



**THIRD WAY**

February 4, 2021

Aida Camacho-Welch  
Secretary  
New Jersey Board of Public Utilities  
44 S. Clinton Avenue, 9th Floor  
Trenton, NJ 08625-0350  
[Board.secretary@bpu.nj.gov](mailto:Board.secretary@bpu.nj.gov)

**RE: BPU Docket Nos. ER20080557, ER20080558, & ER20080559, In the Matter of the Zero Emission Certificate Program for Salem Unit 1, Salem Unit 2, and Hope Creek**

Dear Secretary Camacho-Welch:

My name is Ryan Fitzpatrick, and I am the Director of the Climate and Energy Program at Third Way. Third Way is a national think tank based in Washington, D.C. that promotes pragmatic solutions to some of our most complex challenges. My team designs and advocates for policies that will drive innovation and deployment of clean energy technologies, and deliver the emissions cuts we need to win the fight against climate change.

I am grateful for the opportunity to reinforce just how important a technology-neutral approach is in this fight against climate change. That means using every low-carbon tool at our disposal, including nuclear power generation.

New Jersey is clearly committed to a clean energy future— with its renewable portfolio standard requiring 50 percent of electricity sales to come from renewables by 2030, an Energy Master Plan to meet 100 percent of the state’s energy needs with clean energy by 2050, and membership in the Regional Greenhouse Gas Initiative. A few years ago, the state made a wise investment to help achieve its clean energy future through Zero Emission Certificates (ZECs) for the Salem and Hope Creek nuclear power plants. Furthermore, in its 80x50 Report, the New Jersey Department of Environmental Protection specifically called for the retention of existing carbon-free resources, including the state’s three nuclear power plants.<sup>1</sup> As part of its commitment to clean energy, the state must provide explicit and continued support for its nuclear power assets.

Hitting our ambitious emissions targets will require a rapid and significant addition of wind, solar, and other low-carbon resources to the power grid. But that effort becomes even more of a challenge if we fail to protect the low-carbon generation we already have—particularly, the nuclear power plants that generate 55 percent of the carbon-free

electricity across the country and that generated about 93 percent of New Jersey's low-carbon power in 2019.<sup>2</sup>

Nuclear power plants across the country are facing economic headwinds and are at risk of closure, due mostly to cheap natural gas and the failure of markets and public policies to adequately reward nuclear plants for their many attributes. The loss of these important low-carbon assets threatens the foundation of America's clean energy progress. From a dollars per ton perspective, acting to maintain the nation's nuclear reactor fleet is among the most efficient and lowest-cost clean energy options available to policymakers today. Federal and state governments should take steps to ensure these plants continue to contribute to a low-carbon future, and should keep these facts in mind as they do:

- U.S. nuclear power constitutes America's largest source of clean energy, generating more electricity than all wind, solar, hydroelectric and geothermal power plants in the country combined. And it is the only carbon-free energy source that is available 24/7.
- If existing reactors retire prematurely, they are likely to be replaced predominately by natural gas-fired power plants, which will cause emissions to rise.
- In 2019 alone, operation of the nuclear fleet provided 800 million megawatt-hours of carbon free electricity per year, which if produced with natural gas combined cycle plants, would add around 290 million metric tons of carbon emissions per year.<sup>3</sup>
- 11 reactors have prematurely closed since 2013, and eight more are slated for premature closure. These reactors in total provide 66.6 million megawatt-hours of carbon-free electricity per year, avoiding over 23 million metric tons of carbon a year if those plants are replaced with natural gas combined cycle plants.<sup>4</sup>

When nuclear plants close, carbon emissions rise. There is ample research and real-life examples to conclude that the vast majority of this carbon-free generation would be replaced by natural gas, pushing emissions up when we need to be ratcheting them down.<sup>56</sup>

To get a sense of the magnitude of the challenge, consider this: if we use the lower estimates and assume that half of the nation's plants (over 48,000 megawatts of nuclear power) are threatened by today's economic and policy landscape and those plants are replaced by natural gas generation, CO<sub>2</sub> emissions could increase by roughly 136 million metric tons annually. That would mean an eight percent increase in overall U.S. power sector emissions.<sup>7</sup>

Closure of New Jersey's nuclear reactors would contribute heavily to this backsliding on our climate efforts. Nuclear power plants produce the vast majority of New Jersey's carbon-free electricity, generating 10 times the amount of power produced by all renewables in the state. Furthermore, the state's reactors generate 26.6 million megawatt-hours of electricity a year, enough to power more than 3 million households. If,

hypothetically, the reactors operating at Salem and Hope Creek generating stations were taken offline in the near future, that generation would likely be replaced almost entirely by natural gas, given the availability of resources and cost projections in this region. Switching all of this carbon-free generation to gas would result in an increase of about 13.8 million metric tons of carbon dioxide equivalent or more<sup>8</sup>. For comparison, that's about 14% of New Jersey's greenhouse gas emissions in 2018. Not just in the state's power sector. That's 14% of *all* of its emissions from power, transportation, industry, buildings, etc. That would be enough to wipe out all of the annual emissions reductions that New Jersey has achieved since 2009 and make New Jersey's 2050 emissions goals—an 80% reduction below 2006 levels<sup>9</sup>—much harder to reach.<sup>10</sup>

We get immense value from keeping nuclear plants online. For instance, the CO2 emissions avoided by the nation's nuclear plants alone delivers an estimated public value of at least \$8 to \$42 per MWh.<sup>11</sup> The nation's nuclear fleet also helps avoid hundreds of thousands of tons of harmful air pollutants each year, including: particulate matter, which causes lung cancer, cardiovascular disease, and other devastating health impacts; sulfur dioxide, which causes acid rain; nitrogen oxides, a precursor to smog; and toxic mercury, which can cause birth defects in children. Given these clean air benefits, it is not an exaggeration to say the U.S. nuclear fleet saves thousands of American lives each year.

Public policy has recognized and monetized these valuable public benefits delivered by renewable energy. For instance, in 2018 renewable sources were awarded between \$30 and \$150 per MWh in combined state and federal incentives.<sup>12</sup> These subsidies have helped two important resources, wind and solar, to thrive during an economically challenging period for U.S. power producers.

Nuclear power delivers many of the same benefits as renewable energy, including clean air and CO2-free power. Therefore, policies to preserve the nuclear fleet would deliver similar and substantial net benefits to the public and should be explored by states with struggling nuclear facilities.

I would hope that the State of New Jersey chooses to continue pursuing policies that support efficiency, renewables, nuclear, and other forms of clean energy. No single resource will be able to tackle this job on its own. Nuclear plants and carbon-free sources are still badly needed to displace natural gas, a fossil fuel that accounts for over half of the state's power generation. Addressing this natural gas issue will be critical if New Jersey is to meet its long-term emissions goals, and it's going to take a variety of tools including today's nuclear plants and the growth of other clean energy sources to get there.

Eventually, like all power generation infrastructure, these nuclear plants will need to be retired. Many of us are working to ensure that, when this time comes, we will see these plants replaced with some combination of other zero-carbon or very low-carbon power sources like renewables, efficiency, advanced nuclear technologies, and carbon capture and storage. But that is definitely not what would happen if PSEG and the State of New

Jersey allowed these plants to close now or at any point in the near future. In that situation, we would see carbon-heavy fossil fuels like natural gas take up the slack for these nuclear plants, and greenhouse gas emissions from this state and this region would rise as a result. That does not seem to be in dispute. The question is how much New Jersey values the climate and other benefits these plants deliver, and how to ensure those benefits are secured efficiently and responsibly, while also promoting the growth of renewable energy.

Our existing nuclear fleet is the foundation on which clean energy progress can be built. If this foundation crumbles, so too will our national energy security, climate, and clean energy goals – taking thousands of jobs and substantial economic benefits with it.

The value of the public benefits to climate, public health, and local economies far outweighs the cost of the policy supports that are needed to keep these units in operation. I thank the members of the Board for taking this issue so seriously, and for exploring solutions—such as extending the ZEC program—that allow valuable nuclear energy assets to continue contributing to the public well-being alongside other low-carbon energy solutions.

Sincerely,

Ryan Fitzpatrick  
Director of the Climate and Energy Program  
Third Way

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<sup>1</sup> State of New Jersey Department of Environmental Protection, “2020 New Jersey Global Warming Response Act 80x50 Report,” October 15, 2020. Available <https://www.nj.gov/dep/climatechange/docs/nj-gwra-80x50-report-2020.pdf>

<sup>2</sup> Energy Information Agency, “Detailed State Data”, Available <https://www.eia.gov/electricity/data/state/>

<sup>3</sup> Energy Information Agency, “Detailed State Data”, Available <https://www.eia.gov/electricity/data/state/>  
Emission reduction calculations assume heat rate for natural gas combined cycle plants of 6.69 million British thermal units (MBTU) per megawatt-hour and a carbon intensity of 117 pounds of CO<sub>2</sub> per MBTU

<sup>4</sup> Nuclear Energy Institute, “Nuclear by the Numbers,” August 2020. Available <https://www.nei.org/CorporateSite/media/filefolder/resources/fact-sheets/nei-nuclear-by-the-numbers-092520-final.pdf>.  
Emission reduction calculations assume heat rate for natural gas combined cycle plants of 6.69 million British thermal units (MBTU) per megawatt-hour and a carbon intensity of 117 pounds of CO<sub>2</sub> per MBTU

<sup>5</sup> ISO New England, “2015 ISO New England Electric Generator Air Emissions Report,” January 2017. Available [https://www.iso-ne.com/static-assets/documents/2017/01/2015\\_emissions\\_report.pdf](https://www.iso-ne.com/static-assets/documents/2017/01/2015_emissions_report.pdf)

<sup>6</sup> S&P Global, “Nuclear retirements in Northeast expected to create gas demand,” May 24, 2019. Available <https://www.spglobal.com/platts/en/market-insights/latest-news/electric-power/052419-nuclear-retirements-in-northeast-expected-to-create-gas-demand>

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<sup>7</sup> U.S. Environmental Protection Agency, “Inventory of U.S. Greenhouse Gas Emission Sinks 1990-2018,” 2020. Available <https://www.epa.gov/sites/production/files/2020-04/documents/us-ghg-inventory-2020-main-text.pdf>

<sup>8</sup> Brattle, “Salem and Hope Creek Nuclear Power Plants’ Contribution to the New Jersey Economy”, Nov 2017 [https://brattlefiles.blob.core.windows.net/files/13065\\_11755\\_salem\\_and\\_hope\\_creek\\_nuclear\\_power\\_plants\\_contribution\\_to\\_the\\_new\\_jersey\\_economy1.pdf](https://brattlefiles.blob.core.windows.net/files/13065_11755_salem_and_hope_creek_nuclear_power_plants_contribution_to_the_new_jersey_economy1.pdf)

<sup>9</sup> State of New Jersey Department of Environmental Protection, “2020 New Jersey Global Warming Response Act 80x50 Report,” October 15, 2020. Available <https://www.nj.gov/dep/climatechange/docs/nj-gwra-80x50-report-2020.pdf>

<sup>10</sup> State of New Jersey Department of Environmental Protection, “2018 Statewide Greenhouse Gas Emissions Inventory,” 2018. Available [https://www.nj.gov/dep/aqes/pdf/GHG%20Inventory%20Update%20Report%202018\\_Final.pdf](https://www.nj.gov/dep/aqes/pdf/GHG%20Inventory%20Update%20Report%202018_Final.pdf)

<sup>11</sup> Calculated using U.S. Energy Information Administration, “U.S. Energy-Related Carbon Dioxide Emissions, 2019,” September 30, 2020. Available <https://www.eia.gov/environment/emissions/carbon/>

<sup>12</sup> Federal ITC reduces overnight capital cost by 30 percent, lowering the levelized cost of solar projects by roughly \$19 to \$63 per MWh. Federal production tax credit delivers \$23 per MWh (rising with inflation) for the first ten years of the project, reducing the levelized cost of electricity from wind projects by \$14.76 per MWh. Benefits of a five-year modified accelerated depreciation schedule (MACRS) are compared to a 20-year straight-line depreciation schedule, resulting in a reduction in levelized cost ranging from roughly \$5 to \$14 per MWh for wind and \$7 to \$22 per MWh for solar projects, depending on capital cost assumptions. Renewable energy has received benefits from state renewable portfolio standards at a value generally ranging from \$10 to \$65 per MWh, according to the [National Renewable Energy Laboratory](#).