STATE OF NEW YORK
DEPARTMENT OF PUBLIC SERVICE

Case 15-E-0302 – Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Energy Program and a Clean Energy Standard

DEPARTMENT OF PUBLIC SERVICE STAFF ZERO-EMISSIONS CREDIT PROGRAM EXTENSION PROPOSAL

Dated July 31, 2025

Contents

Introduction

On May 15, 2025, the Public Service Commission (Commission) issued an Order, that, among other things, directed the Department of Public Service (DPS or Staff) to prepare a white paper to evaluate how any continued Zero-Emission Credit (ZEC) program should be structured, and to file such white paper for public comment within 120 days.[1] The Commission's directive to Staff recognized that retaining the State's existing fleet of zero-emission resources warrants careful consideration in light of the conditions impacting renewable energy development in the State.[2] In this proposal, Staff outlines the continued need for emissions-free energy as provided by the State's existing nuclear powered electric generation resources and proposes the continuation of a ZEC program to support the extended operation of these resources.

Background

Four nuclear power reactors currently operate in Upstate New York State: (1) Nine Mile Point Nuclear Generating Station (Nine Mile Point) in Scriba, New York, Unit 1; (2) Nine Mile Point in Scriba, New York, Unit 2; (3) James A. FitzPatrick Nuclear Power Plant in Scriba, New York (FitzPatrick); and (4) R.E. Ginna Nuclear Power Plant in Ontario, New York (Ginna). Previously, three reactors operated at the Indian Point site in Downstate New York, with Indian Point Unit 1 operating from 1962 until 1974 when it was permanently shut down, and Indian Point Unit 2 and Unit 3 operating until 2020 and 2021, respectively. The Shoreham Nuclear Power Station, located on Long Island, did not proceed to commercial operation; it completed decommissioning in 1995.[3] As of 2023, nuclear facilities were responsible for approximately 22.2% of energy production statewide, a drop from 34% in 2019 following the closure of the

---

1 Case 15-E-0302, Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and a Clean Energy Standard, Order Adopting Clean Energy Standard Biennial Review as Final and Making Other Findings (issued May 15, 2025) (CES Biennial Review Order).

2 CES Biennial Review Order, p. 68.

3 U.S. Nuclear Regulatory Commission (NRC), 2024-2025 Information Digest, NUREG-1350, Volume 35 (Feb. 28, 2025), Appendices A and C, available at: https://www.nrc.gov/docs/ML2505/ML25051A094.pdf.

Indian Point Energy Center.[4] Nationwide, nuclear facilities have provided nearly a fifth of America's power each year since 1990.[5] Table 1 below provides some additional detail on the existing Upstate nuclear fleet.

Table 1: Operating Nuclear Power Plants in New York State as of July 1, 2025[6]

Plant	Operator	Location	Size / Capacity Factor[7]	License Expiration	License Renewal Application Deadline
FitzPatrick	Constellation Energy Generation, LLC	Town of Scriba, Oswego County	831 MWe 96.4%	Oct 2034	Oct 2029
Ginna	Ginna Nuclear Power Plant LLC (Constellation)	Town of Ontario, Wayne County	580 MWe 94.5%	Sept 2029	Sept 2026
Nine Mile Point Unit 1	Nine Mile Point Nuclear Station, LLC (Constellation)	Town of Scriba, Oswego County	621 MWe 91.9%	Aug 2029	Aug 2026
Nine Mile Point Unit 2	Nine Mile Point Nuclear Station, LLC (Constellation)	Town of Scriba, Oswego County	1,272 MWe 98.1%	Oct 2046	Oct 2041

New York's decarbonization policies began considering nuclear generation in 2002, when the New York Energy Planning Board (Planning Board) developed a new Energy Plan recommending that the State "lead the nation in taking actions to reduce greenhouse gas

---

4 Data regarding New York's nuclear energy profile are available at: https://www.eia.gov/state/?sid=NY#:~:text=In%202023%2C%20New%20York%20ranked,nuclear%20power%20plants%2C%20shut%20down.

5 U.S. Energy Information Administration (EIA), Nuclear Explained: Nuclear Power Plants (updated August 21, 2023), available at: https://www.eia.gov/energyexplained/nuclear/nuclear-power-plants.php.

6 NUREG-1350, Vol. 35, Appendix A; Nuclear Energy Institute, Nuclear Energy Fact Sheet 2024: New York (updated November 2024), available at: https://www.nei.org/CorporateSite/media/filefolder/resources/fact-sheets/state-fact-sheets/New-York-State-Fact-Sheet.pdf.

7 Capacity factor refers to how effectively a power plant can maximize its potential to generate electricity. Nuclear has the highest capacity factor of electric generation resources in New York State.

emissions, stressing the aggressive implementation of existing, and development of new technologies and strategies to significantly reduce emissions."[8] More specifically, it recommended that New York consider implementing a Renewable Portfolio Standard (RPS) to support the development of renewable energy generation facilities so as to reduce emissions from the energy sector.[9]

Following the Planning Board's recommendation, the Commission instituted a proceeding, pursuant to Public Service Law (PSL) §§5(2) and 66(2), to develop an RPS program,[10] and adopted the RPS program in September 2004.[11] In adopting the program, the Commission expressed its goal to promote the development of enough renewable energy generation capacity to ensure that such capacity supplied 25% of the electricity used in the State by the end of 2013.[12]

In 2008, Governor David Paterson signed an executive order calling for the creation of a new Energy Plan by June 2009.[13] In 2009, Governor Paterson signed another executive order adopting a statewide goal of reducing greenhouse gas (GHG) emissions from all sources in the State to 80% below 1990 levels by the year 2050.[14] The executive order also created a Climate Action Council responsible for drafting a Climate Action Plan for achieving the goal.[15]

---

8 New York State Energy Planning Board, 2002 State Energy Plan (issued June 2002), p. 1-42, available at: https://energyplan.ny.gov/Plans/2002-Energy-Plan (2002 State Energy Plan).

9 2002 State Energy Plan, pp. 1-39.

10 Case 03-E-0188, Proceeding on Motion of the Commission Regarding a Retail Portfolio Standard, Order Instituting Proceeding (issued February 19, 2003), p. 1 ("We are increasingly concerned with the effects on our climate of fossil-fired generation and the security implications of importing much of the fuel needed to supply our electricity needs.").

11 Case 03-E-0188, supra, Order Regarding Retail Renewable Portfolio Standard (issued September 4, 2004) (RPS Order).

12 RPS Order, pp. 24-27.

13 N.Y. Exec. Order No. 2 (Apr. 8, 2008), available at: https://www.law.cornell.edu/regulations/new-york/9-NYCRR-7.2.

14 N.Y. Exec. Order No. 24 (Aug. 9, 2009), available at: https://www.law.cornell.edu/regulations/new-york/9-NYCRR-7.24.

15 *Id.*

At the end of 2009, the Planning Board released a new Energy Plan reflecting Governor Paterson's directives and establishing several long-range policy objectives ultimately aimed at reducing the State's GHG emissions.[16] In its discussion of nuclear power, the 2009 Energy Plan stated:

> Nuclear power plays a significant role in meeting New York's energy needs. Nuclear capacity—sited, built and operated appropriately—supports key State interests. The Plan's modeling results demonstrate that increasing the State's nuclear capacity will benefit the State by lowering both wholesale prices and GHG and other emissions, and it therefore may play an integral role in the State's efforts to address climate change.[17]

In 2010, the New York Climate Action Council released the Climate Action Plan. The interim report of the Plan concluded that the State's existing nuclear capacity "must be re-licensed or replaced" to achieve the emissions reductions goals adopted by Governor Paterson,[18] and recommended that the State implement a low-carbon portfolio standard that would build on the RPS by requiring regulated utilities to procure low-carbon energy generated by "appropriately sited nuclear," among other sources.[19]

In 2015, Governor Andrew Cuomo adopted a new goal for the State of 50% of electric generation coming from renewable energy sources by 2030.[20] In a letter dated December 2, 2015, Governor Cuomo directed DPS to develop a Clean Energy Standard (CES) that replaces the RPS and reflects the new goal.[21] Additionally, Governor Cuomo directed DPS to include measures in the CES that would support Upstate nuclear facilities, as the "elimination of [such] facilities, operating under valid federal licenses, would eviscerate the emissions reductions

---

16 New York State Energy Planning Board, 2009 State Energy Plan (issued December 2009), available at: https://energyplan.ny.gov/Plans/2009-Energy-Plan (2009 State Energy Plan).

17 2009 State Energy Plan, p. 63.

18 New York State Climate Action Council, Climate Action Plan Interim Report (Nov. 2010), pp. 4-7.

19 *Id.* at 8–10.

20 New York State Energy Planning Board, 2015 State Energy Plan, Volume 1: The Energy to Lead (2015), p. 112, available at: https://energyplan.ny.gov/Plans/2015-Energy-Plan.

21 Office of the Governor of New York, Renewable Energy Letter (December 2, 2015), available at: https://www.governor.ny.gov/sites/default/files/atoms/files/Renewable_Energy_Letter.pdf.

achieved through the State's renewable energy programs, diminish fuel diversity, increase price volatility, and financially harm host communities."[22]

Governor Cuomo's request for measures to preserve the State's nuclear capacity followed news that Entergy Corporation, the then-owner of the Fitzpatrick nuclear power plant, planned to close the facility due to low electricity prices resulting from a decline in the price of natural gas.[23] Exelon Corporation, the then-owner of the Ginna plant, had also earlier announced its own plan to close that facility, and had begun receiving payments through a Reliability Support Service Agreement with the Rochester Gas & Electric Corporation.[24]

Pursuant to Governor Cuomo's directive, on January 25, 2016, Staff issued a white paper regarding a CES program (CES White Paper).[25] In the CES White Paper, Staff, among other things, cited to findings in a report prepared by The Brattle Group, which found that the closure of Upstate nuclear plants would have multiple negative near-term effects, including but not limited to higher emissions resulting from the need to procure more energy from plants powered by fossil fuels, and the potential loss of up to 25,000 jobs that could be attributed to the plants.[26] Based in part on those concerns, the CES White Paper proposed introducing a ZEC program to facilitate a market for "Tier 3" credits reflecting the benefits of New York's Upstate nuclear capacity.[27] Staff proposed that, in order to participate in the program, a facility must: (1) have an in-service date of January 1, 2015 or earlier; (2) be facing financial difficulty as determined by a Staff examination of the books and records of the facility; (3) be operating pursuant to a fully

---

22 *Id.*

23 Entergy to Close James A. FitzPatrick Nuclear Power Plant in Central New York, PR NEWSWIRE (Nov. 2, 2015), https://www.prnewswire.com/news-releases/entergy-to-close-james-a-fitzpatrick-nuclear-power-plant-in-central-new-york-300170100.html.

24 Case 14-E-0270, Petition Requesting Initiation of a Proceeding to Examine a Proposal for Continued Operation of the R.E. Ginna Nuclear Power Plant, LLC., Reliability Support Services Agreement (filed February 13, 2015).

25 Case 15-E-0302, supra, Staff White Paper on Clean Energy Standard (issued January 25, 2016) (CES White Paper); *id*., Secretary Notice (issued January 25, 2016).

26 CES White Paper, p. 29; *see* The Brattle Group, New York's Upstate Nuclear Power Plants' Contribution to the State Economy (issued December 2015), available at: https://www.brattle.com/insights-events/publications/new-yorks-upstate-nuclear-power-plants-contribution-to-the-state-economy/ (Brattle Report).

27 CES White Paper, pp. 30–31.

renewed operating license by the U.S. Nuclear Regulatory Commission (NRC) until 2029 or beyond; and (4) be consistent with any other federal and state authorizations.[28] Under these criteria, the Fitzpatrick and Ginna plants would be eligible to participate in the ZEC program, and the Nine Mile Point nuclear plants in Oswego, New York would also be eligible to participate.[29] However, the two Indian Point nuclear plants in Downstate New York would not satisfy these criteria, because they were beyond their initial 40-year operating periods (in 2013 and 2015 respectively) and they had not yet secured renewed federal and state licenses to operate for additional 20-year terms.[30]

Thereafter, on July 8, 2016, Staff issued a further filing in response to numerous public comments received on the CES White Paper.[31] In the Responsive Proposal, Staff proposed details on the calculation methodology for the ZEC program, whereby among other things, the State would provide a subsidy to eligible facilities based on the social cost of carbon (SCC), and factoring for the State's participation in the Regional Greenhouse Gas Initiative (RGGI) program.[32]

In August 2016, the Commission issued its CES Order, which, inter alia, formally created the ZEC program.[33] The Commission approved a twelve-year program, and a ZEC calculation methodology based on the SCC, with ZEC payments capped annually based on the amount of verifiable historic contributions the facility has made to the clean energy resource mix consumed by retail consumers in the State. In establishing the ZEC program, the Commission identified that the retention of the zero-emissions attributes of New York's Upstate nuclear plants would avoid approximately 15 million tons of carbon emissions per year.[34]

---

28 CES White Paper, pp. 31–32.

29 *Id*.

30 *See generally* Atomic Energy Act of 1954, §103(c), 42 U.S.C. §2133(c) (license period); 10 C.F.R. §54.31 (issuance of renewed license).

31 Case 15-E-0302, supra, Staff's Responsive Proposal for Preserving Zero-Emissions Attributes (issued July 8, 2016) (Responsive Proposal).

32 Responsive Proposal, p. 5.

33 Case 15-E-0302, supra, Order Adopting a Clean Energy Standard (issued August 1, 2016) (CES Order).

34 CES Order, p. 19.

New York's ZEC program subsequently faced multiple legal challenges, both in federal and state courts, all of which ultimately upheld the program. In October 2016, a group of electrical generators and trade groups of electrical generators filed a complaint arguing that the ZEC program was preempted by the Federal Power Act (FPA) and violated the Dormant Commerce Clause of the U.S. Constitution. The federal district court in that case dismissed the plaintiffs' claims after finding that the ZEC program was not preempted by the FPA and did not violate the Dormant Commerce Clause.[35] That decision was subsequently upheld by the United States Court of Appeals for the Second Circuit.[36] On April 15, 2019, the United States Supreme Court unanimously denied a petition for review of the Second Circuit's ruling.[37]

In November 2016, a group of litigants led by Hudson River Sloop Clearwater, Inc. submitted a combined CPLR Article 78 and declaratory judgment petition challenging the ZEC program, arguing that the program violated the State Administrative Procedure Act (SAPA), the State Environmental Quality Review Act (SEQRA), and the PSL, and was otherwise arbitrary and capricious. Over two decisions, the Albany Supreme Court dismissed every claim presented by the petitioners.[38]

Relatedly, in 2017, the State of Illinois implemented a program substantially similar to New York's ZEC program. A group of plaintiffs challenged the Illinois program on similar bases as the plaintiffs in *Coalition for Competitive Electricity,* raising preemption and Dormant Commerce Clause claims. The trial court dismissed these claims,[39] and the Court of Appeals for the Seventh Circuit affirmed that decision.[40] As in *Coalition*, the plaintiffs filed a petition for a

---

35 *Coal. for Competitive Elec. v. Zibelman*, 272 F. Supp. 3d 554 (S.D.N.Y. 2017).

36 *Coal. for Competitive Elec. v. Zibelman,* 906 F.3d 41 (2d Cir. 2018).

37 587 U.S. 938 (2019) (denying petition for certiorari review *sub nom. Electric Power Supply Ass'n v. Rhodes*).

38 *Hudson River Sloop Clearwater, Inc. v. N.Y. State Pub. Serv. Comm'n,* No. 7242/2016, slip op. at 5 (Sup. Ct. Albany Cnty. Jan. 22, 2018); *Hudson River Sloop Clearwater, Inc. v. N.Y. State Pub. Serv. Comm'n,* No. 7242/2016, slip op. at 14 (Sup. Ct. Albany Cnty. Oct. 8, 2019).

39 *Village of Old Mill Creek v. Star*, No. 17 CV 1163, 2017 WL 3008289 (N.D. Ill. 2017).

40 *Elec. Power Supply Ass'n v. Star*, 904 F.3d 518 (7th Cir. 2018).

writ of certiorari, which the Supreme Court denied.[41] The United States and the Federal Energy Regulatory Commission (FERC) endorsed the conclusions reached by the trial courts in both *Coalition for Competitive Electricity* and *Old Mill Creek*.[42] They deemed preemption an "extraordinary and blunt remedy," and asserted that "if [Illinois's and New York's ZEC programs] in fact, impair FERC-jurisdictional wholesale capacity markets, the solution lies with the [FERC], not with courts."[43]

In July 2019, the New York Legislature passed the Climate Leadership and Community Protection Act (CLCPA), which committed the State to the goal of reducing emissions by 85% by 2050.[44] The CLCPA also directed the Commission to establish a program target to achieve a statewide electric generation system having a minimum of 70% of electricity generated by renewables by 2030 (70 by 30 Target) and a statewide electrical demand system with zero-emissions by 2040 (Zero by 40 Target), as well as a variety of technology-specific deployment goals.[45]

ZEC 1.0 (2016-2029)

In the 2016 CES Order, the Commission concluded, based its review of Staff's research, the comments received, the information gathered, and the proposals and arguments submitted in the proceeding, that the benefits of preserving the zero-emissions attributes of New York State's existing Upstate nuclear facilities outweighed the costs. Specifically, the Commission found Staff's Responsive Proposal, in which it recommended paying ZEC payments to zero-emissions facilities based upon the social cost of carbon, to be consistent with the Commission's approach in setting guidelines for Benefit-Cost Analysis. [46]

---

41 *Elec. Power Supply Ass'n v. Star*, 587 U.S. 937 (2019) (denying petition for certiorari review of Seventh Circuit ruling).

42 Brief for the U.S. and the Fed. Energy Regul. Comm'n as Amici Curiae in Support of Defendants-Respondents and Affirmance at 12, 17, *Vill. of Old Mill Creek et al. v. Star et al*., Docket No. 17-2433 (7th Cir. 2018).

43 *Id*. at 20.

44 Chapter 106 of the Laws of 2019.

45 PSL §66-p.

46 CES Order, p. 150.

As approved by the CES Order, the ZEC program provides a ZEC payment to an eligible nuclear generating facility where there is a public necessity to preserve the zero-emissions environmental attributes of the facility. At its discretion, the Commission determines the public necessity on a plant-specific basis, using criteria deemed reasonable by the Commission, on the basis of: (a) the verifiable historic contribution the facility has made to the clean energy resource mix consumed by retail consumers in New York State regardless of the location of the facility; (b) the degree to which energy, capacity and ancillary services revenues projected to be received by the facility are at a level that is insufficient to provide adequate compensation to preserve the zero-emission environmental values or attributes historically provided by the facility; (c) the costs and benefits of such a payment for zero emissions attributes for the facility in relation to other clean energy alternatives for the benefit of the electric system, its customers and the environment; (d) the impacts of such costs on ratepayers; and (e) the public interest.[47]

Based on the above criteria, the Commission found that all three facilities in Upstate New York (FitzPatrick, Ginna, and Nine Mile Point) have provided a significant verifiable contribution to New York State's clean energy resource mix as consumed by New Yorkers. Based on financial information received, the Commission also found that the projected revenues for these facilities fell short of anticipated costs, which seriously jeopardized the preservation of the zero emissions attributes of these facilities. The Commission also determined that the environmental attributes of the three Upstate facilities were at risk.[48] The Commission further determined that the benefits related to the zero-emissions power of these facilities outweighed the costs, and the potential customer bill impacts of providing ZEC payments to them were reasonable, particularly in the context of 2016's historically low commodity costs. As to the public interest, the Commission determined that there was a public necessity to provide ZEC payments to the FitzPatrick, Ginna and the Nine Mile Point facilities for the purpose of maintaining the emission-free attributes because there were insufficient zero-emission alternatives available as replacement any time soon.[49]

---

47 CES Order, pp. 124-128.

48 CES Order, pp. 125-126.

49 CES Order, pp. 128-129.

Regarding ZEC price formula mechanics, the Commission adopted Staff's proposal for the ZEC contracts to be administered in six two-year tranches. Staff proposed the price of the ZECs be updated for each tranche pursuant to a set formula that provides certainty as to how prices will be set. For the first tranche, the ZEC price was based on the average April 2017 through March 2019 projected SCC as published by the U.S. Interagency Working Group (USIWG) in July 2015 (nominal $42.87/short ton), less a fixed baseline portion of that cost that is already captured in the market revenues received by the eligible facilities due to the RGGI program. The RGGI baseline impact was calculated based upon the average of the April 2017 through March 2019 forecast RGGI prices embedded in the Congestion Assessment and Resource Integration Study (CARIS) Phase 1 report (nominal $10.41/short ton), and yielded a Tranche 1 net social cost of carbon of $32.47 (nominal $/short ton), and a ZEC price of $17.48 per megawatt-hour (MWh).[50]

For the contract periods of Tranche 2 through Tranche 6, the Commission adopted the following ZEC price calculation methodology:[51]

Social Cost of Carbon	-	Baseline RGGI Effect	-	Amount Zone A Forecast Energy Price and ROS Forecast Capacity Price combined exceeds $39/MWh	=	ZEC Price ($/MWh)

Regarding the SCC, the Commission adopted Staff's proposal to fix the SCC component (nominal dollars per short ton of carbon dioxide) by tranche based on SCC estimates published in July 2015 by the USIWG. These figures are as follows: Tranche 2 ($46.79), Tranche 3 ($50.11), Tranche 4 ($54.66), Tranche 5 ($59.54), and Tranche 6 ($64.54). The Commission also adopted Staff's proposal for the RGGI baseline effect to be subtracted from the SCC at the same fixed amount for all tranches, at a nominal $10.41/short ton. The Commission noted that the energy price forecast part of the adjustment in the methodology would capture forward-going changes due to RGGI.

[50] CES Order, pp. 129-130.

[51] CES Order, p. 131.

The Commission further adopted the use of a fixed 0.53846 conversion factor for all tranches to convert the SCC figures from $/short ton to $/MWh.[52] The conversion factor is based on the emissions rates of the mix of resources that would be avoided by the preservation of zero-emissions attributes.

Regarding the adjustment for forecast energy and capacity prices, for Tranches 2 through 6, the Commission adopted Staff's proposal to use changes in independently published forecasts of going-forward energy and capacity prices to adjust the ZEC price (downward only so as not to exceed the SCC), by the amount that future forecasts predict that New York Independent System Operator, Inc. (NYISO) Zone A energy prices combined with the Rest of State (ROS) capacity prices will exceed $39/MWh. The Commission specifically noted that the Upstate nuclear units are located in NYISO Zones B and C and do not receive market energy revenues at the Zone A Locational Based Marginal Price, but Zone A was chosen as a reference price solely for the mechanics of the adjustment mechanism based on the availability and quality of forecasts for Zone A as compared to forecasts from Zones B and C.[53] The Commission expressly noted that the reference price forecast does not act within the formula to establish a quantity of energy and capacity revenues, and, as a deliberate intention, no part of the formula establishes energy or capacity prices or revenues; rather, the Zone A forecasts are used in the calculation to measure only the change in independent forecasts over time.[54]

Regarding contract performance, the Commission directed that the amount of ZECs to be purchased on an annual basis be capped at a MWh amount that represents the verifiable historic contribution the facility has made to the clean energy resource mix consumed by retail consumers in New York State. The Commission found it reasonable to use the sum of the then-most recent four quarters of production, July 2015 through June 2016, as a measure of the facilities' output, and therefore capped the amount of ZECs to be purchased on an annual basis at

---

[52] The carbon emissions rate was fixed for the first three tranches, with a one-time adjustment in the event a certain level of renewables is added in New York. That level of renewables was not achieved, so no adjustment to the conversion factor were made.

[53] CES Order, p. 139.

[54] *Id*.

that amount, which totaled 27,618,000 MWh.[55] The Commission further ordered that each facility would have an obligation to produce the ZECs and to sell them to NYSERDA through March 31, 2029, except during periods when the calculated ZEC price pursuant to the contract is $0. In order to ensure performance, the Commission established various financial consequences for failure to produce the requisite ZECs.

Recognizing that plant closures could impact the production of ZECs, the Commission also ordered that, if any of the three Upstate nuclear facilities permanently stopped producing zero-emissions attributes for any reason, the overall cap of 27,618,000 MWh would be reduced by one-third for each facility. The Commission noted that these requirements would encourage facility owners to keep all of the plants operating and ensure that the continuing program keeps the original balance between ratepayer and generator interests.

The Commission further adopted Staff's proposal that each Load Serving Entity (LSE) in the State, including the New York Power Authority and the Long Island Power Authority, be required to encourage the preservation of the environmental values or attributes of qualified zero-emissions nuclear-powered electric generating facilities for the benefit of the electric system, its customers, and the environment, by purchasing a proportion of the ZECs purchased annually by NYSERDA, based on the proportion of the electric energy load served by the LSE in relation to the total electric energy load served by all LSEs in the New York Control Area (NYCA). The ZEC obligation is separate from any obligation on LSEs to encourage generation utilizing renewable resources.[56] The Commission also directed that LSEs would make ZEC purchases by contract with NYSERDA and recover costs from ratepayers through commodity charges on customer bills.[57]

The ZEC contracts expressly provided that ZEC payments would be adjusted for a change in law that materially changes the original economic benefits of the contract, such as a federal tax credit aimed at nuclear production like the Inflation Reduction Act of 2022 (IRA) production tax credit (PTC). Constellation will begin claiming the federal PTC to reflect its

---

[55] CES Order, p. 145.

[56] CES Order, p. 147.

[57] CES Order, p. 150.

ownership in the Upstate New York nuclear generation units on its corporate tax return for the first time in calendar year 2025 for tax year 2024, and it is expected that the PTC will reduce the proportion of ZEC payments paid for by New York State ratepayers during the PTC's tenure.[58]

Since its creation, the ZEC program made between $462 million and $590 million in annual ZEC payments to participating facilities.[59] Without the ZEC program, the Ginna and Fitzpatrick facilities would have closed due to "continued deteriorating economics."[60] The same economic pressures also applied to Nine Mile Point Units 1 and 2.[61] Instead, following the initiation of the ZEC program, these facilities have continued to supply high-capacity baseload electric power for New York State.[62] As Table 2 shows below, the ZEC payments have also resulted in significant emission reductions. Over the past five years since the enactment of the CLCPA, the program has helped avoid over 13 million metric tons (MT) of CO_2 per year, or the equivalent to the yearly operation of approximately 35 natural gas-fired power plants.[63]

---

[58] Governor Hochul Announces Significant Federal Assistance to Reduce Clean-Energy Costs for New Yorkers, Inflation Reduction Act Helps Support Nuclear Power in New York State (Aug. 1, 2023), available at: https://www.governor.ny.gov/news/governor-hochul-announces-significant-federal-assistance-reduce-clean-energy-costs-new-yorkers

[59] *See* Case 15-E-0302, supra, ZEC Fiscal Summary Report 2024 (filed March 31, 2025).

[60] CES White Paper, pp. 28-29.

[61] *Id.*

[62] The capacity factor of the four Upstate nuclear facilities in 2024: Fitzpatrick (94.83%), Ginna (97.56%), NMP1 (97.54%), and NMP2 (91.22%).

[63] Calculated using the Environmental Protection Agency (EPA) Greenhouse Gas Equivalencies Calculator (https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator#results), utilizing the Emissions and Generation Resource Integrated Database (eGRID) available at https://www.epa.gov/egrid.

Table 2: ZEC Program Emission Reductions (CO_2)[64]

CO_2 (Metric Tons)	Source	2020	2021	2022	2023	2024
Incremental Reductions	Tier 3 ZECs	13,250,894	14,120,884	13,404,018	13,760,194	13,525,145
Cumulative Reductions	Tier 3 ZECs	13,250,894	27,371,778	40,775,796	54,535,990	68,061,135

Discussion

New York's nuclear fleet has provided historic contributions to the clean energy resource mix in New York State.[65] In 2023, for example, nuclear power generated 27,522 gigawatt-hours (GWh) of energy, or 22 percent of the total amount of the energy generated front-of-meter in the NYCA that year (124,522 GWh).[66] Prior to the ZEC program, however, low natural gas prices and the concomitant low electric wholesale energy market prices led to lower revenues for electric generators. This was especially problematic for the Upstate nuclear facilities that relied heavily on energy and capacity market revenues to maintain their financial viability.[67]

---

[64] Emission reductions are estimated by applying the GHG emission reduction factor of electricity to the amount of ZECs created during the ZEC compliance year. The electricity factor utilized is the marginal electric emission factor representing the change in the tons of CO_2 produced by the bulk system when system load levels are reduced by 1% due to distributed energy resources. This factor is calculated by DPS utilizing the NYISO CARIS2 Base model and General Electric's Multi-Area Production Simulation Models. *See* CE-10 Data Dictionary and Scorecard Guidance (issued December 16, 2021), p. 27, available at: https://dps.ny.gov/clean-energy-guidance-documents (CE-10 Guidance).

[65] CES Order, p. 125.

[66] NYISO, 2024 Load & Capacity Data(issued April 2024), p. 111, available at: https://www.nyiso.com/documents/20142/2226333/2024-Gold-Book-Public.pdf (Gold Book).

[67] CES White Paper, p. 28.

Staff recognizes that the Upstate nuclear facilities need continued revenue certainty to operate beyond the ZEC 1.0 program period.[68] Ginna and Nine Mile Point Unit 1 will be the first nuclear plants in the State to seek a subsequent license renewal from 60 to 80 years, extending their operational period through 2049. There are inherent costs and risks to operating a nuclear facility to 80 years, including rigorous aging management procedures and necessary capital investments to ensure continued safety and operational efficiency.[69] Staff requests that Constellation provide information to show what impact, if any, the original ZEC program has had to operations and maintenance expenses, as well as the company's anticipated costs during the subsequent license renewal period.

As discussed in more detail below, the loss of these facilities would also have significant emissions, economic, and land use impacts.

Timing and Aging Management

Nuclear plants must receive an initial license from the NRC to operate for 40 years, and are eligible to apply for extensions in 20-year increments.[70] License renewal beyond year 60 is known as "subsequent license renewal," a process which authorizes nuclear plants to operate beyond 60 years (i.e., the initial 40-year operating license term and the first 20-year license renewal term). All of the operating nuclear plants in New York are currently in their first 20-year extension (i.e., the 40-to-60-years of licensed operations), with an opportunity to pursue

---

[68] The need for a continued ZEC program was identified in Constellation's application for an exemption to the NRC's license renewal timeline, in which the company acknowledged that the economic viability of continued operation of Ginna and Nine Mile Point Unit 1 beyond the current expiration date of its NRC license is uncertain, and stated "[t]he New York ZEC program expires on March 31, 2029, and it is unknown at this time whether this or any similar program will be continued beyond then. Given the uncertainty of this program beyond 2029, EGC cannot plan for those revenues to continue into the period of subsequent license renewal for Ginna and [Nine Mile Point 1]." NRC Docket No. 50-244 et al., R.E. Ginna Nuclear Power Plant, Request for Exemptions from 10 CFR 2.109(b) (September 11, 2020), Attachment 1, p. 1, available at: https://www.nrc.gov/docs/ML2025/ML20255A001.pdf.

[69] *See*, *e.g.*, World Nuclear Association, Safety of Nuclear Power Reactors (updated February 11, 2025), available at: https://world-nuclear.org/information-library/safety-and-security/safety-of-plants/safety-of-nuclear-power-reactors.

[70] Atomic Energy Act of 1954, § 103(c), 42 U.S.C. § 2133(c) (initial license period); 10 C.F.R. § 54.31 (issuance of renewed license).

subsequent license renewal to 80 years. The NRC typically requires license renewal applications to be submitted five years prior to a plant's license expiration date. For Nine Mile Unit 1 and Ginna, the NRC granted an exemption to the license renewal application timelines, shortening the application period to three years.[71] Constellation has indicated to the NRC that it intends to submit its subsequent license renewal application between January and March 2026 for Nine Mile Point Unit 1, and between April and June 2026 for Ginna.[72]

As part of the license renewal process, the NRC reviews the safety and technical requirements for an extended license term, and the renewal is based on the NRC's assessment of the plant's operational safety, including environmental protection, being assured during the 20-year extension period.[73] While the license renewal process primarily considers passive systems, structures, and components, such as piping, bolts, baffles, formers, concrete structures, and electrical cables and connections, their degradation may not be as readily apparent as the degradation of active structures and components.[74] Implementation of a rigorous aging management program plays an important role in checking such components during extended operations.[75] Furthermore, the technical community has identified a number of additional challenges to plant operations beyond 60 years, including the possible onset of previously known age-related degradation mechanisms that have not yet been observed, the acceleration of degradation already observed and accounted for, and the emergence of new degradation mechanisms related to the plant's operation beyond 60 years.[76] The United States nuclear fleet is the largest in the world, at 94 units, and is also one of the oldest, with an average age of 42.7

---

71 *See* NRC Docket No. 50-220 et al., Nine Mile Point Nuclear Station, Unit 1, Updated Notice of Intent to Pursue Subsequent License Renewal Applications (filed May 9, 2024), available at: https://www.nrc.gov/docs/ML2413/ML24130A126.pdf.

72 *Id*.

73 *See* 10 C.F.R. Part 54.

74 NRC, Review of Aging Management Programs: Compendium of Insights from License Renewal Applications and from AMP Effectiveness Audits Conducted to Inform Subsequent License Renewal Guidance Documents (June 15, 2016), available at: https://www.nrc.gov/docs/ML1616/ML16167A076.pdf.

75 *Id.* at 27.

76 *Id.* at 27-28.

years.[77] New York's nuclear fleet itself is also one of the oldest in America, with an average age of approximately 50 years, with Nine Mile Point Unit 1 being the oldest at 56 years and Ginna the second oldest at 55 years.[78] Recognizing that New York's existing nuclear fleet is aging, continued safe and reliable operation will require rigorous and constant monitoring and inspections, followed by timely and preventative operations and maintenance and capital project investments.

Emissions

The Commission is advancing emissions reduction targets through programs calibrated to deploy enough renewable energy and energy storage to make up at least 70% of New York's generation mix. Progress toward the Zero by 40 Target, however, will require a substantial amount of zero-emission resources to reliably meet statewide electricity demand by 2040.[79] Consideration should be given to policy decisions that help ensure the continued operation of existing zero-emission generation assets which are critical to achieving the State's CLCPA targets.

From a life-cycle perspective, nuclear reactors have demonstrated the lowest lifecycle emissions of any generation technology when including capital expenditure embodied emissions.[80] While the existing New York nuclear fleet does not produce carbon or other direct air pollutant emissions, a retiring nuclear plant is most likely to be replaced by natural gas-fired

---

77 Mycle Schneider et al., World Nuclear Industry Status Report 2024 (September 2004), p. 27, available at: https://www.worldnuclearreport.org/World-Nuclear-Industry-Status-Report-2024.

78 U.S. Nuclear Plant License Information is available at: https://www.nei.org/resources/statistics/us-nuclear-plant-license-information.

79 Notably, while the CLCPA established the Zero by 40 Target, the term "zero emissions" is not clearly defined in the CLCPA or in the PSL. The Commission is currently undertaking a process to establish key terms in PSL §66-p, including the appropriate criteria for complying with a "zero emissions" standard. *See* Case 15-E-0302, supra, Department of Public Service Proposed Definitions of Key Terms in PSL §66-p (filed November 4, 2024).

80 Jun Hong Clarence Ng, Pradeep Vyawahare, Pahola Thathiana Benavides, Yu Gan, Pingping Sun, Richard Boardman, Jason Marcinkoski, Amgad Elgowainy (March 2025), Life-cycle greenhouse gas emissions associated with nuclear power generation in the United States. JOURNAL OF INDUSTRIAL ECOLOGY 29(7). https://onlinelibrary.wiley.com/doi/full/10.1111/jiec.70008.

plants that do emit carbon and other air pollutants. The Brattle Report projected that average annual carbon emissions would be almost 16 million tons higher absent the generation from the Upstate nuclear plants.[81] The Brattle Report also identified that Upstate nuclear plants also prevent the emission of 13,000 tons of nitrogen oxides, 3,000 tons of sulfur dioxide, and 2,000 tons of particulate matter each year.[82]

A recent example of replacing nuclear energy with fossil fuels occurred with the closure of the two remaining Indian Point reactors. Between 2019 (i.e., the last year during which both Indian Point Unit 2 and Unit 3 were in operation) and 2022 (i.e., the first year during which neither reactor was in operation), the proportion of electricity generated by burning fossil fuels increased,[83] and air emissions from the New York electric grid increased by approximately 26%, from 22.12 million metric tons of carbon dioxide equivalent (mmt CO_2e GWP20) to 27.79 mmt CO_2e GWP20.[84] Two large natural gas fired electric generation plants, Cricket Valley Energy Center and CPV Valley Energy Center, came online to replace Indian Point and maintain reliability.[85]

A comparison between the Additional Action and No Action scenarios in the latest State Energy Plan's Pathways Analysis further highlights the importance of maintaining the existing nuclear fleet. Under the Additional Action scenario, existing nuclear plant licenses are extended to 80 years, and the State's nuclear generation capacity remains steady at 3,305 megawatts (MW)

---

81 *See* Brattle Report, p. 1.

82 *See* Brattle Report, p. 11.

83 Data from the EIA shows that, between 2019 to 2022, net generation fell by 6,418 GWh, from 131,603 GWh to 125,185 GWh, while nuclear generation fell by 18,053 GWh, from 44,865 GWh to 26, 812 GWh, and natural gas generation increased by 12,700 GWh, from 47,612 to 60,312 GWh. The data is available at: https://www.eia.gov/electricity/data/browser/#/topic/0?agg=2,0,1&fuel=vvvp&geo=0002&sec=g&freq=A&start=2001&end=2024&ctype=linechart&ltype=pin&rtype=s&pin=&rse=0&maptype=0 .

84 New York State Department of Environmental Conservation (NYSDEC), 2024 NYS Greenhouse Gas Emissions Report: Sectoral Report #1 (issued December 2024), p. 5.

85 NYISO, Generator Deactivation Assessment Indian Point Energy Center (issued December 13, 2017), available at: https://www.nyiso.com/documents/20142/1396324/Indian_Point_Generator_Deactivation_Assessment_2017-1213.pdf/f673a0f8-5620-1d7b-4be2-99aaf781ac5c.

through 2040.[86] Under the No Action scenario, the licenses for reactors' continued commercial operations are not extended, resulting in the cessation of reactor operations, and the commencement of decommissioning of the plants as they reach their retirement age. Nuclear generation capacity under the No Action scenario decreases by 1,201 MW in 2030 and 2,033 MW in 2040, contributing to more natural gas-fired generation through 2040.[87]

Market Dynamics and Economic Impacts

The closure of New York's Upstate nuclear plants would also expose the State to greater energy price volatility and energy security concerns. Nuclear energy generation has high fixed operating costs but very low marginal costs, while fossil fuel generators have high marginal costs due to the cost of fuel, which can vary significantly on a day-to-day basis. As was the case when New York first implemented the ZEC program in 2016, it is very likely that any decrease in nuclear energy generation would be accompanied with an equally sizeable increase in fossil fuel energy generation and GHG emissions.[88] Greater dependency on fossil fuels also raises reliability concerns, particularly during extreme cold weather events.[89] New York has a diverse electric generation mix, which benefits the State by mitigating price volatility and reducing the State's reliability on any one fuel source. This diversity, delivered in part by the State's existing nuclear fleet, provides New York consumers with a resilient electricity supply and ensures greater energy security should one fuel supply source be compromised, particularly at a time of high end-user demand on the electric system.

The closure of the Upstate Lake Ontario nuclear reactors would also have immediate negative economic impacts at the regional level. As mentioned earlier, the Brattle Group found in their 2015 report that closure threatened upwards of 25,000 direct and indirect jobs that could

---

86 Draft New York State Energy Plan, Chapter 16 Pathways Analysis, (July 2025), pp. 22-27, available at: https://energyplan.ny.gov/Plans/Draft-2025-Energy-Plan.

87 *Id.* at 17-18.

88 *See* CES White Paper, p. 29.

89 *See* Northeast Power Coordinating Council, Northeast Gas/Electric System Study (issued January 21, 2025), p. 4, available at: https://cdn.prod.website-files.com/67229043316834b1a60feba3/678fee912264907c381a0f68_NPCC%20Northeast%20Gas%20Electric%20System%20Study.pdf.

be attributed to the plants.[90] The Upstate nuclear fleet directly employs approximately 2,300 people at the plants.[91] Constellation also pays more than $144 million in net state taxes annually, further supporting the host communities.[92]

This availability of reliable electricity is also critical to attracting new economic development in New York State. For example, Micron Technologies recently opted to site a new major semiconductor manufacturing facility in Central New York in large part due to the reliable electricity made available by New York's nuclear capacity.[93] The effects of the closure of the Indian Point nuclear plants further amplify these concerns. Prior to its closure, Indian Point employed more than 1,000 people, with a payroll of more than $140 million, making it one of the larger employers in Westchester County.[94]

"Clean Firm" Technology

While the Commission is pursuing programs and policies to develop renewable energy and battery storage to meet the State's renewable energy target, these resources are unlikely to replace a significant loss of zero-emission nuclear generation. Nuclear energy provides unique services to the grid that renewables cannot easily replicate, particularly during "lulls" of wind and solar generation.[95] Retiring the existing nuclear facilities at the end of their current 60 year-

---

90 Brattle Report, p. 5.

91 *Id.*

92 *Id.*

93 Andrew Donovan, Even a blip of power outage could cost Micron's fabs thousands of dollars in ruined chips, LOCALSYR.COM (May 24, 2024), https://www.localsyr.com/news/local-news/even-a-blip-of-power-outage-could-cost-microns-fabs-thousands-of-dollars-in-ruined-chips/ (Scott Gatzemeier, corporate vice president of U.S. Expansion at Micron: "One of the reasons why we made the decision to go there is there's a nuclear power plant 40 miles directly north of our facility with a direct-line connection to a 345-KV substation across the street from that site.").

94 Thomas C. Zambito, Indian Point shutdown cost local jobs. Federal funding could resurrect them, JOURNAL NEWS (Feb. 14, 2023), https://www.lohud.com/story/news/2023/02/14/indian-pointnuclear-shutdown-cut-jobs-federal-money-westchester-biosciences/69886732007/.

95 NYISO, 2023-2042 System & Resource Outlook (The Outlook) (issued July 23, 2024), Appendix E, available at: https://www.nyiso.com/documents/20142/46037414/2023-2042-System-Resource-Outlook.pdf (NYISO Resource Outlook).

year licenses could increase power sector decarbonization costs by $7.6 billion.[96] Furthermore, in the Draft Biennial Review, Staff and NYSERDA noted that the State was not on track to meet the 70 by 30 Target due to a confluence of factors.[97] The Draft Biennial Review noted, for example, how global interest rates, inflation, supply chain pressures, and labor needs are all factors affecting the development and deployment of renewable energy .

Opportunities to replace lost firm nuclear capacity with other low- or zero-carbon alternatives will require the deployment of novel technologies and their integration into a changing grid – some of which may not currently be commercially feasible.[98] The technical conference hosted by Staff and NYSERDA in December 2023 regarding the Zero by 40 Target highlighted how various energy technologies that are not commercially available at present could, if widely deployed, address the emergence of the supply and demand "gap." [99] However, various panelists and commenters noted that while several technologies show promise, the ability to deploy these technologies at the locations and scale required remains uncertain.

In discussing such technologies, often called Dispatchable Emissions Free Resources (DEFR), the NYISO Resource Outlook states:

> While essential to the grid of the future, such DEFR technologies are not commercially viable today at the necessary scale. Even assuming that they are commercially viable, there remains significant work in implementation and logistics that must be overcome to economically justify transitioning the dispatchable fleet to some combination of new technologies in the next 15 years. The research, development, and construction lead times necessary for these technologies may extend beyond the policy mandate timeline, in which case other existing generation technologies may be required to remain in operation to continue to maintain a reliable system.[100]

---

96 New York State Climate Action Council, Scoping Plan (issued December 2022), Appendix G, pp. 83-84, available at: https://climate.ny.gov/resources/scoping-plan (Scoping Plan).

97 Draft Biennial Review, pp. 11-18.

98 *See* NYISO Resource Outlook, Appendix F.

99 A recording of the Technical Conference can be accessed at: https://youtu.be/H8cDf0bRetQ?t=1144

100 NYISO Resource Outlook, p. 9.

Notwithstanding the foregoing, there may be opportunities to support additional DEFRs with the existing nuclear fleet. According to the U.S. Department of Energy, the Nine Mile Point nuclear plant in Oswego, New York hosts the first-of-its-kind facility in the United States to generate clean hydrogen via nuclear power.[101] The 1.25 MW electrolyzer uses a small amount of Nine Mile Point Unit 2's electric output to produce hydrogen that is currently used for the facility's own operational needs. This project highlights how nuclear power plants may help lower costs and scale-up the production of clean hydrogen for both operational uses and for use as a potential DEFR in the future.

Land Use

Replacing existing nuclear generation with renewable energy must also be considered as New York balances clean energy development with the continued use of agricultural lands to support farms and related industries. Nuclear is the most efficient source of energy in terms of Land Use Intensity of Energy (LUIE) metric when compared to natural gas, wind, solar, geothermal, hydroelectric, and biomass generation.[102] LUIE is a metric that measures the amount of land needed to produce one terawatt-hour of electricity per year. For nuclear generation, a majority of land impacts comes from the siting of the power plant itself, with indirect land use from uranium mining only about 10% of the total LUIE.

The development of additional renewable energy generation resources under the CLCPA will require land to site such resources. Based on information from NYSERDA's Large-Scale Renewables (LSR) Supply Curve and NYISO's 2024 Load & Capacity Data (Gold Book), Staff performed an analysis to estimate the amount of land that would be used by solar and wind resources in New York State by 2040. Using outputs from the capacity expansion modeling carried out for Cycle 1 of the Coordinated Grid Planning Process (CGPP), Staff's analysis

---

[101] U.S. Department of Energy, Nine Mile Point Begins Clean Hydrogen Production (March 7, 2023), https://www.energy.gov/ne/articles/nine-mile-point-begins-clean-hydrogen-production.

[102] Jessica Lovering, Marian Swain, Linus Blomqvist, Rebecca R. Hernandez (July 2022), Land-use intensity of electricity production and tomorrow's energy landscape. PLoS ONE 17(7): e0270155. https://doi.org/10.1371/journal.pone.0270155.

showed that more than 4% of New York State land would be needed for wind and solar resources by 2040.[103]

Recent CGPP modeling also included a scenario that incorporates a high-cost, low-operating (HcLo) DEFR as a replacement to the theoretical hydrogen-based DEFR used in the baseline modelling (the State Scenario). This HcLo DEFR could represent a nuclear resource that provides a significant portion of locational energy needs as a high firm-capacity resource. Using such a resource, the capacity expansion model projected less wind and solar were needed both Upstate and Downstate due, in part, to the high capacity factor of the HcLo DEFR. Staff's land analysis of this scenario showed that total State land use by renewables dropped by 0.65% to a total of 3.44%. These results emphasize the significance of land use considerations as New York continues to maintain its existing clean energy infrastructure. While these analyses assess the impact of *new* nuclear resources on land use, the retirement of any *existing* nuclear capacity would likely have a similar land use impact if its generation were to be replaced by additional solar or wind resources Upstate, where land availability is already expected to be constrained in order to meet the CLCPA requirements.

Zero-Emission Nuclear Power Production Federal Tax Credit

The zero-emission nuclear power production credit is a per kilowatt-hour federal tax credit included under Section 45 of the U.S. tax code.[104] This PTC was created through the IRA to incentivize the production of electricity from qualified nuclear power facilities between December 31, 2023 and December 31, 2032.[105] Federal legislation signed by the President on July 4, 2025 retained the nuclear PTC with a new end date of 2031 and restrictions on projects involving "prohibited foreign entities."[106] Staff expects that Constellation will realize significant savings for New York ratepayers through the PTC when the company finalizes its 2024 tax return later in calendar year 2025. While the actual savings are not yet known today, the PTC is a potentially important tool to offset ZEC program costs, while further improving the cost-

---

[103] Information on the CGPP and capacity expansion modeling outputs can be found at: https://dps.ny.gov/eppac-supporting-documents.

[104] Internal Revenue Code (IRC) § 45U.

[105] 26 U.S.C. § 45U (2022).

[106] Title 119-21, H.R. 1 (2025) One Big Beautiful Bill Act.

benefit analysis of maintaining the existing nuclear fleet as compared to the alternatives. Staff thereby requests that Constellation file into the record a report on the actual savings from the PTC when it completes its upcoming filing.

Activity in Other States

Interest in nuclear power has increased over the past year with several technology companies securing power purchase agreements (PPA) with existing nuclear plants. Much of this interest is driven by the need for a constant, clean and reliable source for electricity to power data centers, which nuclear power can provide.[107] The U.S. Department of Energy forecasts that data centers will consume from 6.7% to 12% of total U.S. electricity by 2028, compared to approximately 4.4% in 2023.[108] In June Amazon and Talen Energy Corporation (Talen) finalized a deal worth $17.2 billion, where Talen's Susquehanna nuclear plant will provide Amazon with up to 1.92 GW of power. While not publicly disclosed, some sources estimate the value of this transaction, when fully operational, to be between $82 and $88/MWh.[109] Meta recently signed a 20-year PPA with Constellation where Meta is purchasing the clean energy attributes of Constellation's 1.092 GW nuclear Clinton Clean Energy Center in Illinois.[110] Reports have estimated that the deal is valued around $70/MWh to $88/MWh.[111] In September 2024, Constellation Energy signed a 20-year PPA with Microsoft to restart the Three Mile Island Unit 1 nuclear power plant that ceased operations in September 2019.[112] This deal is estimated to be between $98/MWh to $115 MWh, with Constellation planning to spend approximately $1.6

---

[107] *See*, *e.g.*, Nuclear Power Emerging as a Clean AI Data Center Energy Source, I/O FUND (June 26, 2025), https://io-fund.com/artificial-intelligence/nuclear-energy-ai-data-centers.

[108] U.S. Department of Energy, DOE Releases New Report Evaluating Increase in Electricity Demand from Data Centers (December 20, 2024), https://www.energy.gov/articles/doe-releases-new-report-evaluating-increase-electricity-demand-data-centers.

[109] *See*, *e.g.*, Devin Leith-Yessian, Talen, Amazon Enter PPA for 1.9 GW of Power from Susquehanna, RTO INSIDER (June 11, 2025), https://www.rtoinsider.com/107790-talen-amazon-ppa-power-susquehanna-energy.

[110] Brian Martucci, Meta-Constellation virtual PPA could be first of many deals for existing reactor output: experts, UTILITY DIVE (June 12, 2025), https://www.utilitydive.com/news/meta-constellation-ppa-could-be-first-of-many-deals-for-existing-reactors/750567/.

[111] *Id*.

[112] *Id*.

billion to restart the facility.[113] Staff recognizes that these types of transactions may provide an opportunity to reduce ratepayer costs of the ZEC program and welcomes comment on how any proposal can accommodate such potential opportunities.

ZEC 2.0 (2029-2049) Proposal

For the foregoing reasons, Staff proposes that maintaining the existing nuclear fleet is a cost-effective and viable solution to help meet the State's growing electric load with zero emission resources, while maintaining system reliability and progress towards GHG reduction goals. Therefore, Staff proposes the continuation of the ZEC program from 2029 through 2049, to enable the existing nuclear fleet to operate through the full subsequent license renewal period for Ginna and Nine Mile Point Unit 1.[114]

Projecting costs for ZEC 2.0 poses additional challenges relative to ZEC 1.0, as Staff must account for first-of-a-kind license extensions from 60 to 80 years in addition to the relevant period starting four years into the future. With these challenges in mind, Staff proposes a formula that is consistent with the ZEC 1.0 methodology and structure and is justifiable based upon a total cost and risk approach. That notwithstanding, Staff seeks additional information on the record from Constellation and other stakeholders regarding verified information, bases, and explanation related to proposed pricing methodologies, in order to further inform Staff's analyses and proposal.

Similar to what the Commission established for the ZEC 1.0 program, Staff recommends that the ZEC 2.0 mechanism be designed such that it can be modified or eliminated by the Commission if a national, NYISO, or other program is instituted that pays for or internalizes the value of the zero-emissions attributes in a manner that adequately replicates the economics of the

---

[113] *Id.*; *see also* Brian Martucci, Constellation plans 2028 restart of Three Mile Island unit 1, spurred by Microsoft PPA, UTILITY DIVE (Sept. 20, 2024), https://www.utilitydive.com/news/constellation-three-mile-island-nuclear-power-plant-microsoft-data-center-ppa/727652.

[114] The 40-60 year licenses for Fitzpatrick and Nine Mile Point Unit 2 do not expire until October 2034 and October 2046, respectively. Constellation has not yet indicated if it intends to pursue subsequent license renewals from 60-80 years for these facilities. However, if Constellation did pursue license renewals for these facilities, this proposal would cover their renewed license period until 2049.

program, and the Commission in its sole discretion is satisfied that the zero-emissions attributes are no longer at risk and that discontinuing the ZEC 2.0 mechanism can be accomplished in a way that is fair to both the facility owners and the ratepayers.[115]

Eligibility and Methodology

Staff proposes that, in order to qualify as a resource eligible to sell Tier 3 ZECs under the ZEC 2.0 program, nuclear facilities must: (1) have an in-service date of January 1, 2015 or earlier; (2) be operating pursuant to an NRC operating license as of April 1, 2029; (3) have demonstrated the need for financial assistance to operate the facility beyond 2029; and (4) be in compliance with any other federal and state authorizations. These eligibility criteria reflect the State's interest in targeting ratepayer support for ZECs to only those facilities that are contributing to the State's Zero by 40 Target and emissions reduction goals and are providing economic and other reliability benefits to the State.

Staff proposes to continue using the current ZEC formula and cost recovery methodology as described in the Final Zero Emissions Credit Implementation Plan.[116] Under the cost recovery methodology, NYSERDA currently assesses each LSE a uniform wholesale per-MWh charge that is applied to the LSE's actual wholesale load to calculate their monthly ZEC obligation payments beginning April 1, 2029. Each year thereafter, NYSERDA would determine, in collaboration with Staff, the dollar per MWh charge (LSE ZEC Rate) owed by each LSE for the next compliance year of the ZEC program. By utilizing the current ZEC formula methodology, the Commission can maintain an appropriate and fair value for the environmental attribute generated by the existing nuclear facilities that is independent of the actual wholesale prices for energy and capacity in the NYISO market, while ensuring that the facilities earn enough revenue to continue operating.

There are several benefits to continuing to use the existing ZEC formula through the ZEC 2.0 period. First, the formula was structured to protect ratepayers from the exercise of market power by the limited number of eligible ZEC sellers. Second, the ZEC calculation methodology ensures that ratepayers will pay a fair value for the environmental attributes but no more than

---

[115] CES Order, p. 144.

[116] Case 15-E-0302, supra, Final ZEC Implementation Plan (filed October 21, 2019).

needed to cover the facilities' operating costs and risks. Staff proposes updating some of the inputs used to determine the ZEC for each tranche. While the formula remains as originally constructed, the proposal makes some updates to the Social Cost of Carbon (SCC), the inflation forecast used to convert the SCC costs from "2020 dollars" to nominal amounts, the conversion factor used to convert short tons of carbon to a per-MWh amount, and the fixed RGGI amount.

Social Cost of Carbon	-	Baseline RGGI Effect	-	Amount Zone A Forecast Energy Price and ROS Forecast Capacity Price combined exceeds $39/MWh	=	ZEC Price ($/MWh)

Social Cost of Carbon: Staff proposes updating the SCC using values from the NYSDEC,[117] with the same discount rate of 3% that was used for the SCC in the current ZEC 1.0 program.[118] Under this approach, the beginning SCC for 2029 is $62.34 (in 2020 dollars) per metric tons of carbon dioxide.[119]

Inflation: To convert the NYSDEC SCC amounts from 2020 dollars to the relevant years of the calculation, Staff proposes using the latest forecast for the 2029-2049 period from the Blue Chip Economic Indicators.[120]

Conversion Factor: The ZEC 1.0 program currently utilizes a fixed conversion factor to adjust dollars per short ton to dollars per MWh, to reflect an estimate of the emissions rates of the mix

---

[117] NYSDEC has developed guidance for the use of the SCC by state agencies. The NYSDEC finalized this guidance on December 30, 2020, and has subsequently updated it in 2021, 2022, 2023, and most recently in April of 2025. The most recent 2025 guidance document notes on p. 4 that "[i]n some decision-making contexts, particularly those that have a history of valuing carbon such as the New York electric industry, alternative approaches may be more appropriate for both resource valuation and benefit-cost analyses." For purposes of this proposal, Staff proposes the use of NYSDEC's 2023 SCC values with a 3% discount rate that is more appropriate for both resource valuation and benefit-cost analyses related to the ZEC program.

[118] NYSDEC, Establishing a Value of Carbon: Guidelines for Use by State Agencies (updated August 2023), available at: https://dec.ny.gov/sites/default/files/2025-04/vocguide2023.pdf (Value of Carbon Guidelines).

[119] Value of Carbon Guidelines, Appendix L.

[120] Forecasts for GDP Price Indices for 2027-2036 and beyond are based on the latest long-term forecasts from the March 2025 Blue Chip Economic Indicators.

of resources that would be avoided by the preservation of zero-emission attributes. The ZEC 1.0 program methodology used a conversion factor of 0.53846, based on a 2015 estimate. Staff proposes to utilize a conversion factor of 0.553, which is consistent with conversion factor that the Commission has used in recent energy efficiency calculations.[121] Staff recognizes that this number may not be static over the proposed period of the ZEC extension and invites stakeholder feedback on ways in which the conversion factor could be updated if extensive renewable energy generation is installed in the intervening years.[122]

Baseline RGGI Effect: In the ZEC 1.0 formula, the price of the ZEC was based upon the SCC, less a fixed baseline portion of costs that are already captured in the market revenues received by eligible facilities under RGGI. This adjustment was put in place to recognize that, while the SCC identifies the financial impact that carbon will have on the environment, it does not recognize that a portion of such damage would be offset through the use of RGGI funds. By using the "SCC less RGGI" approach, the calculation quantifies the net impact of an additional MWh's cost of carbon. Staff proposes to maintain the same forecast of RGGI proceeds per short ton ($10.41),[123] used in the original ZEC formula, but update the amount per MWh to be consistent with the revised conversion factor being proposed.[124] Using the updated conversion factor of 0.553, the RGGI adjustment is increased from $5.61 per MWh to $5.76 per MWh.

Forecast Energy and Capacity Price: Staff proposes to maintain the same reference price for energy and capacity, or $39 per MWh in total. This reference price is based on the NYISO Zone

---

[121] *See* CE-10 Guidance, p. 27.

[122] In the CES Order, the Commission built such an adjustment into the ZEC 1.0 program in recognition of the fact that, while radical changes in the conversion factor were not expected, the duration of the program necessitated a methodology to reflect incremental updates. CES Order, p. 137.

[123] *See* CES Order, Appendix E, Table 3.

[124] As explained in the CES Order, increases in RGGI prices are expected to be reflected in the Forecast Energy & Capacity Price, and therefore inflating the RGGI offset in future tranches would constitute a double count. CES Order, pp. 135-136.

A energy revenues and the ROS capacity revenues.[125] This level of market revenue, combined with the ZEC price calculated as described, should provide sufficient revenues to cover current and expected costs of the Upstate nuclear facilities during years 60 to 80 of operations, and ensure that customers receive the benefit of the zero-emission generation at a cost no greater than the projected impact of additional carbon from fossil generation. Because the nuclear plants do not receive the revenues from Zone A, but rather amounts at their individual "busses," the original ZEC program recognized that the nuclear plants would be receiving less revenue than the $39/MWh forecast. In fact, revenue of only $33/MWh was forecast at that time. However, the Commission recognized that, like the conversion factor, this amount would likely change over time. The Commission therefore included a one-time update to the basis differential prior to Tranche 4, in the event the basis differential changed by more than $1/MWh in either direction.[126] Staff proposes implementing a similar update mechanism, either on a one-time or recurring basis, during the ZEC 2.0 program, and invites comments as to how this can best be effectuated.

ZEC Price Tranches: Staff recommends that ZEC 2.0 contracts be administered in 11 tranches of two years each, with the exception of a shorter Tranche 7 to accommodate a stub period (i.e., April 2029 to December 2029) between ZEC 1.0 and ZEC 2.0, which will align the tranches with calendar years and thus lower the administrative burden of managing this program. The maximum ZEC price for each Tranche would be calculated utilizing the methodology described above.[127] The maximum ZEC prices are currently calculated as follows:

---

[125] The CES Order dictated that forecasts of the NYISO Zone A energy prices should be calculated based on data from the Intercontinental Exchange (ICE), with the data collected during the calendar year proceeding each tranche price reset. The ICE price forecasts have since ceased to be available for NYISO Zone A, and the calculation now uses an alternative data source. Staff proposes that the current, or similar, data source be used to calculate the forecast energy price for ZEC 2.0. Further, the data collection period will have to be modified should the proposal to change the tranche periods to calendar years be adopted. CES Order Appendix E, pp. 6-8.

[126] CES Order, p. 141.

[127] Staff notes, however, that possible adjustments to the basis differential and conversion factor, as previously discussed, could impact the final ZEC price for any Tranche.

Table 3: Maximum ZEC Price by Tranche

Tranche	Schedule	Maximum ZEC Price ($/MWh)	Combined Market and ZEC Revenue ($/MWh)[128]
Tranche 7	2029 (Stub Period)	$36.27	$69.27
Tranche 8	2030-2031	$39.01	$72.01
Tranche 9	2032-2033	$42.85	$75.85
Tranche 10	2034-2035	$46.94	$79.94
Tranche 11	2036-2037	$51.31	$84.31
Tranche 12	2038-2039	$55.95	$88.95
Tranche 13	2040-2041	$60.90	$93.90
Tranche 14	2042-2043	$65.02	$98.02
Tranche 15	2044-2045	$70.57	$103.57
Tranche 16	2046-2047	$76.48	$109.48
Tranche 17	2048-2049	$82.75	$115.75

Based on Staff's current forecasts of energy and capacity revenues, the actual ZEC prices could be less than half of the maximum ZEC prices over the full period.

Staff further proposes continuing contract performance and facility closing requirements that the Commission adopted in the ZEC 1.0 program.[129] Specifically, Staff proposes capping the amount of ZECs to be purchased on an annual basis based on the verifiable historic contribution, in MWh, that a facility has made to the clean energy resource mix consumed by retail consumers in New York State.[130] Staff proposes that, if any of the three Upstate nuclear facilities permanently ceases producing zero-emissions attributes, the overall MWh cap that represents the verifiable historic contributions of the facilities should be reduced by one-third for each such closed facility.[131] This type of mechanism acts as an incentive to the facility owners to keep all of the plants operating, and to ensure that the ZEC 2.0 program maintains the original balance between ratepayer and generator interests. Furthermore, because the scale of the

[128] Assuming combined energy and capacity market revenues of $39/MWh through the life of the program.

[129] CES Order, pp. 144-147.

[130] CES Order, p. 145.

[131] For purposes of this mechanism, Nine Mile Point Unit 1 and Unit 2 would qualify jointly as a single facility. If either unit permanently ceases producing zero-emission credits, the entire qualified Nine Mile Point facility would be treated as having permanently ceased producing zero-emission credits.

proposed ZEC 2.0 investment warrants protections against short-term performance of the facilities, Staff recommends including a performance mechanism to incentivize the nuclear generators to maximize their output in any contractual arrangement between the administrators of the ZEC 2.0 program and the facility owners.[132]

Conclusion

Staff recognizes the complexity in extending a 20-year forward looking program that both protects and provides the best value to ratepayers while ensuring the continued operation of necessary zero-emission nuclear resources. Staff believes this proposal effectively balances the interests of ratepayers and ensures the Upstate nuclear facilities pursue a subsequent license renewal. While the ZEC 2.0 proposal is based on information currently available, Staff encourages stakeholders, including the owner and operator of the Upstate nuclear facilities, to provide additional information, explanation, and justification in the record on this proposal, as well as any justification for other mechanisms that may be necessary to achieve the mandates of the Commission to provide safe and reliable service at just and reasonable rates.

[132] CES Order, p. 145.