

MISO's Recent Capacity Auction

May 4, 2022

There is already a lot of information about MISO's 10th Annual Planning Resource Auction (PRA) for 2022-2023, but we wanted to briefly offer our perspective on the auction and its aftermath and to highlight a serious issue that is not receiving the attention it deserves, the retirement of coal-fired generation.ⁱ

High Capacity Prices

MISO's footprint is divided into 10 zones. Capacity prices in MISO Zones 1-7 (Iowa, Illinois, Indiana, Kentucky, Michigan, Minnesota, Missouri, Montana, North Dakota, South Dakota, and Wisconsin) were almost 50 times higher than they were for the previous auction (\$236.66/MW-day for 2022-2023 versus \$5.00/MW-day for 2021-2022). These higher prices were interpreted as a supply-and-demand signal that MISO is facing a potential shortage of electricity when demand peaks. Not surprisingly, a few days after the auction MISO announced that it is preparing for "worst-case scenarios" because of a 5,000 MW expected capacity shortfall in July and a 2,000 MW expected shortfall in August.

Temporary Blackouts

MISO's *installed* generating capacity has increased by more than 4,200 MW over the past five years. How could MISO have a shortfall if its *installed capacity* has increased? Part of the answer lies in slightly higher electricity demand, but the primary reason is an 8,300 MW decline in *accredited capacity* over the same time period because of an increase in intermittent generation and coal retirements. This means that MISO's ability to dependably generate electricity when electricity demand peaks has effectively shrunk by 8,300 MW. According to MISO, Zones 1-7 "have an increased risk of needing to implement temporary, controlled load sheds." In other words, there is a greater chance that people in these zones will experience temporary blackouts.

Accredited Capacity

The dependability of electricity resources varies. A less dependable resource has a lower amount of *accredited capacity* – a term used synonymously with unforced capacity, effective load carrying capability, or capacity credit – compared to a more dependable resource.ⁱⁱ For example, MISO's average accredited capacity value for wind for 2022-2023 is 15.5% of installed capacity, which means that 100 MW of installed wind capacity can be expected to generate 15.5 MW of power when needed to meet peak electricity demand. MISO's default accredited capacity value for solar is 50% of installed capacity for its first year of operation. Longer term, MISO expects to adopt 20% as the average accredited capacity value for solar. Similarly, the ICF consulting firm calculates that

nearly 7 MW of wind or 2 MW of solar (for its first year of operation) are necessary to provide 1 MW of accredited capacity.

On the other hand, coal-fired generation is a more dependable resource. Coal, natural gas, and nuclear are sometimes referred to as thermal resources because they use heat to generate electricity. In setting capacity requirements that serve as auction demand, MISO assumed that thermal resources have an average capacity value of almost 91% of installed capacity. Over the years, MISO has assumed coal generation has capacity values ranging from slightly less than 90% to a little more than 95% of installed capacity. That is, MISO assumes that 100 MW of installed coal-fired generating capacity can be counted on to generate 90-95 MW of power when electricity demand peaks. Another way to think about accredited capacity is that it would take about 5.8 MW of wind to replace 1 MW of coal when electricity demand peaks. According to MISO, the grid operator had 26,735 MW of installed wind capacity last year, which translates into 4,139 MW of accredited capacity.

MISO summed up its situation this way: “Although installed capacity has increased in the last five years, accredited capacity has decreased due to thermal retirements and the increasing transition to renewables.”

Coal Retirements

Currently, MISO’s coal fleet totals roughly 55,000 MW of installed generating capacity. Some 18,300 MW of MISO’s coal generation have retired since 2015. These coal retirements are the primary reason that MISO’s accredited capacity has declined to the point at which the grid operator may have to order temporary electricity blackouts this summer. However, this situation is likely to become even more serious because announced coal retirements during 2022-2030 total 27,300 MW of MISO’s coal capacity, approximately half of MISO’s remaining coal fleet.

Although disturbing enough by themselves, these figures do not include retirements that will result from new EPA regulations.ⁱⁱⁱ Unless steps are taken to minimize retirements, more than half the MISO coal fleet is likely to retire earlier than 2030 because we expect the largest number of coal retirements due to expected EPA regulations will take place in the 2026-2028 timeframe.

For more information, please contact us or visit www.americaspower.org.

ⁱ Most of the information in this paper is based on MISO’s “2022/2023 Planning Resource Auction (PRA) Results,” April 14, 2022; RTO Insider “MISO’s 2022/2023 Capacity Auction Lays Bare Shortfalls in Midwest,” April 19, 2022; Utility Dive “Capacity prices jump across MISO’s central and northern regions, driven by supply shortfall,” and “MISO prepares for ‘worst case scenarios,’ heads into summer with insufficient generation,” April 29, 2022; ICF “Outlook for the MISO 2022-2023 Planning Resource Auction,” April 2022 and “Making sense of MISO’s recent capacity auction,” April 2022; MISO’s “Planning Year 2022-2023 Loss of Load Expectation Study;” and “MISO 2022 Regional Resource Assessment (RRA),” April 20, 2022.

ⁱⁱ Installed capacity represents physical generating capacity adjusted for ambient weather conditions. Unforced capacity represents the percentage of installed capacity available after a unit’s forced outage

rate is taken into account. The capacity value for a wind or solar capacity resource represents the amount of generating capacity that it can reliably contribute during summer peak hours, and which can be offered as unforced capacity into the MISO capacity auction. Effective load carrying capability is the amount of incremental load that a resource can dependably and reliably serve.

ⁱⁱⁱ These rules include, but are not limited to, the Cross-State Air Pollution Rule, Regional Haze Rule, a replacement for the Affordable Clean Energy rule, a revised Mercury and Air Toxics Standards rule, revised Effluent Limitations Guidelines, and the implementation of possible revisions to the current ambient air quality standards for ozone and fine particles. Our analysis shows that slightly more than 30,000 MW of MISO's coal capacity is at risk of having to install selective catalytic reduction to reduce NOx emissions and/or flue gas desulfurization to reduce SO2 emissions. Additional emission controls are all but certain to trigger more coal retirements.