



Winter 2016 Cold Weather Operations

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Rensselaer, NY

Winter 2016 Ambient Conditions

- **Winter 2016**
 - *Milder than past two winters*
 - *Milder than 10-year & 30-year averages*

Month	Time Period	6 PM Min Temperature	Heating Degree Days (55 F)
December	30 Yr	20.1	628.7
	10 Yr	23.9	573.8
	2015	33.7	275.8
January	30 Yr	14.0	793.4
	10 Yr	13.6	800.6
	2016	15.9	732.7
February	30 Yr	17.3	695.0
	10 Yr	17.0	721.1
	2016	6.3	614.9

(Heating Degree Day - The higher the HDD, the colder the average temperatures)

Winter 2016 Ambient Conditions

Record Cold Temperatures since 1975 & Winter 2016 Temperatures

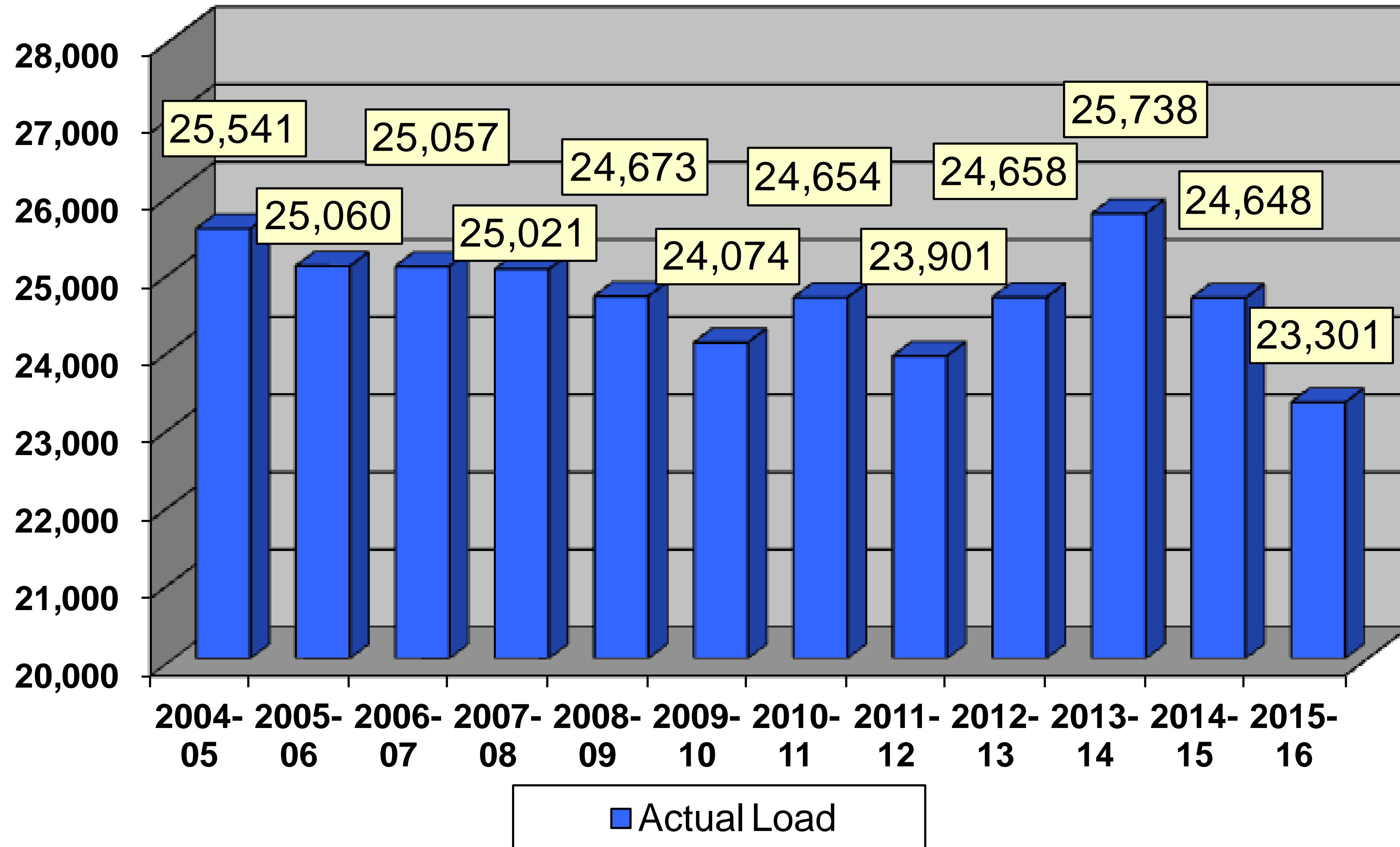
Station	Date Record Was Set, Since 1975	Record Cold Temperature	2016 Minimum Daily Temperatures					
			2016 1/1 to 2/29	1/5/16	1/19/16	2/11/16	2/13/16	2/14/16
Albany	1/27/1994	-23	-13	2	13	8	-8	-13
Buffalo	1/1/1986	-28	-12	7	10	7	-4	-12
Laguardia	1/21/1985	-3	1	14	19	21	8	1
NYCA	2/18/1979	-8	-7	10	15	15	1	-7

(NYCA composite temperature is based on 17 stations across the state)

Winter 2016 Peak Loads

- **Three cold weather periods in Winter 2016**
 - *January 5th Peak Load -- 23,162 MW*
 - *January 19th Peak Load -- 23,317 MW (Winter 2016 Peak)*
 - *February 12-15 Peak Load -- 22,951 MW (Coldest Weather)*
- **Forecast Winter 2016 Peak Load**
 - *24,515 MW*
- **All-Time NYISO Winter Peak Load**
 - *25,738 MW peak set on January 7, 2014*

Winter Peak Loads - 2004-05 to 2015-16 (MW)



Jan. 19 Cold Weather Operations

- **Regional Electric Conditions**
 - *Adjacent areas reported sufficient capacity resources*
 - *Low levels of generator derates across the regions*
- **Transmission Operations**
 - *No significant transmission forced outages*
 - *Good performance of Day Ahead import schedules, no projections of import curtailments nor real time curtailments*
- **Supplemental Capacity Resource Commitments**
 - *No need for NYISO to schedule Supplemental Capacity Resources*
- **Demand Response**
 - *No need for NYISO Demand Response resources*
- **Regional Pipeline Conditions**
 - *New York pipelines and LDCs issued limited Operation Flow Orders (OFOs)*
 - *No significant gas infrastructure forced outages*

Winter 2016

Cold Weather Operations

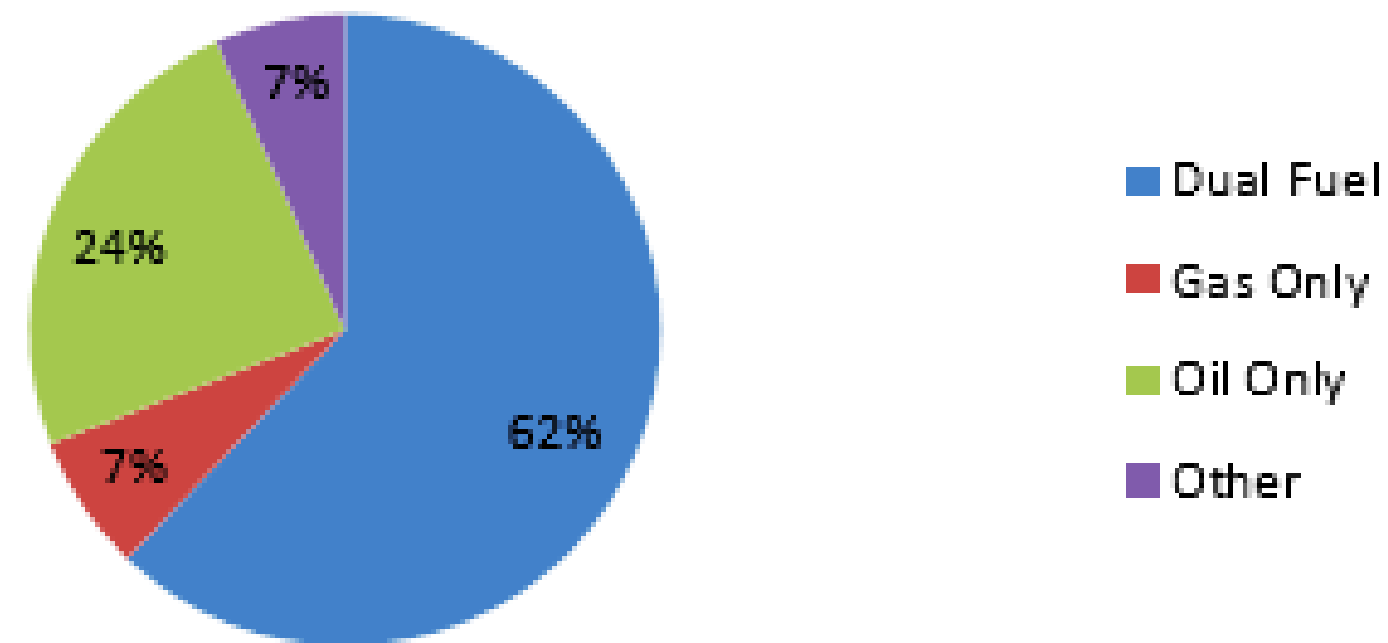
- **No Statewide Supplemental Capacity Commitments**
- **Generation Performance (3 highest peak days)**

Date	Derates Prior to DAM	Additional Real Time derates	Total Derates	Fuel Related
1/5/2016	1011	528	1539	540
1/19/2016	902	566	1468	46
2/12/2016	1662	233	1895	866
2/13/2016	1765	1152	2917	1682
2/14/2016	1606	422	2028	1010
2/15/2016	1522	338	1860	1010

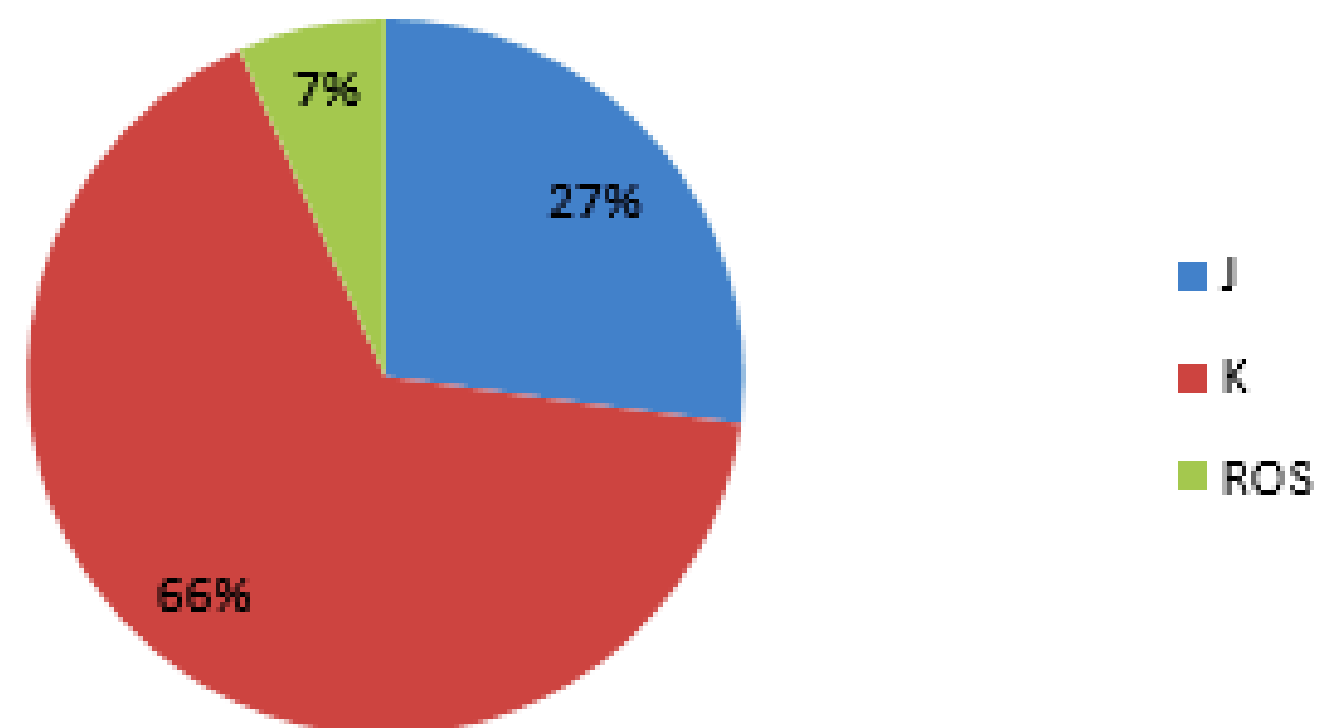
- **Demand Response**
 - *No Demand Response Activation was needed this winter*
- **Transmission Performance**
 - *On February 15 the 345 kV Marcy-New Scotland 18 tripped resulting in a Major Emergency (the trip was unrelated to cold weather)*

January 5, 2016

Derates By Type



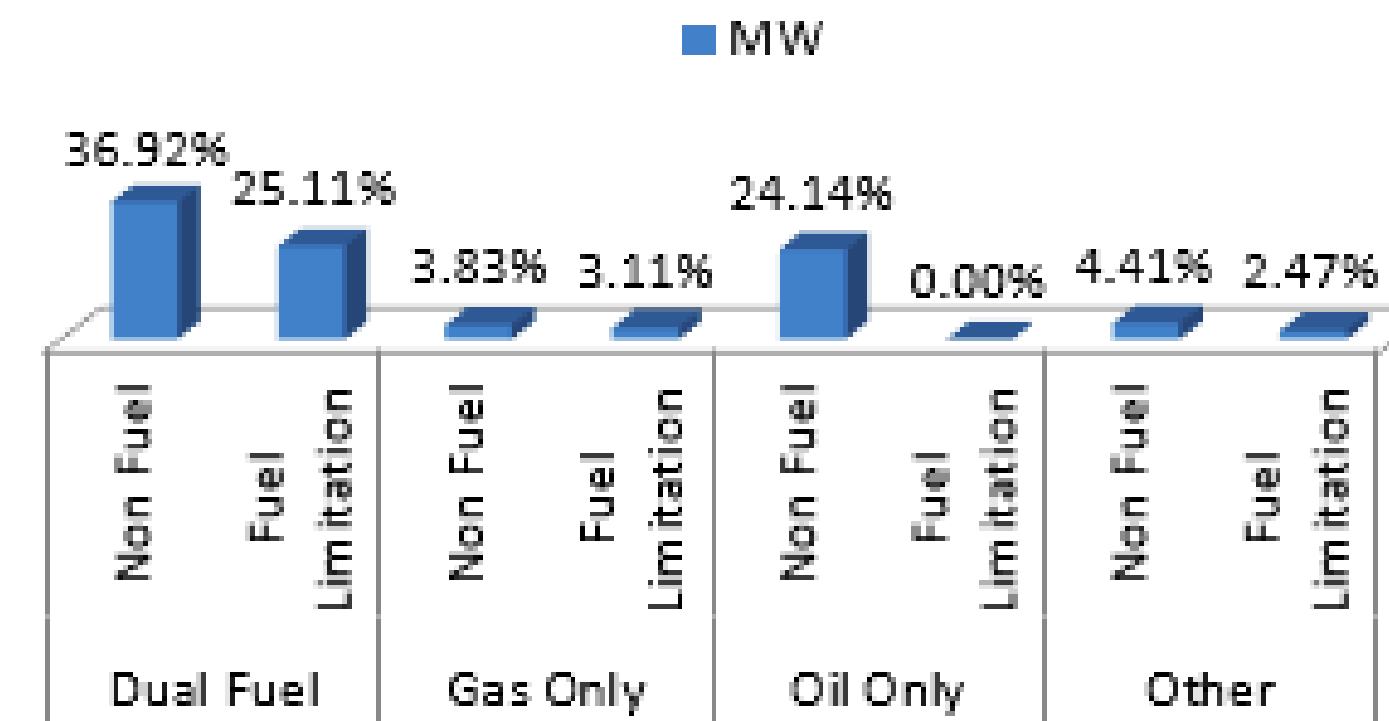
Zone



Peak Load
Total Derates

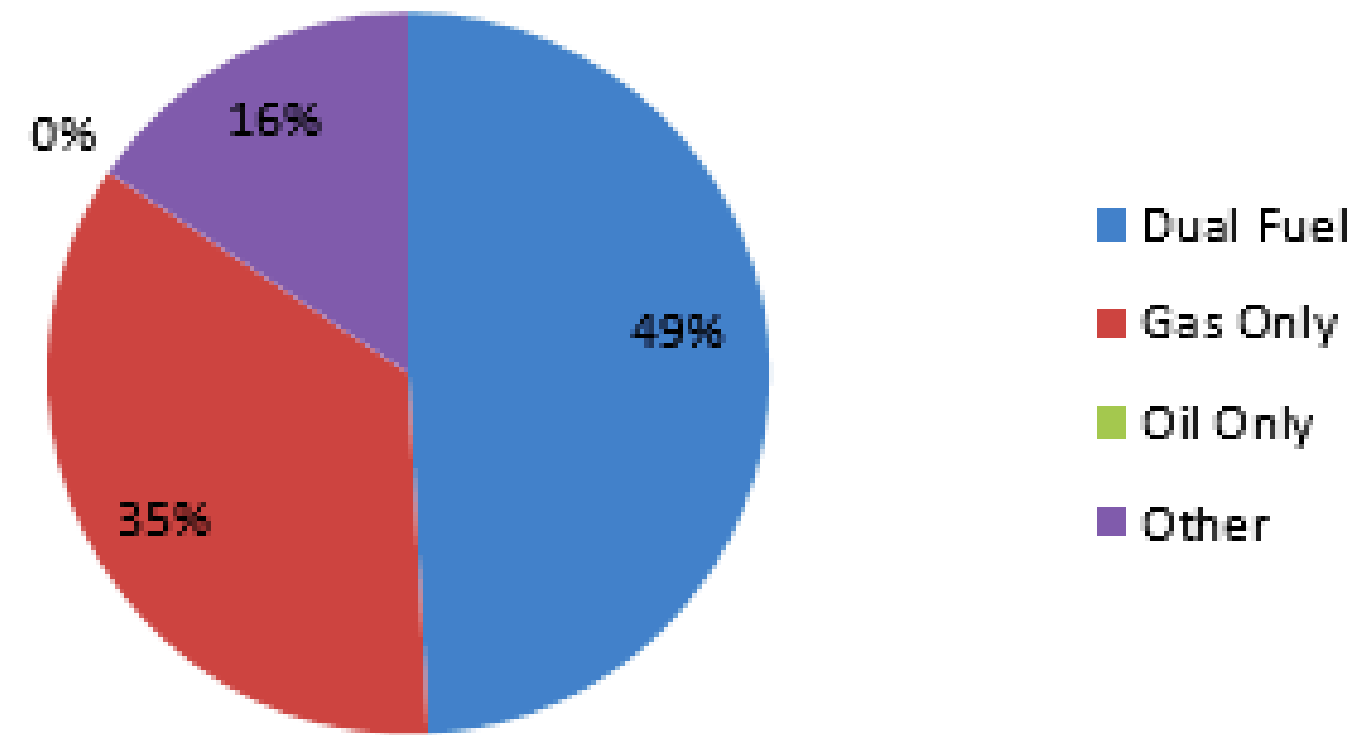
23162 MW
1539 MW

Derate Category By Unit Type



January 19, 2016

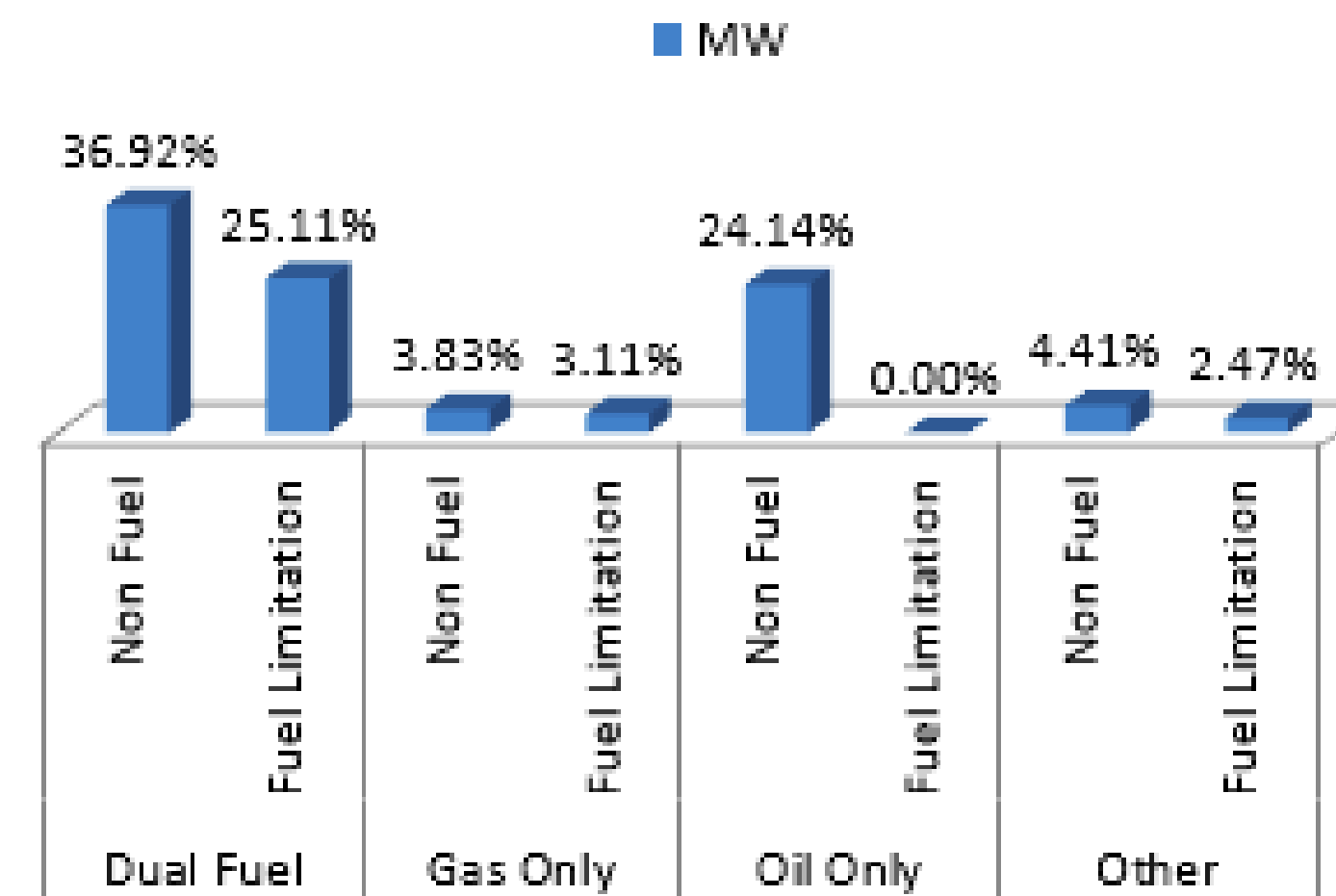
Derates By Type



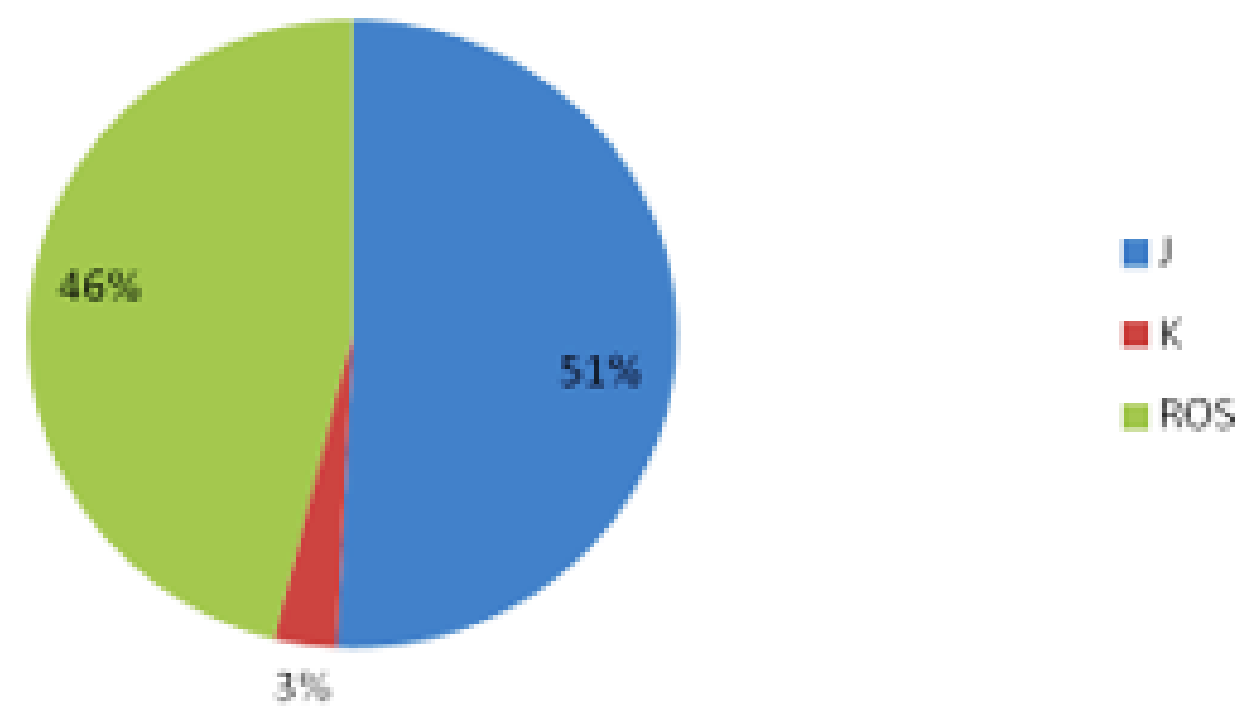
Peak Load
Total Derates

23317 MW
1468 MW

Derate Category By Unit Type

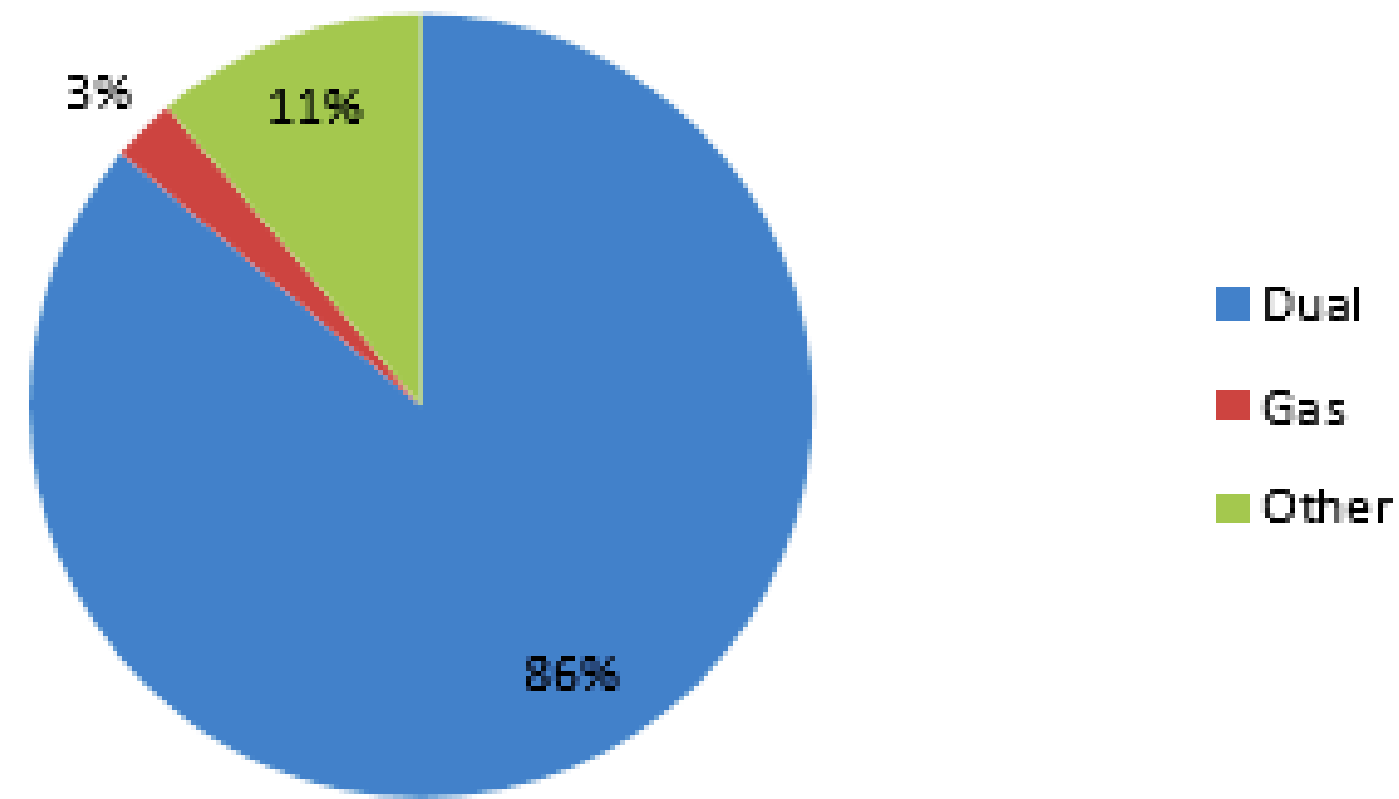


Zone

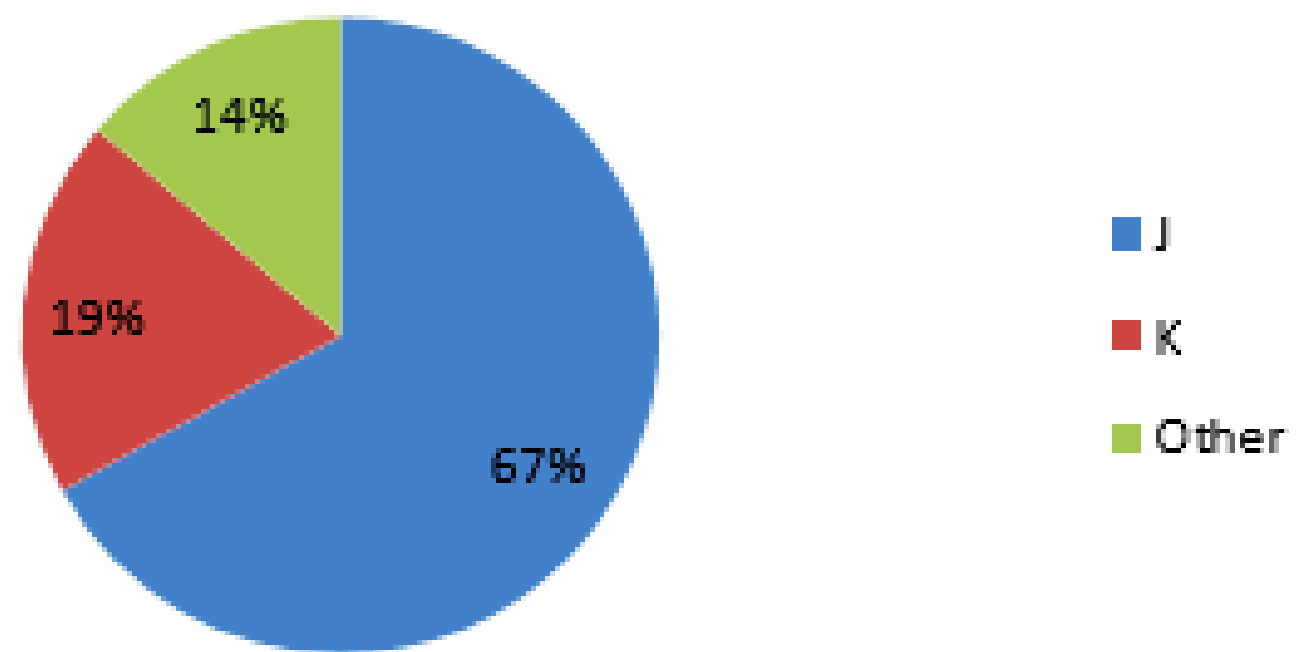


February 12, 2016

Derate by Type



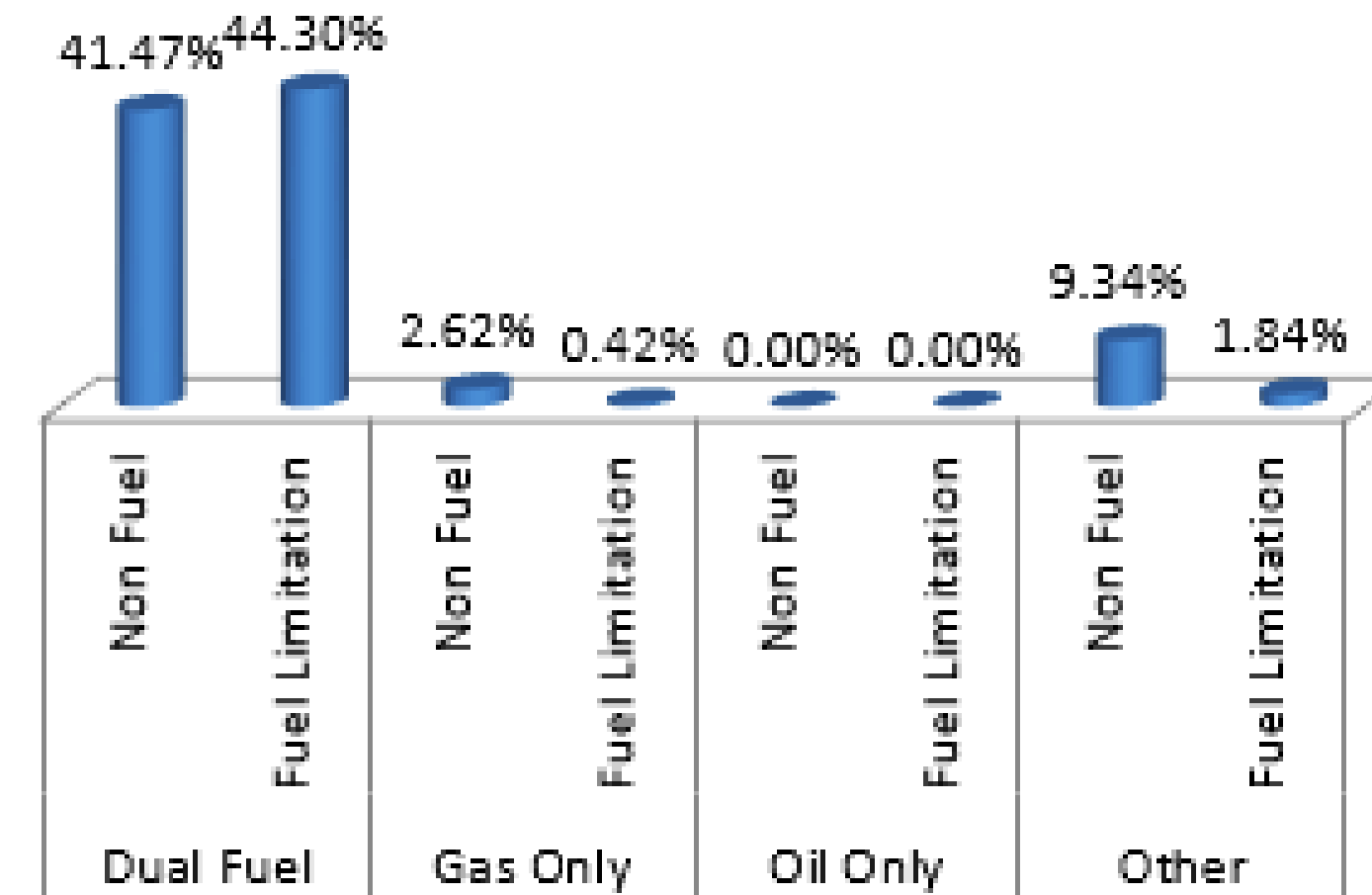
Zone



Peak Load
Total Derates

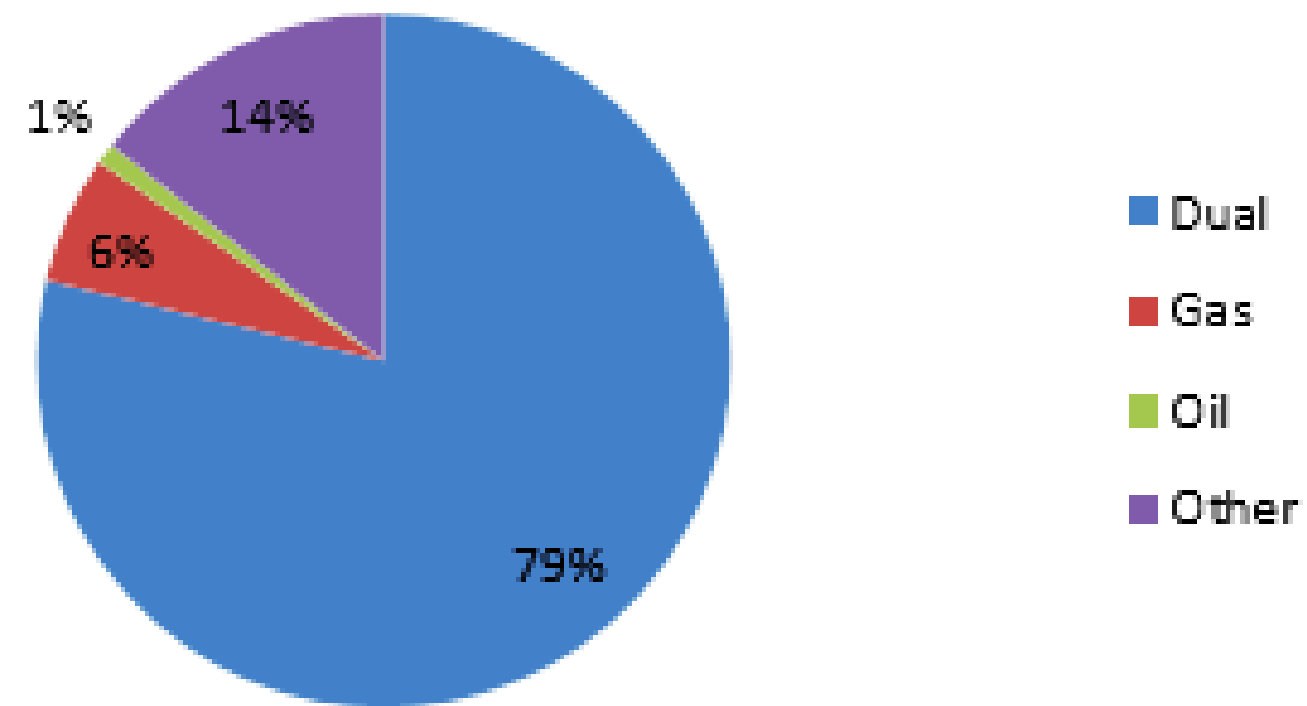
22330 MW
1895 MW

Derate Category by Unit Type

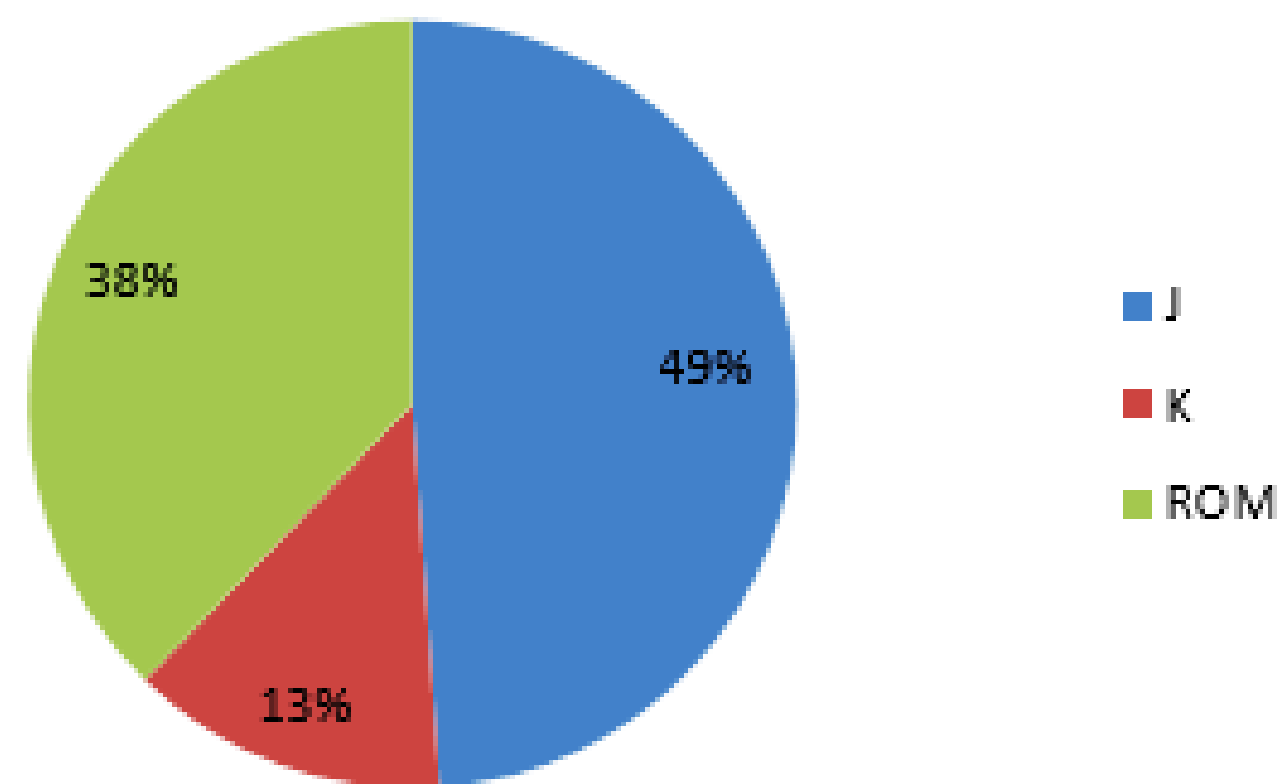


February 13, 2016

Derates By Type



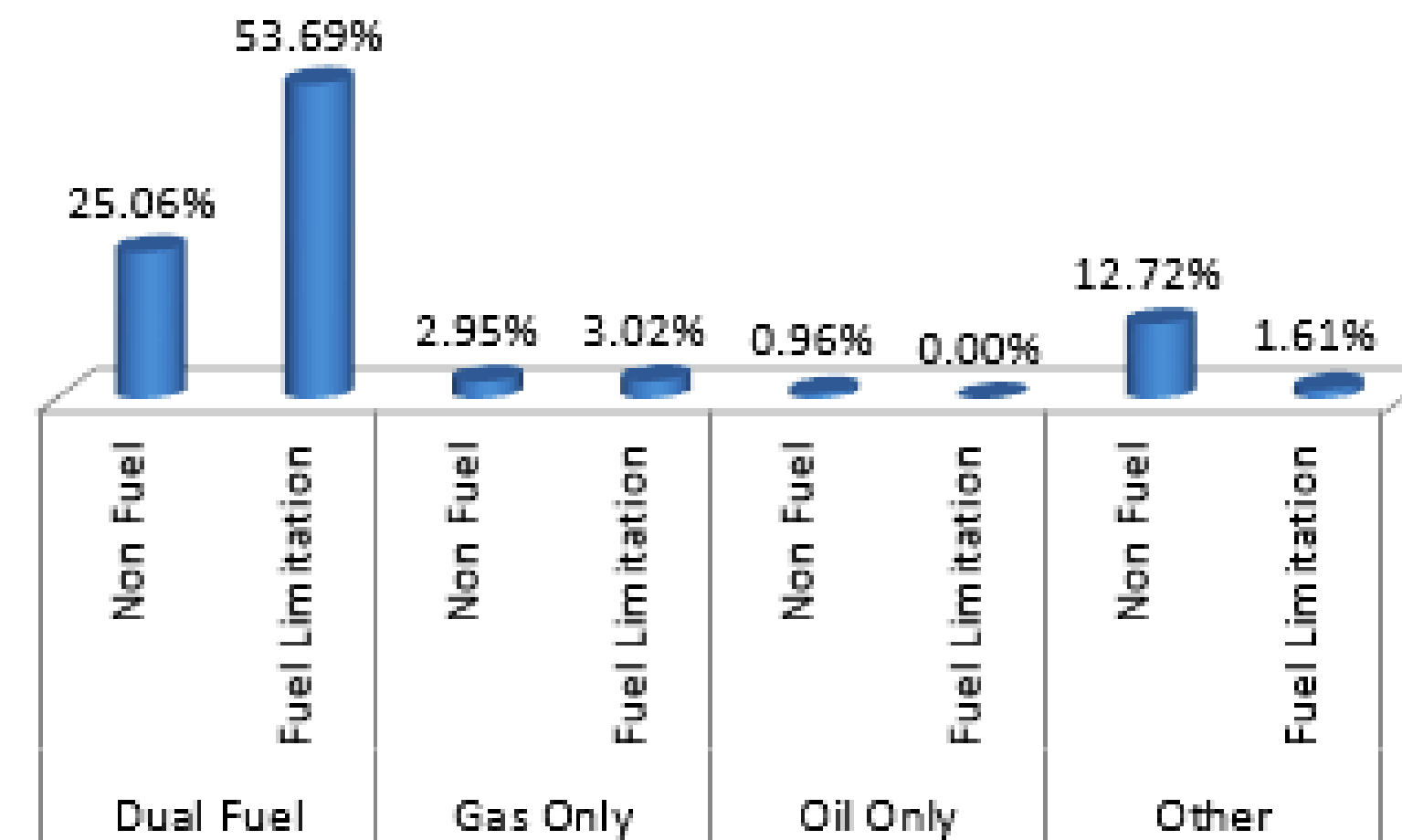
Zone



Peak Load
Total Derates

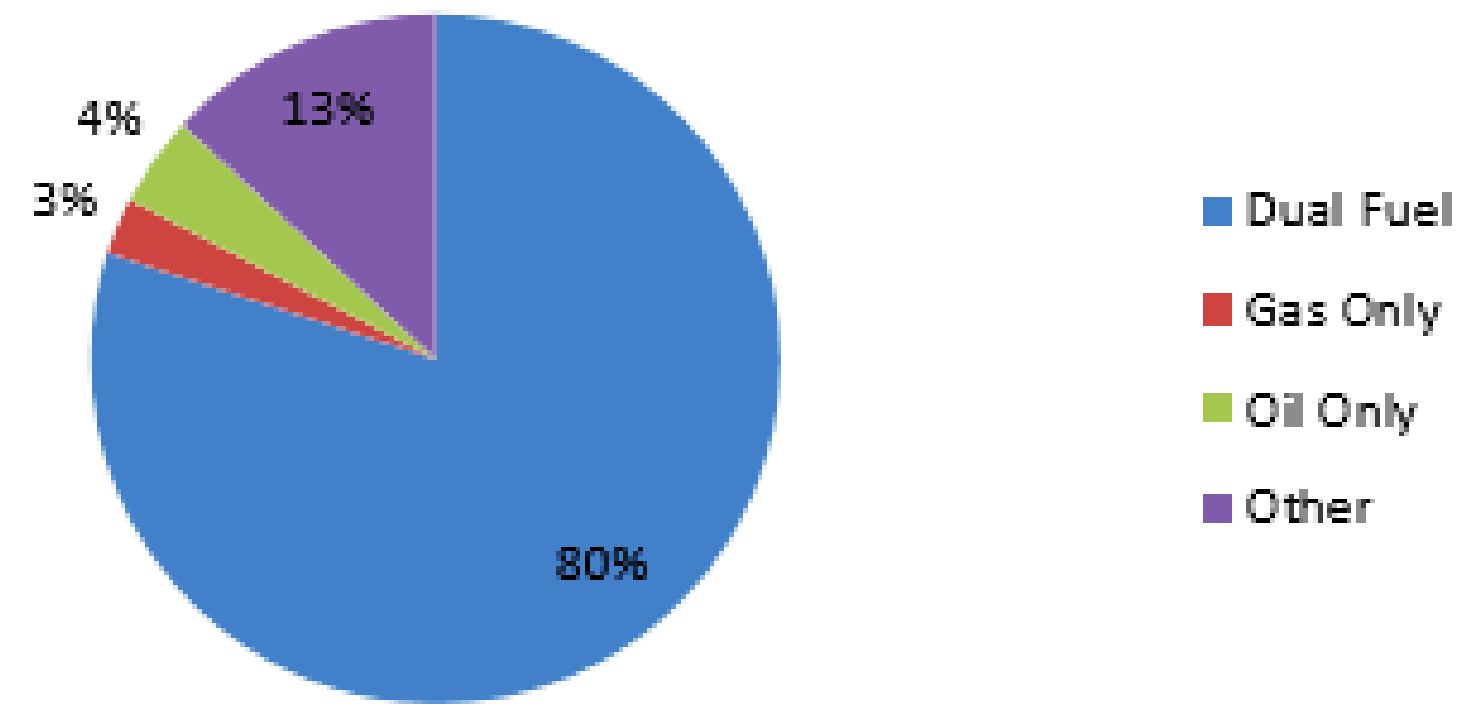
22917 MW
2917 MW

Derates Category by Unit Type

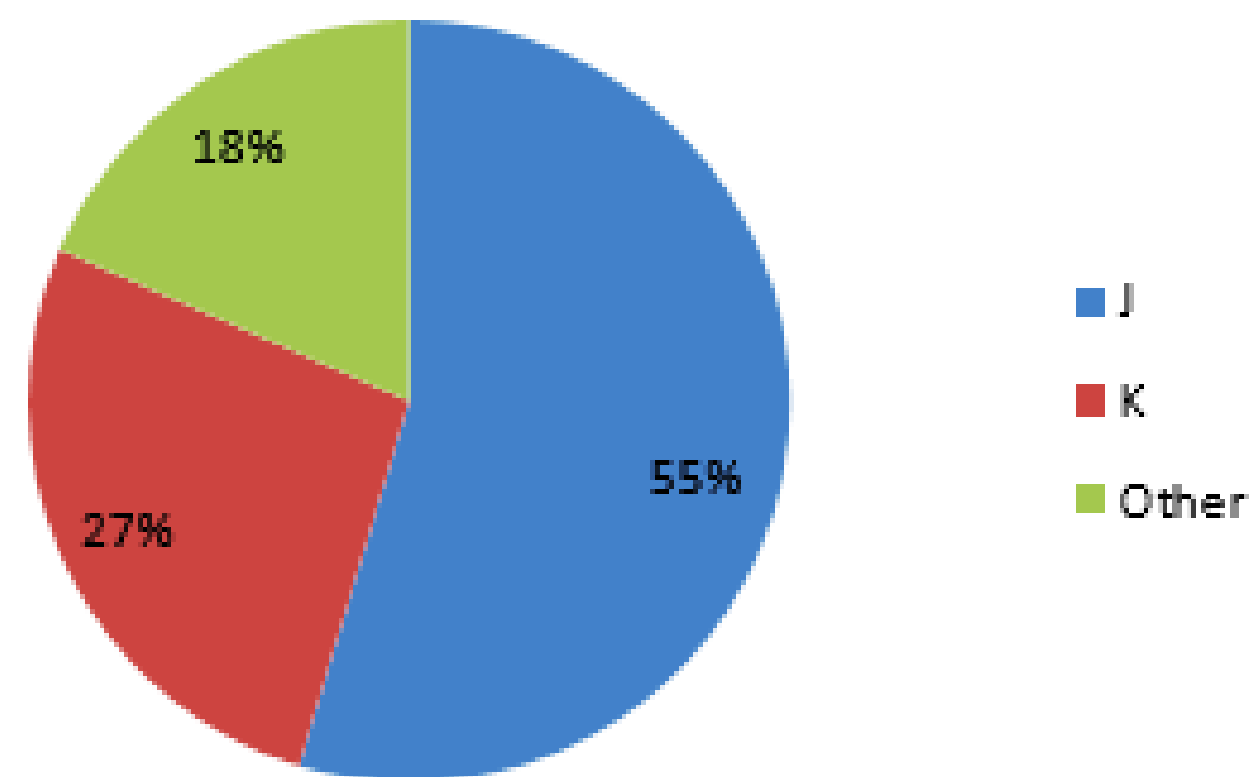


February 14, 2016

Derates By Type



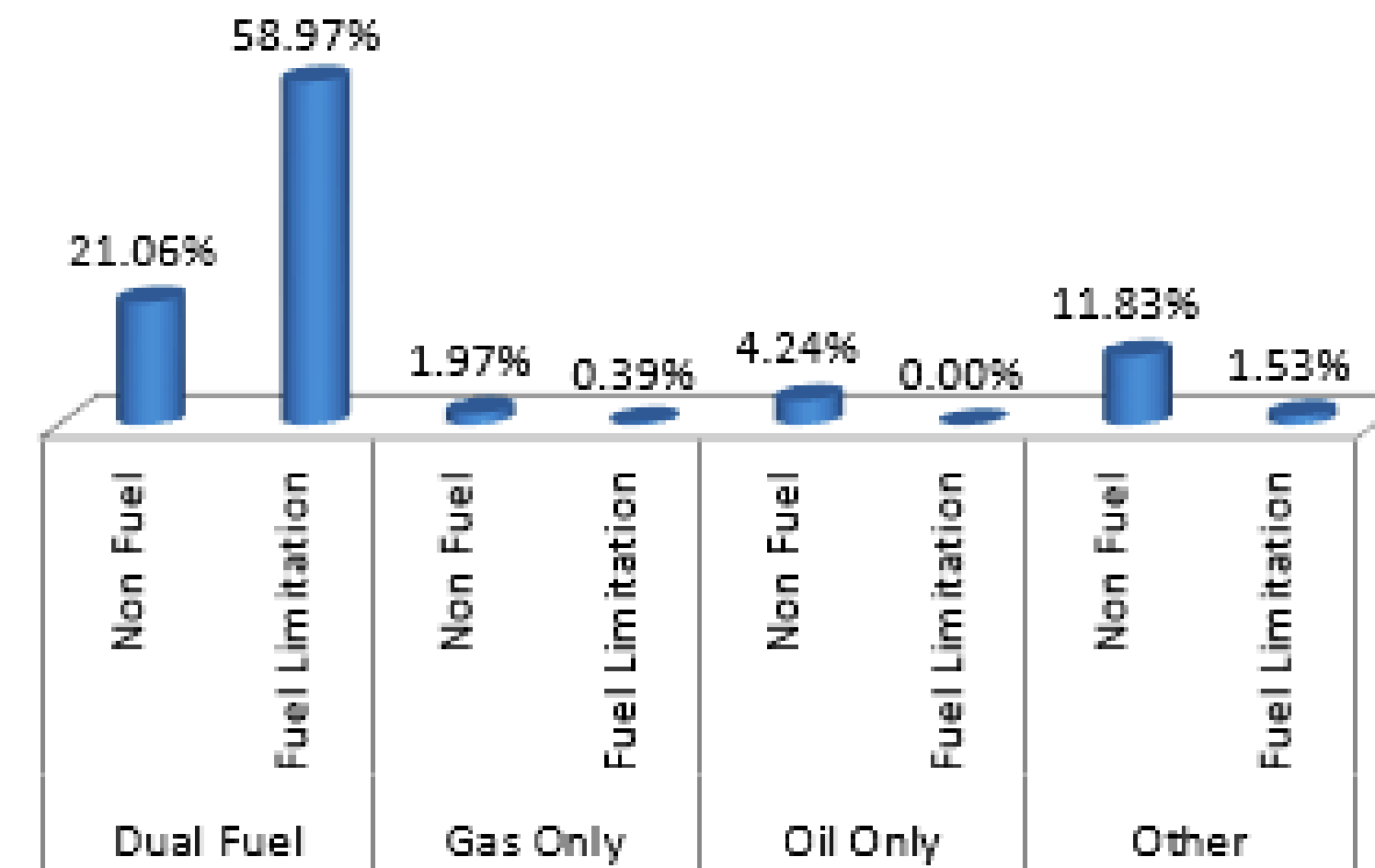
Zone



Peak Load
Total Derates

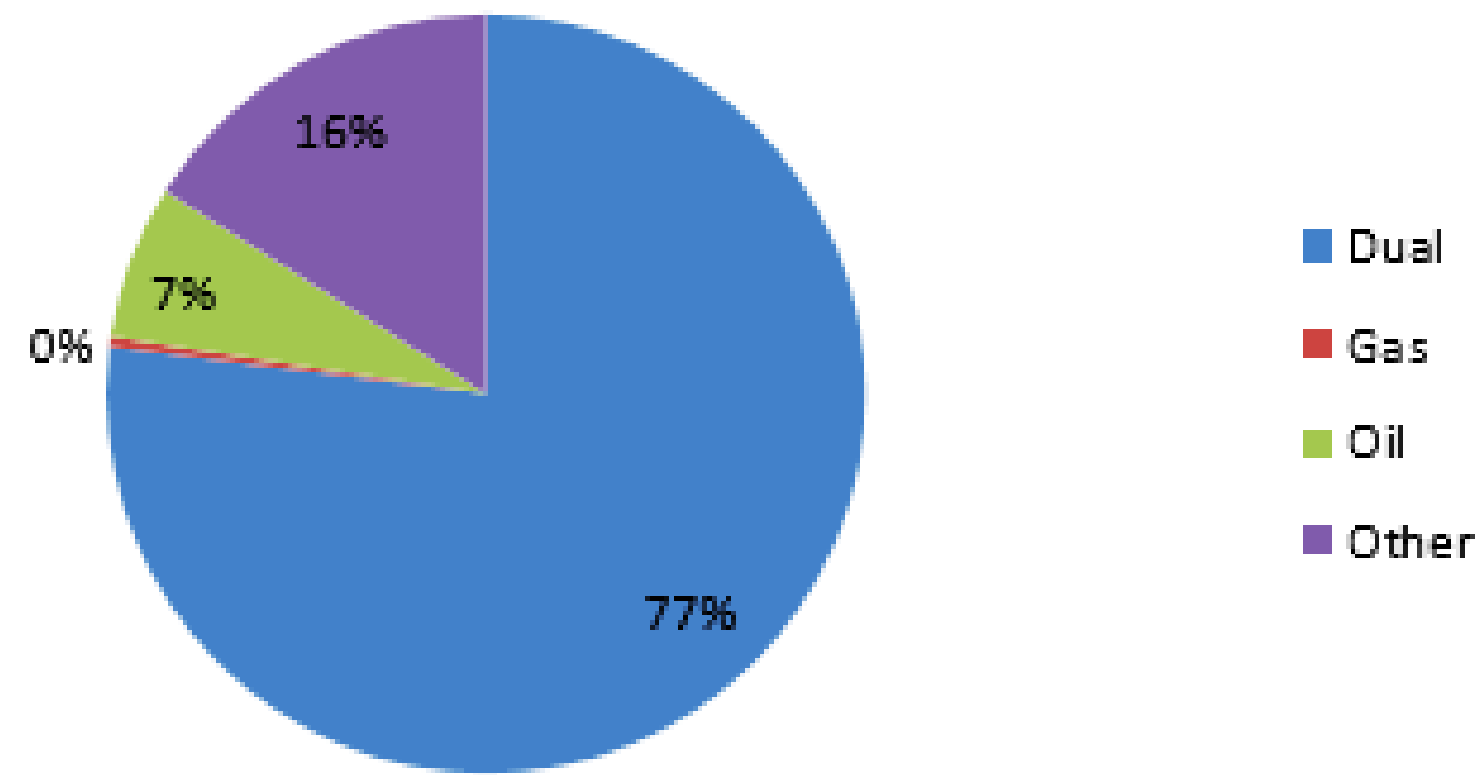
22763 MW
2028 MW

Derate Category by Unit Type

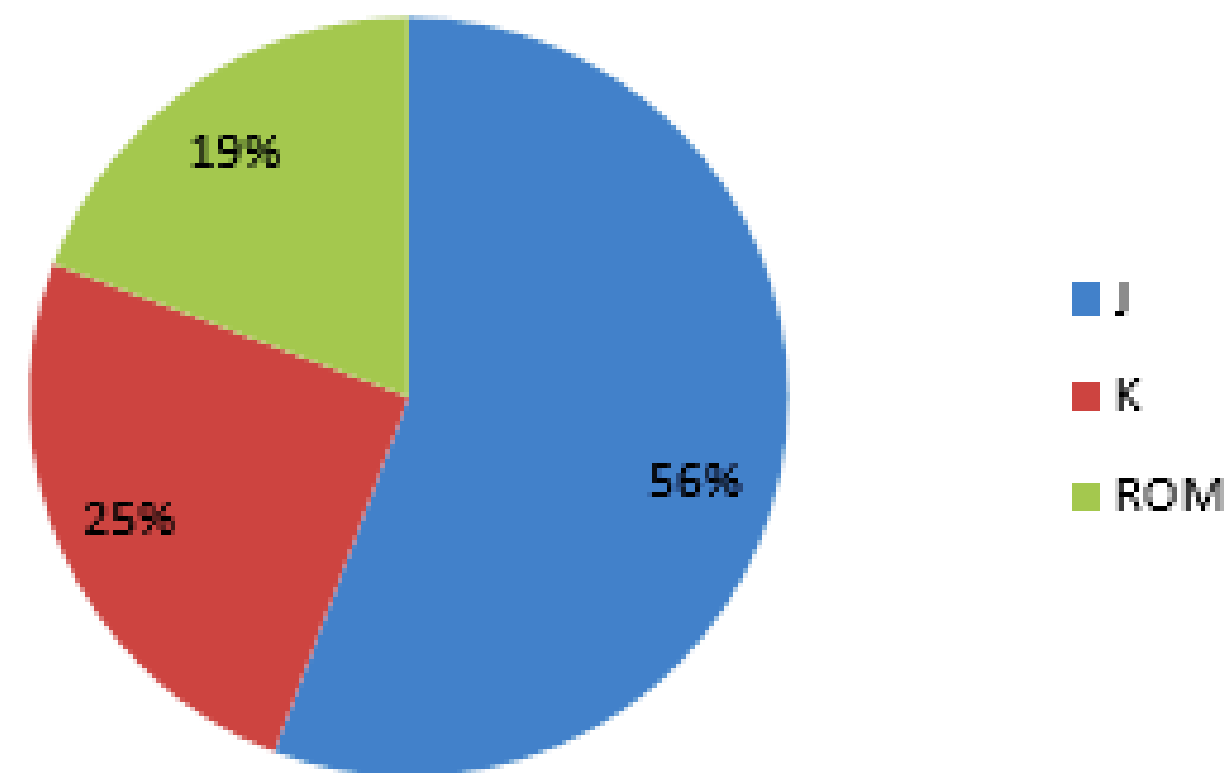


February 15, 2016

Derates By Type



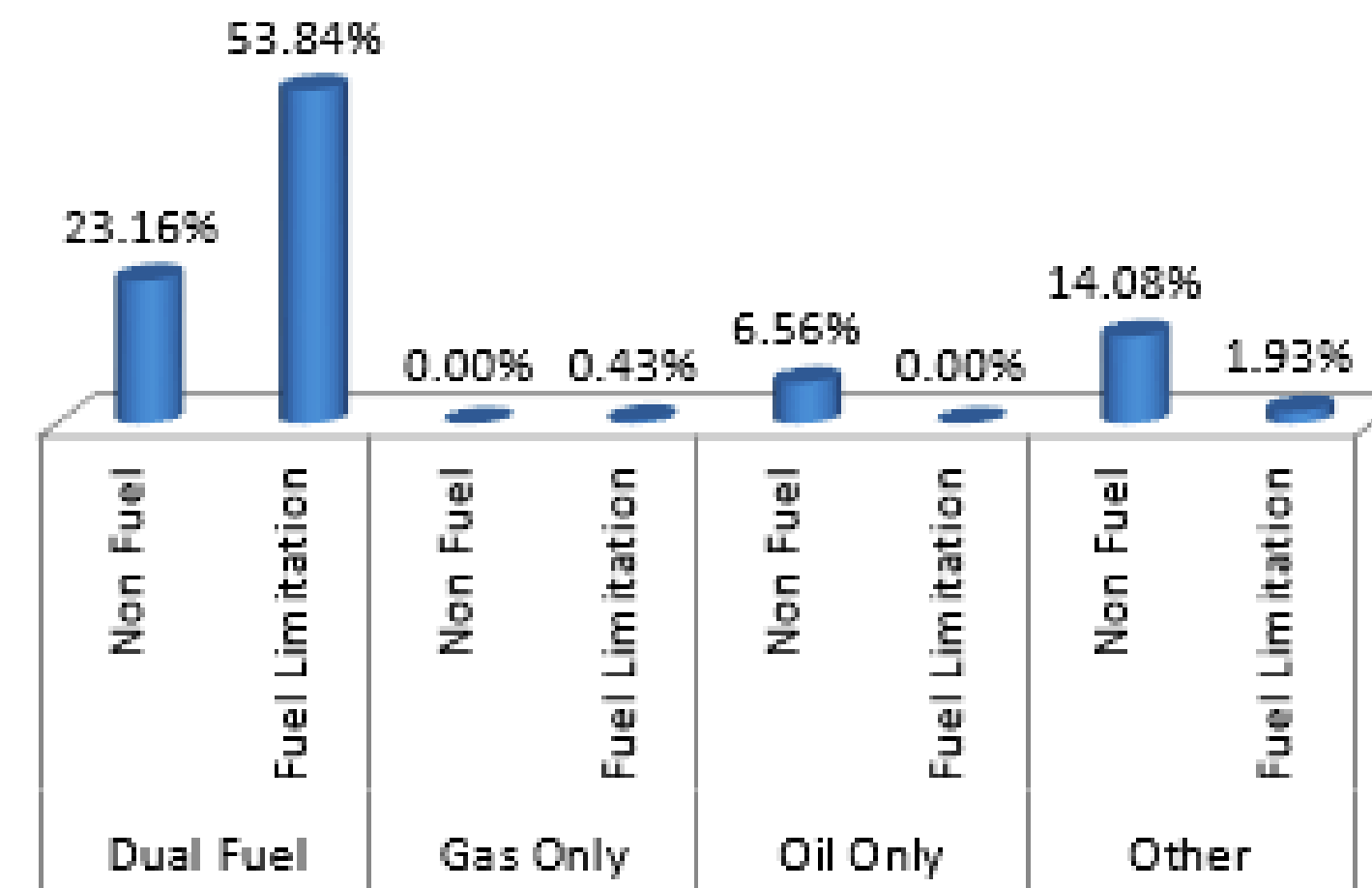
Zone



Peak Load
Total Derates

22951 MW
1860 MW

Derate Category by Unit Type

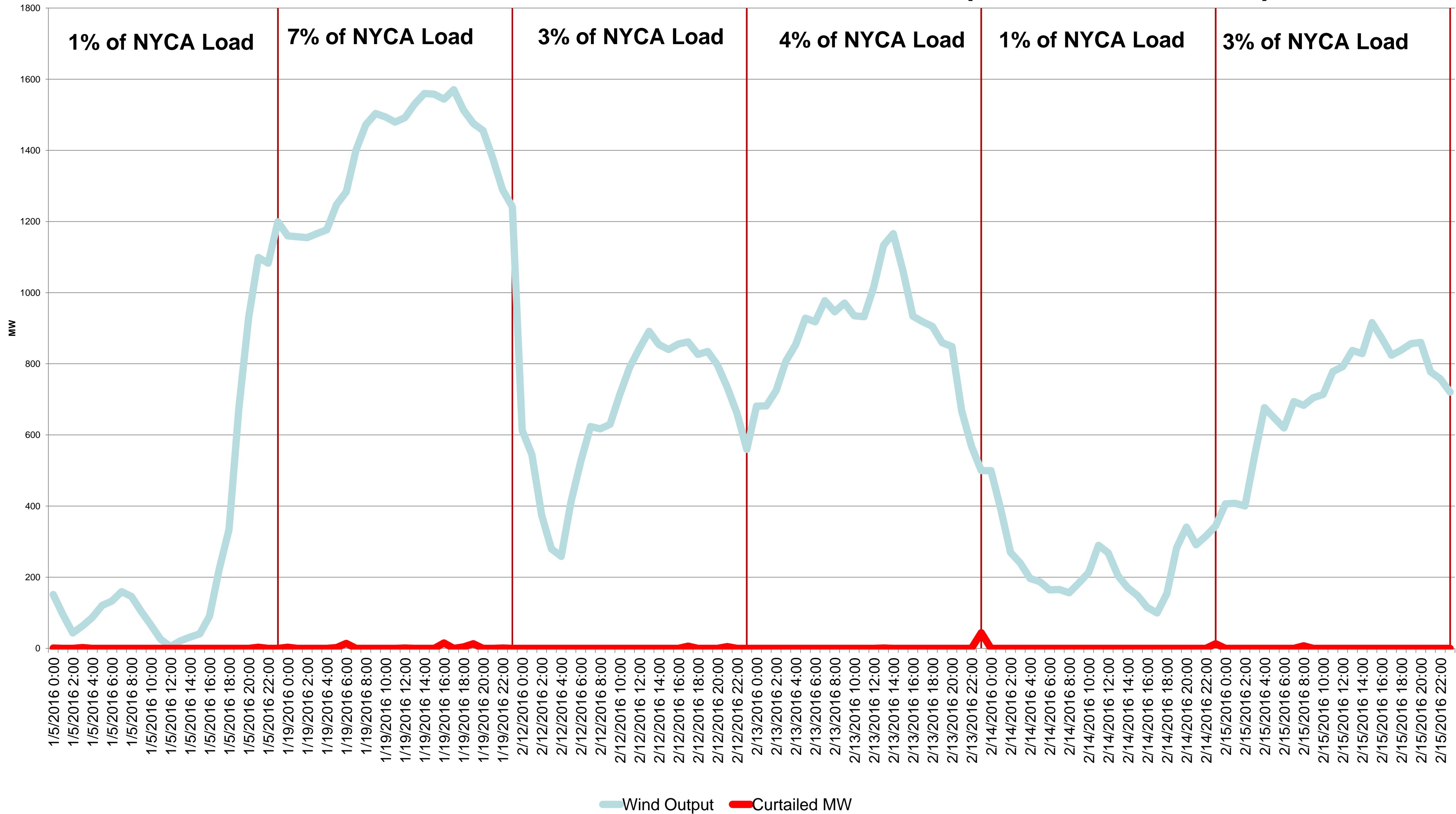


Winter 2016

Cold Weather Operations

- **Fuel Inventories**
 - *Sufficient alternative oil fuel inventories were maintained throughout Winter 2016*
 - *The NYISO did not need to initiate the state-agency communication protocol*
- **Regional Electric Conditions**
 - *Fewer generator derates and import schedule curtailments than previous two winters*
- **Regional Pipeline Conditions**
 - *Northeast interstate pipelines and LDCs issued only a limited number of Gas Alerts and OFOs this winter*
 - **The most restrictive were during the February 12-15 time period as there were multiple pipeline OFOs and some gas LDCs either instituted restrictive OFOs or curtailed gas supply to generators**
 - *New York State set an all-time gas peak on 2/13/2016 (6.6 BCF)*
 - *Previous peak set on 2/27/15 (6.4 BCF)*

Winter 2016 Cold Weather Wind Performance (1/5, 1/19, 2/12-15)



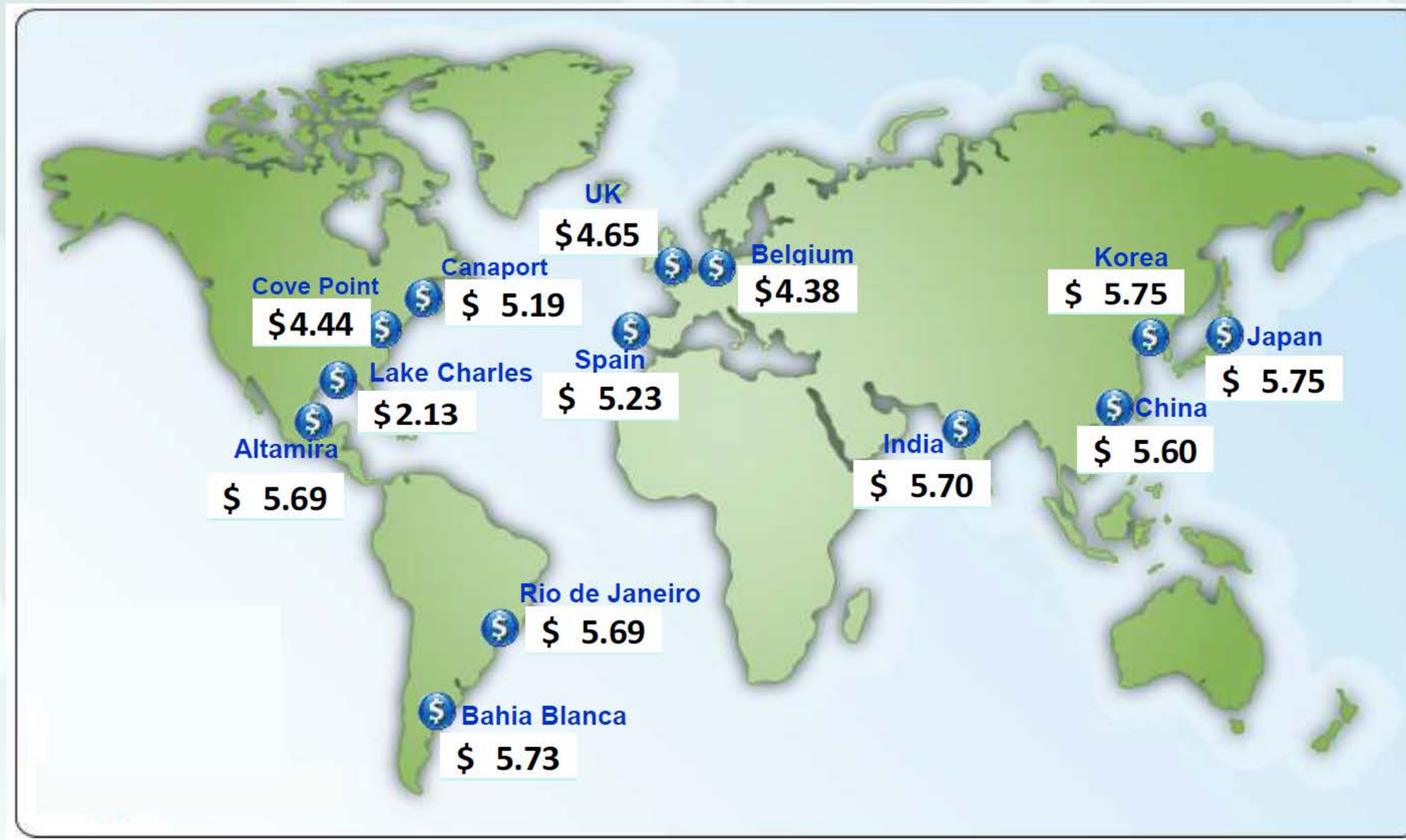
Winter 2016 Natural Gas Sendout

- **Central Hudson set a new gas peak day on February 13 with 137,000 MCF delivered**
- **Con Ed set a new peak day on February 13 with 1.23 BCF delivered**
- **National Grid set an Enterprise-Wide record (*New York and New England franchises*)**
- **NYSEG came within 2 degrees of their design day on 2/13**

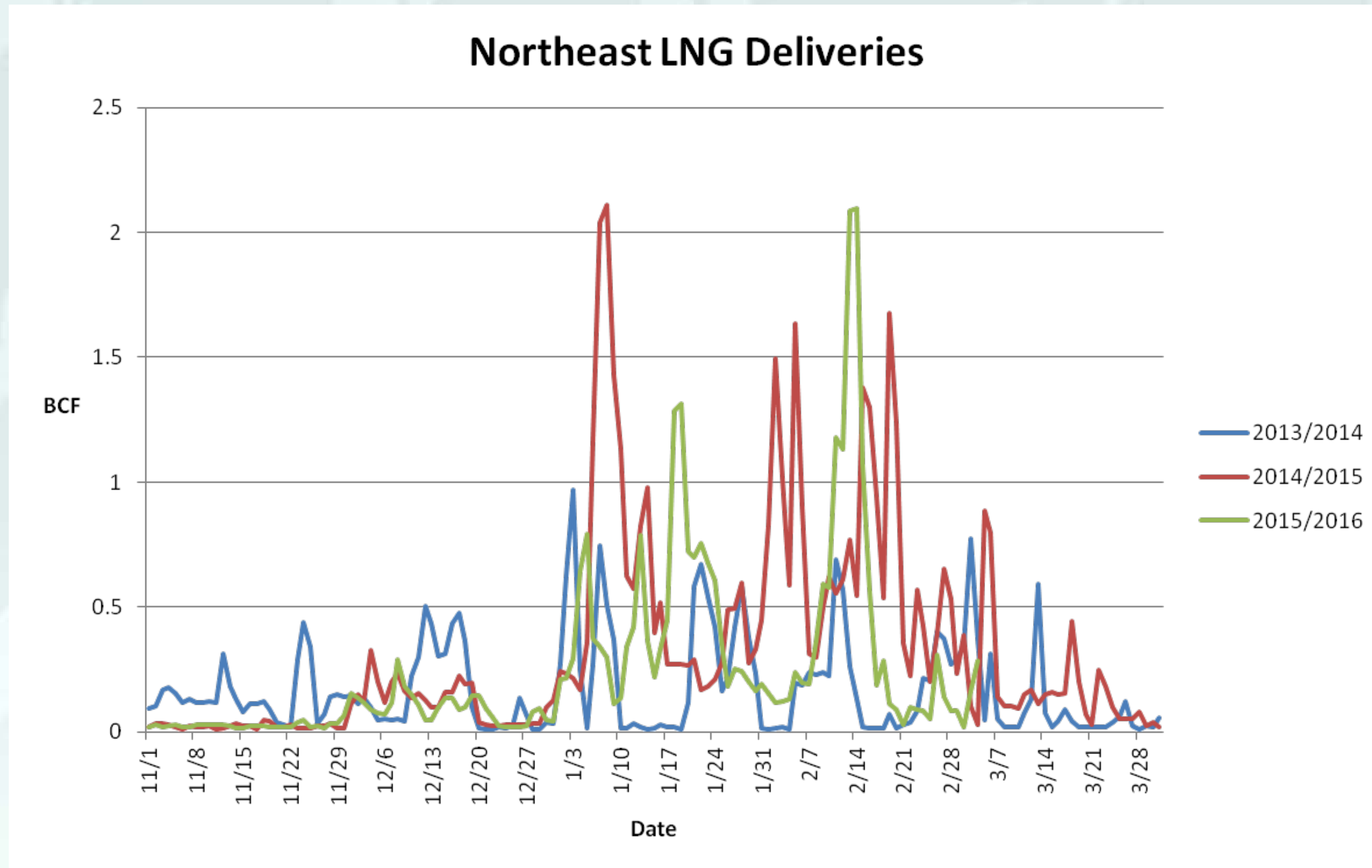
World LNG Estimated Jan. 2015 Landed Prices



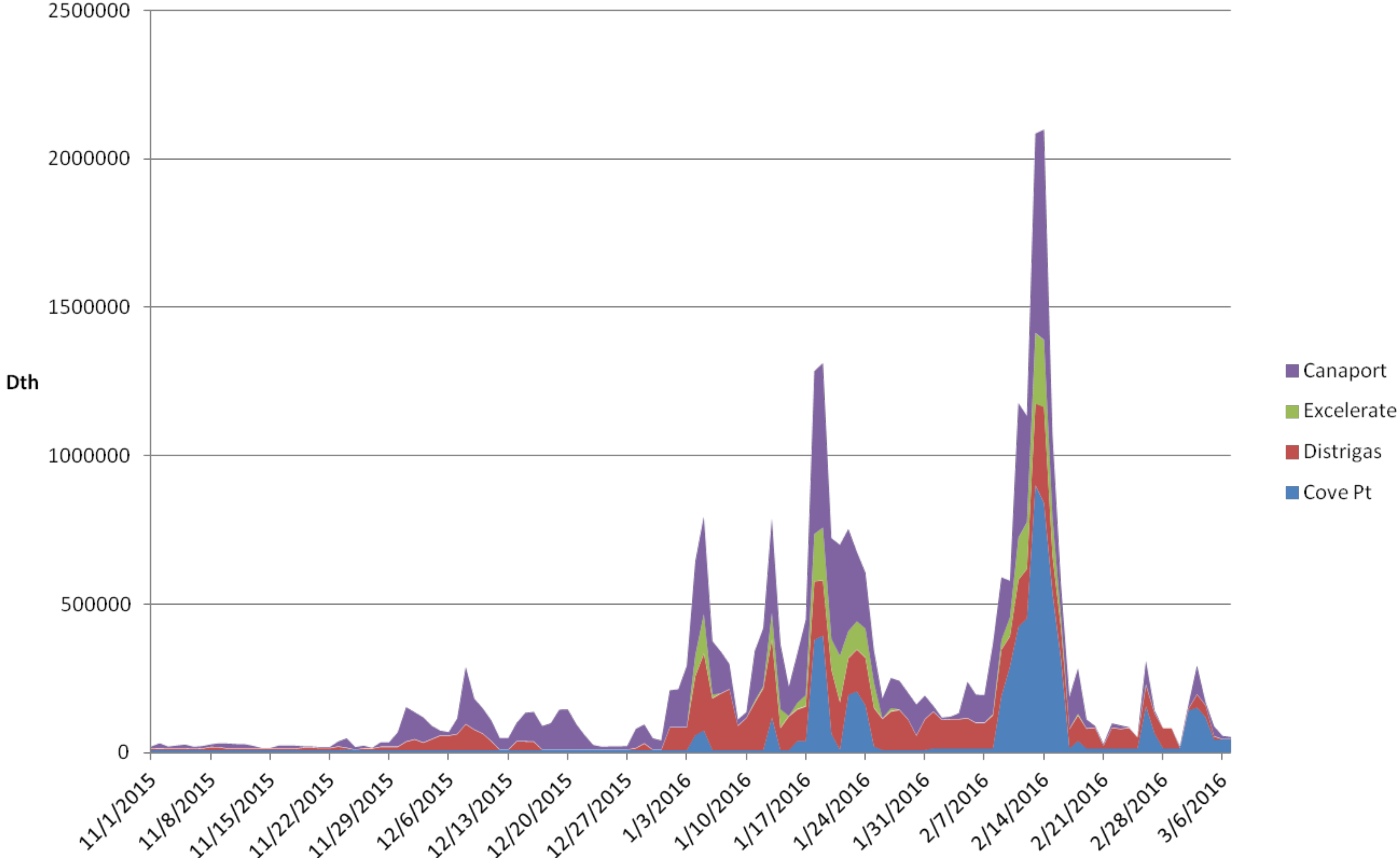
World LNG Estimated Jan. 2016 Landed Prices



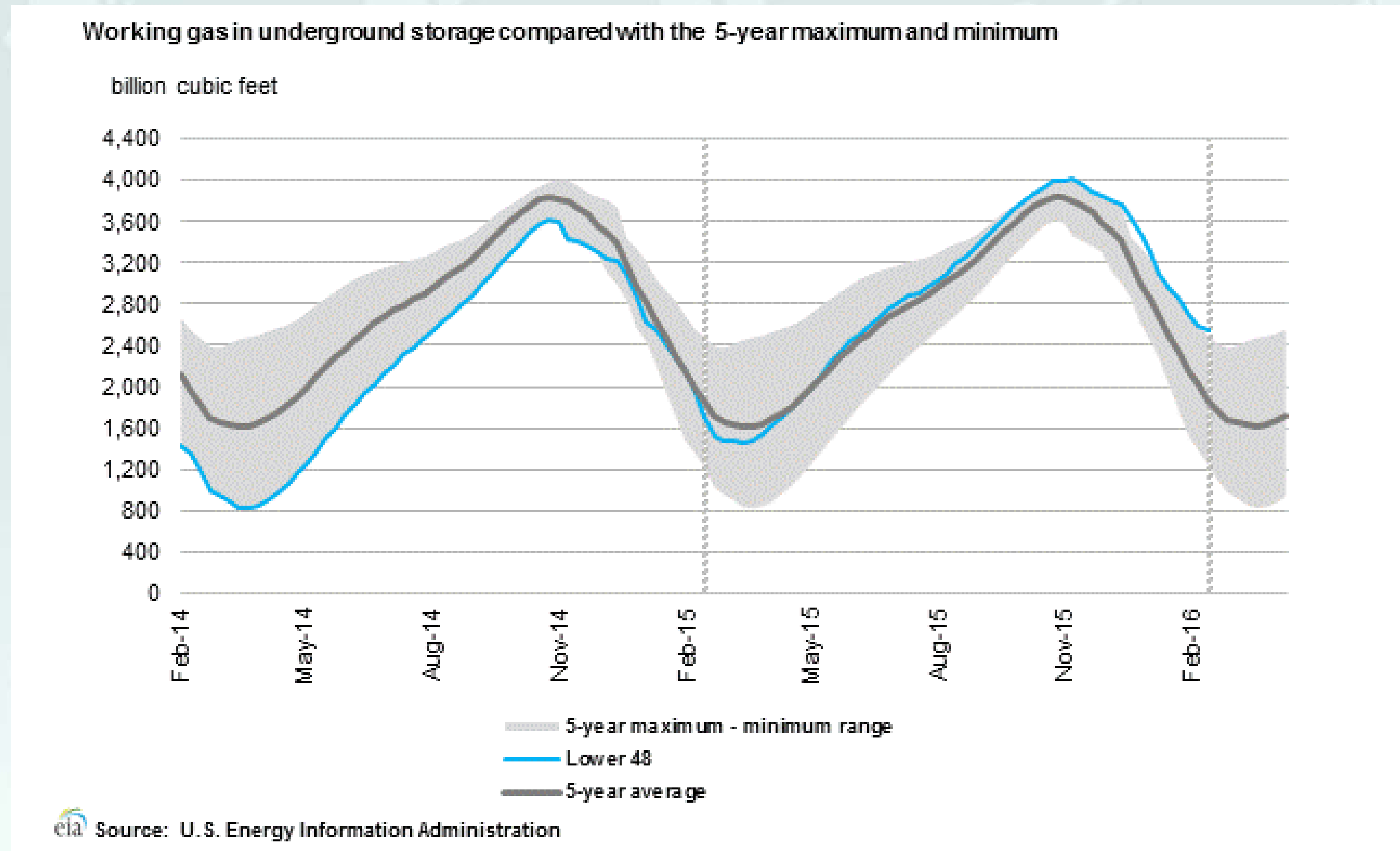
Year-on-Year LNG Deliveries



Winter 2016 LNG Deliveries By Facility



Winter Storage Comparison



FERC Order 809 (In effect 4-1-2016)

- **Adopts two proposals submitted by NAESB**
- **Revises Gas Nomination Timeline**
- **Timely Nomination schedule moved from 12:30 PM to 2:00 PM EST**
- **Adds a third intraday nomination cycle**
- **Declines to change the gas day to align with the power day**

After FERC Order 809

Natural Gas Pipeline Nomination, Confirmation, and Scheduling Timeline			
All times are EST		Current Timeline	RM14-2 Revised Timeline
Start Time of Gas Day		10:00 AM	10:00 AM
Timely Cycle	Nomination Deadline	12:30 PM	2:00 PM
	Confirmation Deadline	4:30 PM	5:30 PM
	Posting of Scheduled Quantity	5:30 PM	6:00 PM
	Gas Flow Start Time	10:00 AM	10:00 AM
	Hours of Gas Flow	24	24
Evening Cycle	Nomination Deadline	7:00 PM	7:00 PM
	Confirmation Deadline	10:00 PM	9:30 PM
	Posting of Scheduled Quantity	11:00 PM	10:00 PM
	Gas Flow Start Time	10:00 AM	10:00 AM
	Hours of Gas Flow	24	24
Intraday 1 Cycle	Nomination Deadline	11:00 AM	11:00 AM
	Confirmation Deadline	2:00 PM	1:30 PM
	Posting of Scheduled Quantity	3:00 PM	2:00 PM
	Gas Flow Start Time	6:00 PM	3:00 PM
	Hours of Gas Flow	16	19
	IT Bump Rights	Bumpable	Bumpable
Intraday 2 Cycle	Nomination Deadline	6:00 PM	3:30 PM
	Confirmation Deadline	9:00 PM	6:00 PM
	Posting of Scheduled Quantity	10:00 PM	6:30 PM
	Gas Flow Start Time	10:00 PM	7:00 PM
	Hours of Gas Flow	12	15
	IT Bump Rights	No Bump	Bumpable
Intraday 3 Cycle	Nomination Deadline	-	8:00 PM
	Confirmation Deadline	-	10:30 PM
	Posting of Scheduled Quantity	-	11:00 PM
	Gas Flow Start Time	-	11:00 PM
	Hours of Gas Flow	-	11
	IT Bump Rights	-	No Bump

Reliability Fuel Sharing

- **The NYISO is considering drafting a Technical Bulletin or Manual changes that would require generators that are predicting insufficient fuel to notify their interconnected Transmission Owner**

The Mission of the New York Independent System Operator, in collaboration with its stakeholders, is to serve the public interest and provide benefit to consumers by:

- *Maintaining and enhancing regional reliability*
- *Operating open, fair and competitive wholesale electricity markets*
- *Planning the power system for the future*
- *Providing factual information to policy makers, stakeholders and investors in the power system*

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