

The Nuclear Option(s)

Lawmakers debate the merits of shoring up struggling nuclear power plants or leaving market forces alone.

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The window was narrowing. There were just a few short weeks remaining before the end of Illinois' legislative veto session, and lawmakers were working around the clock to squeeze out a compromise on an issue that had divided them for years.

The nuclear power industry in Illinois was struggling. Some accused the owner of the state's nuclear plants, Exelon Corp., of looking for handouts, of trying to force customers to prop up unprofitable plants. The company's message, however, was unwavering: Without support, it would be forced to close three of the 11 reactors in the state, reducing the state's carbon-free electricity by about 20 percent, based on data from the U.S. Energy Information Administration.

When June 2016 passed without legislation, Exelon announced that it would shutter its worst-performing nuclear plants by the end of the year.

Lawmakers were faced with a dilemma: intervene to preserve the struggling carbon-free resource or let market forces determine the fate of the industry, its employees and the state's future energy mix.

Unlikely Place for a Compromise

In a state where the Republican governor and the Democratic legislature had been at an impasse over the budget for nearly two years, Springfield, Illinois, appeared to be an unlikely place for a compromise—let alone one involving nuclear power.

And yet, during a narrow two-week win-

dow in November, Illinois legislators drafted a bipartisan energy reform package—eventually known as the Future Energy Jobs Bill—that included provisions to assist the state's struggling nuclear plants. Some coal and natural gas plants argued that the nuclear component would put them at a disadvantage, while some environmental groups pressed the state to invest in renewables.

The bill changed about 30 times, gaining momentum with each iteration, as legislators sought the necessary votes. Eventually, the bill gained bipartisan support and the governor's blessing.

"The success of the Future Energy Jobs Bill comes from one major theme: compromise. Business, environment and labor all worked together to find a way to protect jobs while also protecting the environment by providing incentives that will drive growth in the renewable energy sector," says Senator David Koehler (D).

On Dec. 1, 2016, with the final compromise made, Illinois became the second state to finalize a policy aimed at preserving nuclear power plants.

Four months earlier, facing the possible shutdown of two struggling plants, the New York Public Service Commission adopted its own energy reform package with support for at-risk nuclear plants—part of Governor Andrew Cuomo's "Reforming the Energy Vision" initiative to modernize the electric system and reduce carbon emissions.



Senator
David Koehler
Illinois



The Market Conundrum

The nation's 99 commercial nuclear reactors account for around 20 percent of the electricity generated in the U.S., and about 60 percent of the carbon-free electricity. Since 2013, six reactors have permanently closed and another 10 to 15 reactors are at risk of closure, according to the Nuclear Energy Institute.

Like all businesses, these plants need to turn a profit to remain viable. A recent analysis by Bloomberg New Energy Finance found that more than half of the operating nuclear power plants in the U.S. were losing money, with plants that sell power on the wholesale market being particularly vulnerable. Whether this is the result of an efficiently working market or of subsidies and faulty market design is the source of much debate.

Policymakers across the country—particularly in Connecticut, New Jersey, Ohio and Pennsylvania—now face the same dilemma as their colleagues in New York and Illinois: whether to intervene in the market, or let the plants close.

Once a nuclear plant shuts down, it will never reopen. The prospect of losing plants raises concerns about environmental impacts, jobs and tax losses, and maintaining electric reliability, all of which were on the minds of New York officials as they considered the fate of their at-risk plants.

“New York is committed to reaching clean energy goals,” says Senator Joseph Griffo (R). “It was approached initially that the [nuclear power] industry is struggling. It’s clean energy. There are a lot of people that work there. We’re already subsidizing solar and wind, so maybe it’s fair to provide nuclear power with the same consideration.”



Senator
Joseph Griffo
New York

In New York, much of the focus has been on carbon emissions. When nuclear plants have closed recently, that power is often replaced by natural gas-fired plants. In Illinois, Ohio and Pennsylvania, the conversation has centered on the job losses and economic impacts associated with closing a nuclear plant.

A Fading Renaissance



When Congress created a nuclear production tax credit as part of the Energy Policy Act in 2005, many believed the nuclear industry was poised for a renaissance. The tax credit was available only to the first six new nuclear reactors brought online, and nearly 20 utilities sought construction approval from the Nuclear Regulatory Commission in the race for those tax credits.

After more than a decade, however, only four new reactors are being built: two units at Plant Vogtle in Georgia, and two units at the V.C. Summer plant in South Carolina. Other proposed projects have languished as attention has largely turned to natural gas and renewables. Complicating matters, the Georgia and South Carolina projects have been plagued by delays and cost overruns.

In March, the builder of the four reactors, Westinghouse Electric Co., filed for Chapter 11 bankruptcy protection due in large part to these projects. The episode has cast a shadow on nuclear's future. In late July, the utilities behind the Summer project announced plans to abandon construction, saying completion of the two units would be "prohibitively expensive." The statement also cited uncertainties over the availability of the tax credits as an underlying concern.

Due to delays, all four reactors likely would come online too late to benefit from the credits, which expire in 2021. It's up to Congress whether to extend them.

The first new reactor in two decades came online in October 2016, after the Tennessee Valley Authority decided to complete the mothballed Watts Bar 2 reactor, about 60 miles northeast of Chattanooga. Although the project took longer to finish than the planned five years, it stayed on budget: \$4.7 billion.

The difficulties in bringing these facilities online, coupled with current market conditions, point to larger concerns. "Like any industry, you're going to have to take a look at yourself and say, 'How do you stay viable?'" says New York Senator Joseph Griffo (R). "That's a challenge to their industry and their companies to work with a future vision."

Still, utilities are pursuing their nuclear options. A number have invested in site planning and licenses that can be used down the road. Some are considering scaled-down alternatives, like small modular reactors. These smaller plants theoretically cost less up front and benefit from the efficiencies of factory fabrication, making them more competitive in the energy marketplace. In fact, the first small modular reactor is scheduled to be built in Idaho after it moves through the licensing process. The developer, NuScale Power, hopes to have its first plant online by 2026.

"Those in Cordova and Clinton can breathe a major sigh of relief, as these jobs, the economic impact they produce, and tax dollars that are generated from these plants will continue," Senator Sue Rezin (R) said after the measure passed in Illinois.



Senator
Sue Rezin
Illinois

"The state's energy portfolio will now not only remain strong, but can grow—a good thing for the state's economy, jobs and communities across the state."

The reality is that wholesale electricity markets weren't set up to consider any of these issues. They were set up to achieve one primary objective: provide the lowest cost electricity at any given time.

Gas on the Rise

At the moment, price signals in these markets have largely favored the widespread development of natural gas. As natural gas prices drop, so too do electricity prices. And while some have warned against becoming overly dependent on one source of energy, others have pointed to the nation's vast shale gas reserves and the low-cost electricity they produce.

"The people in my district care about turning on the lights and not having to pay an arm and a leg for it," says Ohio Senator Sean O'Brien (D). "Asking my constituents in north-eastern Ohio—an area that has at least 50 years' worth of cheap, clean-burning shale gas trapped just a few yards beneath our feet—to pay more to bail out these uncompetitive plants is unfair and makes no sense."



Senator
Sean O'Brien
Ohio

For this reason, many consumer advocates have argued that the markets are working and ratepayers are reaping the benefits.

Compounding the issue has been a combination of a slowing demand for electricity and a growing interest in renewable energy. Numerous states and the federal government have offered a combination of subsidies and mandates to stimulate and support the development of renewable energy projects. As nuclear has come

under pressure, some states are considering whether its carbon-reduction benefits don't merit similar supports—even going so far as to push to have nuclear considered a renewable resource.

But there has been push-back to this idea. Many are concerned about the unresolved issues surrounding the disposal of nuclear waste, while others argue that supporting specific energy sources risks subverting competitive markets.

“Nuclear is not a new technology seeking to break into the market, which might justify a temporary subsidy,” says Connecticut Representative Mary Mushinsky (D). “If legislators subsidize, they are using ratepayer or taxpayer funds to increase the rate of return for one fuel.”

These concerns are common. In fact, including ratepayer protections was one of the final compromises that got Illinois' bill over the line.



Representative Mary Mushinsky Connecticut

ZECs All Around

In Illinois and New York, lawmakers and regulators have adopted ZECs (zero emissions credits) to compensate certain nuclear plants for every megawatt-hour of carbon-free electricity generated. Similar to credits for wind and solar generators that avoid carbon emissions, ZECs have piqued lawmakers' interest during this session—possibly because they provide an immediate fix for at-risk plants, or because they're the only policy mechanism to date that's been enacted.

New York's ZECs program went into effect last April. The subsidy will cost approximately \$7.6 billion over 12 years and is designed to compensate three struggling nuclear plants. The ZECs program is expected to add around \$2 to the average customer's monthly electric bill. The Public Service Commission said it was the “least cost” option for carbon reduction, as widespread and rapid deployment of renewables would cost more.

While there is broad agreement among

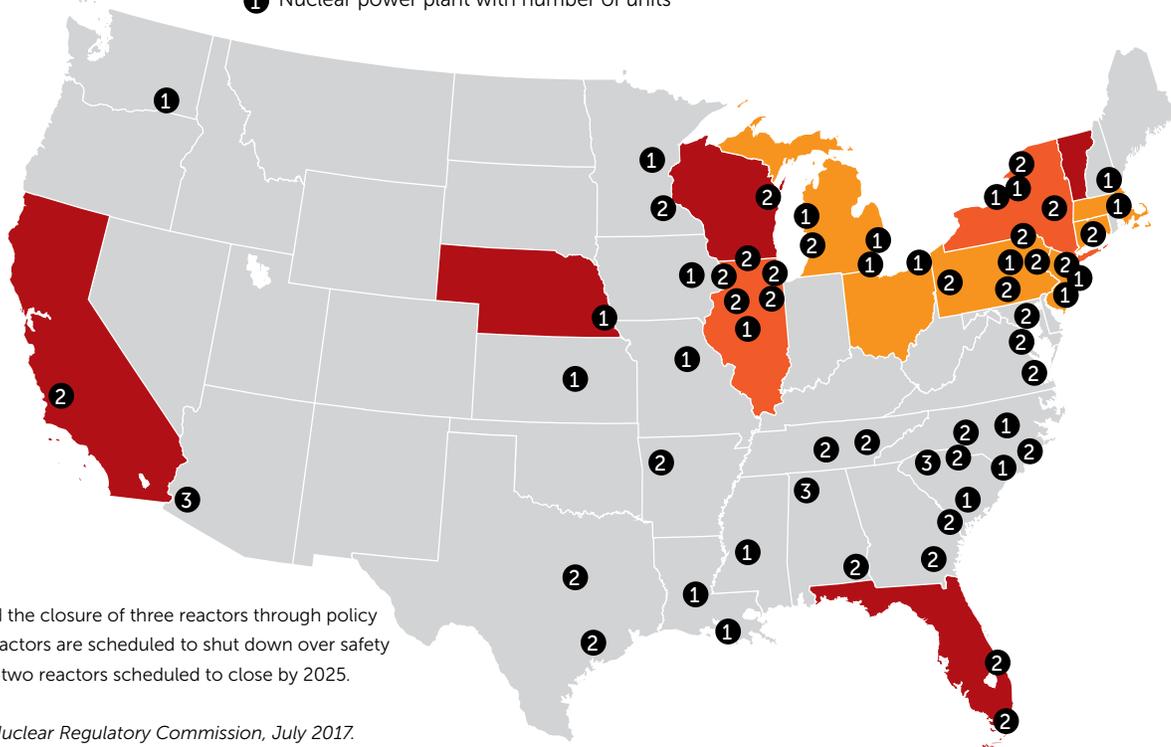
lawmakers to support the state's nuclear plants, that doesn't mean everyone agrees on the policy. The New York Legislature would like to see the ZECs program provide greater ratepayer protections, but each chamber differs on what form that would take. The Senate narrowly passed a bill that would alter the funding source and reduce the amount of funds available for the ZECs program, though it's unlikely to pass the Assembly.

“It would change the current program initiative so that ratepayers didn't have to bear the burden of additional charges,” Griffo, the New York senator, says. He noted that customers already pay toward energy efficiency and renewables on their bills, “so adding a ZEC caused a lot of consternation.”

Illinois' legislation went into effect on June 1, and will offer about \$235 million a year for 10 years to Clinton and Quad Cities—the two plants slated for closure. Illinois' nuclear plants generate more than 96 million megawatt hours of electricity per year—more nuclear power than any other

States With Nuclear Plants in Peril

- Have had reactors close since 2013
- Have had closures averted or delayed by state action
- Have planned closures and reactors at risk of shutting down
- ① Nuclear power plant with number of units



Note: New York avoided the closure of three reactors through policy changes, another two reactors are scheduled to shut down over safety concerns. California has two reactors scheduled to close by 2025.

Source: NCSL and U.S. Nuclear Regulatory Commission, July 2017.



Three Mile Island Nuclear Power Plant

state—but only 14.2 million megawatt hours will be eligible to receive ZECs.

Both programs are being challenged in court for interfering in wholesale markets. Federal judges separately dismissed both challenges in July, however, ruling the policies were sufficiently separate from wholesale markets and therefore don't violate the Federal Power Act, which regulates the interstate activities of the electric power and natural gas industries. The plaintiffs in each case, including a number of power plant owners, have appealed the rulings.

The outcome of the lawsuits could affect other states as well. New Jersey currently has two bills pending that would require the state Board of Public Utilities to study ZECs. Ohio has also introduced bills in the House and Senate, but after several hearings—one lasting more than 10 hours—it is unclear whether there is consensus among committee members to move forward.

Approaches Vary

ZECs are far from the only policy under consideration. A measure introduced in Washington state, for example, would define nuclear as an alternative energy source. If passed, the bill would allow customers to elect to buy nuclear-generated electricity. The New Mexico Legislature also considered adding nuclear power to the state's renewable standard, but the measure failed to pass committee.

Twenty-nine states and the District of Columbia have mandatory standards requiring utilities to sell a specified amount of renewable electricity. Some states, including Illinois and New York,

considered a separate set of standards to support nuclear facilities.

The reality is that each state's approach may be different. Dozens of legislators in the Pennsylvania General Assembly formed a bicameral, bipartisan Nuclear Energy Caucus to preserve the state's nuclear power, but some members say a ZECs-type subsidy wouldn't be right for the state.

Senator Ryan Aument (R), who co-chairs the caucus, has said he doesn't believe the approach is "politically viable in Pennsylvania."



Senator
Ryan Aument
Pennsylvania

With the state facing the possible closure of the Three Mile Island nuclear plant, Aument believes the solution lies in addressing underlying market factors. "TMI, in a sense, points us to a much larger issue regarding the wholesale electricity market," he says, using an abbreviation for the plant. "I think that's the heart of the issue, and that's what we really have to take a look at." The caucus is working on a policy solution unique to Pennsylvania, though it hasn't released specifics.

In Connecticut, the Senate has passed similar bills in each of the last two sessions, and each time they met resistance in the House. The bills would have allowed the state's lone nuclear plant, Millstone, to bypass wholesale markets in a bidding process overseen by four state agencies, which proponents argue is similar to the process for large renewable resources. The legislature adjourned before taking up the most recent bill for a full vote.

For Connecticut Representative Lonnie Reed (D), it was important to establish a plan B to encourage the nuclear plant to continue operating. "Millstone produces 2,100 megawatts—60 percent of Connecticut's electricity," she says. "Without smart planning, the sudden departure of Millstone could deliver a devastating blow to our economy and environment."



Representative
Lonnie Reed
Connecticut

Reed's colleague Mushinsky also wants Millstone to continue operations but has spoken of the need for legislators to see more evidence that the power plant needs support. "If the plants are actually in dan-

ger of closing, legislators might be willing to preserve them," Mushinsky says.

Connecticut legislators might get more detailed information early next year. Governor Dannel Malloy (D) recently directed the state to review Millstone's financial position, its need for policy support and what form that policy could take.

What's Next?

Advocates of policies that assist nuclear power cleared a major hurdle when federal judges ruled in favor of the ZECs programs in Illinois and New York. The rulings, however, have been appealed and the eventual outcomes will affect not only struggling nuclear plants, but also other states considering similar mechanisms.

Advocates in Illinois and New York argue that the ZECs policies mirror existing mechanisms that support renewable energy and were designed to support the carbon-free attributes of nuclear power plants, which would otherwise be lost without financial assistance. However, market operators have urged states not to enact these policies, arguing the best approach is to address the issue regionally or nationally. And many agree—even some who have been backing state initiatives.

The Federal Energy Regulatory Commission is examining whether it's the role of the federal commission to intervene as states consider policy solutions. The agency is currently two commissioners short of a quorum, and any federal rulemaking could take years. By the time changes take effect, plants may close.

For this reason, some policymakers feel they don't have time to wait. Certainly, some legislators in Illinois felt the pressure of losing three reactors as they debated the issue last fall. They had debated the same issue in previous years, but it wasn't until November's veto session, with the fate of those plants and jobs on the line, that legislators made the final decision.

As more states face similar situations, it's likely that lawmakers will continue to introduce and debate policies aimed at supporting at-risk nuclear plants. And, if the experience of Illinois lawmakers is any indication, shoring up nuclear energy and jobs might be one area in which Republicans and Democrats can find agreement. ■