

**Ohio Senate Energy and Public Utilities Committee
June 19, 2019**

Kristy Hartman, Energy Program Director (Kristy.hartman@ncsl.org)

Daniel Shea, Energy Policy Specialist (Daniel.Shea@ncsl.org)

Chairman Wilson and members of the Committee, thank you for allowing the National Conference of State Legislatures to submit testimony on this important topic. We are closely monitoring and providing assistance to state legislatures as they examine the challenges of a rapidly changing energy mix and the impacts to nuclear power in certain restructured states.

Overview of NCSL. We are the only bipartisan organization serving all state legislators and legislative staff in the 50 states, commonwealths and territories. We provide research, analysis, and information on any topic of interest to state legislatures.

NCSL Tracking the issue. We've been tracking these issues since they first came up in states around 2015. It was another year or two before the first states took action and passed measures to provide supplemental revenue to at-risk nuclear plants. We published a web document in 2016, followed by a comprehensive report on the subject in January 2017. The issue was moving so fast at that point that we published a follow-up addendum only a couple of months later.

Nuclear Power in the U.S.:

- There are currently 97 operating nuclear reactors across the country.
- Eight reactors have shut down since 2013: Crystal River (FL), Kewaunee (WI), San Onofre 2&3 (CA), Vermont Yankee (VT), Fort Calhoun (NE), Oyster Creek (NJ), Pilgrim (MA)
- Eleven reactors scheduled to shut down over the next decade: TMI (PA), Beaver Valley 1&2 (PA), Perry (OH), Davis-Besse (OH), Palisades (MI), Indian Point 2&3 (NY), Diablo Canyon 1&2 (CA), Duane Arnold (IA).
- It's worth noting that 82 of the nation's reactors are currently operating on a 20-year license extension. Two power plants have applied for a second 20-year extension—with the Peach Bottom plant in Pennsylvania being one of those. This would extend the operating life for these two plants to up to 80 years and may encourage other plants to do the same. At the moment, more than half the current fleet—52 reactors—would see their 20-year license extensions expire before 2040.

U.S. Energy Mix. This is a time of change for the U.S. energy mix. There are increasingly more coal retirements, while large growth has occurred in the renewables sector. Nationally, nuclear accounts for around 20 percent of electricity generation, while it's close to 12 percent in Ohio, where the share of electricity generated by natural gas (43%) and coal (41%) are higher than the national average. Ohio's share of renewable generation (3%), which includes hydropower, is lower than the national average (17%) in 2018.

Challenges Facing Nuclear Power. We know the committee is aware of the challenges facing many nuclear plants in restructured states where many are struggling to cope with lower electricity prices and reduced revenue.

Three main challenges for nuclear power in certain restructured states: The abundance of natural gas with sustained low natural gas prices, along with federal and state incentives for renewable resources, and low growth in electricity demand. It is becoming increasingly challenging for nuclear to compete in restructured, competitive markets such as Ohio's.

As these issues came to light, and states were faced with the prospect of losing nuclear and coal plants, states began to consider what, if anything, ought to be done.

The Market Issue. On the one hand, electricity markets have functioned as designed. They were designed to deliver reliable electricity at the cheapest possible price. Those were the two parameters: cheapest possible power, so long as reliability wasn't impacted.

However, states have been prioritizing other issues and attributes for years. For example, 29 states and DC have mandatory renewable portfolio standards that have been around in competitive markets for decades.

These are complex issues that not only involve the energy industries impacted, but also obviously the states, market operators like PJM for Pennsylvania and FERC.

Some market operators, like PJM, have questioned this piecemeal state policy approach that we've seen to support nuclear. PJM, in particular, has said you can have market competition or integrated resource planning, but you can't have both and so they've questioned state policies that interfere with the current market and possibly suppress prices.

At the same time, PJM has acknowledged that its market design is no longer really aligned with state goals, with many states interested in valuing attributes like environmental and reliability concerns.

The actual market design may also be flawed, as PJM has said. For example, traditional baseload resources, like nuclear and coal, are not allowed to set prices, even though they're now in a position of being marginal resources—needed to meet reliability. PJM has called this an "unintended bias" against baseload resources that fails to signal the full, true cost of electricity.

There are differing opinions on whether support should be provided specifically for nuclear, but also current market structures may be out of date and flawed, and most importantly, to date, state policies are the only actions we've seen to try to address possible imbalances. These discussions are still dynamic and before FERC.

Legislative Trends. Clean energy has been the biggest trend of 2019. We have seen a variety of bills from state legislatures, but the focus is on clean energy. It is important to note that all of the nuclear support bills passed by states, to date, have also included support and incentives for renewable resources.

State Action on Nuclear Power. Since 2016, four states have adopted policies designed to provide additional revenue for nuclear power plants. New York and Illinois were the first to establish Zero

Emissions Credits—commonly known as ZECs. New Jersey took up ZECs in 2018, while Connecticut decided to follow a different path by allowing some nuclear capacity to compete in a separate state-run market for large-scale renewables which tends to return higher prices.

In each case, policymakers were considering a variety of issues: jobs and the economy, clean power and emissions, diversity of the energy mix. Especially as it related to the ZECs programs, the policies were negotiated along with other clean energy initiatives.

In Illinois, for example, the law also expanded energy efficiency and renewables targets, established a low-income solar program, distributed generation rebates and a bill-crediting program for community solar. New York and New Jersey each bolstered their own clean energy programs, as well, including making their renewables targets more ambitious.

Zero Emissions Credits. ZECs are not, in practice, all that different from what’s being proposed in the legislation before this committee, which would create an Ohio Clean Air Program. New Jersey calls its program Nuclear Diversity Certificates, but they are still functionally similar to ZECs. A proposal still under consideration in Pennsylvania would have wrapped a ZECs-type mechanism into the state’s Alternative Energy Portfolio Standard, which is equivalent to Ohio’s program of the same name.

In practice, ZECs represent a payment for every megawatt-hour of carbon-free electricity generated by qualifying power plants. The underlying assumption is that the majority of lost nuclear capacity would be replaced by gas-fired capacity. And so, ZECs are payments for the avoidance of carbon emissions and other key pollutants that would likely result from these facilities shutting down.

By the numbers. This slide provides a breakdown of the figures involved, comparing the state policies side-by-side. We’ve based Ohio’s figures off House Bill 6.



- Bullet 1) Total annual in-state nuclear generating capacity.
- Bullet 2) How much of that capacity is eligible for the state program.
- Bullet 3) The price per megawatt-hour that qualifying plants receive.
- Bullet 4) The annual cost of the program in each state.
- Bullet 5) The number of years that each state's program runs.
- Bullet 6) The number of reactors that would benefit.

The price we've calculated for Ohio is the top rate that could be redeemed by qualifying facilities under the law. That price could always be reduced, depending on the price of power in PJM. If the PJM clearing prices rise, the \$9/MWh could be reduced.

A number of other state policies also include a market-based price adjustment to ensure qualifying facilities don't receive a windfall if electricity prices suddenly jump.

It's worth noting that Illinois and New York only support a portion of their nuclear fleets—in Illinois it's only about 15 percent of the state's nuclear capacity that qualified under the state's ZECs program. There's now talk of other plants in the state being at-risk and in need of support, which hasn't necessarily sat well with legislators who thought they'd solved the problem back in 2016.

Key considerations. Below we have highlighted some of the key policy considerations that other states have made in crafting their policies.

Eligibility requirements: what type of facility will qualify? Connecticut requires plants to demonstrate evidence that they're struggling financially. In Illinois, applicants for the state zero emission credits program are required to provide information on their operational and financial outlook to the Illinois Power Agency, which will procure credits based on long-term environmental attributes. New Jersey requires plants to show they contribute to the diversity and resiliency of the state's energy mix and also left the possibility to include out-of-state plants. The policy language in Illinois and New York also specifically includes or excludes certain nuclear facilities.

Price formation: New York and Illinois rely on the Social Cost of Carbon to set the price of ZECs around \$16 to \$18 per megawatt-hour, which puts the price substantially higher than what's proposed in Senate Bill 510.

New Jersey decided to put a small surcharge on ratepayer bills—\$0.004 per kilowatt-hour. The total collected over the year would then be divided between qualifying plants, and based on initial calculations, that should come out to around \$10 per megawatt-hour.

Ratepayer impacts: New Jersey limits ratepayer impacts by adding a known surcharge to ratepayer bills.

Illinois' law doesn't allow ratepayer bills to increase as a result of ZECs by more than 1.65 percent.

Both Illinois and New York established mechanisms that allow the state to reduce the price of ZECs if, for some reason, wholesale prices jump. This would prevent plants from suddenly getting a windfall at the ratepayer expense.

Review for Necessity: Finally, states have established ways to review the policies to see if they're still needed. In New York, prices are re-set every two years. Illinois requires annual reporting and authorizes the state to reduce prices as it sees fit. New Jersey essentially decides whether to re-up the program every three years.

Illinois' law requires a state agency to publish annual reviews which assess the net benefits to the state and calculate the cost of replacing lost nuclear capacity with other zero carbon resources. In its first (and so far only) report issued, the Illinois Power Authority calculated that the value of avoided emissions, based on the social cost of carbon, to be just under \$3.6 billion for the first year.

It calculated the cost of replacing the three nuclear reactors that receive ZECs with other zero-carbon resources at between \$2.7 billion and \$10.2 billion, using two different methodologies to calculate the costs.

Where H.B. 6 differs. The bill under consideration before this committee is quite different from the other policies to support nuclear power in other states. Below we have highlighted some of these differences.

Eligibility requirements: The Ohio Clean Air Program that would be established by House Bill 6 is clearly only open to in-state nuclear and solar generators that meet certain different criteria. Facility qualifications focus primarily around air quality, generating capacity and who owns the facility (not available to municipally or cooperatively owned facilities). While the payments are available to solar generators, only solar installations of 50 MW or higher are eligible. For reference, the majority of utility-scale solar projects across the U.S. are under 10 MW.

Unlike the other state policies, House Bill 6 does not increase state renewables targets. Rather, it eliminates the state's current Alternative Energy Portfolio Standard, along with the associated charges on ratepayer bills. Those charges would essentially be replaced by monthly charges to fund the Ohio Clean Air Program.

Price formation: While Illinois and New York used the Social Cost of Carbon to create their prices, and New Jersey used a surcharge—\$0.004 per kilowatt-hour—Ohio's program would be funded through flat fees on residential customers, regardless of usage. In all of these cases, the cost borne by ratepayers has been tied directly to that customers' electrical consumption.

House Bill 6 uses a different methodology, which relies more on flat monthly fees. For residential customers, those monthly fees start at \$0.50 for 2020, and rise to \$1 for the ensuing five years. Meanwhile, the average commercial user would pay \$15 per month for most of the program's life, and industrial customers would pay an average of \$250 per month. Large users (over 45 million MWh per year) would pay an average of \$2,500 per month.

The revenue generated by these fees would be \$140.5 million for the first year, and \$197.6 million for each of the ensuing five years.

Ratepayer impacts: The impacts on ratepayers is highly predictable, given the above-mentioned stipulations, and the actual costs borne by ratepayers appears to be lower than in other states.

Review for Necessity: As in other states, the policy outlines a process for the state to review the necessity of the program. This allows the state to reduce the price of the credits if electricity prices rise, or eliminate the program altogether if it's considered to be in the public's interest.

ZECs in the courts. It's worth noting that the legality of these programs has been upheld so far in the courts. There have been issues with state programs running afoul of FERC jurisdiction in the past, but the ZECs programs in Illinois and New York have been separately upheld in two U.S. Courts of Appeal.

Plaintiffs have argued that the programs are distorting competitive markets under FERC jurisdiction, while states have defended the programs, saying they're functionally similar to long-accepted renewable energy credits programs.

At the moment, all parties are waiting to see if the Supreme Court decides to take up the case.

Conclusion. Thank you for your time and for the opportunity to offer testimony on the bill before the committee. Please feel free to reach out to either of us with any additional questions.