

**Nuclear Energy Institute**  
**Testimony for the Record**  
**Joint Senate Environment and Energy and**  
**Assembly Telecommunications and Utilities Committees**  
**State of New Jersey**  
December 20, 2017

I would like to thank Chairman Smith and the Senate Environment and Energy Committee and Chairman DeAngelo and the Assembly Telecommunications and Utilities Committee for giving me the opportunity to speak today. I am Maria Korsnick, President and CEO of the Nuclear Energy Institute. I have spent my entire career in the nuclear industry operating and managing these plants. I was a senior reactor operator, site vice president, chief nuclear officer of Constellation Energy Nuclear Group and, before I joined NEI in 2015, I was senior vice president of Exelon's northeast operations, responsible for the Nine Mile Point and Ginna plants in upstate New York and the Calvert Cliffs plant in Maryland. I am proud to represent this industry and excited about the role nuclear power can play in New Jersey and across the nation.

I have lived in the communities that depend upon these plants. I worked for 17 years at the Calvert Cliffs nuclear plant in Southern Maryland across the Delmarva Peninsula from Salem and Hope Creek. I know these plants are vital contributors to the surrounding communities and the state's infrastructure. Senate Bill 3560 gives this legislature has an opportunity to preserve these valuable assets not just for the benefit of every citizen of New Jersey.

**Economic Impacts**

Salem and Hope Creek are economic engines for their communities and the state. These plants provide baseload power to the state. They run around the clock, every day, typically even under extreme weather conditions to provide reliable electricity to the state's homes and businesses. Their continued operation will keep electricity prices low. The Salem and Hope Creek Nuclear Generating Stations employ 1,400 people near Lower Alloways Creek. The plants generate over \$800 million each year in economic value to the state, concentrated in these communities. In total, the plans support between 5,800 and 6,100 direct and secondary jobs that are important to the New Jersey economy.

Losing a nuclear plant can have devastating impacts to local communities and the state. When the Kewaunee Plant closed in 2013, the host town of Carlton lost 70 percent of its operating budget. Following the closure of the Crystal River plant in Florida, Citrus County laid off 100 workers and raised property taxes by over 30 percent. In the face of the potential closure of a plant in Michigan, Covert Township was no longer sure if it could afford a new fire truck.

If these plants close, the downstream consequences of premature plant closures are dire and irreversible. The electricity produced by these plants will need to be replaced and most of that generation will be produced outside of the state. New Jersey would have to import even more electricity, increasing reliance on out-of-state generators and sending New Jersey jobs to neighboring states. Even if new natural gas plants were built in New Jersey to replace the state's nuclear generation, hundreds of jobs will be lost in the process. Replacing the nuclear plants with natural gas plants would likely require fewer than 200 employees, compared to the 1,400 number of workers at Salem and Hope Creek.

When nuclear plants close, electricity prices rise. This is a consequence of the way electricity prices are set in competitive wholesale markets such as the PJM market that covers New Jersey. After ranking all of the plants from lowest to highest cost to operate, the market price is set by the most expensive plant needed to meet demand. If nuclear plants close, the replacement power will come from plants that were previously too expensive to be dispatched by PJM. Two separate economic analyses have each estimated that New Jersey customers will pay an additional \$400 million each year in higher power prices if Salem and Hope Creek retire. These estimates are consistent with what we have seen in other parts of the country. California consumers in the state paid \$350 million more for their electricity after the San Onofre Nuclear Generating Station shut down. Estimates for losing nuclear plants in Illinois, New York, and Pennsylvania show costs increasing by hundreds of millions of dollars annually for consumers in those states.

### **Environmental Impacts**

Nuclear energy provides almost 60 percent of the carbon-free electricity in the U.S. When nuclear plants close, their production is replaced by generators capable of running at all hours of the day and these are typically fossil fuel plants. When Vermont Yankee closed in 2014, all of its electricity was replaced by natural gas and as a result New England's carbon emissions increased for the first time in over a decade. New Jersey's nuclear plants provide 95 percent of the state's non-emitting electricity. They do not emit air pollutants such as sulfur dioxide and nitrogen oxides which lead to acid rain, smog, and asthma.

Nuclear power's ability to provide large amounts of emission-free generation around the clock has allowed the government of Ontario, Canada, to provide its citizens with substantial clean air, and in turn, health benefits. Ontario significantly increased its nuclear generation between 2004 and 2014, reducing GHG emissions and smog days as well as hospitalizations and premature deaths attributed to air pollution. A strong nuclear fleet means the United States

does not have to choose between the health of its electric grid and the health of its most vulnerable citizens.

### **Reliability and Resiliency Impacts**

Nuclear power plants are our nation's most *reliable and resilient* source of electricity. Like other sources of baseload power, nuclear power plants traditionally have low forced and maintenance outage hours. This characteristic helps ensure that nuclear baseload electricity generation is more resilient to disruptions and thus more reliably available. America's first Secretary of the Department of Homeland Security wrote earlier this year, "Only a grid built on diverse and stable sources of energy can withstand evolving threats and keep the lights on throughout America. The goal of grid resilience cannot be met without nuclear power."

For example, while the frigid temperatures produced by the 2013–2014 Polar Vortex created very high electricity demand and impacted the production of electricity from all U.S. generation sources, nuclear generators performed better than all other forms of generation—operating with an average capacity factor of 95 percent. In addition, of the 34 nuclear facilities from South Carolina to Vermont in Superstorm Sandy's path in 2012, 24 continued to operate safely and generate electricity throughout the event. In sum, U.S. nuclear power plants are regularly top performers on the grid during extreme weather events or man-made disasters.

Nuclear plants are hardened facilities that are protected from physical and cyber threats. Nuclear reactors can operate for 18-24 months between refueling outages and always have fuel on site. This means that nuclear power plants are resilient to the risk of fuel supply shortages – enhancing their reliability. Further, nuclear plants are not exposed to short-term fuel cost fluctuations, which directly impact electricity prices.

More broadly, maintaining nuclear as a major contributor to the nation's electric generation capacity enhances fuel diversity. This provides important economic benefits and protects the grid from becoming too dependent on any one fuel source. A diverse portfolio of fuels and technologies serves as a hedge against price volatility and supply disruptions, and is critical to any resiliency program. The North American Electric Reliability Corporation, America's reliability watchdog organization issued its 2017 Long-Term Reliability Assessment this week with the following findings, "Reliable operation of the BPS (Bulk Power System) requires dependable capacity with fuel assurance to address consumer needs, impacts of extreme weather conditions, and sudden disturbances on the system" and policymakers should "consider the reliability and resilience attributes provided by coal and nuclear generation to ensure that the generation resource mix continues evolving in a manner that maintains a

reliable and resilient BPS.” Numerous reports and analyses, as well as common sense, demonstrate that fuel diversity within a region or market is important for the ability of the electric grid to withstand and recover from stresses caused by weather or man-made disruptions.

The investments that we make in our plants are with an eye towards the long-term operation of these units. These plants are well-maintained which has enabled almost all of the U.S. nuclear fleet to receive a license renewal that allows them to run for up to 60 years of service. Some of our plants are in the process of seeking a second license renewal that would allow for 80 years of life. America’s nuclear plants are part of the nation’s long-term infrastructure that supports economic growth.

### **Policy Response**

The economic challenges facing nuclear plants say more about the flaws in the markets in which they operate than it does about the performance of the plants. These market challenges are being felt beyond New Jersey. Market prices that only reflect short-term operational costs do not provide a way for plant owners to realize the broader benefits they provide to our electricity system. Unless the markets are reformed – or policies are enacted by governments – to value fuel diversity, resilience or environmental protection, the market will not provide these attributes.

Over the last four years, five plants have closed before the end of their useful life. NEI has previously warned of the possibility of fifteen to twenty units that could be at risk of early closure. In the face of such a burgeoning epidemic, it has been state governments that have provided leadership. They recognized the role nuclear plants play in their states and the urgent need to act before they were lost.

In October, Connecticut passed a law that would allow some of the generation from the Millstone plant to compete with other non-emitting sources in a clean electricity procurement that is used to meet the state’s environmental policies. In 2016 policymakers in New York and Illinois took action to appropriately value the environmental benefits being provided by nuclear plants facing early closure. Each state implemented a zero-emission credit to ensure that the value of generation without air emissions would be factored into decisions about the future of the plant. These zero-emission credits were designed to work in parallel with renewable energy credits that had been part of the policy framework in those states for years. These states have tailored their policy approaches to what works for them.

These actions taken in New York, Illinois and Connecticut will preserve nuclear generation as the largest source of clean electricity in those states and the thousands of jobs of those who will support their continued operation. States that allowed their nuclear plants to close such as Vermont and California saw increased emissions and higher electricity costs.

Beyond the state level, others are seeking solutions but they take much longer to act. Regional market operators, state and federal regulators are all working to ensure that markets are structured to produce the generation mix we need today and into the future. These efforts are unlikely to create a one-size-fits-all answer that works for every state. This legislature is best-positioned to find a solution that works for New Jersey.

The Federal Energy Regulatory Commission is currently examining how resilience should be valued in wholesale markets as well as the broader question of how state policies should be reconciled in regional markets. There is no timeline for final action on either issue.

PJM recently sent a letter to these committees describing an energy price formation proposal that it has developed. While PJM's proposal would correct long-standing flaws in the market, they did not provide a timeline for when it will even submit that proposal to FERC, let alone an estimate of when it will be implemented. And time is running out. Just this week PJM CEO Andy Ott said that nuclear plants are "casualties by default" because the price of electricity "that they produce a lot of" is understated. In any event, PJM's reform is not aimed at the environmental or fuel diversity attributes provided by New Jersey's nuclear plants and thus would leave those attributes uncompensated. New Jersey should not leave its energy future in the hands of others.

If, however, those federal and regional activities result in increased revenues to New Jersey's nuclear plants, the bill before you provides the flexibility to make appropriate adjustments. The bill allows the Board of Public Utilities to reassess the program every three years and to reduce payments in response to federal policies that value nuclear attributes. The bill represents a "no regrets" strategy for New Jersey – it provides assurances that investments in the plants will be sensible while protecting ratepayers as policies change in the future. The legislation ensures consumer protections by establishing transparency, due process and stakeholder input.

In the end, it is important to consider the full benefits of keeping Salem and Hope Creek running versus the cost of the NDC program. When you compare the estimated benefits outlined in the IHS Markit report prepared for Nuclear Matters that considers economic costs (estimated at \$820M/year), environmental costs (estimated at \$530M/year) and avoided electricity costs (estimated at \$400M/year) to the expected cost of the NDC program (\$280M/year), the benefit to cost ratio for New Jersey

consumers is six to one. Clearly it is 'cheaper to keep' Salem and Hope Creek nuclear plants running in New Jersey benefiting all New Jersey consumers and communities than to let them retire prematurely.

The legislature should not delay in addressing this risk to the state. Once a nuclear plant closes, the decision cannot be reversed later. Nuclear plants cannot be mothballed and reopened later as there is no process to reactivate an operating license once it has been surrendered. The state must act before it is too late.

Passing this bill will have implications beyond New Jersey. The early closure of U.S. nuclear plants has implications for national security. There are 59 reactors under construction worldwide. This global expansion of nuclear power is being driven by China and Russia. If the U.S. forgoes its role as a leader in the global nuclear industry, the world will look to those embracing the technology for leadership, putting them in a position to develop future standards for nuclear energy technology use around the globe. Further, America's nuclear infrastructure supports both its civilian and military needs. Allowing this infrastructure to diminish would adversely affect our defense nuclear complex.

### **Conclusion**

Getting this right is important for our country. An electricity system that is overly-reliant upon a single fuel can leave us vulnerable to attacks or other disruptions. A robust nuclear fleet allows the U.S. to maintain international leadership on nuclear issues. Allowing well-run nuclear plants to close doesn't help the communities that have grown up around them, it doesn't make electricity more affordable for consumers, it doesn't help provide jobs for New Jersey, and it doesn't support our energy and national security. New Jersey has the opportunity to preserve these plants and I encourage you to do so.