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September 13, 2017

The Honorable Fred Upton, Chairman
Committee on Energy and Commerce
Subcommittee on Energy
2125 Rayburn House Office Building
Washington, DC 20515-6115

Re: July 26, 2017 Hearing – Response to Additional Questions for the Record

Dear Chairman Upton,

Thank you for the opportunity to testify before the Subcommittee on Energy of the Committee on Energy and Commerce of the U.S. House of Representatives on Wednesday, July 26, 2017 at the hearing entitled “Powering America: A Review of the Operation and Effectiveness of the Nation’s Wholesale Electricity Markets,” and for the opportunity to address additional questions of subcommittee members.

Attached are my responses to those additional questions per your letter dated August 29, 2017. Thank you and the Subcommittee for your continued time, effort and consideration of perspectives offered. Should you have any questions with regard to the attached, please do not hesitate to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Craig A. Glazer", written in a cursive style.

Craig A. Glazer

cc: The Honorable Bobby L. Rush, Ranking Member, Subcommittee on Energy
Ms. Elena Brennan, Legislative Clerk at U.S. House of Representatives
Jason Stanek, Committee Staff
Richard Kessler, Committee Staff

Attachment: Reply of Craig Glazer, Additional Questions for the Record

Attachment
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Additional Questions for the Record Dated August 29, 2017

THE HONORABLE FRED UPTON

Question 1: It has been more than 7 years since FERC embarked on its efforts to promulgate new transmission planning reforms which resulted in Order No. 1000. Your RTO is designated as “Order 1000 transmission planning regions.” Now that you have had real-world experience with these reforms, do you think FERC’s efforts at reforming transmission planning and cost allocation have succeeded, failed, or landed somewhere in between?

Response: PJM believes that Order No. 1000 has helped to advance certain aspects of grid planning and infrastructure development but has fallen short in other areas. PJM’s response below addresses two of the larger initiatives within Order No.1000, the first dealing with competitive solicitations for new transmission projects, and the second involving interregional planning. Our response will further address those areas where, in PJM’s view, Order No.1000 has fallen short of its original billing.

(a) Competitive Solicitation Provisions of Order No. 1000 – On the positive side, particularly in the case of market efficiency projects, the competitive solicitation provisions of Order No.1000 have led to a notable increase in the number and variety of solutions to reduce congestion on the grid through transmission projects. In this specific area (known as “market efficiency projects”), PJM has received over 100 proposals under our first “market efficiency” competitive solicitation issued pursuant to Order No.1000 when, in contrast, it received very few such proposals prior to the issuance of Order No. 1000. Although many of the submittals involved smaller incremental transmission upgrades, the PJM Board of Managers has also approved two significantly larger market efficiency projects since the inception of Order No. 1000. On another positive aspect of Order No. 1000, although cost caps have been controversial, PJM does believe that Order No. 1000 has worked to more fully inject cost discipline into proposed project submissions. Concerns with aspects of the implementation of the competitive solicitation provisions of Order No. 1000 are outlined below.

(b) Interregional Planning Provisions of Order No. 1000 – The track record of Order No. 1000 relative to interregional planning has been far more mixed. With the support of FERC, the level of interregional coordination through the identification of “quick hit” beneficial projects with the Midcontinent Independent System Operator (“MISO”) has been promising although this has only occurred after directives from FERC to eliminate some of the original limitations on interregional coordination that some of our neighbors included in their original Order No. 1000 tariffs. Interregional planning with other regions has been far more limited given the:

- (i) regional differences in planning regimes across the nation;
- (ii) significant reduction in load growth across the Eastern Interconnection; and,
- (iii) lack of willingness of states to promote or pay for major interregional “public policy projects.”

In short, given Order 1000’s embrace of “bottom-up” planning and maintenance of regional differences in the determination of benefits, we believe a metric which looks for the development of major interregional transmission projects covering hundreds of miles may be unrealistic and an inappropriate metric of success.

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(c) FERC's Implementation of Order No. 1000 – Order No. 1000 has suffered from FERC's extreme focus on documentation of processes at a level of detail that can stifle the flexibility and discretion needed in the complex area of transmission planning. Requirements for tariffing the minutiae of the planning process has the potential to create new grist for litigation and compliance challenges in a process which, in the past, recognized the need for the exercise of discretion and judgment by RTO transmission planning experts. As an example and with no disrespect to the practicing Bar, we are increasingly seeing lawyers attending and participating at our stakeholder meetings where the results of competitive solicitations are being discussed. The potential for litigation and 'compliance traps' associated with the tariffing of the minutiae of our planning process can potentially work, over the long run, to delay moving forward in a timely manner on needed reliability projects.

Moreover, there has clearly been an inconsistent roll-out of Order No. 1000 across the country. While PJM is now on its 13th opening of competitive solicitation windows, as a result of inconsistencies in tariff provisions, various exceptions approved by FERC and other reasons, some other regions have yet to undertake their first competitive solicitation. Such inconsistent roll-out of what was supposed to be a national rulemaking has made PJM begin to question the reasonableness of moving forward in light of this slow and inconsistent roll-out.

Question 2: Your RTOs and ISOs play a central role in operating the wholesale electricity markets and (with the exception of ERCOT) your primary regulator is the Federal Energy Regulatory Commission. Do you believe that FERC is appropriately engaged in overseeing wholesale electricity markets?

Response: FERC's job is complex as market design is as much an art as a science. We believe that overall, FERC has been quite supportive of ensuring fair and balanced rules that are consistent with its long-stated goal of promoting competition while ensuring reliability in a fuel-neutral manner. Because the electricity industry is one of the most capital-intensive industries in the nation, consistency in those basic approaches is extremely important if the nation is to incent and sustain the needed level of infrastructure investment. PJM has found FERC's Commissioners and staff to be true professionals who have undertaken their responsibilities with dedication and fairness.

Question 2a: Are there additional areas of regulatory oversight that requires the attention of this Subcommittee?

Response: As I indicated at the July 26 hearing, PJM believes there is value in having additional hearings and Sub-Committee oversight in two areas:

(a) Grid Resilience – Although PJM is actively moving forward in this area, it would be helpful for those in government with access to intelligence information to be able to assist grid operators in verifying and validating the nature of threats which require additional build-outs for resilience, which could be costly. As a result, although information sharing is occurring today on an incident basis, it would be helpful if the RTOs can receive some verification from officials with access to intelligence information as to the reasonableness of the RTO's choice of which threats require additional build-out versus which potential threats are remote enough to not justify the same degree of build-out from a cost/benefit viewpoint. The Sub-Committee's oversight as to

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the degree of coordination between agencies such as Department of Homeland Security and Department Of Energy with the grid operators in this area could be helpful to the overall effort.

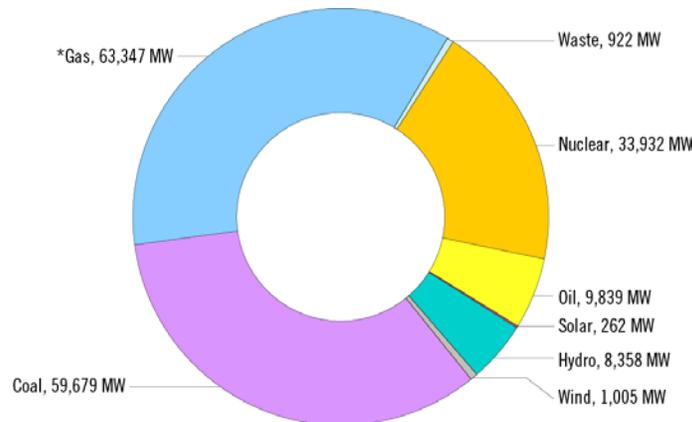
(b) Gas-Electric Coordination – As overseen by FERC, as a result of Congress’ directives in the Energy Policy Act of 2005, the electric industry is the only industry with mandatory cyber and physical security standards. By contrast, the natural gas pipeline industry is subject to an entirely different and far more voluntary regulatory regime under the regulatory oversight of the Transportation Security Administration (TSA). As the two industries become more inter-dependent, it would be helpful for this Committee to continue its oversight as to whether this disparate regulatory regime is becoming an impediment to ensuring the effective consideration of threats to each other’s systems.

THE HONORABLE JOHN SHIMKUS

Question 1: If, as we learned at the hearing, markets were structured to build only the least expensive generation, we would build nothing but natural gas plants right now.

Question 1a: Is that correct? Is that what’s happening?

Response: Although PJM has seen significant development of natural gas facilities, the PJM generation profile today is more diverse than it has ever been as evidenced by the chart below.



PJM Installed Capacity as of 12/31/2016

**Gas is made up of ‘Natural Gas’ (62,941 MW) and ‘Other Gas’ (405 MW) such as landfill gas, biomass, etc.*

In addition to the increase in the interconnection of new natural gas-fired facilities, PJM has seen a significant increase in the interconnection of renewable facilities and innovative new technologies such as energy storage resources. For example, at the end of 2016, PJM had active interconnection requests of nearly 30,500 megawatts of nameplate capacity evenly split from wind and solar resources. Energy storage resource requests comprised 680 megawatts of nameplate capacity.

PJM believes the nation’s policy focus should not be on defining an acceptable percentage of different fuel types. Rather, as PJM detailed in its Spring 2017 whitepaper, *PJM’s*

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Evolving Resource Mix and System Reliability,¹ we believe a focus on ensuring that we are obtaining resources which provide key reliability attributes is preferable to choosing investment in particular fuel types. PJM's capacity market reforms, approved by FERC in June 2015,² and PJM's new price formation initiative focused on developing a compensation mechanism to reward and incent flexible load following services are examples of the kind of initiatives which will ensure a cost-effective and reliable grid going forward.

Question 1b: If not, how do you explain other generation sources entering the market?

Response: See response 1a above. As a matter of regulatory policy, FERC has described its regulatory policy as remaining fuel-neutral but not reliability neutral. We believe this long-standing policy, and the Commission's support for some of the initiatives referenced in our response to Question 1a, will serve to ensure a healthy mix of resources that ensure long term reliability at reasonable prices to consumers.

THE HONORABLE BILLY LONG

Question 1: RTO development began in late 1999 with ISO development soon to follow. Both organizations help to monitor our electric power system. There are still a number of gaps in our electric system where problems could occur. What are your thoughts about the creation of another RTO that could include the states of Nevada, Arizona, Colorado, and other western states? Should it be an RTO or an ISO?

Response: PJM believes that RTOs have provided significant benefits to customers in driving greater grid efficiencies and more reliable operations. PJM does not take a formal position on what actions should be taken by the states identified in this question other than to note the efficiencies which have been demonstrated across the nation through the operation of RTOs.

Question 2: How are you planning to manage the growing surplus of generation in your respective regions?

Response: Although principally as a result of sluggish load growth, reserve margins in PJM have grown most recently, these higher reserve margins should not, in PJM's view, be a basis for complacency. Although reserve margins and "iron in the ground" is certainly one measure of reliability of the grid, PJM is increasingly focusing on low probability/high impact events, which could range from extreme weather events to physical or cyber-attacks, to ensure that today's reliable grid is resilient to withstand and/or recover from these extreme events.

Thus, although PJM will continue to procure capacity resources to meet its reserve margin using traditional NERC analyses and standards, our focus is increasingly moving toward

¹ *PJM's Evolving Resource Mix and System Reliability*, March 30, 2017, PJM Interconnection; <http://www.pjm.com/~media/library/reports-notice/special-reports/20170330-pjms-evolving-resource-mix-and-system-reliability.ashx>.

² *PJM Interconnection, L.L.C.*, 151 FERC ¶ 61,208 (2015), *order on reh'g*, 155 FERC ¶ 61,157 (2016) (Capacity Performance proceedings).

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encompassing grid resiliency in our overall planning and operations to ensure that today's surplus is truly available to meet both normal and extreme operating conditions.

THE HONORABLE FRANK PALLONE, JR.

Question 1: Consumer advocates have identified the resource imbalance between the stakeholder members of the RTO/ISO Boards and the small consumer community as a major barrier to having meaningful representation of consumer viewpoints included in decisions about grid operation and capital project evaluation and approvals. What mechanisms, reductions in costs of stakeholder participation, or other support does your RTO/ISO provide to the small consumer community to facilitate their participation in RTO/ISO governance?

Response: PJM and its stakeholders have taken significant steps to ensure that consumer viewpoints, including the viewpoints of residential consumers, are represented in the PJM stakeholder process and are presented directly to the PJM Board of Managers. Some of the specific steps taken by PJM to enhance Consumer Advocate participation in the PJM stakeholder process include the following:

(a). One of PJM's foundational documents, the Amended and Restated Operating Agreement of PJM Interconnection, L.L.C. (Operating Agreement), requires a permanent stakeholder group – the Public Interest, Environmental Organization User Group. Consumer Advocates and environmental organizations comprise this group. The group has periodic teleconference meetings with PJM management and staff and meets annually with the PJM Board of Managers.

(b). Established in 2013, the Consumer Advocates of PJM States, Inc. (CAPS) is a collection of all organizations in PJM that are mandated by law to represent the interests of their respective utility consumers before regulatory and judicial bodies. The organization is funded through a schedule line item on PJM's FERC-approved Tariff. Through the facilitation of a full-time Executive Director, the funding allows those organizations that are mandated to represent consumer interests to further their mission by allowing for meaningful engagement in the PJM stakeholder process and education on emerging issues.

(c). PJM itself is dedicated to effective Consumer Advocate relationships through the full-time employment of a Consumer Advocate liaison. This role advances Consumer Advocates' engagement with PJM by providing formalized access to PJM personnel and knowledge.

(d). PJM, including attending members of the PJM Board of Managers, meet with the Consumer Advocates at least twice a year at industry-wide meetings, such as NARUC and NASUCA.

(e). The Consumer Advocates in PJM's region are voting members of PJM (technically called Ex Officio Voting Members). This gives them the same voting privileges as all other Voting Members of PJM. In fact, representatives of several jurisdictions' Consumer Advocate offices as well as representatives of CAPS participate regularly at all levels of PJM's stakeholder process, including frequent representation on the Liaison Committee when it meets directly with PJM's Board of Managers.

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(f). Dues for membership in PJM are reduced significantly for Consumer Advocate offices. Specifically, annual dues for Consumer Advocates are \$500 versus \$5000 for other voting members.

Question 2: You indicated at the hearing that PJM had a formal structure (e.g. committee or liaison position) for obtaining input on consumer views and concerns on grid management. Please provide detail about how consumer views are incorporated into decision-making at your RTO/ISO.

Response: PJM employs a full time Consumer Advocate liaison who works directly with the Consumer Advocates to ensure that they have full access to PJM subject matter experts and have direct access to the PJM Board of Managers through regularly scheduled meetings.

As to decision-making at the RTO/ISO, as noted above PJM stakeholders fund the CAPS organization so that the official state consumer advocates can be represented through a full-time dedicated CAPS official, at all PJM stakeholder meetings. PJM meetings are open to the public and consumer advocate offices can participate individually as well as through CAPS and can vote either in person or by telephone.

As noted above, the Consumer Advocates formally have a vote on matters which are then presented to the PJM Board of Managers as recommendations from PJM stakeholders. The Consumer Advocates' votes are equal to the vote of market participants in PJM irrespective of the size of the different companies or organizations.

Question 2a: Do consumer advocates have voting representation on the Board?

Response: As noted previously, the Consumer Advocates, like all other market participants, have voting rights in the PJM stakeholder process. The stakeholder votes concerning changes to the PJM tariff rules are, by design, advisory to the Board. Stakeholders retain rights as a group, through the sector-weighted voting process, to seek a Federal Power Act, Section 205 change to the Operating Agreement. Nevertheless, the Board still retains its rights to petition FERC for changes in the Operating Agreement pursuant to Federal Power Act, Section 206.

PJM has an independent Board rather than a Board made up of stakeholders. The 10-member PJM Board of Managers is tasked with retaining PJM's independence as an organization in carrying out its role of executing non-discriminatory wholesale markets, reliable operations, and prudent transmission planning. As a result, the PJM Board of Managers is independent of the members and can hold no interest—financial or otherwise---in any member organization.

RTOs were designed to be independent of stakeholders in order to ensure unbiased decision-making on key issues associated with the reliability of the grid, ensuring the competitiveness of the PJM markets, providing a robust and transparent planning process and ensuring the physical and cybersecurity of essential PJM grid operations.

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Question 2b: Do consumer advocates participate actively in the development and approval of grid planning?

Response: Yes. The meetings of PJM's Planning Committee as well as its Transmission Expansion Advisory Committee are open. Consumer Advocates, acting through CAPS and also on their own behalf, are active in these meetings as are public interest organizations.

Question 2c: Are there funds available to support full-time staff that serve the interests of consumer advocates? If so, what is the source of those funds?

Response: As outlined above, PJM, with the support of its stakeholders, submitted to FERC an amendment to the PJM Open Access Transmission Tariff to permit the funding of the CAPS organization. FERC approved that request on Feb. 29, 2016. The funding supports the hiring of an Executive Director for CAPS and allows the CAPS organization to cover its costs in participating in PJM stakeholder processes.

Question 3: What quality control measures does PJM have in place to ensure that cost estimates for proposed transmission projects are reasonably accurate and inclusive of all expenses that a project is likely to incur?

Response: There are a number of facets to this answer. PJM requires the timely submittal of estimated cost information, which includes projections of all costs associated with the siting and construction of transmission facilities, and considers this information prior to the PJM Board of Managers' approval of a given project. The project developer has the initial responsibility to estimate these costs as they are in the best position to negotiate contracts and manage their costs associated with a given project. PJM uses this information in determining which project meets the standard of being the more cost effective and efficient solution to the particular identified problem – whether it be resolving a foreseeable reliability violation or improving the efficiency of market results by reducing congestion costs on the system with cost-effective transmission solutions. The evaluation of costs is a component used by PJM to decide whether, in a given situation, PJM should approve smaller upgrades versus development of a larger "greenfield" solution as the more cost-effective solution.

For projects which are subject to Order No. 1000's competitive bid process, project developers have the option of submitting cost caps as part of their bid submittals. This process can provide a further check on project costs depending on the specific provisions of the proposed cost cap. PJM evaluates proposed cost caps as one component of its determination of the more cost-effective or efficient proposal among the various submitted proposals.

PJM posts project costs as project construction proceeds. The PJM Board of Managers retains the right to re-evaluate or cancel projects for a number of reasons including whether the projected costs of completion of the project when weighed against the updated needs analysis, justifies reconsideration, reconfiguration or even cancellation of a project.

Finally, although PJM considers costs at each of the stages of the planning process outlined above, FERC continues to hold primary responsibility for the determination of the reasonableness of costs of individual projects. Any customer can challenge the reasonableness of costs being included in rates either at the time the utility seeks recovery of those costs

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pursuant to Federal Power Act, Section 205 or through a separate complaint filed by the customer pursuant to Federal Power Act, Section 206.

Question 4: When PJM approves a project with its associated cost estimate, is the project re-evaluated if the cost increases significantly? Does the approval include cost containment measures or a cap on cost increases?

Response: See response to Question 3 above. The PJM Board of Managers retains the right to re-evaluate projects if the costs of the project when compared to the need no longer justify its construction. Pursuant to FERC regulations, transmission owners may be allowed to recover abandonment costs of cancelled projects, which is another factor that is considered as the PJM Board of Managers determines whether to re-evaluate, reconfigure or even cancel a project.

As noted above, the PJM Board of Managers considers any cost cap proposals that have been submitted by project developers. If that project proposal is selected by the PJM Board of Managers, the cost cap proposal is inscribed in a binding agreement known as the Designated Entity Agreement (DEA), which is filed for approval at FERC. Any customer can challenge the cost cap proposal that is submitted to FERC as part of the DEA filing.

Question 5: The Consumer Advocates of the PJM States have raised questions about PJM's process for planning transmission projects relative to the cost estimates and consumer impacts of proposed projects. A specific project in my district, Jersey Central Power and Light's proposed Monmouth County Reliability Project, has been questioned by members of the community that would be directly impacted by the project's construction and also by the Rate Counsel because of the high cost of the project and its projected impact on consumers. Intervenors in this case presented a non-transmission option at a cost estimated to be 70 percent less than the cost of the transmission project. Transmission operators, voting members of the Board of PJM, are likely to favor new transmission as a solution to reliability issues. How does PJM account for this bias within its membership when evaluating alternative approaches for addressing reliability issues?

Response: PJM wishes to separately address the specific references in the question above as to the alternative presented by intervenors to the Monmouth County Reliability Project as well as to the part of question referencing an alleged "bias within its membership when evaluating alternative approaches for identifying reliability issues."

As to the specific reference to the Monmouth County Reliability Project, there is no evidence of bias in this case. The hearing relative to the siting application for the Monmouth County project has been completed and briefed by the parties as we await a decision of the New Jersey Board of Public Utilities. During the final day of evidentiary hearings, the RAGE witness, Jeffery Palermo, introduced a new technical solution alternative to the proposed project during his oral sur-rebuttal testimony. Mr. Palermo admitted in both his Sur-Rebuttal Report, and while on the witness stand, that a NERC Category 7 violation currently exists and must be addressed. Mr. Palermo also proposed (for the first time in his sur-rebuttal testimony) an alternative that would involve installation of major pieces of voltage stabilization equipment (two static synchronous compensators) and significant reinforcements to Jersey Central Power & Light Company's (JCP&L) 34.5 kV distribution system, including new 34.5 kV transmission lines.

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In the first place, this alternative was never presented at the various PJM stakeholder meetings regarding this project. Nevertheless, based on the analysis performed by JCP&L, and reviewed by PJM, Mr. Palermo's alternative to the Monmouth County Reliability Project would be more expensive to construct, more disruptive to JCP&L's customers in Monmouth County, and result in a less robust system than the proposed project.

On the larger question concerning alleged bias in decision-making, decisions on the choice and need for transmission projects are made by the PJM Planning Division staff and then are submitted to the independent PJM Board of Managers for final review and approval. Those decisions are informed by the consideration of alternatives that have come forward as generation, demand response or energy efficiency solutions through the PJM markets or are otherwise identified by parties when the proposal is first vetted. As a result, whether there is "bias" among individual member companies is irrelevant to the decision being reached by the PJM Board of Managers – a decision which is informed by market results and the transparent and independent analysis of the PJM Planning Division staff, which has been thoroughly vetted through the public stakeholder planning process.

Question 5a: Do consumers or consumer advocates have representation on the Board?

Response: See response to Question 2a. The PJM Board of Managers is independent of all stakeholders. As a result, no stakeholders, including consumer advocates, have designated representatives on the PJM Board of Managers.

Question 5b: Do they vote or have other formal input to decisions on transmission projects?

Response: Yes. See responses to Question 2, 2a, 2b and 2c. Consumer Advocates, acting through CAPS and as individual offices, have both formal and informal input to proposed decisions of PJM on whether to authorize specific transmission projects. All projects which PJM Planning Division staff is considering presenting to the PJM Board of Managers are first vetted through the Transmission Expansion Advisory Committee where Consumer Advocates and other stakeholders can provide comment. In addition, CAPS, individual Consumer Advocate offices and even individual consumers are able to correspond with the PJM Board of Managers prior to its decision whether or not to approve a specific projects that has been vetted at the Transmission Expansion Advisory Committee.