

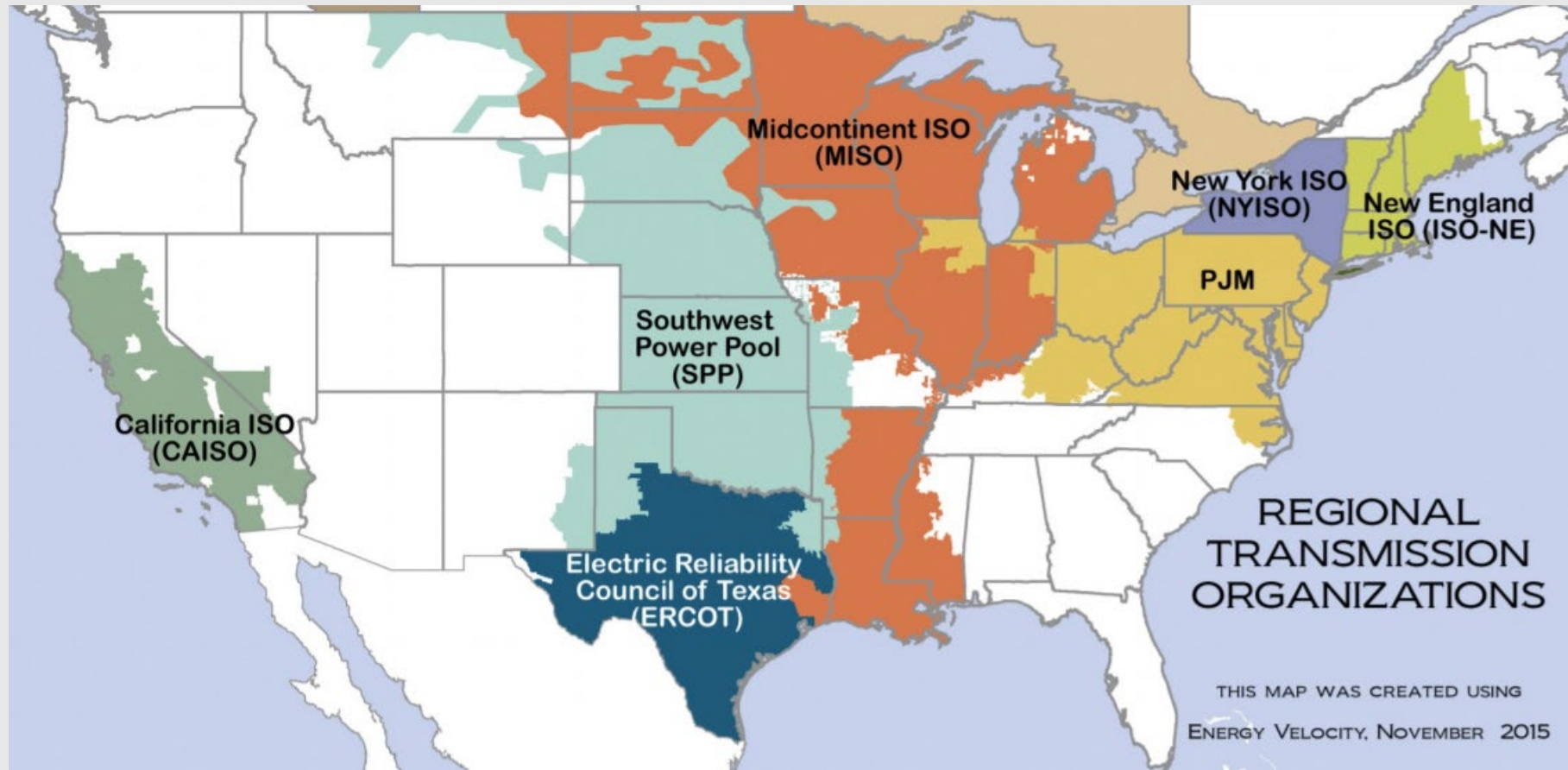


The Role of Regional Transmission Organizations in Decarbonizing Louisiana's Power Sector

Goals of this Presentation

- 1 Provide a primer on Regional Transmission Organizations (RTO) in Louisiana
- 2 Identify the importance of RTO's in reaching Louisiana's decarbonization goals
- 3 Provide examples of initiatives currently underway in MISO and SPP which can facilitate state decarbonization goals.

Regional Transmission Organizations (RTO) and Independent System Operators (ISO)



RTO Characteristics

Governance

- FERC Jurisdictional
- RTO's are Nonprofit Organizations
- Board of Directors
- Stakeholders
- Stakeholder Committees

Market Functions

- Energy
 - Real Time
 - Day Ahead
- Capacity
- Ancillary Services

Planning

- Transmission Planning
- Generation Interconnection
- Seams



Better connection means resilience, access and affordability

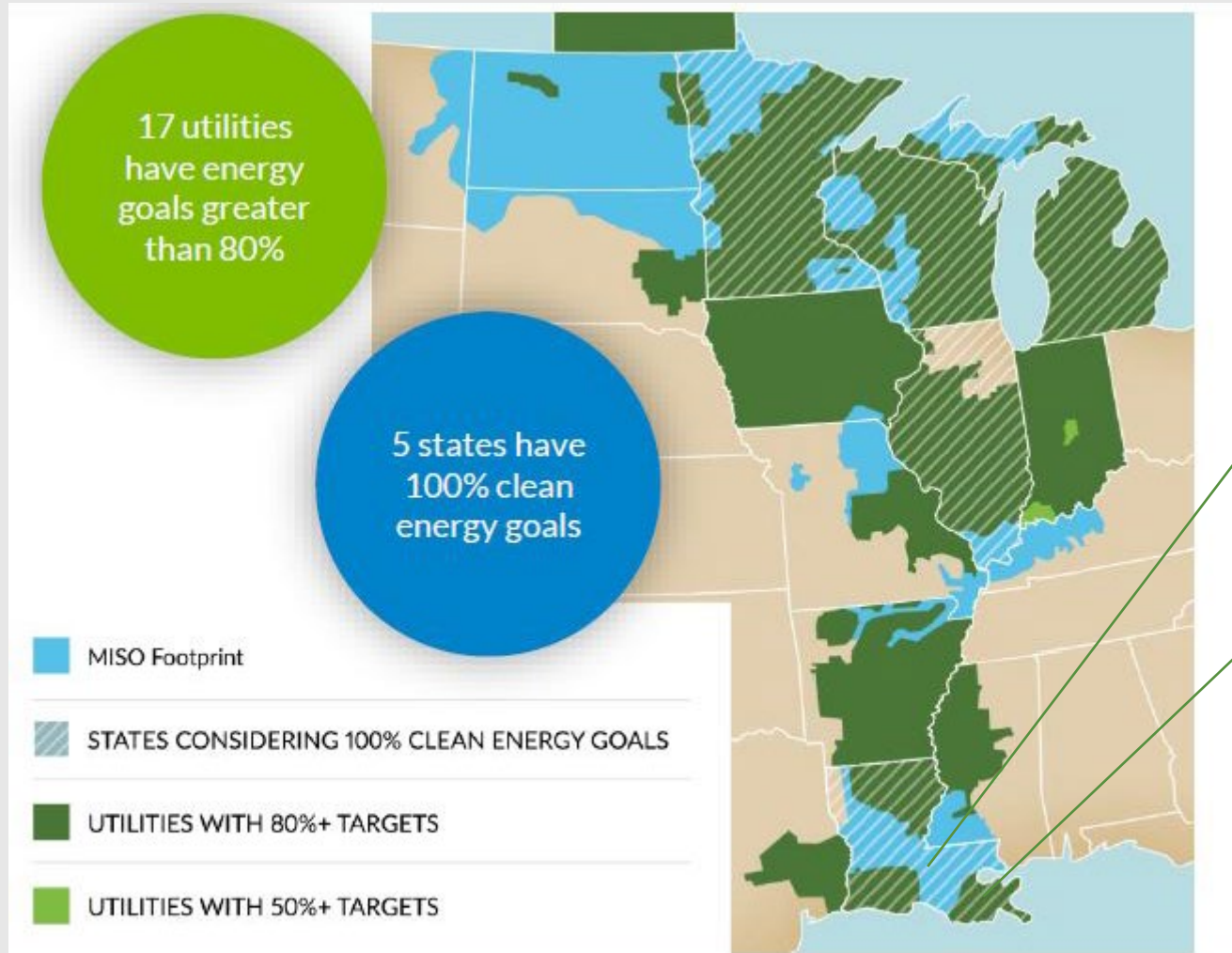
Reducing transmission barriers between MISO and SPP, as well as between MISO North and South is an important part of increasing renewable energy and providing resilience for the region.

- Added resilience in the face of extreme weather events that threaten infrastructure
- Expanded access to renewable energy. SPP and MISO North can provide wind energy, and MISO South can provide solar energy



MIDCONTINENT INDEPENDENT SYSTEM OPERATOR (MISO)

Goals are even better when they can be met affordably



Louisiana – Net Zero by 2050 EO

NOLA – 100% by 2050

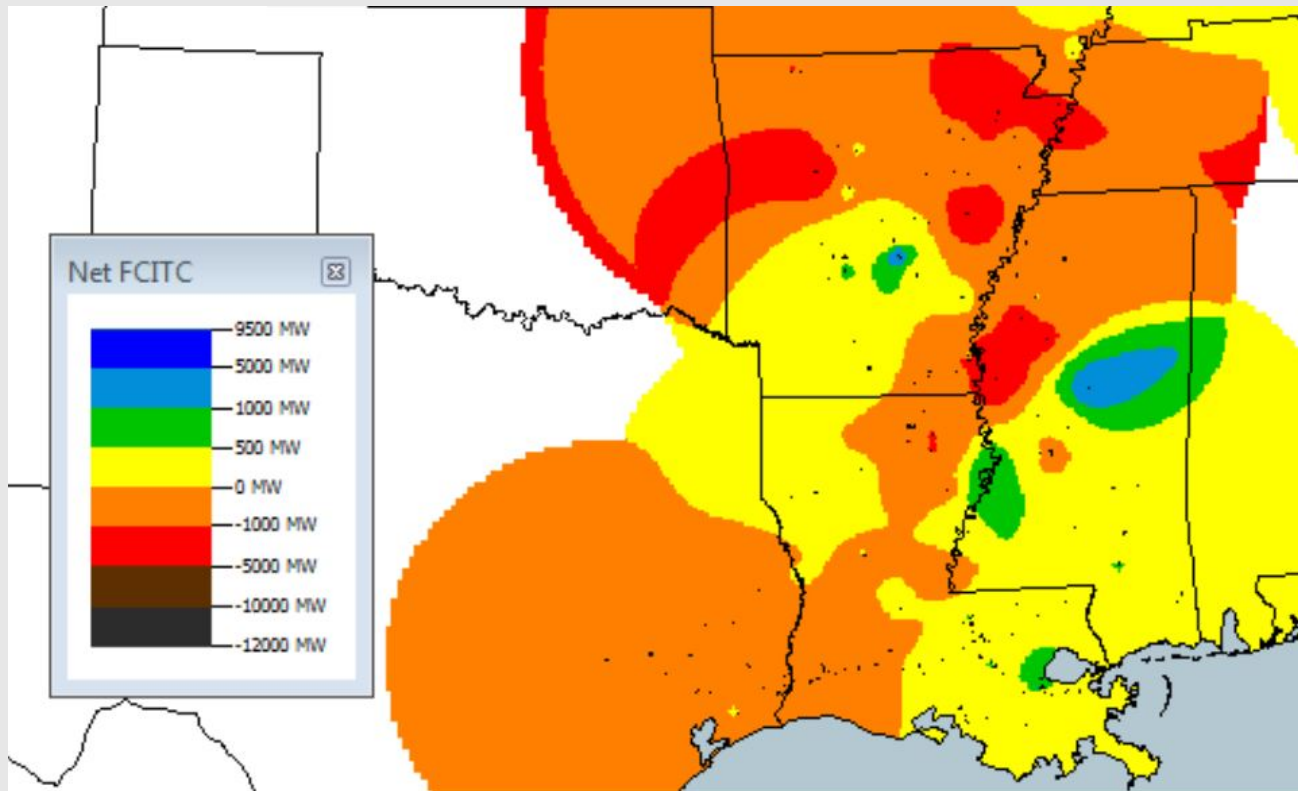
- 5 states in MISO have 100% clean energy goals
- 17 utilities have also committed to goals greater than 80%

As of late 2020; changing rapidly.

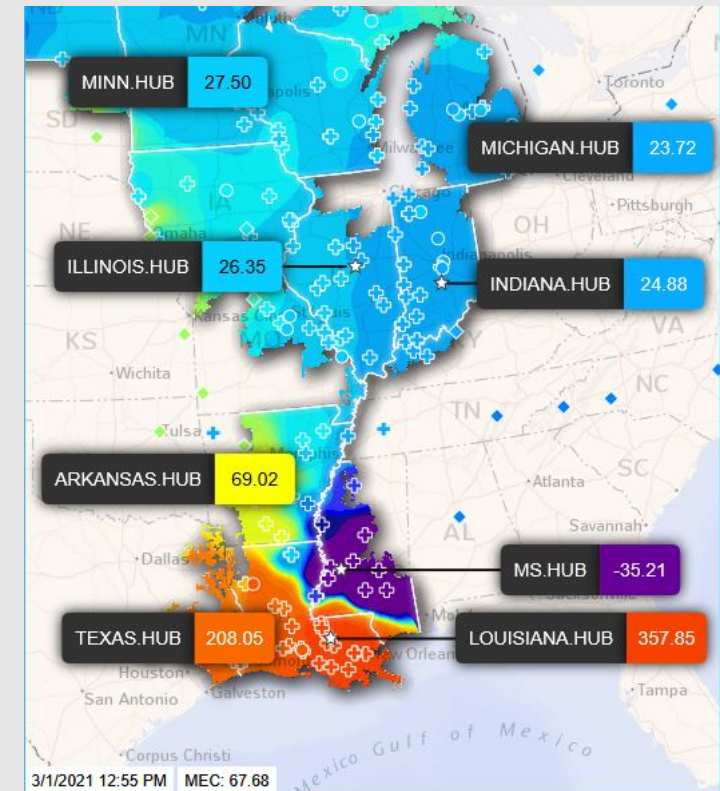
MISO PLANNING

The image is a composite background for a presentation slide. In the foreground, there are rows of solar panels tilted towards the right. In the mid-ground on the left, a large metal lattice transmission tower stands. In the background, several wind turbines are visible against a sky with soft, orange and yellow clouds, suggesting a sunset or sunrise. The overall scene represents a mix of renewable energy sources.

The importance of better planning in LA



Transmission constraints (in red and orange), make interconnection for developers tough, and reduce system reliability



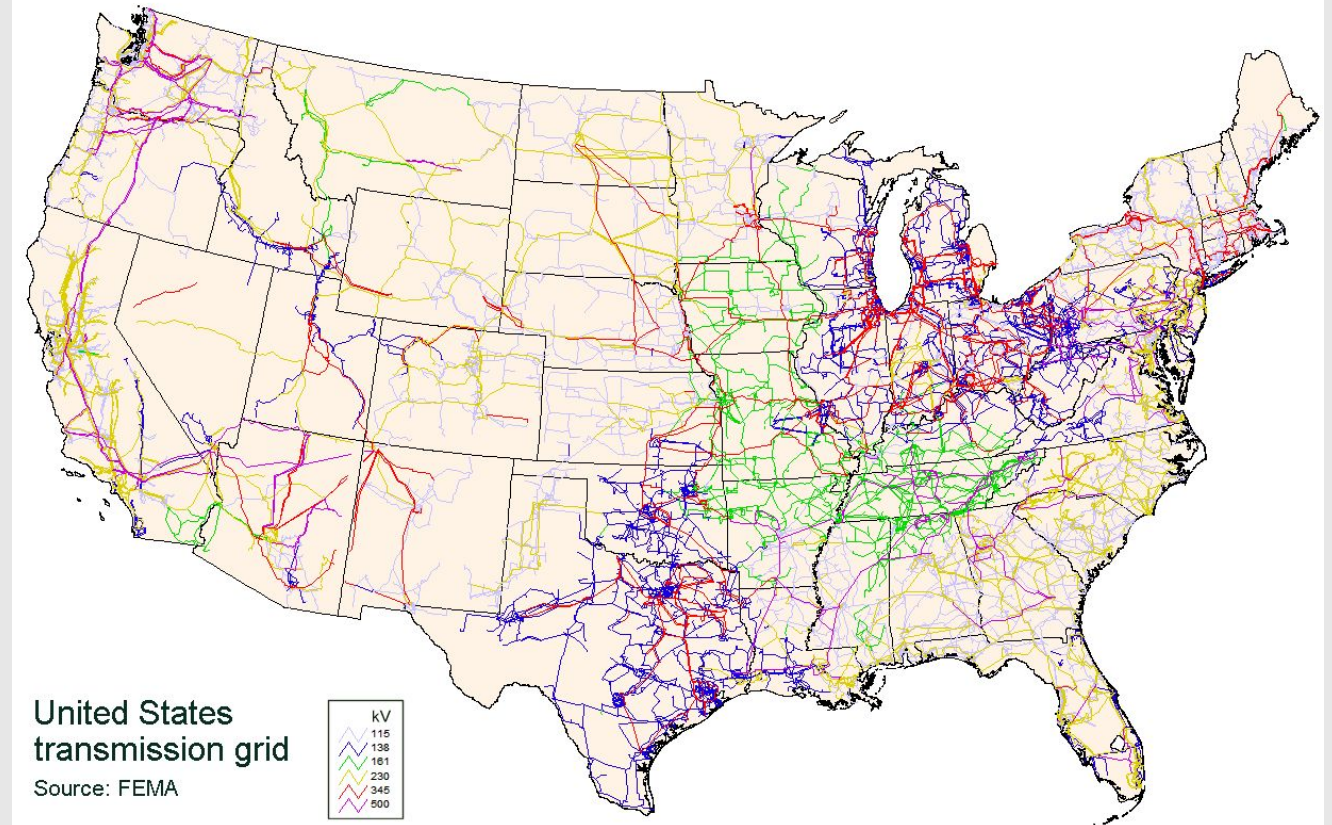
March 1st
(High prices in red)

Real-time
congestion
drives high
prices

LONG RANGE TRANSMISSION PLANNING

A more comprehensive transmission planning process that looks further into the future and seeks to relieve major issues across the footprint.

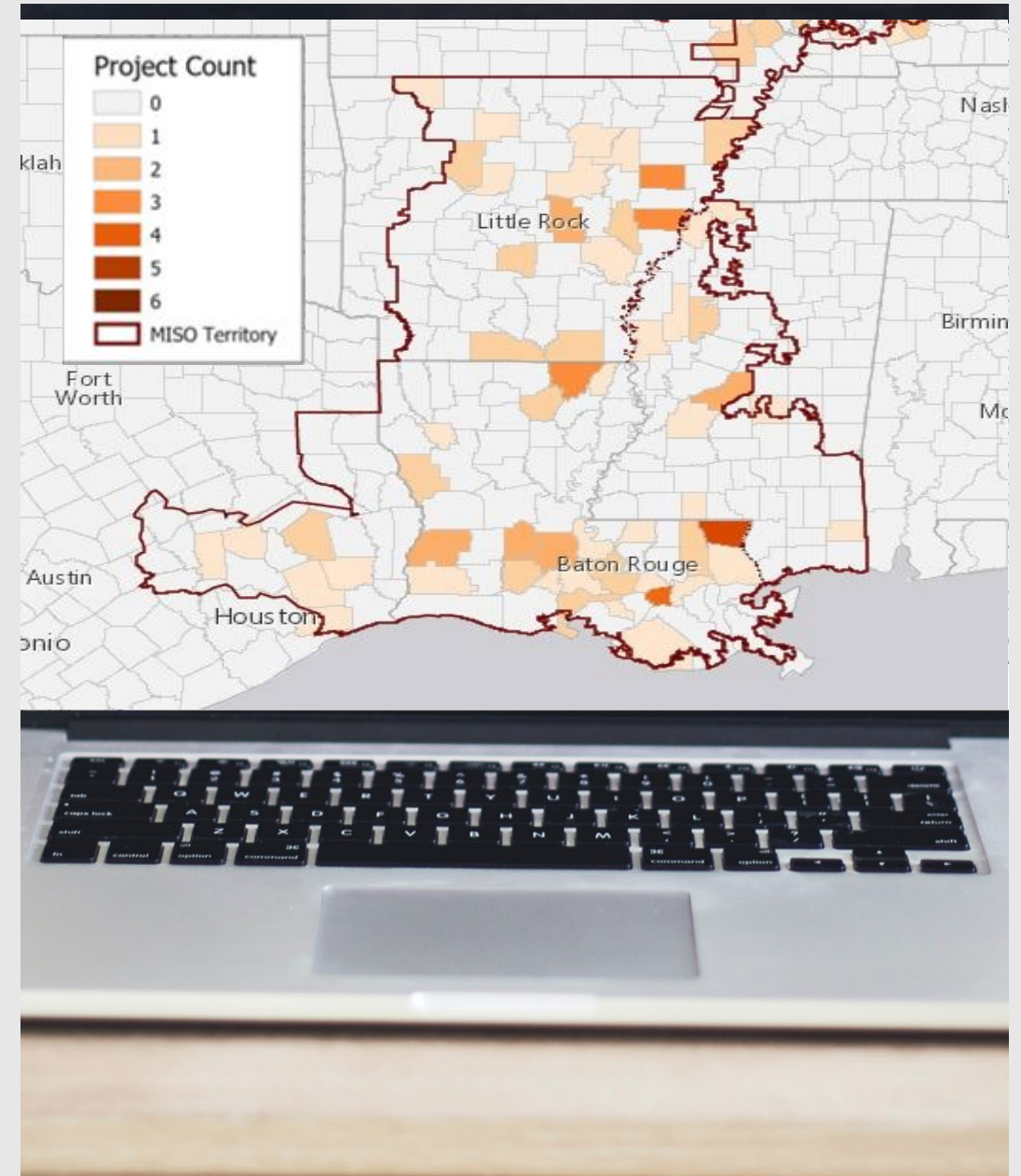
- A changing resource mix w/ more renewables
- Lowering costs of interconnection
- Policy goals
- And additional issues like congestion and overall system reliability



OPPORTUNITY: BRING ON A LOT MORE LOW-COST SOLAR AND WIND

Clean energy projects in the MISO South region in the “Active Queue” waiting to interconnect:

- **SOLAR:** 10,610 megawatts (enough to power about **2 million homes**)
 - **LA - 6,020 megawatts of solar**
- **WIND:** 701 megawatts (enough to power **212,000 homes**)
- **ENERGY STORAGE:** 405 megawatts
 - **LA – 145 megawatts of energy storage**



BOTH MISO & SPP LONG RANGE PLANNING PROCESSES RESULT IN CONSUMER BENEFITS

MISO

Net savings from 17 MISO grid upgrades called the Multi-Value Projects, from 2011-2020:

Every **\$1 in cost** translates to **\$2-\$3 in consumer benefit**

Source: MISO 2017 MVP Triennial Review Report

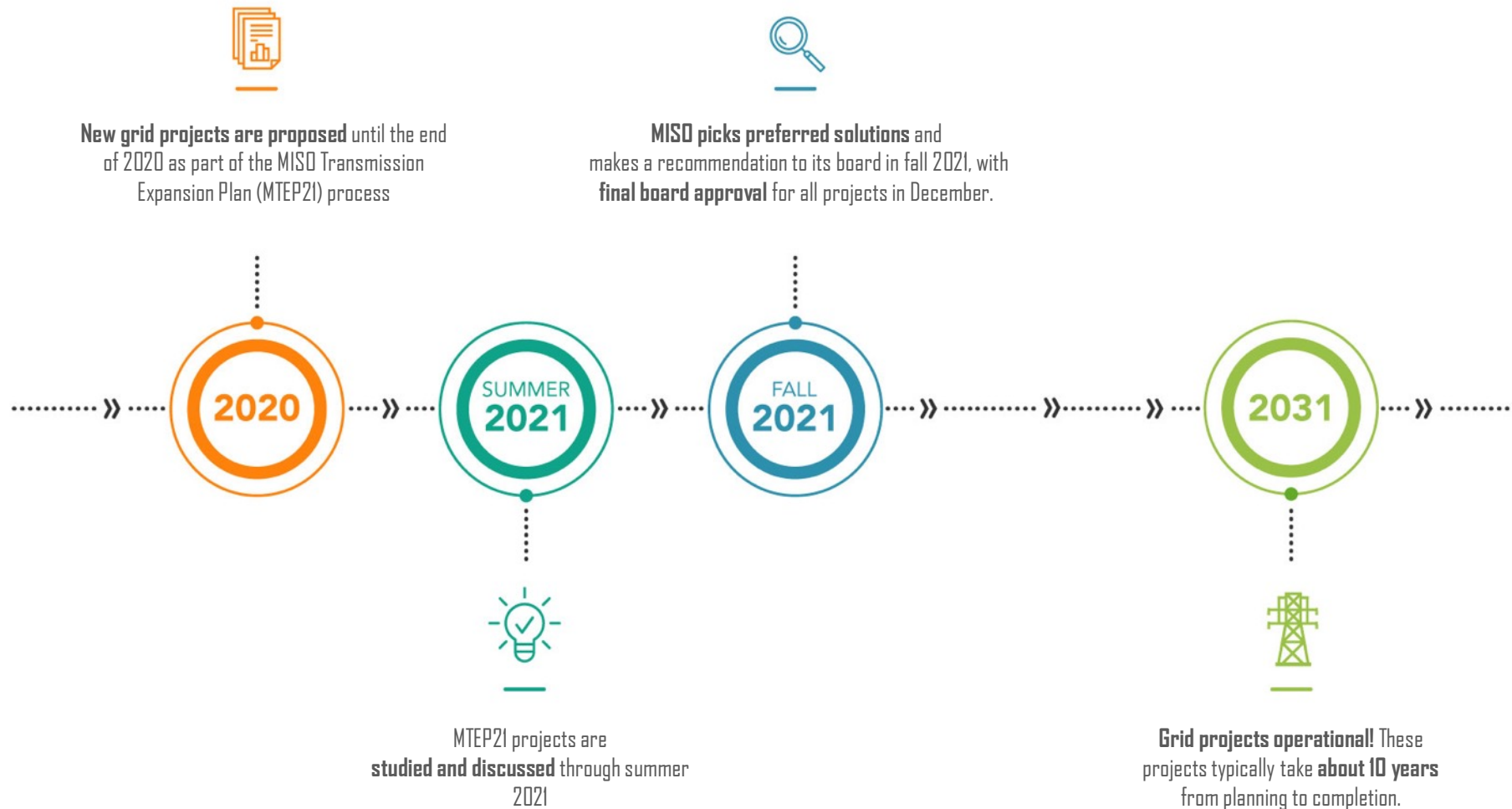
SPP

For \$3.4 billion spent on expansion and high voltage upgrades between 2012-2014, a benefit of \$16.6 billion:

Every **\$1 in cost** translates to **\$3+ in consumer benefits**

Source: SPP 2016 The Value of Transmission Report

GRID SOLUTIONS TAKE YEARS BUT THE PLANNING & DECISIONS ARE NOW





LOUISIANA STAKEHOLDERS MUST ENGAGE WITH MISO

9%

MISO's grid only carries
9% renewable energy
now*

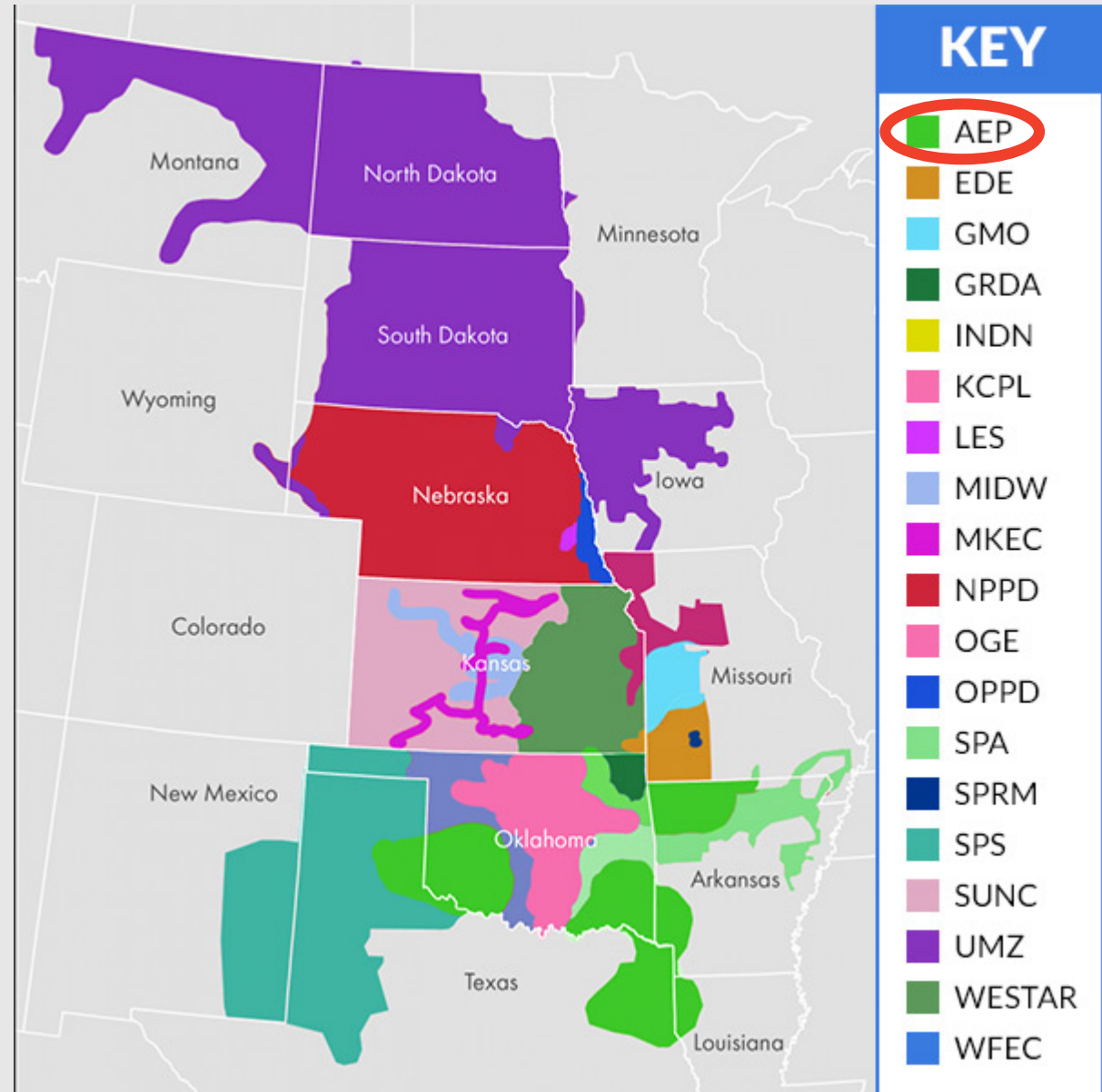
- MISO estimates that **by 2026** renewable energy penetration throughout MISO could be **30%**
- MISO's own analysis says “**significant transmission investment will be needed**” to interconnect new resources
- A better **connection across the SPP seams** can help ensure the energy needs of the state are met in the face of **extreme weather events**, and that a transition to renewables is affordable, but **support is needed for transmission planning.**

* most concentrated in North MISO



SOUTHWEST POWER POOL (SPP)

AEP (SWEPCO)





SPP PLANNING

SPP Quick Facts

- **SPP's number one energy resource in 2020 was wind.**
- A new record of 80% renewable generation was reached just this past week
- SPP now has 27GW of Wind installed. That is an increase facilitated by the transmission expansion that occurred through from the Balanced Portfolio, the Priority Projects, and the Integrated Transmission Planning (ITP) process.

ITP



2019 Integrated Transmission Plan

A 10-year plan to deliver energy reliably and economically, optimizing benefits to end-use customers

44 projects

166 miles 345 kV transmission

28 miles transmission rebuild

\$336 million E&C costs

PROJECTS

The 2019 Integrated Transmission Plan (ITP) determined 44 new transmission projects are needed to ensure a reliable and cost-effective grid capable of enabling a rapidly changing generation mix and new technologies.

ITP

Solve 145 system needs
Help levelize market prices
Improve congestion hedging
Access to low-cost energy

4¢ - 23¢
Residential bill savings
3.5 - 5.8 to 1
Benefit-to-cost ratio

8 groups; 100+ meetings
27-month schedule
1,600+ solutions reviewed
700+ inquiries processed

BENEFITS

The recommended transmission projects will facilitate delivery of lower-cost generation throughout the region. Market-price disparity will be reduced, levelizing wholesale energy prices by 21% on average.

VALUE

The proposed projects are expected to provide a 40-year benefit-to-cost ratio ranging from 3.5 to 5.8. This investment is projected to generate net savings of 4¢ to 23¢ on the average residential bill in the SPP region.

COLLABORATION

SPP and its stakeholders worked together for more than two years to produce the 2019 ITP. This highly collaborative effort was designed to produce a high degree of confidence in the results.

SPP SET NEW RECORDS

78.9% WIND PENETRATION

80.3% RENEWABLE PENETRATION

12:18 a.m. | March 9, 2021



SPP and MISO Seam

- SPP has substantial amounts of renewable generation (particularly wind) accessible to utilities in its footprint that would help meet Louisiana's carbon goals in a cost effective way. However:
 - The seam creates an artificial barrier in moving power between markets that adds cost to transactions
 - Moving power across the seam means paying for transmission in both footprints, adding costs that may not reflect the actual use of both systems
 - The limits of the transmission system across the seam fall under interregional planning
- Solution: Interregional market; eliminating or reducing pancaked transmission; Improvements in interregional planning

MISO North and South

- MISO North has substantial amounts of wind in MISO North that would help meet Louisiana's carbon goals in a cost effective manner.
However:
- There are physical transmission limitations to moving power between the two regions
- There are further restrictions on transfers of power between the MISO subregions as a result of a FERC complaint and subsequent settlement involving SPP, TVA, Southern and AECI
- Resolving this issue would likely involve new transmission between MISO North and South and a renegotiation of the settlement agreement.

SPP CAN SHARE BENEFITS WITH LOUISIANA

30%

SPP's grid carries
30% renewable energy
now

- SPP can share both capacity, and renewable energy with MISO South, which helps **reliability, and decarbonization goals**
- To help decarbonize the power sector, there must be support for coordination between MISO and SPP that increases access to **affordable, reliable and renewable energy resources**.



QUESTIONS