

# Winter Storm Gerri Markets Review

## January 13–18, 2024

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Market Implementation Committee  
February 7, 2024

- An overview of operations and markets during Winter Storm Gerri was provided at the January Markets & Reliability Committee.
- These slides are meant to provide additional detail for how Markets reflected system operations and conditions.

AREAS INCLUDE:

Day-ahead market clearing and scheduling

Real-time LMP price verification

Ancillary service pricing

Uplift totals

Conservative Operations units scheduled in the Day-Ahead peaked on January 16 at 15,189 MW; 67% were gas-fired units.

Day-Ahead Cleared Demand was as much as ~9,800 under bid compared to the forecast.

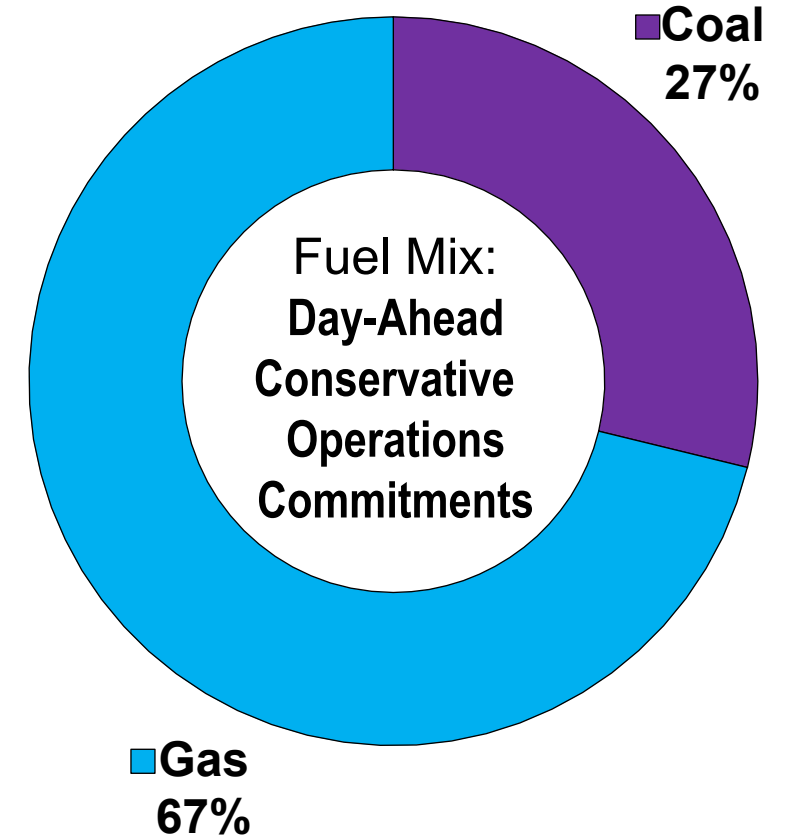
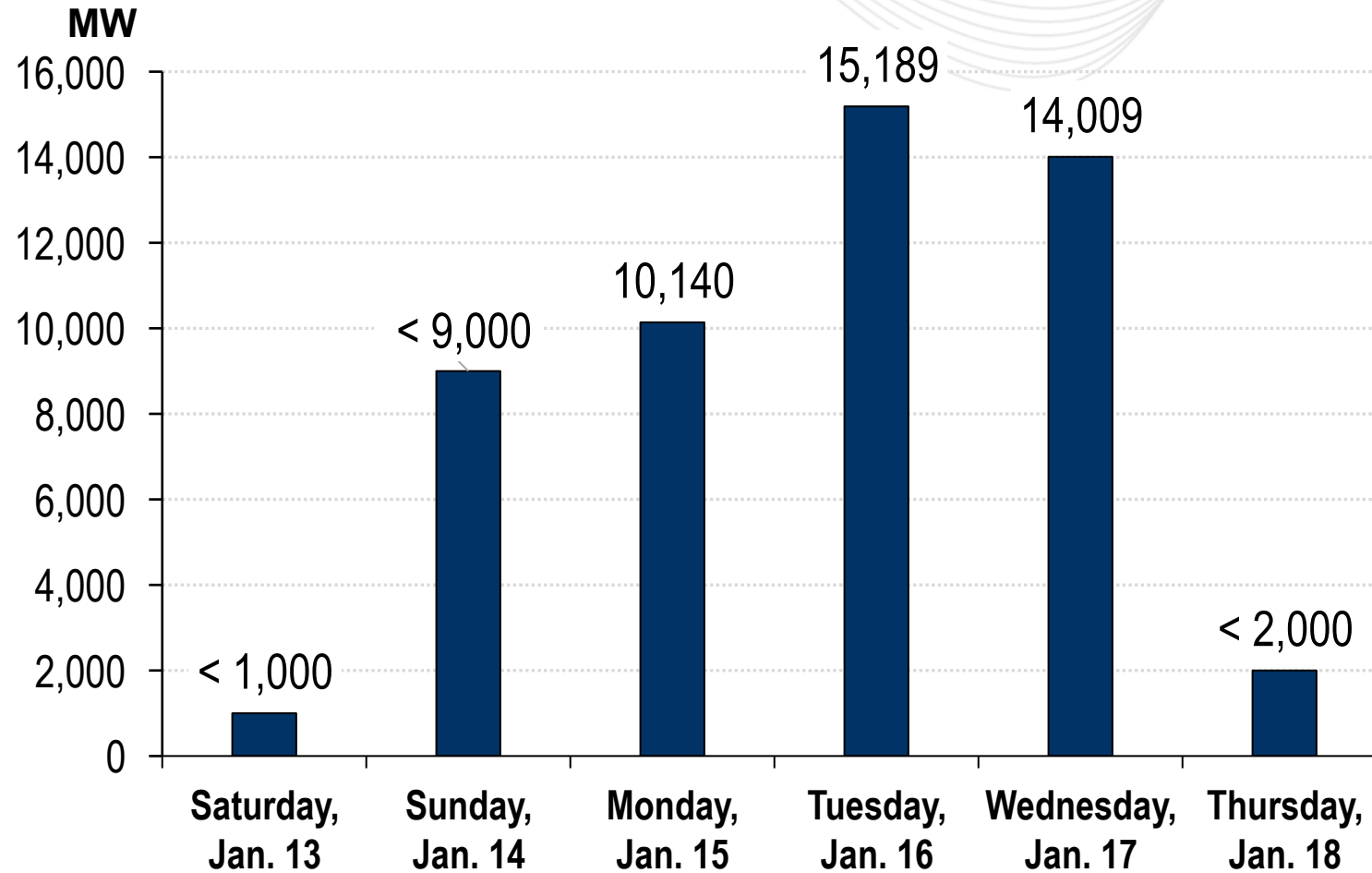
46–96% of exports were accounted for in the Day-Ahead clearing process.



# Day-Ahead Unit Scheduling

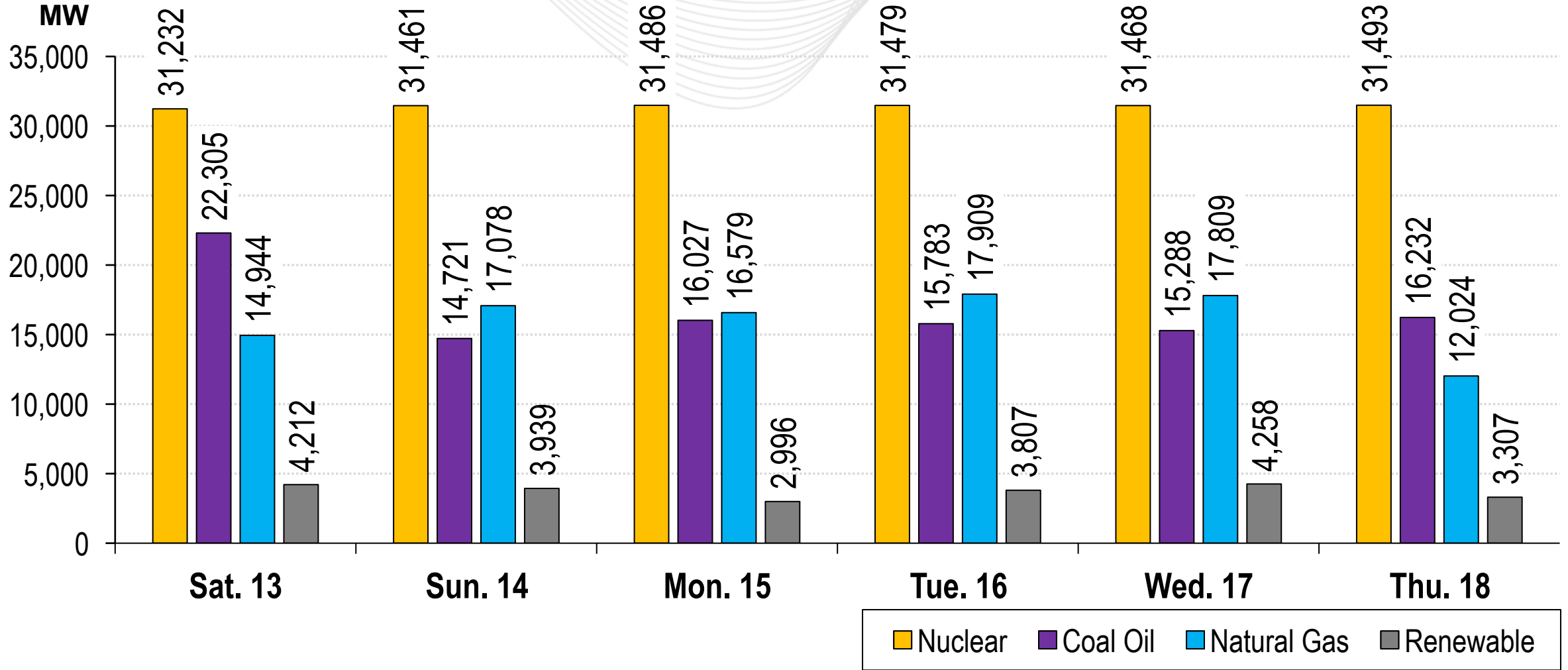
Date	Day - Ahead	
	Self-Scheduled Units	Committed Unit for Conservative Operations
	<i>Sum of Eco Max</i>	
Jan. 13	72,693	< 1,000
Jan. 14	67,200	< 9,000
Jan. 15	67,088	10,140
Jan. 16	68,977	15,189
Jan. 17	68,823	14,009
Jan. 18	63,056	< 2,000

## Day-Ahead Conservative Operations Commitments (Jan. 13–18, 2024)



# Day-Ahead Self Scheduled Units

Jan. 13–18, 2024





# Day-Ahead Self Scheduled Units

January 2024	Nuclear		Coal Oil		Natural Gas		Renewable		Total (MW)
	MW	%	MW	%	MW	%	MW	%	
<b>Sat. 13</b>	31,232	43%	22,305	31%	14,944	21%	4,212	6%	<b>72,693</b>
<b>Sun. 14</b>	31,461	47%	14,721	22%	17,078	25%	3,939	6%	<b>67,200</b>
<b>Mon. 15</b>	31,486	47%	16,027	24%	16,579	25%	2,996	4%	<b>67,088</b>
<b>Tue. 16</b>	31,479	46%	15,783	23%	17,909	26%	3,807	6%	<b>68,977</b>
<b>Wed. 17</b>	31,468	46%	15,288	22%	17,809	26%	4,258	6%	<b>68,823</b>
<b>Thu. 18</b>	31,493	50%	16,232	26%	12,024	19%	3,307	5%	<b>63,056</b>

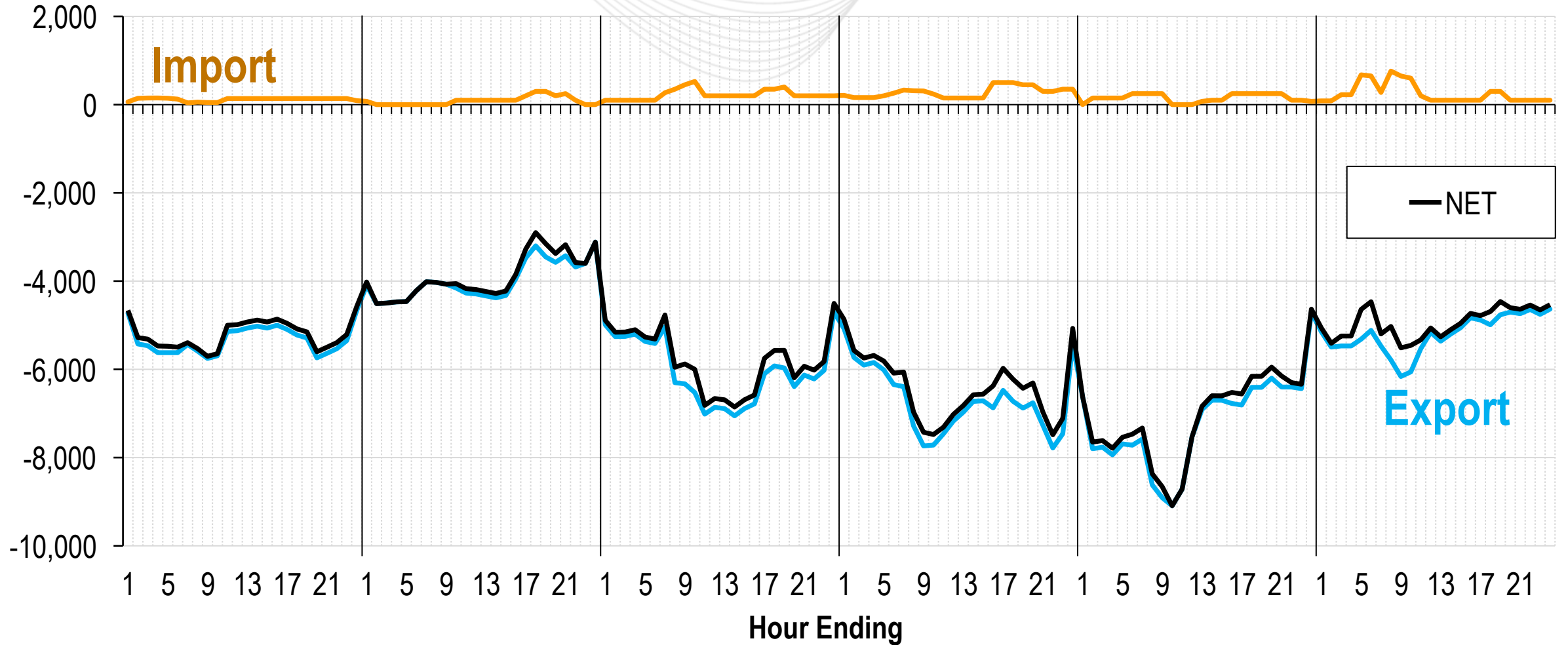


# Day-Ahead Demand vs. Forecast at 18:00

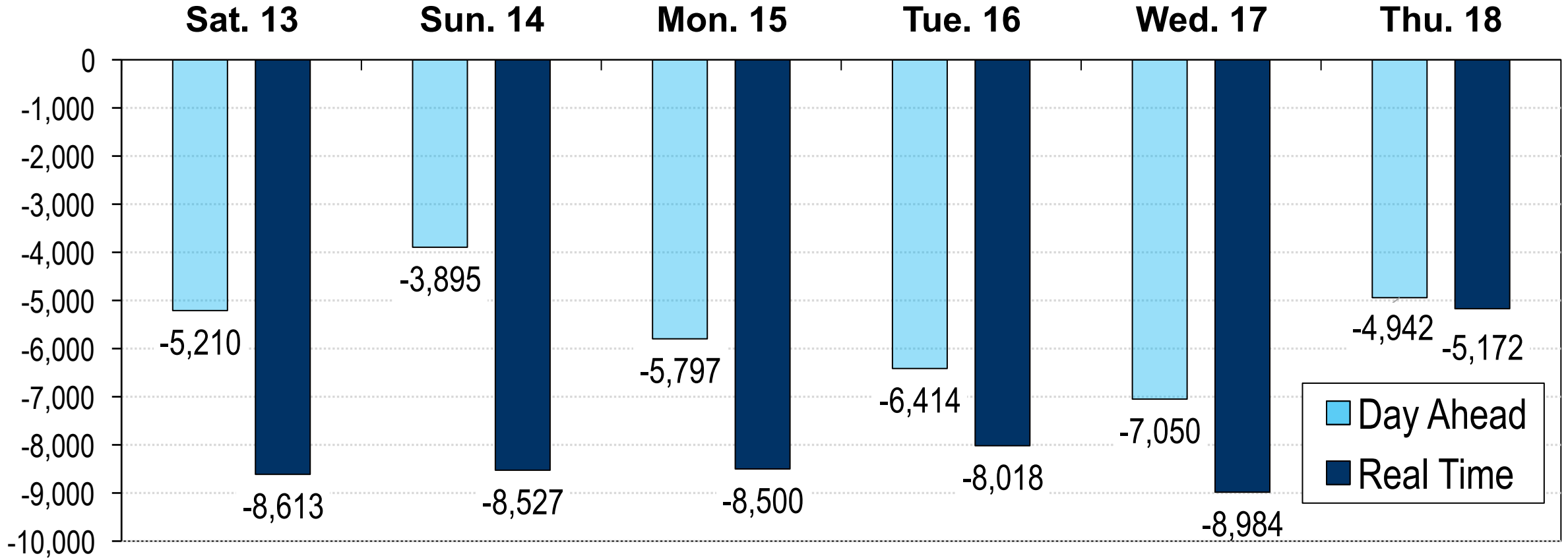
January 2024	Valley			Morning Peak			Evening Peak		
	DA Demand	Org Forecast	DA Over/Under Bid	DA Demand	Org Forecast	DA Over/Under Bid	DA Demand	Org Forecast	DA Over/Under Bid
Sat., Jan. 13	75,914	80,468	-4,554	91,300	96,996	-5,696	98,701	105,543	-6,842
Sun., Jan. 14	90,350	90,344	6	102,362	102,014	348	115,144	116,447	-1,303
Mon. Jan. 15	102,365	103,808	-1,443	116,683	124,309	-7,626	117,383	126,687	-9,304
Tue., Jan. 16	100,524	102,610	-2,086	116,796	124,946	-8,150	122,246	131,337	-9,091
Wed., Jan. 17	109,523	111,958	-2,435	133,002	135,061	-2,059	124,418	125,627	-1,209
Thu., Jan. 18	97,243	107,104	-9,861	122,000	126,563	-4,563	112,698	118,939	-6,241



## Day-Ahead Interchange Totals (Jan. 13–18, 2024)



## Day-Ahead vs. Real-Time Net Daily Average Interchange (Jan. 13–18, 2024)



Real-time pricing peaked coincident with system conditions on Jan. 16–18, driven by load, interchange and localized congestion.

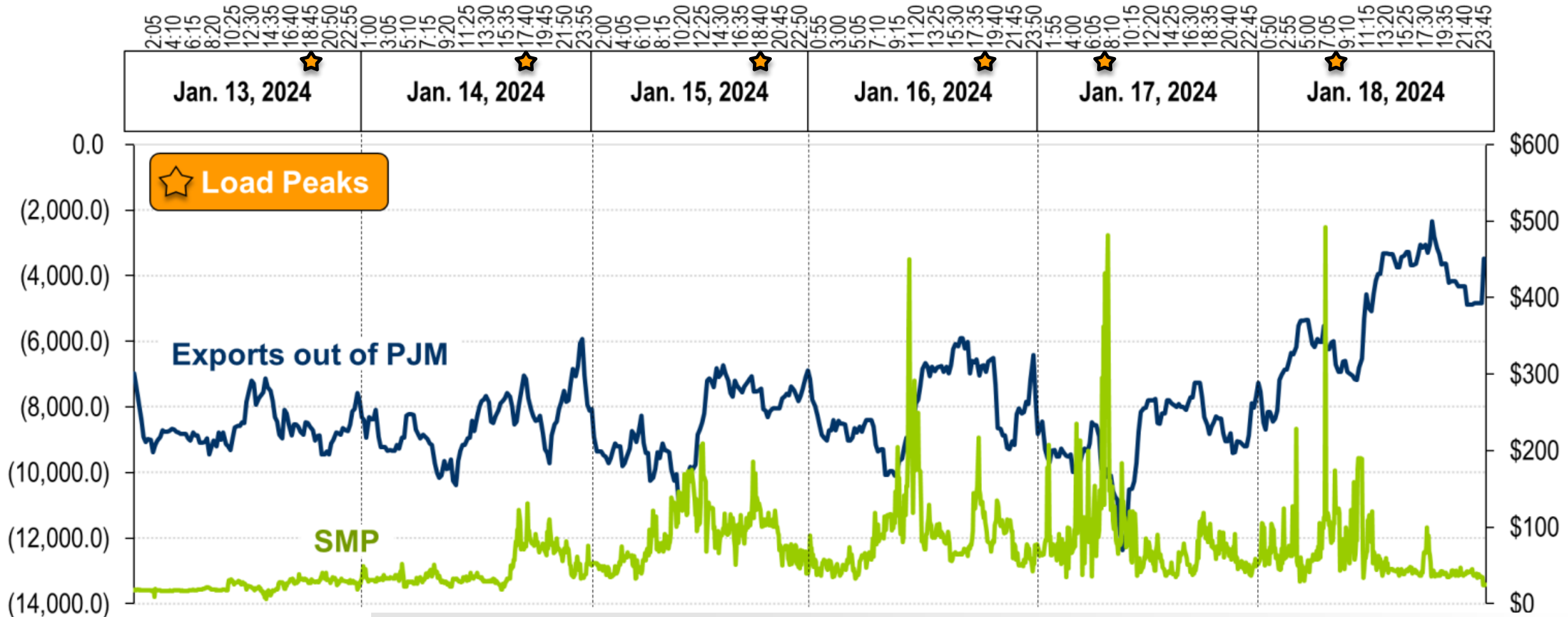
SMP = \$479.87 @ Jan. 17, 07:45; \$490.39 @ Jan. 18, 06:55

Localized congestion peaked on Jan. 17.

Nineteen out of 26 active constraints in RT SCED bound at the \$2,000/MWh penalty factor.

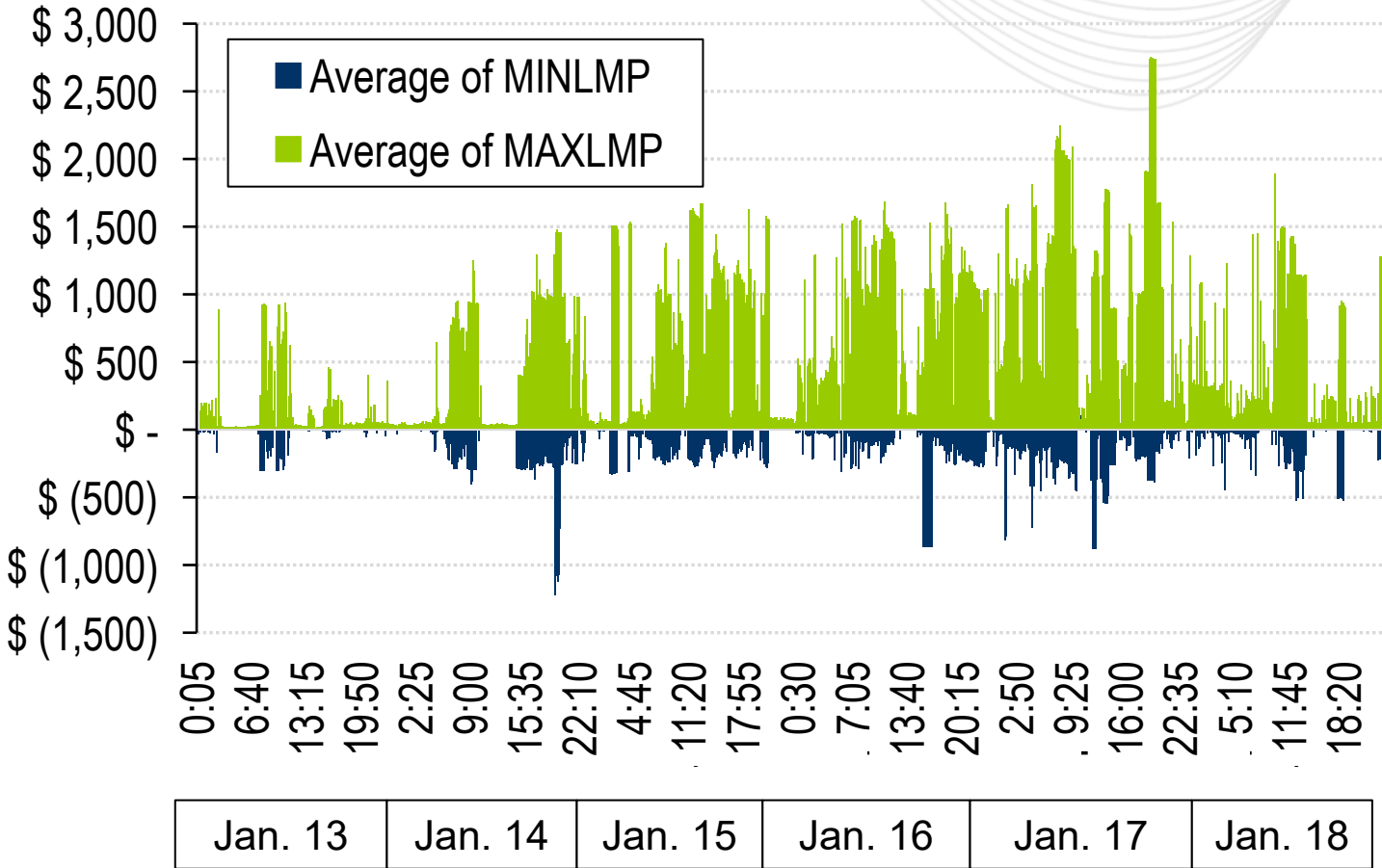
Additional reserves and regulation:

- No reserve shortage cases approved throughout event
- One Synchronized Reserve event Jan. 13 (<10 minutes)



**Key takeaway:** SMP spike late morning on Jan.16 driven by sudden increase in load; SMP spikes Jan. 17–18 coincident with heavy morning load and interchange

Min./Max. 5-Minute Real-Time Total LMP



**Locational aspect of load to constraints ultimately impacts pricing.**

**Pnode** prices reached:

As high as \$2,749    As low as -\$1,222  
*on Jan. 17*                      *on Jan. 14*

**Zonal** prices reached as high as  
 \$1,122 (DOM) on Jan. 18.

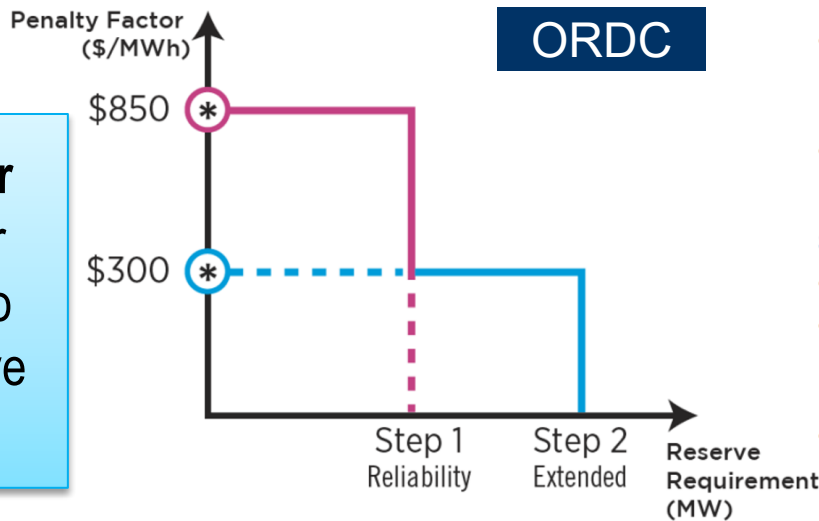
**Transmission Constraint Penalty Factors**

These are parameters used by the Security Constrained Economic Dispatch (SCED) applications to determine the maximum cost of the redispatch incurred to control a transmission constraint. Default is \$2,000/MWh.

## Reserves:

**On Jan. 14–17** – Step 2B of the ORDCs extended from 190 MW by 300 MW for a total of 490 MW for 05:00 through 23:00 (*RTO Zone only, DA & RT*)

**Penalty Factor** sets a price for being unable to meet the reserve requirement.



## Regulation:

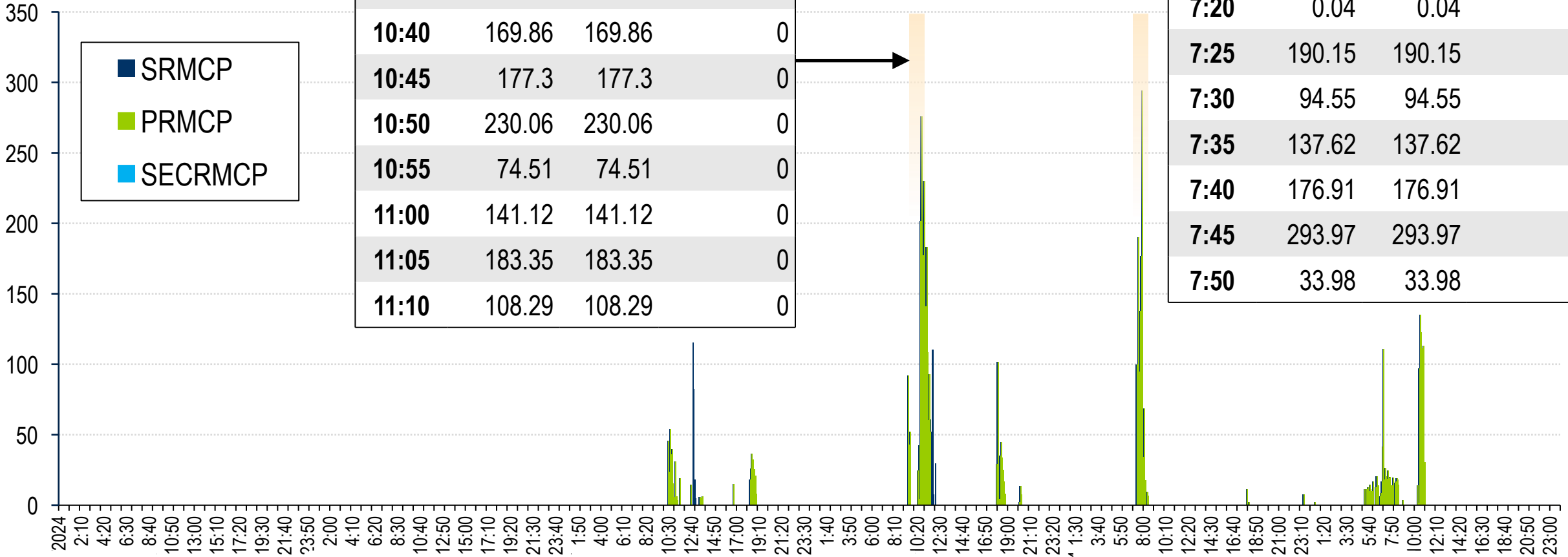
**Jan. 14–17** – 800 MW for all hours

Normal requirement is 525 MW, 800 MW for off-peak, on-peak periods.

Updates communicated to stakeholders through Special Notice in Emergency Procedures tool



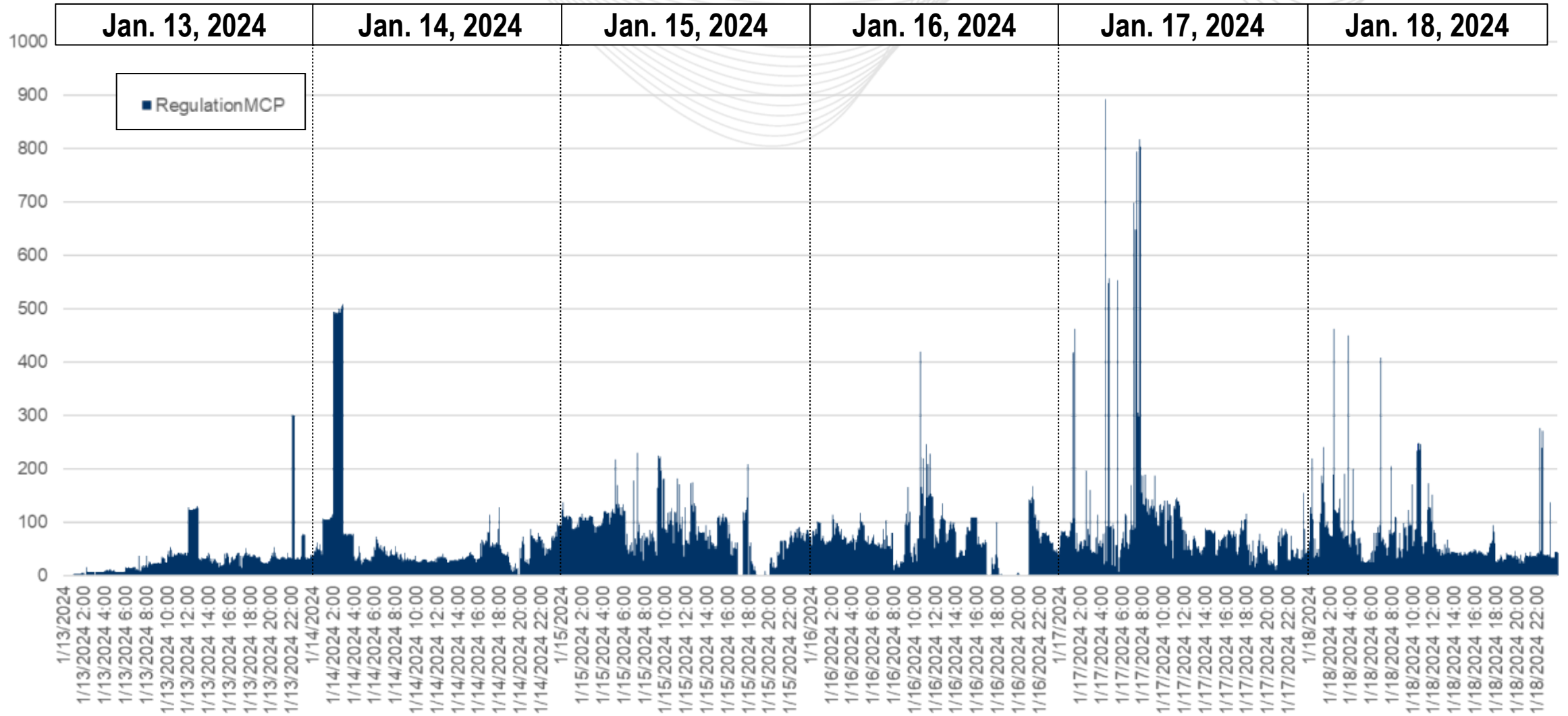
# Reserve Market Clearing Pricing



Jan. 16	SRMCP	PRMCP	SECRMCP
10:25	42.45	42.45	0
10:30	201.37	201.37	0
10:35	275.79	275.79	0
10:40	169.86	169.86	0
10:45	177.3	177.3	0
10:50	230.06	230.06	0
10:55	74.51	74.51	0
11:00	141.12	141.12	0
11:05	183.35	183.35	0
11:10	108.29	108.29	0

Jan. 17	SRMCP	PRMCP	SECRMCP
7:15	99.52	99.52	0
7:20	0.04	0.04	0
7:25	190.15	190.15	0
7:30	94.55	94.55	0
7:35	137.62	137.62	0
7:40	176.91	176.91	0
7:45	293.97	293.97	0
7:50	33.98	33.98	0

Jan. 13, 2024	Jan. 14, 2024	Jan. 15, 2024	Jan. 16, 2024	Jan. 17, 2024	Jan. 18, 2024
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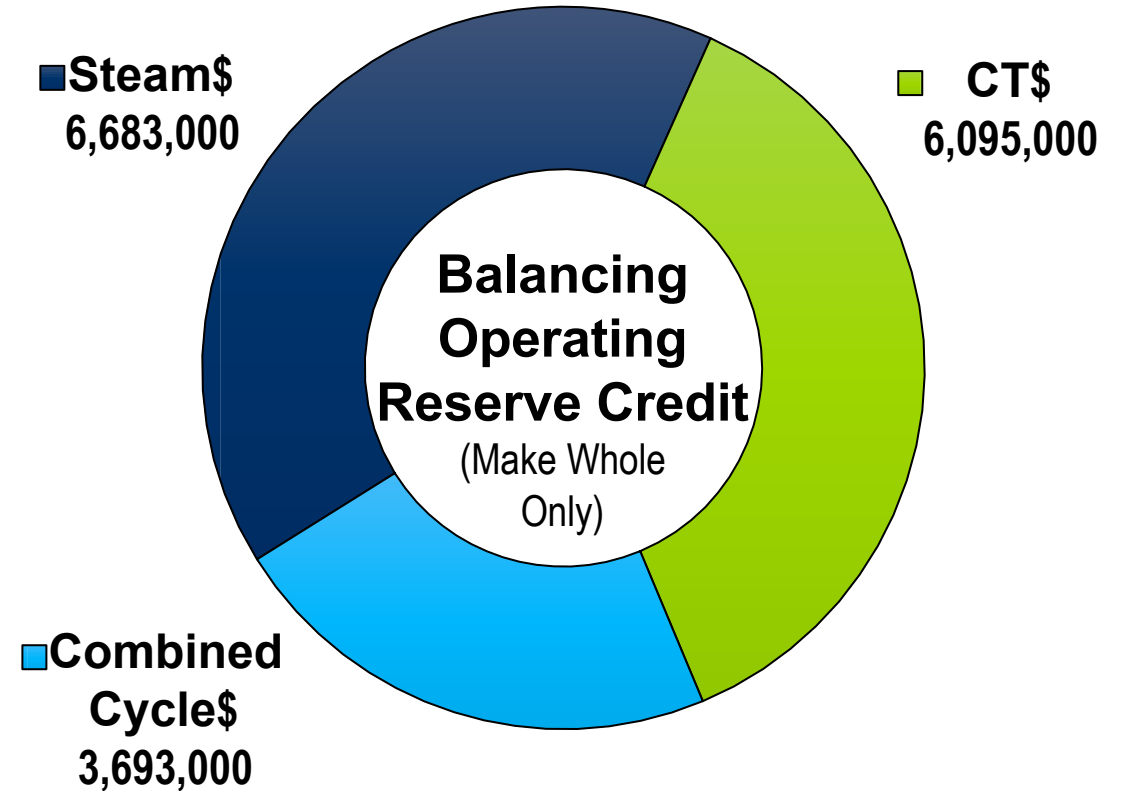
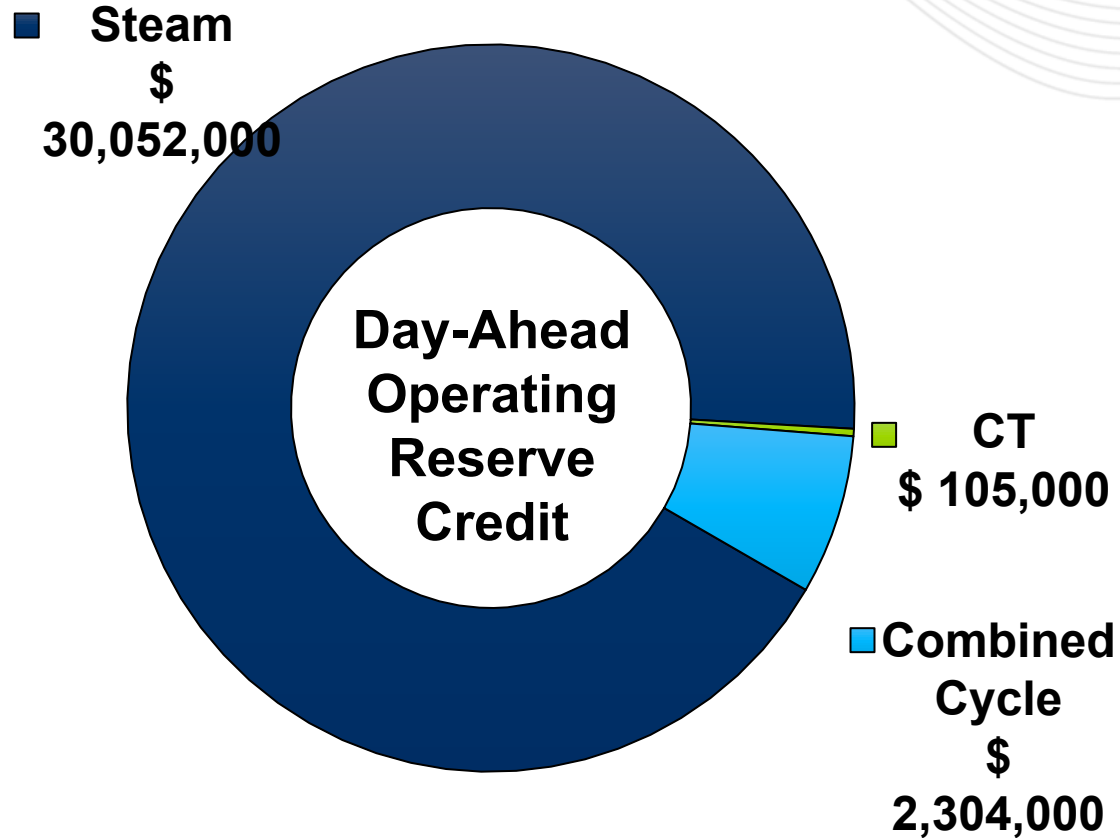




January 2024	Operating Reserve Credit		Total Uplift
	Day Ahead	Balancing	
<b>Friday:</b> Jan. 12	\$21,974	\$48,416	\$70,390
<b>Saturday:</b> Jan. 13	\$38,934	\$3,122,138	\$3,161,072
<b>Sunday:</b> Jan. 14	\$3,135,907	\$1,569,792	\$4,705,699
<b>Monday:</b> Jan. 15	\$14,275,847	\$6,051,075	\$20,326,922
<b>Tuesday:</b> Jan. 16	\$10,243,688	\$2,168,132	\$12,411,821
<b>Wednesday:</b> Jan. 17	\$4,204,974	\$2,217,142	\$6,422,116
<b>Thursday:</b> Jan. 18	\$562,398	\$1,830,112	\$2,392,510
<b>Friday:</b> Jan. 19	\$186,575	\$167,063	\$353,638
<b>Saturday:</b> Jan. 20	\$0	\$928,947	\$928,947
<b>Sunday:</b> Jan. 21	\$279,973	\$376,496	\$656,469
<b>Monday:</b> Jan. 22	\$9,699	\$2,071,810	\$2,081,510
<b>Total</b>	<b>\$32,959,970</b>	<b>\$20,551,126</b>	<b>\$53,511,096</b>

# Operating Reserve Credits by Unit Type

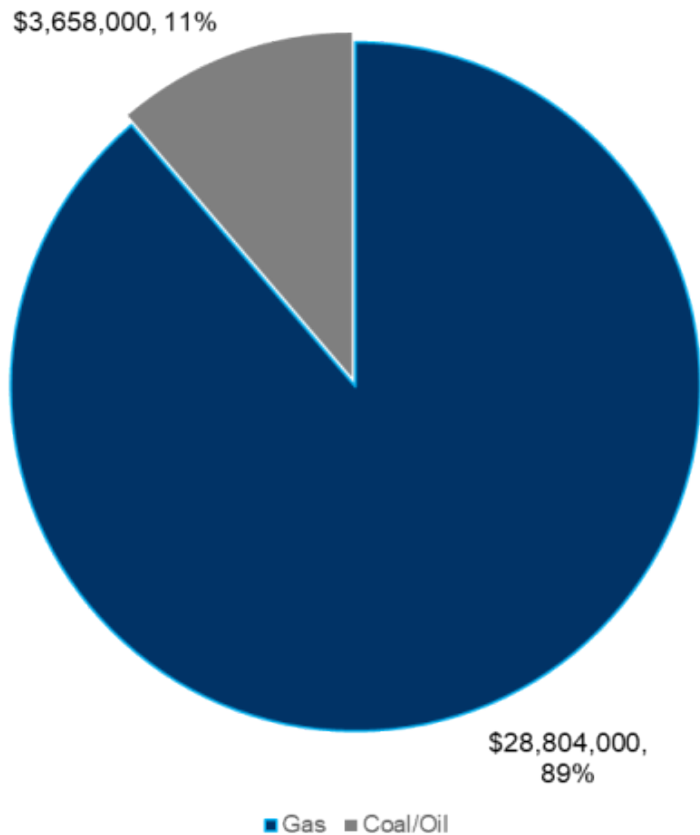
## Sat. January 13 to Thu. January 18



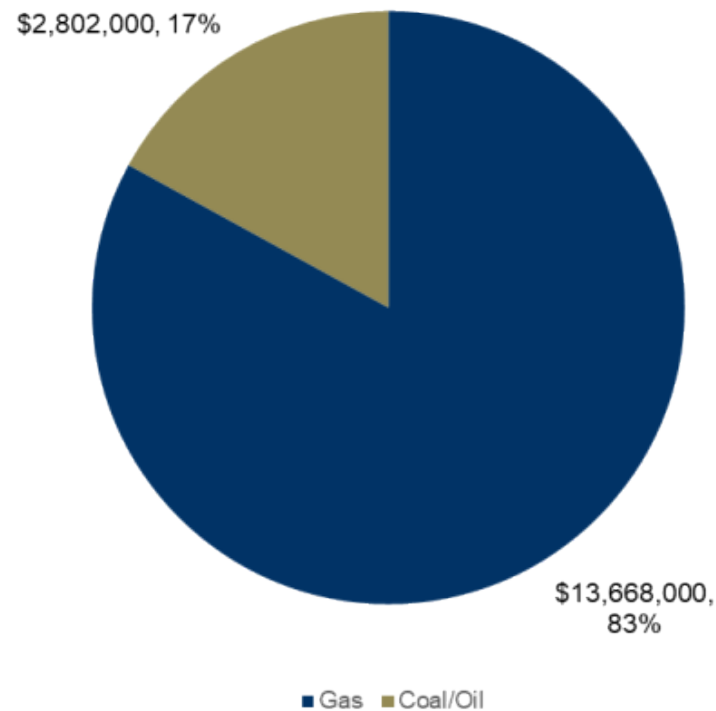
# Operating Reserve Credits by Fuel Type

## Sat. January 13 to Thu. January 18

### Day-Ahead Operating Reserve Credit



### Balancing Operating Reserve Credit by Fuel Type (Make Whole Only)



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### Member Hotline

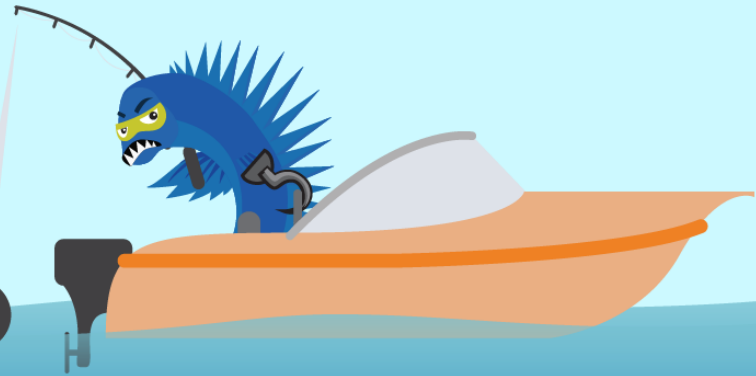
(610) 666-8980

(866) 400-8980

[custsvc@pjm.com](mailto:custsvc@pjm.com)

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