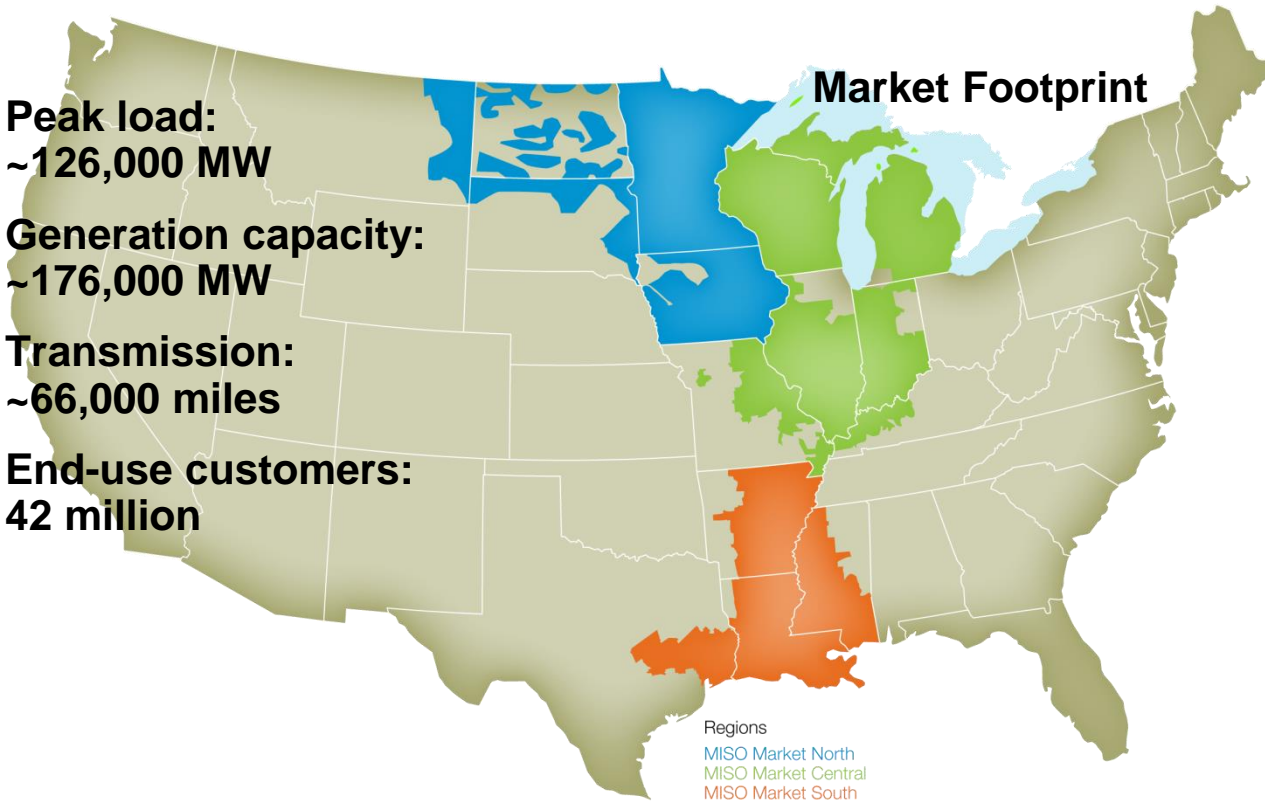


Tessa Haagenson  
Policy Studies Engineer  
May 5, 2014

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# The Midcontinent Independent System Operator (MISO)

- **Peak load:**  
~126,000 MW
- **Generation capacity:**  
~176,000 MW
- **Transmission:**  
~66,000 miles
- **End-use customers:**  
42 million



# The energy landscape is evolving, as reflected in a transitioning generation fleet and changing dispatch...

The annual contribution to total energy served by gas-fired resources in MISO over the past 4 years has increased from 3% to 7%.

Increased natural gas supplies are driving forecasts for sustained, competitive gas prices.

MISO's Q4 2013 Quarterly Survey projects the retirement of approx. 10 GW of coal-fired capacity in MISO by 2016.

Future environmental regulations also have the potential to significantly alter the generation fleet.

MISO's Generator Interconnection Queue indicates that generation added to the system in the next 3-5 years will largely be gas and wind.

State RPS mandates and goals are leading to increased penetration of renewables.

***...and reliance upon natural gas resources to meet energy needs is expected to continue to grow.***

# **MISO's Electric and Natural Gas Coordination Task Force was formed to investigate gas-electric interdependencies and to foster cross-industry education and discussion.**

*The Task Force has identified, prioritized and explored a number of critical gas-electric topics. This work effort has been memorialized in a series of collaborative papers and continues in 2014.*

## **2013 Topics**

Resource Adequacy (Fuel Risk)

Coordinated Operations: Procedure & Protocol for NG/EL Communications

Misalignment of Gas-Electric Scheduling & Market Timelines

Examination of Market Signals for Reliability (cont. in 2014)

## **2014 Topics**

Polar Vortex Experiences: NG Availability & Enhanced RTO / Pipeline Communications

Polar Vortex Experiences: Analysis of Projected 2016 Retirements

Potential Competition between Generator Demand & Upcoming Gas Storage Injection


Process & Timeline for NG Infrastructure Build-out

## The Task Force has also served as a platform for soliciting stakeholder input for Congressional hearings, FERC NOPRs and Technical Conferences.

- **Feb. 2013** – Tech Conf. on info sharing and communications between NG and EL industries
- **March 2013** – Congressional hearing on growing role of NG for electricity production
- **April 2013** – Tech Conf. on Coordination between NG and EL Markets
- **March 2014** – NOPR on NG & EL Operating Days and Market Timelines
  - May 6<sup>th</sup> MISO Gas-Electric Harmonization Workshop to gather feedback
- **April 2014** – Tech Conf. on Winter 2013-2014 Operations and Market Performance in RTOs/ISOs

**Additionally, MISO commissioned a series of gas infrastructure analyses and is engaged in an on-going gas-electric study effort for the entire Eastern Interconnect.**

- The Phase I, II and III gas studies identified major gas industry trends and provided a high-level picture of gas pipeline capacity availability in the MISO footprint in the context of growing demand.
  - See <https://www.misoenergy.org/WhatWeDo/StrategicInitiatives/Pages/EPACompliance.aspx>
- The Eastern Interconnection Planning Collaborative (EIPC) is overseeing a multiple-year study of the gas-electric system interface with input from each of the Planning Authorities in the EI.
  - See [http://www.eipconline.com/Gas-Electric\\_Activities.html](http://www.eipconline.com/Gas-Electric_Activities.html)

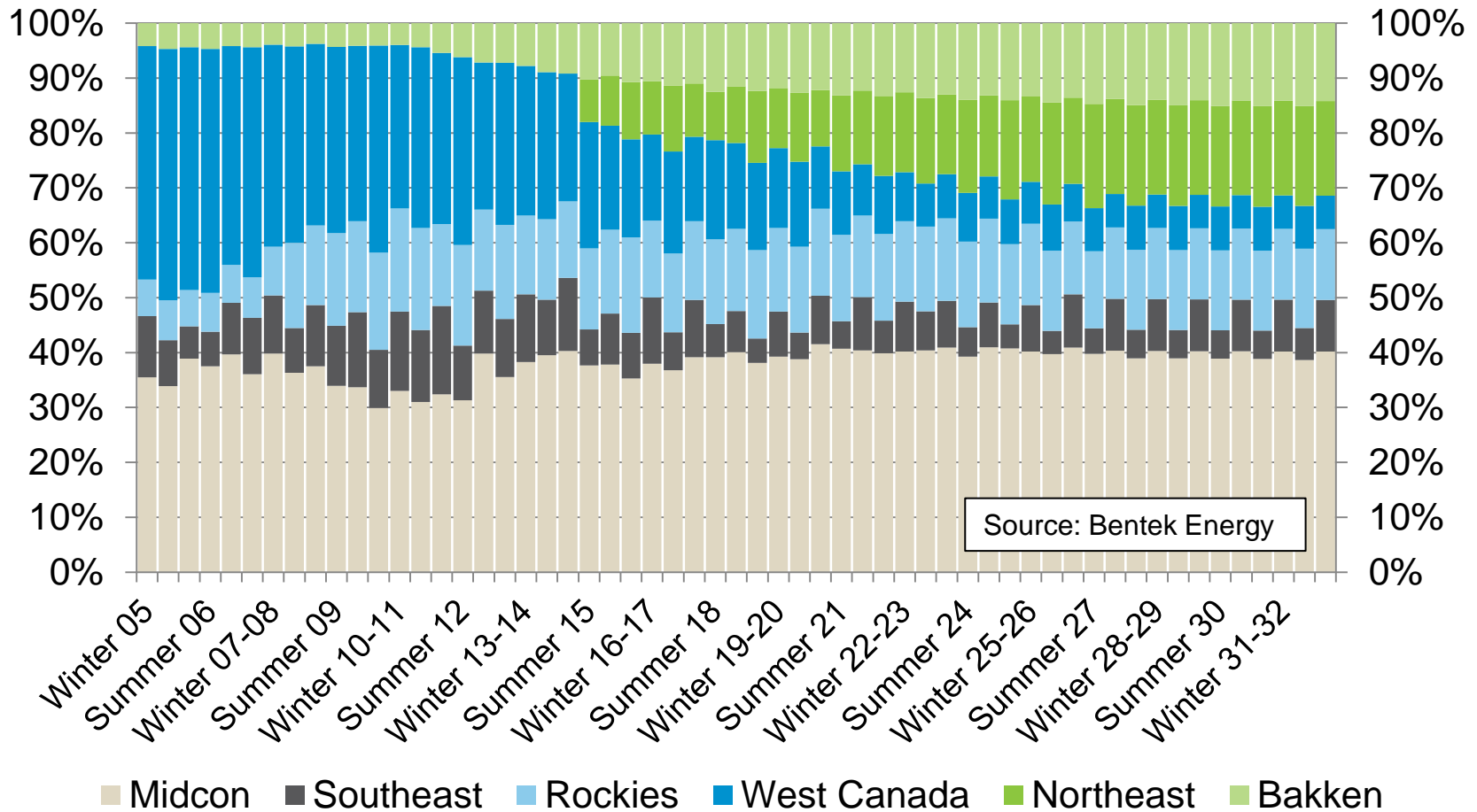


## **We continue to work with our stakeholders, state and federal regulators, and members of the gas industry to address gas-electric challenges including...**

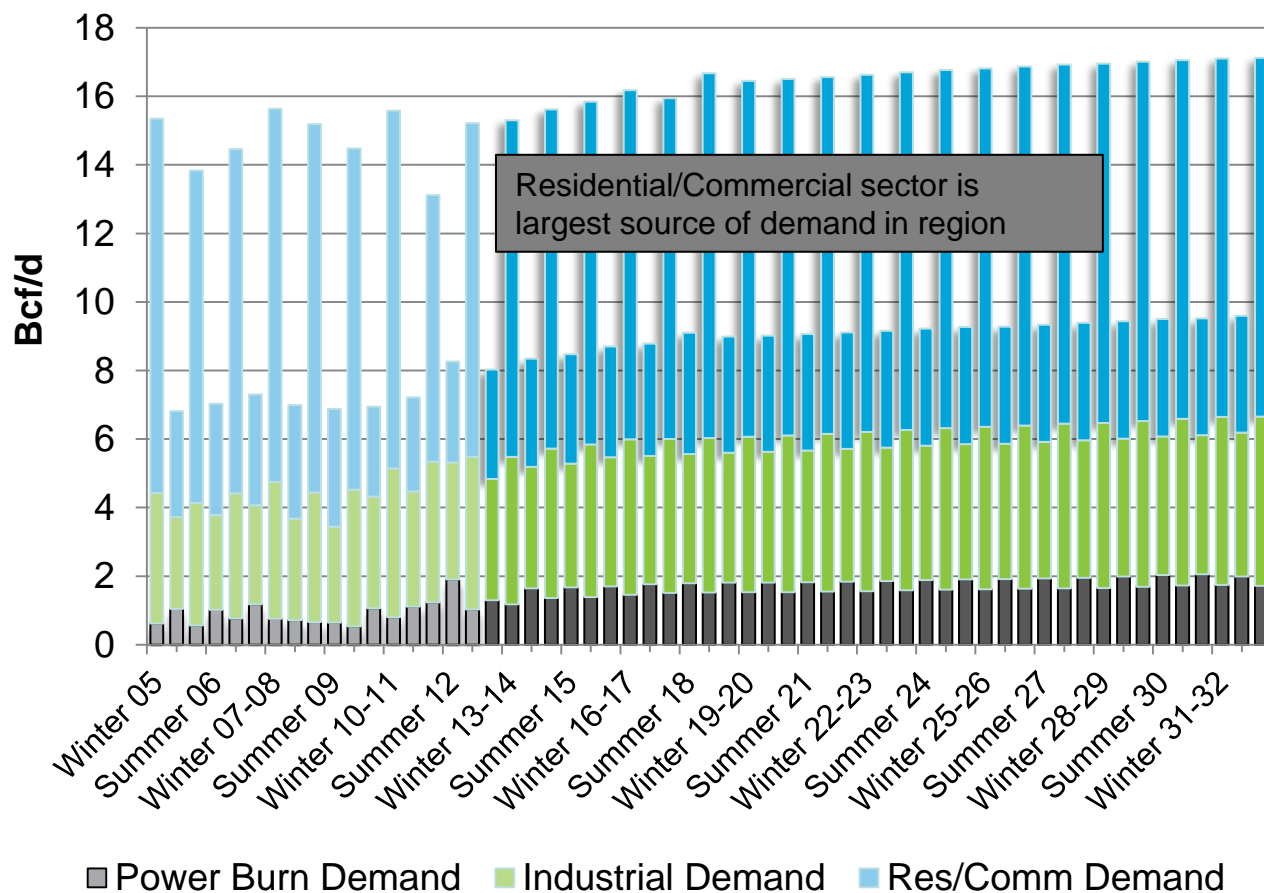
- Enhancing system awareness
- Improving cross-industry communications
- Reflecting fuel risk in market design and planning processes
- Preparing for extreme weather peak day operations
- Addressing scheduling differences between operating days market timelines
- ...all with the overarching goal of ensuring safe, reliable and efficient operation of the electric transmission system, in order to deliver lowest-cost energy to the end-use consumer.

# APPENDIX

## Gas supply options for the Midwest are projected to diversify over the next 20 years.

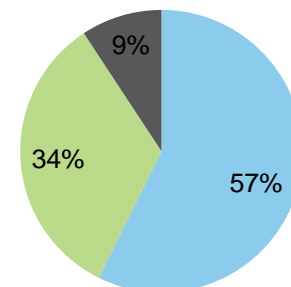


# Midwest forecasts show base load growth in demand for gas from power and industrial sectors.



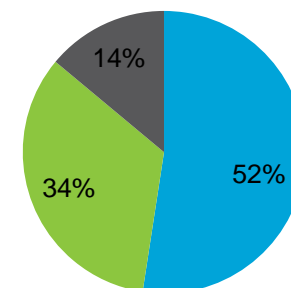
2009-2013 Avg

■ Res/Comm ■ Industrial ■ Power burn



2028-2032 Avg

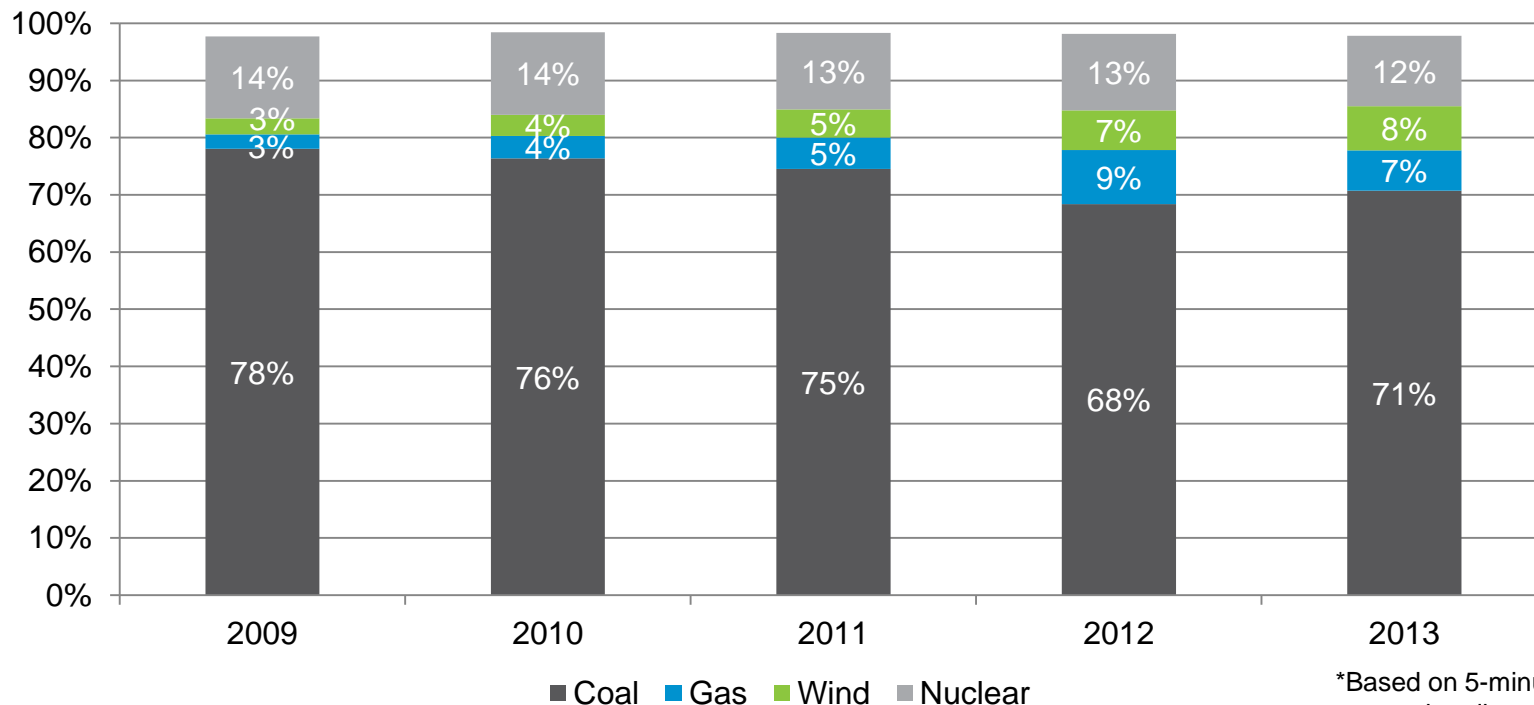
■ Res/Comm ■ Industrial ■ Power burn



Source: Bentek Energy

## Both system dispatch and the electric generation resource mix in the footprint are in transition.

Annual Energy Contribution in MISO by Fuel Source\*



\*Based on 5-minute unit level generation dispatch target.

**In the current footprint, coal resources account for 40% of installed capacity, gas/oil for 40%, renewables for 12% and nuclear for 8%.**

# Links

- To learn more about gas-electric coordination at MISO, see the link below:
  - <https://www.misoenergy.org/WhatWeDo/StrategicInitiatives/Pages/EPACompliance.aspx>
- To find out what's powering the Midcontinent, see a Real-Time breakdown of total energy served by fuel type:
  - <https://www.misoenergy.org/MarketsOperations/RealTimeMarketData/Pages/FuelMix.aspx>