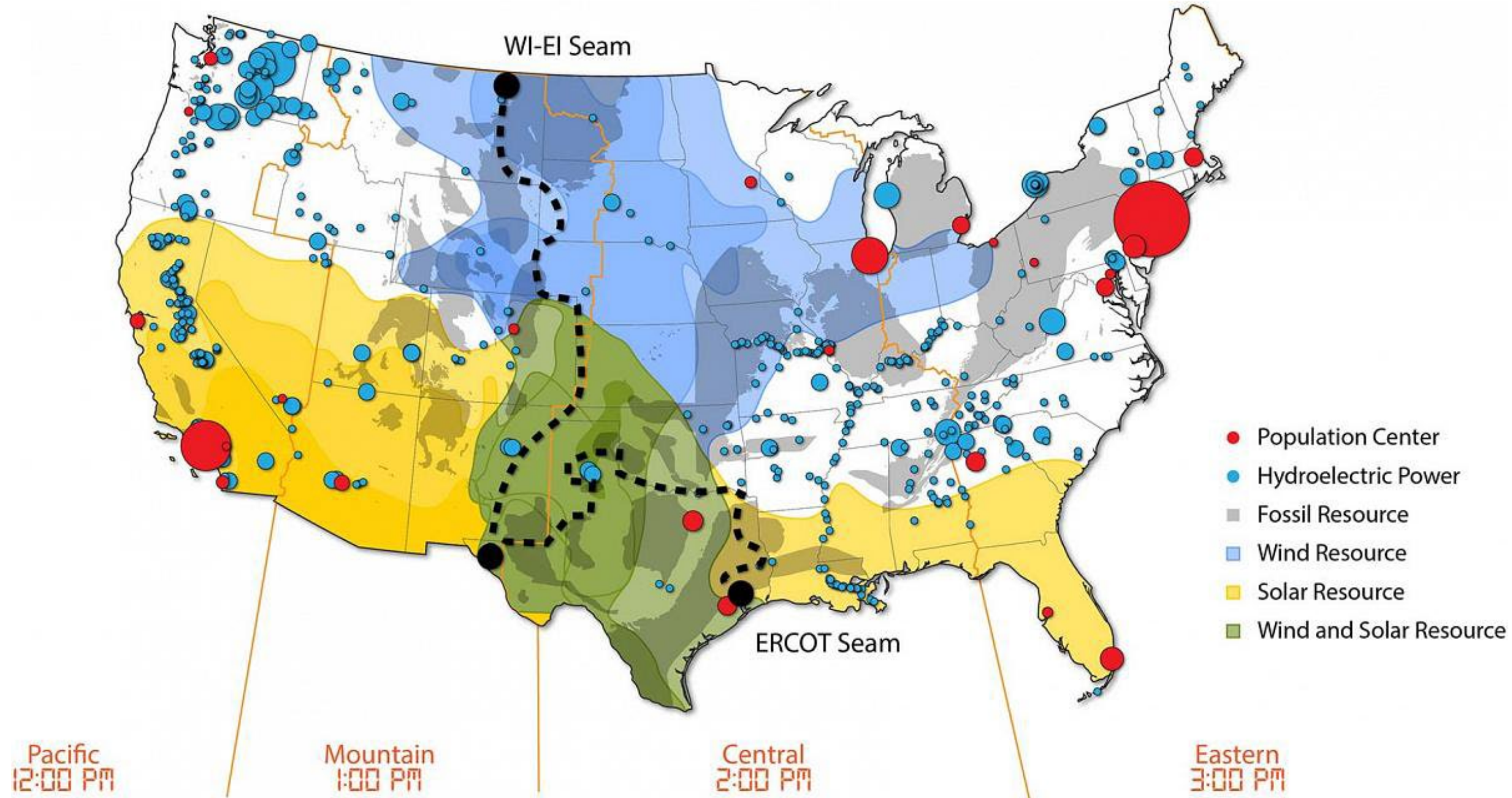


# Overview

- The Macro Grid Initiative seeks to expand and upgrade the nation's transmission network to deliver job growth and economic development, a cleaner environment, and lower costs for consumers
- The initiative operates as a partnership between ACORE and the Americans for a Clean Energy Grid (ACEG)
- Through a transmission Macro Grid, high renewable resources can be connected to high electricity demand to enhance grid resiliency, reduce consumer costs, and decrease carbon emissions



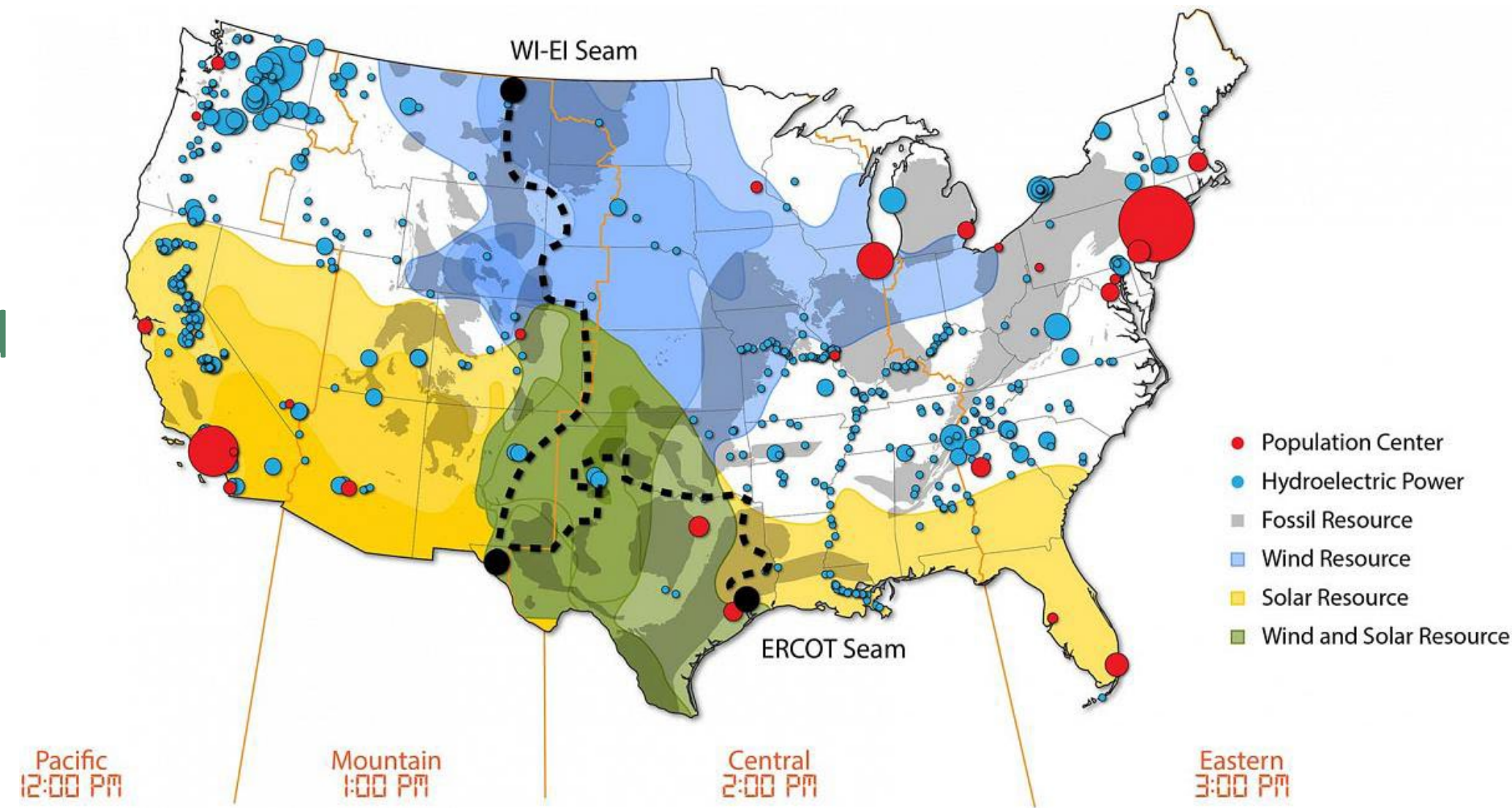
# US Domestic Resources



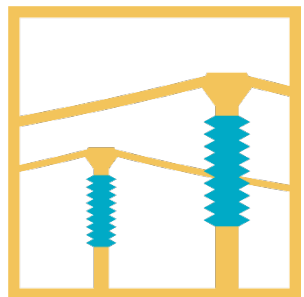


# Vision

- America's centers of high renewable resources and high electric demand sometimes fall within different grid regions
- The 15 states between the Rockies and Mississippi account for 88 percent of the nation's wind technical potential and 56 percent of solar technical potential
- This region is home to only 30 percent of expected 2050 electricity demand

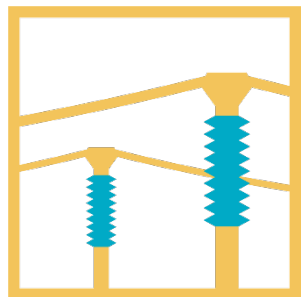
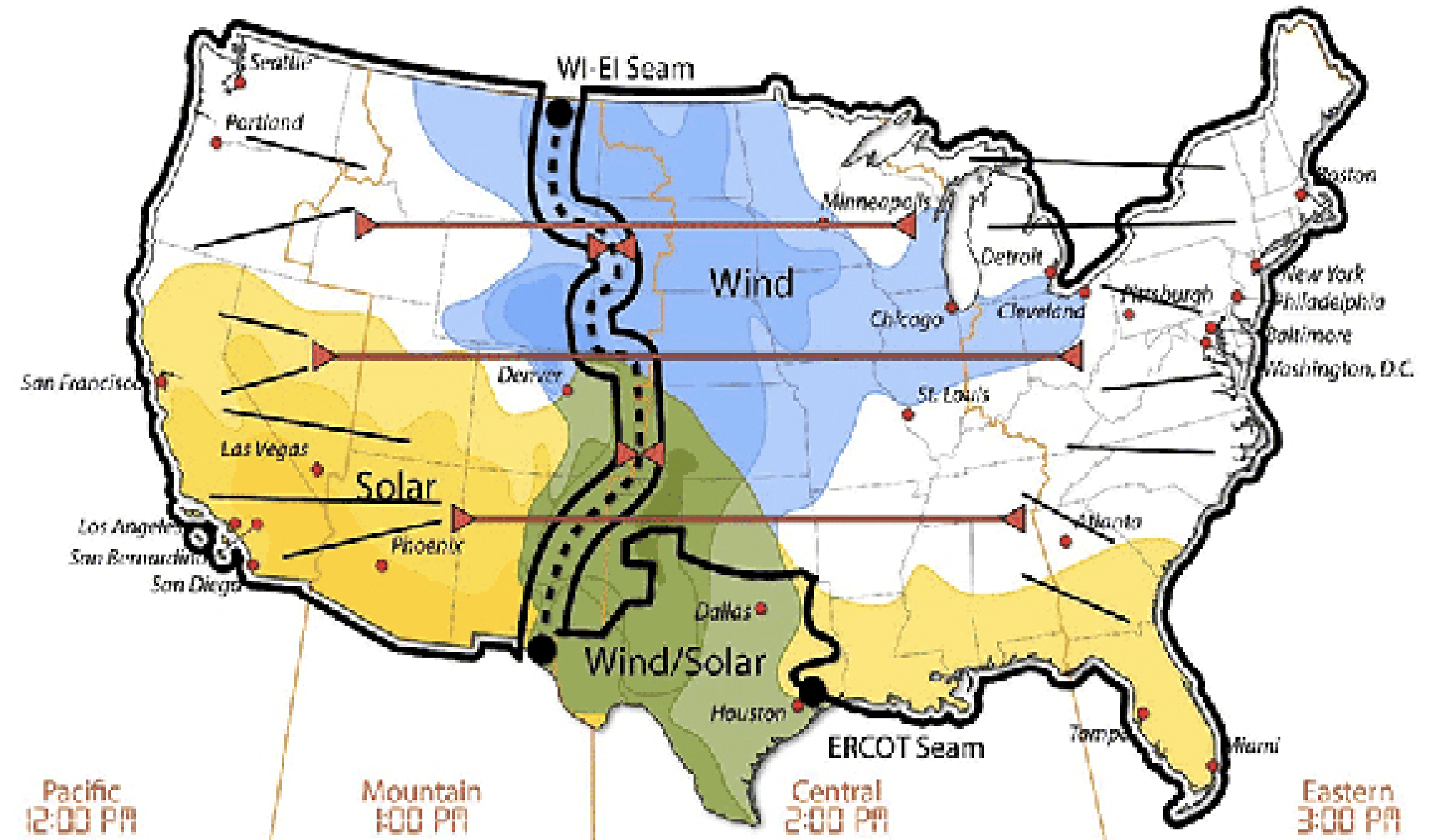


Source: NREL Interconnections Seam Study



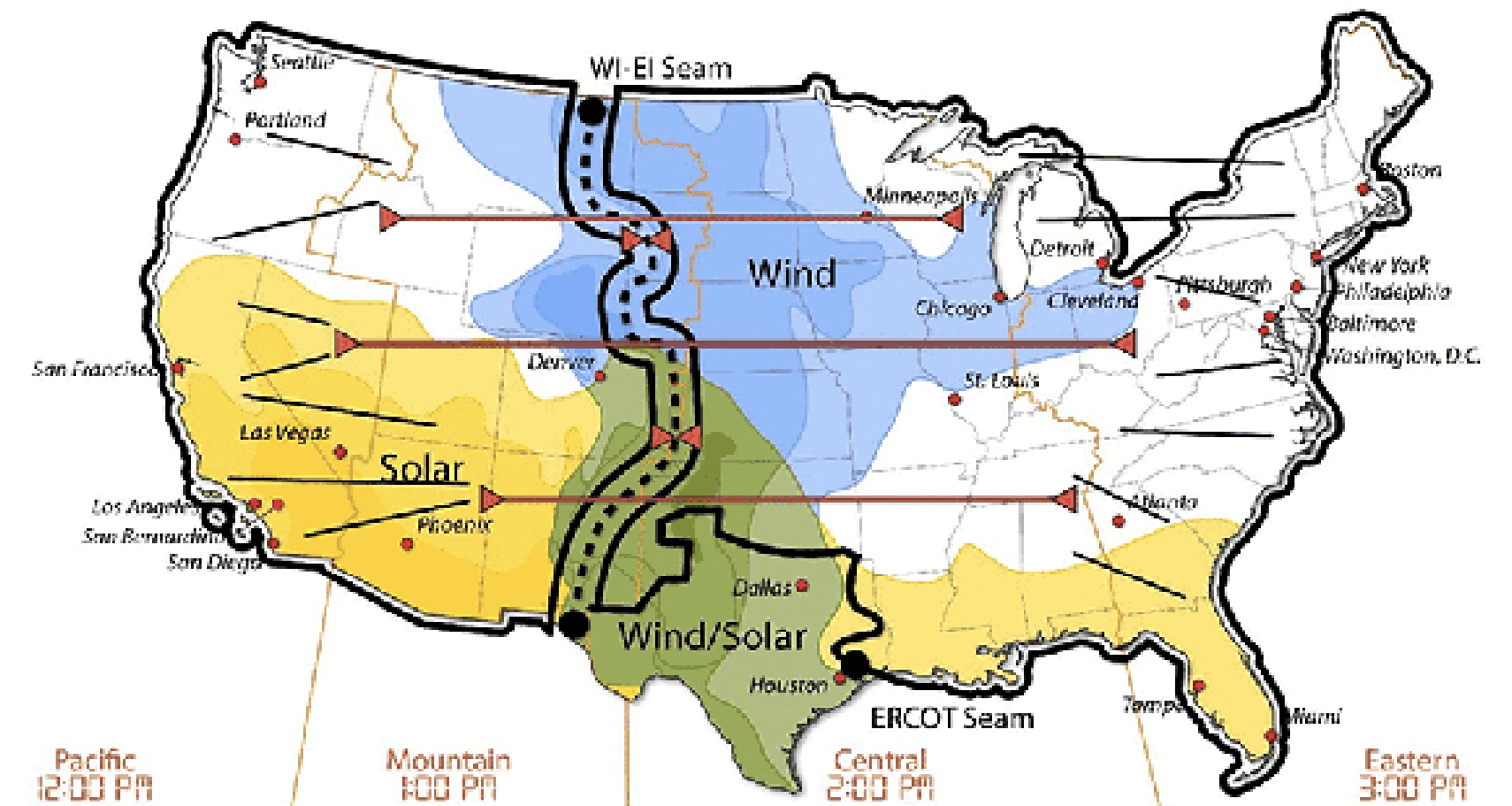
# High-Voltage Interregional Transmission Benefits

- Enables the integration of vast amounts of clean energy
- Improves flexibility
- Improves resilience
- Lowers costs for consumers

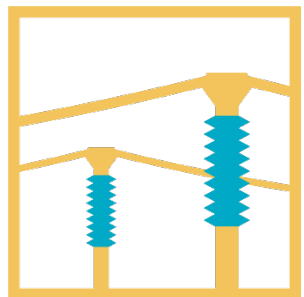


# Building the Macro Grid

- Expanded and upgraded interregional transmission lines would help electric utilities, corporate and institutional buyers, and other consumers meet carbon and clean energy goals by affordably and reliably integrating low-cost renewable resources
- Increased transmission development at the “seams” between regions could save consumers up to \$47 billion annually and return more than \$2.50 for every dollar invested



Source: NREL Interconnections Seam Study, Scenario 2b

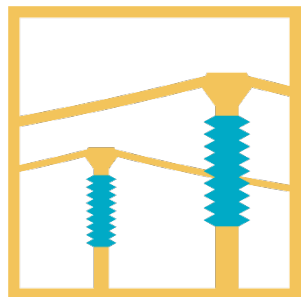




# Objectives

The Macro Grid Initiative seeks to build public and decision-maker support for a new policy and regulatory environment that recognizes the substantial nationwide benefits of new regional and interregional transmission. Priority areas include:

- Increasing Congressional support for building and upgrading transmission systems
- Educating local/state/regional stakeholders on regional and interregional transmission planning and resulting benefits
- Engaging in the new Federal Energy Regulatory Commission (FERC) transmission planning, cost allocation, and generator interconnection rulemaking





# New Research

## Just & Reasonable? Transmission Upgrades Charged to Interconnecting Generators Are Delivering System-wide Benefits

Exhibit 1: MISO and SPP Network Upgrades

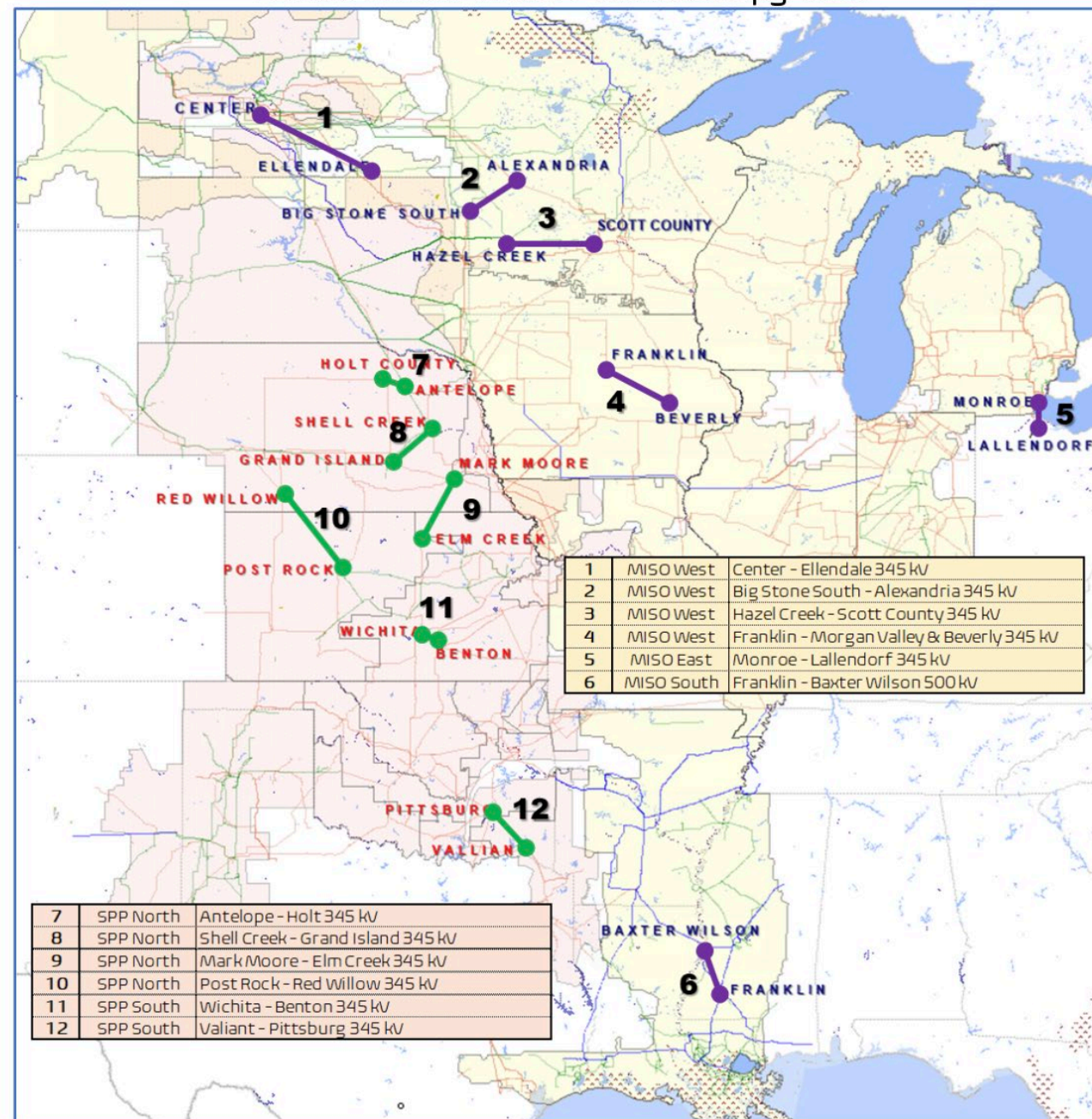
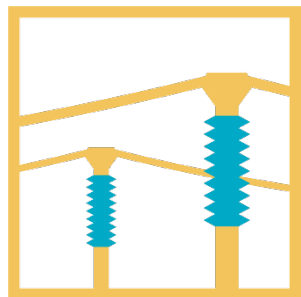


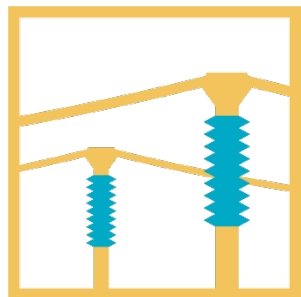
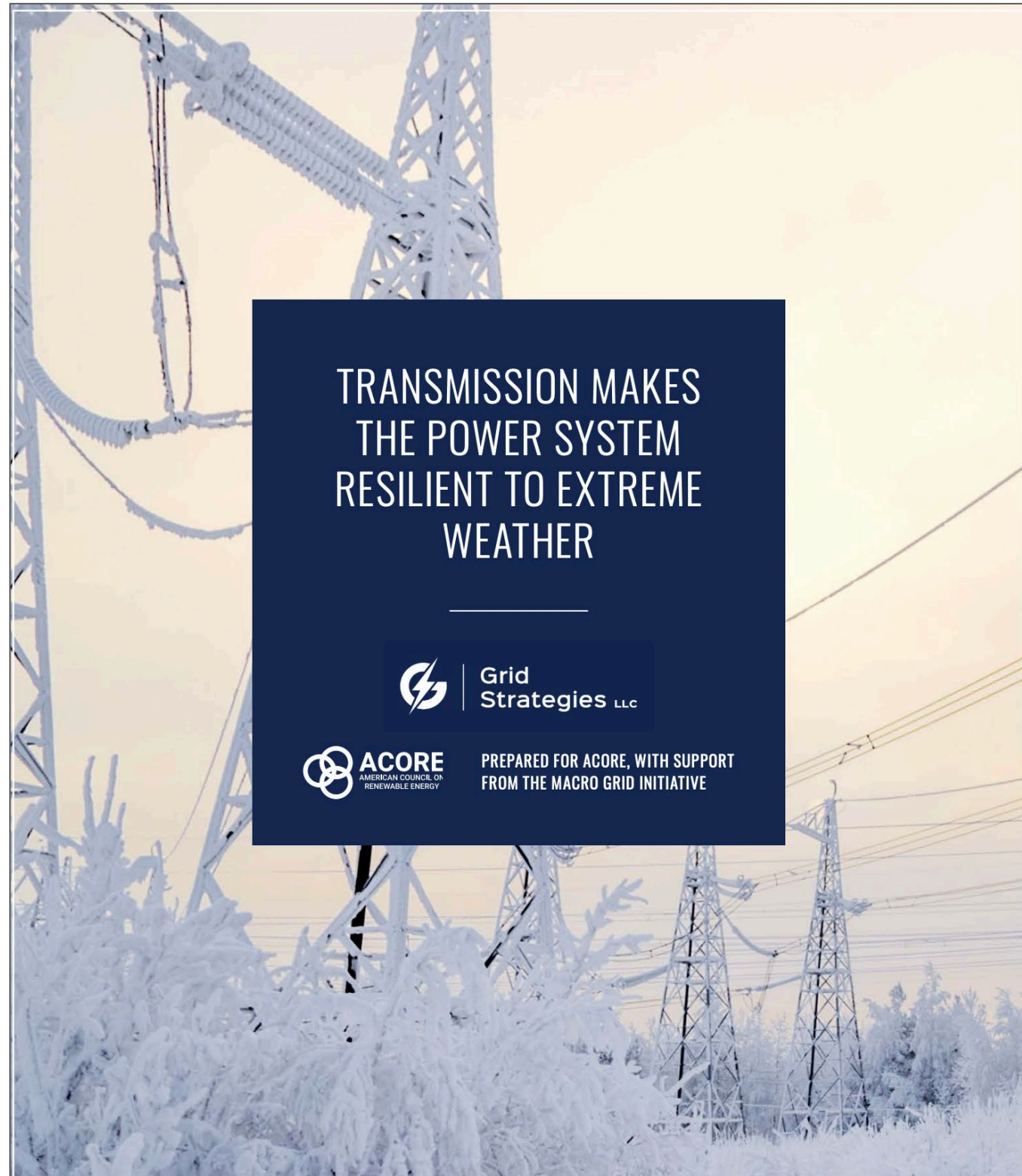
Exhibit 3: Summary of Net Benefits to Load

Region	NU #	Network Upgrade	Cost <sup>15</sup>	Cost Allocated to the Load <sup>14</sup>	APC Savings (Benefits) <sup>16</sup>	Net Benefits <sup>17</sup>
MISO West	1	Center - Ellendale 345 kV	\$456.2M	\$45.62M	\$181.9M	\$136.3 M
MISO West	2	Big Stone South - Alexandria 345 kV	\$221.4M	\$22.14M	\$335.8M	\$313.7 M
MISO West	3	Hazel Creek - Scott County 345 kV	\$236.4M	\$23.64M	\$85.4M	\$61.8 M
MISO West	4	Franklin - Morgan Valley & Beverly 345 kV	\$597.4M	\$59.74M	-\$4.8M	-\$64.5 M
MISO East	5	Monroe - Lallendorf 345 kV Rebuild	\$44.9M	\$4.49M	\$2.9M	-\$1.6 M
MISO South	6	Franklin - Baxter Wilson 500 kV	\$350.5M	\$35.05M	\$41.1M	\$6.05M
SPP North	7	Antelope - Holt 345 kV	\$276.6M	\$0M	\$142.8M	\$142.8M
SPP North	8	Shell Creek - Grand Island 345 kV	\$208.7M	\$0M	\$61.7M	\$61.7M
SPP North	9	Mark Moore - Elm Creek 345 kV	\$259.3M	\$0M	\$10.4M	\$10.4M
SPP North	10	Post Rock - Red Willow 345 kV	\$345.8M	\$0M	-\$8.9M	-\$8.9M
SPP South	11	Wichita - Benton 345 kV 2nd Line	\$32.1M	\$0M	\$59.3M	\$59.3M
SPP South	12	Valiant - Pittsburg 345 kV 2nd Line	\$282.9M	\$0M	\$86.2M	\$86.2M





# New Research



**TABLE 1.** Value of 1 GW of additional transmission by region for each event

Receiving region – delivering region	Savings per GW of additional transmission capacity (millions of \$)
<b>WINTER STORM URI, FEBRUARY 2021</b>	
ERCOT – TVA	\$993
SPP South – PJM	\$129
SPP South – MISO IL	\$122
SPP South – TVA	\$120
SPP S – MISO S (Entergy Texas)	\$110
MISO S-N (Entergy Texas - IL)	\$85
MISO S (Entergy Texas) – TVA	\$82
<b>TEXAS HEAT WAVE, AUGUST 2019</b>	
ERCOT – TVA	\$75
<b>NORTHEAST BOMB CYCLONE, DECEMBER 2017 – JANUARY 2018</b>	
Eastern PJM (VA) – Western PJM (Northern IL)	\$43
NYISO – PJM	\$41
PJM – MISO	\$38
NYISO – ISONE	\$29
<b>NORTHEAST POLAR VORTEX EVENT, JANUARY 2014</b>	
PJM – MISO	\$17
NYISO – PJM	\$9
NYISO – MISO	\$21
<b>MIDWEST POLAR VORTEX EVENT, JANUARY 2019</b>	
MISO – PJM	\$2



# New Research



**Consumer, Employment,  
and Environmental Benefits  
of Electricity Transmission  
Expansion in the Eastern U.S.**

- Christopher T.M. Clack, Vibrant Clean Energy LLC
- Michael Goggin, Grid Strategies LLC
- Aditya Choukulkar, Brianna Cote, & Sarah McKee, Vibrant Clean Energy LLC


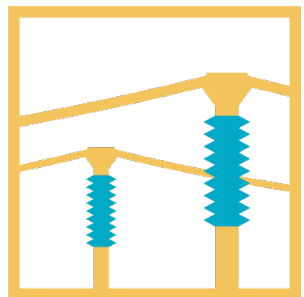
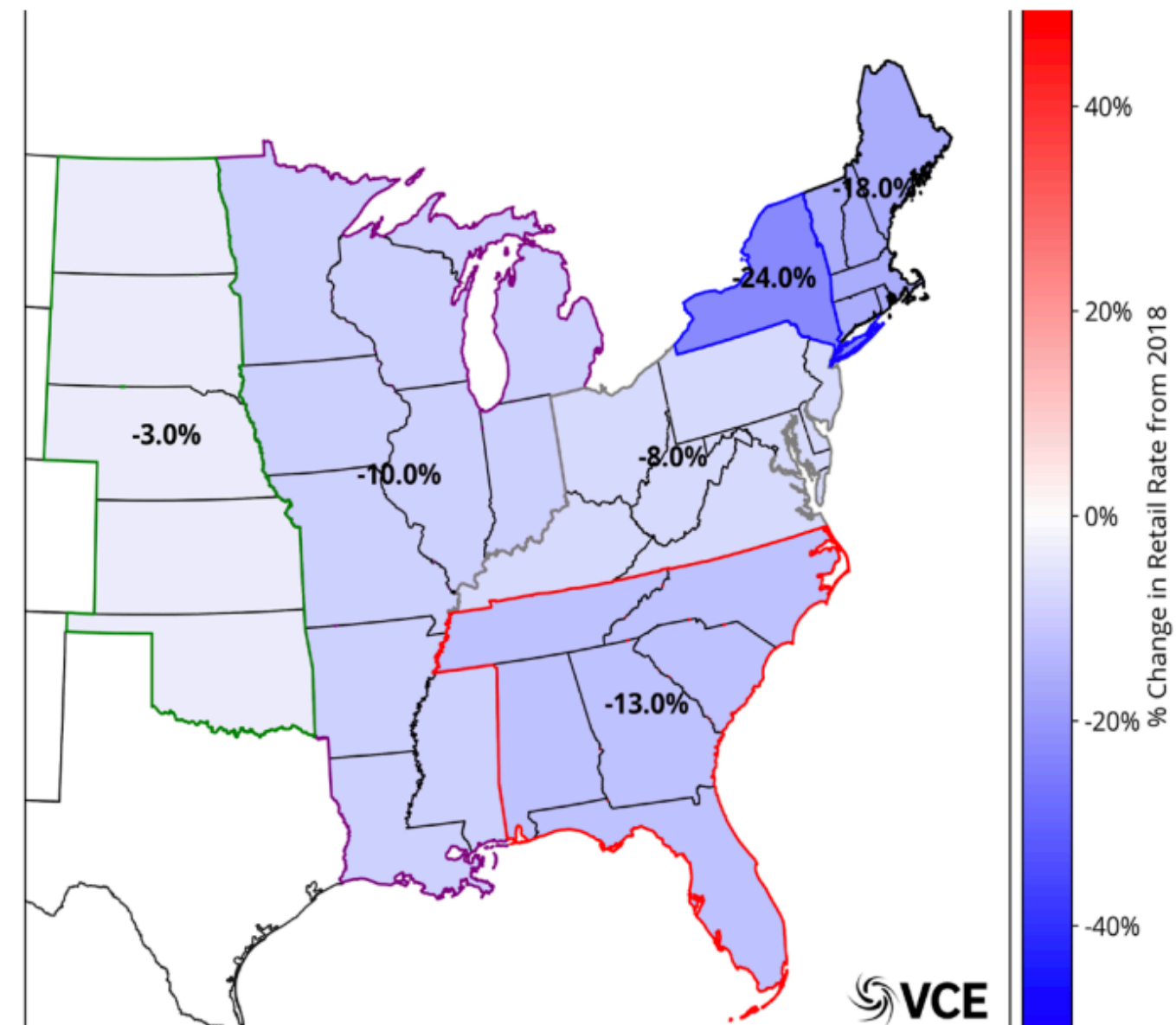
 Americans for a Clean Energy Grid

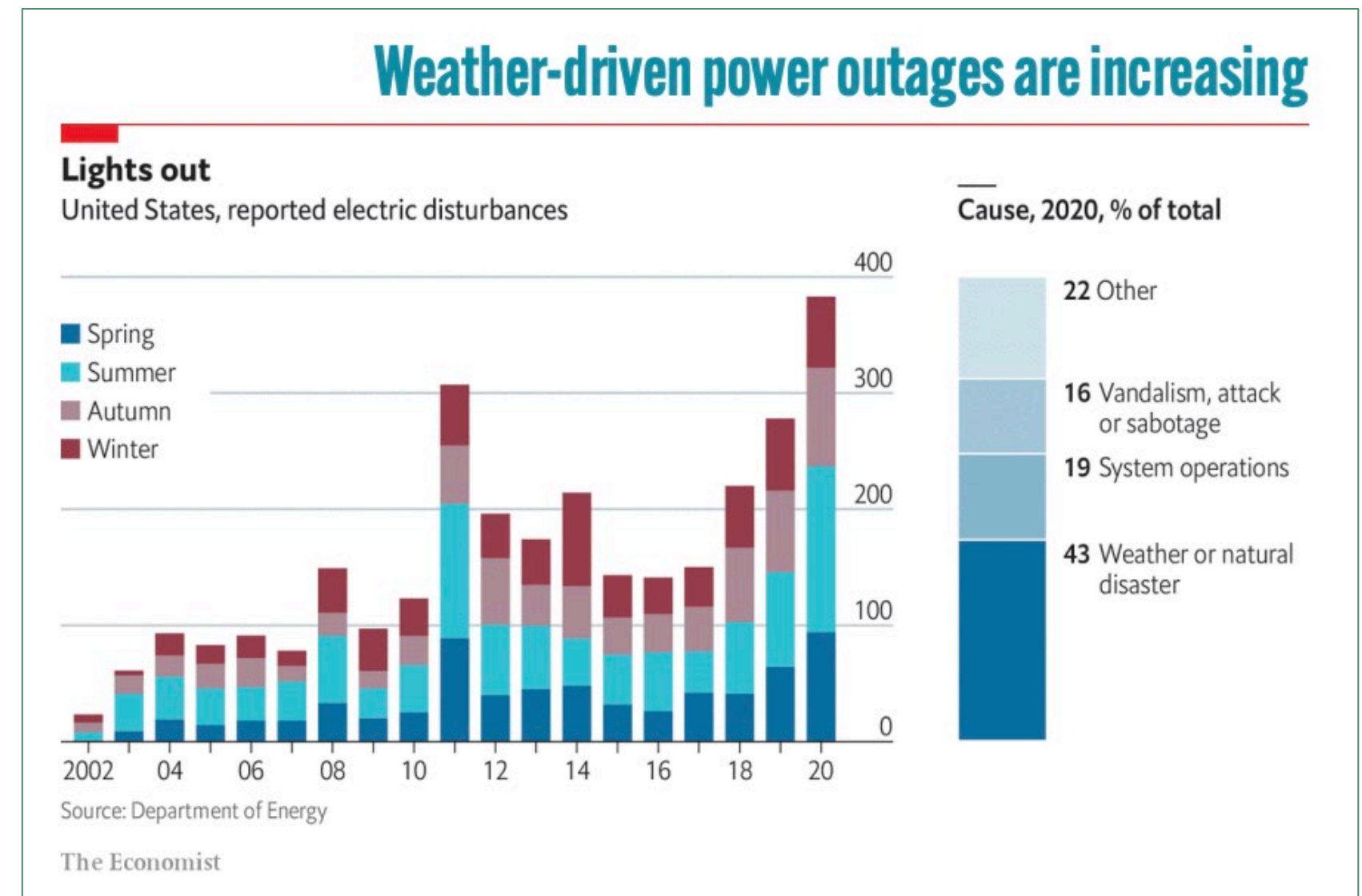
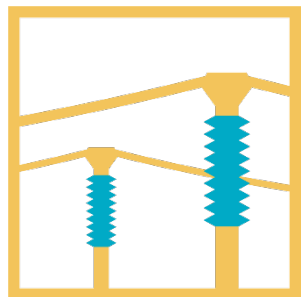
Figure 25: Change in retail electric rates from present to 2035



# New Research

## *National Security Depends on a Robust Transmission Grid*

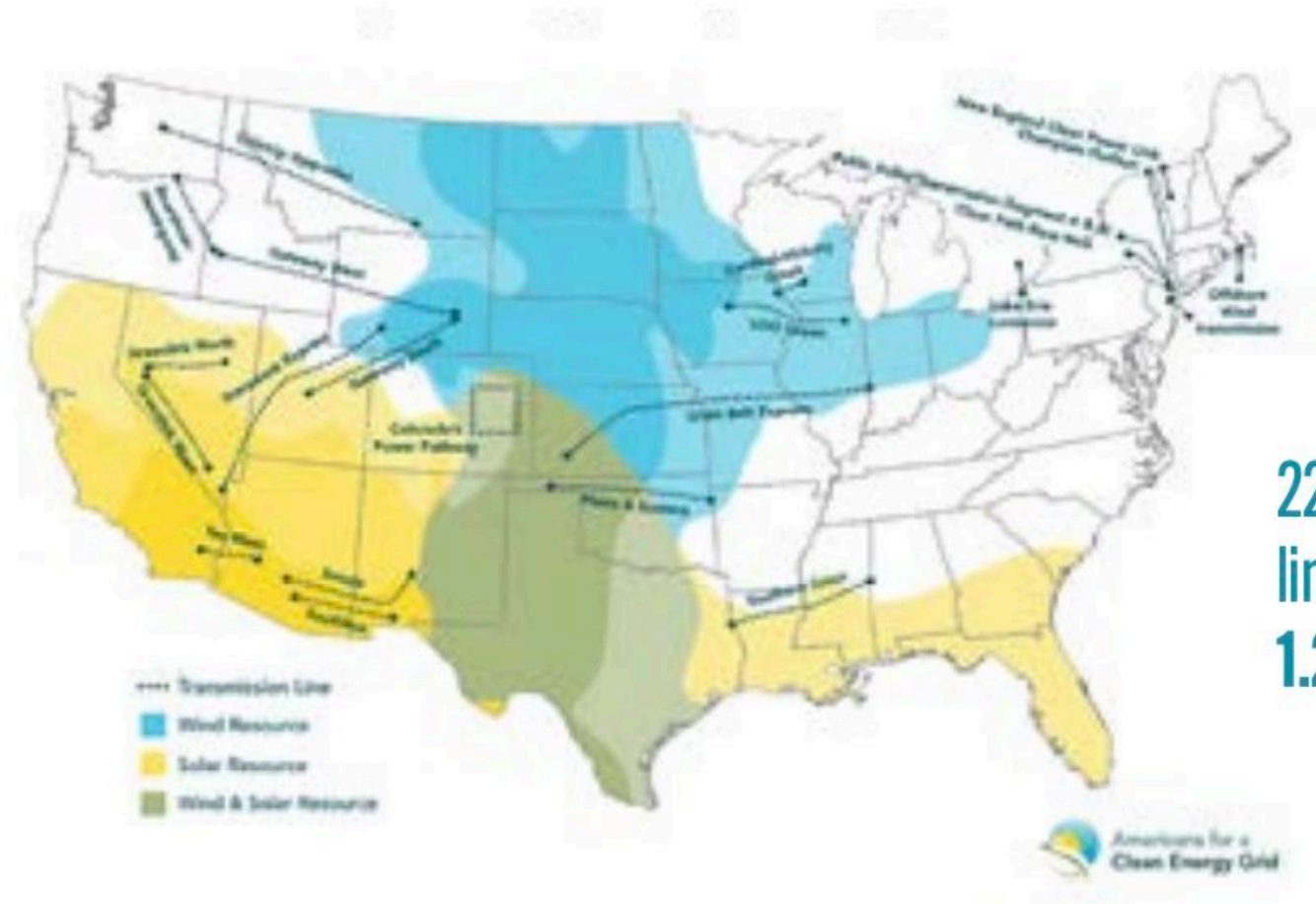
- *Ensures US military bases and emergency services remain fully operational during extreme weather*
- *Switching to EVs will reduce dependence on global oil markets, but will require new transmission to bring lowest-cost new power generation online*



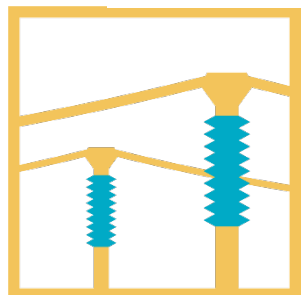


# New Research

## *Upgrading and Expanding High Voltage Transmission Creates Well-Paid Jobs, Drives Economic Growth*



22 proposed transmission lines could create 1.2 million new jobs



## CASE STUDY

### Economic impact of MISO Multi-Value transmission projects between 2002 and 2015

Investment in transmission creates jobs and provides significant economic benefits. In the Midwest, the grid operator evaluated the impact of the \$9.4 billion transmission Multi-Value Project (MVP) investment on job creation, income, and tax revenue from 2002 to 2015,<sup>7</sup> finding that the MVP lines:

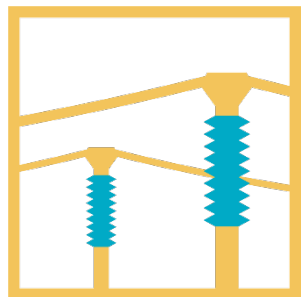
- Created more than 114,000 job-years with a peak of 16,700 to 25,800 total jobs in 2014.
- Provided \$5 to \$8 billion of labor income.
- Delivered \$457 to \$765 million of state and local tax revenue, and \$935 million to \$1.5 billion of federal tax revenue.
- Spurred economic activity totaling \$6.7 to 11.3 billion over the period.



MISO Multi-Value Projects provided \$5 to \$8 billion of labor income in the region

# Broad Perspectives

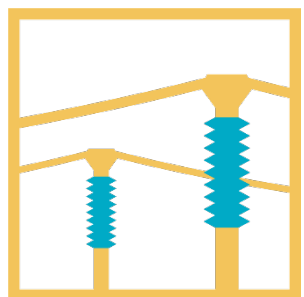
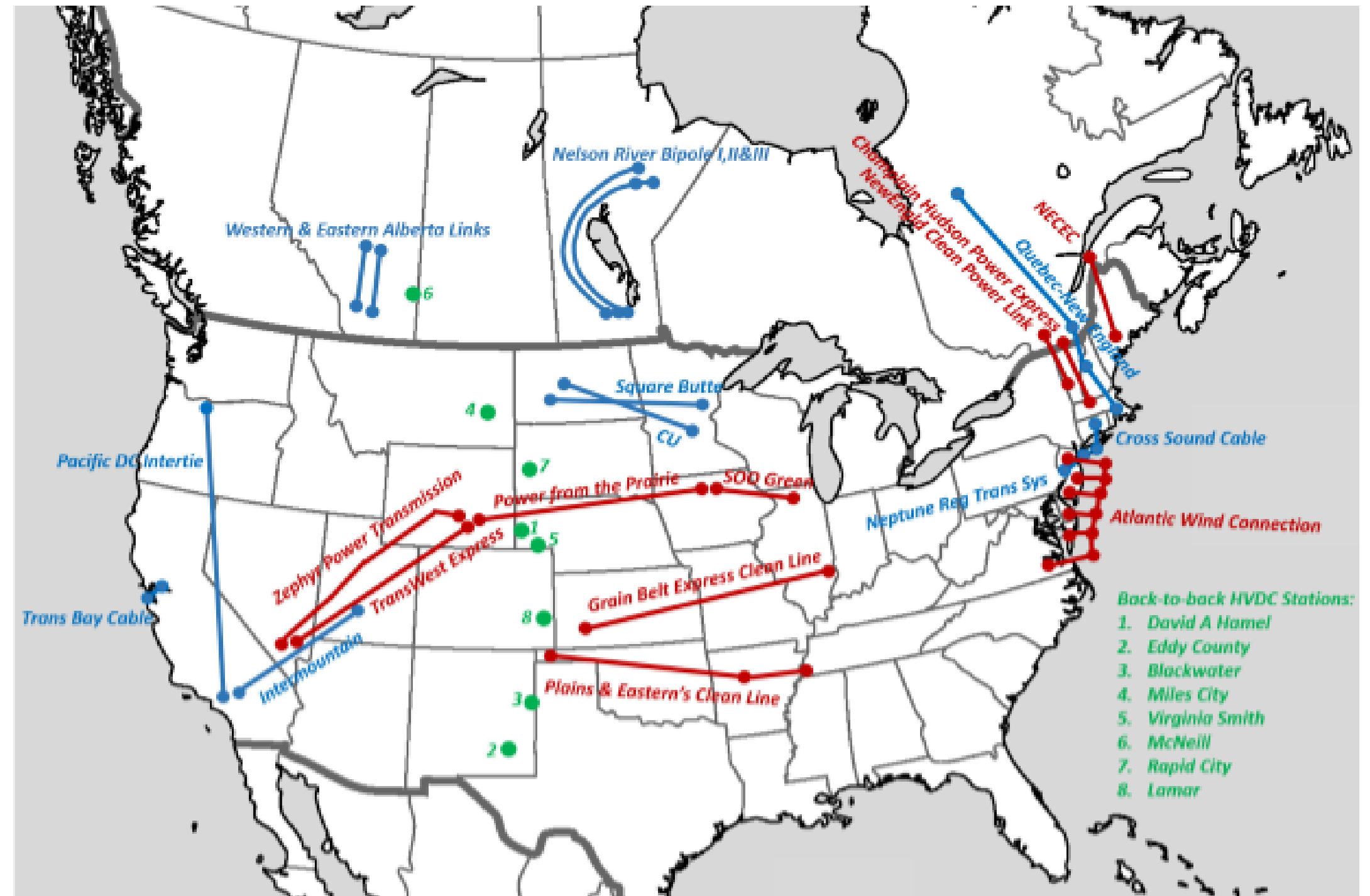
- Transmission expands access to lower-cost domestic energy
- Aggressive procurement goals require new transmission
- A Macro Grid enhances the nation's transmission system for the long term and extreme weather events
- Diverse perspectives are new to the transmission discussion, so outreach is timely and critically important
- Engage stakeholders at the federal, state and regional levels
- Visit [www.acore.org/macro-grid-initiative/](http://www.acore.org/macro-grid-initiative/)





# Existing and planned HVDC transmission in North America

Excellent opportunities for Macro Grid development



# Supporters

- Advanced Power Alliance
- American Clean Power Association
- Berkshire Hathaway Energy Renewables
- BlueGreen Alliance
- Clean Grid Alliance
- GridLab
- Natural Resources Defense Council
- ITC Holdings
- R Street Institute
- Solar Energy Industries Association
- Union of Concerned Scientists
- WIRES Group

*“We learned in the 2000-2001 California/Western power collapse and the 2003 North American power blackout that power markets REQUIRE robust infrastructure. Today, that means strong electrical ties between and across all the power regions. I welcome the refreshed focus on this issue: without a strong national power grid, we won’t come anywhere close to the low-cost, low-carbon grid customers demand — and deserve.”*

*- Pat Wood III, Former FERC Chairman; Former Chairman of the Public Utility Commission of Texas; CEO, Hunt Energy Network*





# Thank you!

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