

Wisconsin Public Service Commission

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November 20, 2014

Electric and Natural Gas Coordination



Changing
Energy
Landscape



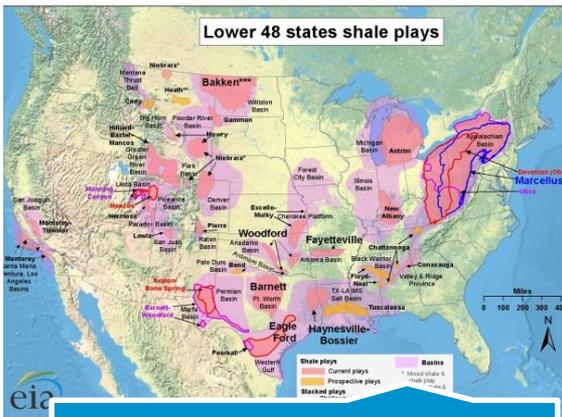
What about
Wisconsin?



What's
MISO
doing?



Evolving Energy Landscape



Abundant Natural Gas Supply



Environmental Regulations

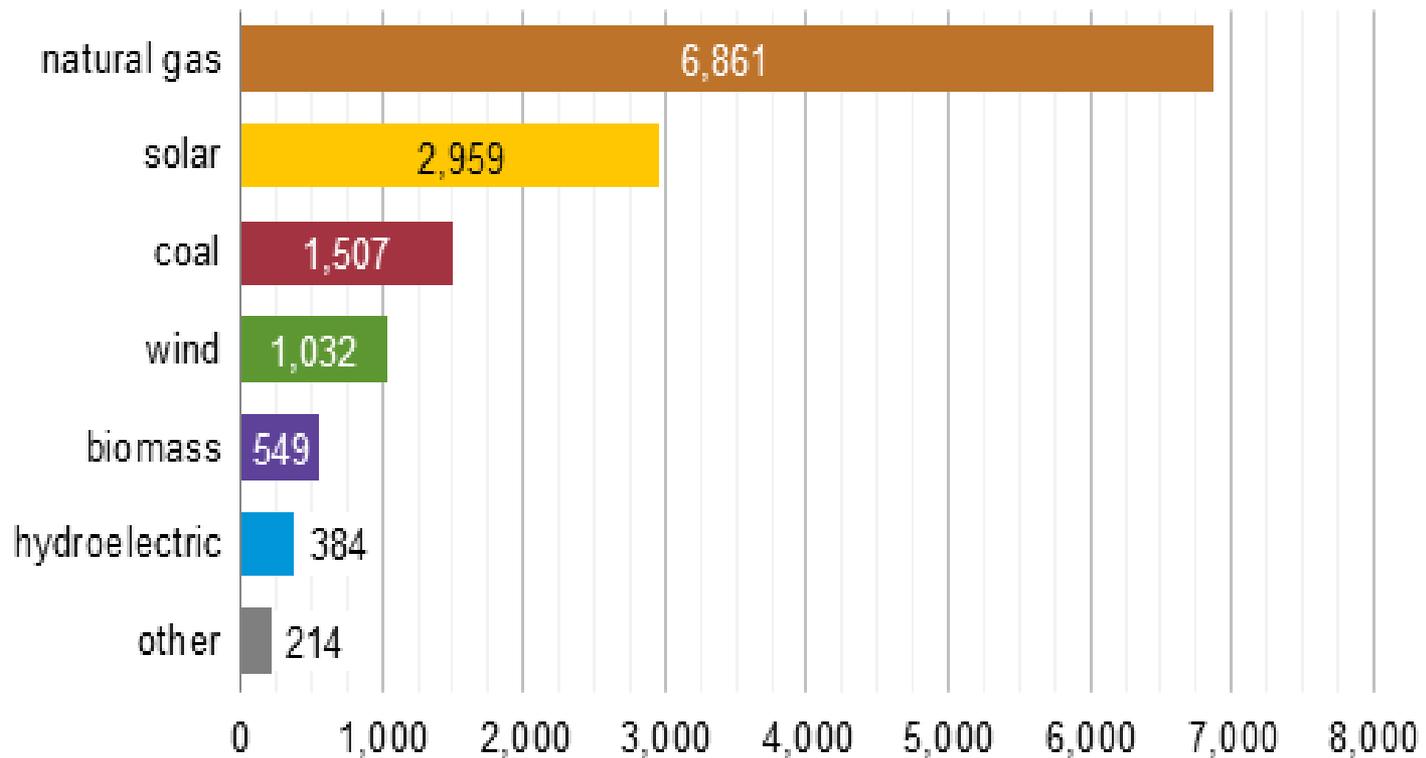


Renewables

Reliance upon natural gas resources to meet energy needs is expected to continue to grow

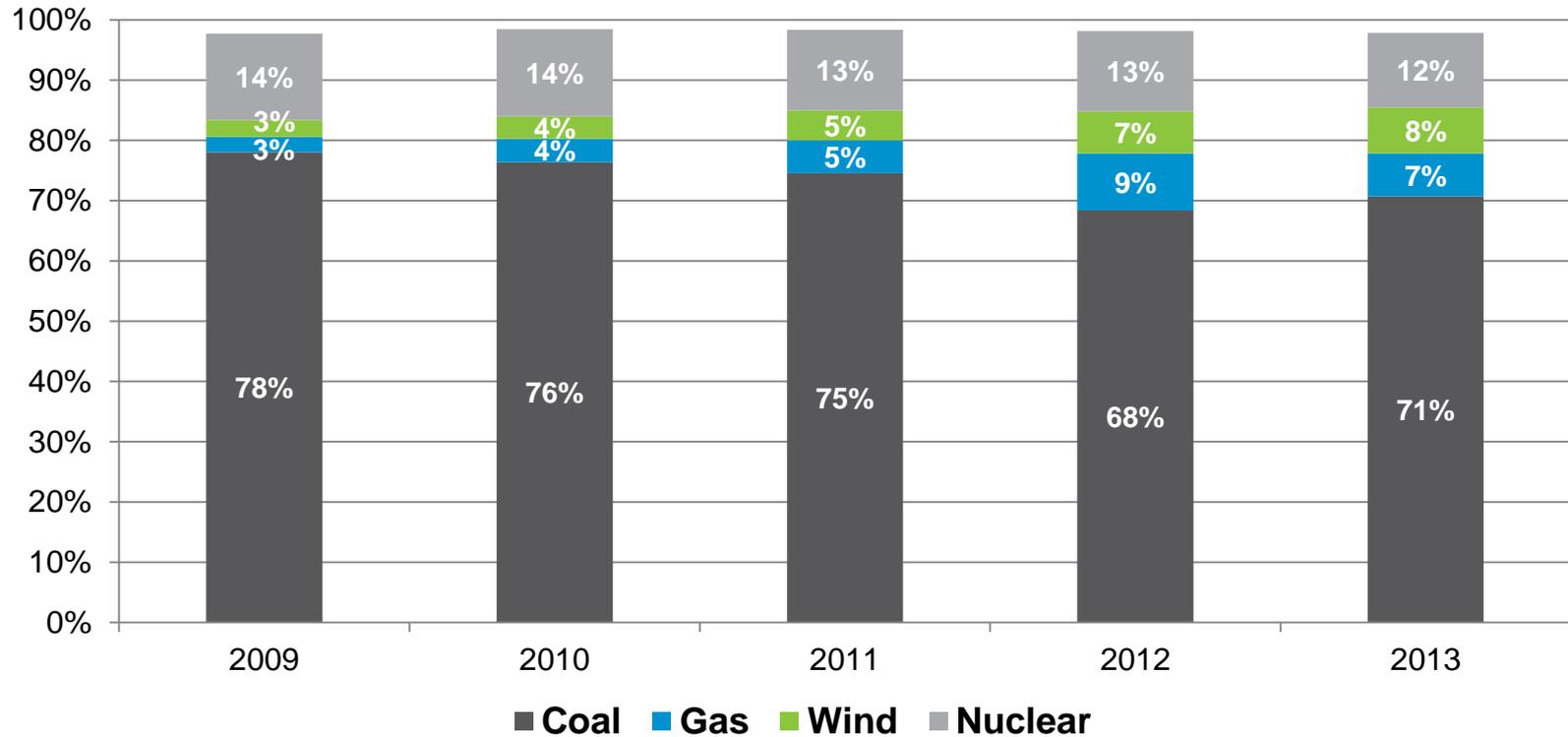
New Installed Capacity in 2013

U.S. power plant capacity additions in 2013
megawatts (MW)



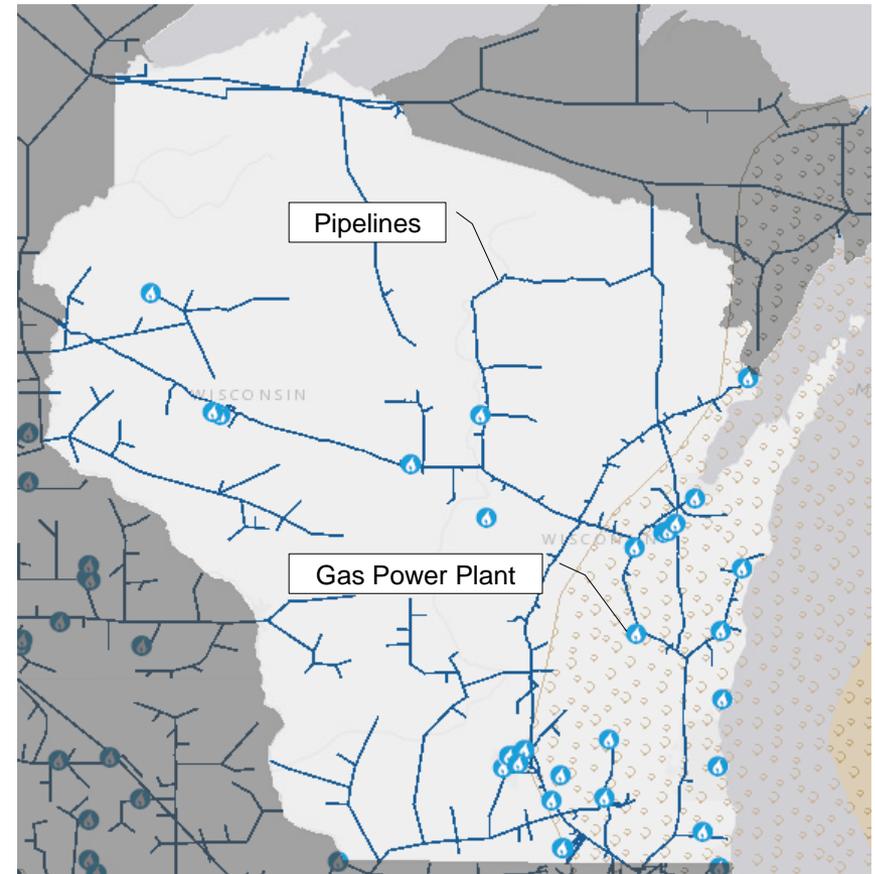
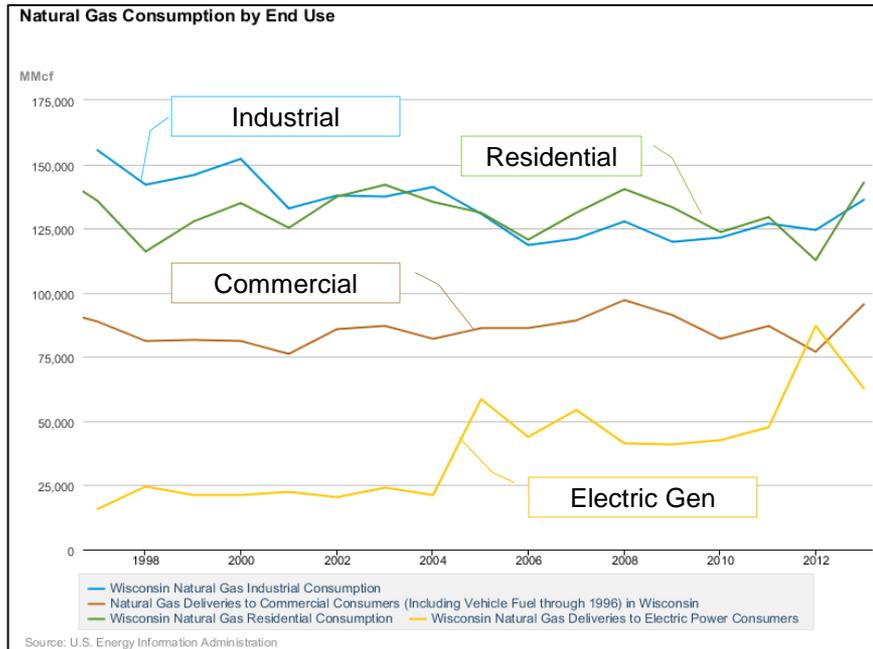
MISO Annual Energy Contribution

Annual Energy Contribution in MISO by Fuel Source



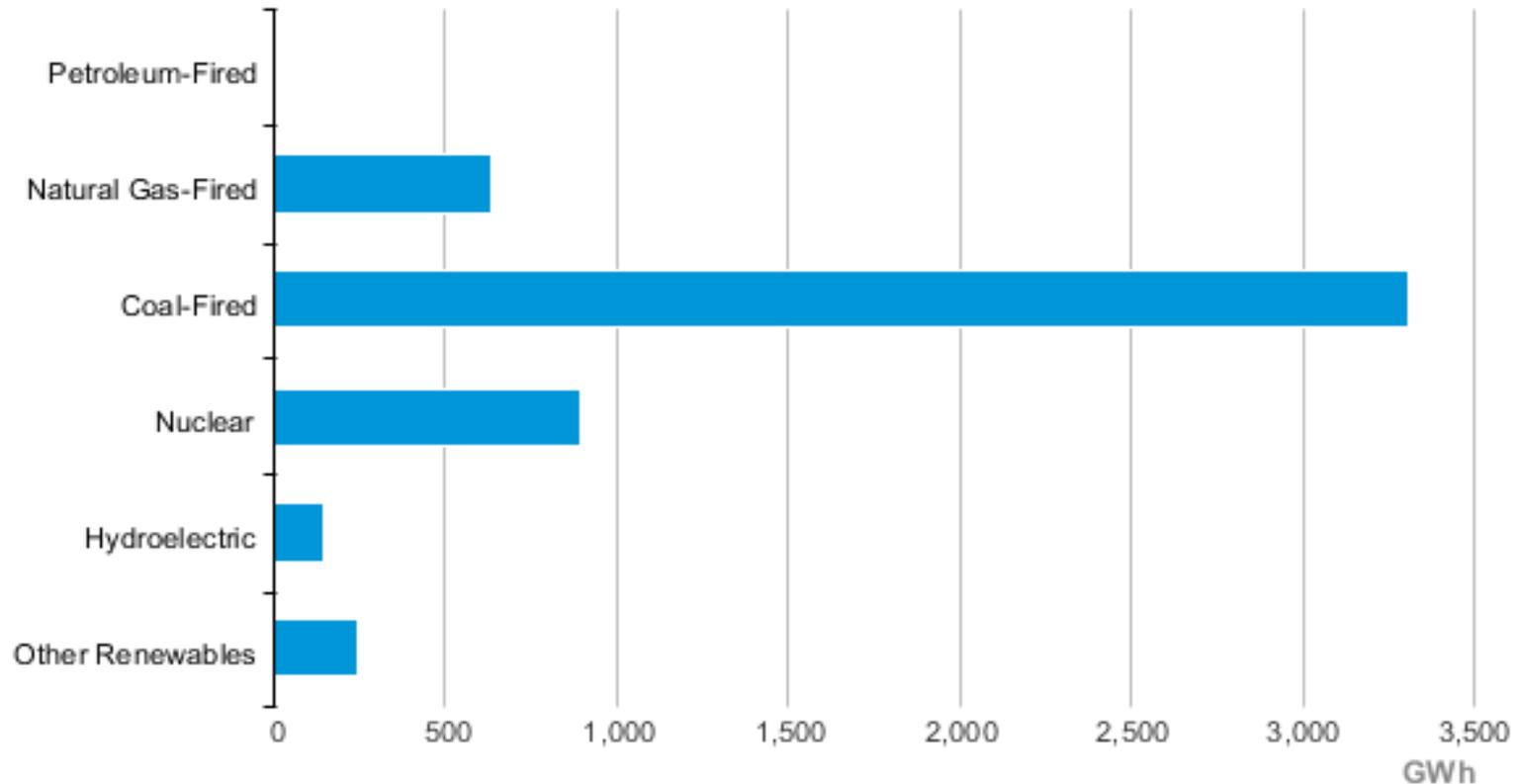
What about Wisconsin?

- No natural gas production, sourced elsewhere, transported via interstate pipelines
- No natural gas storage
- Residential and Industrial are largest natural gas consuming sectors
- Power gen usage increasing



Electric Energy Contribution by Fuel

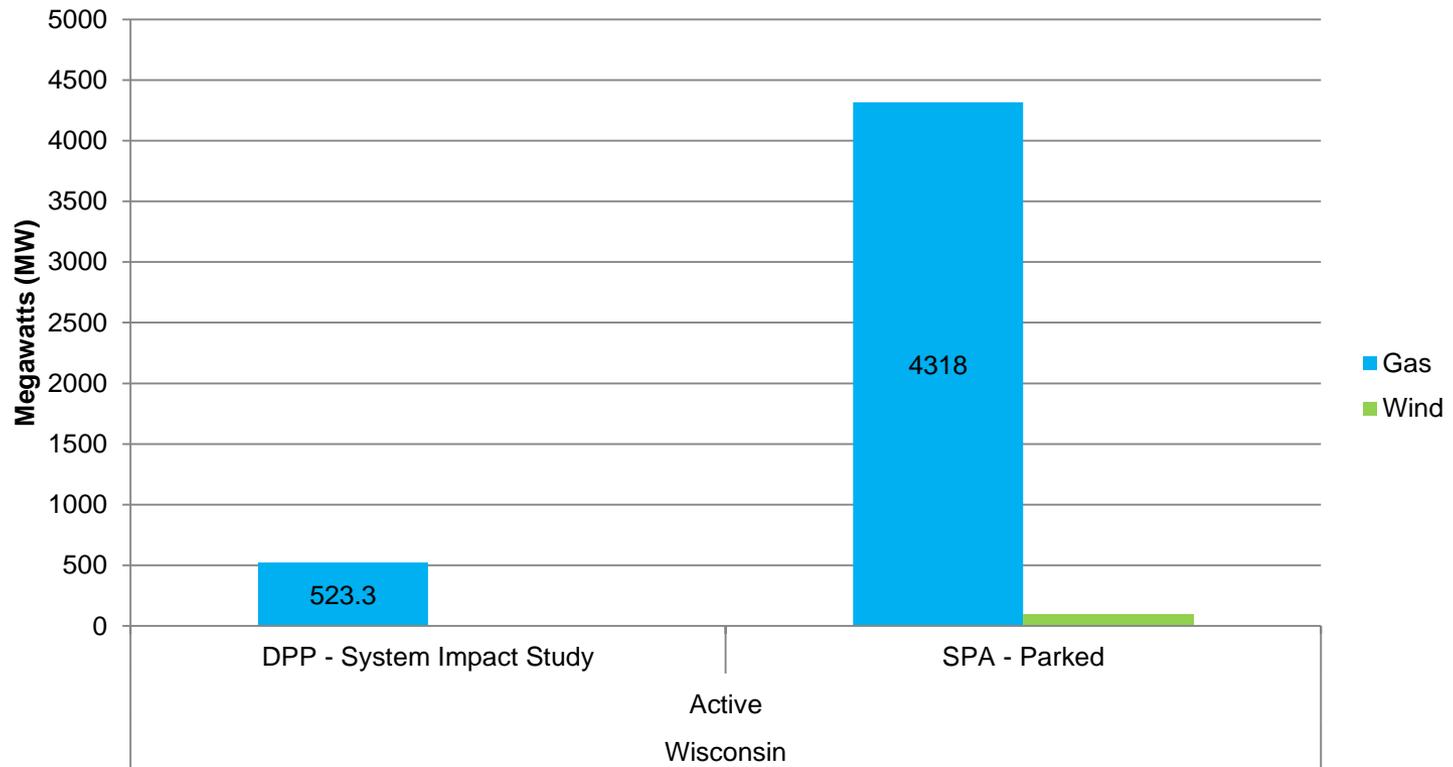
Wisconsin Net Electricity Generation by Source, Jul. 2014



Source: Energy Information Administration, Electric Power Monthly



MISO Generation Interconnection Queue*



* 2014/11/06 query of MISO generation interconnection queue for active projects.



Electric - Natural Gas Coordination

Continued & improved coordination between the electric industry and natural gas industry is needed to ensure we effectively manage system assets.



Situational Awareness

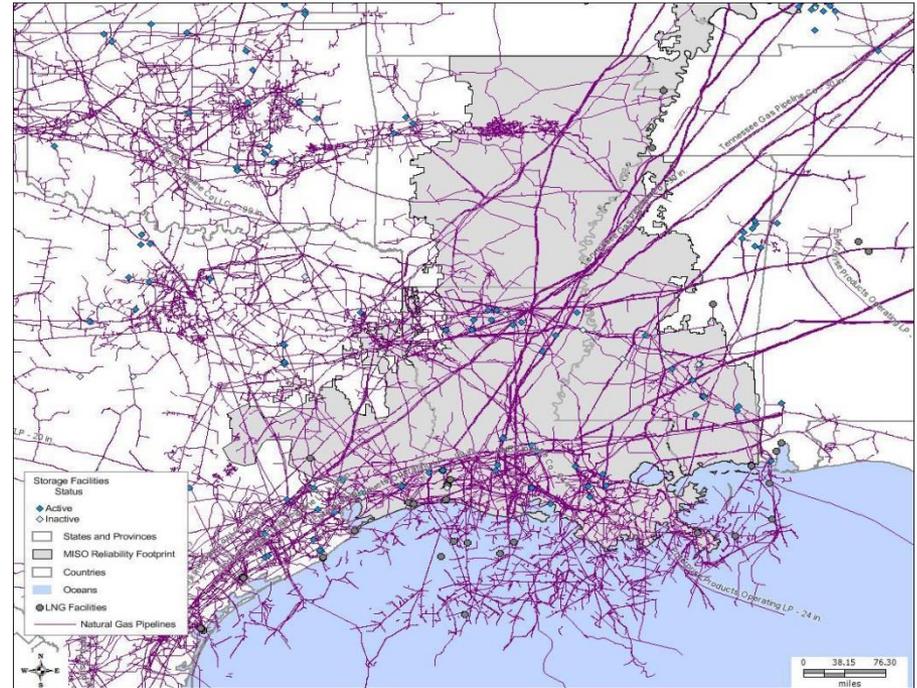
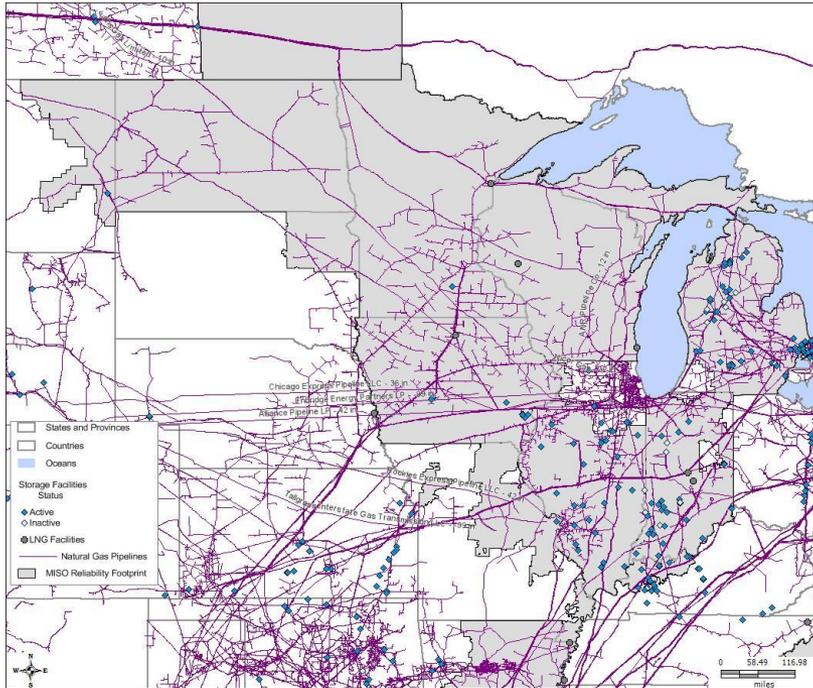


Post Event Analysis

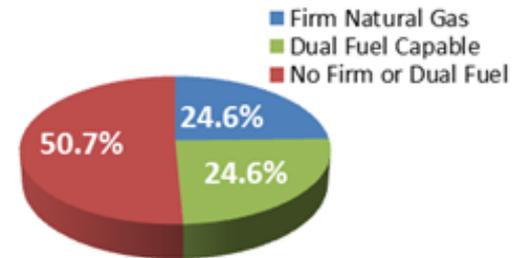


Market Reforms?

How is that going to happen exactly?



- 72 pipeline systems (interstate, intrastate, local distribution companies)
- 69 GW of gas fired power generation
 - Some are dual fuel capable
 - Some with firm supply and transportation
 - A lot without either



MISO Website / Gas Pipeline Notifications


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Home > Markets and Operations > Gas Pipeline

Gas Pipeline

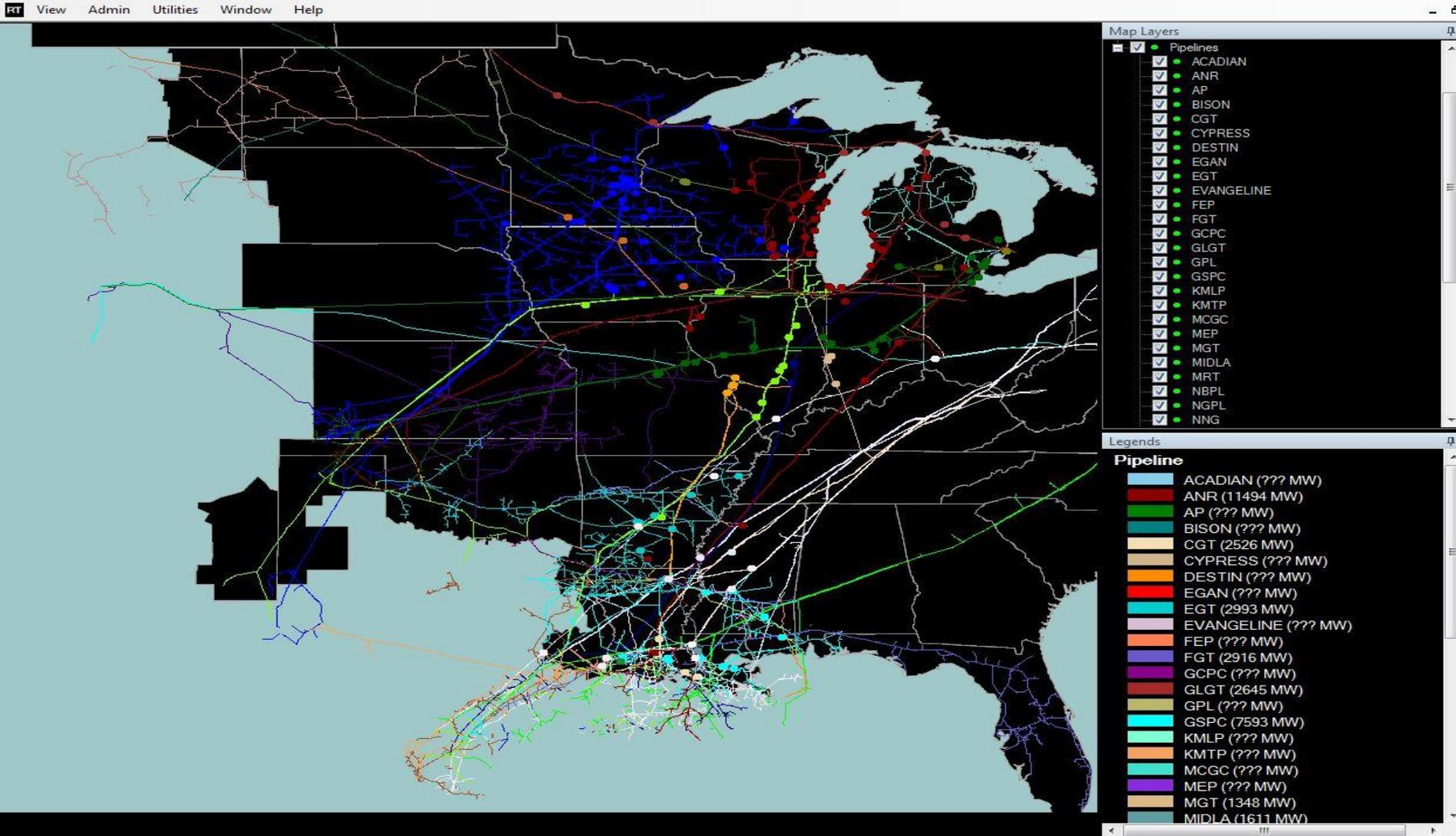
Critical Pipeline Notifications



Search: 1,101 records (1 to 25)

Pipeline	ID	Type	Subject	Posted	Effective	End
Pipeline	ID	Type				
FGT	51743	Operational Alert	Overage Alert Day 25% Tolerance	08/08/2014 00:00	08/08/2014 00:00	08/09/2014 00:00
TGP	352984	Pipeline Conditions	Restrictions For 8-8-14 Ec	08/07/2014 19:24	08/07/2014 19:24	12/31/2049 09:00
TGP	352983	Pipeline Conditions	Restrictions For 8-7-14 Id2	08/07/2014 17:49	08/07/2014 17:49	12/31/2049 09:00
REX	1414	Critical Notice	Current Pipeline Conditions	08/07/2014 17:39	08/07/2014 17:39	12/31/9000 00:00
REX	1413	Critical Notice	Rex Maintenance Schedule For August 2014 - Update # 1	08/07/2014 17:39	08/07/2014 17:39	12/31/9000 00:00
TGP	352982	Other	Supply Net Pipeline Position Notice	08/07/2014 16:07	08/07/2014 16:07	08/08/2014 09:00
TGP	352981	Other	Dart Outage Effective 8-8-14	08/07/2014 16:05	08/07/2014 16:05	12/31/2049 09:00
REX	1412	Critical Notice	Computer System Maintenance	08/07/2014 15:29	08/07/2014 15:29	12/31/9000 00:00
NGPL	34471	Pipeline Conditions	Current Pipeline Conditions	08/07/2014 15:16	08/07/2014 15:16	12/31/2049 09:00

MISO Control Rooms / Real Time Display



Post Event Analysis

In order to perform accurate post-event analysis, reporting of the specificity of unit outage and de-rate cause types is essential.

Process Gap

- Clarify outage reporting requirement for fuel related events

Outage Cause Codes

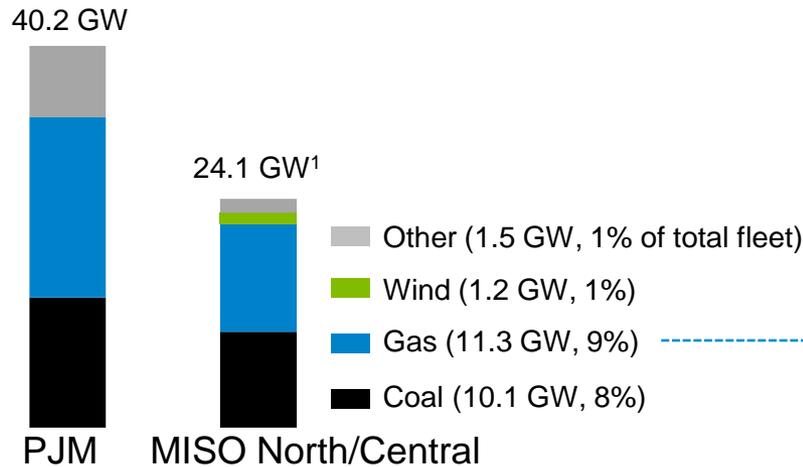
- Provide new outage Cause codes to capture fuel & weather events more appropriately
- Update or Remove codes to achieve better utilization

Guidance

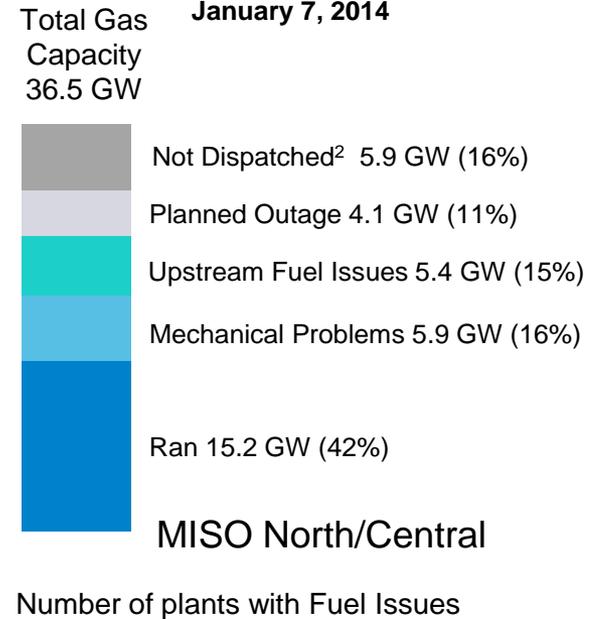
- Provide outage submitters guidance on reporting of fuel & weather driven events

Jan 2014 Winter Cold Weather Event

Unplanned Outages January 7, 2014



Gas Detail January 7, 2014



¹Daily average forced outages and de-rates for MISO North and Central regions January 7, 2014. Data per MISO Information Delivery and Market Analysis group. Includes gas and gas/oil.

²These resources were either emergency resources only (3 GW) or not committed because they were uneconomic or infeasible to run (2.9 GW).



Market Reforms



Interstate Pipeline
Nomination Schedules



Grid Operators
Day Ahead
Markets



Operating Day?



Key Remaining Challenges

- Balancing reliability and cost is the underlying challenge of gas-electric interdependency
- Identifying the effective level of coordination between the electric and natural gas industries
- Understanding and modeling the interdependencies between gas and electric infrastructure and markets

Contact Information & Useful Link

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MISO Electric & Natural Gas Coordination Task Force

<https://www.misoenergy.org/StakeholderCenter/CommitteesWorkGroupsTaskForces/ENGCTF/Pages/home.aspx>

