



2018/2019 Planning Resource Auction Results

April 13, 2018

Executive Summary

- MISO Region has adequate resources to meet its Planning Reserve Margin Requirement of 135,179 MW
 - Zone 1 cleared at \$1.00/MW-day
 - Remainder of footprint cleared at \$10.00/MW-day
 - Marginal resources located in multiple Zones
 - Increased demand and lower supply largely responsible for higher Auction Clearing Prices relative to last year
 - ZDB rate of \$0.04 will be credited to load in Zones 2 through 10
- Regional generation supply is consistent with the 2017 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

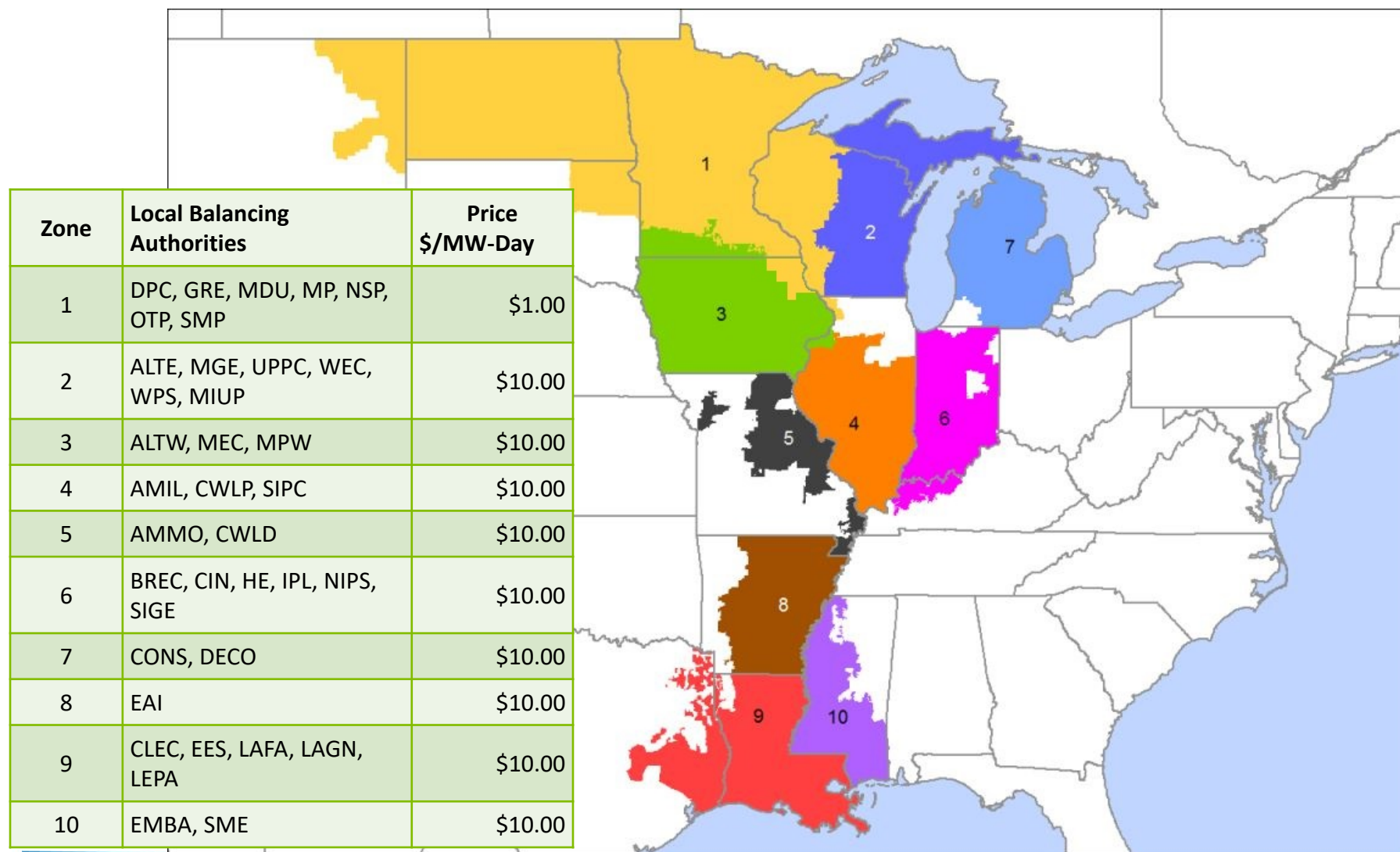
Auction Output and Settlements

- 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

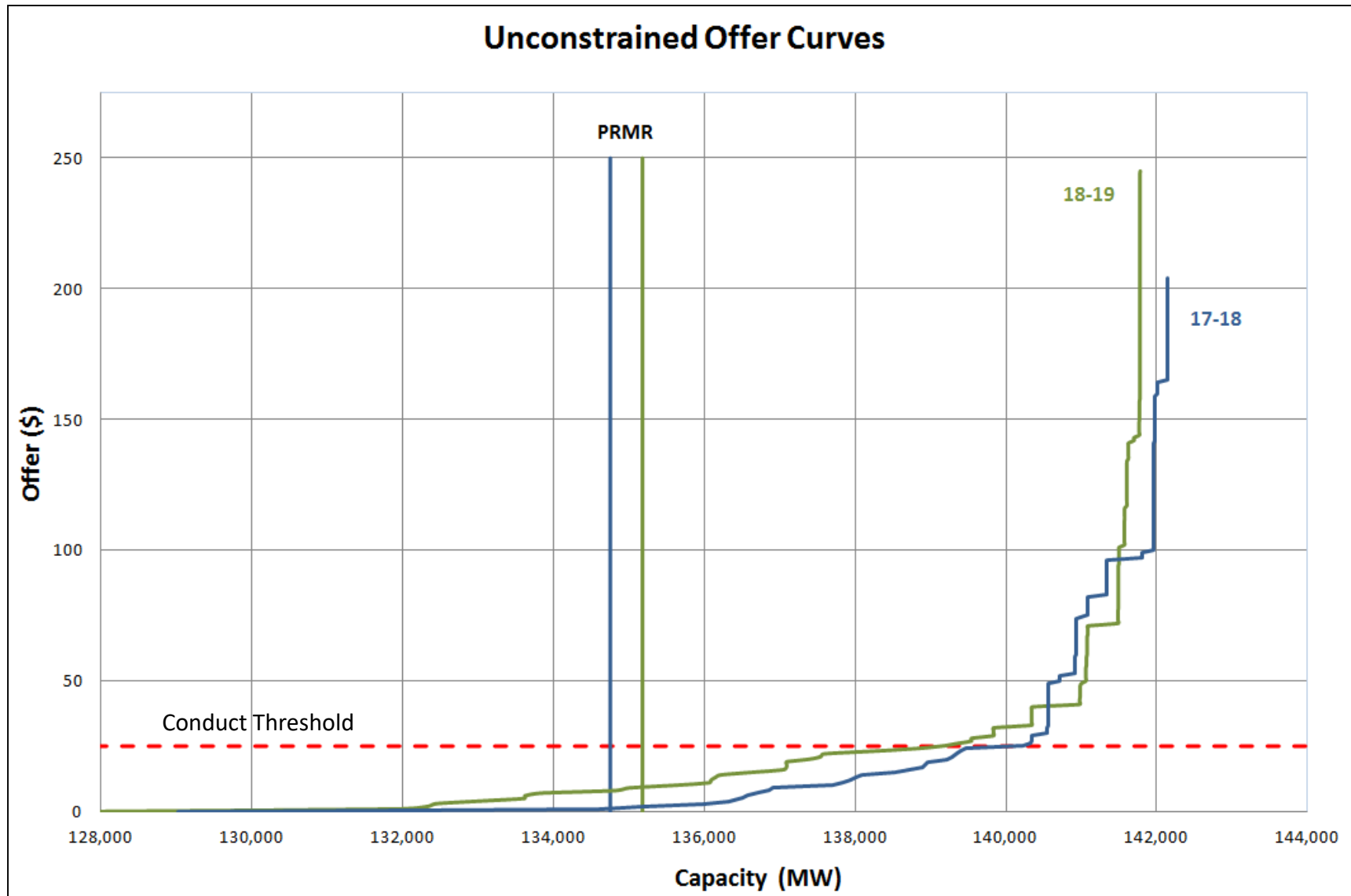
Approved Tariff filings since the 2017/2018 PRA

- Tariff revisions approved in FERC Docket ER17-892-000 and -001 documenting the calculation of Sub-Regional Import and Export Constraints and the Independent Market Monitor's calculation of going-forward costs for Reference Levels.
- Tariff revisions approved in FERC Docket ER17-2112 to authorize the extension or reopening of the Planning Resource Auction ("PRA") offer window when necessitated by unanticipated events.
- Tariff revisions approved in FERC Docket ER18-75-000 to allow Market Participants greater flexibility in the qualification of certain resource types for the Planning Resource Auction, allowing for additional components of Installed Capacity to be deferred in addition to the Generation Verification Test Capacity (GVTC).
- Re-filed Tariff provisions (no changes) regarding Planning Resource Auction re-approved in FERC Docket ER18-462-000.

2018/2019 Auction Clearing Price Overview



MISO Offer Curve, 2017/2018 vs. 2018/2019



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					\$16.44			N/A
2015-2016 ACP*	\$3.48		\$150.00	\$3.48			\$3.29		N/A	
2016-2017 ACP*	\$19.72	\$72.00					\$2.99			
2017-2018 ACP*	\$1.50									
2018-2019 ACP*	\$1.00	\$10.00								
<i>Conduct Threshold</i>	\$24.76	\$24.25	\$24.35	\$24.62	\$25.07	\$24.45	\$24.86	\$23.63	\$22.81	\$23.63
<i>Cost of New Entry</i>	\$247.59	\$242.47	\$243.48	\$246.22	\$250.66	\$244.52	\$248.60	\$236.30	\$228.11	\$236.30

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

Additional Details Regarding Supply

Planning Resource Type	2018-2019 Offered	2017-2018 Offered	2018-2019 Cleared	2017-2018 Cleared
Generation	126,159	127,637	120,855	121,807
External Resources	3,903	4,029	3,089	3,378
Behind the Meter Generation	4,176	3,678	4,098	3,456
Demand Resources	7,370	6,704	6,964	6,014
Energy Efficiency	173	98	173	98
Total	141,781	142,146	135,179	134,753

- Demand Resource quantities include Aggregators of Retail Customers (ARCs) that registered for the 2018-19 PRA

2018/2019 Planning Resource Auction Results

Local Resource Zone	Z1	Z2	Z3	Z4	Z5	Z6	Z7	Z8	Z9	Z10	System
PRMR	18,414	13,463	9,805	10,060	8,549	18,741	22,121	8,088	20,976	4,963	135,179
Total Offer Submitted (Including FRAP)	19,560	13,954	10,884	11,002	7,944	19,221	22,036	10,939	21,196	5,046	141,781
FRAP	14,431	11,196	4,170	1,136	0	1,803	12,255	440	172	1,428	47,030
Self Scheduled (SS)	4,046	1,930	5,979	6,636	7,934	16,105	9,193	9,706	16,509	2,858	80,896
Non-SS Offer Cleared	453	215	308	1,155	10	1,179	352	241	2,782	558	7,253
Total Committed (Offer Cleared + FRAP)	18,930	13,342	10,456	8,927	7,944	19,087	21,801	10,387	19,463	4,844	135,179
LCR	15,832	12,373	7,374	4,960	5,693	12,090	20,628	4,744	19,319	4,463	N/A
CIL	4,415	2,595	3,369	6,411	4,332	7,941	3,785	4,834	3,622	2,688	N/A
Import	0	121	0	1,133	606	0	320	0	1,513	120	3,812
CEL	516	2,017	5,430	4,280	2,122	3,249	2,578	2,424	2,149	1,824	N/A
Export	516	0	651	0	0	346	0	2,299	0	0	3,812
ACP (\$/MW-Day)	\$1.00	\$10.00	\$10.00	\$10.00	\$10.00	\$10.00	\$10.00	\$10.00	\$10.00	\$10.00	N/A



* Values displayed in MW UCAP

Next Steps

- Detailed results review at May 9 Resource Adequacy Subcommittee (RASC)
- Posting of PRA offer data 30 days after PRA conclusion – May 18
- Results from previous Planning Resource Auctions can be found on the MISO website at: Planning-> Resource Adequacy -> PRA Document

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
- PRM - Planning Reserve Margin (%)
- PRMR - Planning Reserve Margin Requirement (MW)
- SREC – Sub-Regional Export Constraint
- SRIC – Sub-Regional Import Constraint
- ZDB – Zonal Deliverability Benefit
- ZRC – Zonal Resource Credit