

TRANSMISSION PLANNING AND DEVELOPMENT BRIEF

Electricity is a unique commodity in that to date there is no appreciable storage capability within the system. As such, supply and demand on the electric grid must be matched in real time to keep the grid operating reliable. **The transmission system facilitates the movement of electricity across large geographic areas from where it is generated to where it is consumed, enabling the wholesale electricity market to connect customers to the lowest cost suppliers in the region.** The Midcontinent Independent System Operator ([MISO](#)), Southwest Power Pool ([SPP](#)) and PJM Interconnection LLC ([PJM](#)) (see figure 1) each operate the region’s transmission system and facilitate transmission planning in the Midwestern Governors Association footprint.

Figure 1. Overview of RTOs serving Midwestern Governors Association states

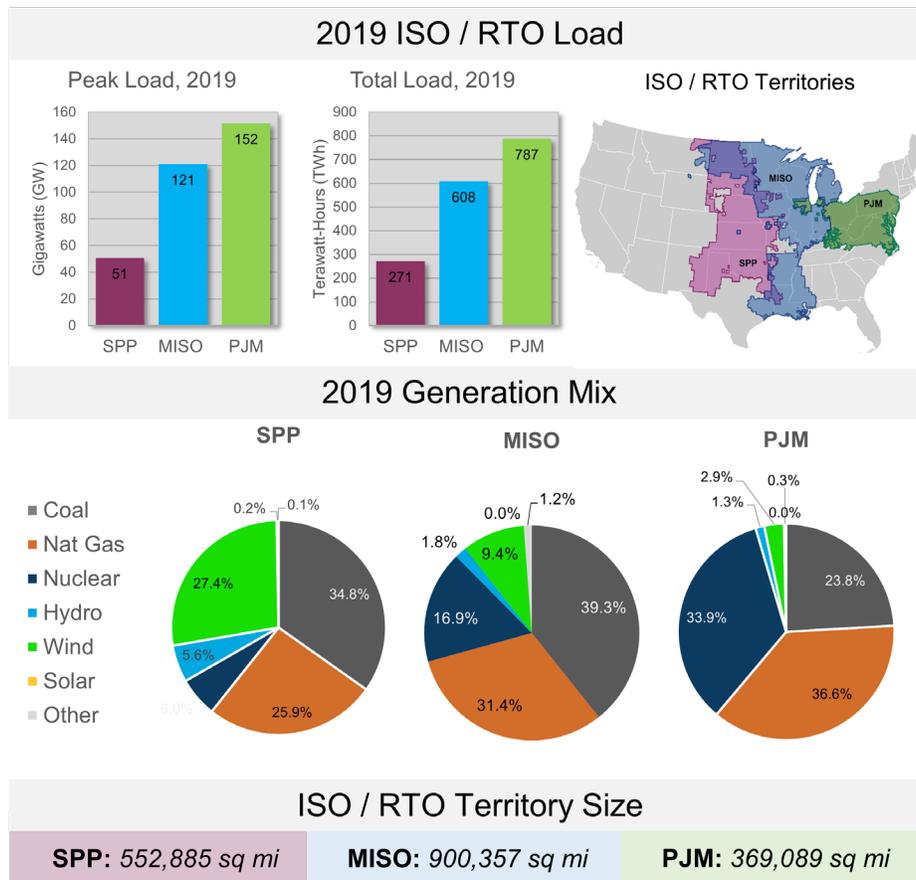


Figure authored by Great Plains Institute, December 2020.

Key takeaways for policy makers:

- The transmission system is a critical component to expanding renewable energy generation in the region by enabling system balancing, interconnection of new generation resources, and delivery of renewable energy output within and between states.
- Early and comprehensive transmission planning is the most important step in building a reliable, resilient, and efficient electric grid that is critical to states’ economic development initiatives.
- The transmission grid is planned via a regional process involving states, utilities, developers, and RTOs and should include state-level energy policies. Governors and staff should regularly communicate state energy policies and goals to their designated public utilities commission members and RTO(s).
- The type of power generation developed by states and utilities has significant implications for the transmission grid. Meanwhile, planning and building regional transmission lines takes about ten years, making regional collaboration vital.

State policies and the transmission grid

Regional Transmission Organizations (RTOs) are required under FERC Order 1000 to incorporate public policies into regional planning processes. State policies, such as renewable portfolio standards or carbon reduction targets, can drive specific assumptions and constraints within RTO planning studies. The aim of such analysis is to identify pathways for achieving state policies for minimal cost. When several states have policies in place, the RTO is tasked with evaluation of regional opportunities to meet policy objectives more efficiently than on a go-it-alone approach.

States in the Midwest are implementing carbon reduction and economic development policies that will drive changes on the grid. Solar and wind generation will likely continue to be added to the grid at an accelerating rate, while distributed energy resources and electrification-driven load growth will impact system planning and customer engagement. A growing body of literature shows that as renewable generation is deployed across the Midwest, the transmission grid will be increasingly important to balance supply and demand on a daily and seasonal basis, and geographic and temporal diversity so energy is always available when and where it is needed, even during times of low in-state production.

As state policies and market forces enable new technologies like energy storage and grid-enhancing technologies to bolster the grid, transmission planning processes must continue to evolve to optimize investments. As these new technologies can not fully replace the need for wires to move energy throughout the market footprint, an integrated approach to optimizing the grid is becoming increasingly important to meet public policy goals efficiently.

There are four main reasons to build transmission projects:

- 1. Reliability:** The grid must be planned in accordance with several reliability standards that the North American Electric Reliability Corporation ([NERC](#)) maintains and enforces. Aging and failing grid elements must also be replaced to maintain reliability.
- 2. Economics:** The economic planning process prioritizes connecting areas of low-cost generation to customer demand, which has the potential to save money for individual customers, states, and the region.
- 3. Public Policy:** State and federal public policies can drive specific transmission needs.
- 4. Interconnection:** Connecting new generation projects to the transmission network often requires transmission upgrades to ensure reliability.

Despite the clear benefits of an optimized regional transmission grid, proactively planning this system remains a persistent challenge. Utilities and RTOs must manage uncertainty regarding technology and fuel costs, load, and public policy needs a decade into the future.

Determining who pays what when new transmission projects are approved requires collaboration across states to identify shared benefits such as cost savings, reliability improvements, and optionality. States with public policy goals can support an efficient and effective cost allocation approach by collaborating to develop a shared vision of system needs.

This brief was prepared by the Great Plains Institute and the Midwestern Governors Association

