

**BEFORE THE
MICHIGAN PUBLIC SERVICE COMMISSION**

In the Matter, on the Commission’s :
Own Motion, to Issue a Report on the :
State’s Supply, Engineering, and :
Deliverability of Natural Gas, : Case No. U-20464
Electricity, and Propane, and :
Contingency Planning, as requested :
By the Governor. :

COMMENTS OF PJM INTERCONNECTION, L.L.C

PJM Interconnection L.L.C. (PJM) is an independent, revenue neutral organization established to coordinate the movement of electricity in all or parts of 13 states and the District of Columbia, including parts of Michigan. PJM has no shareholders and is not publicly traded. As a regional transmission organization, PJM is viewed by many in the industry as serving a quasi-governmental function established by the United States Congress and regulated by the Federal Energy Regulatory Commission (FERC). PJM’s top priority is reliability of the grid: keeping the lights on at the lowest reasonable cost to consumers.

On February 4, 2019, Governor Whitmer issued a request directing the Michigan Public Service Commission (MPSC) to conduct “a statewide review of supply and deliverability of natural gas, electricity, propane, and contingency planning.” On July 1, 2019, the MPSC issued a Statewide Energy Assessment Report. The MPSC determined that the state’s supplies and energy infrastructure are adequate; however, the MPSC’s Report includes 36 recommendation and 14 observations that could strengthen the energy systems in the state.

PJM appreciates the opportunity to submit these limited comments regarding certain recommendations that are directed to or impact the operations of the RTOs.

DEMAND RESPONSE

Recommendation: Utilities should coordinate with Staff, customers, RTOs, and other stakeholders on retail DR tariff offerings to align with wholesale markets and emergency operations.

Demand response is an integral part of PJM's wholesale electricity markets, providing equivalent treatment for generation and demand resources. PJM has undertaken efforts to ensure that demand response is fully integrated into the wholesale markets. In PJM, retail electric customers have the opportunity to participate in PJM's energy, capacity and ancillary service markets and receive payments for their reductions in demand.

PJM's rules and procedures provide an effective way for retail customers with demand response capability to participate in wholesale markets. Generally speaking, Curtailment Service Providers ("CSPs"), who are qualified market participants in PJM and act as agents, work with those retail customers who want to participate as demand response resources in the wholesale markets. The CSPs aggregate the demand of the retail customers, register that demand with PJM, and they also receive the payment from PJM. It is a matter of private agreement between the CSP and the retail customers as to how the payment will be allocated between the customers and the CSP.

PJM is currently working with state commissions and other stakeholders to continue to refine the demand response rules and align retail and wholesale market incentives to promote demand response.

EMERGENCY OPERATIONS

- A. Recommendation:** Generators should provide the RTO with all generator operating characteristics and to incorporate measures to improve generator startup performance when emergency units are called upon.

NERC standards and PJM's Operating Agreement require all generators participating in the PJM markets to provide PJM with all their operating characteristics. During January 2014, the PJM region and much of the United States experienced bitter cold weather. PJM experienced approximately 22% of forced generator outages and tight operational conditions because of the extreme weather, and other problems. After the Polar Vortex 2014, PJM implemented Capacity Performance. Capacity Performance requires generators to meet their commitments to deliver electricity whenever PJM determines they are needed to meet power system emergencies.

- B. Recommendation:** To improve safety and reliability during energy emergencies, the Commission proposes to discuss with EGLE coordination issues, including scenarios where an electric generator is reaching air emission limitations at the same time an electric emergency declaration by the RTO requires all generators to maximize output.

PJM agrees with the importance of good situational awareness and coordinated operating procedures, especially during system emergencies. The PJM Emergency Operations Manual M13 (<https://www.pjm.com/-/media/documents/manuals/m13.ashx>) contains operating procedures to address both Resource Limitation Reporting (section 6.4) and procedures for Obtaining a Temporary Environmental Variance (Attachment M).

- C. Recommendation:** The MPSC should consult with State Police, RTOs, gas and electric utilities, and the Governor’s office to consider criteria to inform the prioritization of sustaining natural gas and electricity service under declared energy emergencies affecting both industries. These criteria could inform the Governor, MSP, the MPSC chairman, and the MPSC’s energy security personnel in the execution of their respective emergency management roles under state law. Criteria may include, for example, extent and severity of safety and public health risks, outage duration and customers affected, types of customers affected including critical facilities, time of year, restoration effort and cost, readiness of utilities and local responders to mitigate impacts of outages with communications, shelter, and supplies, and economic disruption.

PJM supports efforts to enhance coordination between the electric and gas sectors. Such coordination and potential criteria should be discussed in advance of system emergencies and will help ensure a common understanding of the impacts decisions have on gas and electric customers, infrastructure and overall operations.

FUEL DIVERSITY/RESILIENCE

Recommendation: The Commission recommends utilities work with Staff and stakeholders to propose a methodology to quantify the value of generation diversity in integrated resource plans. In addition, the value of resiliency should be considered in future investment decisions related to energy infrastructure.

PJM conducted an analysis of the reliability attributes associated with various potential future resource mixes in March 2017. The evolving mix study concluded that PJM’s electric system could operate reliably under a number of different generation supply portfolios (see the study at <http://pjm.com/-/media/library/reports-notice/special-reports/20170330-pjms-evolving-resource-mix-and-system-reliability.ashx?la=en>). However, the analysis did not include the resilience of the system under certain scenarios nor the risk related to certain disruptive events. As stated in PJM’s evolving mix study, “Heavy reliance on one resource type, such as a resource portfolio composed of 86 percent natural gas-fired resources, however, raises questions about electric system resilience, which are beyond the reliability questions this paper sought to

address.” Accordingly, PJM submits that the MPSC should recommend that the utilities work with staff and stakeholders to understand the impact ***Fuel Security*** and Fuel Diversity have on System Reliability and Resilience. Additionally, NERC has undertaken similar efforts by publishing literature on Essential Reliability Services (https://www.nerc.com/comm/Other/essntlrbltysrvcstskfrDL/ERSWG_Sufficiency_Guideline_Report.pdf) and are currently engaged in an effort to develop a Fuel Risk Assessment Reliability Guideline.

TRANSMISSION

Recommendation: Utilities, electric transmission companies, Staff, RTOs, and stakeholders, should further investigate opportunities to expand Michigan’s capability to import additional electricity to address short- and long-term reliability and resource adequacy needs in a more holistic manner as Michigan experiences additional power plant retirements. This effort should also consider a methodology to quantify the value of such projects and related cost allocation, as appropriate.

As part of its role as an RTO, PJM administers the connection of new generating facilities to the electric grid. PJM coordinates the planning process for connecting new generation, analyzes the reliability impact of proposed generating projects and oversees the construction of the facilities required to interconnect new generation to the grid. PJM plans the expansion and enhancement of the grid on a regional basis. The long-range regional planning process determines what changes and additions to the system are necessary to maintain and enhance system reliability. PJM’s Regional Transmission Expansion Plan incorporates a 15-year planning period to more effectively plan for reliability needs, upgrades, power plant retirements, or other major developments.

The planned interconnection of new generating units and proposed increases in the output capability of existing generating units affect the reliability of and overall operation of the grid; therefore, these interconnections are considered and evaluated as part of the RTEP process. PJM is unable to order the construction of a generating facility as a non-transmission alternative. However, PJM models generation interconnection queue projects that move forward through the interconnection study process and obtain an Interconnection Service Agreement. PJM performs necessary tests to determine if previously identified reliability issues remain in the units eventually enter into service.

INTERCONNECTION PROCESS

Recommendation: Standardized interconnection rules for Michigan electric utilities would enable distributed generation to interconnect with the utility system in a safe, reliable, and efficient manner. The Commission recommends that Staff continue to work with stakeholders to update the MPSC’s interconnection rules and procedures for generation facilities seeking to connect to the utilities’ distribution grids and to better integrate distributed energy resources such as solar, microgrids, and battery storage as part of this process. This effort will inform formal Commission rulemaking activity to commence in the fall of 2019.

During grid contingencies, such as the trip of a large generator or load, conventional generators must provide dynamic support to the grid in the form of “ride through”. When frequency or voltage go unusually high or unusually low, generators with ride through capability remain connected for a period of time. Ride through capability ensures grid reliability during operational contingencies.

Ride through is one of several functionalities often grouped under the topic of “smart inverters”, which applies to inverter-based resources like solar and batteries. Today, distributed energy resources in the United States mostly lack ride through functionality—instead, they trip offline during such operational contingencies. As more distributed energy resources are deployed, especially in a concentrated geographic area, this lack of ride-through functionality can cause reliability concerns that may be costly to address. For example, in order to improve reliable grid operations in the wake of a regional blackout, distributed energy resources in Germany were retrofitted with ride-through functionality at a cost of tens of millions of dollars.¹ PJM itself has implemented ride-through requirements for wholesale DER that interconnect to the wholesale grid under federal jurisdiction. During the PJM stakeholder process discussions leading up to the adoption of this requirement, inverter manufacturers reported little or no increase in DER costs associated with implementing ride through functionality.

For distributed generation and storage connecting to state jurisdictional distribution lines, existing Commission rules govern behavior during grid contingencies, including ride through functionality. PJM urges the Commission to consider revising its rules in the future so that ride through functionality is required by implementing IEEE Standard 1547-2018. PJM would welcome the opportunity to work with the Commission, utilities, and other stakeholders to discuss implementation of this standard, including PJM’s own ongoing effort to update these requirements and coordinate their implementation with transmission and distribution owners.²

¹ http://www.ecofys.com/files/files/ecofys_2011_paper_on_frequency_stability_challenge.pdf

² <https://www.pjm.com/committees-and-groups/task-forces/derrttf.aspx>

CONCLUSION

PJM appreciates the MPSC's consideration of these additional comments. PJM looks forward to working with the MPSC, industry leaders, and other stakeholders to strengthen the energy systems in the state of Michigan.

Respectfully submitted,

/s/ Evelyn R. Robinson

Evelyn R. Robinson

Managing Partner

2750 Monroe Blvd

Audubon, PA 19403

Email: Evelyn.robinson@pjm.com

Cell: 610.439.0491

/s/ Matthew Bernstein

Matthew Bernstein

Analyst

2750 Monroe Blvd

Audubon, PA 19403

Email: Matthew.bernstein@pjm.com

Ph: 610.666.3122