



# Hybrid Utility Regulation in the United States Midwest: Achievements & Challenges

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Public Service Commission of Wisconsin, U.S.A.  
iiESI Workshop  
Copenhagen, Denmark  
May 27 – 28, 2014



# Goals of Presentation

- Structural overview of hybrid regulation in Wisconsin
- The response of the current regulatory construct to market and policy challenges





# Geography and Climate of Wisconsin

- Land Area: 141,000 km<sup>2</sup>
- Population: 5,688,040
- Capital: Madison, population 240,000
- Largest City: Milwaukee, population 598,000
- Average Winter Temperature: -8°C
- Average Summer Temperature: 19°C
- Average Annual Precipitation: 83 cm



# Public Service Commission of Wisconsin (PSCW)

- Wisconsin was 1<sup>st</sup> state to regulate public utilities (1907)
- Three Commissioners appointed by the Governor to serve 6-year terms
- Staff of ~140
- PSCW regulates more than 1,100 public utilities that provide electricity, natural gas, water and telecommunication services



# Key Structural Elements of Electric Sector Regulation in Wisconsin

- State-based, traditional retail regulation
- Combination of vertically integrated utilities (W. Wisconsin) and generation and distribution utilities co-served by a transmission-only utility (E. Wisconsin)
- Some non-utility, independent generators
- Load served through utility-owned generation, contracted power (via IPPs), and market purchases
- Retail regulated structure exists alongside, and within, a wholesale energy market (Midcontinent Independent System Operator (MISO))
- **A true hybrid, but similar in most regards to how most load is regulated in MISO – vertically integrated, state-regulated utilities participating in a wholesale energy market regulated by the federal government (FERC)**



# PSCW Role in Regulation of Electricity Industry

- Ensure that in the absence of competition, adequate and reasonably priced service is provided to utility customers:
  - Pre-construction approval of large generation and transmission projects
  - Approval of retail rates
  - Oversight of utility finance, structure, mergers
  - Oversight of energy efficiency and conservation programs
  - Oversight of utilities' compliance with the renewable portfolio standard
  - Advocacy at the RTO (MISO) and federal regulator (FERC)



# PSCW Role in Regulation of Electricity Industry

- The PSCW has broad regulatory authority over:
  - Investor Owned Utilities (IOUs)
  - Municipal Electric Utilities
- The PSCW has varying limited regulatory authority over:
  - Independent Transmission Companies (“American Transmission Company”)
  - Cooperatives
  - Independent Power Producers
- Local Distribution Companies:
  - 118 monopolies with distinct service territories
    - 12 private utilities (owned by investors)
    - 82 municipal utilities (owned by local government)
    - 24 cooperatives (owned by customers)





# Midcontinent Independent System Operator (MISO)

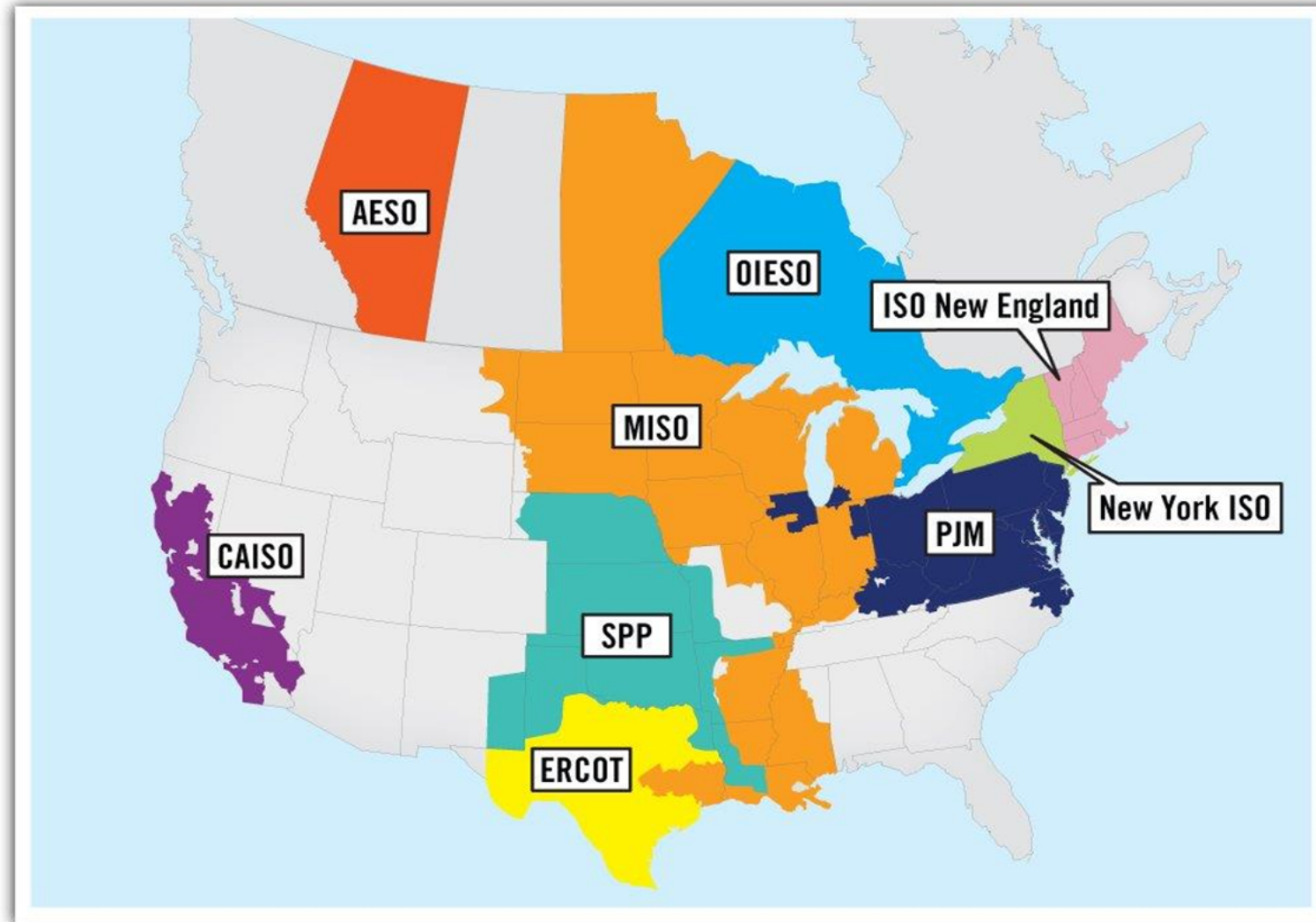
- Regional Transmission Organization (RTO) covering 16 states in the Midwestern U.S. and parts of the southern U.S. as well as the Canadian province of Manitoba
- Independent, non-governmental organization created as a result of U.S. federal energy policy developed in the 1990s and 2000s
- Functions include:
  - Regional transmission planning
  - Wholesale market operations
  - Market development
  - Provider of independent transmission system access
- 201,390 MW (reliability); 176,454 MW (market); 12,464 MW wind in service
- 65,787 miles of transmission
- \$20.3B USD annual gross market charges



# Wholesale (MISO) Market Oversight

- Wholesale market subject to oversight and regulation by the federal regulator (FERC)
- FERC relies on an Independent Market Monitor (IMM)
- IMM's role is to identify market flaws that result in inefficiencies or gaming and market power abuses
- IMM reports to both FERC and the RTO Board of Directors
- **Diminished role of state (non-federal) regulator in this area**

# RTOs and Energy Markets





# Policy and Regulatory Drivers in Wisconsin (some old, some new)

- Costs – rates matter, and they’re going up – **are rates reasonable?**
  - Cost-based rates (plus a reasonable return on equity)
  - Least-cost generation planning
- Resource Adequacy – **will the lights stay on?**
  - A state-mandated planning reserve margin of 14.5 percent
  - Least-cost generation planning
  - Increasing reliance on natural gas – fuel diversity a problem?
- Public Policy – **are legislative mandates being met at reasonable cost?**
  - Renewable Portfolio Standard (Wisconsin = 10% by 2015)
  - Energy Efficiency requirements (Wisconsin = \$70M USD – \$90M USD per year)
  - Federal Environmental Policy – air pollution reduction standards (e.g., SO<sub>x</sub>, NO<sub>x</sub>, mercury, etc.)
  - Carbon?
- Distributed Generation - an “All of the Above” issue (costs, resource adequacy, public policy) – **what are Wisconsin and MISO doing?**



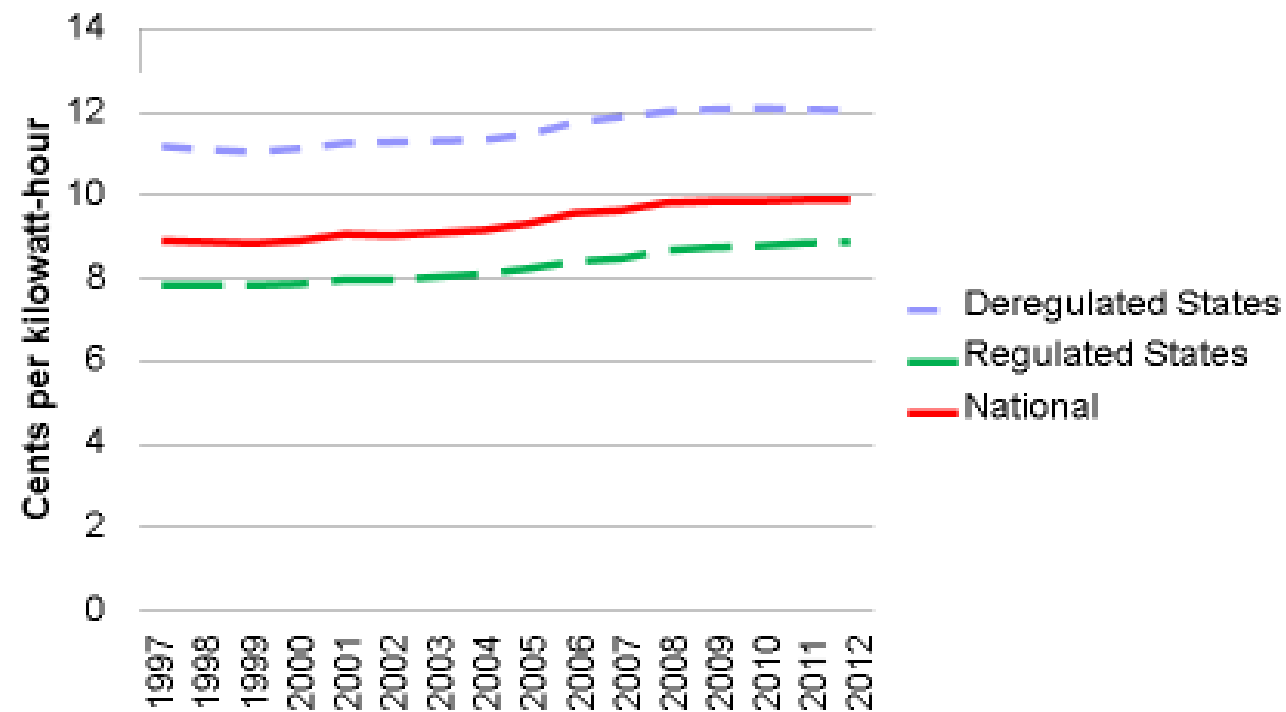
# Rates/Bills in Wisconsin

- **Rates** in the primarily vertically integrated Midwest are lower, on average, than in the rest of the country. In Wisconsin, they are higher.
  - Wisconsin – 10.64 US cents per kwh (2013)
  - U.S. Midwest – 9.21
  - U.S. – 10.08
- **Bills** in Wisconsin and the Midwest are lower, on average, than in the rest of the country
  - Wisconsin - \$92.79 USD/month
  - U.S. Midwest - \$97.68
  - U.S. - \$107.28
- Causes in Wisconsin? Generation, transmission, pollution control build, increased fuel and O&M lead to increases. Recession and strong energy efficiency program lead to lower bills.



# Average Rates: Deregulated (Liberalized) vs. Regulated States

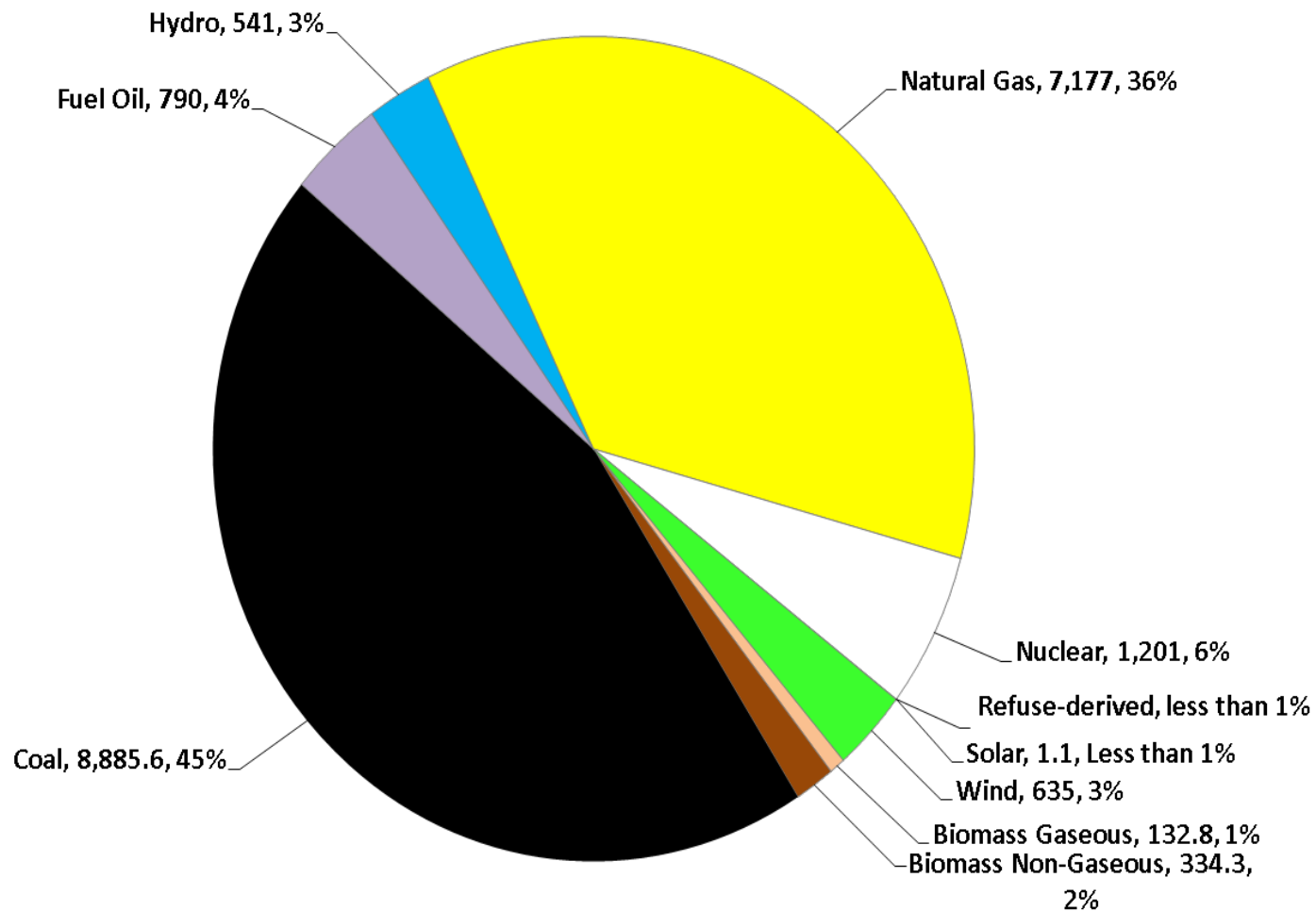
Average rates: Deregulated (Liberalized) vs. Regulated States



Source: U.S. Department of Energy, EIA

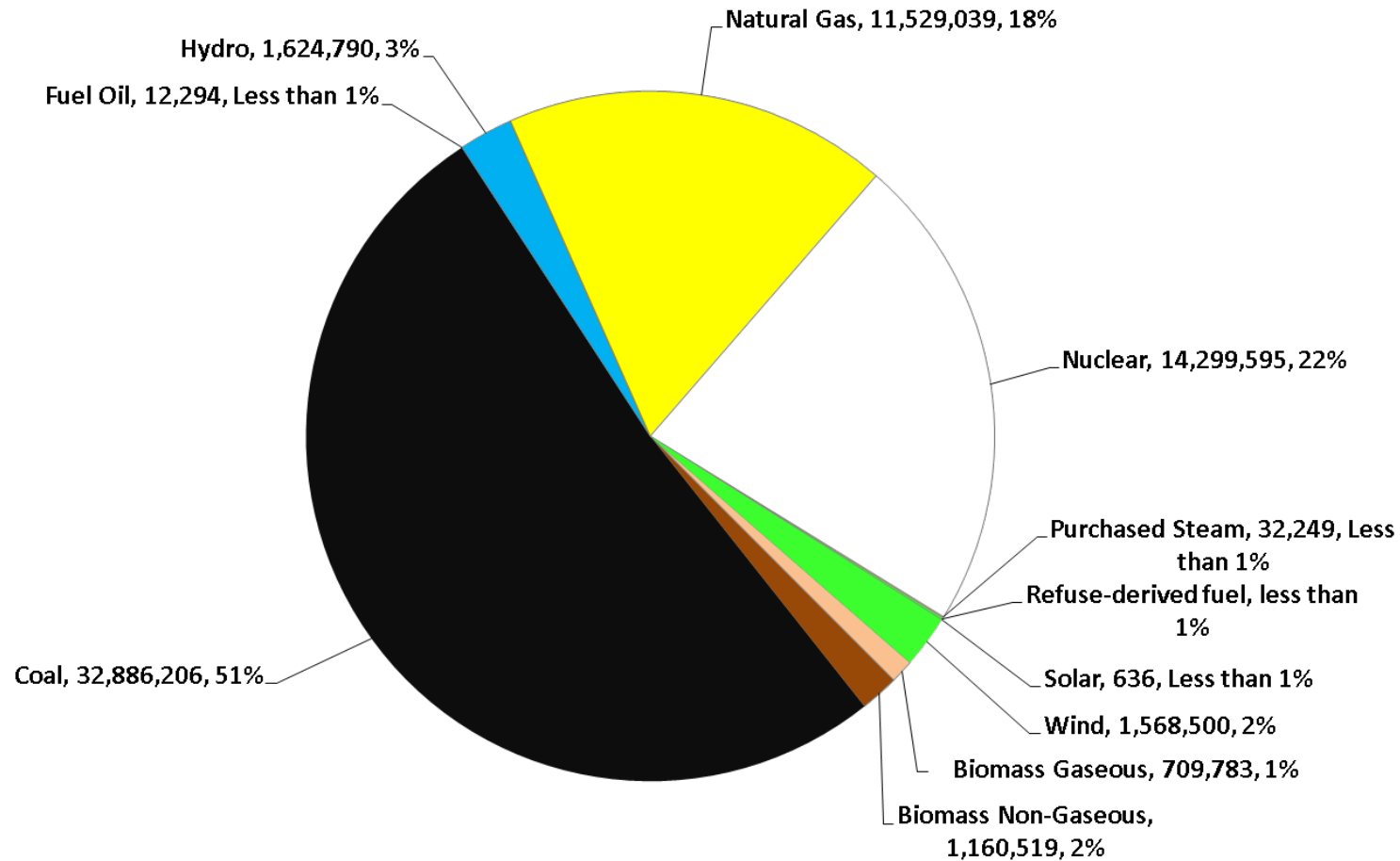


# Wisconsin Generation Capacity by Fuel, January 2014





# Wisconsin Energy Generated by Fuel, 2012



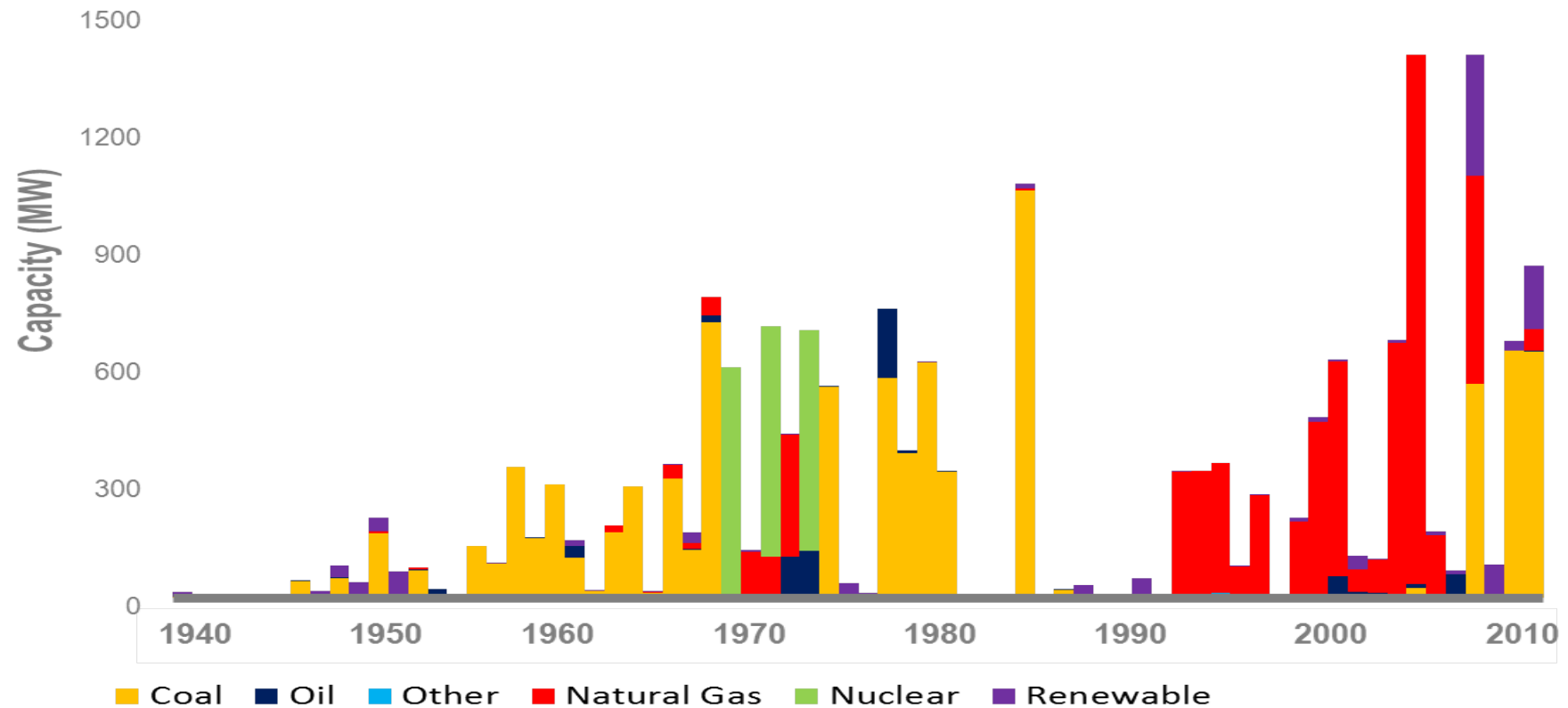
- Includes generating units operated by IOUs, cooperatives, municipals, non-utilities, and merchants; (MWh)





# New Wisconsin Generation

## New Electric Generating Capacity Additions by Fuel Type



Source: U.S. Energy Information Administration Form EIA-860, which includes existing electric generating units at plants with at least 1 MW capacity (electric utilities, independent power producers, and combined heat and power plants) that are connected to a power grid. Data represents installed summer capacity.



# Increased Regional Reliance on Gas - Electric / Gas Coordination

- Strong likelihood of widespread and substantial coal retirements in the MISO region (one MISO estimate = ~12 GW)
- Gas generation will fill the gap – MISO projects 22 new gas-fired units to be built over the next 20 years (13 GW of new gas generation)
  - PSCW has approved 4800 MW of new gas or gas conversion since 1997
- Heightened concern about gas storage and pipeline capacity
- In one MISO study, the High Demand Scenario indicated constraints on ~90% of the major interstate pipelines in the Midwest
- Collaborative, regional focus on matching expected future gas demand with sufficient storage and capacity – states, FERC, and MISO working together

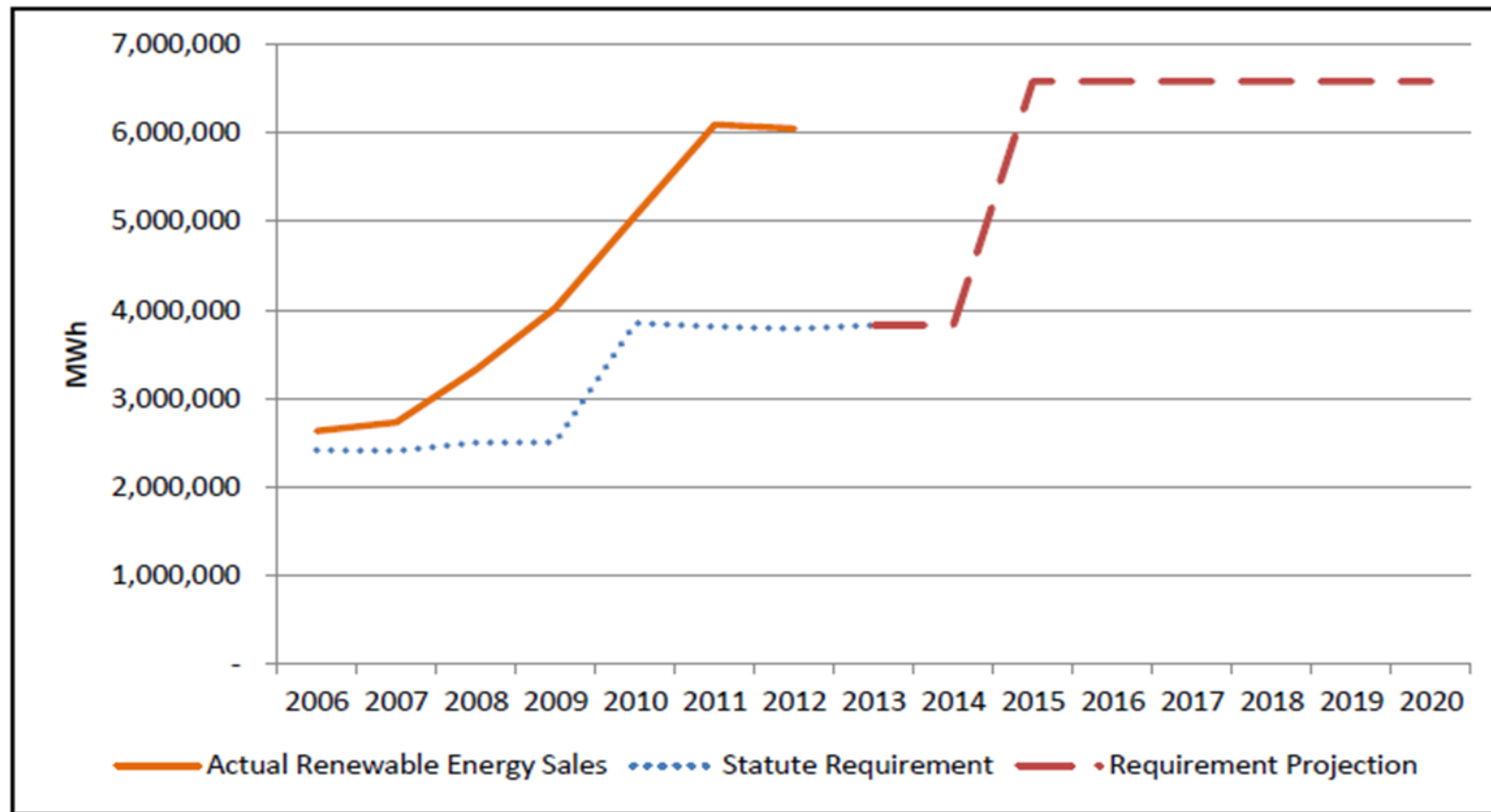


# 2014 “Polar Vortex”

- All-time winter peaks set in the MISO region in January of 2014 – coldest weather in decades
- Natural gas constraints and interruptions were common
- Gas demand/supply issues pushed energy market prices up
- Market response was a move to coal
- Very high coal unit availability (85% – 90%) and capacity factors (between 70% – 90%) during the extreme cold spells
- Relative fuel diversity of the MISO region big benefit
- Vortex event exposed timing disconnect between gas commodity market transactions and energy dispatch at MISO – FERC is acting and states need to focus more directly on winter resource adequacy



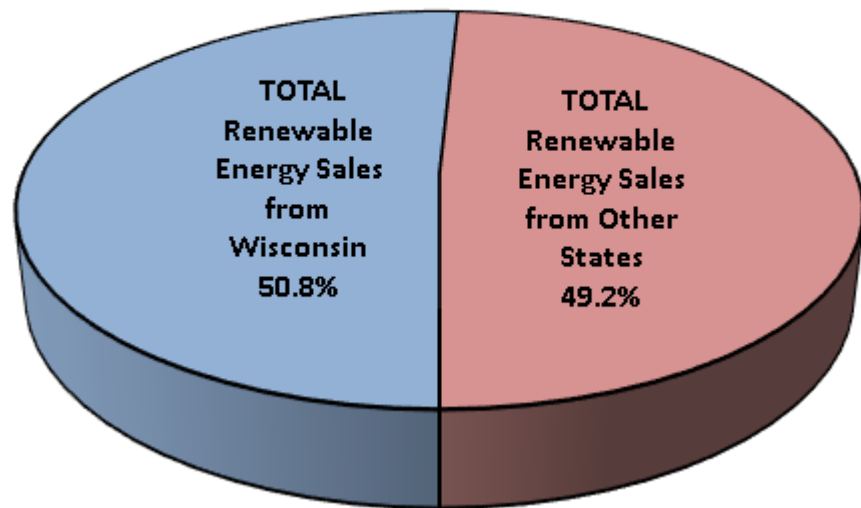
# Wisconsin Statewide Renewable Energy Sales and RPS Requirements



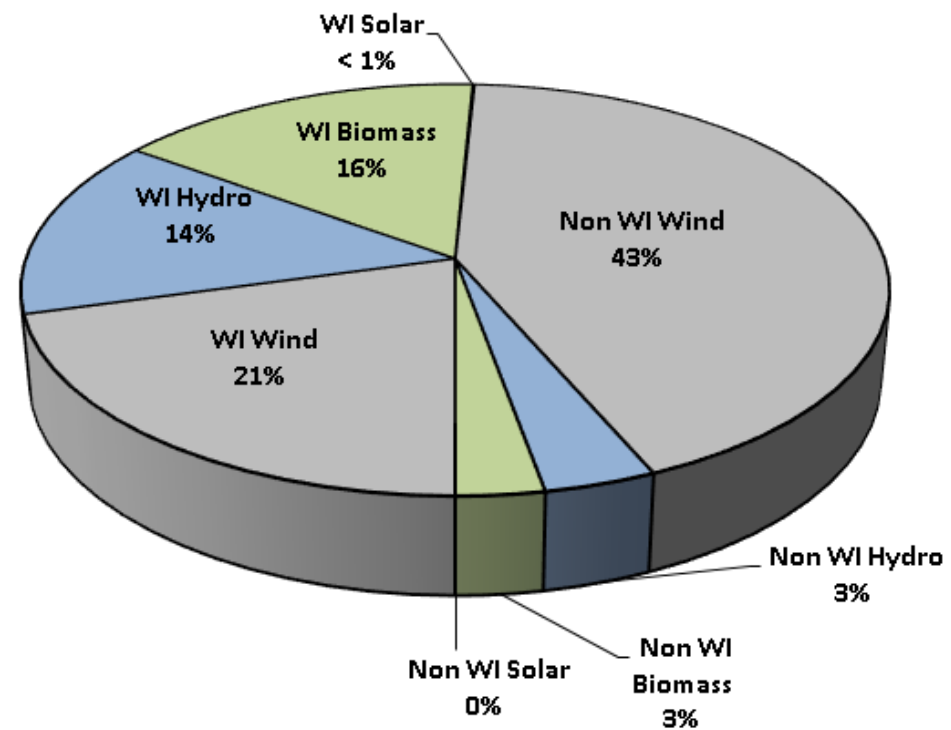
\* Projection out to 2020 based on 0 percent energy growth.

- Renewables as % of total retail electric sales: 3.78% in 2006, 8.79% in 2012
- Preliminary Wisconsin Commission staff analysis for 2013: slightly above 10% goal

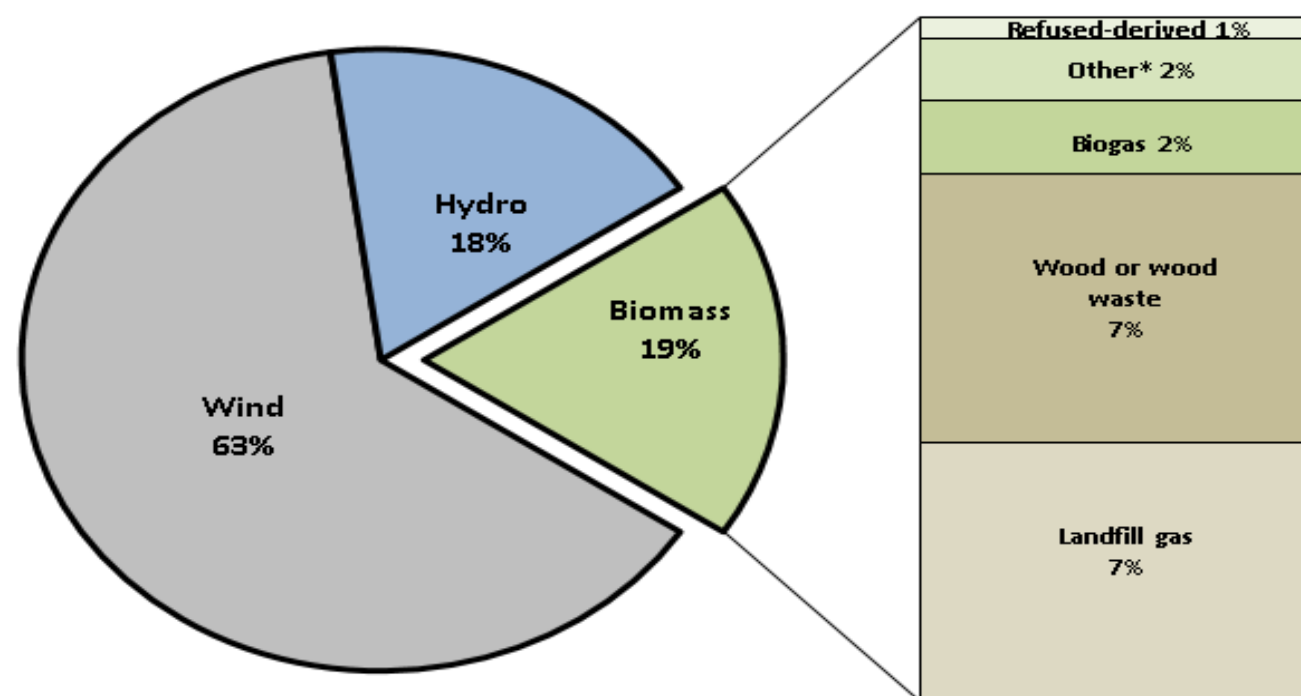
**2012 Renewable Energy Sales by State**



**2012 Renewable Energy Sales by State and Resource**



## 2012 Renewable Energy Sales by Resource



\*Other biomass represents waste from paper products, processed plant materials, agriculture products, and animal waste



# Major RPS Programs in the U.S. Midwest

- **The Wisconsin RPS**
  - Statewide goal of 10% by 2015
  - Preliminary status for 2013: 10% goal reached, may increase slightly in the next few years
- **The Michigan RPS**
  - Statewide Goal of 10% by 2015
  - Michigan's regulatory agency states that all but one small utility on track to meet 2015 requirements; price cap issue with the one small utility
- **The Minnesota RPS**
  - Statewide Goal of 25% by 2025
  - Xcel = 30% by 2020, other IOUs = 26.5% by 2020, other utilities = 25% by 2025
  - Solar carve-outs for individual utilities, statewide goal of 10% total retail sales from solar by 2030
- **The Illinois RPS**
  - Statewide Goal of 25% by 2025



# Energy Efficiency in Wisconsin

## “Focus on Energy”

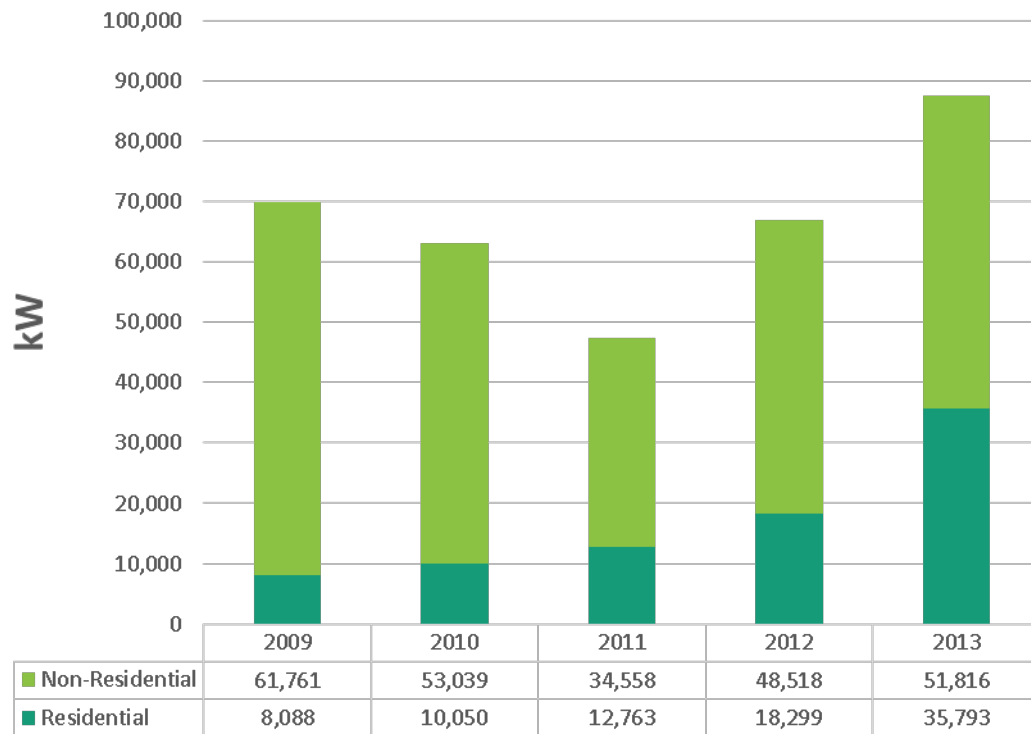
- 1999 – Creation of the statewide energy efficiency program – *Focus on Energy*
  - Managed by a state agency (now the PSCW)
  - Third-party program administrators
    - Utilities contract with third party, PSCW approves contract
    - PSCW reviews program direction every 4 years
    - Performance based contract
  - Established funding level (1.2% of utility revenues - \$70-90M USD per year)
  - Allows utilities and large customers to opt out (none have)
  - Allows utilities to have additional voluntary programs (3 of 5



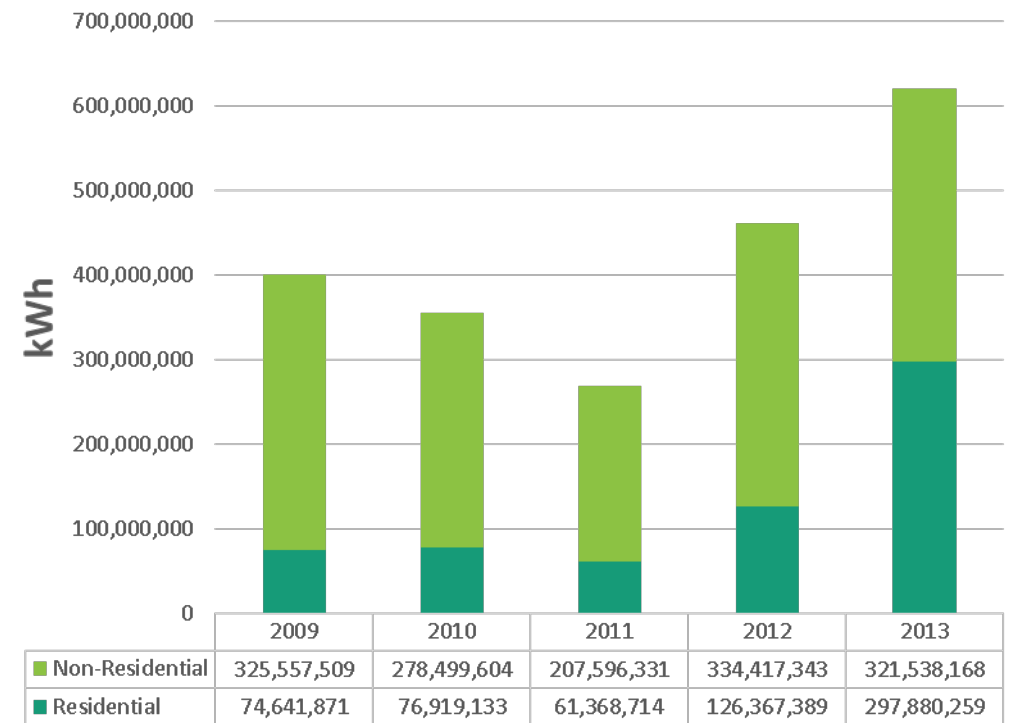


# Wisconsin Focus on Energy: 2009-2013

## Peak Demand (kW) Reduction



## Electricity Savings (kWh)





# Wisconsin Focus on Energy: Key Achievements

- On track to meet commission's 4-year savings goal (2011-2014)
- Achieving increased savings with increased cost-effectiveness
  - Program benefit cost ratio
    - 2011: 2.46 to 1
    - 2012: 2.89 to 1
    - 2013: 3.41 to 1
- Emissions reductions
  - 2012: Avoided 4.8 million tons of carbon dioxide emissions
- Economic benefits
  - \$940M USD from CY 2012 program activities



# Distributed Generation - Regulatory Challenges

- Traditional response to DG in U.S. states – net metering (43 states + D.C.)
- As DG penetration increases, a perceived disconnect between “pro-DG” rate structures such as net metering and a utility’s ability to recover fixed costs
- Apparent disparity between net metering retail rate and utility avoided cost (wholesale energy price)
- Traditional utility response (and seen in Wisconsin):
  - Increase fixed charges
  - Cap DG facility sizes
  - Limit buyback of DG customer’s “excess” energy to wholesale price
- Questions for state regulators, federal regulators, RTOs
  - Is the threat to utilities real?
  - Which subsidies (tax, rate) exist and which should continue?
  - Is there a single solution (straight fixed variable, Value of Solar), or multiple solutions?
  - What is the role for RTOs and federal regulator (FERC)?



# Policy and Regulatory Drivers in Wisconsin (some old, some new)

- Costs – rates matter, and they’re going up – **are rates reasonable?**
  - Yes, though bears watching (as always). State based regulation allows opportunity to earn a reasonable return. Transmission costs rising (7% in 2011 to 11% in 2013 ), but RTO planning is leading to transmission build and access to least-cost (or publicly desirable) forms of generation.
- Resource Adequacy – **will the lights stay on?**
  - Yes. Resource adequacy is a long-standing obligation of state regulators. Working in tandem with the RTO, both long-term and short-term reliability can be assured. Inter-RTO cooperation key on high demand days.
- Public Policy – **are legislative mandates being met at reasonable cost?**
  - Yes, with Wisconsin rates up approximately 1% as a result of the 10% RPS obligation. Access to cheaper forms of renewable energy facilitated by RTO transmission build and planning.
  - Energy efficiency remains a core responsibility of state-regulated utilities.
  - States will have primary responsibility for compliance with major federal environmental mandates. RTOs will provide valuable analytical assistance, and perhaps more in a carbon-regulated future.
- Distributed Generation - **what are Wisconsin and MISO doing?**
  - Something, but perhaps not enough.



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