

## North America

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Alternative Energy | Nuclear Power

# New York Proposes Nuclear Subsidy Based on Social Cost of Carbon

**Policy Could Prompt Market Design Adjustment to Compensate Zero-Carbon Generation**

**July 20, 2016**

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Policy Brief

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### Key Takeaways:

- The New York State Public Service Commission (NY PSC) has proposed subsidizing financially-challenged upstate nuclear power facilities under the Clean Energy Standard (CES)
- The subsidy program would value the zero-emissions attributes of nuclear plants based on the social cost of carbon and is estimated to provide \$4 billion in net benefits
- The program would result in higher consumer bills but reduce dependence on natural gas for the near future
- Exelon Corporation, which operates the nation's largest nuclear fleet, expects to keep its New York fleet operational and to acquire Entergy's Fitzpatrick facility in upstate New York

### Entities Mentioned:

- Alliance for a Green Economy
- Entergy Corporation
- Exelon Corporation
- New York State Independent System Operator
- New York State Public Service Commission
- Nuclear Energy Institute

### Related Research

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[State Legislatures Seek to Support Struggling Coal and Nuclear Plants](#)

[New York Seeks To Redesign Compensation To Keep Nuclear Plants Alive](#)

## Insight for Industry – New York Proposes Subsidizing Financially-Challenged Upstate Nuclear Plants to Meet Overall Emissions Goals

On July 8, 2016, the New York State Public Service Commission ([NYPSC](#)) issued a [proposal](#) to subsidize nuclear power generating facilities that may otherwise be retired to preserve their zero-emission attributes as part of the state's Clean Energy Standard ([CES](#)). The CES is part of the 10-year, \$5 billion Clean Energy Fund ([CEF](#)) unveiled in January to advance solar, wind, energy efficiency, and other clean energy industries to spur economic development and reduce emissions. It aims to procure 50 percent of the state's energy from clean sources by 2030 and reduce emissions by 40 percent.

The proposal estimates that investing \$965 million in the first two years of the program would yield \$5 billion in benefits, based on the social cost of carbon. The proposal would be implemented in six tranches over a 12-year period starting 1 April 2017. The proposal opens a 10-day comment period.

The proposed program would apply to the state's upstate nuclear fleet – Exelon's Ginna and Nine Mile Point units 1 and 2, and Entergy's FitzPatrick nuclear facilities – while excluding the downstate Indian Point Energy Center due to its proximity to the New York City metropolitan area. According to NY PSC, the early closure of upstate plants would result in increased emissions from fossil fuel generators, reduced fuel diversity, and unstable electric prices, as well as economic distress in upstate communities. In 2016, both Exelon and Entergy announced plant closures scheduled to occur in 2017 before the expiration of their license, due to economic constraints.

New York's approach in aiding the hindered nuclear power sector is unprecedented in that it recognizes the social benefits of nuclear and considers it worthy of benefits similar to those provided to renewable energy sources. In contrast to New York, California is examining plans to close its last remaining nuclear facility, Diablo Canyon, and replace it with emission-free resources by 2025. Meanwhile, the Illinois state legislature failed to consider a subsidy for Exelon's Clinton and Quad Cities nuclear plants, leading to the company's repeated announcement on June 2 to retire the two struggling facilities.

Exelon Corporation, which operates the nation's largest nuclear fleet, expects the CES program to provide certainty to keep its New York fleet operational. The company is also involved in discussions to purchase Entergy's Fitzpatrick plant and expects CES approval to provide the needed confidence to make investments to refuel the plant and reverse its shutdown.

The subsidy program could prompt additional policy changes, especially in terms of market design, as retention of existing nuclear plants requires long-term financial viability, which in turn hinges on wholesale markets recognizing the benefits of nuclear power.

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## Proposed Nuclear Subsidy Program Seeks to Retain Nuclear for Its Zero-Emission Attributes and Expand Renewables to Meet Emissions Goals

The NY PSC [proposal \(15-E-0302\)](#) recognizes the role of nuclear plants in reducing emissions, maintaining fuel diversity, and lowering overall costs in the generation sector. The proposal seeks 12-year contracts for zero emission credits (ZEC) administered in six two-year tranches beginning April 1, 2017. Subsidies for upstate plants would start at a rate of \$17.48/MWh for the contract period of Tranche 1 and gradually increase to \$29.15/MWh over the 12-year span if wholesale prices do not increase sufficiently. The subsidies would be adjusted if forecasted power prices exceed the baseline figure of \$39/MWh. ZECs would be capped annually at a MWh amount that represents the concerned facility's verifiable historic contribution to the clean energy resource mix. The Commission notes that the program is not intended to increase nuclear generation.

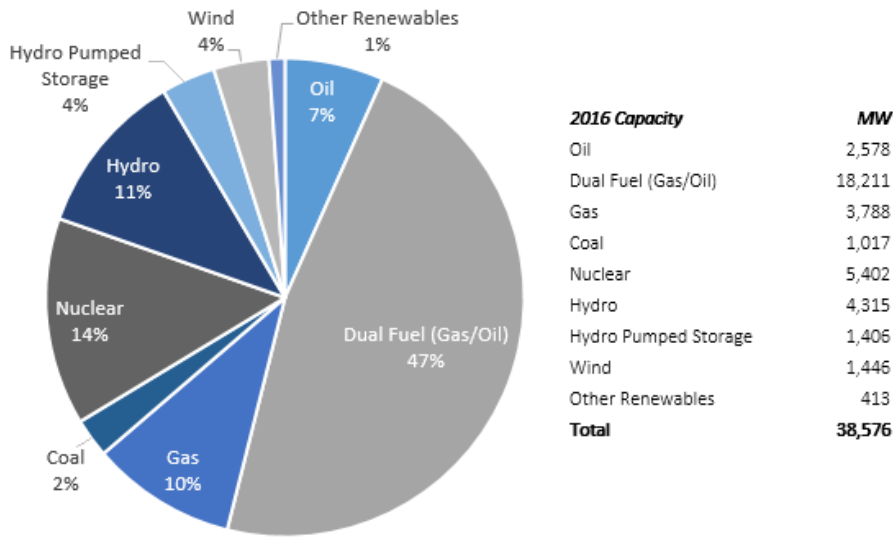
The Commission estimates net benefits of approximately \$4 billion for the first two years of the program, with up to \$965 million in total attribute payments compared to \$5 billion in benefits associated with carbon reductions, supply cost savings, and property taxes. Cost recovery would be incorporated into the commodity charges on customer bills.

According to [NY PSC](#), payments would be based on the U.S. Interagency Working Group's projected social cost of carbon, an approach that is consistent with NY PSC's guidelines for benefit-cost analysis. The outcome is expected to resemble the average pay-as-bid price that would result from a competitive bid solicitation currently conducted for Renewable Energy Credits. To determine public necessity, the proposal takes into account the historic contribution to the clean energy resource mix, degree of revenue inadequacy to preserve zero-emission attributes, cost-benefits of the subsidy in comparison to other clean energy alternatives, impacts on ratepayers, and public interest. Currently, NY PSC sees public necessity to subsidize the Ginna, Nine Mile Point, and Fitzpatrick facilities. If Indian Point becomes eligible, the Staff recommends a ZEC price calculation that reflects the difference between upstate and downstate market revenues, citing Indian Point's higher market revenues due to its location in an area of higher electric system constraints.

Upstate New York nuclear-power generating facilities have the capacity to generate approximately 27.6 million MWh of electricity per year (Figure 1). Financial challenges posed by low natural gas prices and sustained wholesale electricity price declines have led to lower revenues for nuclear generators that rely on energy revenue margins to maintain their financial viability.

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**Figure 1 – 2016 New York Generating Capacity by Fuel Source**



Source: NYISO

**Green Groups Oppose New York Nuclear Subsidy Citing Imposition of Nuclear Tax**

Green groups led by the Alliance for a Green Economy (AGREE) objected to the proposal saying that it amounted to a nuclear tax of approximately \$7.5 billion and would result in investing more than twice as much on nuclear subsidies compared to renewable energy under the CES. On the other hand, pro-nuclear groups lauded the plan, with the Nuclear Energy Institute (NEI) saying that official recognition of nuclear energy’s emission-free generation had long been a primary goal of the industry.

In June, a coalition of 112 organizations led by AGREE wrote to Governor Cuomo expressing disappointment over including a nuclear subsidy in the CES policy, saying it contradicted the state’s leadership on climate change, energy affordability, and closure of Indian Point. The coalition pointed to the New York State Independent System Operator’s (NYISO) revised analysis on the FitzPatrick deactivation assessment, which identified no resource adequacy related reliability needs in the near-term period from 2016 to 2020.

Emphasizing that nuclear power was not pollution-free, the coalition pointed to nuclear-related greenhouse gas emissions released in the fuel mining and enrichment stages, as well as the lack of long-term storage for nuclear waste. The coalition also emphasized the need to replace most upstate reactors that will retire by 2030.

The AGREE-led coalition said that New York had 8,000 solar installation jobs and that upcoming green manufacturing projects –including a Solar City factory in Buffalo, 1366 Technologies factory near Rochester, and Sora LED lightbulb factory in Syracuse –could create approximately 6,420 long-term jobs with a state investment of approximately \$937 million. By comparison,

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the proposed nuclear subsidies could cost more than \$3.5 billion to preserve less than 2,500 nuclear jobs.

The [Staff White Paper on CES](#), released in January, proposed a requirement that all utilities and energy service companies procure a share of ZECs attributable to generation from qualified nuclear facilities to maintain the state's source of zero-emission electricity. It found that the near-term closure of nuclear generating plants due to economic pressures would increase the state's dependence on fossil fuel-generation, resulting in annual carbon emissions increases of more than 15.5 million metric tons. The Commission's [CES cost study](#) estimated less than one percent impact on electricity bills in the near term and a net benefit of \$1.8 billion by 2023 attributed largely to emissions reductions despite lower electricity prices due to low natural gas prices.

### **Contrary to New York, California Considers Nuclear Phase-out; Illinois Proposals in Limbo**

In contrast to New York, California is examining plans to close its last remaining nuclear plant, Diablo Canyon in San Luis Obispo County, and replace it with emission-free resources by 2025. In June, PG&E announced a joint proposal with labor and environmental organizations to retire Diablo Canyon after its current Nuclear Regulatory Commission ([NRC](#)) operating licenses expire in 2024 (Unit 1) and 2025 (Unit 2). This transition period is expected to provide adequate time to replace Diablo Canyon's energy with clean sources – energy efficiency, renewables, and storage. Under the proposal, PG&E would voluntarily commit to a 55 percent renewable energy target in 2031, surpassing the state-mandated target of 50 percent by 2030. According to PG&E, the proposal would have a lower overall cost than relicensing the plant and operating it through 2044, and would therefore have no impact on customer costs.

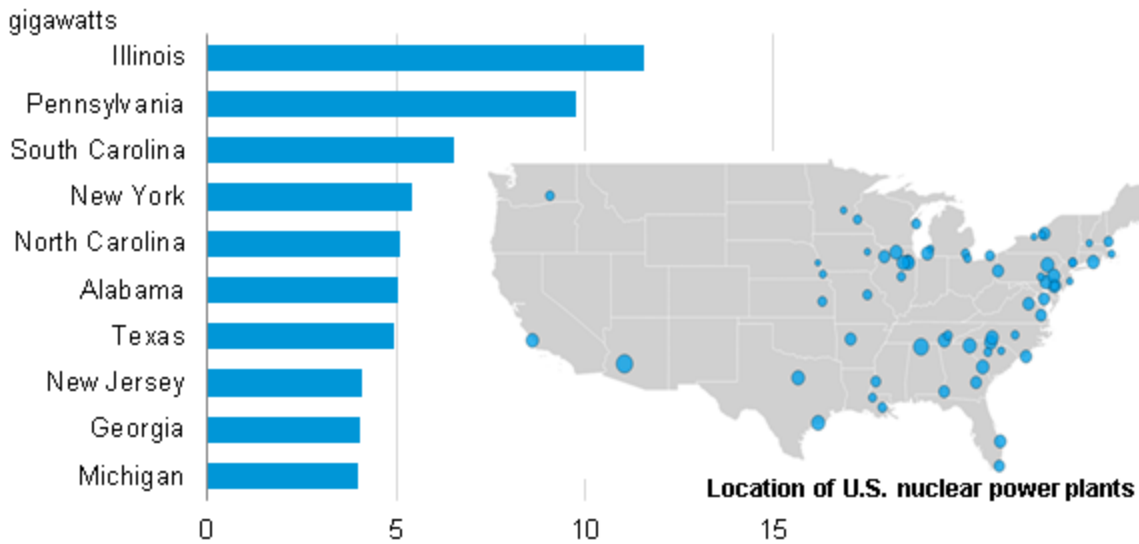
On the other hand, the Illinois Legislature failed to consider a bill subsidizing Exelon's two struggling nuclear plants in the state before adjourning on May 31. On June 2, Exelon announced that Clinton and Quad Cities, which have lost a combined \$800 million in the past seven years, would close in 2017 and 2018, respectively, putting some 4000 jobs at risk. Nuclear power currently dominates Illinois' power sector, accounting for more than a half of the state's total generation and 12 percent of the nation's nuclear power generation in 2015.

Illinois leads the nation in nuclear power generation, with approximately half the state's net generation produced by its six nuclear power plants (Figure 2).

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**Figure 2 – Nuclear Capacity for Top 10 U.S. States, 2015**



Source: EIA

**Exelon Stands to Benefit from Proposal; Discusses Acquisition of Additional Upstate Facility**

The NY PSC proposal will benefit Exelon Corporation, which has been considering closure of its Nine Mile Point Unit 1 and Ginna facility in the absence of subsidies. The company commended the proposal, underscoring the role of nuclear power as a bridge in transitioning to a low-carbon future and achieving the state's environmental goals. Upon approval of the subsidy program, Exelon plans to invest approximately \$200 million in its upstate plants, which generate 2.4 billion watts of electricity. In its June 14 [filing \(16-E-0270\)](#) with NYPSC, Exelon emphasized the certainty from the CES approval and ZECs procurement contract to keep Nine Mile Point Unit 1 and Ginna in operation. Exelon operates the largest nuclear fleet in the United States, which includes 23 reactors at 14 facilities in Illinois, Maryland, Nebraska, New Jersey, New York, and Pennsylvania, with a capacity to generate more than 22,000 megawatts of electricity.

Following NYPSC's subsidy proposal, on July 13, Entergy announced that it was considering selling the FitzPatrick facility to Exelon, consistent with its commitment to consider viable options to retain the plant, but expected to cease operations if discussions failed. In November 2015, Entergy announced that it would retire the FitzPatrick Plant at the end of its current fuel cycle, expected in late 2016 or early 2017. The company attributed its decision to significantly reduced revenues due to low natural gas prices, a flawed market design that improperly compensated the full benefits from nuclear generation, and high operational costs. Exelon said that approval of the CES program will provide the confidence to make investments to refuel the Fitzpatrick plant and reverse the shutdown decision.

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The subsidy program would provide a boost for New York's nuclear generation fleet and could prompt additional policy changes, as retention of existing nuclear plants requires long-term financial viability, which in turn hinges on effective market design that recognizes the zero-carbon benefits of nuclear power. It will likely spur other states grappling with policies for the nuclear power sector to consider plans to preserve nuclear generation, given the need for low-carbon resources to support environmental goals.

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## Disclosures Section

### RESEARCH RISKS

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Regulatory and Legislative agendas are subject to change.

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