

Coordinating the Gas and Electric Power Interface: Gas & Electric Scheduling

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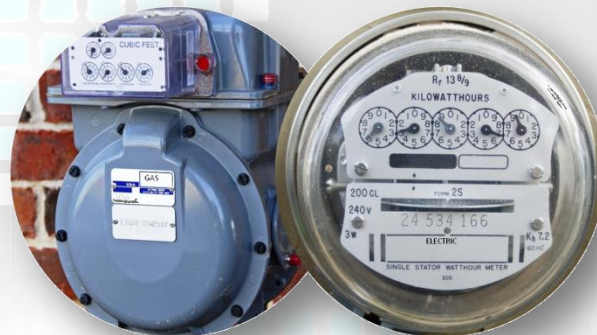
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EUCI Conference

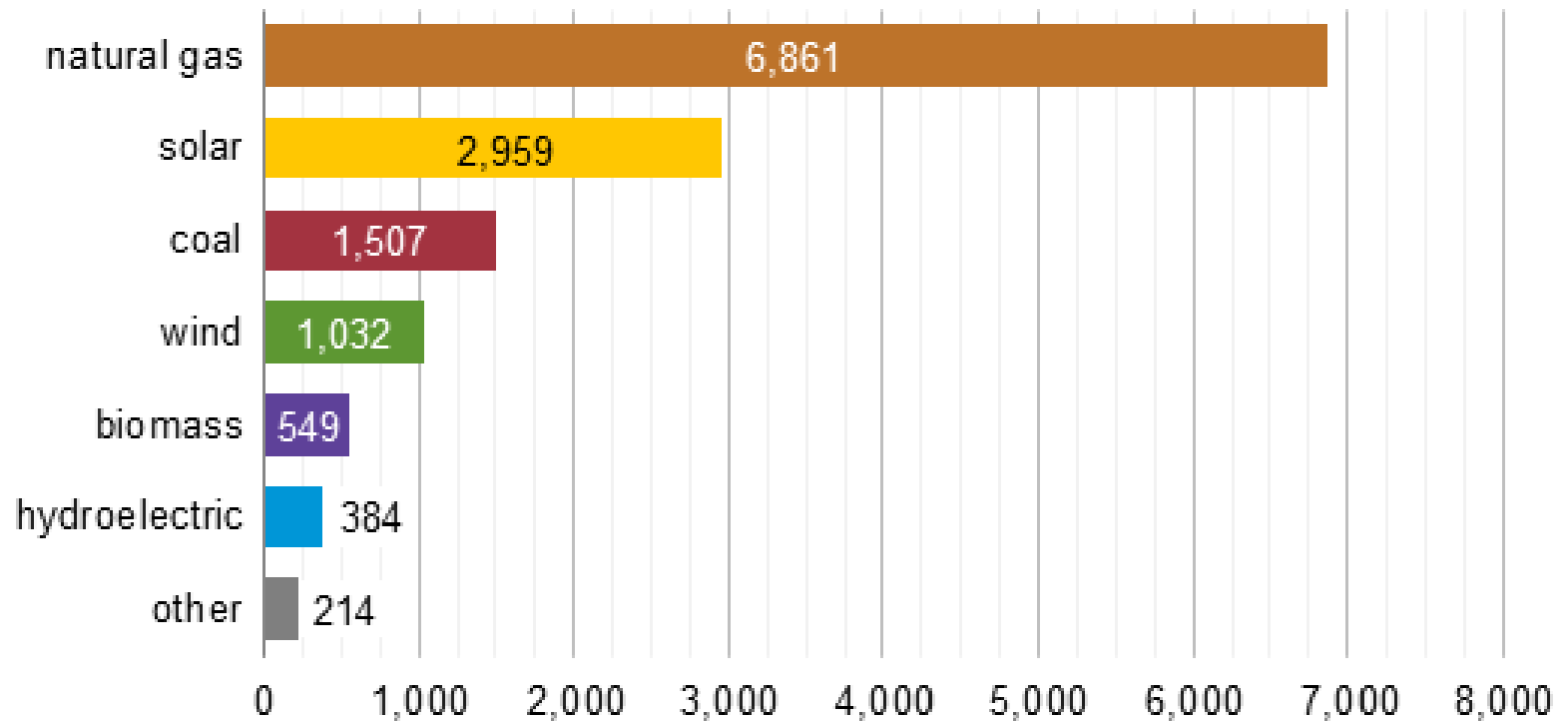
Charlotte, NC

May 5, 2014



U.S. Power Plant Additions

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



Generator Statistics

By Planning Authority

	% GWh Gas (2012)	Total ICAP (GW)	Gas-Capable ICAP (GW)	% Total (GW)	Direct- Connect ICAP (GW)	LDC- Served ICAP (GW)
PJM	19%	185	78.7	43%	35.1	43.6
MISO	9% _(N/C) / 52% _(S)	177	68.0	38%	44.8	23.2
NYISO	45%	38	24.7	65%	7.4	17.3
ISO-NE	50%	35	18.6	54%	14.3	4.3
TVA	12%	34	10.6	31%	8.0	0.6
IESO	15%	33	9.9	28%	1.2	8.7
Total		502	208.5	41%	110.8	97.7

Note: N/C – MISO North & Central Regions, S – MISO South Region

Source: EIPC Gas Electric Study, Target 1

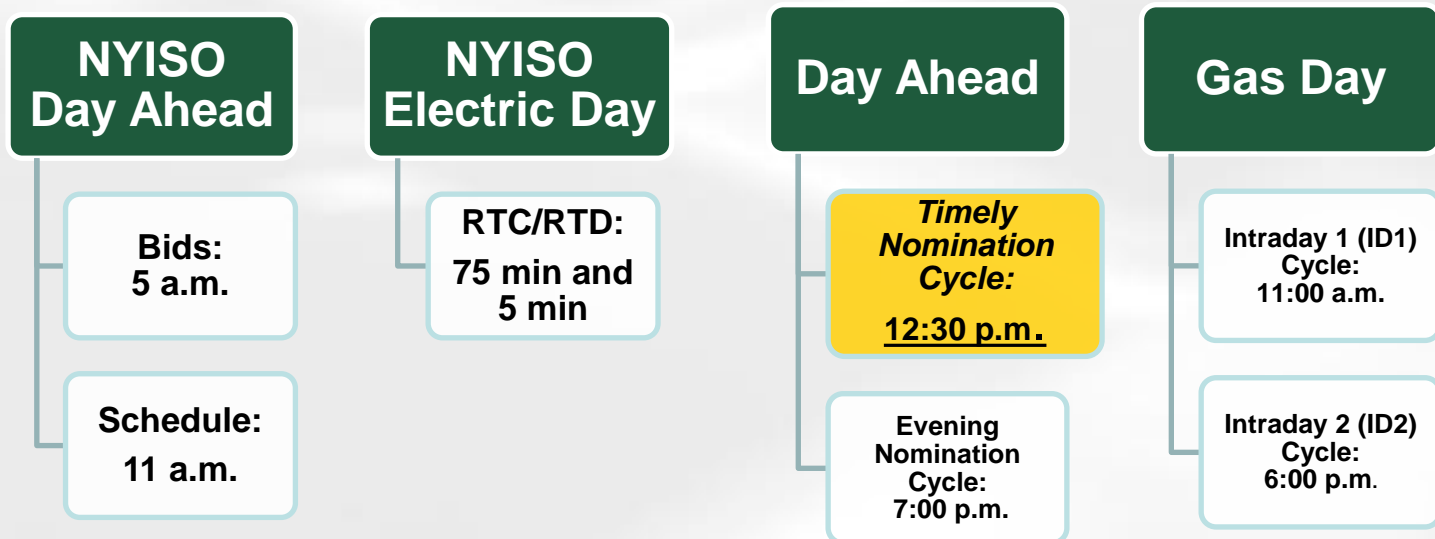
Gas & Electric Market Timing

Differences in Market Timing

◆ Operating Day Differences

- Gas Day: 10:00 a.m. – 10:00 a.m. (ET)
- Electric Day: 12:00 a.m. – 12:00 a.m.

◆ Scheduling Differences



Electric Scheduling

ISO/RTO	Bids Due (CT)	Day-Ahead Commitment Posted (CT)
California ISO	12:00 pm	3:00 pm
ISO-New England	9:00 am	12:30 pm
PJM	11:00 am	3:00 pm
MISO	10:00 am	2:00 pm
New York ISO	4:00 am	10:00 am
SPP	11:00 am	4:00 pm

Challenges Related to Timing Differences

- ◆ **Electric and Gas Operating Days**
 - *End of the Gas Day overlaps with the morning load pick-up*
 - *May lead to need for balancing*
- ◆ **Electric and Gas Scheduling**
 - *Timing differences mean some generators nominate without knowing their electric schedule*
 - *Gas is not easily purchased on weekends, holidays, evening, and overnight hours, even though gas can be nominated all days*

Gas System Operations

Physical Gas Flow

- ◆ Line pack, compressor stations, gas injections, gas storage
- ◆ Flexibility in balancing agreements
 - *Overtake*
 - *Undertake*
- ◆ Flexibility on timing of gas taken
 - *Non-ratable takes*

Physical Gas Flow

- ◆ **Restrictions on flexibility:**
 - *System Alert: Limit balancing*
 - *Ratable Takes: Limit flow flexibility*
 - *Operational Flow Order (OFO): Potential curtailment*
- ◆ **“Over-nominations” managed by priority***
 - *Primary Firm*
 - *Secondary Firm (SIP and SOP)*
 - *Interruptible*
 - *Other*
 - **Authorized Overrun**
 - **Imbalance**

** NAESB WGQ Nomination and Scheduling Standards and Procedures*

**FERC Notice Of
Proposed
Rulemaking
(NOPR)
March 20, 2014**

FERC: Gas and Electric Coordination

- Regional Technical Conferences in 2012 concerning:
 - *Scheduling and Market Structures/Rules*
 - *Communications, Coordination, and Information-Sharing*
 - *Reliability Concerns*
- ◆ In response to those technical conferences (FERC Order):
 - *In May 2013, ISO/RTOs report on Winter/Spring Operating Period*
 - *In Oct. 2013, ISO/RTOs report on Summer/Fall Operating Period*
- ◆ Technical Conferences held in 2013:
 - *Information-sharing and communication procedures*
 - *Capacity release markets and gas/electric day scheduling*

2013 Technical Conference

- ◆ **Gas and Electric Operating Days and Scheduling Timelines**
 - *An Energy Day? Should the electric day be the same regionally?*
 - *Align the Operating Days?*
 - *Is there a need to change electric scheduling times?*
- ◆ **ISO/RTO Discussion focused on:**
 - *Overlap between end of gas operating day and morning load pick-up*
 - *Timing for buying/selling gas.*
 - *Timely Cycle closing time*
 - *Gas system designed on daily basis, not hourly*

FERC NOPR

Coordination of the Scheduling Processes of Interstate Natural Gas Pipelines and Public Utilities. Docket No. RM14-2-000

- ◆ **Modify the Gas Operating Day**
 - *From 9 am – 9 am CT to 4 am – 4am CT*
- ◆ **Modify the Timely Cycle Nomination**
 - *From 11:30 am CT to 1:00 pm CT*
- ◆ **Modify Intra-day (ID) Nomination Cycles**
 - *Changes to existing times*
 - *Add two additional ID cycles (total 4)*
 - *Two of the ID cycles to allow bumping*

FERC NOPR

◆ From the NOPR:

- *“We continue to recognize that the natural gas and electric industries are best positioned to work out the details of how changes in scheduling practices can most efficiently be made and implemented.”*
- *“The Commission has recognized that even the most efficient standards need to be modified to accord with changing realities.”*

◆ Gas and Electric Industries given 180 days to work through the North American Energy Standards Board (NAESB)

- *NAESB is accredited by the American National Standards Institute*
- *Standards represent a reasonable consensus of the industry*



The New York Independent System Operator (NYISO) is a not-for-profit corporation responsible for operating the state's bulk electricity grid, administering New York's competitive wholesale electricity markets, conducting comprehensive long-term planning for the state's electric power system, and advancing the technological infrastructure of the electric system serving the Empire State.

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