Summary of Testimony of Joseph Dominguez
Exelon Corporation

May 19, 2015

The electric utility industry is in the midst of a transformation and it is critical that our public policies keep up with the changes in the industry. Maintaining a diverse supply of reliable, affordable, and clean generation is critically important to American families and businesses. To achieve these objectives, policy makers should focus equal attention on future investments and preserving the existing "steel in the ground" by ensuring that policies value these attributes.

In the last three years, the nation has lost five nuclear units totaling over 4,000 megawatts of capacity. Several additional units have announced plans to prematurely retire by 2019 and Wall Street analysts and academics have published reports concluding that dozens of additional units, totaling as much as 25% of the fleet, are in jeopardy.

Nuclear power plants offer a host of benefits: they are the most reliable source of electric generation in the country, operating over 90 percent of the time; they provide emissions-free power, accounting for more than 60 percent of the nation's clean energy in 2014; and they provide an important hedge against fuel price volatility because reactors can operate for up to 24 consecutive months on one fuel load.

Organized markets should be reformed to appropriately incent efficient investments in generation infrastructure and fuel procurement to ensure reliability during peak periods. Fuel firmness, fuel diversity and winter firming (through infrastructure investments) are integral to reliable operations, and the markets should support resources that provide firm, reliable service in all operating conditions. PJM is already moving ahead with a Capacity Performance proposal that addresses many of these issues.

PJM's proposed Capacity Performance product will bring significant benefits to customers by penalizing generators that do not perform when customers need them most. This will improve reliability by giving suppliers the market-based incentives needed to invest in winter-hardening of critical equipment, fuel inventories, and dual-fuel capabilities.

In addition to operating clean, reliable baseload generation, Exelon is investing in the energy system of the future. We are at the beginning stages of an industry-wide transformation, which is being driven by a number of factors, including technology and innovation, intelligent electric network equipment and systems, consumer interest in renewable energy and distributed generation options, and large supplies of relatively low-cost natural gas.

At Exelon, we see the energy system of the future as one in which the current grid and central power generation systems coexist with distributed generation, renewables and energy efficiency, with natural gas playing a growing role in energy production. While we believe in the value of distributed generation systems and continue to invest in them, we recognize that we will also need to find a balanced approach where both can exist without unduly burdening traditional customers.

Testimony of Joseph Dominguez
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Exelon Corporation

Committee on Energy and Commerce
Subcommittee on Energy and Power
United States House of Representatives

May 19, 2015

Mr. Chairman, and members of the subcommittee, thank you for the opportunity to be here today. I'd also like to thank the subcommittee for taking up this important topic.

The electric utility industry is in the midst of a transformation and it is critical that our public policies keep up with the changes in the industry. Maintaining a diverse supply of reliable, affordable, and clean generation is critically important to American families and businesses. To achieve these objectives, policy makers should focus equal attention on future investments as well as preserving the existing "steel in the ground" by ensuring that policies value these attributes.

Today's hearing is particularly timely given the challenges to base load generation like nuclear power. In the last three years, the nation has lost five nuclear units totaling over 4,000 megawatts of capacity. Several additional units have announced plans to prematurely retire by 2019 and Wall Street analysts and academics have published reports concluding that dozens of additional units, totaling as much as 25% of the fleet, are in jeopardy.

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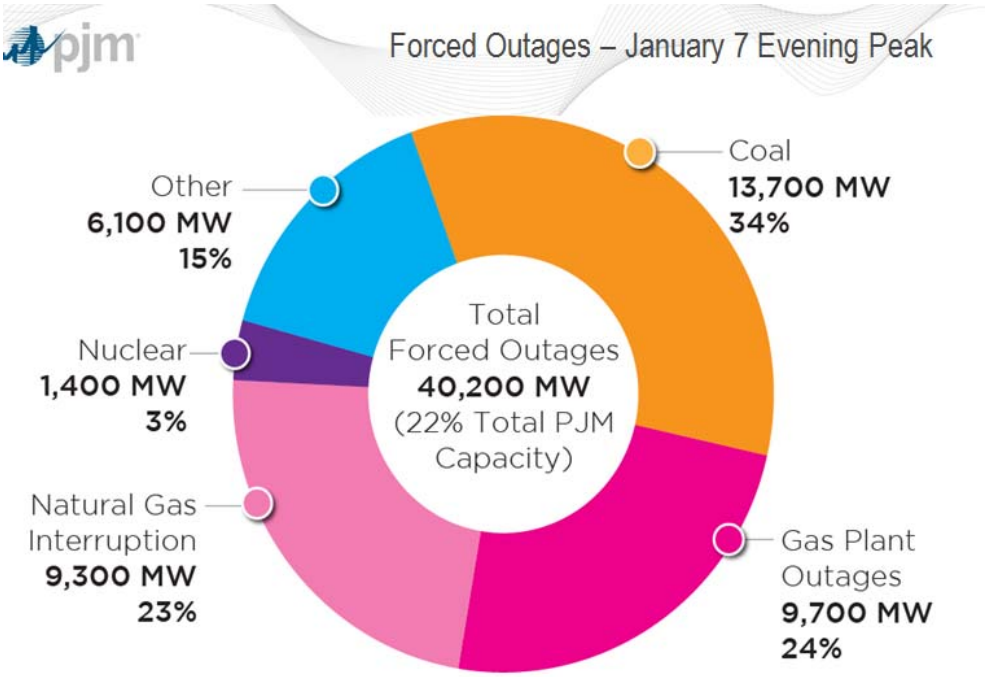
power, accounting for more than 60 percent of the nation's clean energy in 2014; and they provide an important hedge against fuel price volatility because reactors can operate for up to 24 consecutive months on one fuel load. While the reliability of nuclear plants is outstanding throughout the year, plant performance is even more impressive during the hottest summer months and the coldest winter months, where their robust design and firm fuel source allows these units to perform unaffected by weather.

Last year's polar vortex offers a prime illustration of nuclear power's importance. On January 7, 2014, PJM experienced an all-time high winter peak of 141,312 megawatts. During the peak load conditions in PJM on that day, natural gas units had a 30 percent forced outage rate; oil units had a 38 percent forced outage rate; coal units had a 19 percent forced outage rate; and wind resources had a 23 percent forced outage rate. In contrast, nuclear resources had a forced outage rate of three percent.

During the Polar Vortex event, physical generation achieved highly variable levels of availability. Nuclear units have consistent availability and secure fuel supply.



Sources: Mike Kormos, EVP Operations PJM, FERC Technical Conference (4/1/2014), PJM Planning Committee Winter Operations Report, 3/6/2014

While the system "weathered the storm" during the less-extreme cold of the past winter, that is because we were lucky, not because the performance of the fleet was materially better. The point is that organized markets should be reformed to appropriately incent efficient investments in generation infrastructure and fuel procurement to ensure reliability during peak periods. Fuel firmness, fuel diversity and winter firming (through infrastructure investments) are integral to reliable operations, and the markets should support resources that provide firm, reliable service in all operating conditions.

Nuclear resources are not being compensated for the unique value they provide to the grid. Currently, firmness of fuel supply and performance reliability is not factored into capacity market prices in most regions of the country. Thus, a gas resource that has gas delivered on a "just in time" basis and that may be subject to gas transportation interruption is nonetheless paid the same per megawatt price in the capacity markets as an oil resource that has a few day's fuel supply on site, a coal resource that has 30 day's fuel supply, or a nuclear resource that has 18-24 month's fuel supply. But many firm-fueled nuclear resources are not recovering their costs in energy and capacity market prices, which are impacted by the production tax credit and state renewable generation mandates, out of market contracts for conventional resources, inadequate transmission in some regions, low gas prices, and inefficiencies in the energy markets.

PJM Capacity Performance Proposal

PJM, the region in which most of Exelon's nuclear generation is located, is already moving ahead with a Capacity Performance proposal that addresses the issues delineated in the committee draft.

PJM's proposal to introduce a Capacity Performance product will bring significant benefits to customers by penalizing generators that do not perform when customers need them most. This will improve reliability by giving suppliers the market-based incentives needed to invest in winter-hardening of critical equipment, fuel inventories, and dual-fuel capabilities. This is consistent with the storm-hardening benefits that resulted from transmission and distribution system upgrades in the wake of Hurricane Sandy. As the events of January 7, 2014, demonstrated, the current RPM procurement process is not designed to ensure sufficient capacity to meet peak loads during extreme winter weather, with the result that the risk of load shed is in fact higher than the once-in-ten-years planning parameter that RPM is intended to satisfy.

Load shedding imposes enormous costs on customers – economic costs for factories and businesses that must shut down, but also public health and safety impacts, particularly in dangerously cold weather. While estimates of the economic cost to customers of loss of load (known as the "Value of Lost Load" or "VOLL") vary considerably, they are uniformly very high, typically ranging from $9,000 per MWh to as much as $45,000 per MWh. If PJM were forced to shed 20 gigawatts of load, this range of VOLL implies an economic cost to customers of between $180 and $900 million for a single hour. When expanded across a multi-hour or even multi-day cold weather event, consumer costs could amount to many billions of dollars.

PJM's proposal will also bring other important benefits to customers. *First*, PJM's proposal will mandate more secure fuel supply arrangements and create incentives for generators to make investments and adopt operating practices that increase generator availability. By doing so, thereby helping to ensure the continued viability of such generators that already exist, PJM's

proposal will effectively add low-cost baseload and intermediate capacity to the energy market by making it more likely that increased aggregate low-cost capacity will be available for dispatch at any particular point in time. This additional low-cost generation will reduce energy production costs by displacing higher-cost resources that would have been dispatched if the lower-cost resources were unavailable. For example, if efforts to comply with PJM's capacity performance program result in increasing the year-round average availability of coal generation by 2%, the program will effectively add about 1 GW of baseload capacity to the market – the equivalent of adding a large new supercritical coal unit. The value of this effect is most pronounced during winter conditions, when gas prices are typically high and the production cost savings from replacing gas with coal or nuclear generation are very large.

Second, PJM's proposal will reduce the volatility of energy prices during the winter and summer peaks by ensuring that sufficient generating capacity can be called upon to minimize the occurrence of scarcity pricing.

Third, and relatedly, by ensuring that winter peak load can be met largely with non-gas or dual-fuel resources or gas resources with a firm gas supply, PJM's proposal will greatly reduce the amount of out-of-market payments that PJM must make to gas facilities (and ultimately charge to customers) to induce the gas facilities to operate when gas supply conditions are tight. Indeed, PJM customers were forced to pay nearly $600 million in out-of market uplift to compensate gas facilities that lacked robust transportation arrangements for the cost of entering expensive and inflexible short-term gas supply contracts during the extreme weather in January 2014.

Fourth, the PJM proposal will benefit consumers by requiring resources to offer operating parameters consistent with their actual underlying physical capabilities. Currently, PJM allows offers that deviate from physical capabilities due to financial reasons – for example, a unit may offer on a block load basis because it does not want to incur the additional operational and maintenance costs that result from ramping up and down. PJM's proposal, however, will require resources to offer based on the technical capabilities of the unit. By doing so, proposal will ensure a more flexible aggregate dispatch curve of energy resources, which will enhance PJM's ability to reliably operate the system under volatile weather or outage conditions and generally produce a more efficient economic dispatch. This will reduce energy production costs.

Finally, PJM's proposal creates improved long-term price signals with respect to gas infrastructure and should lead to more investment in firm gas delivery capacity (if generators enter into firm gas delivery contracts) or reduced gas usage during winter peak conditions (if generators add dual-fuel backup capability). Either way, PJM's proposal will reduce the likelihood of extreme winter price stress on gas delivery systems and related spikes in the natural gas market within its footprint, which will reduce energy production costs while also benefiting heating and industrial consumers of natural gas.

The Energy System of the Future

In addition to operating clean, reliable baseload generation, Exelon is investing in the energy system of the future. We are at the beginning stages of an industry-wide transformation, which is being driven by a number of factors, including technology and innovation, intelligent electric network equipment and systems, consumer interest in renewable energy and distributed

generation options, and large supplies of relatively low-cost natural gas. It is also being influenced by environmental concerns, such as the continued need for low-carbon resources to meet the nation's climate change goals and consideration of water resource issues.

At Exelon, we see the energy system of the future over the next decade as one in which the current grid and central power generation systems coexist with distributed generation, renewables and energy efficiency, with natural gas playing a growing role in energy production. With operations across the full energy value chain, Exelon is uniquely positioned to identify, understand and adjust its investment portfolio to capture value as new technologies and opportunities emerge.

At its beginning, the modern electric system utilized large central power plants and a transmission and distribution (T&D) system that was designed to deliver power from power plants to customers. Technical, system and regulatory decisions were focused primarily on maintaining a reliable, diverse and reasonably priced supply of electric power. Over the past twenty years, the system has started to change as a result of technological innovation, industry restructuring and evolving consumer interests.

Today's grid still largely reflects a model where primarily conventional generation resources (coal, nuclear, oil, gas, hydro) produce power that is delivered to end users via the T&D system. This design provides a reliable, one-way flow of power from central plants to end consumers. However, with advances in technology, new distributed generation resources and increased customer interest in energy management, the grid is evolving into a more complex, integrated

structure. Under this new configuration, some customers are becoming suppliers through demand response programs and the deployment of distributed generation. Emerging technologies, such as battery storage, fuel cells and use of electric and natural gas power for alternative transportation will also increase, affecting available supply.

To best manage increases in energy distributed generation sources, many of which provide intermittent generation into the system, as well as increases in stored energy, we will need to update supply and demand models and related policies to ensure that overall system reliability is maintained. For example, when customers deploy distributed generation they spend less on electricity from the grid, but still want grid accessibility as a back-up energy source. In these cases, energy providers must maintain the transmission and distribution infrastructure, but do not receive the same level of revenue to upkeep the grid. This could force others without access to distributed generation systems to pay more.

While we believe in the value of distributed generation systems and continue to invest in them, we recognize that we will also need to find a balanced approach where both can exist without unduly burdening traditional customers. We must also continuously assess the benefits of intelligent networks, including the millions of smart meters deployed by Exelon utilities, to optimize production and distribution. By evaluating new technology and carefully balancing competing demands, we can achieve greater reliability and efficiency, enable consumers to best manage their energy use and continue to improve the overall energy system for generations to come.

The Committee Draft

The committee draft on Energy Reliability and Security addresses many aspects of the challenges our generation, transmission, and distribution system is facing today.

Section 1201 includes language from *t*he Grid Reliability Act authored by Reps. Olson, Green, and Doyle to prevent a conflict in which a utility is ordered by the Department of Energy to run a plant on an emergency basis under Section 202(c) of the Federal Power Act to ensure grid reliability while the operation of the plant would violate environmental statutes. Exelon has long supported resolving this conflict to ensure that reliability is maintained during an emergency situation.

Also important to maintaining reliability are Sections 1207 and 1208.

Section 1207 of the discussion draft amends Section 111(d) of the Public Utility Regulatory Policies Act (PURPA) to include resiliency related technologies like Advanced Metering Infrastructure (AMI), distributed generation, microgrids and energy storage. It also requires states to consider allowing utilities to recover the cost of procuring and deploying these technologies.

Increasingly, customers are demanding a diversity of choice in energy technologies. Some states, like New York and others, are pursuing policies and market designs to incorporate more distributed energy resources and microgrid technologies. In 1978, PURPA was created against the backdrop of the 1970's oil embargo and intended to promote energy independence by

supporting renewables, conservation and energy efficiency projects. The energy landscape today could not be more different. Two-thirds of customers nationally live in regions governed by independent regional transmission organizations, creating competition and choice for customers. Renewable energy, including hydroelectricity, now accounts for 13% of the country's electric output. Customers are demanding new technologies and the competitive marketplace is responding.

Section 1208 of the committee draft directs the Federal Energy Regulatory Commission to require regional transmission organizations and independent system operators to ensure the procurement and availability of sufficient future electric energy resources.

The draft requires the consideration of criteria that include a diverse and flexible generation portfolio, long-term reliability and stable pricing, price adequacy and certainty, and enhanced operational performance assurances during peak-demand periods. The section also promotes the need for reliability attributes that include the ability to generate electricity on a continuous basis for an extended period of time.

While it is essential that action taken under Section 1208 does not undercut the underlying purpose for which these competitive markets were established, it is also important to ensure that markets focus on providing a reliable supply of affordable and clean generation.

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