Robert F. Powelson
Commissioner
Federal Energy Regulatory Commission

Chairman Murkowski, Ranking Member Cantwell, and members of the Committee, thank you for holding today's hearing and for the opportunity to appear before you today. My name is Robert Powelson and I am honored to serve as a Commissioner of the Federal Energy Regulatory Commission (FERC or Commission).

Prior to joining the Commission in August of 2017, I spent nine years as a member of the Pennsylvania Public Utility Commission. My experience as a former state utility regulator and my interaction with colleagues at state commissions across the country has provided a unique perspective on FERC's important mission. From day one, I have approached each decision with a thorough understanding of how our determinations impact families and businesses nationwide. I have made it a priority to engage with stakeholders from all geographic regions that represent a diverse set of interests to ensure that I hear a variety of viewpoints and my decisions are fully informed.

Today, my testimony will focus on two key areas. First, I will discuss the evolving electric grid, and in particular, how the nation's generation resource mix is changing in light of technological innovation, evolving consumer preferences, and state policy initiatives. Second, I will discuss the Commission's cybersecurity initiatives, and specifically highlight how interagency coordination has helped further our goals with respect to pipeline security.

An Evolving Electric Grid

Our nation's electric grid has traditionally been a one-directional, centralized system designed to provide reliable service at the lowest price. Today, shifting consumer preferences and technological innovation are forcing our grid to adapt to new realities.

A primary driver behind the evolution of the grid is the changing generation mix. Due in large part to advancements in production technologies that have unlocked vast shale reserves, the United States now has access to large deposits of affordable domestic natural gas. Because of this, many parts of the country are experiencing one of the greatest generation fuel shifts in our history. Simultaneously, consumer demand for clean energy has spurred increased investment in, and deployment of, renewable energy resources, sparking energy policy discussions in states across the country.

Innovation has also been a key driver behind the changing electric grid with the advent of large scale battery storage, microgrids, and smart cities. These resources have the potential to turn the one-directional, centralized electric grid into a multi-directional,

de-centralized grid that utilizes technological innovation to produce consumer benefits and increase the reliability and resilience of the bulk power system.

Recognizing of these trends, the Commission has been proactive in undertaking efforts to foster continued innovation. In early 2018, the Commission issued a final rule that directed grid operators to remove barriers to the participation of electric storage resources in the wholesale electricity markets. Additionally, in April 2018, FERC held a technical conference to discuss ways to facilitate the participation of distributed energy resources in wholesale electricity markets. The Commission is keenly aware that the electric grid is evolving and is taking steps to ensure that market design also evolves to meet changing needs and demands.

States have also played a major role in the evolution of the electric grid. Some states have proactively influenced the resource mix by creating goals or mandates for the production or procurement of energy from certain types of resources. Other states have reacted to changes in the resource mix by establishing mechanisms to ensure that certain generation resources remain operational. These decisions by states, whether proactive or reactive, have implications for FERC-jurisdictional wholesale markets.

Until the mid-1990s, the nation's electric utilities were vertically integrated. Under this model, state regulators used centralized planning to select the type of generation resources in their state and ensure that the amount of generation was sufficient to meet forecasted energy demand. In an effort to reduce costs and consumers' exposure to costly resource decisions, many state legislatures across the country voluntarily chose to restructure their electric utilities. These states moved away from centralized planning and instead began to rely on regional grid operators to ensure resource adequacy, largely through competitive markets overseen by FERC. Through competition, these markets have done exactly what they were designed to do: procure a reliable and affordable generation mix in a fuel-neutral manner. Consumers in many states across the country have benefitted from competitive electricity markets through lower prices, greater efficiencies, and increased innovation.

In recent years, another trend has influenced the generation mix. The abundance of low-cost domestic natural gas, combined with a reduced demand for electricity, has resulted in declining or flat wholesale energy prices. These low prices have been a factor in the retirement of certain resources, traditionally referred to as "baseload" resources, which cannot compete with cheaper gas-fired and renewable generation. In response, some states in restructured markets have enacted policies to assist or procure certain resources by providing revenue streams outside of the market.

These actions by states, regardless of their motivation, have implications for wholesale energy and capacity markets and determining how to respond to them is complicated. While FERC respects state authority, it is also obligated to ensure that rates

in wholesale electricity markets are just and reasonable. Competitive markets have led to more efficient generation resources, environmental benefits, and lower rates for consumers. As such, a primary focus for FERC is ensuring that wholesale electricity markets continue to provide these benefits. At the same time, the Commission must be willing to consider changes to market mechanisms that effectively balance the often competing interests of states, market participants, and consumers.

Today, numerous proceedings to address the impacts of state policy initiatives in wholesale electricity markets are pending before the Commission and federal courts. In mid-2017, the Commission held a two day technical conference to explore the impacts of state policies on FERC-jurisdictional capacity markets. This proceeding provides the procedural vehicle through which the Commission can provide regulatory certainty and ensure that it effectively responds to the changing marketplace. In addition, the Second and Seventh Circuits of the U.S. Court of Appeals have cases pending regarding the potential preemption of state Zero Emissions Credit (ZEC) programs. Recently, the Commission worked with the Department of Justice to file a brief before the Seventh Circuit expressing its view on preemption with respect to the ZEC program in Illinois.

Until now, intervention in wholesale electric markets has largely been from the states. However, unprecedented steps by the federal government – through the President's recent directive to the Department of Energy to subsidize certain resources – threaten to collapse the wholesale competitive markets that have long been a cornerstone of FERC policy. This intervention could potentially "blow up" the markets and result in significant rate increases without any corresponding reliability, resilience, or cybersecurity benefits. Indeed, PJM Interconnection, LLC, the regional transmission organization that ensures the reliability of the high-voltage electric power system serving 65 million people in 13 states, has stated that "[t]here is no need for such drastic action" because "there is no immediate threat to system reliability."[1]

Cybersecurity

Pursuant to the Energy Policy Act of 2005 (EPAct 2005), the Commission is responsible for overseeing mandatory, enforceable reliability standards for the bulk power system. The Commission takes this responsibility seriously. The reliability standards are developed by the North American Electric Reliability Corporation (NERC) and apply to the users, owners, and operators of the bulk power system. Critical Infrastructure Protection (CIP) standards specify mandatory requirements for utilities regarding cybersecurity, including: guidelines for how to identify and categorize cyber assets and systems; processes and procedures for maintaining these systems; and

[1] *See* "PJM Statement on Potential Department of Energy Market Intervention," dated June 1, 2018, available at: http://pjm.com/-/media/about-pjm/newsroom/2018-releases/20180601-pjm-statement-on-potential-doe-market-intervention.ashx.

safeguards to ensure that only appropriate personnel have access to these systems, among others. Both reliability and cybersecurity standards are approved by the Commission.

Cybersecurity threats are constantly evolving. The Commission must remain vigilant in refining existing standards and developing new standards to address emerging threats. Recently, through its Office of Electric Reliability (OER), FERC initiated rulemaking proceedings to propose: (1) approving new mandatory reliability standards to bolster supply chain risk management protections for the grid; and (2) the development of a revised CIP standard to improve mandatory reporting of cybersecurity incidents.

In addition to developing reliability standards, the Commission conducts outreach to other federal agencies, state utility commissions, and the private sector on cybersecurity issues. Through its Office of Energy Infrastructure Security (OEIS), the Commission works with outside entities to help identify threats to energy infrastructure, share information, and promote voluntary mitigation practices that complement the mandatory security standards. The Commission assists the following agencies in maintaining an awareness of emerging threats and the capabilities of adversaries who may initiate a cyber or physical attack on the nation's energy infrastructure: Department of Energy (DOE), Department of Homeland Security (DHS), Federal Bureau of Investigation (FBI), Nuclear Regulatory Commission (NRC), Department of Defense (DOD), National Security Agency (NSA), U.S. Coast Guard (USCG), and the Transportation Safety Administration (TSA). Engaging with the community on issues of cyber and physical security outside of a traditional FERC proceeding facilitates the useful exchange information and sharing of best practices.

The Commission also participates in DHS's National Cybersecurity Communications and Integration Center, a round-the-clock center for cyber situational awareness, incident response, and management, which serves as a national nexus of cyber and communication integration for the federal government, intelligence community, and law enforcement. At the state and regional level, OEIS staff provides targeted support and involvement with State Fusion Centers to assist with incidents and mitigation, as well as adoption of best practices using new approaches and technology.

The Commission, through its OEIS staff, also works with Information Sharing Analysis Centers (ISACs),[2] including NERC's E-ISAC (electric and hydroelectric), ONG-ISAC (oil and natural gas and LNG terminals), and DNG-ISAC (downstream natural gas facilities). Together with NERC's E-ISAC, the Commission has worked to initiate, develop, and issue security alerts to industry in near real-time to address cyber and physical security threats. Thus, the Commission makes interagency coordination a

[2] An ISAC is a nonprofit organization that provides a central resource for gathering information on cyber threats to critical infrastructure and providing two-way sharing of information between the private and public sector.

priority and participates extensively in intelligence-related collaboration efforts on cyber issues.

The Commission also plays a role in pipeline security. Pursuant to section 7 of the Natural Gas Act, the Commission reviews applications for construction and operation of interstate natural gas pipelines. Under this review, the Commission ensures that applicants certify that they will comply with Department of Transportation (DOT) safety standards. FERC itself has no jurisdiction over pipeline safety or security, but actively works to support other agencies that do have pipeline safety and security responsibilities.

For example, the Commission has been actively engaged with TSA as they update their Pipeline Security Guidelines. TSA developed these guidelines to provide a voluntary security structure for pipeline owners and operators to use in developing their security plans and programs. The guidelines also serve as a standard for TSA's pipeline security assessments. TSA is currently working with stakeholders to update these guidelines and the Commission has provided technical review and assistance throughout this process.

The frequency of cyber and physical threats to the nation's energy infrastructure is only increasing. The Commission is aware of this and has made cyber and physical security a top priority. Through OER and OEIS, the Commission will continue to update its reliability standards and coordinate with its interagency partners to address cyber and physical security risks to jurisdictional energy infrastructure. As evidenced by the collaboration described above, the Commission is always open to working with other federal agencies to address the continually evolving cybersecurity threats.

Chairman Murkowski, Ranking Member Cantwell, and members of the Committee, thank you again for the opportunity to testify today. I look forward to answering your questions.