

Resource Adequacy in MISO Zone 4 - Outline for January 30, 2018 Comments

Murray Energy's Foresight mines are the largest coal producers in Illinois and Murray Energy is the largest underground coal company in the United States. Murray/Foresight truly appreciate the opportunity to submit our comments for the "Resource Adequacy in MISO Zone 4 Outline for January 30, 2018 Comments", as we appreciate the opportunity to be included in this process.

Murray/Foresight submits comments to the following Sections and Subsections, and prefers to defer responses to the remaining Sections and Subsections to Illinois' Utility and Electrical generators, as they would be most knowledgeable to address the remaining questions. Murray/Foresight submits the responses to the following Sections and Subsections in summary form versus specifically addressing each one independently and several of the responses to each Section and Subsection are in the comments. The Sections and Subsections addressed are as follows:

I.A: Resource Adequacy Standards - How should resource adequacy be defined and how does resource adequacy compare with or contrast with resiliency and reliability?

I.B: Resource Adequacy Standards – What entities currently address resource adequacy, how do they do so, and how sufficient are such current measures?

II.D: Resource Adequacy Measurement - What are the prospects for new generation resources becoming available to meet Zone 4 resource adequacy going forward?

IV: Scope - Please provide commentary on any relevant substantive or process issue you believe has not been adequately captured in the Sections above.

Resource Adequacy in MISO Zone 4

Outline for January 30, 2018 Comments – Murray/Foresight Energy

I.A: Resource Adequacy Standards - How should resource adequacy be defined and how does resource adequacy compare with or contrast with resiliency and reliability?

Resource adequacy must first begin with defining those electrical generating assets, which provide baseload electricity. Such baseload generating facilities when defining resource adequacy are the assets required to not only provide the current load required for Illinois, but also factoring in future industrial growth, maintaining the state's current export levels of electricity, and future potential exports of electricity, which benefits Illinois consumers. .

By understanding and identifying which resources are truly baseload electricity, Illinois will see maximum electricity exports, provide resource adequacy and capacity, security, while providing fair reasonable electrical rates from its diverse portfolio with the "cornerstone" being substantial and sustainable base load facilities. Baseload generation must be defined as those units which have the capacity factors and availability, to provide electricity on a 24/7 basis, daily, on peak and off peak periods, and in all seasons of the year. Onsite fuel or fuel with very limited risk of disruption also should be a consideration in the definition of a baseload electricity. Baseload coal and nuclear plants typically operate at high capacity factors, have stable operating costs, and are not generally exposed to spikes in the cost of fuel.

Illinois' understanding and focus on maintaining baseload coal and nuclear plants will drive grid resilience, offset vulnerability to severe price spikes, and keep electricity costs at reasonable levels on a long-term basis. A capacity shortage occurs when there is no longer enough baseload generation to meet the demand at any given time.. Such shortages can occur under a variety of scenarios not limited to weather events, transmission line related events, or driven by a constrained system with no excess capacity where a single, small unit disrupt causes a shutdown due to a capacity shortage. Disruptive events are not selective as to when they occur.

Resilience is a much broader term than reliability for resilience is tested when "the grid" has a reliability interrupting event or blackout. Once the interrupting event occurs, resilience is determined by how quickly the interrupting event can be mitigated, and at what cost. Resilience is also directly related to ensuring the system has the proper infrastructure to minimize the duration of the event and the cost to mitigate the event. The premature closing of 24/7 baseload coal and nuclear generating facilities not only affects the long-term system reliability but also long term resiliency. These baseload units cost less to operate than the cost to replace the megawatts once lost.

Illinois must develop a structure, which ensures adequacy of service and resilience, protects electricity users against long-term wholesale electricity prices that are higher than necessary, and properly defines and accounts for the value of baseload coal and nuclear generation in Illinois diverse energy mix. Illinois must ensure that we maintain wholesale power rates which are just, and reasonable which are mitigated from price spikes, overall economic downturn, and job loss due to not taking into account all previously mentioned concerns.

I.B: Resource Adequacy Standards – What entities currently address resource adequacy, how do they do so, and how sufficient are such current measures?

While MISO's process may work for other states, the process does not properly account for the factor that Illinois is a deregulated state. Illinois is the only deregulated state within MISO, which makes Illinois not only unique, but also very vulnerable. The current market rules are driving coal and nuclear facilities into premature retirement. This indicates that the market rules have a problem that needs addressing. The Illinois General Assembly and the Illinois Commerce Commission has the opportunity to address this issue for Illinois at the request of MISO.

In our deregulated state, MISO offers only a distorted short-term market, which provides low market prices, and thus does not allow for long-term operating or long-term capital decisions for the baseload facilities. This distorted market in our deregulated state thus leans more towards eroding reliability, resiliency, and long-term power supply for Illinois consumers, which will result in increased long-term electricity prices when baseload plants shut down. The current market structure tilts the playing field heavily towards short-term optimization and fails to compensate in any way for any long-term focus or capital investments at Illinois' facilities. This rigid focus on short-term marginal costs gives generation owners an incentive to focus only on maximizing short-term operating margins, if any, and not on maximizing operating efficiency over a much longer period nor investing to build new baseload generation. If FERC, MISO, and or Illinois do not rectify this problem, it is plausible that Illinois could lose 25% or more of its baseload generation over the next decade.¹ Such a closure of plants will lead to additional employment and economic loss to Illinois and will further increase vulnerability of electricity price spikes and ultimate system reliability and resilience. The loss of baseload units will make electricity

¹ Dynegy's ICC Pre-Workshop Comments on MISO Zone 4 Resource Adequacy Issues; November 30,2017, Page 5

price spikes significantly more likely as the ability to switch from gas-to-coal during periods of high system stress, will not be available.

As a result of the latest northeastern weather event, natural gas units were called upon due to the U.S. loss of baseload generating units. Bloomberg News reported "U.S. natural gas inventories may drop to a four-year low by winter's end which is 23 percent below the 5-year average for the end of March. Gas futures, meanwhile, surged 13 percent to a 13-month high. With baseload electricity unavailable, the 15 days between Christmas and January 9th, power generators in Massachusetts burned about two million barrels of oil, which is more than twice the amount of oil they burned during all of 2016. Energy and Environment Secretary Matthew Beaton stated, "We can't ignore this and I think this has to be part of an honest conversation of how we look at the challenges facing our system." Federal Energy Regulatory Commission Chairman Kevin McIntyre stated "Record-setting natural gas price spikes" also contributed to higher-than-usual wholesale energy prices. Day-ahead energy prices between Dec. 28 and Jan. 7 averaged \$177 per megawatt hour (MWh) with a maximum price of \$320 MWh at ISO-NE's internal hub.

Baseload generation is essential to achieve the core responsibilities of the FERC and Illinois. FERC has recognized in a number of other instances that, to the extent use of cost of service recovery or other incentives are required to achieve these objectives, these mechanisms should be allowed. If this mechanism could be changed to provide predictable revenues for an extended period of time, Illinois coal-fired generating units could install new scrubbers and emission control equipment to continue operation. Illinois recognized this problem for baseload nuclear units and rectified the situation, at least for the next decade with the passage of the Future Jobs Energy Act of 2016.

II.D: Resource Adequacy Measurement - What are the prospects for new generation resources becoming available to meet Zone 4 resource adequacy going forward?

As stated prior without any changes to the current distorted short-term market mechanism Illinois will not only lose baseload generating facilities, but due to the same market mechanisms Illinois will see no new baseload generating facilities built. The addition of new coal or nuclear capacity resources require a lead-time for required permitting and planning, are more expensive to build and require a longer time period to amortize costs, which cannot be addressed in a deregulated state under the current distorted short-term market structure. The current market structure separates out energy and capacity markets and favors gas-fired generation as a gas-fired unit needs to be able to recover its capacity cost with the fuel cost risk being borne by the consumers. The current market structure tilts the playing field heavily towards short-term optimization and fails to compensate in any way many of the attributes of sound power supply planning which reduces exposure to price volatility, maintains a diverse generating mix, and ensures that electricity costs remain stable on a long-term basis.

The MISO survey only looks at the short-term and does not look at a longer period of 24/7, seasonal, 52-week intervals, which would provide market indications showing a need to maintain or add additional baseload generation. The MISO survey thus does not address resiliency at all with such a short-term view. Resiliency alone is a strategic plan tied to resource adequacy, which cannot be properly quantified in such a short-term view. NERC's 2017 Long Term Reliability Study indicates that in 5 years

MISO will fall below the Reference Margin Level of 15.8 percent.² We do not feel the data has addressed the issue of Dynegy possibly closing plants during this same period nor the discussions CWLP has had publicly related to possible retirement of units. These events would cause MISO to fall below the Reference Reserve Margin Level sooner than predicted.

IV: Scope - Please provide commentary on any relevant substantive or process issue you believe has not been adequately captured in the Sections above.

Illinois must ensure that it maintains its diverse power supply options, which include currently operating baseload coal and nuclear generating facilities, as this is the most cost-effective means to ensure reasonable wholesale power costs on a long-term basis.

A cost-effective mix of generating resources contains variable operational parameters, such as wind and solar's availability, but such flexibility of generating resources is supported by a steady baseload flow of electricity. The on peak wind contribution within MISO is projected to be less in 2018 than it was in 2008.³ Other technologies such as gas generation has the flexibility to generate as needed, but is not always cost-effective based on the fuel costs if moving from a peaking unit to attempting to provide baseload.

If the price of the alternative fuels and costs for each technology always moved in harmony then there is little need for the diversity, but that is not the case. Power production from off peak or non-baseload technologies are unrelated and are inherently unstable as compared to baseload units where the fuel supply is onsite and normally purchased via long term contracts.

The closure of baseload coal and nuclear units across the U.S. has left the U.S. vulnerable to natural gas price spikes, overall electric cost spikes, and has created concerns for reliability and resiliency for decades to come. Illinois does not have to make the same mistake as our state has a diverse portfolio with a baseload foundation which provides the constant dollar cost averaging component of the diverse energy mix portfolio to consumers as other non-baseload and intermittent sources contribute to the required load.

Technologies such as coal and natural gas are considered dispatchable while solar and wind technologies are not due to coal and natural gas units can be ramped up or down based upon current load. The goal in a diverse energy portfolio, such as the one Illinois has, is to provide a cost effective electricity output to match the patterns of consumers' needs.

Baseload units must also be considered as primary when evaluating Illinois' long-term security, growth and ties to Homeland Security. Former Secretary of Homeland Security Tom Ridge warned that "Only a grid built on diverse and stable sources of energy can withstand evolving threats and keep the lights on around America".⁴

² NERC 2017 Long-Term Reliability Assessment, page 41;
http://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC_LTRA_12132017_Final.pdf

³ NERC 2017 Long-Term Reliability Assessment, page 27;
http://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC_LTRA_12132017_Final.pdf

⁴ Tom Ridge, "Keeping nuclear in the nation's energy mix", Philly.com. 9 August 2017, retrieved 24 August 2017

Illinois must understand the impact of losing base load generation in the diverse mix of generation sources. Illinois must also educate the public of the value of baseload units and the value of having a diverse mix, which includes renewable resources and baseload coal and nuclear facilities. The removal of baseload generation the portfolio is cause for concern not only to the consumers' rates, but will have an effect for decades in Illinois due to no new construction of baseload units in our deregulated state.

A diverse power generation technology mix is essential to cost effectively integrate intermittent renewable power resources into the power supply mix, as long as each component is accounted for and are understood and balanced within the whole mix. Maintaining and preserving Illinois' diverse generation mix is important to Illinois consumers want stability in supply and predictability in their monthly bills. Illinois must ensure the diverse generation mix is balanced over the short and long-term as it allows Illinois protection from fuel price spikes and meets consumer demands.