



# IMM 2019 Summer Readiness and Resource Adequacy

Presented to:

MISO Market Subcommittee

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MISO Independent Market Monitor

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## IMM Summer 2019 Readiness Scenarios

- In our Annual State of the Market Report, we estimate MISO's available capacity margin during the summer peak to evaluate MISO's adequacy.
- The following table shows capacity margins under the following scenarios:
  - ✓ *Base Case.* Matches MISO's Base Case in its *2019 Summer Resource Assessment*. Assumes that: a) MISO will be able to access all emergency resources in any given emergency, and that b) *No* unreported or planned outages other than those scheduled and approved by April 1, 2019.
  - ✓ *Realistic Case.* Reflects operational expectations: a higher transfer limit, but typical levels of summer peak planned and unreported outages and derates.
  - ✓ *Realistic Scenario < 2 Hour Emergency Resources.* Same as prior, but only emergency resources that can be scheduled within 2 hours are included (typical timeframe for calling an emergency).
  - ✓ *High Temperature Cases:* Same as prior two cases, but includes the effects of hotter than normal summer peak conditions (10 percent probability) – raises the load and reduces the maximum output of many of MISO's generators.

# IMM Summer Readiness Scenarios 2019

	Base Scenario	Alternative IMM Scenarios			
		Realistic Scenario	Realistic DR ≤ 2HR*	High Temperature Cases	
				Realistic Scenario	Realistic ≤2HR*
<b>Load</b>					
Base Case	124,744	124,744	124,744	124,744	124,744
High Load Increase	-	-	-	6,554	6,554
<b>Total Load (MW)</b>	124,744	124,744	124,744	131,298	131,298
<b>Generation</b>					
Internal Generation Excluding Exports	134,856	134,856	134,422	134,856	134,422
BTM Generation	4,588	4,588	2,845	4,588	2,845
Unforced Outages**	(725)	(10,486)	(10,486)	(11,833)	(11,833)
Adjustment due to Transfer Limit	(1,220)	-	-	-	-
<b>Total Generation (MW)</b>	137,498	128,958	126,781	127,610	125,434
<b>Imports and Demand Response***</b>					
Demand Response	7,684	7,684	5,093	7,684	5,093
Capacity Imports	3,272	3,272	3,272	3,272	3,272
<b>Margin (MW)</b>	23,710	15,170	10,402	7,269	2,501
<b>Margin (%)</b>	<b>19.0%</b>	<b>12.2%</b>	<b>8.3%</b>	<b>5.8%</b>	<b>2.0%</b>

\* Assumes 100% response from resources available within 2 hours.

\*\* Base scenario shows approved planned outages for 19/20 summer.

Alternatives use average historical average unforced unit unavailability during July and August peak hours.

\*\*\* Cleared amounts for the 2019/2020 planning year.



## IMM Summer 2019 Readiness Scenarios: Results

- The capacity margin in the base case exceeds 19 percent, higher than the Planning Reserve Margin Requirement (PRMR) of 16.8 percent.
- In this realistic scenario, the planning reserve margin falls to 12.2 percent, and falls further to 8.3 percent if MISO does not have access to longer lead time emergency resources (which we expect based on past emergencies).
- The high-temperature cases show much lower margins—as low as 2 percent, which is roughly MISO’s operating reserve requirement and makes no allowance for forced outages.
- These margins would raise concerns for some RTOs, but MISO has the unique advantage of having substantial import capability from all directions.
  - ✓ Only a small amount of this import capability (3.3 GW) is reserved on a firm basis and used to import capacity.
  - ✓ The remaining capacity (>10 GW) is available on a non-firm basis to be used when shortages occur to resolve the shortage.
  - ✓ The next table includes additional imports that equal the average amount of additional non-firm imports during summer peak conditions (2.2 GW).

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<b>Effects of Non-Firm Imports</b>					
Summer Peak Net Imports	2,161	2,161	2,161	2,161	2,161
<b>Expected Margin (MW)</b>	25,871	17,330	12,563	9,429	4,662
<b>Expected Margin (%)</b>	<b>20.7%</b>	<b>13.9%</b>	<b>10.1%</b>	<b>7.6%</b>	<b>3.7%</b>

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# IMM Summer 2019 Readiness Scenarios Conclusions

- This additional assumed 2.2 GW would increase the capacity margins by almost 2 percent in each scenario, raising the realistic scenario to 14 percent.
  - ✓ These results do not include the additional roughly 7 GW of non-firm import capability that may be available.
- Overall, these results indicate that:
  1. *The system's resources are adequate for summer 2018, but*
  2. *They may run short if the peak conditions are substantially hotter than normal.*
- Going forward, we find that:
  - ✓ Capacity margins will likely fall as fossil resources retire and suppliers continue to export capacity to PJM.
  - ✓ Additionally, we are concerned that an increasing amount of the capacity reserve margin is being provided by LMRs that are accessible only after MISO declares an emergency.
  - ✓ Therefore, it remains increasingly important to consider making the necessary changes to allow the capacity market to provide efficient economic signals to maintain an adequate resource base.

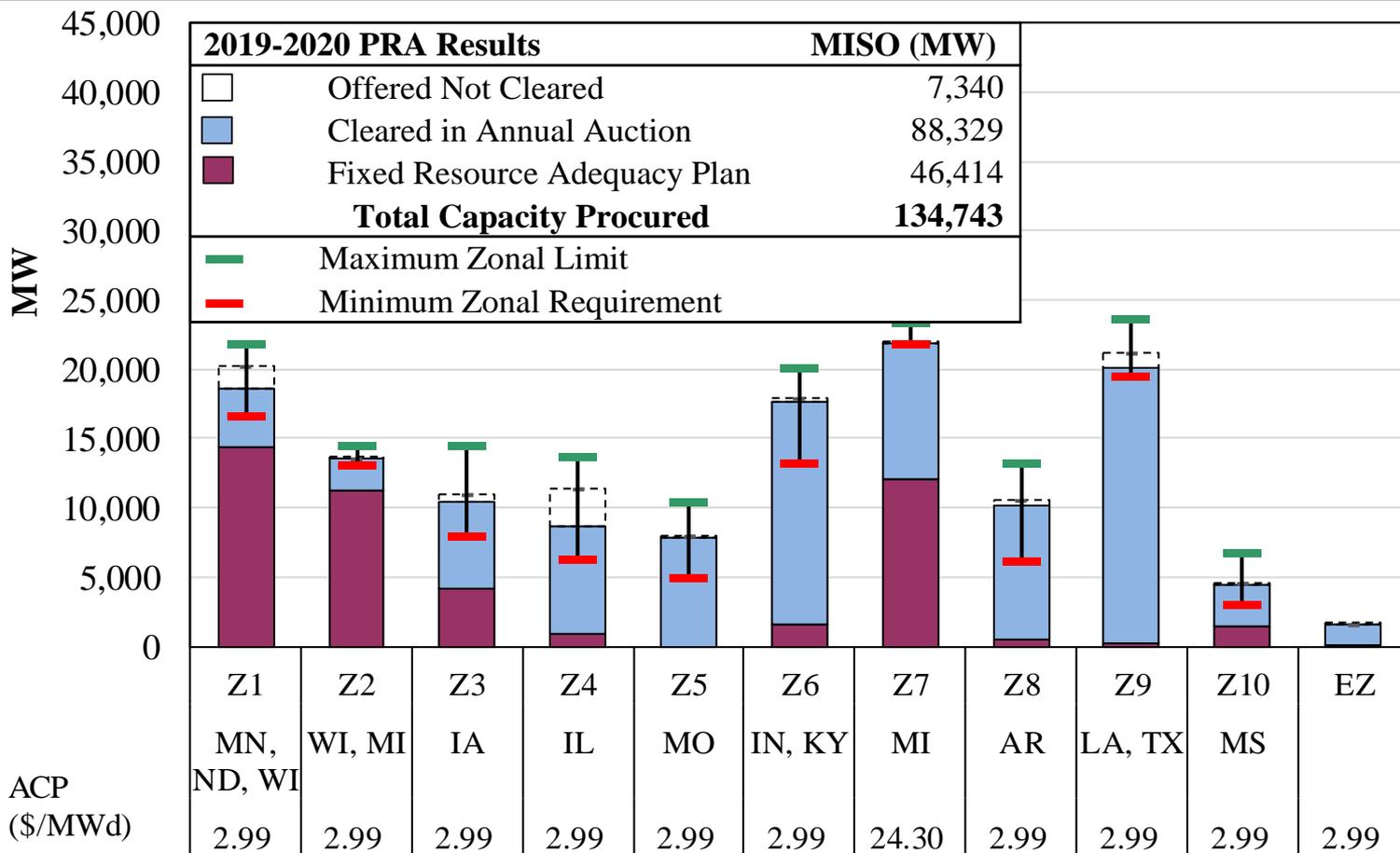


## 2019-2020 Capacity Auction Results

- The annual PRA is designed to meet its Planning Reserve Requirement (vertical demand curve) determined through planning study.
- MISO's 2019/2020 PRA was conducted in late March, resulting in:
  - ✓ A clearing price of \$24.30 per MW-day in Michigan, while
  - ✓ The rest of MISO cleared at \$2.99 per MW-day.
- These prices are close to zero and well below the price that would motivate investment (over \$200 per MW-day) or keep older existing units in operation (over \$100 per MW-day).
- The following figure shows:
  - ✓ The zonal requirements, and the minimum and maximum amount that can clear in each zone (given the import and export limits).
  - ✓ The amount of capacity that cleared and remained uncleared in each zone.
  - ✓ The price in each zone.



# Planning Reserve Auction Results 2019-2020





## 2019-2020 Capacity Auction Results

- In addition to the distortion caused by the vertical demand curve, we identified other concerns with the supply and demand in the PRA.
- Units on outage for the peak periods of the planning year can still satisfy the planning requirements:
  - ✓ For example, one resource in Michigan started an approved planned outage in May and will be out of service the entire planning year.
  - ✓ Without this unit, Michigan would have cleared at the Cost of New Entry (CONE) \$243.37 per MW-day.
  - ✓ This demonstrates why we have been recommending that resources with no expectation of being available during the summer peak period not qualify as planning resources.
- The State of the Market Report for 2018 will identify some other improvements how resources are qualified and accredited, and how the requirements are calculated to improve the performance of the PRA.