



Partnering to Improve Energy Development

John Tuma | Commissioner

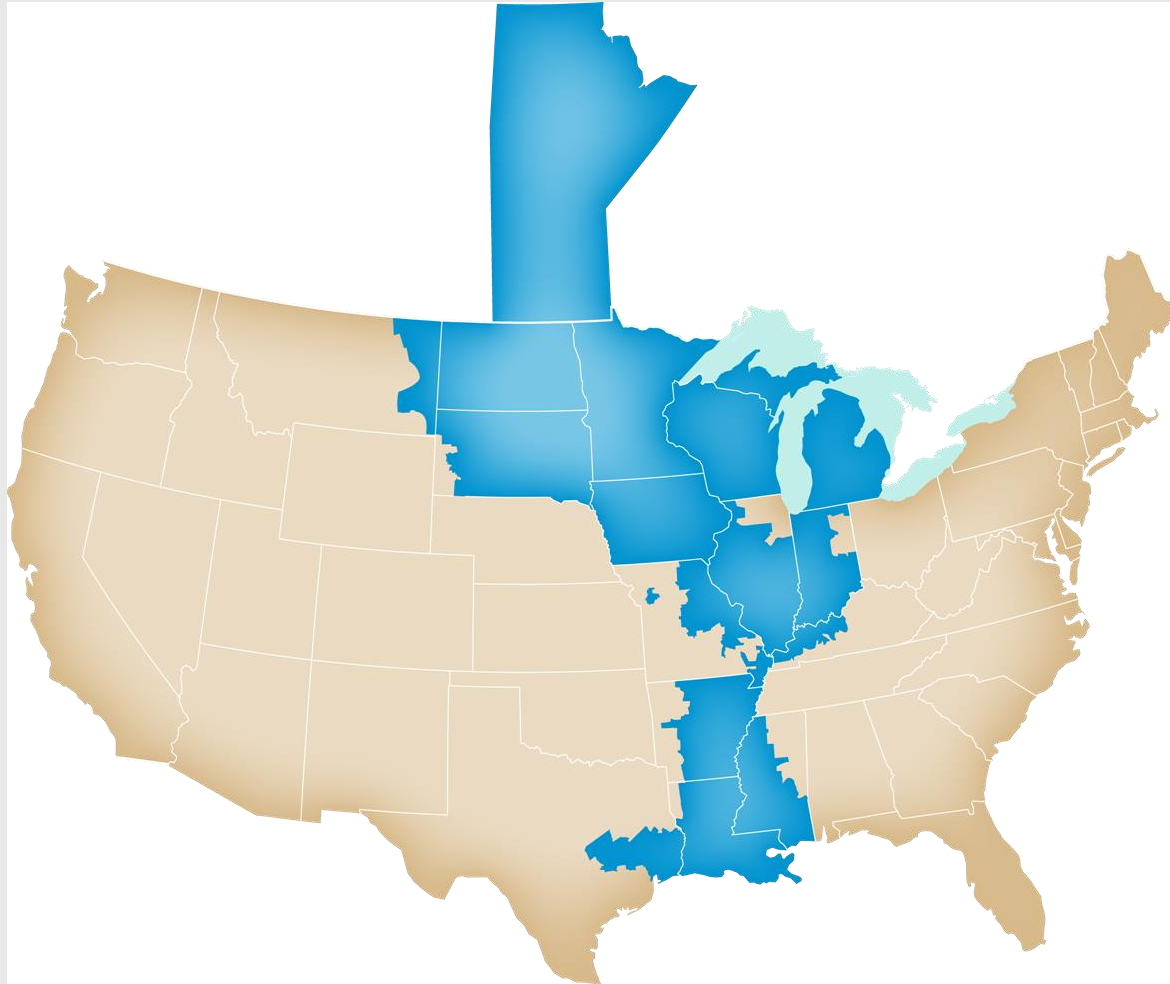
Clarion Call! Success has brought us to the limits of the current transmission system

“Here’s the bottom line. We have been given a really loud wake-up call with the most recent MISO queue study results that show there is no available transmission capacity in the MISO West footprint. Without an immediate commitment to addressing the exorbitant cost of interconnecting new projects to the electric grid and a plan to strategically build new transmission lines, wind and solar development will be stalled for the foreseeable future.”

*Peder Mewis and Kelly Welf
November 12, 2019*

- How Did We Get Here?
- How Can We Partner to Address Transmission Constraints?

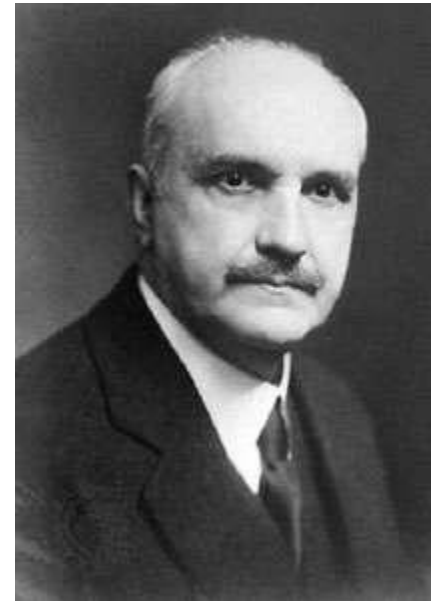
Midwest Independent System Operator (MISO)



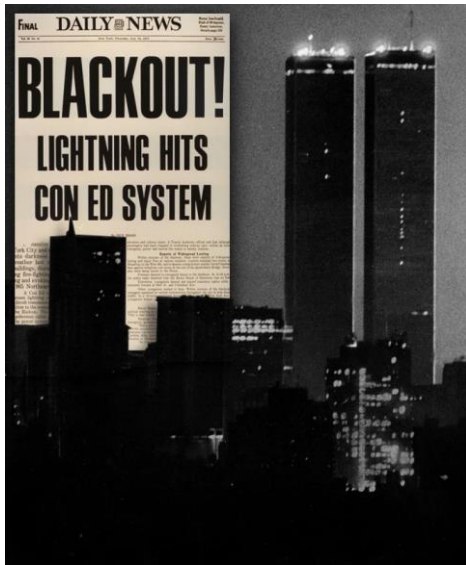
MISO History Matters

"Those who cannot
remember the past are
condemned to repeat it."

George Santayana



Challenges are not unique



1977



2003

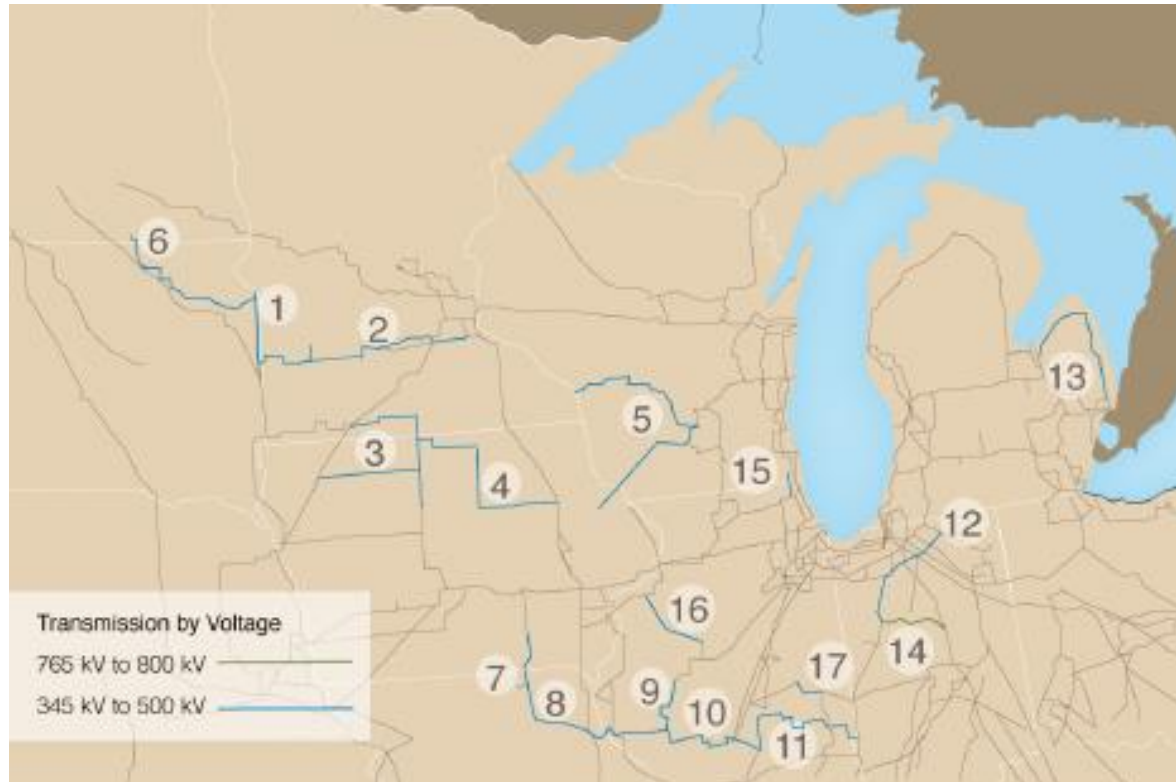
- 1992 Energy Policy Act of 1992
- 1998 Federal Energy Regulatory Commission accepts the organizational plan for the Midwest Independent System Operator MISO
- 2001 MISO begins reliability coordination and regional planning services
- 2003 MISO Transmission Expansion Plan (MTEP) MISO and stakeholders began to explore how to best provide a value-added regional planning process to complement the local planning of MISO members.
- 2005 MISO launched the Energy Markets and began centrally dispatching generating units throughout much of the central United States

- 1992 Energy Policy Act of 1992
- 1994 Xcel's Prairie Island Agreement with a mandate to develop wind projects
- 1998 Federal Energy Regulatory Commission accepts the organizational plan for the Midwest Independent System Operator MISO
- 2001 MISO begins reliability coordination and regional planning services
- 2004 CAPX2020 starts a partnership with Great River Energy, Minnesota Power, Missouri River Energy Services, Otter Tail Power and Xcel
- 2005 MISO launched the Energy Markets and began centrally dispatching generating units throughout much of the central United States.
- 2005 SW Energy Task Force reinvents itself as the Rural Minnesota Energy Board
- 2007 Minnesota Renewable Energy Act

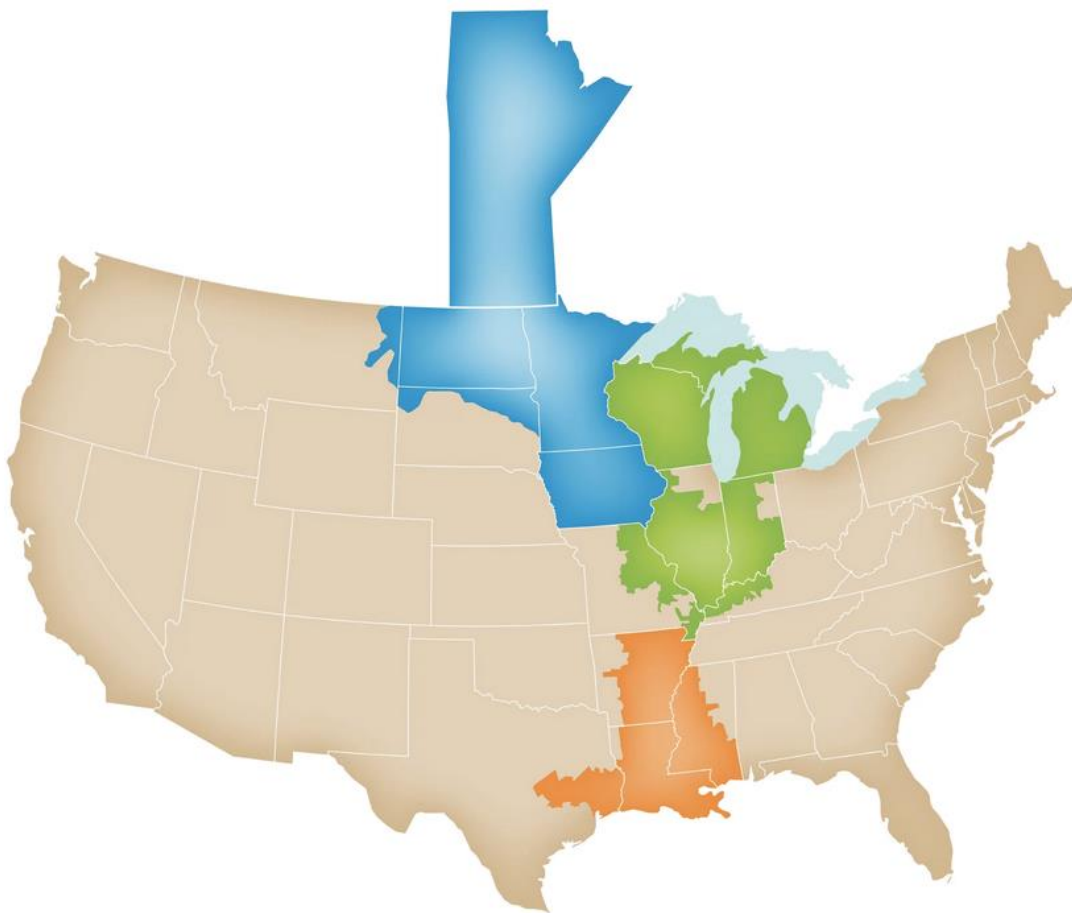
- 1992 Energy Policy Act of 1992
- 1994 Xcel's Prairie Island Agreement with a mandate to develop wind projects
- 1998 Federal Energy Regulatory Commission accepts the organizational plan for the Midwest Independent System Operator MISO
- 2001 MISO begins reliability coordination and regional planning services
- 2003 MISO Transmission Expansion Plan (MTEP) MISO and stakeholders began to explore how to best provide a value-added regional planning process to complement the local planning of MISO members.
- 2004 CAPX2020 starts a partnership with Great River Energy, Minnesota Power, Missouri River Energy Services, Otter Tail Power and Xcel
- 2005 MISO launched the Energy Markets and began centrally dispatching generating units throughout much of the central United States
- 2007 Minnesota Renewable Energy Act
- 2008 MISO develops in their MTEP Load Serving Entities regional needs that lays out the Multi-Value Portfolio (MVP) reimbursement structure.
- 2011 MISO MTEP process identifies their MVP portfolio

MISO MTEP17

The MVP Portfolio projects all showed a cost-benefit for MISO members and their ratepayers at ratios from 1.8 to 3.0 (1 being breakeven)



2013 MISO South



"Those who cannot remember the past are condemned to repeat it."

George Santayana

2019 MISO Forward

De-marginalization, Decentralization, and Digitalization



Study timeline for North Region Transfer Study

Phase I	Phase II & III	Phase IV
<ul style="list-style-type: none">• Develop scope in coordination with stakeholders• Develop Models and Scenarios	<ul style="list-style-type: none">• Run Reliability analysis and identify limits• Run economic analysis to evaluate if any benefit in mitigating system limits	<ul style="list-style-type: none">• Document and present final findings and recommendations to stakeholders
<p>January 2020</p> <ul style="list-style-type: none">• Present initial scope• Solicit Feedback <p>February 2020</p> <ul style="list-style-type: none">• Revised/Final Scope• Technical discussion on Models and Scenarios	<p>June 2020</p> <ul style="list-style-type: none">• Reliability and Economic initial results• Seek potential solutions to increase system limits	<p>August 2020</p> <ul style="list-style-type: none">• Final results and next steps <p>September 2020</p> <ul style="list-style-type: none">• Final findings and recommendations

MISO Governance

- Not-for-profit organization that delivers safe, cost-effective electric power across 15 U.S. states and the Canadian province of Manitoba.
- 120 Members
- Transmission Owners (GRE, MP, Xcel, OTP, Minnesota Municipal Power Agency, Missouri Basin. . .)
- Independent Power Producers (Geronimo, NextEra Energy. . .)
- Municipals and Cooperatives

Economic Development Matters



Study timeline for North Region Transfer Study

Phase I	Phase II & III	Phase IV
<ul style="list-style-type: none">• Develop scope in coordination with stakeholders• Develop Models and Scenarios	<ul style="list-style-type: none">• Run Reliability analysis and identify limits• Run economic analysis to evaluate if any benefit in mitigating system limits	<ul style="list-style-type: none">• Document and present final findings and recommendations to stakeholders
<p>January 2020</p> <ul style="list-style-type: none">• Present initial scope• Solicit Feedback <p>February 2020</p> <ul style="list-style-type: none">• Revised/Final Scope• Technical discussion on Models and Scenarios	<p>June 2020</p> <ul style="list-style-type: none">• Reliability and Economic initial results• Seek potential solutions to increase system limits	<p>August 2020</p> <ul style="list-style-type: none">• Final results and next steps <p>September 2020</p> <ul style="list-style-type: none">• Final findings and recommendations

Thank You!

John Tuma

john.tuma@state.mn.us

651-201-2220