

**Testimony of Neil Chatterjee
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Before the Committee on Energy and Commerce
Subcommittee on Energy
United States House of Representatives
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Introduction

Chairman Upton, Ranking Member Rush, and Members of the Subcommittee:

Thank you for the opportunity to appear before you today to discuss the important work we are doing at the Federal Energy Regulatory Commission. I appreciate the Subcommittee's attention to the major energy issues facing our nation and the role that FERC plays in addressing them.

This is an exciting and transformational period for our nation's energy future, and I take very seriously my responsibility to work with my colleagues on ensuring that all Americans have reliable and affordable energy. Today I will focus my remarks on the Commission's efforts on reliability and the Public Utility Regulatory Policies Act of 1978 (PURPA), as well as an overview of my priorities as a Commissioner.

Reliability Standards

As you well know, Congress delegated to FERC the responsibility to approve and enforce mandatory reliability standards for the grid in the Energy Policy Act of 2005 (EPA 2005). This authority is limited to the "bulk-power system," as defined in Section 215 of the Federal Power Act (FPA), and excludes Alaska and Hawaii, as well as local distribution systems.

Under FPA Section 215, FERC cannot directly write or modify reliability standards, but must rely on a FERC-designated Electric Reliability Organization to perform this task. In 2006, FERC certified the North American Electric Reliability Corporation (NERC) as this Electric

Reliability Organization. In addition to approving or remanding a reliability standard proposed by NERC, FERC has the authority to direct NERC to address a specific matter through a new or revised reliability standard, and at times, the Commission has done just that. Once FERC approves a proposed standard, it becomes mandatory and enforceable. An entity that violates an approved standard may be subject to enforcement by either NERC or FERC, as well as a potential monetary penalty.

Thanks to the Commission's leadership and the dedicated efforts of NERC and industry, the reliability standards have matured considerably since they first became mandatory and enforceable in 2007. The reliability standards now form an effective "baseline" for addressing day-to-day grid reliability issues, like tree trimming, relay setting, communications, system planning, and emergency operations. The evolution of these baseline reliability standards has allowed FERC and NERC to focus more of their efforts on emerging threats such as cybersecurity, physical security and the potential grid impact of a geomagnetic disturbance (GMD). I and my fellow Commissioners will continue to work with our partners at NERC to address significant issues as they develop.

Interconnection Rules and Market Mechanisms

FERC also works to ensure reliability through its oversight of jurisdictional wholesale energy, capacity, and ancillary services markets. Evaluating the essential reliability services necessary for the stability of the grid has been at the forefront of the Commission's recent efforts. Ensuring the continued provision of essential reliability services such as voltage control and frequency control is critical to maintaining the integrity of the grid during the transformation of our power supply portfolio.

As a result of this evaluation, FERC has taken several actions to modernize its interconnection requirements to ensure new generators provide certain essential reliability services. For instance, Order No. 827 eliminated the exemption for new wind generators from the requirement to provide reactive power. Similarly, Order No. 828 required newly interconnected small generators to ride through abnormal frequency and voltage events and not disconnect during such events, similar to the requirements already in place for large generators. And, just last month, in Order No. 842, FERC issued an order requiring that all resources newly interconnecting to the grid install and enable primary frequency response capability as a condition of interconnection.

Fuel Security Concerns Arising from Rapid Changes in the Generation Mix

The United States is experiencing rapid, unprecedented changes in its generation resource mix. A number of forces, including historically low natural gas prices and technological innovations, promise tremendous benefits to consumers through lower prices and greater choice. While this transformation may bring positive outcomes for consumers, it's critical that we remain vigilant during this transition to ensure that reliability is not adversely impacted. For example, shifts in the generation mix increasing reliance on interruptible transportation of natural gas may in turn increase fuel security risks in certain circumstances, such as during periods of cold weather that drive heating demand, unless other resources or fuels are available. While some Regional Transmission Organizations (RTOs) and Independent System Operators (ISOs) have implemented market reforms to provide financial incentives to procure firm gas transportation or back-up fuels, utilities should continue to be mindful of the risk of relying too heavily on a particular pipeline or storage facility and should develop plans in case such a facility experiences an outage.

Competitive markets are generally the best approach for encouraging utilities to make reasonable fuel choices. However, even with competitive markets, reliability requires careful planning and analysis to ensure that risks are anticipated and addressed when necessary. To this end, I would highlight the important work that ISO-New England has done to assess the specific fuel supply vulnerabilities in its region. I think ISO-New England's analysis is an excellent example of how RTOs and ISOs should proactively evaluate their specific regional risks. I expect that issues of fuel security will continue to be an area of interest for the Commission, both within our discussion of reliability as well as within our ongoing resilience proceeding.

Physical Security Requirements

In 2014, FERC directed NERC to develop a reliability standard to address physical security threats. Later that year, FERC approved NERC's proposed physical security reliability standard which requires three main elements. Utilities must: (1) identify their critical transmission facilities; (2) pinpoint the relevant threats and vulnerabilities for those facilities; and (3) develop and implement a plan to address those threats and vulnerabilities, including measures designed to deter, detect, delay, assess, communicate, and respond to potential physical threats.

In addition to this mandatory approach, FERC also works collaboratively with utilities on physical security issues. For example, our staff, in collaboration with other federal agencies, provides subject matter experts to conduct in-depth physical security reviews of key energy infrastructure facilities, assessing their vulnerabilities to current threats and emerging exploits.

GMD

The Commission has also taken steps to help mitigate the potentially catastrophic effects of geomagnetic disturbances, or GMDs, which primarily result from coronal mass ejections during

normal cyclical activity of the sun. These events produce solar storms that can hurl charged particles at the earth causing variations in the magnetic field. These variations can result in destructive geomagnetically induced currents (GIC) that flow through the earth's crust, eventually finding their way to the electric power grid. Excessive GIC flow can cause overheating in transformers and other phenomenon such as distorting harmonics or significant reactive power absorption. These occurrences can result in severe impacts through wide-spread outages on the electric power grid.

To address the risks posed by GMD events to the reliable operation of the bulk-power system, the Commission issued Order No. 779 in 2013 requiring NERC to submit proposed reliability standards, in two stages. The first-stage standard, which the Commission approved in 2014, required owners and operators of the bulk-power system to develop and implement operational procedures to mitigate the effects of GMDs. The second stage, approved in 2016, required owners and operators to assess potential GMD impacts on the bulk-power system and, based on those assessments, to develop and implement plans to protect against instability, uncontrolled separation, or cascading failures of the bulk-power system resulting from certain benchmark GMD events. Under this reliability standard, applicable entities must assess the vulnerability of their systems to a benchmark GMD event (i.e., a one-in-100 year event) and develop a corrective action plan if the assessment indicates that the system will not meet certain performance requirements following such an event.

In addition to the mandatory reliability standards, FERC staff advises jurisdictional infrastructure owners and operators on securing their systems from naturally occurring or emerging threats including GMDs. The Commission's Office of Energy Infrastructure Security (OEIS) works with other federal, state, local, and foreign government organizations while also participating in the

Space Weather Operations, Research, and Mitigation subcommittee established by Executive Order 13744. Additionally, FERC will be working with DOE to develop a pilot program to evaluate mitigation devices, as required by Executive Order 13744, regarding coordination among agencies to prepare the nation for space weather events.

EMP

An electromagnetic pulse (EMP) is a short burst of electromagnetic energy that can be of either natural or manmade origin. EMP is often associated with the electrical phenomenon that accompanies the high altitude detonation of a nuclear device but also can be produced by other electrical phenomena. Intentional Electromagnetic Interference (IEMI) devices are man-made and built to produce similar effects. These high energy pulses from EMP or IEMI can disrupt or damage electronic devices – including control systems and large transformers – and can cause power outages and adversely impact pipeline and hydroelectric equipment.

Although there are no current or planned NERC reliability standards or existing regulations to address EMP or IEMI, FERC staff has been working with industry, manufacturers, the states, other government agencies, and international partners to help recognize and quantify the threat and vulnerabilities to jurisdictional energy infrastructure and to identify effective mitigation and counter measures. As part of this effort, staff collaborates with agencies and organizations that either control information regarding vulnerabilities to EMP or have taken action to address them. Currently, Commission staff also participates in EMP programs directed by the Department of Homeland Security and the Department of Energy, including those required under the Fixing America's Surface Transportation (FAST) Act and those recommended in a recent Government Accountability Office report to Congress on EMP.

PURPA

In 1978, Congress enacted PURPA to foster the development of alternative energy resources and conserve what were then thought of as scarce resources, such as natural gas. Since that time, PURPA has played an important role in fostering the development of renewable technologies and the electric industry's transition to competitive markets. However, it's worth noting that the energy landscape that existed when PURPA was conceived was fundamentally different from that of today. That is to say, solar and wind power were fledgling technologies, there was no open access to wholesale electricity markets, and natural gas was in scarce supply. None of those things are true today. Moreover, many states have encouraged the development of renewable generation through renewable portfolio standards, and Congress adopted the Production Tax Credit to further spur renewable development. Congress acknowledged the impact of many of these changes by amending PURPA as part of EPAct 2005.

Now, many in the industry are asking whether PURPA needs changes to align with the realities of our modern energy landscape. For example, the president of the National Association of Regulatory Utility Commissioners, which represents the state utility regulators responsible for implementing much of PURPA, sent a letter to FERC this past December on this issue. In it, he urged the Commission to adopt a number of reforms to balance PURPA's goals of providing rates that are just and reasonable for electric consumers while also protecting PURPA qualify facilities (QFs) from discrimination.

While significant changes to the implementation of PURPA will require Congressional action, I believe the Commission should continue to review its regulations to determine whether changes could be beneficial. Specifically, I support reviewing our existing regulations to ensure that they

fulfill PURPA's mandate to encourage the development of renewable and cogeneration resources while protecting customers and preserving competition.

2016 Technical Conference and Subsequent Comments

In June 2016, the Commission held a technical conference to solicit the views of diverse stakeholders on PURPA implementation. Subsequent to the technical conference, the Commission issued a request for comments on two issues: (1) the "one-mile rule" used to determine the eligibility of an entity seeking certification as a small power production qualifying facility, and (2), minimum standards for PURPA purchase contracts.

Unless the Commission undertakes additional steps to expand the record, any changes to our current implementation of PURPA would likely build on the record that the Commission developed at the June 2016 technical conference and through the comments submitted thereafter. I plan to continue working with my colleagues to determine the best path forward on this issue.

Other Priorities

I also would like to note another matter that I view as a priority for the Commission. FERC is currently undertaking a review of the 1999 Certificate Policy Statement, which guides our consideration of new natural gas pipeline certificates. I think it's essential that the Commission get this issue right; we must balance consumers' needs for abundant, affordable energy while ensuring the rights of landowners are respected. The shale gas revolution has led to a corresponding increase in pipeline construction. As the Commission considers how we evaluate applications to construct pipelines, I am committed to ensuring that we have an efficient, transparent, and predictable process that encourages landowner participation. The

Administration MOU that FERC recently signed will help meet that goal, and I believe this policy statement review is the next step in the process.

Finally, I would also like to emphasize my continued commitment to securing our grid against cyber-attacks. While the Administration has taken significant steps to address cyber threats to our critical infrastructure, I believe that these threats will continue to grow. Sophisticated hacking tools are becoming more widely available, and cyber threats are constantly evolving making such attacks more versatile. To combat these evolving threats, both government and industry must remain vigilant and work collaboratively to address these complex issues. At the Commission, I strongly support our two-pronged approach to addressing cyber threats, which consists of a combination of mandatory reliability standards as well as voluntary best practices and information sharing. Even still, more work remains on this issue, and I look forward to continued collaboration with my colleagues at the Commission and our partners across the government to ensure we're taking the proper steps to defend against future cyber-attacks.

Conclusion

Again, I appreciate the opportunity to come before you today. It's critical that we at the Commission work together with other agencies as well as Congress to address the various issues currently facing America's energy future, and I look forward to continuing this important dialogue.

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