

A large, light gray, stylized sun graphic is positioned on the left side of the slide. It consists of a semi-circle at the top with several rays extending downwards, and a larger, more complex shape below it that resembles a sunburst or a stylized sun with rays extending outwards.

2017/2018 Planning Resource Auction Results

April 14, 2017

Executive Summary

- MISO Region has adequate resources to meet its Planning Reserve Margin Requirement of 134,753 MW
 - Zones 1-10 cleared at \$1.50/MW-day
 - Marginal resource is in Zone 1
 - Increased supply and lower demand in Midwest largely responsible for lower Auction Clearing Prices relative to last year
- Regional generation supply is consistent with the 2016 OMS-MISO Survey
- No mitigation for physical or economic withholding by the IMM

Auction Inputs and Considerations

- MISO's Resource Adequacy construct combines regional and local criteria to achieve a least-cost solution for the region subject to the following:
 - MISO-wide reserve margin requirements
 - Zonal capacity requirements (Local Clearing Requirement)
 - Zonal transmission limitations (Capacity Import/Export Limits)
 - Sub-Regional contractual limitations such as between MISO's South and Central/North Regions
- The MISO-wide reserve margin requirement is shared among the Zones, and Zones may import capacity to meet this requirement
- Multiple options exist for Load-Serving Entities to demonstrate Resource Adequacy:
 - Submit a Fixed Resource Adequacy Plan
 - Utilize bilateral contracts with another resource owner
 - Participate in the Planning Resource Auction
- The Independent Market Monitor reviews the auction results for physical and economic withholding

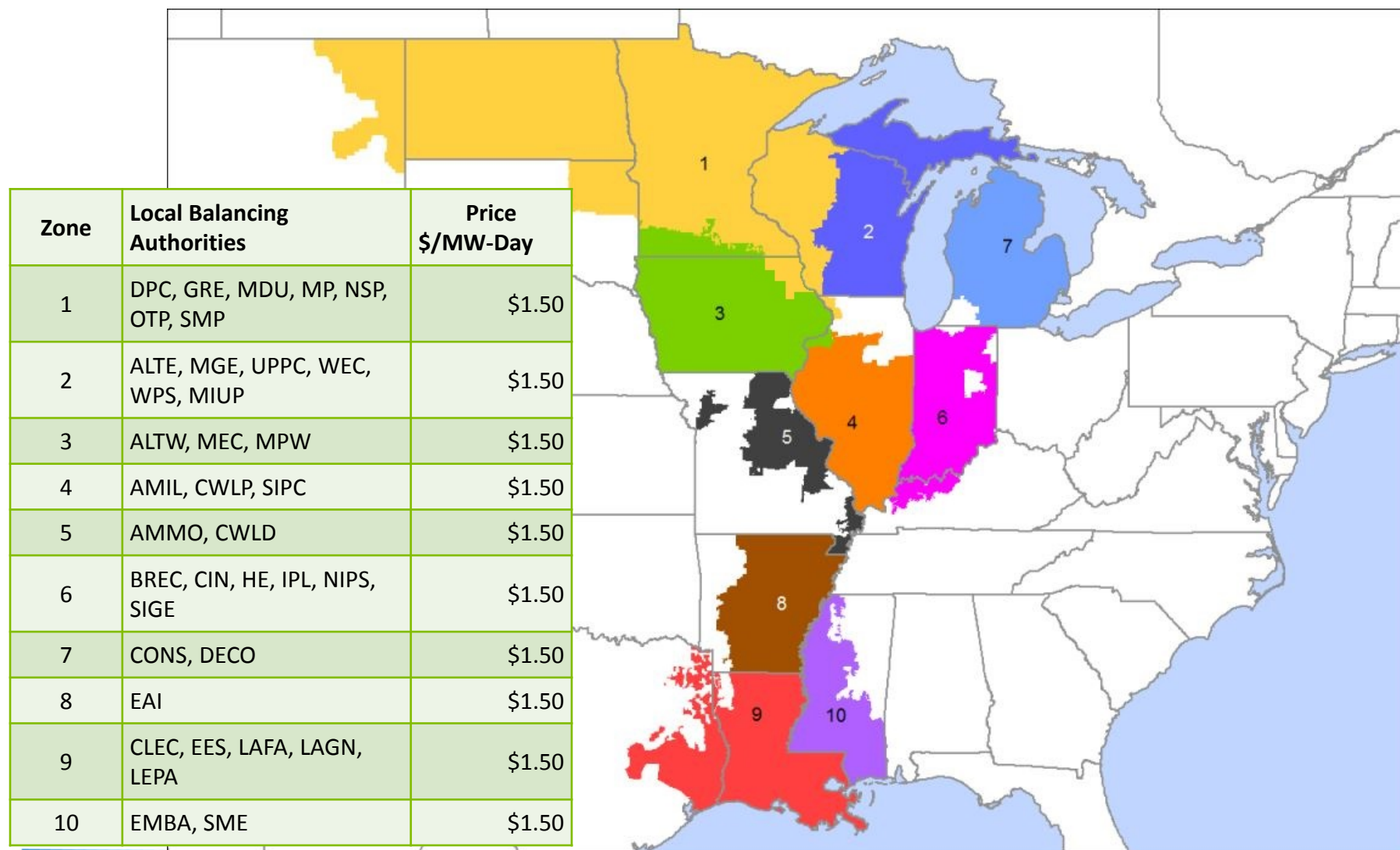
Auction Output and Settlements

- Key outputs from the Auction
 - A commitment of capacity to the MISO region, including performance obligations and
 - The capacity price (Auction Clearing Price) for each Zone
- This price drives the settlements process
 - Load pays the Auction Clearing Price for the Zone in which it is physically located
 - Cleared capacity is paid the Auction Clearing Price for the Zone where it is physically located
 - External Resources are paid the price of the Zone where their firm transmission service crosses into MISO

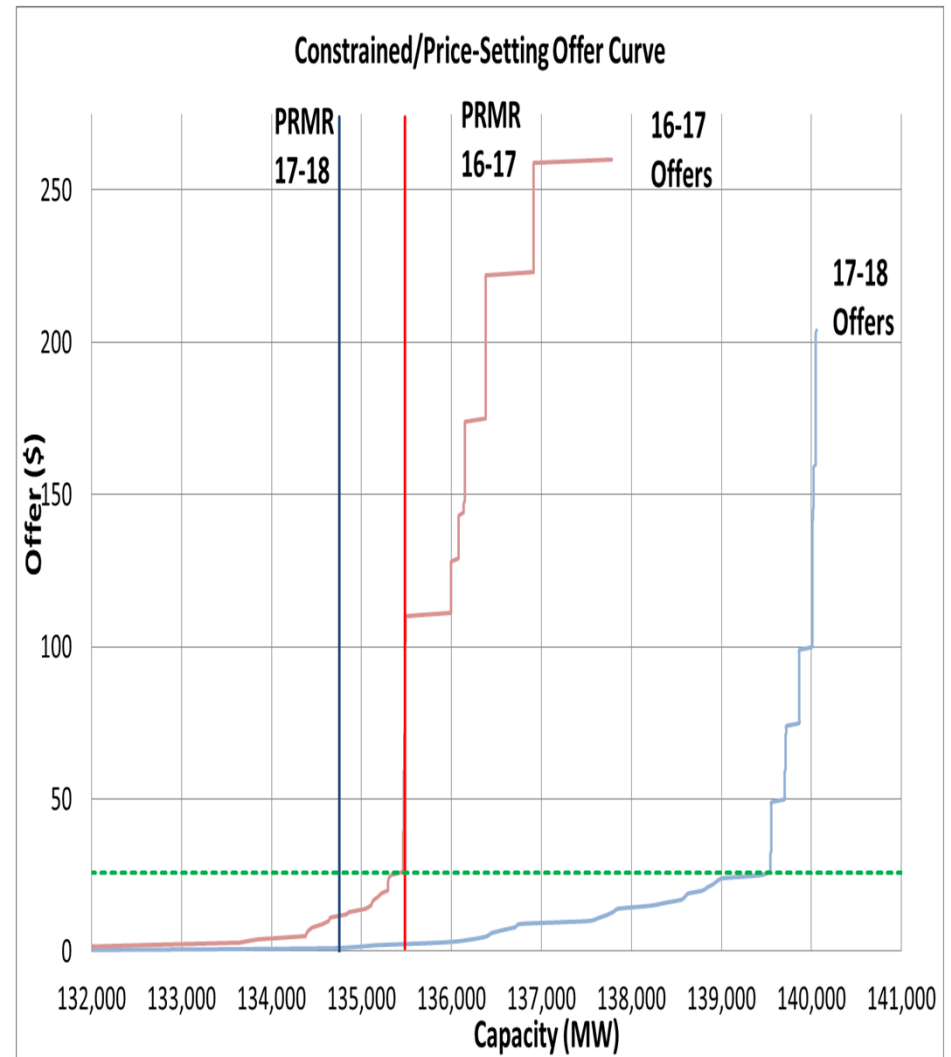
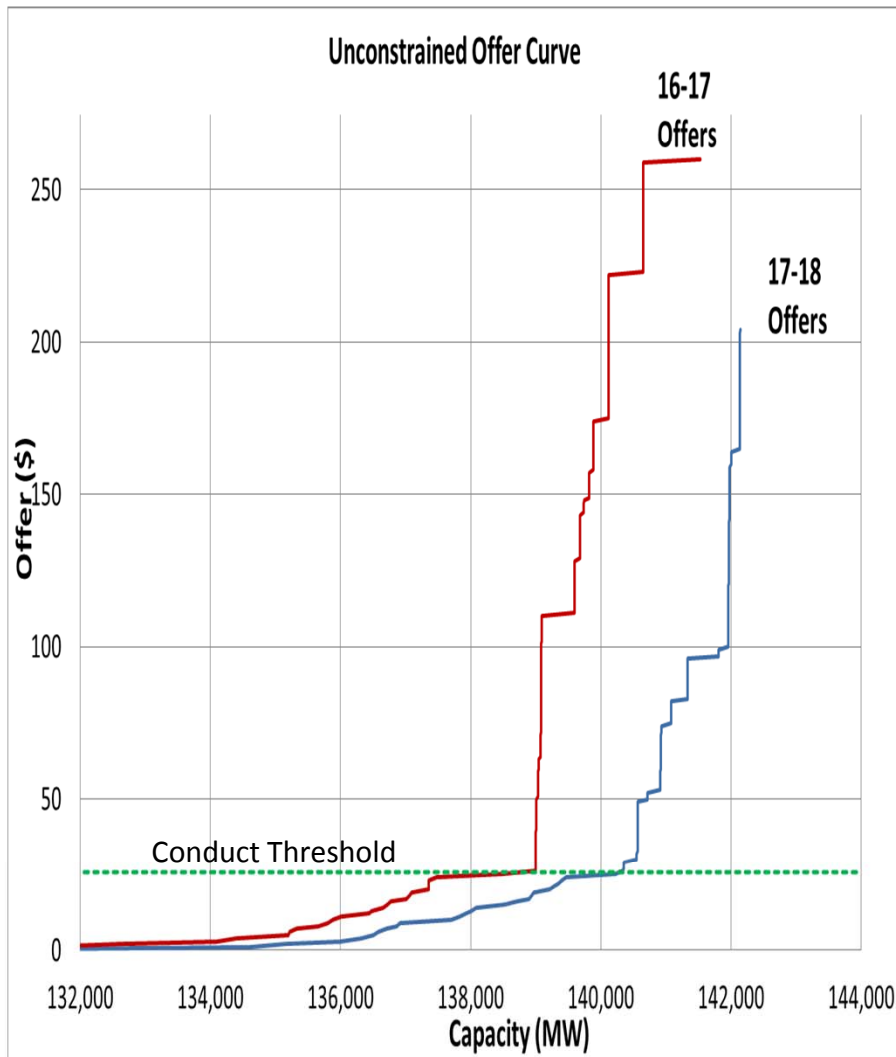
Changes since PRA 2016/2017

- Tariff revisions approved in FERC Docket No. ER17-806-000 exempting Demand Resources (DR), Energy Efficiency Resources (EER) and External Resources (ER) from Market Monitoring and Mitigation in the 2017-18 PRA
- Tariff revisions approved in FERC Docket No. ER17-806-000 modified the application of the Physical Withholding Threshold to include Market Participants and their Affiliates
- Tariff revisions approved in FERC Docket No. ER16-833-004 established default technology specific avoidable costs, in lieu of providing facility specific operating cost information, to request facility specific Reference Levels from the IMM
- Sub-Regional Export Constraint in the South to Midwest direction increased to a 1500 MW limit from 876 MW and increased to a 3000 MW limit from 2794 MW in the Midwest to South direction

2017/2018 Auction Clearing Price Overview



MISO Offer Curve, 2016/2017 vs. 2017/2018



Capacity constrained by export limits from Zone 1 and MISO South



Auction Clearing Prices Since 2014-15 PRA

\$/MW-day

	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9	Zone 10
2014-2015 ACP*	\$3.29	\$16.75	\$16.75	\$16.75	\$16.75	\$16.75	\$16.75	\$16.44	\$16.44	N/A
2015-2016 ACP*	\$3.48	\$3.48	\$3.48	\$150.00	\$3.48	\$3.48	\$3.48	\$3.29	\$3.29	N/A
2016-2017 ACP*	\$19.72	\$72.00	\$72.00	\$72.00	\$72.00	\$72.00	\$72.00	\$2.99	\$2.99	\$2.99
2017-2018 ACP*	\$1.50	\$1.50	\$1.50	\$1.50	\$1.50	\$1.50	\$1.50	\$1.50	\$1.50	\$1.50
<i>Conduct Threshold</i>	\$25.83	\$26.09	\$25.53	\$25.94	\$26.45	\$25.85	\$26.00	\$24.79	\$25.14	\$24.61
<i>Cost of New Entry</i>	\$258.32	\$260.90	\$255.31	\$259.42	\$264.52	\$258.49	\$260.00	\$247.94	\$251.42	\$246.13

- Current Conduct Threshold is 10% of Cost of New Entry (CONE) for each Zone
- Current Conduct Threshold is \$0 for a generator with a facility specific Reference Level

* Auction Clearing Price

2017/2018 Planning Resource Auction Results

Local Resource Zone	Z1	Z2	Z3	Z4	Z5	Z6	Z7	Z8	Z9	Z10	System
PRMR	18,316	13,366	9,781	9,894	8,598	18,422	22,295	8,329	20,850	4,902	134,753
Total Offer Submitted (Including FRAP)	19,635	15,149	11,009	10,618	7,950	18,718	22,031	10,914	20,392	5,732	142,146
FRAP	14,361	11,559	4,197	712	0	4,155	12,374	470	182	1,454	49,463
Self Scheduled	4,004	2,113	5,575	7,723	7,948	13,009	9,462	9,660	16,505	3,556	79,554
ZRC Offer Cleared	4,568	2,207	6,088	8,412	7,950	14,510	9,583	9,669	18,470	3,833	85,290
Total Committed (Offer Cleared + FRAP)	18,929	13,766	10,285	9,124	7,950	18,665	21,956	10,139	18,652	5,287	134,753
LCR	15,975	11,980	7,968	5,839	5,885	13,005	21,109	6,766	17,295	4,831	N/A
CIL	3,531	2,227	2,408	5,815	4,096	6,248	3,320	3,275	3,371	1,910	N/A
Import	0	0	0	771	648	0	338	0	2,198	0	3,955
CEL	686	2,290	1,772	11,756	2,379	3,191	2,519	2,493	2,373	1,747	N/A
Export	613	400	503	0	0	243	0	1,810	0	385	3,955
ACP (\$/MW-Day)	\$1.50	\$1.50	\$1.50	\$1.50	\$1.50	\$1.50	\$1.50	\$1.50	\$1.50	\$1.50	N/A

Additional Details Regarding Supply

Planning Resource Type	2017-2018 Offered	2016-2017 Offered	2017-2018 Cleared	2016-2017 Cleared
Generation	127,637	127,329	121,807	122,379
Behind the Meter Generation	3,678	3,487	3,456	3,462
Demand Resources	6,704	6,322	6,014	5,819
External Resources	4,029	4,385	3,378	3,823
Energy Efficiency	98	0	98	0
Total	142,146	141,523	134,753	135,483

- Demand Resource quantities include Aggregator of Retail Customers (ARCs) that registered for the 2017-18 PRA
- Registered Energy Efficiency Resources for the 2017-18 PRA for the first time since the 2013-14 PRA

Next Steps

- Detailed results review at May 10 Resource Adequacy Subcommittee (RASC)
- Posting of PRA offer data 30 days after PRA conclusion – May 12

Acronyms

- ACP - Auction Clearing Price (\$/MW-Day)
- ARC - Aggregator of Retail Customers
- BTMG – Behind the Meter Generator
- CEL - Capacity Export Limit (MW)
- CIL - Capacity Import Limit (MW)
- CONE – Cost of New Entry
- FRAP - Fixed Resource Adequacy Plan (MW)
- FSRL – Facility Specific Reference Level (\$/MW-Day)
- LCR - Local Clearing Requirement (MW)
- LMR – Load Modifying Resource
- LRZ - Local Resource Zone
- PRA - Planning Resource Auction
- PRM - Planning Reserve Margin (%)
- PRMR - Planning Reserve Margin Requirement (MW)
- SREC – Sub-Regional Export Constraint
- SRIC – Sub-Regional Import Constraint
- ZRC – Zonal Resource Credit

References

- Sub-Regional Export and Import Constraints discussed at the Resource Adequacy Subcommittee (RASC)
 - November 2, 2016
- Market Monitoring and Mitigation in the Planning Resource Auction
 - February 8, 2017