Additional Questions for the Record
Chairman Cheryl A. LaFleur

The Honorable Ed Whitfield

1. In your testimony, you stated that:

> **FERC staff commented on the proposal through the OMB interagency review process from a reliability perspective. Among other recommendations, FERC staff emphasized the need for the development of natural gas pipeline and electric transmission infrastructure to enable compliance with State compliance plans.**

Please provide a copy of the comments and recommendations to which you are referring in the above statement.

Answer: Commission staff reviewed parts of the draft Greenhouse Gas rule as a part of the OMB process and provided oral input to the EPA from a reliability perspective. We did not provide written comments. However, as requested in Question 2, I have attached the internal memo to file discussing staff's phone call with representatives of OMB and EPA on EPA's draft rule.

2. During the hearing, in response to a question regarding FERC and EPA coordination on the development of the Clean Power Plan, you stated that "we [FERC] kept a memo, but we did not turn them in in writing because that has not been the practice." Please provide a copy of the memo you referred to and any related materials.

Answer: See response to Question 1.

3. Multiple times during the hearing you stated that it was premature for FERC to complete a reliability analysis and that it would make more sense to wait until States submitted their respective compliance plans. For example, in one instance you stated "I believe it is our responsibility to make sure that reliability is sustained. I think we will know much more when we see the different State plans." And yet EPA has already concluded that the "proposed rule will not raise significant concerns over regional resource adequacy or raise the potential for interregional grid problems."

> **a. Please explain why EPA is able to complete a "Resource Adequacy and Reliability Analysis" and draw reliability conclusions based on the results, but FERC believes it is premature to complete such an analysis.**

Answer: It is premature to complete a detailed reliability analysis rather than a high level study, such as the one completed by the EPA, because there are four proposed building blocks as well as other options that each State can combine to create a customized compliance plan. Unlike the Mercury and Air Toxics Standards (MATS) rule, the proposed Clean Power Plan would be implemented on a state or regional level rather than on an individual facility level, which leads to the need to consider many more variables. For example, any detailed reliability analysis would involve making many assumptions on key factors of potential State plans, such as the extent and distribution of load reductions from energy efficiency, the number and location of new natural

gas combined cycle (NGCC) generation facilities, and economic conditions such as fuel prices. As such, given the uncertainty surrounding what State plans will look like, the results of any study would depend greatly on the assumptions chosen as inputs, such that a study would likely be more speculative than informative, especially for later years. Finally, because the proposed Clean Power Plan includes both flexibility in the form of the regional compliance option and an extended timeframe for compliance, industry, states and others will have time to prepare and complete studies to assist with compliance as compliance plans are developed.

b. Is EPA better positioned to complete reliability analyses than FERC?

Answer: FERC's approach to reliability analyses is generally granular, employing detailed power flow analyses to evaluate a particular scenario and set of constraints to determine the potential impact on reliability. As noted in my response to Question 3a, due to the uncertainty of potential State compliance plans, a study at this point would likely be more speculative than informative. I am not in the position to assess EPA's ability to perform reliability analyses. As I stated in my testimony, the Commission will continue to be closely engaged with EPA, states, regional transmission organizations, independent system operators, industry and NERC to identify and resolve any reliability issues as state and regional implementation plans are developed and implemented.

c. Please provide the current FY 2014 (and requested FY 2015) budget for FERC's Office of Reliability.

Answer:
FY 2014 - $12,342,772
FY 2015 (requested) - $12,421,324

d. How many employees are currently in FERC's Office of Reliability?

Answer: As of August 15, 2014, the Office of Electric Reliability had 92 employees. Within this Office, most of the modeling work has generally been performed by a group of about ten employees, although a number of other employees within the Office also are able to do this type of work and, from time to time, may do so.

e. Should EPA have refrained from making resource adequacy and reliability determinations until after States have submitted implementation plans, as you have suggested?

Answer: See response to Question 3b.

4. Do you view EPA's proposed Clean Power Plan as an "energy plan" or a "pollution control" rule? Why or why not?

Answer: I consider EPA's proposed Clean Power Plan to be an environmental rule that has implications for energy resources.

5. EPA's "Best System of Emissions Reduction" goals were developed using 2012 as the baseline year. Does FERC believe that 2012 was a reasonable baseline to use given the

historically low natural gas prices and economic conditions? Wouldn't you agree that considering multiple years in the EPA baseline would produce a more realistic analysis?

Answer: Any baseline year that is chosen relies on a specific set of conditions that may affect each state uniquely. The determination of the appropriate baseline year to establish emissions goals is not within my purview.

6. Would you agree that the proposed Clean Power Plan gives EPA a certain amount of control over State decisions regarding the generation, supply and consumption of power?

Answer: The proposed Clean Power Plan does not give the EPA direct control over state power decisions. The proposed Clean Power Plan, like other environmental and regulatory requirements, will affect the choices states make regarding generation, supply, and consumption of power. However, the proposed Clean Power Plan also provides the states with flexibility regarding those choices.

7. As the D.C. Circuit Court recently held, the Federal Energy Regulatory Commission lacks authority to dictate how States plan and operate their energy systems. Are you aware of any statutory authority that permits EPA to mandate that States restructure their electric systems and subject State energy decisions to federal oversight and control?

Answer: Assessment of EPA's statutory authority is not within my purview. If challenged, the legality of the EPA's proposed rule will be decided by the courts.

8. To what extent does FERC have authority over State utility and resource planning? Are you aware of any statutory authority giving EPA greater authority in this area than FERC?

Answer: The Commission, and not the EPA, has statutory responsibilities to ensure just and reasonable wholesale rates, authorize the construction of certain energy infrastructure, and oversee the reliability of the bulk-power system.

9. EPA projects nearly 180 gigawatts of generation capacity will retire between 2010 and 2020 in response to the Clean Power Plan and other factors, such as EPA's previously finalized Mercury and Air Toxics (MATS) rule. What do you view as the potential reliability impacts resulting from the loss of 180 gigawatts of generation over the next 6 years?

Answer: The impacts of projected retirements will depend on, among other factors, the timing, location, and type of facilities retiring, and the amount of capacity additions during this period. The proposed Clean Power Plan includes flexibility in the form of the regional option and extended implementation of state plans over ten years beginning in 2020 and continuing through 2030. This provides industry with time to prepare for compliance as well as the ability to make additional adjustments during the compliance period, if needed, to ensure reliability. Historically, industry has demonstrated that significant investment is possible on a relatively short time frame. However, as I noted in my testimony, the Commission will have an important role in monitoring potential reliability impacts related to the proposed rule, in supporting the

development of gas pipeline and electric transmission infrastructure, and considering any revised market rules necessitated by state or regional compliance plans.

10. Would you be supportive of EPA including in its final Clean Power Plan a "reliability safety valve" that provides FERC greater authority to prevent the retirement of reliability critical generating units? What might such a safety valve look like?

Answer: I believe that flexibility will be an important tool to enable compliance with the proposed Clean Power Plan. In that regard, I would support a carefully designed mechanism to consider reliability if an issue arises. FERC is prepared to assist the EPA with reliability topics as we have in the past, and one approach might be to focus such a mechanism on multi-state aspects of compliance, to ensure that individual state plans do not conflict in ways that might pose reliability problems.

11. Has EPA advised you about how the Clean Power Plan would work in states with multiple Regional Transmission Organizations (RTOs) or states with RTO members and non-RTO members or states with no RTO members? If yes, how would the plan work according to EPA?

Answer: No, the EPA has not advised FERC on this issue.

12. EPA analyzed a set of compliance scenarios referred to as "Regional" scenarios. The regional scenarios allow emission rate averaging across affected sources within six multi-state regions, informed by North American Electric Reliability Corporation (NERC) regions and Regional Transmission Organizations (RTOs). What role does FERC see for itself in overseeing such regional compliance efforts?

Answer: FERC has a role in ensuring that the regimes for wholesale electric service, interstate electric transmission and natural gas pipeline transportation and natural gas pipeline permitting under its jurisdiction are sufficient to account for any regulatory changes required by the EPA rules.

13. Regarding the June 6th decision by the D.C. Circuit Court of Appeals in the *Delaware Riverkeeper Network vs. FERC* case, there are concerns that this decision will lead to much longer review times for natural gas pipeline approvals.

> **a. In particular, what changes is FERC considering in regards to how it reviews natural gas pipeline applications because of this decision?**

Answer: The *Delaware Riverkeeper* decision, in which the court held that the Commission must avoid segmenting the environmental review of closely-related, contemporaneous projects and ensure that it analyzes the cumulative environmental impacts of such projects, was based on the specific facts of that case. Commission staff will be mindful of the court's analysis as it processes future pipeline project applications, but I cannot say to what extent other cases will present similar facts.

b. What impact will these changes have on the length of time it takes to review these applications?

Answer: It is possible that the Commission may have to adjust its analysis of particular projects if applications to authorize other, closely-related projects are filed soon after the initial project applications, but I cannot predict to what extent this is likely to occur. The Commission will continue to process natural gas pipeline certificate applications as expeditiously as possible consistent with our statutory responsibilities.

14. In May, the government of the Commonwealth of Puerto Rico wrote to FERC expressing concern that FERC is not moving quickly enough to complete the review of Aguirre Offshore LNG import terminal. Currently FERC is scheduled to release the FEIS for the project on December 19, 2014 but Puerto Rico is asking for FERC to move up this date. Not only does Puerto Rico need LNG to help lower extremely high electricity prices, but also to help be in compliance with EPA mercury and air toxics standards. Is FERC looking to work with Puerto Rico in order to help the Commonwealth?

Answer: I appreciate the view of the Commonwealth and other stakeholders. The draft Environmental Impact Statement (EIS) for this project was issued August 7, 2014. FERC staff is continuing its environmental review process and is currently taking comments on the draft EIS from the public, as well as federal, state, and local agencies, including holding public, centrally-located meetings within the project area. Further, the Commission will continue to accept comments after the due date of September 29, 2014. As in all certificate proceedings, the Commission staff will issue the final EIS once it is completed, which may be earlier than the scheduled date.

15. The Department of Energy in late May abruptly changed their approval processes for LNG export applications, now making DOE's approval contingent upon FERC's approval of the export facility.

a. Did DOE consult with FERC prior to making the announced changes or request FERC's input about how these changes might affect the process?

Answer: I was notified immediately before the announcement, but not consulted on the changes. The change in the DOE approval process does not impact the FERC review process.

b. DOE also announced that in addition to the process changes for LNG export applications it will also release two additional environmental reports "beyond what is required for NEPA" on LNG exports. Given that this seems to encroach upon FERC's permitting role, has FERC advocated for additional environmental analysis beyond what is required under NEPA?

Answer: I do not believe that these studies encroach upon the Commission's permitting role. The Commission's NEPA responsibilities, as evidenced in its environmental documents, are limited to assessing the environmental impacts reasonably related to the proposed facilities.

16. What contingency plans does FERC have in the event a court strikes down Order 1000 as outside the four corners of the Federal Power Act?

Answer: The U.S. Court of Appeals for the D.C. Circuit denied all of the challenges to Order No. 1000 in *South Carolina Pub. Service Auth. v. FERC*, Nos. 12-1232 (August 15, 2014).

17. Does the physical security standard recently passed by NERC require protection of control centers for regional reliability coordinators, such as the Peak Reliability control center that manages reliability for eleven western states including Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming?

Answer: The Commission recently issued a Notice of Proposed Rulemaking which largely approves the proposed physical security standard. NERC's petition to approve the physical security standard states that the standard's drafting team determined that the proposal should only provide additional physical security protections to those primary control centers that can physically operate critical substations. The drafting team also determined that a physical attack on a control center that only has monitoring or oversight capabilities of a critical substation would not have a direct impact on reliability in real-time. It would be inappropriate for me to judge the merits of the proposed standard before interested parties have an opportunity to submit comments to the Commission, but I will carefully consider them to ensure that the final standard adequately protects the bulk-power system.

18. Could a coordinated attack on one or more large generation plants cause a cascading outage?

Answer: A carefully planned and executed attack on one or more large generation plants could cause cascading outages, but I have not seen information that would lead me to believe that it could cause a long-term power shortage. The extent and duration of any outage from an attack would depend upon a number of factors, such as the size and location of the plant, system loads, the configuration of the grid, the availability of replacement equipment and fuel, and the resilience of the systems under attack. Resilience begins with how the system is planned, designed, constructed, and operated, and is informed by how asset owners and grid operators respond to and learn from events. Many of these factors are addressed in detail in the FERC-approved mandatory reliability standards, such as standards requiring that the grid be able to continue to operate after a single contingency event and certain blackstart capabilities be in place, ensuring that additional generation is able to come online to replace units lost unexpectedly.

19. Does the physical security standard recently passed by NERC require protection of large generation plants?

Answer: The proposed standard does not require the protection of generation plants. In its petition seeking Commission approval of the proposed standard, NERC stated that a "generation facility does not have the same critical functionality as certain … Transmission substations due to the limited size of generation plants, the availability of other generation capacity connected to

the grid, and planned resilience of the transmission system to react to the loss of a generation facility."

20. FERC sponsored a report by the Oak Ridge National Laboratory, "Intentional Electromagnetic Interference (IEMI) and Its Impact on the U.S. Power Grid." This report found that critical electric grid equipment is susceptible to damage from local electromagnetic pulse devices. Since the publication of the Oak Ridge report in 2010, what steps has FERC taken to protect the grid against local electromagnetic pulse devices?

Answer: While there is no wide scale threat detection or deterrence program in place for IEMI, the Office of Energy Infrastructure Security works collaboratively with other agencies to help utilities who are currently engaged in incorporating best practice IEMI prevention into their facilities. Further, although FERC has not taken any action specific to IEMI, the Commission has recently required NERC to address the impact of geomagnetic disturbances on the reliable operation of the bulk-power system. These standards could help mitigate the threat of an IEMI event.

21. Would it be important for grid reliability coordinators to know if an electromagnetic pulse attack is taking place?

Answer: Considering the speed and impact of an EMP event, the industry should be made aware of any threat prior to its occurrence, when possible. Mitigating measures such as protective equipment can help address a risk of inadequate warning.

22. How much do electromagnetic pulse detectors cost? Would it be cost-effective to require utilities to install electromagnetic pulse detectors at critical grid substations and control centers?

Answer: I am informed that at least one manufacturer produces an EMP detector for approximately $15,000. The cost-effectiveness of such detectors depends on a variety of circumstances, and it is difficult to offer a generalized conclusion on the issue.

23. What steps has FERC taken to protect the grid from solar storms and other geomagnetic disturbances?

Answer: The Commission issued a final rule on May 16, 2013, requiring NERC to address the impact of GMDs on the reliable operation of the bulk-power system in two stages. In the first stage, the Commission directed NERC to submit reliability standards that require owners and operators of the bulk-power system to develop and implement operational procedures to mitigate the effects of GMDs consistent with the reliable operation of the bulk-power system. In the second stage, the Commission directed NERC to submit reliability standards that require owners and operators of the bulk-power system to conduct initial and on-going assessments of the potential impact of benchmark GMD events on bulk-power system equipment and the bulk-power system as a whole. If the assessments identify potential impacts, the reliability standards should require owners and operators to develop and implement a plan to protect against instability, uncontrolled separation, or cascading failures of the bulk-power system.

As a result of the first stage efforts, on June 19, 2014, the Commission approved a new reliability standard, EOP-010-1 – Geomagnetic Disturbance Operations. Reliability standards to address the Commission's second stage directives are still under development. The Commission has set a January 2015 compliance deadline for the filing of the proposed second stage GMD reliability standards.

Additionally, FERC continues to be an active participant in efforts to protect the bulk-power system from GMDs by facilitating the advancement and incorporation of new technologies and mitigation methods into best practice applications and by working together with our federal partners, NERC, and the Geomagnetic Disturbance Task Force.

24. Regarding FERC's Office of Enforcement, it is my understanding that FERC has a "Hotline" that is used for referrals of suspected violations but that there is no "Help Line." Is there a dedicated compliance line? How often is it used for compliance guidance?

Answer: The Commission first created an Enforcement Hotline in 1987, then expanded the scope of the Hotline in 1991 and finally codified the Enforcement Hotline in its regulations in 1999. The Commission explained that the Hotline would field concerns regarding a wide variety of matters, including allegations of: (1) market manipulation; (2) failure to follow the requirements of a transmission tariff; (3) abuse of an affiliate relationship; (4) failure to follow electric reliability standards; or (5) failure to comply with hydroelectric project licensing conditions. The Commission also directed that the Hotline would provide information to the general public and guidance to the energy industry regarding the application of the Commissions statutes, rules, regulations and order. In practice, Enforcement staff (in consultation with other FERC program offices) routinely provides informal guidance to Hotline callers to assist with compliance. The Commission posts information about the Enforcement Hotline and how members of the public may contact the Enforcement Hotline on its website. *See* http://www.ferc.gov/enforcement/staff-guid/enforce-hot.asp

The Commission created the Compliance Help Desk in May 2008. The Compliance Help Desk is manned by staff from the Office of General Counsel, the Office of Enforcement, the Office of Energy Market Regulation, the Office of Energy Policy and Innovation, the Office of Electric Reliability, and the Office of Energy Projects. Informal advice given by staff in response to a compliance help desk inquiry is not binding on the Commission and may represent the view of only individual staff members. The Commission posts information about the Compliance Help Desk and how members of the public may contact the Compliance Help Desk on its website. *See* http://www.ferc.gov/contact-us/compliance-help-desk.asp

Finally, the Commission has a number of other mechanisms available to obtain guidance from Commission staff on a variety of regulatory and compliance issues, including informal staff contact, requests for declaratory orders, general counsel opinion letters, and accounting interpretations.

25. How many No Action letters has FERC's Office of Enforcement issued and how long was the process from start to finish for each?

Answer: The Commission established the No-Action Letter process in November 2005. No-Action Letter requests are submitted to the General Counsel. Given the nature of the No-Action Letter requests, Commission staff from various offices, including the Office of General Counsel, the Office of Enforcement, the Office of Energy Market Regulation, and the Office of Energy Policy and Innovation participate in the review of No-Action Letter requests. In 2008, the Commission modified the No-Action Letter process and indicated that it expected that in most circumstances, staff would act on No-Action Letter requests within 60 days after the filing of, or amendment to, a request.

Since 2006, the Commission has received a total of 28 No-Action Letter Requests. The average response rate was 38.9 days.

The Honorable David B. McKinley

1. This January, during the "Polar Vortex", electricity customers in the PJM region experienced significant abrupt increases in their electricity costs, with bills rising to several times their normal levels. These price spikes were caused, in part, by significant generation outages during January, despite these generation resources receiving billions of dollars a year in advanced payments in exchange for their being available to provide energy during peak periods, whether in the extreme heat of the summer or the extreme cold of the winter. I am concerned that the causes of this situation have not been understood well enough to prevent it from happening again. Do you think you fully understand what happened and can assure us it isn't going to happen again? Has the Commission conducted a comprehensive root cause investigation and analysis of the situation, or directed PJM or the PJM Independent Market Monitor ("IMM") to do so?

a. If yes, have those results been released publicly?

b. If no, why not?

Answer (a and b): The Commission held a technical conference on Winter 2013/14 Operations and Market Performance in RTOs/ISOs on April 1, 2014 to explore the impacts of the season's cold weather events on the RTOs/ISOs, and discuss action taken to respond to those impacts. At that technical conference, staff from the Commission's Office of Enforcement provided an overview of its comprehensive review of the Polar Vortex events. Enforcement staff's presentation is available at: http://www.ferc.gov/CalendarFiles/20140401083844-Staff%20Presentation.pdf. This review augmented Enforcement staff's regular surveillance program which routinely screens the natural gas and electric markets for potential manipulation or other improper conduct. As Enforcement staff noted at the Technical Conference, to date, it has not found any indication that manipulative activity caused the high natural gas or electricity prices. However, Enforcement staff continues to examine whether market participants may have improperly benefitted from the unusually constrained conditions in the electric markets in violation of the Commission's rules.

PJM conducted an investigation of last January's "Polar Vortex" events in its region, and issued a public report on May 9, 2014. In its report, PJM describes several challenges it faced in maintaining reliability during the extreme weather events of last winter, outlines a number of the

causes of those challenges, and identifies action items to improve operations and market performance in the future. The report is available at: http://www.pjm.com/~/media/committees-groups/task-forces/cstf/20140509/20140509-item-02-cold-weather-report.ashx.

The Commission's technical conference and the work of its staff to analyze the events of last winter, along with the work of PJM, have helped us to better understand what caused the significant price increases and poor generator performance. We will continue to analyze these events and assess opportunities to improve the operational and market performance of the RTO/ISOs in future cold weather events.

2. What efforts has the Commission undertaken, or directed PJM and the IMM to undertake, to identify potential solutions to the generation performance problems that occurred during January 2014 in the PJM region?

Answer: The Commission and PJM have both undertaken significant efforts to identify potential solutions to generation performance issues. As noted in response to Question 1, the Commission held a technical conference on Winter 2013/14 Operations and Market Performance in RTOs/ISOs on April 1, 2014 to explore the causes of the season's cold weather events and their impacts on the RTOs/ISOs, and to discuss actions taken to respond to those impacts (Docket No. AD14-8-000). Following the conference, the Commission invited written post-technical conference comments. Thirty-five entities filed comments addressing various aspects of the impacts of cold weather events on RTOs/ISOs across the country during Winter 2013/14, including generator performance. In addition, last year the Commission launched an inquiry into the centralized capacity markets in the eastern RTOs and ISOs, including PJM, to consider how their rules and structures are supporting the procurement and retention of resources necessary to meet future reliability and operational needs. The Commission held a technical conference as part of that inquiry, and received post-technical conference comments from industry and the public. Generator performance issues have been a significant topic of discussion in that inquiry, as well.

The RTOs, including PJM, have responded to the generator performance concerns highlighted in these Commission inquiries. ISO-NE has proposed a new capacity market design that ISO-NE expects will improve generator availability and performance by rewarding generators that are available during critical events with relatively higher payments, while ensuring that generators that are not available during such events are penalized.

Similarly, PJM has initiated discussions with its stakeholders regarding potential revisions to the region's capacity market to improve generator availability and performance during periods of high demand on the grid. Materials on their proposal are available on their website at http://www.pjm.com/committees-and-groups/committees/mrc.aspx. Commission staff has had preliminary discussions with PJM about these potential market rule changes, and will continue to closely monitor the stakeholder process. I can assure you that the Commission will act expeditiously to consider any market rule changes filed with us as a result of this effort.

3. Has the Commission determined whether any generation outages were reflective of attempts to manipulate market-clearing prices?

Answer: As part of Enforcement staff's comprehensive review of the Polar Vortex events, Enforcement staff spoke with market participants, and analyzed data and information related to generation outages to determine if those outages were part of a manipulative scheme or otherwise improper under the Commission's rules. Through this review, Enforcement staff did not find that any generator outages reflected attempts to manipulate market-clearing prices. Enforcement staff continues to investigate market performance issues related to the Polar Vortex events.

4. We understand that the delivered price of natural gas rose to historic highs in the PJM region during January 2014, and that these unprecedented delivered prices for natural gas were primarily the result of extraordinarily high prices for capacity on interstate natural gas pipelines in the PJM region. Has the Commission conducted a comprehensive root cause investigation and analysis, or directed PJM or the PJM Independent Market Monitor ("IMM") to conduct a comprehensive root cause investigation and analysis, of the unprecedented natural gas prices that surfaced in the P JM region during January 2014?

Answer: See my response to Question 2. PJM conducted its own analysis of the high prices in the PJM region during January 2014. Enforcement staff spoke with market participants, and analyzed data and information related to the high natural gas prices to determine the cause of such prices. To date, Enforcement staff has not found that such high prices were the result of anything improper under the Commission's rules, but Enforcement staff continues to assess all aspects of market performance issues related to the Polar Vortex events.

a. If yes, have those results been released publicly?

b. If no, why not?

Answer (a and b): As noted in my response to Question 1, Enforcement staff provided a presentation on its preliminary findings from its review of the Polar Vortex events at the April 1, 2014 Technical Conference. The Commission may release additional details relating to this review in the future.

5. What efforts has the Commission undertaken, or directed PJM and the IMM to undertake, or directed interstate natural gas pipeline operators to undertake, to identify potential solutions to the natural gas deliverability problems that occurred during January 2014 in the PJM region, either by better optimizing the use of existing assets or by constructing new assets or both?

Answer: Several events over the last few years demonstrate the crucial interaction between natural gas pipelines and electric transmission systems. The Commission convened a technical conference in April 2014 on winter market operations in the RTO/ISO regions at which we discussed communications during the cold weather events with industry, as well as other experiences and lessons learned. At that conference, I asked the RTOs, including PJM, to look at pricing fuel assurance into the markets. Following that conference, a number of RTOs have filed or are considering revisions to their tariffs to provide for better winter performance.

As an example, PJM is currently working on several initiatives with its stakeholders to identify potential solutions to the problems that occurred during January 2014 in the PJM region. For example, PJM is currently working with its stakeholders to develop a new Capacity Performance Product to ensure that capacity resources are available to perform during critical operational periods such as the extremely cold weather this past winter. The solution would address fuel security, performance incentives and penalties for generators; standards for availability; and increased operating flexibility from generators.

Furthermore, PJM has either established committees or task forces to explore solutions to address the following: (1) difficulties experienced in scheduling gas-fired generation during cold weather events, as well as the ability to track dual-fuel capability, (2) develop a permanent solution, if necessary, related to the temporary waivers of the $1,000 per MWh offer caps that the Commission granted in January 2014, and (3) various gas-electric coordination issues.

In addition, the Commission has been focusing on the coordination of the gas and electric industries since 2012. As a part of that effort, on November 15, 2013, the Commission issued a Final Rule allowing interstate natural gas pipelines and electric transmission operators to share non-public operational information to promote the reliability and integrity of their systems. In addition, on March 20, 2014, the Commission issued a Notice of Proposed Rulemaking proposing to revise the natural gas operating day and scheduling practices used by interstate pipelines to schedule natural gas transportation service in light of increased reliance on natural gas by electric generators. The Commission has also asked staff for quarterly reports through 2014 on industry efforts and initiatives on gas-electric coordination. Those reports are publicly posted on the Commission's website. Also, Commissioner Moeller recently announced a meeting in September to discuss the concept of developing an electronic information and trading platform for natural gas.

6. Has the Commission determined whether any natural gas deliverability problems were reflective of attempts to manipulate natural gas prices or electricity market clearing prices?

Answer: As part of Enforcement staff's comprehensive review of the Polar Vortex events, Enforcement staff analyzed data and gathered information related to natural gas deliverability problems from market participants, including gas suppliers, LDCs, and pipelines, as well as generation operators, to determine if manipulation may have contributed to the high natural gas prices or electricity market clearing prices during the cold weather events. To date, enforcement staff has not found indications that natural gas deliverability problems were reflective of attempts to manipulate natural gas prices or electricity market clearing prices. Enforcement staff continues to investigate market performance issues related to the Polar Vortex events.

7. Price increases for natural gas and electricity in the PJM region, and elsewhere, are very concerning to me. My constituents in the PJM region have asked me to ensure that markets have been, and are, functioning properly and that prices have not been increased by speculation or manipulation. It is now July, can you assure me that FERC intends to have answers to these questions about natural gas and electricity pricing BEFORE next winter?

Answer: As noted above, immediately following the Polar Vortex events, Enforcement staff began an extensive review of natural gas and electric market data and information, in close coordination with the RTOs/ISOs and the market monitors, to determine whether any manipulative behavior may have contributed to the high natural gas prices and/or the elevated cost of electricity during this past winter. To date, enforcement staff has not found any indication that manipulative activity caused the high natural gas or electricity prices. Enforcement staff continues to investigate market performance issues related to the Polar Vortex events.

In the long-term, the Commission has several initiatives underway to continue to assess the energy and capacity markets and ensure that they are continuing to function properly. For example, as I noted in my response to Question 2, last year the Commission launched an inquiry into the centralized capacity markets in the eastern RTOs and ISOs, including PJM, to consider how their rules and structures are supporting the procurement and retention of resources necessary to meet future reliability and operational needs. In addition, in June the Commission announced that its staff will hold a series of workshops on price formation in the RTO/ISO energy and ancillary services markets. These workshops will explore potential improvements to market designs and operational practices that impact how prices in these markets are determined.

8. In the Clean Power Plant proposed rule's Regulatory Impact Analysis, EPA notes that the Integrated Planning Model (IPM) was used to project the impact of the rule on electricity prices. The documentation for the IPM on EPA's web site explains that the model assumes both perfect competition and perfect foresight. The former means that "IPM does not explicitly capture any market imperfections such as market power, transaction costs, informational asymmetry or uncertainty." The latter "implies that agents know precisely the nature and timing of conditions in future years that affect the ultimate costs of decisions along the way." Does FERC agree that such a model can accurately capture how the proposed rule will impact prices? What are some likely differences in the actual implementation of the rule and this model?

Answer: I am informed by staff that the IPM is one of a number of tools that may be used to project the impact of the proposed rule on electricity prices. I am not personally aware whether this model is best suited to accurately capture the price impacts of the rule.

9. Achieving compliance with the proposed rule will require a replacement of higher carbon dioxide emitting resources with new lower or zero-emitting units. Yet a recent study by Christensen Associates commissioned by the Electric Markets Research Foundation concluded that the RTO markets "do not and cannot address long-term capacity needs." The study also found that "[b]ilateral forward contracting remains key under any market design for locking in revenues and facilitating financing of new resources. Contrary to this key necessity, however, the RTO markets include some design elements that impede long-term investments and long-term bilateral contracts." What steps does FERC intend to take to ensure that RTO markets do not impede bilateral contracting needed for new resource development that will be required for state compliance with the rule?

Answer: As discussed in my responses to Questions 2 and 7, last year the Commission launched an inquiry into the eastern RTOs' and ISOs' centralized capacity markets to consider how their

rules and structures are supporting the procurement and retention of resources necessary to meet future reliability and operational needs. As part of that inquiry, Commission staff issued a white paper addressing certain market design aspects of the centralized capacity markets, including the role of self-supply and bilateral contracting in those markets. The Commission held a technical conference and received post-technical conference comments, where these issues were discussed at length. The Commission is continuing to evaluate capacity market issues broadly and to address specific capacity market design issues in individual docketed cases to ensure that these markets function properly and adapt as necessary to meet new challenges, including new environmental requirements.

10. Within the retail access states, most of the generation is no longer owned by vertically-integrated utilities and instead is under merchant ownership. There is no state or local jurisdiction over these merchant generation owners regarding whether to continue to operate or close a plant or what types of generation technology should be built. Does FERC see any difficulties in implementation of the proposed rule in states with large amounts of merchant generation?

Answer: Where economic to do so, merchant generators have made significant investment in pollution control technology to comply with environmental requirements in recent years. To the extent merchant generators participate in organized wholesale electricity markets, they are permitted to include costs incurred to comply with environmental requirements in their market bids, allowing them to recover those costs. As I indicated in my testimony, the Commission will need to consider whether adjustments to Commission-jurisdictional rates and competitive markets will be needed to ensure reliability as states implement their compliance plans.

The Honorable Gene Green

Chairman LaFleur, in your testimony, you discuss EPA's Mercury and Air Toxics Standard or MATS. You state that EPA sought advice from FERC upon issuance. You stated that FERC issued a policy statement on potential violations MATS may induce based on FERC's reliability standard. We have a bill, HR 271, that deals with a conflict that exists between EPA enforcement and reliability.

1. Given the increasing complexity of EPA's regulations, does FERC anticipate additional conflicts with reliability?

Answer: As I noted above, the Commission will need to monitor the reliability impacts of the proposed Clean Power Plan. The Clean Power Plan provides states with a number of tools for developing the state-specific or regional-coordinated compliance plans. It is the Commission's role to ensure that jurisdictional rates and markets and infrastructure are appropriately adapted to these compliance plans to ensure that reliability is maintained. Continued coordination between the EPA, FERC, RTOs/ISOs, the states and industry can help to mitigate these issues.

You also discuss EPA's proposal and gas pipeline adequacy in your testimony stating "FERC emphasized capacity factors and existing constraints."

2. Do you believe EPA adequately incorporated FERC's input?

Answer: It is evident that certain aspects of the Commission's input, such as our focus on the need for regional coordination and compliance, are reflected in the proposed rule. The proceeding is still ongoing and FERC continues to be engaged in the process.

3. How does FERC anticipate handling increased permitting requests for natural gas pipelines if states choose EPA's regional policy option?

Answer: It is possible that the Commission will receive an increased number of permitting requests if states choose to rely more heavily on natural gas-fired generation as part of their compliance plans. The Commission acts on all natural gas project applications as soon as the record is complete in each case, and processes multiple applications simultaneously. I anticipate that the Commission has sufficient resources to handle its natural gas workload in the foreseeable future. However, I will continue to work closely with the Office of Energy Projects to ensure that sufficient resources are dedicated to this important aspect of our work.

To: File

From: Mike Bardee

Date: April 25, 2014

Subject: Phone call on EPA's draft rule for GHG from existing power plants

On Wednesday, April 23, I and others from FERC participated in a phone call with representatives of OMB and EPA on this topic. I was joined by Jeff Dennis and Matt Vlissides from FERC. Cortney Higgins participated from OMB; EPA was represented by Reid Harvey, Jeb Stenhouse, Bill Meroney and several others.

I started by saying that our comments would focus primarily on reliability, not the economic or environmental aspects of the draft rule.

On the issue of increasing the capacity factor for natural gas combined cycle units, I said that those units operated at a capacity factor of about 45% in 2008-2013. I noted that, while those units exceeded a 60% capacity factor in July and August 2012, those were summer months, and thus off-peak for the gas system. I mentioned that this past winter, those units had a capacity factor of 46% and 41% in January and February, respectively. I said that numerous generators were unable to get gas delivered during the polar vortex and subsequent cold weather, although we do not yet know how much of this was due to a pipeline constraint instead of an overall commodity shortage. I noted that gas prices spiked in some locations, another possible indicator of constraints in the pipeline system. I said that New England, in particular, was widely viewed as having inadequate pipeline capacity. Thus, I emphasized that the issue of pipeline adequacy could warrant a regional consideration, not just a national perspective. And, I noted the difficulty of measuring capacity growth on a network, either gas or electric, but that one relevant data point was growth in total consumption, and that over 2000-2014, total gas consumption grew by about 12%. I concluded by saying that we had doubts about the ability to expand the pipeline infrastructure as quickly as the emission targets implied.

An EPA representative said that, according to their modeling, the capacity factors for combined cycle units under economic dispatch would be lower than the capacity factor embedded in the emission targets. I agreed that their modeling showed this outcome, but that we did not understand the reasons for the difference, and that public discussion of the proposed rule would likely focus on the capacity factor underlying their emission targets, not the different numbers indicated by their modeling.

I also mentioned that, apart from pipeline adequacy, other factors to consider would be the possible effects of LNG exports and of generators having to obtain and pay for firm delivery service, instead of the interruptible service widely used now.

Next, we discussed the proposal to base the emission targets on a significant increase in renewable generation. I stated that it is difficult to get transmission built for such generation when it is remote from loads, e.g., wind farms. I also noted that there are unresolved questions about the effects of relying on renewables for 20% or more of net generation. In particular, I cited the NERC/CAISO and PJM/GE studies as offering different views on the issue of ensuring adequate ancillary services. Finally, I pointed out that the State renewable targets came to "quirky" results, and that the disparate results might be hard for affected parties to understand.

Then, I noted certain aspects of infrastructure development related to both the redispatch component and the renewables component. I said that both involved significant changes in the resources used to supply load. I noted that this could lead to significant costs for new pipelines and transmission. I also explained that this shift in supply resources would require extensive and time-consuming engineering analysis of, e.g., voltage and reactive power issues. I said that such changes might be costly and difficult to achieve within the timeline of the emission targets.

I then turned to the issue of coal heat rates. I indicated that this did not seem like a major factor overall but that the improvements assumed here seemed beyond the levels suggested in a couple of studies by "NETL." An EPA representative said, however, that the difference between the various numbers was just that some were expressed as a percentage of heat rate and others were a percentage of a facility's overall efficiency. He said that, when the numbers were put into comparable units, the results were not inconsistent. On a separate aspect of coal heat rates, I said that the assumed cost effectiveness of the proposed improvements was hard to reconcile with the fact that owners had not yet made such changes.

Finally, I suggested that the draft should highlight two particular concepts. First, I said that EPA should not only allow, but even encourage, regional collaboration among the states, instead of state-by-state compliance, since such collaboration would likely yield significant benefits in reliability, let alone costs. Second, I said that EPA should propose some form of a "reliability safety valve," perhaps in the context of review and approval of state plans or any subsequent modifications to those plans. I cited to the IRC proposal as one possibility to consider.