

STATE OF NEW YORK  
PUBLIC SERVICE COMMISSION

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

NOTICE OF ERRATUM AND OPPORTUNITY TO COMMENT

(Issued September 25, 2025)

The Resolution Accepting Draft Supplemental Generic Environmental Impact Statement as Complete, issued September 19, 2025, in the above-captioned proceeding, requires correction. The Resolution is missing the 2025 Draft Supplemental Generic Environmental Impact Statement (2025 Draft SGEIS). Attached hereto is the 2025 Draft SGEIS.

**PLEASE TAKE NOTICE** that, pursuant to Clause 2 of the Resolution, written comments on the attached 2025 Draft SGEIS will be accepted if they are filed with the Secretary to the Commission **before 4:30 p.m. on October 31, 2025**. Please refer to the Resolution and to the Notice of Completion of Draft Supplemental Generic Environmental Impact Statement, issued September 19, 2025, in this proceeding, for additional information on how to file written comments on the 2025 Draft SGEIS.

(SIGNED)

MICHELLE L. PHILLIPS  
Secretary



## Draft Supplemental Generic Environmental Impact Statement for Zero-Emissions Credit Program Extension

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

**Prepared for:**

New York State Department of Public Service

**Prepared by:**

Industrial Economics, Incorporated  
2067 Massachusetts Avenue  
Cambridge, MA 02140  
(617) 354-0074

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**Agency Contact Persons:** Ryan Coyne,  
New York State Department of Public Service, Office of General Counsel, Three Empire State Plaza, Albany, NY 12223,  
[ryan.coyne@dps.ny.gov](mailto:ryan.coyne@dps.ny.gov), (518) 474-3137.

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## Acronyms and Abbreviations

|                  |                                                                 |
|------------------|-----------------------------------------------------------------|
| ACS              | American Community Survey                                       |
| AEA              | Atomic Energy Act                                               |
| ALA              | American Lung Association                                       |
| ALARA            | As Low as Reasonably Achievable                                 |
| ALJ              | Administrative Law Judge                                        |
| AQI              | Air Quality Index                                               |
| AREGCBA          | Accelerated Renewable Energy Growth and Community Benefit Act   |
| BACT             | Best Available Control Technology                               |
| BLS              | U.S. Bureau of Labor and Statistics                             |
| BOD              | Biological Oxygen Demand                                        |
| BWR              | Boiling Water Reactor                                           |
| CAA              | Clean Air Act                                                   |
| CAIDI            | Customer Average Interruption Duration Index                    |
| CDDs             | Cooling Degree Days                                             |
| CEA              | Critical Environmental Area                                     |
| CEF              | Clean Energy Fund                                               |
| CEHA             | Coastal Erosion Hazards Areas                                   |
| CES              | Clean Energy Standard                                           |
| CFR              | Code of Federal Regulations                                     |
| CGP              | Construction General Permit                                     |
| CHPE             | Champlain Hudson Power Express                                  |
| CJWG             | Climate Justice Working Group                                   |
| CLCPA            | Climate Leadership and Community Protection Act                 |
| CLG              | Certified Local Government                                      |
| CMP              | Coastal Management Program                                      |
| CO               | Carbon Monoxide                                                 |
| CO <sub>2</sub>  | Carbon Dioxide                                                  |
| CO <sub>2e</sub> | Carbon Dioxide Equivalents                                      |
| COPD             | Chronic Obstructive Pulmonary Disease                           |
| CECPN            | Certification of Environmental Compatibility and Public Need    |
| CPNY             | Clean Path NY                                                   |
| CPV              | Competitive Power Ventures                                      |
| CRAMMP           | Cultural Resources Avoidance, Minimization, and Mitigation Plan |
| CRIS             | Cultural Resources Information System                           |
| CSA              | Combined Statistical Area                                       |

|       |                                                     |
|-------|-----------------------------------------------------|
| CWA   | Clean Water Act                                     |
| DAM   | Department of Agriculture & Markets                 |
| DEFR  | Dispatchable Emissions Free Resources               |
| DER   | Distributed Energy Resource                         |
| DERMS | Distributed Energy Resource Management System       |
| DHSES | Department Homeland Security and Emergency Services |
| DOE   | Department of Energy                                |
| DOH   | Department of Health                                |
| DOS   | Department of State                                 |
| DOT   | Department of Transportation                        |
| DPS   | Department of Public Service                        |
| EAF   | Environmental Assessment Form                       |
| ECCS  | Emergency Core Cooling System                       |
| ECL   | Environmental Conservation Law                      |
| EDC   | Electric Distribution Companies                     |
| EGC   | Exelon Generation Company, LLC                      |
| EIS   | Environmental Impact Statement                      |
| EJ    | Environmental Justice                               |
| EMFs  | Electric and Magnetic Fields                        |
| EPA   | U.S. Environmental Protection Agency                |
| ESA   | Endangered Species Act                              |
| EV    | Electric Vehicle                                    |
| FAA   | U.S. Federal Aviation Authority                     |
| FCZMA | Federal Coastal Zone Management Act                 |
| FEMA  | Federal Emergency Management Agency                 |
| FERC  | U.S. Federal Energy Regulatory Commission           |
| FHWA  | U.S. Federal Highway Administration                 |
| GEIS  | Generic Environmental Impact Statement              |
| GETs  | Grid-Enhancing Technologies                         |
| GHG   | Greenhouse Gas                                      |
| GPM   | Gallons per minute                                  |
| GW    | Gigawatts                                           |
| GWh   | Gigawatt-hours                                      |
| HDD   | Horizontal Directional Drilling                     |
| HPFF  | High-Pressure Fluid-Filled Pipe                     |
| HPGF  | High-Pressure Gas-Filled Pipe                       |
| HVAC  | High Voltage Alternating Current                    |

|                 |                                                          |
|-----------------|----------------------------------------------------------|
| HVDC            | High Voltage Direct Current                              |
| IAEA            | International Atomic Energy Agency                       |
| IOUs            | Investor-Owned Utilities                                 |
| ISFSI           | Independent Spent Fuel Storage Installation              |
| JFK             | John F. Kennedy International Airport                    |
| JTWG            | Just Transition Working Group                            |
| kWh             | Kilowatt-hours                                           |
| LAER            | Lowest Achievable Emission Rate                          |
| LIPA            | Long Island Power Authority                              |
| LL97            | Local Law 97                                             |
| LLRWPA          | Low-Level Radioactive Waste Policy Act                   |
| LPC             | Landmarks Preservation Commission                        |
| LSE             | Load-Serving Entity                                      |
| LUIE            | Land Use Intensity of Energy                             |
| LWRs            | Light Water Reactors                                     |
| MSA             | Metropolitan Statistical Area                            |
| MSG             | Mineral Soils Groups                                     |
| MSW             | Municipal Solid Waste                                    |
| MTA             | Metropolitan Transportation Authority                    |
| MVA             | Mega Volt-Amperes                                        |
| MVT             | Multi-Value Transmission                                 |
| MW              | Megawatts                                                |
| MWh             | Megawatt-hours                                           |
| NAAQS           | National Ambient Air Quality Standards                   |
| NAICS           | North American Industry Classification System            |
| NCBP            | Net Conservation Benefit Plan                            |
| NEPA            | National Environmental Policy Act                        |
| NESHAPs         | National Emission Standards for Hazardous Air Pollutants |
| NFIP            | National Flood Insurance Program                         |
| NHPA            | National Historic and Preservation Act                   |
| NMFS            | U.S. National Marine Fisheries Service                   |
| NOAA            | National Oceanic and Atmospheric Administration          |
| NO <sub>2</sub> | Nitrogen Dioxide                                         |
| NO <sub>x</sub> | Nitrous Oxide                                            |
| NPDES           | National Pollutant Discharge Elimination System          |
| NPS             | National Park Service                                    |
| NRC             | U.S. Nuclear Regulatory Commission                       |

|                   |                                                                                      |
|-------------------|--------------------------------------------------------------------------------------|
| NRHP              | National Register of Historic Places                                                 |
| NWPA              | Nuclear Waste Policy Act                                                             |
| NY                | New York                                                                             |
| NYCA              | New York Control Area                                                                |
| NYCRR             | New York Codes, Rules and Regulations                                                |
| NYISO             | New York Independent System Operator                                                 |
| NYNHP             | New York Natural Heritage Program                                                    |
| NYPA              | New York Power Authority                                                             |
| NYSDEC            | New York State Department of Environmental Conservation                              |
| NYSDOH            | New York State Department of Health                                                  |
| NYSEG             | New York State Electric and Gas                                                      |
| NYSERDA           | New York State Energy Research and Development Authority                             |
| NYSOPRHP          | New York State Office of Parks, Recreation & Historic Preservation                   |
| NYSPSC            | New York State Public Service Commission                                             |
| OREC              | Offshore Renewable Energy Certificates                                               |
| ORES              | Office of Renewable Energy Siting and Electric Transmission                          |
| OSHA              | Occupational Safety and Health Administration                                        |
| OTR               | Ozone Transport Region                                                               |
| PASNY             | Power Authority of the State of New York                                             |
| PEJA              | Potential Environmental Justice Area                                                 |
| PJM               | PJM Interconnection, Inc.                                                            |
| PM                | Particulate Matter                                                                   |
| PM <sub>10</sub>  | Particulate matter that is 10 microns or less in diameter; coarse particulate matter |
| PM <sub>2.5</sub> | Particulate matter that is 2.5 microns or less in diameter; fine particulate matter  |
| PPTN              | Public Policy Transmission Need                                                      |
| PSC               | Public Service Commission                                                            |
| PSL               | Public Service Law                                                                   |
| PURPA             | Public Utilities Regulatory Policies Act                                             |
| PWR               | Pressurized Water Reactor                                                            |
| QFs               | Qualifying Facilities                                                                |
| RAPID Act         | Renewable Action Through Project Interconnection and Deployment Act                  |
| RCRA              | Resource Conservation and Recovery Act                                               |
| REC               | Renewable Energy Certificate                                                         |
| RERRs             | Radioactive Effluent Release Reports                                                 |
| RES               | Renewable Energy Standard                                                            |
| REV               | Reforming the Energy Vision                                                          |
| REZ               | Renewable Energy Zone                                                                |

|                 |                                                     |
|-----------------|-----------------------------------------------------|
| RG&E            | Rochester Gas and Electric Corporation              |
| RNA             | Reliability Needs Assessment                        |
| ROW             | Right-of-way                                        |
| RPT             | Real Estate Property Taxes                          |
| RTE             | Rare, Threatened, and Endangered Species            |
| RVs             | Recreation Vehicles                                 |
| SAIDI           | System Average Interruption Duration Index          |
| SAIFI           | System Average Interruption Frequency Index         |
| SASS            | Scenic Areas of Statewide Significance              |
| SCFF            | Self-Contained Fluid-Filled                         |
| SDWA            | Safe Drinking Water Act                             |
| SEIS            | Supplemental Environmental Impact Statement         |
| SEP             | State Energy Plan                                   |
| SEQRA           | State Environmental Quality Review Act              |
| SGEIS           | Supplemental Generic Environmental Impact Statement |
| SHPO            | State Historic Preservation Office                  |
| SO <sub>2</sub> | Sulfur dioxide                                      |
| SPDES           | State Pollutant Discharge Elimination System        |
| SRHP            | State Register of Historic Places                   |
| SSCs            | Site-Specific Conditions                            |
| SUTs            | Sales and Use Taxes                                 |
| TAGMs           | Technical and Administrative Guidance Memorandums   |
| the State       | New York State                                      |
| THPO            | Tribal Historic Preservation Officers               |
| TWh             | Terawatt-Hour                                       |
| USACE           | U.S. Army Corps of Engineers                        |
| USCs            | Uniform Standards and Conditions                    |
| USDA            | U.S. Department of Agriculture                      |
| USFWS           | U.S. Fish and Wildlife Service                      |
| USGS            | U.S. Geological Survey                              |
| VOCs            | Volatile Organic Chemicals                          |
| VRMP            | Visual Resources Management Plan                    |
| WTE             | Waste-to-Energy                                     |
| XLPE            | Cross-Linked Polyethylene                           |
| ZEC             | Zero-Emissions Credit                               |

## Executive Summary

The New York State Public Service Commission (PSC, or the Commission) adopted the Clean Energy Standard (CES) in 2016 and expanded the standard in 2020 to meet the requirements of New York’s Climate Leadership and Community Protection Act (CLCPA, or Climate Act). The Climate Act requires New York to achieve 70 percent renewably sourced electricity by 2030 and a zero-emissions electric grid by 2040 (Zero by 40 Target).<sup>1</sup> New York State (the State) enacted the CLCPA in 2019 with the objective of addressing climate change and minimizing its adverse impacts on the economic well-being, public health, natural resources, and environment of the State. In addition to the renewable electricity and zero-emissions targets, the CLCPA requires the State to reduce economy-wide greenhouse gas (GHG) emissions to below 40 percent of 1990 levels by 2030 and 85 percent below 1990 levels by 2050. The CES implemented two programs: a Renewable Energy Standard (RES) and a Zero-Emissions Credit (ZEC) requirement for load serving entities to procure renewable energy certificates (RECs) and ZECs. The Commission adopted the ZEC program (ZEC 1.0) to preserve the environmental and reliability attributes of the State’s nuclear fleet by compensating eligible nuclear power plants for the carbon-free electricity they produce. The State has designed and implemented a series of policies, programs, and regulations to address key barriers and accelerate the transformation of the State’s energy system. The CES Order directed the New York State Energy Research and Development Authority (NYSERDA) to establish long-term contracts for the monthly purchase of ZECs with the State’s nuclear fleet, including the James A. FitzPatrick Nuclear Power Plant (FitzPatrick), Robert Emmett Ginna Nuclear Power Plant (Ginna), and Nine Mile Point Nuclear Station (Nine Mile Point).<sup>2</sup>

The ZEC 1.0 program expires on March 31, 2029. On May 15, 2025, the Commission directed the New York State Department of Public Service (DPS) Staff to prepare a white paper evaluating how a continued ZEC program (ZEC 2.0) should be structured and to file such white paper for public comment.<sup>3</sup> The Commission’s directive to DPS Staff (Staff) recognized that retaining the State’s existing fleet of zero-emissions resources warrants careful consideration in light of the conditions impacting renewable energy development. Staff filed the white paper (ZEC 2.0 White Paper) on July 31, 2025, in Case 15-E-0302.<sup>4</sup> The ZEC 2.0 White Paper outlines the continued need for emissions-free energy as provided by the State’s existing nuclear powered electric generation resources and proposes continuing a ZEC program to support the extended operation of these resources.

This supplemental generic environmental impact statement (SGEIS) evaluates the environmental impacts associated with the implementation of ZEC 2.0. This ZEC 2.0 SGEIS builds upon and incorporates by reference relevant material from prior State Environmental Quality Review Act (SEQRA) analyses, including the 2020 SGEIS for the CLCPA implementation order and the 2016 SEIS for the CES. ZEC 2.0 extends and modifies the current ZEC (ZEC 1.0) program, reflecting a change in policy and environmental conditions that previous analyses did not evaluate. Therefore, 6 NYCRR § 617.9(a)(7) indicates that a SGEIS is the appropriate mechanism for assessing environmental impacts of the proposed action.

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<sup>1</sup> Case 15-E-0302, Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and a Clean Energy Standard, Order Adopting a Clean Energy Standard (issued August 1, 2016) (CES Order), see also NYSERDA, Clean Energy Standard, available at: <https://www.nyserda.ny.gov/All-Programs/Clean-Energy-Standard>.

<sup>2</sup> Nine Mile Point has two nuclear reactors, referred to herein as Unit 1 and Unit 2. This SGEIS refers to the four plants collectively as the “Upstate nuclear” facilities or plants.

<sup>3</sup> Case 15-E-0302, supra, Order Adopting Clean Energy Standard Biennial Review as Final and Making Other Findings (issued May 15, 2025) (CES Biennial Review Order).

<sup>4</sup> Case 15-E-0302, supra, Department of Public Service Staff Zero-Emissions Credit Program Extension Proposal (issued July 31, 2025).

**Chapter 1** describes the background, purpose and need, and expected public benefits of the proposed action, as well as ZEC 2.0's relationship to the State's other energy policies and programs. **Chapter 2** through **Chapter 4** characterize the regulatory baseline against which this SGEIS evaluates and compares the impacts of ZEC 2.0. Specifically, **Chapter 2** provides an overview of the State's current nuclear energy industry. **Chapter 3** describes the environmental setting of this SGEIS, which is the entire State of New York, including coastal waters within the State's jurisdiction; this chapter provides additional detail on the resources and communities near the Upstate nuclear facilities in Oswego and Wayne counties. Potential impacts are assessed across 12 resource areas: physical geography; land use; water resources; climate change and air quality; plants, animals, and biodiversity; aesthetic and visual resources; cultural and historic resources; waste management; public health; community character; transportation resources; and socioeconomic considerations.

**Chapter 4** evaluates reasonable alternatives to ZEC 2.0, including the baseline or "no action" scenario. This SGEIS adopts a bounding approach that defines a range of plausible outcomes following the expiration of the current ZEC program in March 2029. At one bound, the "no action" or baseline scenario assumes that ZEC 1.0 expires in March 2029 and is not otherwise renewed or replaced. Without this support, the Upstate nuclear fleet retires, and approximately 27,000 GWh of annual zero-emissions generation is lost. At the other bound, the proposed action assumes that ZEC support continues through 2049, preserving the fleet's zero-emissions generation. This SGEIS defines two alternatives within the "no action" scenario. **Alternative 1** assumes that fossil fuels replace 100 percent of lost nuclear generation, while **Alternative 2** assumes that fossil fuels replace *part of* lost nuclear generation, supplemented by renewables, imports, and demand-side resources. Together, these alternatives capture the full spectrum of foreseeable environmental outcomes. Any intermediate case – such as closure of only one nuclear facility or replacement by a mixed portfolio – would fall between these bounds and is therefore encompassed within the analysis.

**Chapter 5** evaluates the environmental impacts that could arise from ZEC 2.0 or the "no action" alternatives. The analytic timeframe is 2029 to 2049, consistent with DPS's proposed timeframe for ZEC 2.0. Relative to the "no action" scenario alternatives, this SGEIS evaluates the impacts that may result if the Upstate nuclear facilities continue operating under ZEC 2.0. The proposed action is not expected to result in additional significant adverse environmental impacts at the nuclear plant sites beyond those already resulting from current operation, maintenance, and refurbishment activities (under ZEC 1.0). This SGEIS follows the NRC's classification of nuclear operations-related environmental impacts as either "SMALL", "MODERATE", or "LARGE".<sup>5</sup> Overall findings suggest that direct adverse impacts of ZEC 2.0 on the environmental resources summarized in **Chapter 3** are likely to be SMALL, and that a variety of regulations and mitigation measures exist to minimize potential impacts.

**Chapter 5** also analyzes the range of possible environmental effects of constructing, operating, and maintaining various replacement energy alternatives to nuclear power (e.g., natural gas plants, wind and solar farms, and other renewable facilities) as would be expected under the "no action" scenario alternatives. In contrast to ZEC 2.0, the potential direct adverse impacts of Alternative 1 and Alternative 2 range from SMALL to LARGE, depending on the environmental resource. For example, if fossil fuels replace 100 percent of lost nuclear capacity under Alternative 1, expected impacts to climate change, air quality, and public health are LARGE. Alternatively, renewable generation facilities such as solar or wind farms require more land than fossil fuel or nuclear power plants, resulting in MODERATE-LARGE expected impacts to land use under Alternative 2. In both "no action" alternatives, the construction of new generating facilities, regardless of the power source, would produce distinct environmental impacts when compared to continued operation of the State's existing

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<sup>5</sup> Environmental impacts are SMALL if they are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of an environmental resource. MODERATE environmental impacts are sufficient to alter noticeably, but not to destabilize, important attributes of the resource. LARGE environmental impacts are clearly noticeable and are sufficient to destabilize important attributes of the resource.

nuclear facilities. The chapter describes potential environmental impacts to the State’s resources and identifies their significance (i.e., SMALL, MODERATE, LARGE) for ZEC 2.0, Alternative 1, and Alternative 2. **Table ES-1** summarizes the results of this comparative analysis.

**Table ES-1. Significance of Impacts under ZEC 2.0 and “No Action” Alternatives**

| Affected Environment                      | ZEC 2.0         | Alternative 1  | Alternative 2  |
|-------------------------------------------|-----------------|----------------|----------------|
| Physiography, geology, and soil           | SMALL           | SMALL-MODERATE | SMALL-MODERATE |
| Land use                                  | SMALL           | MODERATE       | MODERATE-LARGE |
| Water resources                           | SMALL           | MODERATE       | SMALL-MODERATE |
| Climate Change and air quality            | SMALL           | LARGE          | MODERATE       |
| Plant and animal species and biodiversity | SMALL- MODERATE | MODERATE-LARGE | MODERATE-LARGE |
| Aesthetic and visual resources            | SMALL           | MODERATE-LARGE | MODERATE-LARGE |
| Cultural and historic resources           | SMALL           | SMALL-MODERATE | SMALL-MODERATE |
| Waste management                          | SMALL           | SMALL          | SMALL          |
| Public health                             | SMALL           | LARGE          | MODERATE       |
| Community character                       | SMALL           | MODERATE-LARGE | MODERATE-LARGE |
| Transportation                            | SMALL           | MODERATE-LARGE | SMALL-MODERATE |
| Socioeconomics                            | SMALL           | LARGE          | SMALL-MODERATE |
| Environmental justice                     | SMALL           | LARGE          | SMALL-MODERATE |

In terms of potential indirect impacts, ZEC 2.0 is assumed to maintain the zero-emissions environmental attributes of the Upstate nuclear facilities. In so doing, the proposed action supports the State’s progress towards CLCPA goals, including zero-emissions targets. Assuming more renewable energy facilities come online in the State, and fossil fuel generating plants retire, reasonably foreseeable indirect impacts of the proposed action include statewide reductions in GHGs and criteria air pollutants; improved public health outcomes; and environmental benefits. These impacts are indirect in that they depend upon other actions to materialize. Continued operation of the Upstate nuclear plants under ZEC 2.0 can support and facilitate the State’s broader energy transition goals. Finally, [Chapter 5](#) evaluates the potential negative and beneficial cumulative impacts of ZEC 2.0. The Upstate nuclear plants have operated for decades. To the extent that operating the plants produces cumulative environmental impacts, many such impacts have likely already materialized and are reflected in this SGEIS. However, this analysis does not rule out the possibility that ZEC 2.0 will result in cumulative environmental impacts. An impact to a resource may be SMALL by itself but could result in a MODERATE or LARGE impact when considered with the impacts of other actions or activities on the affected resource. Similarly, if a local resource is imperiled, even a SMALL individual impact could be important if it contributes to or accelerates the overall resource decline. Overall findings indicate that cumulative impacts, like direct impacts, are expected to be SMALL for all environmental resources considered.

[Chapter 6](#) considers the measures available to minimize or avoid, to the maximum extent practicable (incorporating all practicable mitigation measures), potentially adverse environmental impacts that may result from ZEC 2.0. Federal and State regulations strictly govern pollutant emissions and radionuclide releases from nuclear facilities, ensuring protection of both public health and the environment. Note that continuation of the ZEC program would not increase the number of nuclear power facilities or their capacity in the State. The Ginna, FitzPatrick, and Nine Mile Point plants have operated for decades and developed sophisticated processes

to identify, minimize, and mitigate risks to human health and the environment. Similarly, federal and State oversight has evolved and improved over time.

**Chapter 7** and **Chapter 8** consider, respectively, unavoidable impacts and irretrievable commitment of resources associated with the proposed action. This SGEIS identifies unavoidable impacts that are inherent to nuclear plant operations, such as the emission and release of various chemical and radiological constituents into the environment or the generation of spent fuel and nuclear waste. However, unavoidable adverse impacts resulting from ZEC 2.0 would be smaller compared to corresponding impacts that would occur under Alternative 1 and Alternative 2 evaluated in this SGEIS. Similarly, continued operation of the State's existing nuclear plants under ZEC 2.0, Alternative 1, and Alternative 2 would all entail the irreversible and irretrievable commitment of resources (e.g., water and fuel). The disposal or storage of wastes, including spent nuclear fuel, represents the most significant irreversible and irretrievable commitment of resources under ZEC 2.0. For the "no action" alternatives, construction activities would require fuel, energy, and water, regardless of the replacement generating facility. Operational impacts would vary depending on the energy sources that replace nuclear power.

**Chapter 9** describes the potential growth-inducing aspects and socioeconomic impacts associated with ZEC 2.0. ZEC 2.0 is expected to yield primary impacts through sustaining current economic activity, electric grid capacity, and reliability associated with existing nuclear facilities. A reliable grid will ensure New York businesses and residents continue to receive reliable electric service and will leverage opportunities for economic development. Similarly, extending the ZEC program will maintain employment and economic activity tied to the continued operation of the Upstate nuclear facilities in Oswego and Wayne counties. ZEC 2.0 may also produce indirect effects in the Upstate nuclear facilities' host communities and across the State.

Finally, **Chapter 10** considers the potential impacts of the proposed action on the use and conservation of energy, including the use of renewable energy sources. The CLCPA facilitates a transition in the use and conservation of energy in the State. As part of this transition, continued operation of the Upstate nuclear facilities will generate emissions-free electricity and accommodate the forecasted growth in electricity demand in the State over time. The proposed action could support the State's conservation of fossil fuels and other energy resources required to construct, operate, and maintain non-nuclear generating facilities that could replace nuclear capacity under Alternatives 1 and 2. ZEC 2.0 will not impact the demand for energy and will instead support the State's ability to meet such demand. This SGEIS also addresses how the proposed action may contribute to the CLCPA's GHG emission reduction targets. The results of this SGEIS indicate that extending the ZEC program through 2049 is not inconsistent with, and will not interfere with, the statewide GHG emission limits set by the CLCPA.

## CHAPTER 1 | SEQRA and Description of the Proposed Action

The New York State Public Service Commission (PSC, or the Commission) adopted the Clean Energy Standard (CES) in 2016 and modified the standard in 2020 to meet the requirements of New York’s Climate Leadership and Community Protection Act (CLCPA, or Climate Act). The Climate Act requires New York to achieve 70 percent renewably sourced electricity by 2030, and a zero-emissions electric grid by 2040 (Zero by 40 Target).<sup>6</sup> New York State (the State) enacted the CLCPA in 2019 with the objective of addressing climate change and minimizing its adverse impacts on the economic well-being, public health, natural resources, and environment of the State. In addition to the renewable and zero-emissions targets, the CLCPA requires the State to reduce greenhouse gas (GHG) emissions to below 40 percent of 1990 levels by 2030 and 85 percent below 1990 levels by 2050 on an economy-wide basis. The CES implemented two programs, a Renewable Energy Standard (RES) and a Zero-Emissions Credit (ZEC) requirement for load serving entities to procure renewable energy certificates (RECs) and ZECs. The Commission adopted the ZEC program (ZEC 1.0) to preserve the environmental and reliability attributes of the State’s nuclear fleet by compensating eligible nuclear power plants for the carbon-free electricity they produce. The State has designed and implemented a series of policies, programs, and regulations to address key barriers and accelerate the transformation of the State’s energy system. The CES Order directed the New York State Energy Research and Development Authority (NYSERDA) to establish long-term contracts for the monthly purchase of ZECs with the James A. FitzPatrick Nuclear Power Plant (FitzPatrick), Robert Emmett Ginna Nuclear Power Plant (Ginna), and Nine Mile Point Nuclear Station (Nine Mile Point).<sup>7</sup>

One key initiative of the CES involves preserving the State’s zero-emissions nuclear capacity beyond the expiration of the ZEC 1.0 program on March 31, 2029. To that end, on May 15, 2025, the Commission directed the New York State Department of Public Service (DPS) Staff to prepare a white paper evaluating how a continued ZEC program (ZEC 2.0) should be structured and to file such white paper for public comment.<sup>8</sup> The Commission’s directive to DPS Staff (Staff) recognized that retaining the State’s existing fleet of zero-emissions resources warrants careful consideration in light of the conditions impacting renewable energy development. Staff filed the white paper (ZEC 2.0 White Paper) on July 31, 2025, in Case 15-E-0302.<sup>9</sup> The ZEC 2.0 White Paper outlines the continued need for emissions-free energy as provided by the State’s existing nuclear powered electric generation resources and proposes continuing a ZEC program to support the extended operation of these resources.

This supplemental generic environmental impact statement (SGEIS) evaluates the environmental impacts associated with the implementation of ZEC 2.0. This ZEC 2.0 SGEIS builds upon and incorporates by reference relevant material from prior State Environmental Quality Review Act (SEQRA) analyses, including the 2020 SGEIS for the CLCPA implementation order and the 2016 SEIS for the CES (the Prior SEQRA Analyses).

**Table 1-1** summarizes the Prior SEQRA Analyses relevant to this SGEIS.

<sup>6</sup> Case 15-E-0302, Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and a Clean Energy Standard, Order Adopting a Clean Energy Standard (issued August 1, 2016) (CES Order), see also NYSEDA, Clean Energy Standard, available at: <https://www.nyserda.ny.gov/All-Programs/Clean-Energy-Standard>.

<sup>7</sup> Nine Mile Point has two nuclear reactors, referred to herein as Unit 1 and Unit 2. This SGEIS refers to the four plants collectively as the “Upstate nuclear” facilities or plants.

<sup>8</sup> Case 15-E-0302, supra, Order Adopting Clean Energy Standard Biennial Review as Final and Making Other Findings (issued May 15, 2025) (CES Biennial Review Order).

<sup>9</sup> Case 15-E-0302, supra, Department of Public Service Staff Zero-Emissions Credit Program Extension Proposal (issued July 31, 2025).

Table 1-1. Prior SEQRA Analyses

| SEQRA Document                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Proposed Action                                                                                                       | Goals and Objectives                                                                                                                                                                                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>2016 SEIS<sup>10</sup></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                       |                                                                                                                                                                                                                                                                            |
| Commission docket numbers:<br>CASE 15-E-0302 – Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and a Clean Energy Standard<br>CASE 14-M-0101 – Proceeding on Motion of the Commission in Regard to Reforming the Energy Vision<br>CASE 14-M-0094 – Proceeding on Motion of the Commission to Consider a Clean Energy Fund<br>CASE 13-M-0412 – Petition of New York State Energy Research and Development Authority to Provide Initial Capitalization for the New York Green Bank<br>CASE 10-M-0457 – In the Matter of the System Benefits Charge IV<br>CASE 07-M-0548 – Proceeding on Motion of the Commission Regarding an Energy Efficiency Portfolio Standard<br>CASE 03-E-0188 – Proceeding on Motion of the Commission Regarding Retail Renewable Portfolio Standard | Adoption of the CES and establishment of a support mechanism to sustain the operations of eligible nuclear facilities | Increase renewable electricity supply to achieve the 50 by 30 goal, support construction of new renewable generation in New York State, prevent premature closure of Upstate nuclear facilities, and promote the progress of Reforming the Energy Vision market objectives |
| <b>2020 SGEIS<sup>11</sup></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                       |                                                                                                                                                                                                                                                                            |
| CASE 15-E-0302 – Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and a Clean Energy Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Implementation of the CLCPA                                                                                           | Address climate change while minimizing adverse impacts on the economic well-being, public health, natural resources, and environment of the State. Sets the State's clean energy goals                                                                                    |

<sup>10</sup> Case 15-E-0302, *supra*, Final Supplemental Environmental Impact Statement (issued May 23, 2016), available at: <https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7b5C3A948E-F09C-4958-9201-1DBB17D06709%7d>.

<sup>11</sup> Case 15-E-0302, *supra*, Final Supplemental Generic Environmental Impact Statement for the Climate Leadership and Community Protection Act (issued September 17, 2020), available at <https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7b4A232F8C-A822-47D8-8EDE-A5E7FA20CA5D%7d>.

The remainder of [Chapter 1](#) provides further background and context on the development of the ZEC 2.0 SGEIS. [Section 1.1](#) describes the purpose of New York’s SEQRA and the requirement to prepare a SGEIS for an action or plan with statewide application. [Section 1.2](#) provides an overview of the public need, purpose, and substance of the ZEC 2.0 program. [Section 1.3](#) provides a summary of the public benefits anticipated from the successful implementation of the ZEC 2.0 program. [Section 1.4](#) and [Section 1.5](#) describe, respectively, the geographic scope of the proposed action and the ZEC 2.0 program’s relationship with the State’s other energy and climate programs. This chapter concludes by listing and describing all required approvals, reviews, and permits associated with implementing the proposed action.

## 1.1 Compliance with the New York State Environmental Quality Review Act

New York’s SEQRA, codified at Article 8 of the Environmental Conservation Law and its implementing regulations at 6 NYCRR Part 617, declares that it is the State’s policy to:

“encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and enhance human and community resources; and to enrich the understanding of the ecological systems, natural, human and community resources important to the people of the state.”

The purpose of SEQRA is to incorporate the consideration of environmental factors into the planning, review, and decision-making processes of State, regional, and local government agencies as early in the process as possible. Consistent with its intent, SEQRA requires all State and local government agencies to analyze and mitigate potentially significant environmental impacts when deciding to approve or undertake an action. Thus, agencies are required to assess the environmental significance of all actions they have discretion to approve, fund, or directly undertake, unless exempt or excluded by statute or regulation. Compliance with SEQRA may include development of an environmental impact statement (EIS).

### 1.1.1 Preparation of a Supplemental Generic Environmental Impact Statement

DPS prepared the Prior SEQRA Analyses in compliance with SEQRA to address the environmental impacts of the proposed actions outlined in [Table 1-1](#). SEQRA addresses circumstances that may require a supplemental EIS, including changes proposed for the project, newly discovered information, or a change in circumstances. ZEC 2.0 extends and modifies the current ZEC (ZEC 1.0) program, reflecting a change in policy and environmental conditions that the Prior SEQRA Analyses did not evaluate. Therefore, 6 NYCRR § 617.9(a)(7) indicates that a SGEIS is the appropriate mechanism for assessing environmental impacts of the proposed action.<sup>12</sup>

In addition to meeting SEQRA requirements, this SGEIS addresses the requirements in CLCPA Sections 7(2) and 7(3). These provisions require State agencies to consider whether their decisions are inconsistent with or will interfere with the attainment of the statute’s statewide GHG reduction targets (and, where deemed inconsistent, provide a detailed statement of justification as to why such limits/criteria may not be met, and identify alternatives or GHG mitigation measures). These provisions also require agencies to consider whether their decisions disproportionately burden disadvantaged communities as identified pursuant to the Environmental Conservation Law (ECL). This SGEIS includes an analysis of the cumulative impacts, if any, associated with

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<sup>12</sup> A GEIS is a type of EIS that is typically used to assess the environmental impacts of an entire program or plan having wide application, including new or significant changes to an agency’s regulatory programs. The broader focus of a GEIS enables the lead agency to identify and broadly analyze the cumulative impacts of a group of actions or a combination of impacts from a single action. The fundamental elements of a GEIS are the same as the elements for a site-specific or project-specific environmental impact statement but provide broader review and general analysis of existing conditions and potential impacts.

the continued operation and maintenance of the Ginna, FitzPatrick, and Nine Mile Point nuclear facilities. It also includes an analysis of potential impacts on disadvantaged communities.

## 1.2 Background and Proposed Action

Consistent with 6 NYCRR § 617.9(b)(5)(i), [Section 1.2](#) provides a concise description of: (1) the purpose and need for the ZEC 2.0 program and (2) the proposed action implementing ZEC 2.0. This section is not intended to be an exhaustive or definitive discussion of ZEC 2.0, but rather a targeted discussion of the program for the purposes of this SGEIS, as required under SEQRA.

### 1.2.1 Purpose and Need for ZEC 2.0

The purpose of and need for ZEC 2.0 are similar to the Commission-approved purpose of and need for the original 2016 ZEC program. Prior to the ZEC 1.0 program, low natural gas prices and the concomitant low electric wholesale energy market prices led to lower revenues for electric generators, including the Upstate nuclear facilities. In 2015, the owners of the FitzPatrick and Ginna plants announced plans to close the facilities due to low electricity prices.<sup>13,14</sup> In response to this news, Governor Andrew Cuomo directed DPS to design measures that would preserve the State's nuclear capacity.<sup>15</sup> DPS then published its CES White Paper, which outlined a ZEC program to facilitate a market for ZECs (or "Tier 3" credits)<sup>16</sup> reflecting the environmental benefits of New York's Upstate nuclear capacity.<sup>17</sup> In the 2016 CES Order, the Commission concluded that the benefits of preserving the zero-emissions attributes of New York State's existing Upstate nuclear facilities outweighed the costs of subsidizing the facilities. For example, the Commission identified that, at the time, 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.<sup>18</sup> As outlined in the ZEC 2.0 White Paper, Staff determined that maintaining the existing nuclear fleet is a cost-effective and viable solution to help meet the State's growing electric load with zero-emissions resources, while maintaining system reliability and making progress toward GHG reduction goals.

The ZEC 2.0 White Paper explains the ongoing need to provide the Upstate nuclear facilities with revenue certainty beyond the ZEC 1.0 program period. For example, Exelon Generation Company, LLC (EGC), the previous owner of the Upstate nuclear facilities, noted in a 2020 license renewal request to the U.S. Nuclear Regulatory Commission (NRC) that the economic viability of the Ginna and Nine Mile Point Unit 1 plants is uncertain after ZEC 1.0 expires in March of 2029.<sup>19</sup>

The ZEC 2.0 White Paper also supports the continuation of the ZEC program based on the State's energy needs, climate policies, and economic interests:

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<sup>13</sup> PR NEWswire, Entergy to Close James A. FitzPatrick Nuclear Power Plant in Central New York, (November 2, 2015), available at: <https://www.prnewswire.com/news-releases/entergy-to-close-james-a-fitzpatrick-nuclear-power-plant-in-central-new-york-300170100.html>.

<sup>14</sup> 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), available at: <https://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?Mattercaseno=14-E-0270>.

<sup>15</sup> 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](https://www.governor.ny.gov/sites/default/files/atoms/files/Renewable_Energy_Letter.pdf).

<sup>16</sup> The CES requires load-serving entities in the State to purchase renewable energy credits ("Tier 1" credits) and Tier 3 credits. The markets are distinct. See NYSDA, LSE Obligations, available at: <https://www.nyserda.ny.gov/All-Programs/Clean-Energy-Standard/LSE-Obligations>.

<sup>17</sup> CES White Paper, pp. 30-31.

<sup>18</sup> CES Order, p. 19.

<sup>19</sup> In the filing EGC stated that "[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>.

- **New York’s nuclear fleet has provided historic contributions to the clean energy resource mix in New York State.** For example, nuclear power generated 27,073 gigawatt-hours (GWh) of energy, or 21 percent of the total amount of the energy generated front-of-meter (i.e., energy that feeds into the electric distribution system) in the New York Control Area (NYCA) in 2024 (130,643 GWh).<sup>20</sup>
- **The continued operation of existing zero-emissions generation assets is 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.<sup>21</sup>
- **The closure of New York’s Upstate nuclear plants would expose the State to greater energy price volatility and energy security concerns.** 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 baseload 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 New York’s Upstate nuclear plants would result in negative economic impacts at the State and local levels.** A reliable electric grid will ensure that New York businesses and residents continue to receive reliable electric service, supporting economic development. Additionally, the Upstate nuclear facilities employ approximately 1,800 workers and pay over \$50 million in property tax revenues, further supporting the host communities.<sup>22</sup>

### 1.2.2 Proposed Action

The proposed action under SEQRA is the continuation of the ZEC program through 2049 with modifications. The ZEC 2.0 White Paper explains the details and mechanics of ZEC 2.0. For purposes of this SGEIS, the key aspect of ZEC 2.0 is that the program supports the financial viability of the State’s existing nuclear fleet. ZEC 2.0 provides financial compensation (ZEC payments) to an eligible nuclear generating facility where there is a public necessity to preserve the zero-emissions environmental attributes of the facility. This SGEIS assumes that the Upstate nuclear facilities would shut down but for the ZEC program.

Under the ZEC program, each load-serving entity (LSE) that serves end-use customers in New York must purchase ZECs from NYSERDA in proportion to the electric load they serve relative to the total statewide electric load. NYSERDA administers the program by purchasing ZECs from qualifying nuclear generators during each compliance year and duly billing LSEs for their share. Staff proposes to maintain the current ZEC formula (with certain modifications to calculating the inputs) and cost recovery methodology as described in Staff’s and NYSERDA’s 2019 Final ZEC Implementation Plan.<sup>23</sup>

<sup>20</sup> NYISO, Gold Book 2025, Load & Capacity Data (April 2025), available at: <https://www.nyiso.com/documents/20142/2226333/2025-Gold-Book-Public.pdf/088438e1-02f1-5316-211b-dbc17c01b4b>. (Gold Book)

<sup>21</sup> 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). Available at: <https://onlinelibrary.wiley.com/doi/full/10.1111/jiec.70008>. Capital expenditure embodied emissions include emissions associated with the construction, operation, and maintenance of a generation facility.

<sup>22</sup> Constellation Energy, Our Locations, FitzPatrick document available at: <https://www.constellationenergy.com/our-company/locations/location-sites/james-a-fitzpatrick-clean-energy-center.html>; Ginna document available at: <https://www.constellationenergy.com/our-company/locations/location-sites/r-e-ginna-clean-energy-center.html>; Nine Mile Point document available at: <https://www.constellationenergy.com/our-company/locations/location-sites/nine-mile-point-clean-energy-center.html>.

<sup>23</sup> Case 15-E-0302, *supra*, Final ZEC Implementation Plan (filed October 21, 2019). Also available at: <https://www.nyserda.ny.gov/-/media/Project/Nyserda/Files/Programs/Clean-Energy-Standard/2019/Case-15-E-0302-Final-ZEC-Implementation-Plan.pdf>.

In the ZEC 2.0 White Paper, Staff proposes that only the existing Upstate nuclear facilities be eligible for ZEC 2.0 and the program extend from 2029 through 2049. Specifically, Staff proposes that, to qualify as a resource eligible to sell Tier 3 ZECs under the ZEC 2.0 program, nuclear facilities must:

- Have an in-service date of January 1, 2015, or earlier;
- Be operating pursuant to an NRC operating license as of April 1, 2029;
- Have demonstrated the need for financial assistance to operate the facility beyond 2029; and
- 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. Under these criteria, only the FitzPatrick, Ginna, Nine Mile Point Unit 1, and Nine Mile Point Unit 2 facilities would qualify for the ZEC 2.0 program. This SGEIS evaluates the impacts and benefits of the continued operation and maintenance of this existing nuclear fleet.

### 1.3 Public Benefits of Proposed Action

Consistent with 6 NYCRR § 617.9(b)(5)(i), this section provides a concise description of the public benefits anticipated from the proposed action. The public benefits of the proposed action should be considered in comparison to the cost of the "business as usual" or "no action" scenario in which the current ZEC program expires in March 2029 and is not otherwise renewed or replaced. Relative to the "no action" scenario described in [Chapter 4](#), ZEC 2.0 is expected to yield public benefits through decreased emissions, efficient land use, electric system reliability, and economic development.

- **Emissions:** DPS estimates that the ZEC program has helped avoid over 13 million metric tons of carbon dioxide emission per year, or over 68 million tons total, between 2020 and 2024.<sup>24</sup> A 2015 study prepared by The Brattle Group (Brattle Report) estimated that the 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.<sup>25</sup>
  - The closure of the Indian Point Energy Center nuclear reactors provides an illuminating example of the impacts of replacing nuclear energy with fossil fuels. Two large natural gas fired electric generation plants came online to replace Indian Point and maintain reliability.<sup>26</sup> Thus, between 2019 (the last year during which both Indian Point Unit 2 and Unit 3 were in operation) and 2022 (the first year during which neither reactor was in operation), the proportion of

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<sup>24</sup> ZEC 2.0 White Paper, pp. 13-14.

<sup>25</sup> The Brattle Group, New York's Upstate Nuclear Power Plants' Contribution to the State Economy (issued December 2015), p. 11., available at: <https://www.brattle.com/insights-events/publications/new-yorks-upstate-nuclear-power-plants-contribution-to-the-state-economy/> (Brattle Report).

<sup>26</sup> 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](https://www.nyiso.com/documents/20142/1396324/Indian_Point_Generator_Deactivation_Assessment_2017-1213.pdf/f673a0f8-5620-1d7b-4be2-99aaf781ac5c).

electricity generated by burning fossil fuels increased, and air emissions from the New York electric grid increased by approximately 26 percent.<sup>27, 28</sup>

- Emissions of GHG and criteria air pollutants contribute to climate change and degrade air quality, negatively impacting human health and the State's natural resources.
- **Land Use:** Nuclear is the most efficient source of energy in terms of the Land Use Intensity of Energy (LUIE) metric when compared to natural gas, wind, solar, geothermal, hydroelectric, and biomass generation.<sup>29</sup>
- **Electric System Reliability:** 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.<sup>30</sup> Greater dependency on fossil fuels also raises reliability concerns, particularly during extreme cold weather events.<sup>31</sup> Further, nuclear energy provides unique services to the grid that renewables cannot easily replicate, particularly during “lulls” of wind and solar generation.<sup>32</sup>
- **Economic Development:** In addition to supporting direct jobs and local tax revenues (discussed further in [Section 1.2](#)), nuclear energy's contribution to electric system reliability underpins economic growth in the 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.<sup>33</sup> 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.<sup>34</sup>

## 1.4 Location of Action

The proposed ZEC 2.0 program is intended to further the State's emissions-free energy goals and promote reliable electric service throughout the State. As such, the location of the proposed action is the entire State of New York, including coastal waters within the State's jurisdiction.

<sup>27</sup> 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. EIA, Electricity, Interactive Data Tools, 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=0&mtype=0>.

<sup>28</sup> New York State Department of Environmental Conservation (NYSDEC), 2024 NYS Greenhouse Gas Emissions Report: Sectoral Report #1 (issued December 2024), p. 5.

<sup>29</sup> Using land area data from the 2020 Census, and accounting for bodies of water and the Adirondack Park, as well as capacity currently contracted, a DPS analysis used land estimates from the Large-Scale Renewable (LSR) supply curve (km<sup>2</sup>/MW) and industry standard capacity built estimates to calculate estimated land used by each resource, including a percentage of State land used by wind and solar by 2040. When conducting the analysis for a scenario that modeled a high-capacity factor, low-operating cost resource such as nuclear, the amount of land used by both wind and solar fell due to the low LUIE of nuclear energy.

<sup>30</sup> For example, see NYISO, Power Trends 2025 (issued June 2, 2025), pp. 12 and 14, available at: <https://www.nyiso.com/documents/20142/2223020/2025-Power-Trends.pdf/51517a1b-36fa-4f3d-d44d-eabe23598514>.

<sup>31</sup> See Northeast Power Coordinating Council, Northeast Gas/Electric System Study (January 21, 2025), p. 4, available at: [https://cdn.prod.website-files.com/67229043316834b1a60feba3/678fee912264907c381a0f68\\_NPCC%20Northeast%20Gas%20Electric%20System%20Study.pdf](https://cdn.prod.website-files.com/67229043316834b1a60feba3/678fee912264907c381a0f68_NPCC%20Northeast%20Gas%20Electric%20System%20Study.pdf).

<sup>32</sup> NYISO, 2023-2042 System & Resource Outlook (The Outlook) (issued July 23, 2024), Appendix E, available at: <https://www.nyiso.com/documents/20142/46037616/Appendix-E-Renewable-Profiles-Variability.pdf/76833f16-ca0b-0439-6bae-e45eb75d88fe>.

<sup>33</sup> 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.”).

<sup>34</sup> Zambito, Thomas C., Indian Point shutdown cost local jobs. Federal funding could resurrect them, JOURNAL NEWS (February 14, 2023), <https://www.lohud.com/story/news/2023/02/14/indian-pointnuclear-shutdown-cut-jobs-federal-money-westchester-biosciences/69886732007/>.

## 1.5 Relationship To Other Plans and Programs

The ZEC 2.0 program is part of a broader suite of policies and initiatives designed to respond to multiple challenges facing the State's energy system. As discussed above, the CES, adopted in 2016 and expanded in 2020, is designed to fight climate change, reduce air pollution, and ensure a diverse and reliable low-carbon energy supply. By focusing on nuclear and other low-carbon energy sources such as solar, wind, and hydropower, the CES aims to bring investment, economic development, and jobs to the State. The State codified its overarching framework for achieving its clean energy goals in the CLCPA. In addition to the CLCPA and CES, the proposed rulemaking might interact with the State's other energy plans and programs, including:

- **Clean Energy Fund (CEF)**, approved in 2016 and modified in 2021. NYSERDA administers the CEF, which consists of four program portfolios designed to collectively accelerate and expand investment in clean energy technologies:
  - 1) **Market Development** to reduce costs and accelerate customer demand for energy efficiency and other behind-the-meter clean energy solutions (e.g., battery storage, residential solar) and increase private investment. This portfolio will provide financial support, technical knowledge, data, and education to customers and service providers to accelerate demand for clean energy solutions and will train an advanced workforce able to fill new jobs in the sector.
  - 2) **NY-Sun** to provide long-term certainty to New York's growing solar market and to lower the costs for homeowners and businesses investing in solar power. This portfolio aims to make solar energy more affordable and accessible for residential and commercial customers.
  - 3) **NY Green Bank** to partner with private financial institutions to accelerate and expand the availability of capital for clean energy projects. This portfolio will increase confidence in lending for clean technologies through a total investment of \$1 billion.
  - 4) **Innovation and Research** to invest in technologies that will meet increasing demand for clean energy. This portfolio will drive clean tech business growth across five key opportunity areas: smart grid technology, renewables and distributed energy resources (DERs), high performance buildings, transportation, and cleantech startup and innovation development.
- **New York State Energy Planning Requirements**, New York's Energy Law establishes a State Energy Planning Board to periodically develop and adopt a State Energy Plan.<sup>35</sup> State Energy Plans include an assessment of the ability of energy supply sources, together with the energy transmission and delivery systems, to meet forecasted energy demand for electricity and fuels for at least a ten-year period. The New York State Energy Planning Board published a Draft 2025 Energy Plan in July.<sup>36</sup>
- **Upcoming Master Plan for Responsible Advanced Nuclear Development in New York**, in January 2025 NYSERDA published its Blueprint for Consideration of Advanced Nuclear Energy Technologies pursuant to a directive from Governor Kathy Hochul. The development of the Master Plan (expected by the end of 2026) will provide a framework for in-depth examination into the key issues raised by the Blueprint to develop recommendations for implementation of advanced nuclear technologies in New York State.<sup>37</sup>

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<sup>35</sup> Consolidated Laws of New York, Energy Chapter 17-A, Article 6 - Energy Planning, September 22, 2014, available at: <https://www.nysenate.gov/legislation/laws/ENG/6-102>.

<sup>36</sup> Draft New York State Energy Plan, Chapter 16 Pathways Analysis (issued July 2025), pp. 22-27, available at: <https://energyplan.ny.gov/Plans/Draft-2025-Energy-Plan>.

<sup>37</sup> NYSERDA, Advanced Nuclear Energy, available at: <https://www.nyserda.ny.gov/All-Programs/Advanced-Nuclear-Energy>.

## 1.6 Approvals, Reviews, and Permits

The proposed action is subject to approval by the PSC. No other reviews or permits are required.

State agencies potentially interested in the ZEC 2.0 program include: New York State Department of Environmental Conservation, New York State Energy Research and Development Authority, New York State Department of State, New York State Department of Health, and New York State Division of Homeland Security and Emergency Services.

## CHAPTER 2 | The Nuclear Industry in New York State

Consistent with 6 NYCRR § 617.9(b)(5)(ii), this chapter provides baseline information on New York State’s nuclear industry and electric system. This SGEIS uses the following terms specific to the electric system:

- **Capacity:** The maximum output of a generating facility that can be supplied to the electrical grid, typically expressed in megawatts (MW) or gigawatts (GW).
- **Generation:** The actual electric energy produced by a generating facility (e.g., nuclear power plant, wind farm, natural gas power plant, etc.). Generation is expressed as a unit of energy such as kilowatt hour (kWh), megawatt hour (MWh, equal to 1,000 kWh) or in the case of statewide generation, gigawatt hour (GWh, equal to 1,000 MWh).
- **Capacity Factor:** A capacity factor is “[t]he ratio of the electrical energy produced by a generating unit for the period of time considered to the electrical energy that could have been produced at continuous full power operation during the same period.”<sup>38</sup> It is expressed as a percentage where the higher the value, the higher intensity or frequency of use at a power plant. A “baseload” power plant that runs near constantly to provide a consistent, steady minimum of electricity over time, like nuclear, would typically have a higher capacity factor.

[Chapter 3](#) describes the current environmental setting in the State and the Upstate nuclear facilities’ interaction with the environment. Together, the information presented in [Chapter 2](#) and [Chapter 3](#) provides a baseline against which the impacts of implementing ZEC 2.0 are evaluated and compared in [Chapter 5](#) through [Chapter 10](#).

This chapter is organized into three sections:

- [Section 2.1](#) provides a historical overview of the three operating nuclear power facilities in the State.<sup>39</sup>
- [Section 2.2](#) provides an overview of the regulatory environment for nuclear power in the State.<sup>40</sup>
- [Section 2.3](#) describes the State’s electricity market, including an introduction to electric generation and demand trends.

### 2.1 Description of the Upstate Nuclear Power Facilities

The FitzPatrick, Ginna, and Nine Mile Point nuclear facilities are all located on the southern shore of Lake Ontario. Constellation Energy Corporation (Constellation) owns and operates each of these facilities. **Figure 2-1** is a map of New York and the facility locations.

All three facilities draw cooling water from Lake Ontario and discharge it under permits issued pursuant to the federal Clean Water Act (CWA) and New York State regulations. Each releases radioactive effluents in accordance with limits set by the NRC and U.S. Environmental Protection Agency (EPA), with discharges and environmental conditions monitored through a Radiological Environmental Monitoring Program that may include aquatic, terrestrial, groundwater, and atmospheric sampling. Spent nuclear fuel is initially stored on-site in spent fuel pools. Once the fuel has cooled sufficiently, it is then transferred to dry casks at each station’s

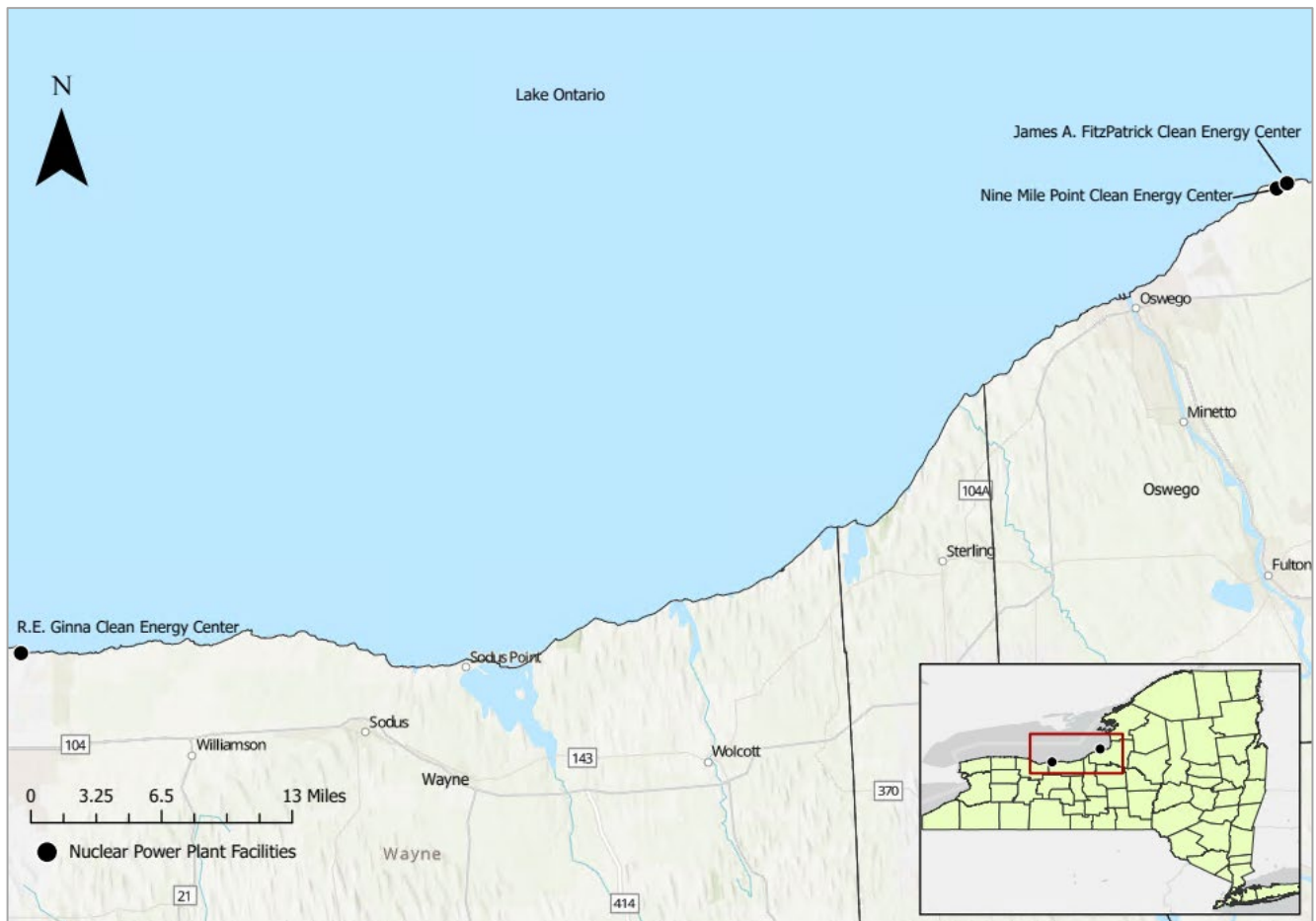
<sup>38</sup> EIA, Glossary, available at: <https://www.eia.gov/tools/glossary/>.

<sup>39</sup> The Nine Mile Point Nuclear Station consists of two units: Unit 1 and Unit 2.

<sup>40</sup> Chapter 6 provides a more detailed review of relevant regulations.

Independent Spent Fuel Storage Installation (ISFSI). Low-level radioactive waste is processed and shipped off-site to licensed disposal facilities.<sup>41</sup>

**Figure 2-1. Map of New York with Upstate Nuclear Facility Locations**



Until 2021, New York’s nuclear fleet also included the Indian Point Energy Center, located on the Hudson River in Buchanan, Westchester County. The facility consisted of three pressurized water reactors that began operating in 1962, 1974 and 1976, respectively. Indian Point Unit 1 shut down in 1974, but Units 2 and 3 operated until 2020 and 2021, respectively. Indian Point supplied approximately one-third of the State’s nuclear generation before it was permanently shut down in April 2021 as part of an agreement between the State, Entergy (the plant’s owner), and environmental groups.

**Table 2-1** provides details on the Upstate nuclear facilities. The operator names shown for each facility are the specific NRC license-holding subsidiary or legal entity through which Constellation operates that plant.

<sup>41</sup> Spent fuel pools are large, water-filled basins located within the reactor building or adjacent structures that provide cooling and shielding for irradiated fuel assemblies after removal from the reactor core. The water both dissipates residual heat and blocks radiation. Dry cask storage systems are sealed steel canisters, often housed within concrete overpacks, that hold cooled spent fuel assemblies in an inert atmosphere. These systems provide passive cooling and radiation shielding for long-term on-site storage, typically located at the facility’s ISFSI.

**Table 2-1. Operating Nuclear Power Plants**

| Plant                  | Operator                                             | Location                      | Capacity <sup>42</sup><br>(Capacity Factor 2022-2024) <sup>43</sup> | License Expiration | License Renewal Application Deadline |
|------------------------|------------------------------------------------------|-------------------------------|---------------------------------------------------------------------|--------------------|--------------------------------------|
| FitzPatrick            | Constellation Energy Generation Co., LLC             | Town of Scriba, Oswego County | 848 MW (93.1%)                                                      | Oct. 2034          | Oct. 2029                            |
| GINNA                  | R.E. Ginna Nuclear Power Plant, LLC (Constellation)  | Town of Ontario, Wayne County | 581 MW (94.8%)                                                      | Sept. 2029         | Sept. 2026                           |
| Nine Mile Point Unit 1 | Nine Mile Point Nuclear Station, LLC (Constellation) | Town of Scriba, Oswego County | 621 MW (93.5%)                                                      | Aug. 2029          | Aug. 2026                            |
| Nine Mile Point Unit 2 | Nine Mile Point Nuclear Station, LLC (Constellation) | Town of Scriba, Oswego County | 1,292 MW (90.9%)                                                    | Oct. 2046          | Oct. 2041                            |

### 2.1.1 FitzPatrick Nuclear Power Plant

The James A. FitzPatrick Nuclear Power Plant is located on the southeastern shore of Lake Ontario in the Town of Scriba, Oswego County, approximately seven miles northeast of the City of Oswego. The plant occupies approximately 900 acres adjacent to the Nine Mile Point Nuclear Station.

FitzPatrick uses a boiling water reactor (BWR) with a net generating capacity of 848 MW and a capacity factor of 93.1 percent from 2022 to 2024. Construction of the facility began in September 1968. The facility achieved first criticality in November 1974, was first connected to the grid in February 1975, and began commercial operation in July 1975.<sup>44</sup> The Power Authority of the State of New York (PASNY, later NYPA) owned the facility until 2000, when the plant was sold to Entergy Nuclear. Exelon Generation subsequently acquired the plant from Entergy, and Constellation acquired the facility in 2022 when Exelon separated its transmission and distribution utility business from its retail energy and generation business. FitzPatrick operates under NRC Operating License DPR-59, which has been renewed to allow operation through 2034. In 2024, FitzPatrick generated 6,790 gigawatt-hours (GWh) of electricity, representing approximately five percent of the total amount of electricity generated in the State.<sup>45</sup> The FitzPatrick plant's annual capacity is sufficient to provide the average electricity needs of 625,000 homes.<sup>46</sup>

<sup>42</sup> NRC, NUREG-1350, Vol. 35 (Information Digest 2024-2025), Appendix A, available at: <https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1350/index.html>.

<sup>43</sup> Capacity factors were calculated using annual generation data reported by the EIA for 2022-2024 (EIA, U.S. Nuclear Generation and Generating Capacity for 2022-2024, available at: <https://www.eia.gov/nuclear/generation/>) and capacity values from NUREG-1350, Vol. 35, Appendix A. For each plant, the capacity factor was calculated as the ratio of total generation over the 2022-2024 period to the maximum possible output (i.e., total capacity × total hours in the period).

<sup>44</sup> World Nuclear Association (WNA), Reactor Database Search, Fitzpatrick, available at: <https://world-nuclear.org/nuclear-reactor-database/details/fitzpatrick>.

<sup>45</sup> NYISO, Gold Book 2025, Load & Capacity Data (April 2025), available at: <https://www.nyiso.com/documents/20142/2226333/2025-Gold-Book-Public.pdf/088438e1-02f1-5316-211b-dba17c01b4b>.

<sup>46</sup> Constellation Energy, James A. FitzPatrick Clean Energy Center, available at: <https://www.constellationenergy.com/our-company/locations/location-sites/james-a-fitzpatrick-clean-energy-center.html>.

### 2.1.2 Nine Mile Point Nuclear Station

The Nine Mile Point Nuclear Station is located on the southeastern shore of Lake Ontario in the Town of Scriba, Oswego County, approximately seven miles northeast of the City of Oswego and adjacent to the Fitzpatrick plant. The site covers roughly 900 acres and contains two BWR units, Units 1 and 2.

Construction of Unit 1 began in April 1965. The reactor achieved first criticality in September 1969, was first connected to the grid in November 1969, and began commercial operation in December 1969, making it one of the oldest operating commercial nuclear units in the U.S.<sup>47</sup> Unit 1 had a net generating capacity of 621 MW and a capacity factor of 93.5 percent from 2022 to 2024. Construction of Unit 2 began in August 1975. The reactor achieved first criticality in May 1987, was first connected to the grid in August 1987, and began commercial operation in March 1988.<sup>48</sup> Unit 2 has a net generating capacity of 1,292 MW, making it the largest single nuclear reactor in the State. Unit 2 had a capacity factor of 90.9 percent from 2022 to 2024.

Niagara Mohawk Power Corporation originally developed the station; subsequent ownership included joint interests with other utilities before consolidation under Constellation. Unit 1 operates under NRC License DPR-63, which runs through 2029, and Unit 2 operates under NRC License NPF-69, which runs through 2046. In 2024, the two units generated 15,484 GWh of electricity combined (Unit 1 generated 5,252 GWh and Unit 2 generated 10,233 GWh), representing approximately 12 percent of the total amount of electricity generated in the State.<sup>49</sup> The two units' capacity is sufficient to provide the average electricity needs of over 1.2 million homes.<sup>50</sup>

### 2.1.3 R.E. Ginna Nuclear Power Plant

The R.E. Ginna Nuclear Power Plant is located east of Rochester in the Town of Ontario, Wayne County, along the southern shore of Lake Ontario. Ginna is located 64.4 miles away from FitzPatrick and 64.2 miles away from Nine Mile Point. The Ginna site occupies 488 acres; about half of the area is leased for agricultural production, while another quarter remains relatively undisturbed open space.<sup>51</sup>

Construction started in April 1966. The facility achieved first criticality in November 1969, was first connected to the grid in December 1969, and began commercial operation in July 1970.<sup>52</sup> The facility has a single pressurized water reactor (PWR) with a net generating capacity of 581 MW. Ginna is a two-loop reactor and had a capacity factor of 94.8 percent from 2022 to 2024. In 2024, Ginna produced 4,799 GWh of electricity, representing approximately four percent of the total amount of electricity generated in the State.<sup>53</sup> The Ginna plant's annual capacity is sufficient to provide the average electricity needs of 425,000 homes.<sup>54</sup>

Ginna was previously owned and operated by Rochester Gas and Electric Corporation (RG&E), which sold it to Constellation in 2004. The facility operates under NRC Operating License DPR-19, renewed in 2004 to permit operation until 2029.

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<sup>47</sup> WNA, Reactor Database Search, Nine Mile Point Unit 1, available at: <https://world-nuclear.org/nuclear-reactor-database/details/Nine-Mile-Point-1>.

<sup>48</sup> WNA, Reactor Database Search, Nine Mile Point Unit 2, available at: <https://world-nuclear.org/nuclear-reactor-database/details/Nine-Mile-Point-2>.

<sup>49</sup> Gold Book, p. 83.

<sup>50</sup> Constellation Energy, Nine Mile Point Clean Energy Center, available at: <https://www.constellationenergy.com/our-company/locations/location-sites/nine-mile-point-clean-energy-center.html>.

<sup>51</sup> R.E. Ginna Nuclear Power Plant Application for Renewed Operating License Appendix E - Environmental Report, p.2-1, available at: <https://www.nrc.gov/reactors/operating/licensing/renewal/applications/ginna/er.pdf>.

<sup>52</sup> WNA, Reactor Database Search, R.E. Ginna, available at: <https://world-nuclear.org/nuclear-reactor-database/details/R.E.-Ginna>.

<sup>53</sup> Gold Book, p. 82.

<sup>54</sup> Constellation Energy, R. E. Ginna Clean Energy Center, available at: <https://www.constellationenergy.com/our-company/locations/location-sites/r-e-ginna-clean-energy-center.html>.

## 2.2 Regulatory Environment

The three operating nuclear power stations are subject to both New York State and federal law.

At the federal level, the Atomic Energy Act (AEA) divides authority over atomic energy between the federal and state governments. The NRC regulates reactor design, construction, operation, security, and radiological safety of nuclear facilities, including licensing, license renewal, and oversight of radiological effluent discharges. NRC authority also extends to the storage of spent nuclear fuel, whether in spent fuel pools or dry cask storage systems at each plant's ISFSI. EPA establishes environmental radiation protection standards (e.g., under 40 CFR 190) that NRC regulations incorporate, and the U.S. Department of Energy (DOE) retains responsibility for developing a permanent geologic repository for spent fuel.

Under the AEA, states retain jurisdiction over issues outside NRC's radiological safety authority, including electricity rates, cost recovery, and certain land use matters. The PSC exercises oversight of the nuclear facilities through its "lightened regulation" framework.<sup>55</sup> Through various laws, the New York State Department of Labor, New York State Department of Health, New York State Department of Homeland Security and Emergency Services, and New York State Department of Environmental Conservation also all play a role in nuclear facility regulations.<sup>56</sup>

Also at the State level, nuclear facilities contribute to New York's climate and energy policy objectives under the CLCPA, enacted in 2019, which mandates 70 percent renewable electricity by 2030 and zero-emissions electricity by 2040. As explained in [Chapter 1](#), the ZEC program, established under the CES, governs compensation to the Upstate nuclear facilities for providing zero-emission electricity. The PSC also periodically reviews the CES to assess progress toward the CLCPA's requirements and determine any necessary program modifications.<sup>57</sup>

## 2.3 Electricity Demand and Generation

New York has a diverse mix of electricity generation capacity as well as an active import-export market with various neighboring markets. For example, the State imports electricity primarily from PJM Interconnection, Inc. (PJM), which serves Pennsylvania, New Jersey, and Maryland, and from Ontario and Hydro-Québec in Canada, and exports electricity to New England and other neighboring markets.<sup>58</sup> Nuclear power plays a significant role as a baseload electricity provider in the State, along with natural gas and hydropower. Renewable energy sources (mainly solar and wind) supplement baseload power. Demand is expected to increase in the future, driven by building and transportation electrification, along with economic growth and industrial development.<sup>59</sup>

The New York Independent System Operator (NYISO) is responsible for the reliability and stability of the State's electricity grid and market. Recent reports from NYISO highlight the uncertainty of the changing electricity market and the challenges of balancing zero-emissions generation – both existing facilities and new renewable resources such as solar and wind – with demand growth. Drawing primarily on recent NYISO data –

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<sup>55</sup> Case 21-E-0130, Joint Petition of Exelon Corporation and Exelon Generation Company, LLC for a Declaratory Ruling Disclaiming Jurisdiction Over or Abstaining from Further Review of the Proposed Transaction, or in the Alternative, an order Authorizing the Proposed Transaction, Order Asserting Jurisdiction, Approving and Adopting Joint Proposal, and Continuing Lightened Regulation (issue December 16, 2021), available at: <https://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterSeq=64826>.

<sup>56</sup> For a list of New York State regulations pertaining to nuclear facilities, see: <https://www.nrc.gov/agreement-states/new-york.html>.

<sup>57</sup> Public Service Law § 66-p.

<sup>58</sup> NYISO, Power Trends 2025: The New York ISO Annual Grid and Markets Report (April 2025), p. 24, available at: <https://www.nyiso.com/documents/20142/2223020/2025-Power-Trends.pdf/51517a1b-36fa-4f3d-d44d-eabe23598514?t=1748866865402>.

<sup>59</sup> Gold Book, p. 9.

supplemented by EIA and PSC data where applicable – the following sections describe the existing resources and generation mix of electricity in New York, and trends in electricity demand in the State.

### 2.3.1 Generation

New York generating facilities produced over 130,000 GWh of electricity in 2024.<sup>60</sup> Beyond nuclear power, a diverse set of generating resources support the electric grid. **Table 2-2** summarizes the State’s capacity and electric generation in 2024 by energy source.

In 2024, natural gas provided half of the State’s electricity generation, producing 62,000 GWh. Natural gas is the largest source of installed capacity at 24,000 MW, or 58 percent of the State total. Nuclear power provides 22 percent of the State’s electricity needs but only represents 8.5 percent of the State’s electricity capacity. As described in [Section 2.1](#), the Upstate nuclear plants maintain high capacity factors, resulting in more generation relative to capacity compared to other energy sources.

**Table 2-2. 2024 New York State Electricity Mix - Capacity and Generation<sup>61</sup>**

| Energy Source | Nameplate Capacity (MW) | Percent of State Capacity Total | 2024 Generation (GWh) | Percent of State Generation Total |
|---------------|-------------------------|---------------------------------|-----------------------|-----------------------------------|
| Natural Gas   | 24,000                  | 58%                             | 62,000                | 50%                               |
| Nuclear       | 3,500                   | 8.5%                            | 27,000                | 22%                               |
| Hydropower    | 6,700                   | 16%                             | 27,000                | 22%                               |
| Wind          | 2,900                   | 6.8%                            | 5,800                 | 4.6%                              |
| Solar         | 600                     | 1.4%                            | 500                   | 0.4%                              |
| Other         | 3,900                   | 9.3%                            | 2,500                 | 2.0%                              |
| <b>Total</b>  | <b>42,000</b>           | <b>-</b>                        | <b>130,000</b>        | <b>-</b>                          |

*Note: Values are rounded to two significant digits. The “Other” category includes geothermal, biomass, and pumped hydropower.*

Since the closure of Indian Point in 2021, nuclear power’s share of New York’s electricity generation has declined. Before the closure, nuclear power supplied roughly one-third of the State’s total generation. To maintain reliability, three new natural gas plants – Cricket Valley Energy Center (1,020 MW), CPV Valley Energy Center (678 MW), and Bayonne Energy Center II (120 MW) – were brought online around the time of Indian Point’s retirement to offset the lost nuclear capacity.<sup>62</sup> According to EIA data, the share of nuclear in New York electricity generation fell from about 34 percent in 2019 to 22 percent in 2023, while natural gas increased from 36 percent to 47 percent.<sup>63</sup>

**Figure 2-2** provides a historical overview of electricity generation in New York by source from 2000 to 2023.<sup>64</sup> Each segment of the bar chart represents a different source of generation and its contributions to total annual generation in New York since 2000. The graph presents the total GWh generated in-State as well as the percentage of total annual generation from that source. Over the past decades, the State’s generation mix has

<sup>60</sup> Gold Book, p. 104.

<sup>61</sup> NYISO, Gold Book 2025, NYCA Existing Generating Facilities dataset, available at: <https://www.nyiso.com/documents/20142/51231901/2025-NYCA-Existing-Generating-Facilities.xlsx/6a8b1cda-6bf3-f546-0f18-737a7835c686>.

<sup>62</sup> NYISO, Generator Deactivation Assessment Indian Point Energy Center, December 12, 2017, available at: [f673a0f8-5620-1d7b-4be2-99aaf781ac5c](https://www.nyiso.com/documents/20142/51231901/2017-IP-Gen-Deactivation-Assessment-Indian-Point-12-Dec-2017.pdf/f673a0f8-5620-1d7b-4be2-99aaf781ac5c).

<sup>63</sup> EIA, Historical Electrical Generation by State 1990 to 2023 (October 2023), available at: <https://www.eia.gov/electricity/data/state/>.

<sup>64</sup> Note, the values from EIA that are presented in the figure, as well as discussed in this section, are for the total electricity generated within the State by fuel source. The New York grid imports and exports electricity from neighboring regions to meet demand, meaning that the total *consumption* of electricity by fuel source will vary from in-State generation, depending on the fuel type of imports and exports for that year. Imports and exports are driven by many conditions such as the weather and market factors, which will vary year to year, as well as planned additions and retirements of generation facilities.

diversified and eliminated the use of coal and petroleum (oil). Coal and petroleum each accounted for 18 percent of in-State generation in 2000. Nuclear power's share of in-State generation increased until Indian Point was shut down in 2021, while hydropower's share of in-State generation has remained around 20 percent. As of 2023, wind power provided about four percent and solar remained a small portion at under two percent of total in-State generation. Other sources, such as geothermal, waste-to-energy, and biomass consistently provide another two percent of in-State generation.<sup>65</sup>

NYISO imports and exports significant amounts of electricity to meet demand and balance the electric grid. In 2024, the State exported 18,148 GWh of electricity generation, primarily to New England (12,782 GWh). It also imported 38,785 GWh, making the State a net importer of electricity, primarily from PJM (21,533 GWh).

[Section 2.3.2](#) below provides additional information on demand trends.

To address growing demand, projects with over 13,000 MW of capacity are planned to become operational by 2028. The majority of capacity additions are solar (5,633 MW). Wind represents another subset of capacity additions (4,580 MW, including on- and off-shore wind) as does energy storage (2,429 MW).<sup>66</sup> **Table 2-3** summarizes NYISO's projected additions to the grid from 2025 to 2028 (as of April 2025).

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<sup>65</sup> Geothermal refers to electricity produced from underground heat sources; waste-to-energy involves generating electricity by burning municipal solid waste; and biomass includes burning wood, agricultural residues, or other organic materials for power production.

<sup>66</sup> Energy storage refers to technologies, such as battery systems or pumped hydro, that store electricity for later use to help balance supply and demand and improve grid reliability.

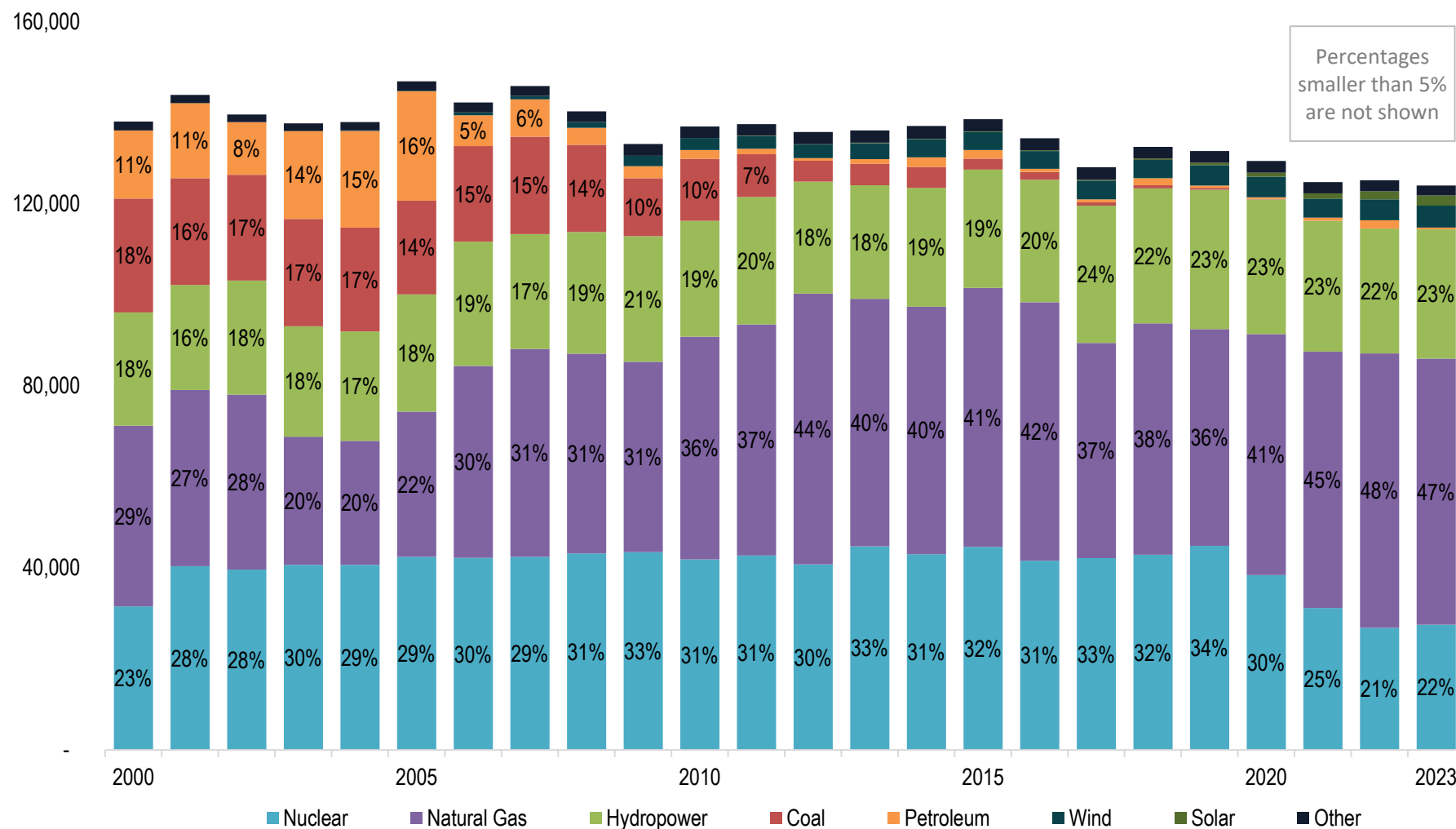
Figure 2-2. Generation Mix in New York State from 2000 to 2023 (GWh)<sup>67</sup><sup>67</sup> EIA, Historical Electrical Generation by State 1990 to 2023 (October 2023), available at: <https://www.eia.gov/electricity/data/state/>.

**Table 2-3. Upcoming or Planned Generation Projects in New York State (MW of capacity)<sup>68</sup>**

| Fuel Type          | 2025 | 2026  | 2027  | 2028  | Total |
|--------------------|------|-------|-------|-------|-------|
| Solar              | 390  | 1,093 | 2,267 | 1,863 | 5,633 |
| Land-Based Wind    | -    | 1,089 | 608   | -     | 1,712 |
| Energy Storage     | 193  | 724   | 1,138 | 352   | 2,429 |
| Offshore Wind      | -    | 2,868 | -     | -     | 2,868 |
| Solar plus Storage | -    | 20    | 270   | 490   | 780   |

*Note: Table excludes transmission projects and updates of existing combined cycle (<50MW).*

### 2.3.2 Demand

In their 2025 load report, NYISO projected electricity demand in the State to grow by two percent annually under baseline conditions. NYISO expects electricity demand to grow due to trends in the electrification of transportation (adoption of electric vehicles) and buildings (through switching to electric heating, cooking, and water heating). These two sectors are forecasted to grow by 3,471 percent and 9,932 percent between 2025 and 2049, respectively.<sup>69</sup>

NYISO also projects significant growth in “large load projects.” A large load project is a new industrial development that requires a substantial amount of electricity; examples include microchip manufacturing and data centers.<sup>70</sup> NYISO has already identified this as a potential risk and reliability concern for the system as there are 20 large load projects with over 4,000 MW of project demand already in their interconnection queue. Up to 2,500 MW of this demand could be connected to the grid by 2035, primarily Upstate.<sup>71</sup>

**Table 2-4** summarizes electricity demand by New York Control Area (NYCA) zone. The New York City NYCA zone has the largest demand for electricity of all of the zones. In 2024, annual electricity consumption was 49,703 GWh in New York City (approximately 33 percent of all electricity consumption in the State), while 19,801 GWh or 13 percent of the total occurs in Long Island.<sup>72</sup> New York residents tend to have low per capita electricity demand compared to the U.S. average. The commercial sector is the largest end-user of electricity, consuming about half of the State’s electricity demand followed by residential end-users at 36 percent.<sup>73</sup> **Table 2-5** summarizes EIA consumption data by sector. These existing sectoral and geographic patterns may shift as large load projects, which are primarily industrial and based Upstate, become operational.

NYISO also forecasts large increases in energy efficiency and behind-the-meter solar generation. Increases offset some of the generation demand from electrification of other sectors in the forecasts. However, growth in demand is still substantial. Overall, NYISO’s baseline scenario projects that electricity demand will increase by 55 percent, from 152,000 GWh in 2025 to 235,000 GWh in 2049.<sup>74</sup> **Figure 2-3** illustrates NYISO’s projections for baseline, low- and high-demand scenarios for overall electricity demand.<sup>75</sup> The winter exhibits larger demand growth due to the potential electrification of space heating. The low- and high-demand scenarios

<sup>68</sup> Gold Book, pp. 118-121.

<sup>69</sup> NYISO, Gold Book 2025, Baseline Forecast Dataset (April 2025), available at: <https://www.nyiso.com/documents/20142/51231901/2025-Gold-Book-Baseline-Forecast-Tables.xlsx/29e041cb-52b1-49a0-ac48-010b71a0eea7>. (Gold Book Baseline Forecast Dataset)

<sup>70</sup> Power Trends, p. 26.

<sup>71</sup> Power Trends, pp. 6-7.

<sup>72</sup> Gold Book Baseline Forecast Dataset.

<sup>73</sup> The Gold Book does not provide consumption estimates by end user sector, thus the estimates of sectoral electricity use come from EIA data for 2023 and 2022.

<sup>74</sup> Gold Book Baseline Forecast Dataset.

<sup>75</sup> Gold Book Baseline Forecast Dataset.

include different assumptions than the baseline forecast for several factors, including the adoption rate of electric vehicles and building electrification.<sup>76</sup> Unlike the baseline and low-demand scenarios, the high-demand scenario also includes high adoption of hydrogen production.<sup>77</sup>

**Table 2-4. Current Demand by New York Control Area (NYCA) Load Zones<sup>78</sup>**

| Zone              | Annual Energy (GWh) in 2024 | Percent of Statewide Annual Energy | Coincident Summer Peak Demand (MW) in 2024 | Coincidence Winter Peak Demand (MW) in 2024-25 |
|-------------------|-----------------------------|------------------------------------|--------------------------------------------|------------------------------------------------|
| A – West          | 15,417                      | 10%                                | 2,254                                      | 2,008                                          |
| B – Genesee       | 9,345                       | 6%                                 | 1,632                                      | 1,496                                          |
| C – Central       | 14,643                      | 10%                                | 2,414                                      | 2,441                                          |
| D – North         | 5,659                       | 4%                                 | 552                                        | 556                                            |
| E – Mohawk Valley | 7,194                       | 5%                                 | 1,166                                      | 1,339                                          |
| F – Capital       | 11,403                      | 8%                                 | 2,129                                      | 1,879                                          |
| G – Hudson Valley | 9,286                       | 6%                                 | 2,081                                      | 1,646                                          |
| H – Millwood      | 2,764                       | 2%                                 | 609                                        | 544                                            |
| I – Dunwoodie     | 5,723                       | 4%                                 | 1,273                                      | 972                                            |
| J – NYC           | 49,703                      | 33%                                | 10,001                                     | 7,464                                          |
| K – Long Island   | 19,801                      | 13%                                | 4,879                                      | 3,176                                          |
| <b>NYCA</b>       | <b>150,938</b>              | <b>-</b>                           | <b>28,990</b>                              | <b>23,521</b>                                  |

**Table 2-5. Sales of Electricity to Ultimate Customers in New York State by Sector in 2023 and 2022<sup>79</sup>**

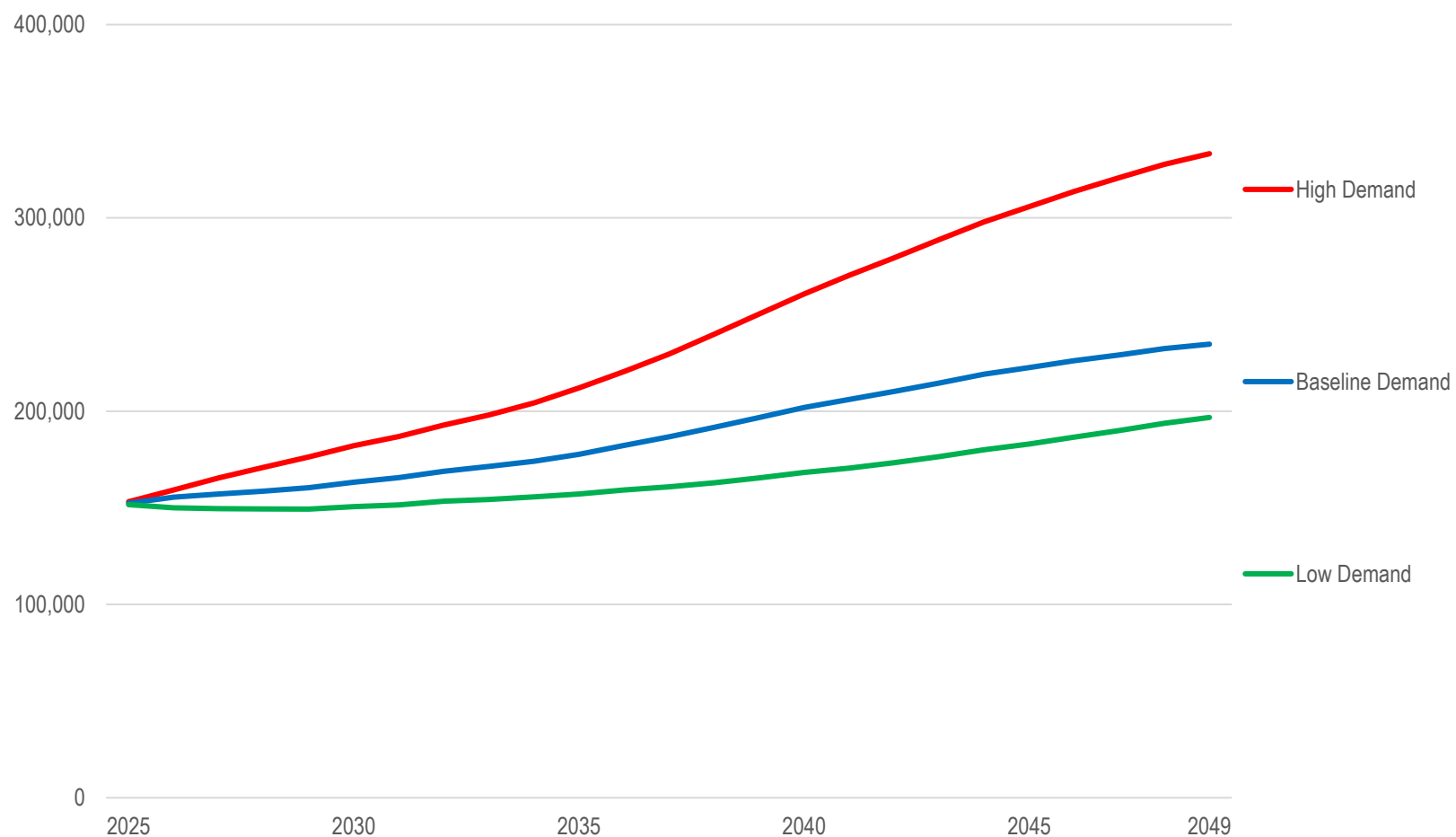
| Year                     | Residential Sales (GWh) | Commercial Sales (GWh) | Industrial Sales (GWh) | Transportation Sales (GWh) | Total Sales (GWh) |
|--------------------------|-------------------------|------------------------|------------------------|----------------------------|-------------------|
| 2023                     | 50,113                  | 71,422                 | 15,174                 | 2,713                      | <b>139,422</b>    |
| 2022                     | 52,227                  | 72,206                 | 16,178                 | 2,600                      | <b>143,211</b>    |
| % of Total ('22 and '23) | 36%                     | 51%                    | 11%                    | 2%                         | -                 |

<sup>76</sup> Gold Book, p. 15. The low demand scenario has slower adoption than baseline while the high demand scenario has faster adoption.

<sup>77</sup> Gold Book, p. 15.

<sup>78</sup> Gold Book, pp. 23-25.

<sup>79</sup> EIA Electric Power Annual, Sales to End-Users. Available at: [https://www.eia.gov/electricity/annual/table.php?t=epa\\_02\\_08.html](https://www.eia.gov/electricity/annual/table.php?t=epa_02_08.html).

**Figure 2-3. Projected Electricity Demand (GWh) in New York State, 2025 to 2049<sup>80</sup>**

<sup>80</sup> Gold Book Baseline Forecast Dataset.

## CHAPTER 3 | Environmental Setting

Consistent with 6 NYCRR § 617.9(b)(5)(ii), this chapter provides an overview of the areas to be affected by ZEC 2.0, defined under 6 NYCRR § 617.2(l) as “the physical conditions that will be affected by [the] proposed action, including land, air, water, minerals, flora, fauna, noise, resources of agricultural, archeological, historic or aesthetic significance, existing patterns of population concentration, distribution or growth, existing community or neighborhood character, and human health.”

The environmental setting described in this chapter serves as a baseline of the existing environmental conditions against which [Chapter 5](#) through [Chapter 10](#) evaluate and compare the potential impacts of ZEC 2.0 with reasonable alternatives, as described in [Chapter 4](#). The areas potentially affected by the proposed action include the entire State, though this chapter provides detail on the resources and communities near the Upstate nuclear facilities in Oswego and Wayne counties.

This chapter is organized into 13 sections consistent with the following environmental, demographic, and socioeconomic characteristics in the State:

- [Section 3.1](#) describes the physical characteristics of the Upstate nuclear facilities and their interaction with the local environment;
- [Section 3.2](#) provides a description of physiography, geology, and soil taxonomy;
- [Section 3.3](#) describes the different types of land uses, including agriculture and existing land uses associated with the nuclear power plants;
- [Section 3.4](#) describes water resources, including estuaries, wetlands, lakes, groundwater, and drinking water;
- [Section 3.5](#) details climatic conditions such as temperature and precipitation, air quality, and climate change;
- [Section 3.6](#) describes plants and animals, including forest resources;
- [Section 3.7](#) overviews aesthetic and visual resources;
- [Section 3.8](#) discusses the importance of cultural and historic resources;
- [Section 3.9](#) covers waste generation and management practices;
- [Section 3.10](#) summarizes potentially relevant public health issues such as ozone, particulate matter, asthma, and noise;
- [Section 3.11](#) describes the population and the factors that contribute to the development and maintenance of community character;
- [Section 3.12](#) describes the transportation modes and facilities found throughout the State and Oswego and Wayne counties; and
- [Section 3.13](#) provides an overview of the demographic and socioeconomic characteristics, including employment, income and wages, housing, municipal revenues, and a description of disadvantaged and minority populations that could be subject to disproportionate and adverse environmental impacts.

### 3.1 Upstate Nuclear Facilities' Interaction with the Local Environment

This section describes the physical characteristics of the Upstate nuclear power facilities. More detailed descriptions are available in the GEISs that the NRC published as supplements to the Generic Environmental Impact Statement for License Renewal of Nuclear Plants: Main Report (NUREG-1437, Volume 1).<sup>81</sup>

#### 3.1.1 External Appearance and Settings

The Upstate nuclear facilities are in rural areas of Oswego and Wayne counties, New York. Security fencing encloses the plants and access to the facilities is controlled. Lake Road (County Route 101) runs east-west and provides access to the Ginna, FitzPatrick, and Nine Mile Point facilities. The FitzPatrick and Nine Mile Point facilities are adjacent to each other and lie about 60 miles east of the Ginna plant.

Common structures necessary for nuclear plant operation include the containment or reactor building, fuel building, turbine building, auxiliary buildings, diesel generator building, pump houses, water intake and discharge facilities, cooling towers, radioactive waste facilities, ventilation stacks, switchyards and transmission lines, independent spent fuel storage installations (ISFSIs), and service buildings containing offices and laboratories. [Chapter 3](#) discusses these structures in relation to the environmental resources near the Upstate nuclear facilities. Maps and layouts of the facilities are available in the NRC supplemental GEISs.<sup>82</sup>

#### 3.1.2 Reactor Systems

Nuclear reactors generate heat (or thermal energy) through nuclear fission, which is a process of splitting atoms to release energy. The heat converts water into high-pressure steam, which in turn spins a turbine to produce electricity. In the United States, all currently operating reactors used for commercial power generation are conventional (i.e., thermal) light water reactors (LWRs).<sup>83</sup> Thermal LWRs use ordinary water as both a coolant method and a neutron moderator that reduces the speed of fast-moving neutrons.<sup>84</sup> Cooling water systems remove excess heat generated in reactor systems. In general, larger nuclear power plants generate more waste heat and require more water for cooling.

Nuclear reactors use different LWR systems to generate steam, including boiling water reactors (BWRs) and pressurized water reactors (PWRs). The FitzPatrick and Nine Mile Point Unit 1 and Unit 2 reactors are BWRs, while the Ginna reactor is a PWR. Both reactor types use enriched uranium as nuclear fuel, but the size of the fuel rods differ. **Figure 3-1** illustrates how PWRs operate.

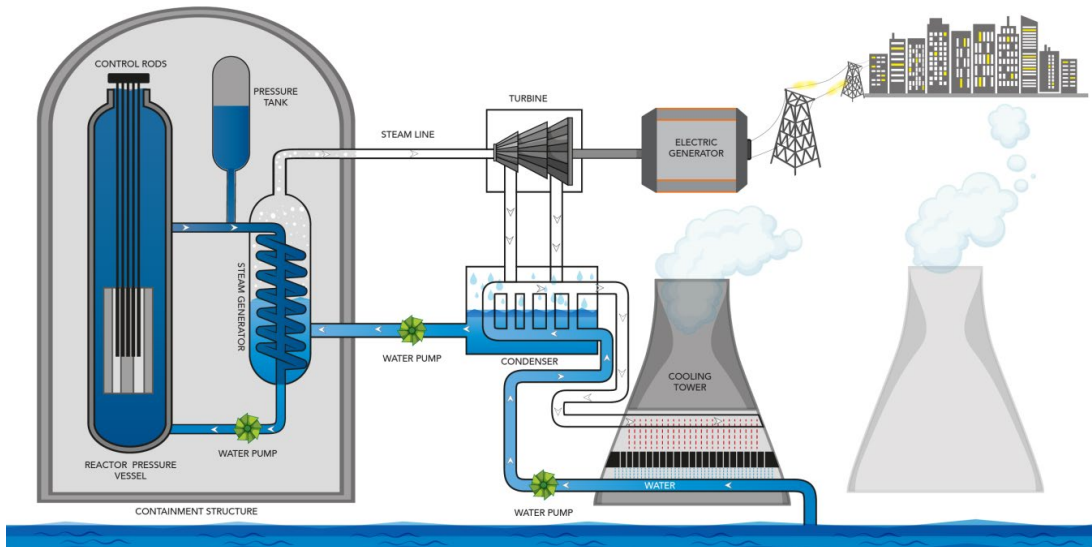
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<sup>81</sup> The main GEIS and Supplements are available at: <https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1437/index.html>. See Supplement 14 Regarding R.E. Ginna Nuclear Power Plant, Supplement 31 Regarding James A. FitzPatrick Nuclear Power Plant, and Supplement 24 Regarding Nine Mile Point Nuclear Station, Units 1 and 2.

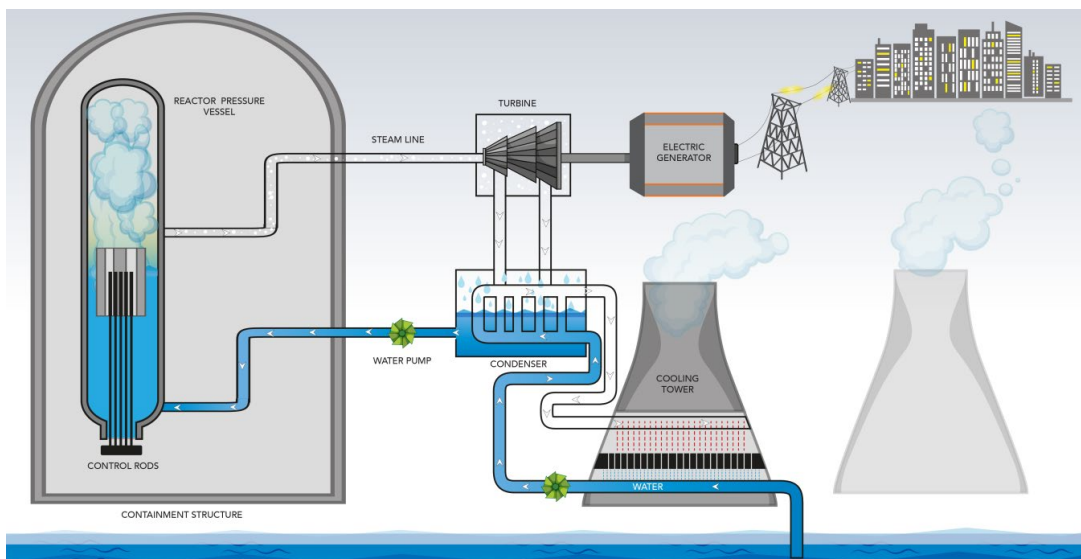
<sup>82</sup> Ibid.

<sup>83</sup> NRC, Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Final Report, NUREG-1437, Volume 1, Revision 2, available at: <https://www2.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1437/r1/index>, p. 3-2 (NRC License Renewal GEIS).

<sup>84</sup> In contrast, pressurized heavy-water reactors use heavy water, which contains a larger amount of the hydrogen isotope deuterium than ordinary water.

Figure 3-1. Pressurized Water Reactors<sup>85</sup>

PWRs heat water to a high temperature under pressure (to prevent boiling) inside the reactor vessel; water then flows to a separate steam generator. **Figure 3-2** illustrates how BWRs operate.

Figure 3-2. Boiling Water Reactors<sup>86</sup>

BWRs generate high pressure steam directly within the reactor vessel. The U.S. DOE provides additional information on how nuclear reactors work.<sup>87</sup>

<sup>85</sup> DOE, NUCLEAR 101: How Does a Nuclear Reactor Work?, available at: <https://www.energy.gov/ne/articles/nuclear-101-how-does-nuclear-reactor-work>.

<sup>86</sup> Ibid.

<sup>87</sup> Ibid.

### 3.1.3 Radioactive Waste Management Systems

Nuclear plant operation creates liquid, gaseous, and solid radioactive waste streams. The Upstate nuclear facilities have comprehensive radioactive waste management systems that collect, treat, and dispose of these wastes. Part 20 of Title 10 of the Code of Federal Regulations (10 CFR Part 20), 10 CFR Part 50, and each nuclear facility's technical specifications and management plans, among other guidance, set standards for waste disposal and put limits on the amount of waste that can be discharged from the facility. [Chapter 6](#) describes the regulatory framework for waste management in detail.

#### Liquid Waste Processing Systems and Effluent Controls

The reactor cooling system generates liquid radioactive wastes. BWRs and PWRs produce similar types and quantities of liquid radioactive waste. Waste classifications include clean wastes (or uncontaminated waste materials), dirty wastes (or wastes that are of variable radioactivity), detergent wastes, turbine building floor-drain water, and steam generator blowdown (for PWRs only).<sup>88</sup> The Upstate nuclear facilities' waste management systems include subsystems to segregate and process the different types of waste separately.

Plant operators collect, test, treat, and dispose of waste according to their chemical composition (e.g., conductivity and radioactivity). Prior to treatment, radioactive fluids enter the waste disposal system and are stored in sumps and tanks. Processing typically includes testing, filtration, demineralization, dewatering, and resin filtration. After treatment, nuclear facilities either recycle or discharge liquid radioactive wastes. Recycling entails returning water that meets technical standards to storage tanks for reuse in the plant, minimizing the need for freshwater intake and reducing the volume of waste requiring discharge or disposal. Combining liquid waste concentrations that cannot be recycled with dilution water reduces the radioactivity of discharged wastes by volume. The Upstate nuclear facilities all have controlled discharge systems and pathways into Lake Ontario.<sup>89</sup>

#### Gaseous Waste Processing Systems and Effluent Controls

Gaseous waste management systems collect fission products, which are mainly noble gases, that accumulate in the primary coolant. The Ginna facility's system comprises a series of gas storage tanks (sometimes referred to as holdup or decay tanks) that allow the short-half-life radioactive gases to decay under controlled conditions. Gas held in the tanks can either be returned to the chemical and volume control system holdup tanks, or it can be discharged to the atmosphere if it has decayed sufficiently for release. The FitzPatrick and Nine Mile Point facilities, which are BWRs, use charcoal beds instead of tanks for the holdup and partial decay of gases (including xenon and krypton).

After sampling, processing, and treatment, nuclear plants transfer gaseous effluents to vent stacks for discharge into the atmosphere. The facilities have various structures and technologies to continuously monitor radiation levels in effluents.<sup>90,91,92</sup>

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<sup>88</sup> NRC License Renewal GEIS, p. 3-14.

<sup>89</sup> NYSDEC, State Pollutant Discharge Elimination System (SPDES) Permit Program documents available at: <https://www.dropbox.com/scl/fo/6s8i1v7pbcohfnbfmqlj/ACKEWArNuGy3iLqHopfaBl8?rlkey=qd5h1ivma057i76tnqo1vk2t0fe=1&dl=0>. Note: Dropbox folder maintained by NYSDEC to enable interested parties to view and print Multi-Sector General (MSGP) Permit documents. There is a Readme file and two Index files to assist users in locating permits and documents.

<sup>90</sup> NRC, Radioactive Effluent and Environmental Reports for Nine Mile Point 1 & 2, available at: <https://www.nrc.gov/reactors/operating/ops-experience/tritium/plant-specific-reports/nmp1-2.html>

<sup>91</sup> NRC, Radioactive Effluent and Environmental Reports for Ginna, available at: <https://www.nrc.gov/reactors/operating/ops-experience/tritium/plant-specific-reports/ginna.html>

<sup>92</sup> NRC, Radioactive Effluent and Environmental Reports for James A. FitzPatrick, available at: <https://www.nrc.gov/reactors/operating/ops-experience/tritium/plant-specific-reports/fitz.html>

## Solid Waste Processing

Nuclear plants generate solid wastes including filter sludge, spent resin, radioactive tools and equipment, oily waste, and miscellaneous trash. The plants collect, process, and temporarily store radioactive solid wastes onsite before shipping them offsite for disposal or further processing and disposal by an authorized third party.

Common volume reduction techniques to make the waste disposal process more efficient include high-pressure compacting in waste drums, dewatering and evaporating wet wastes, monitoring waste streams to segregate wastes, and sorting.

Spent fuel, which is nuclear fuel that has been used in the reactor, is handled separately and stored onsite in spent fuel pools and dry storage facilities (independent spent fuel storage installations (ISFSIs)). Spent fuel contains fission products and actinides produced when nuclear fuel is irradiated in reactors, as well as any unburned, un-fissioned nuclear fuel remaining after the fuel rods have been removed from the reactor core.<sup>93</sup>

### 3.1.4 Nonradioactive Waste Management Systems

Nonradioactive wastes from nuclear power plants include both hazardous and nonhazardous wastes.<sup>94</sup>

Hazardous wastes include organic materials, heavy metals, solvents, paints, batteries, mercury-containing equipment, cutting fluids, and lubricating oils that have been used at a nuclear power plant and, after use, have been declared to be waste. [Chapter 6](#) describes the federal and State regulations pertinent to hazardous waste management. The Upstate nuclear facilities also have pollution prevention and waste minimization policies that apply to hazardous and nonhazardous wastes.

### 3.1.5 Plant Operation and Maintenance

The Upstate nuclear facilities typically generate electricity continuously for 18 to 24 months on a single fuel load, though they do not operate at maximum capacity or continuously for the entire term of their license.<sup>95</sup>

Routine operation and maintenance activities at the Upstate nuclear facilities include inspection, testing, and surveillance to maintain the current licensing basis of the units and to ensure compliance with environmental and safety requirements.<sup>96</sup>

Nuclear power plants must periodically discontinue electricity generation for refueling that occurs every 18 to 24 months, in-service inspection, and scheduled maintenance. Unplanned equipment issues and replacements, capital upgrades, and major plant refurbishments can also temporarily shut down operations.

## 3.2 Physical Geography

New York State is the 27<sup>th</sup> largest state by size, covering more than 47,000 square miles (or 30.1 million acres), including approximately 1,600 square miles (or 1.0 million acres) of inland water bodies.<sup>97</sup> The State's topography is generally hilly or mountainous in all areas except Long Island and the areas adjacent to Lake Erie, Lake Ontario, and the St. Lawrence River. The greatest topographic variations are found in the Catskill and Adirondack Mountains, where elevations reach higher than 4,000 feet and variations between peaks and valleys

<sup>93</sup> NRC License Renewal GEIS, p. 3-16.

<sup>94</sup> Hazardous wastes pose severe threats to human health or the environment if improperly disposed of and are regulated under the Resource Conservation and Recovery Act (RCRA). Non-hazardous wastes do not pose a direct threat to human health or the environment and are more loosely monitored than hazardous wastes.

<sup>95</sup> NRC License Renewal GEIS, p. 3-18.

<sup>96</sup> "Licensing basis" means "the collection of documents or technical criteria that provides the basis upon which the NRC issues a license to construct or operate a nuclear facility; to conduct operations involving the emission of radiation; or to receive, possess, use, transfer, or dispose of [source material](#), [byproduct material](#), or [special nuclear material](#)." NRC, Glossary, available at <https://www.nrc.gov/reading-rm/basic-ref/glossary/licensing-basis.html>.

<sup>97</sup> National Climatic Data Center, The Climate of New York, available at: [http://www.geo.hunter.cuny.edu/courses/geog306.04\\_grande/ClimateNY\\_01.pdf](http://www.geo.hunter.cuny.edu/courses/geog306.04_grande/ClimateNY_01.pdf).

accrue up to 2,500 feet. Approximately 40 percent of the State has an elevation of more than 1,000 feet above sea level.<sup>98</sup> New York includes two Great Lakes: Lake Erie and Lake Ontario. The Niagara River and falls flow between Lakes Erie and Ontario, making the State one of the nation's leading producers of hydroelectric power. The Great Lakes and Atlantic Ocean shorelines also provide significant wind resources.<sup>99</sup> **Figure 3-3** shows the topography of New York State.

**Figure 3-3. Topography of New York State**



### 3.2.1 Physiography

The U.S. is divided into eight major physiographic regions, representing distinctive areas that have common topography, rock types and structure, and geologic and geomorphic history.<sup>100</sup> New York overlaps three of these physiographic regions, with most of the State falling within the Eastern Appalachian Highlands region, which extends from New England south to Alabama and Georgia and west to the continental interior plains.

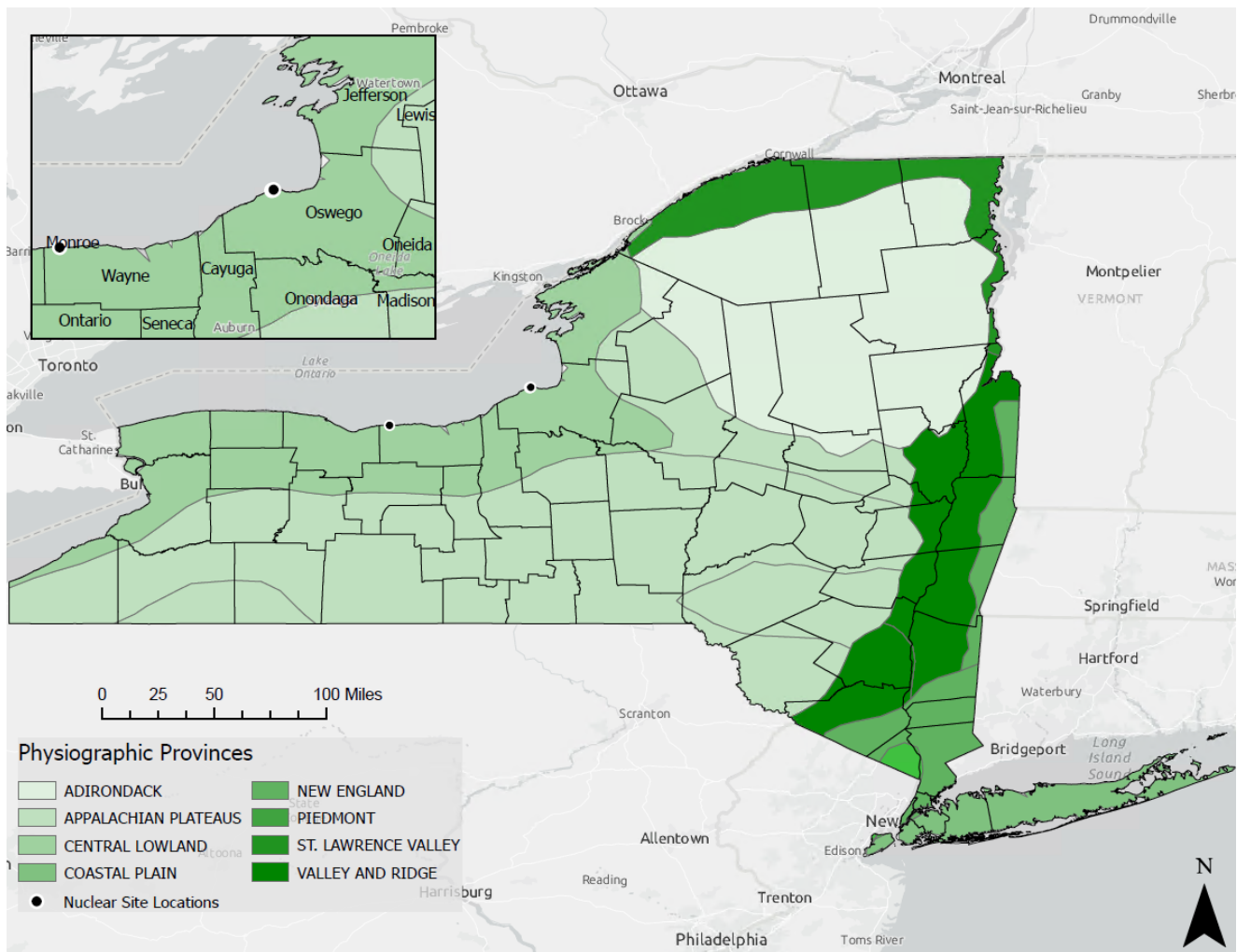
<sup>98</sup> Ibid.

<sup>99</sup> EIA, New York State Profile and Energy Estimates, available at: <https://www.eia.gov/state/print.php?sid=NY>.

<sup>100</sup> USGS, Physiographic divisions of the conterminous U.S., available at: <https://catalog.data.gov/dataset/physiographic-divisions-of-the-conterminous-u-s>.

Additionally, the State contains eight physiographic provinces with the majority falling within the Adirondack and Appalachian plateaus provinces as shown in **Figure 3-4**.

**Figure 3-4. New York State Physiographic Provinces<sup>101</sup>**



### 3.2.2 Geology

The locations of the State's electric infrastructure are influenced by its geology. Geology determines the types and distribution of soils, water drainage, topography and ecosystems. In turn, these factors impact land use, development, and population distribution, thereby directly influencing the locations of energy resources, including renewable energy facilities and nuclear power stations.

More directly, the buffering ability of bedrock geology, soils, and water can help limit the damage caused by acidic air pollutants released from sources such as electric generation, industrial activities, and transportation.<sup>102</sup> The geological features that provide pollution buffering in the State include shale and shale-sandstones, such as limestone; granite; sands and clays; and soils. The ability of certain geological features to buffer air pollutants

<sup>101</sup> Ibid.

<sup>102</sup> Buffering refers to the soil's natural capacity to resist changes in its properties (like pH) through its reserves of acidic or basic material.

from surrounding soils and surface waters depends on the amount of calcium carbonate released by natural weather and erosion processes. Geologic features resistant to such processes, such as granite in the Adirondack Mountains and Hudson Highlands, provide minimal buffering capacity due to a lack of calcium carbonate.

Shale and shale-sandstones such as limestone provide the greatest pollution buffering capacity. This bedrock dominates in the Appalachian Highlands, Hudson Valley, and the periphery of Tug Hill (in Upstate New York).<sup>103</sup> Large areas of sandstone are found in narrow bands of bedrock along the northern edge of the Appalachian Highlands, the south shore of Lake Ontario, the St. Lawrence River plain, and the Catskill Mountains. Several long, narrow bands of limestone bedrock are also found in the periphery of the Adirondacks, and along the Lake Ontario plain, the St. Lawrence River plain, and the escarpment located south of the Mohawk River and west of the lower Hudson River. Large areas of limestone bedrock also occur at both the northern edge of the Hudson Highlands and along the Taconic Mountains. The majority of Oswego County contains deposits of ablation tills, gravel, sands, silt, clay, and gravel along stream valleys.<sup>104</sup> Similarly, Wayne County consists of glacial outwash alongside sand and gravel deposits.<sup>105</sup>

### 3.2.3 Soil

Soil supports agriculture, buildings, and forestlands, sequesters carbon, and filters and buffers pollutants. The soil of New York is relatively young. Formed between 21,000 and 10,000 years ago, mostly by glacial till, the State's soil is most agriculturally productive in valleys. Muck soils, which provide lasting evidence of former glacial lakes, are known to be highly productive and found mainly between Rochester and Syracuse.<sup>106</sup> Honeoye soil, which is unique to the State, is especially productive due to its loamy textures, high water-holding capacity, good drainage, and fertility. Found on drumlins, till plains, and hills, it was developed as sediment deposited by glaciers combined with organic matter from plants and animals. It currently covers 500,000 acres in 15 counties in the Finger Lakes Region.<sup>107</sup>

## 3.3 Land Use

Land use is characterized by the arrangements, activities and inputs people undertake to produce, change, or maintain land.<sup>108</sup> Existing land uses are a function of local topography. For example, the highlands of eastern New York form natural barriers to transportation and settlement. Land use around Lake Ontario is diverse. The Genesee River incentivizes settlement and high population densities in Rochester, while Wayne County's highly productive agricultural lands promoted rural communities.

In addition to topography, land use is also influenced by such factors as proximity to developed areas and transportation networks, past uses of the land, and other societal and economic trends. The scope and scale of development across the State ranges from urban and suburban to rural and natural areas. Because of topography, a variety of land uses are concentrated in a narrow corridor along the Hudson River. **Figure 3-5** provides an overview of major land uses across the State. As shown, more than half of the State is forest and woodland (59

<sup>103</sup> For purposes of this SGEIS, Upstate New York is defined as areas that fall within NYCA Load Zones A-G and Downstate as areas that fall within NYCA Load Zones H-K. Downstate is defined slightly differently in section 3.12.3, as a small portion of Westchester County falls within NYCA Load Zone G.

<sup>104</sup> USGS, Geology and ground-water resources of Oswego County, New York, available at: <https://www.usgs.gov/publications/geology-and-ground-water-resources-oswego-county-new-york>.

<sup>105</sup> USGS, Detailed Aquifer Mapping in Wayne County, New York, The Fairport-Lyons Channel Aquifer, available at: <https://www.usgs.gov/centers/new-york-water-science-center/science/detailed-aquifer-mapping-wayne-county-new-york#overview>

<sup>106</sup> City University of New York. Soils of New York State, available at: [http://www.geo.hunter.cuny.edu/courses/geog306.04\\_grande/7-Soils%20Handout.pdf](http://www.geo.hunter.cuny.edu/courses/geog306.04_grande/7-Soils%20Handout.pdf).

<sup>107</sup> Soil Science Society of America, Honeoye New York State Soil, available at: <https://www.soils4teachers.org/files/s4t/k12outreach/ny-state-soil-booklet.pdf>.

<sup>108</sup> Food and Agriculture Organization of the United Nations, Geospatial information for sustainable food systems, available at: <https://www.fao.org/geospatial/our-work/what-we-do/land-cover-and-land-use/en/>

percent), while approximately 21 percent is active farmland or cropland. Developed areas, which consist primarily of residential, commercial, and industrial land uses, comprise approximately 11 percent of the State.

**Figure 3-5. New York State Land Use<sup>109</sup>**

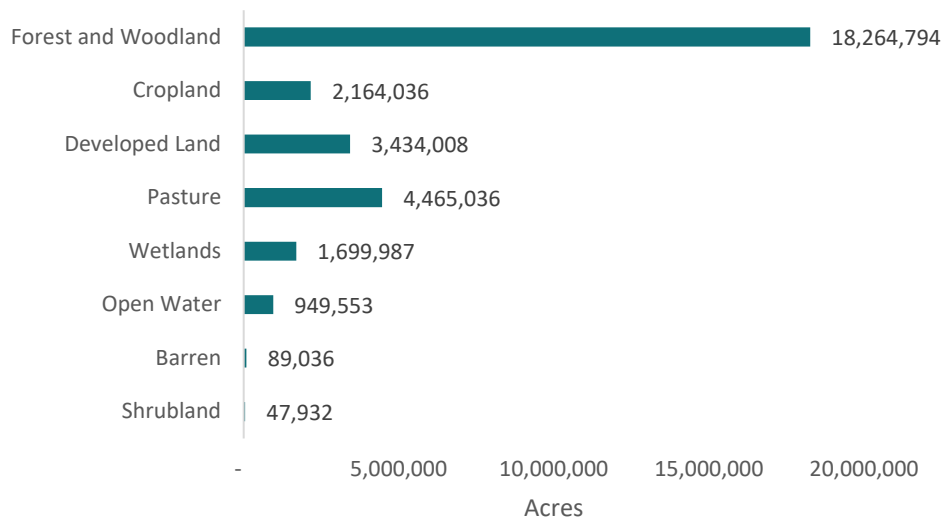
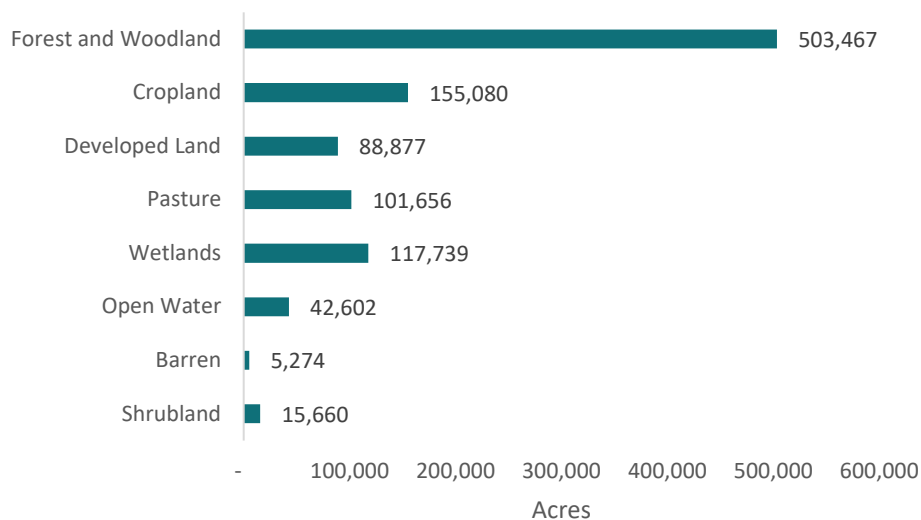


**Figure 3-6** presents land use in Wayne and Oswego County. Almost half of total land in the counties is forest and woodland (49 percent), while 25 percent is active farmland or cropland. Wayne County, known for its agricultural productivity, holds 64 percent of the 155,080 acres of active farmland or cropland between the counties.

**Figure 3-6. Wayne and Oswego County Land Use<sup>110</sup>**



<sup>109</sup> National Agricultural Statistics Service, Cropland Data Layer 2024, available at: <https://nassgeodata.gmu.edu/CropScape/>.

<sup>110</sup> Ibid.

### 3.3.1 Local Land Use Planning

New York State constitutional “home rule” provisions mean that land use in the State is primarily controlled at the municipal level.<sup>111</sup> All cities in the State and more than 70 percent of townships develop and adopt comprehensive land use plans, which address planning, conservation, zoning, and related regulatory requirements.<sup>112</sup> Numerous statewide land use and resource management plans provide further guidance for local authorities on state-wide land use issues of importance (e.g., groundwater, coastal areas, etc.). Additionally, local land use and planning laws have implications for the siting of nuclear projects. For example, the City of Oswego’s Planning Board and Zoning Board of Appeals each meet once a month to discuss zoning administration and enforcement among other topics.<sup>113</sup>

### 3.3.2 New York State Open Space Conservation Program

To ensure citizen input into State land acquisition decisions, New York established a formal Open Space Conservation Program in 1990. The NYSDEC and New York State Office of Parks, Recreation & Historic Preservation developed a comprehensive statewide Open Space Conservation Plan that includes conservation actions, tools, and cooperation with other participating State agencies.<sup>114</sup> Updated with a goal of creating a new plan every three years, a revision of the 2016 plan was expected in summer 2024 but has yet to be released. The revised plan would address open space conservation activities within four critical priority areas: (1) promoting outdoor recreation; (2) addressing climate change; (3) ensuring clean water, air and land for a healthy public and vibrant economy; and (4) protecting, using and conserving our natural resources and cultural heritage.<sup>115</sup>

In addition to outdoor recreational opportunities, goals of the Program include protecting plant and animal diversity to ensure viable ecosystems, protecting the drinking water supply and the water quality for aquatic ecosystems, improving the quality of life for the State’s citizens, maintaining natural resource industries such as farming, forestry, fishing, and tourism, and combating global climate change and its potential effects.

### 3.3.3 Agriculture

Agriculture is an important sector of the State’s economy. According to the U.S. Department of Agriculture (USDA), milk is the State’s largest agricultural commodity, accounting for nearly \$3.5 billion—or 49 percent—of the State’s \$7.1 billion in agricultural sales in 2023.<sup>116</sup> New York is also a major producer of other agricultural products, including apples, maple syrup, wine, and grapes. According to the USDA, in 2022, the total market value of New York agriculture was roughly \$8 billion.<sup>117</sup> The total market value of agricultural products sold in Oswego and Wayne County exceeded \$450 million, rising nearly 70 percent since 2017 and outpacing the 50 percent growth statewide over the same period.<sup>118,119,120</sup>

<sup>111</sup> NYDOS, Land Use Planning and Regulation, available at: [https://video.dos.ny.gov/lg/handbook/html/land\\_use\\_planning\\_and\\_regulation.html](https://video.dos.ny.gov/lg/handbook/html/land_use_planning_and_regulation.html).

<sup>112</sup> Townships are all locations outside of cities or reservations where people reside.

<sup>113</sup> City of Oswego, Planning & Zoning, available at: <https://www.oswegony.org/government/planning-zoning>.

<sup>114</sup> Other relevant State agencies include including the Department of State (DOS), the Adirondack Park Agency, the Department of Agriculture & Markets (DAM), and the Department of Transportation (DOT).

<sup>115</sup> NYSDEC, Open Space Conservation Plan, available at: <https://dec.ny.gov/nature/open-space/open-space-conservation-plan>.

<sup>116</sup> USDA Economic Research Service, Cash receipts by commodity, available at: [https://data.ers.usda.gov/reports.aspx?ID=4055#Pb1f88e1051fb46a0aececa11d2c74149\\_2\\_17iTOR0x32](https://data.ers.usda.gov/reports.aspx?ID=4055#Pb1f88e1051fb46a0aececa11d2c74149_2_17iTOR0x32).

<sup>117</sup> USDA, Market Value of Agricultural Products Sold Including Landlord’s Share, Food Marketing Practices, and Value-Added Products: 2022 and 2017, available at: [https://www.nass.usda.gov/Publications/AgCensus/2022/Full\\_Report/Volume\\_1\\_Chapter\\_1\\_State\\_Level/New\\_York/st36\\_1\\_002\\_002.pdf](https://www.nass.usda.gov/Publications/AgCensus/2022/Full_Report/Volume_1_Chapter_1_State_Level/New_York/st36_1_002_002.pdf) (USDA Market Values).

<sup>118</sup> USDA, 2022 Census of Agriculture Oswego County, available at: [https://www.nass.usda.gov/Publications/AgCensus/2022/Online\\_Resources/County\\_Profiles/New\\_York/cp36075.pdf](https://www.nass.usda.gov/Publications/AgCensus/2022/Online_Resources/County_Profiles/New_York/cp36075.pdf).

<sup>119</sup> USDA, 2022 Census of Agriculture Wayne County, available at: [https://www.nass.usda.gov/Publications/AgCensus/2022/Online\\_Resources/County\\_Profiles/New\\_York/cp36117.pdf](https://www.nass.usda.gov/Publications/AgCensus/2022/Online_Resources/County_Profiles/New_York/cp36117.pdf).

<sup>120</sup> USDA Market Values.

From 2017-2022, 15 new farms with over 7,000 acres in additional farmland were added in Wayne and Oswego counties.<sup>121</sup> Wayne County is known for its agricultural productivity, ranking third among counties in agricultural commodity sales in 2024, while Oswego County is outside the top ten.<sup>122</sup> The 2022 average net income per farm in Wayne and Oswego County was \$112,123 and \$46,154 respectively.<sup>123</sup> This difference is partially attributable to economies of scale. In 2022, 34 percent of farms in Wayne County reported greater than \$100,000 in sales, while only 9 percent of those in Oswego County reported the same.<sup>124</sup> **Table 3-1** below summarizes select characteristics of the agricultural industry in the State and Wayne and Oswego County.

**Table 3-1. Select Agricultural Industry Characteristics<sup>125</sup>**

| Statistic                                 | New York State (2022) | Wayne County (2022) | Oswego County (2022) |
|-------------------------------------------|-----------------------|---------------------|----------------------|
| Number of farms                           | 30,650                | 863                 | 592                  |
| Acres in production                       | 6,502,286 acres       | 167,220 acres       | 85,696 acres         |
| Average farm size                         | 212 acres             | 145 acres           | 194 acres            |
| Total value of agricultural products sold | \$8.04 billion        | \$381.5 million     | \$68.9 million       |
| Average net income per farm               | \$76,281              | \$112,123           | \$46,154             |

### 3.3.4 Nuclear Industry Land Use

Nuclear power generation accounts for a small portion of the electric industry's direct use of land in the State. Such energy density enables plants to be sited near existing grid infrastructure or demand sources even when land is constrained.<sup>126</sup>

Different electricity generation types require varying amounts of land for resource production, plants, transport and transmission, and waste storage. **Table 3-2** shows the median land use intensity of energy for different electricity sources, measured in hectares per terawatt hour (ha/TWh/y) of electricity generated per year. Nuclear requires the least amount of land at 7.1 ha/TWh/y. Natural gas and renewables such as solar and wind are more land intensive. Considering spacing LUIE, i.e., the entire area necessary for energy production, natural gas LUIE (including all the area in between well pads, even if that land does not have any structures or roads covering it) increases to 1,900 ha/TWh/y. Wind (footprint), solar (ground mounted), and wind (spacing) have LUIEs of 130, 2,000, and 12,000 ha/TWh/y, respectively.

<sup>121</sup> USDA Census of Agriculture, Wayne County, available at: [https://www.nass.usda.gov/Publications/AgCensus/2022/Online\\_Resources/County\\_Profiles/New\\_York/cp36117.pdf](https://www.nass.usda.gov/Publications/AgCensus/2022/Online_Resources/County_Profiles/New_York/cp36117.pdf), and Oswego County, available at: [https://www.nass.usda.gov/Publications/AgCensus/2022/Online\\_Resources/County\\_Profiles/New\\_York/cp36075.pdf](https://www.nass.usda.gov/Publications/AgCensus/2022/Online_Resources/County_Profiles/New_York/cp36075.pdf).

<sup>122</sup> New York State Comptroller, A Profile of Agriculture in New York State, available at: <https://www.osc.ny.gov/files/reports/pdf/profile-of-agriculture-in-ny.pdf>.

<sup>123</sup> USDA Census of Agriculture, Wayne County, available at: [https://www.nass.usda.gov/Publications/AgCensus/2022/Online\\_Resources/County\\_Profiles/New\\_York/cp36117.pdf](https://www.nass.usda.gov/Publications/AgCensus/2022/Online_Resources/County_Profiles/New_York/cp36117.pdf), and Oswego County, available at: [https://www.nass.usda.gov/Publications/AgCensus/2022/Online\\_Resources/County\\_Profiles/New\\_York/cp36075.pdf](https://www.nass.usda.gov/Publications/AgCensus/2022/Online_Resources/County_Profiles/New_York/cp36075.pdf).

<sup>124</sup> Ibid.

<sup>125</sup> USDA Census of Agriculture, Wayne County, available at: [https://www.nass.usda.gov/Publications/AgCensus/2022/Online\\_Resources/County\\_Profiles/New\\_York/cp36117.pdf](https://www.nass.usda.gov/Publications/AgCensus/2022/Online_Resources/County_Profiles/New_York/cp36117.pdf), and Oswego County, available at: [https://www.nass.usda.gov/Publications/AgCensus/2022/Online\\_Resources/County\\_Profiles/New\\_York/cp36075.pdf](https://www.nass.usda.gov/Publications/AgCensus/2022/Online_Resources/County_Profiles/New_York/cp36075.pdf).

<sup>126</sup> Lovering, J., Swain, M., Blomqvist, L., & Hernandez, R. R. (2022). Land-use intensity of electricity production and tomorrow's energy landscape. *PLoS One*, 17(7), e0270155. Available at: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0270155>.

**Table 3-2. Land Use Intensity of Energy by Electricity Source in ha/TWh/y<sup>127</sup>**

| Electricity Source      | Median Land Use Intensity of Energy (ha/TWh/y) |
|-------------------------|------------------------------------------------|
| Nuclear                 | 7.1                                            |
| Geothermal              | 45                                             |
| Wind (footprint)        | 130                                            |
| Residue biomass         | 130                                            |
| Natural Gas (footprint) | 410                                            |
| Hydro                   | 650                                            |
| Coal                    | 1,000                                          |
| Solar CSP               | 1,300                                          |
| Natural Gas (spacing)   | 1,900                                          |
| Solar (ground-mounted)  | 2,000                                          |
| Wind (spacing)          | 12,000                                         |
| Dedicated biomass       | 58,000                                         |

All commercial operating nuclear generation infrastructure in the State is located on the shore of Lake Ontario. Ginna, FitzPatrick, and Nine Mile Point Unit 1 all operate with once-through cooling, meaning their proximity to surface water is necessary for cooling, while Nine Mile Point Unit 2 uses cooling towers and a closed loop system, which is far less water-intensive. These plants are not land intensive, but the specific land they occupy is essential for operation.

### 3.4 Water Resources

Water resources are either natural or artificial supplies of water that are essential for human activities and ecosystems. Water resources include surface water and ground water. This section describes water resources potentially impacted by implementation of ZEC 2.0 beginning with estuaries, wetlands, drinking water, groundwater, and water use, and ending with a brief discussion of the intersection of energy and water resources.

#### 3.4.1 Estuaries

Freshwater estuaries in the Great Lakes are semi-enclosed areas where river or stream water mixes with lake water.<sup>128</sup> Although freshwater estuaries do not contain saltwater, the chemically distinct composition of lake water and river/stream water mix together, which results in a unique water composition. Unlike brackish estuaries, which are tidally driven, freshwater estuaries are often storm-driven, as they are regulated by storm surges and subsequent vertical oscillations of lake water.<sup>129</sup> In Oswego County, the 270-acre Salmon River Freshwater Estuary is an important habitat for migratory and resident waterfowl, and the beds of marsh

<sup>127</sup> Ibid. Footprint area represents land directly covered by infrastructure, while spacing area is the entire area within the perimeter of a production site.

<sup>128</sup> NOAA, Classifying Estuaries: By Water Circulation, available at: [https://oceanservice.noaa.gov/education/tutorial\\_estuaries/est05\\_circulation.html](https://oceanservice.noaa.gov/education/tutorial_estuaries/est05_circulation.html).

<sup>129</sup> Ibid.

vegetation and aquatic plants provide habitat for many warm water fish.<sup>130</sup> The estuary is also a staging area for annual migrations of spawning salmon, making this area popular for fishing.<sup>131</sup>

### 3.4.2 Wetlands

Wetlands are areas where water covers the soil or is present either at or near the surface of the soil all year or for varying periods of time during the year. There are two general categories of wetlands: coastal/tidal wetlands and inland wetlands. Estimates of total wetland cover across the State vary, but the National Agricultural Statistics Service suggests 1.7 million acres of wetland.<sup>132</sup> **Figure 3-7** shows freshwater and tidal wetlands in the State. Tidal wetlands are concentrated along the Atlantic Ocean and Long Island Sound, while freshwater wetlands are distributed more broadly across the State. Tidal wetlands include estuarine intertidal flats (e.g., mudflats, sand bars, and beaches), estuarine emergent wetlands (e.g., vegetated flats), low salt marshes that are flooded daily, and high salt marshes in intermittently flooded tidelands. Freshwater wetlands include emergent, scrub-shrub and forested wetlands, freshwater marshes, wet meadows, vernal pools and seasonally inundated floodplains.

Most wetlands in New York are freshwater wetlands located in the northern part of the State, which formed in and around glacial lakes.<sup>133</sup> Some wetlands also occur along river and stream corridors. Groundwater and overland precipitation runoff are the primary sources of water for the glacial lake wetlands, and river flooding is an additional source of water for wetlands along rivers and streams.

Wetlands are biologically productive ecosystems, supporting more plants and animals and producing more organic material than adjacent aquatic or upland areas. Wetlands also provide critical flood and stormwater control and serve as groundwater discharge sites. In New York, public protection is afforded to tidal wetlands surrounding Long Island, New York City, and the Hudson River South of the Governor Mario M. Cuomo Bridge and freshwater wetlands throughout the State.

In January 2025, amendments to the Freshwater Wetland Jurisdiction and Classification regulations (6 NYCRR Part 664) expanded NYSDEC's jurisdictional authority over freshwater wetlands.<sup>134</sup> The minimum size for wetlands under NYSDEC's authority decreased from 12.4 to 7.4 acres, which could bring one million additional acres of wetland under its regulation.<sup>135</sup> Under these new thresholds, Oswego County has the third highest acreage of regulated wetlands in the State.<sup>136</sup>

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<sup>130</sup> State University of New York Environmental Science and Forestry, Salmon River Watershed Natural Resources Viability Analysis, available at: <https://www.tughill.org/wp-content/uploads/2011/10/SRWatershedNaturalResourcesViabilityAnalysis6-30-08.pdf>.

<sup>131</sup> Ibid.

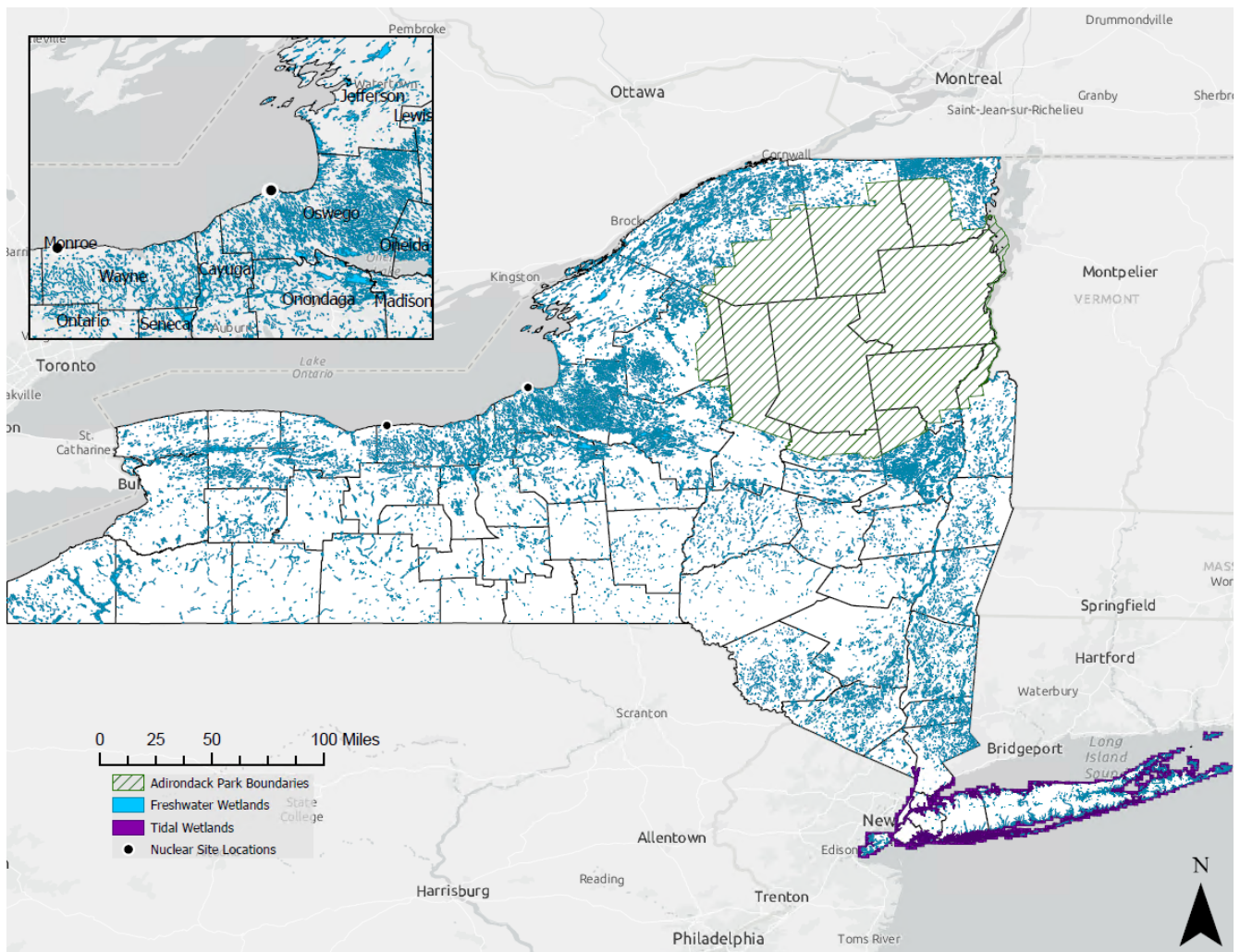
<sup>132</sup> National Agricultural Statistics Service, Cropland Data Layer 2024, available at: <https://nassgeodata.gmu.edu/CropScape/>.

<sup>133</sup> National Water Summary, Wetland Resources, available at: <https://www.fws.gov/sites/default/files/documents/National-Water-Summary-Wetland-Resources-New-york.pdf>.

<sup>134</sup> NYSDEC, Freshwater Wetlands Permits, available at: [https://dec.ny.gov/regulatory/permits-licenses/waterways-coastlines-wetlands/freshwater-wetlands#:~:text=Jurisdictional%20protections%20for%20previously%20mapped%20freshwater%20wetlands,and%20Classification%20regulations%20\(6%20NYCRR%20Part%20664\).](https://dec.ny.gov/regulatory/permits-licenses/waterways-coastlines-wetlands/freshwater-wetlands#:~:text=Jurisdictional%20protections%20for%20previously%20mapped%20freshwater%20wetlands,and%20Classification%20regulations%20(6%20NYCRR%20Part%20664).)

<sup>135</sup> New York Upstate, New York adds 1 million acres of wetlands, sparking concern among lakefront landowners, available at: <https://www.newyorkupstate.com/outdoors/2025/01/new-york-adds-1-million-acres-of-wetlands-sparking-concern-among-lakefront-landowners.html>.

<sup>136</sup> Ibid.

**Figure 3-7. Freshwater and Tidal Wetlands In New York State**<sup>137, 138, 139</sup>

### 3.4.3 Watersheds

A watershed (also referred to as a drainage basin or catchment) is an area of land that drains all water (including rainfall) to a common outlet such as the outflow of a reservoir, mouth of a bay, or point along a stream channel. Watersheds include networks of rivers, streams, and lakes, the land area surrounding them and the underlying groundwater. High elevation geographic features, such as mountains, ridges, and hills, separate watersheds and are referred to as drainage divides.

The U.S. is divided into 21 primary drainage regions, and the State is within portions of the Mid-Atlantic and Great Lakes regions. Within the State, waters are drained by five major watersheds, including the Allegheny, Delaware, Great Lakes-St. Lawrence, Hudson, and Susquehanna. Watersheds within the State are further

<sup>137</sup> NYSDEC, Regulatory Tidal Wetlands, available at: [https://data.gis.ny.gov/datasets/661acb5eaffb4be39b0d6d2203e636c3\\_1/explore](https://data.gis.ny.gov/datasets/661acb5eaffb4be39b0d6d2203e636c3_1/explore).

<sup>138</sup> NYSDEC, Regulatory Freshwater Wetlands, available at: [https://data.gis.ny.gov/datasets/b7cbbb6d520e428792d48b20ff63c0f3\\_0/explore?location=42.661726%2C-75.818139%2C7.57](https://data.gis.ny.gov/datasets/b7cbbb6d520e428792d48b20ff63c0f3_0/explore?location=42.661726%2C-75.818139%2C7.57).

<sup>139</sup> The latest available data for freshwater wetlands from NYS as noted above no longer includes regulatory freshwater locations inside Adirondack Park, as such the area is marked in a green hatch to highlight the absence of data.

divided into 17 sub-regional watersheds. NYSDEC manages the State's water resources at the sub-regional level. All three nuclear facilities are in the Lake Ontario and Minor Tributaries sub-regional watershed. The watershed includes 2,460 square miles of land area, 5,891 miles of freshwater rivers and streams, 60 significant freshwater lakes, ponds, and reservoirs, and 326 miles of Lake Ontario shoreline.<sup>140</sup>

Watersheds are often a unit by which water resources are managed because water quality and stream flow are affected by activities that occur in its land area. For example, under the Safe Drinking Water Act of 1974, intensive development activities are restricted in watersheds that provide source water for drinking water supplies.

### 3.4.4 Lakes, Rivers and Canals

The State has more than 7,600 freshwater lakes, ponds, and reservoirs, portions of two of the five Great Lakes, and over 70,000 miles of rivers and streams.<sup>141</sup> Oneida Lake is the largest lake in the State, covering 51,243 acres.<sup>142</sup> The Finger Lakes are a group of eleven glacially created lakes located in central New York. In southeastern New York, the 18 reservoirs built to supply New York City with drinking water make up the bulk of the freshwater resource in the region. New York's Adirondack Park, which contains over 3,000 lakes and ponds, takes up most of the northeastern section of the State. The State has over 59,300 rivers and streams within its borders. Some of the streams are intermittent, only flowing during wet periods. The Hudson River, which flows 301 miles from Lake Tear of the Clouds in the Adirondacks to New York Harbor, is the longest river completely in the State as well as the deepest.<sup>143</sup> **Figure 3-8** shows New York's rivers, streams, and lakes.

New York has direct access to two of the five Great Lakes, including Lake Ontario and Lake Erie. The Great Lakes are an important source of fresh water throughout western and central New York State. The ports of Buffalo, Oswego, Rochester, and Ogdensburg handle more than 1.1 million tons of inbound and outbound cargo each year.<sup>144</sup> The Niagara Power Project in Lewiston is the State's largest producer of electricity, and as mentioned, Lake Ontario's supply of freshwater is essential for nuclear power generation across three generation plants.<sup>145</sup>

The State has a network of over 500 miles of canals that connect major waterbodies within New York. The State's canal system includes the Erie Canal, Champlain Canal, Oswego Canal, and Cayuga-Seneca Canal.<sup>146</sup> The State's Canal System links the Hudson River with Lake Champlain, Lake Ontario, and Lake Erie via the Niagara River, allowing boaters to travel from the Atlantic Ocean to the Great Lakes.

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<sup>140</sup> NYSDEC, Watersheds, available at: <https://dec.ny.gov/nature/waterbodies/watersheds>.

<sup>141</sup> NYSDEC, Lakes and Rivers, available at: <https://dec.ny.gov/nature/waterbodies>.

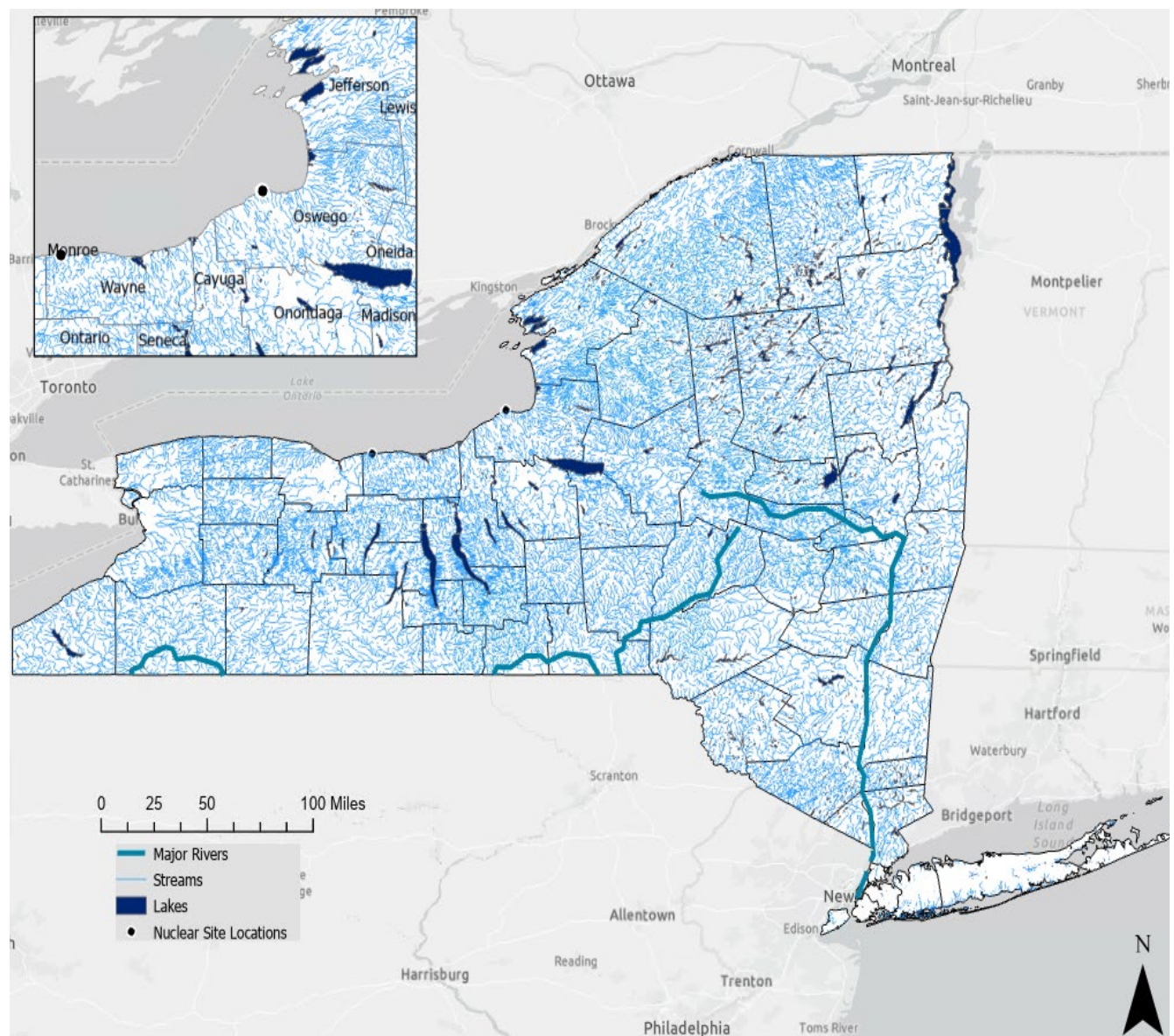
<sup>142</sup> NYSDEC, Waters of New York, available at: [https://extapps.dec.ny.gov/docs/fish\\_marine\\_pdf/gsfishing7.pdf](https://extapps.dec.ny.gov/docs/fish_marine_pdf/gsfishing7.pdf).

<sup>143</sup> Ibid.

<sup>144</sup> New York State Climate Impacts Assessment, Climate Impact Spotlight: The Great Lakes Region, available at: <https://nysclimateimpacts.org/explore-by-region/the-great-lakes-region/>.

<sup>145</sup> Ibid.

<sup>146</sup> Erie Canalway National Heritage Center, The Canal System Today, available at: <https://eriecanalway.org/learn/history-culture/canal-today>.

Figure 3-8. Rivers, Streams, and Lakes in New York State<sup>147</sup>

### 3.4.5 Drinking Water

Nearly 95 percent of all New Yorkers receive water from public water supply systems.<sup>148</sup> There are almost 9,000 systems statewide, ranging from small wells in rural towns to large municipal networks. The largest engineered water system in the nation belongs to New York City, whose system serves more than 9 million people.<sup>149</sup>

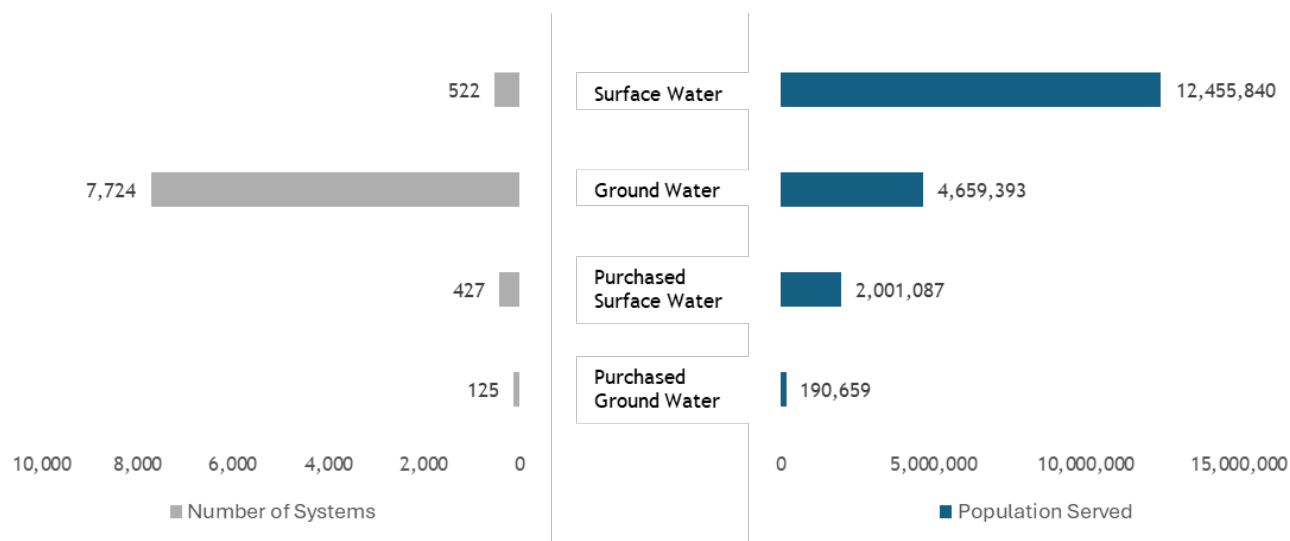
<sup>147</sup> NYSDEC, Waterbody Inventory/ Priority Waterbodies List (WI/PWL) Layer, available at: <https://data.gis.ny.gov/maps/fe6e369f89444618920a5b49f603e34a/about>.

<sup>148</sup> New York Department of Health, Drinking Water Program: Facts and Figures, available at: [https://www.health.ny.gov/environmental/water/drinking/facts\\_figures.htm](https://www.health.ny.gov/environmental/water/drinking/facts_figures.htm).

<sup>149</sup> Ibid.

As shown in **Figure 3-9**, most of the State's population is served by surface water. For example, the 9 million people served by the New York City water system rely on surface water from New York City's large Upstate reservoir and distribution system.

**Figure 3-9. Summary of New York Drinking Water Sources<sup>150</sup>**



Both the Onondaga County Water Authority and Wayne County Water and Sewer Authority, which supply Oswego and Wayne County respectively, report Lake Ontario as the primary source of drinking water.<sup>151,152</sup> In addition, Wayne County sources a small portion of its drinking water from groundwater wells.<sup>153</sup>

### 3.4.6 Groundwater

Groundwater, which is the water located beneath the earth's surface in soil pore spaces and in the fractures of rock formations, occurs across the State. Unconsolidated sediments (e.g., sand and/or gravel deposits) function as the State's most productive aquifers. Groundwater in these aquifers occurs under water-table (unconfined) or artesian (confined) conditions. A few municipalities, industries, and farms have built over many of these aquifers because they typically form flat areas that are suitable for development with an ample groundwater supply. To enable better management of the State's groundwater resources, NYSDEC works with the USGS to map the State's groundwater resources.<sup>154</sup> **Figure 3-10** shows the general location of the State's unconsolidated aquifers, as well as the unconsolidated aquifers in Wayne and Oswego County.

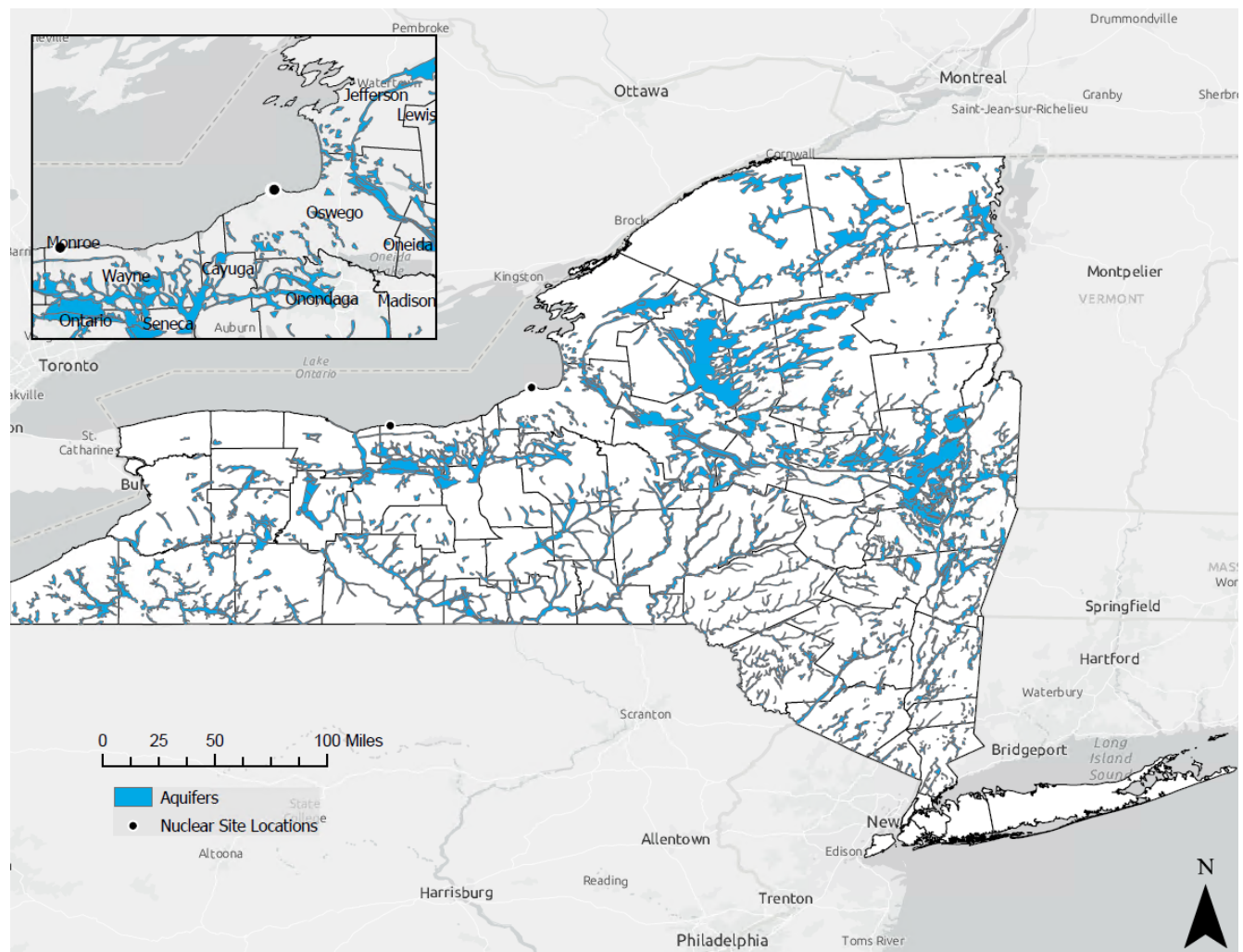
<sup>150</sup> Ibid.

<sup>151</sup> OCWA, Sources of Water, available at: <https://www.ocwa.org/about/sources-of-water/>.

<sup>152</sup> Wayne County Water & Sewer Authority. Water Quality, available at: <https://wcwsa.org/water-quality/>.

<sup>153</sup> Ibid.

<sup>154</sup> NYSDEC, Groundwater, available at: <https://dec.ny.gov/nature/waterbodies/groundwater>.

**Figure 3-10. Unconsolidated Aquifers in New York State<sup>155</sup>**

### 3.4.7 Water Use

In 2015, the most recent year for which complete data are available, USGS estimated annual water withdrawals in the State at approximately 10.1 billion gallons per day (bgd). Uses for such withdrawals include drinking water, irrigation, industrial, and thermoelectric power.<sup>156</sup> The majority (76 percent, or 7.7 bgd) of the State's total annual withdrawals (10.1 bgd) are for thermoelectric power.<sup>157</sup>

Annual water withdrawals in Wayne and Oswego County are dominated by thermoelectric power generation, which includes both nuclear- and gas-powered plants. Annual thermoelectric withdrawals across the two counties were approximately 1.5 bgd, with 1.4 bgd consumed for nuclear generation, with withdrawals

<sup>155</sup> NYS GIS Clearinghouse, NYS Aquifers, available at: <https://data.gis.ny.gov/datasets/sharegisny::nys-aquifers/about>.

<sup>156</sup> USGS, Water Use Data for New York, available at: <https://waterdata.usgs.gov/ny/nwis/wu>.

<sup>157</sup> Ibid. USGS estimates that thermoelectric power in New York State withdraws 2,210 bgd of fresh water and 5,474 bgd of saline water.

dominated by the once-through cooling systems of Nine Mile Unit Point 1, Ginna, and FitzPatrick.<sup>158,159</sup> In Wayne and Oswego County, 97 and 93 percent of withdrawals respectively are used for once-through cooling.<sup>160</sup> Closed-loop cooling accounted for just 2 percent of withdrawals in Oswego County.

### 3.4.8 Flooding

Flooding is a primary natural hazard to the State and a threat to 90 percent of its population. Each year the State experiences an average of 83 flooding episodes at a cost of \$135.7 million.<sup>161</sup> In September 2023, New York City was hit with a flash flood caused by record breaking rainfall. Heavy rainfall caused runoff and flooded highways, streets, underpasses, and any low-lying drainage area. During the storm, rain overwhelmed the City's sewer system, sending floodwaters through streets. Major traffic and transportation systems experienced disruptions and damage. All three New York City area airports saw flight delays and JFK Airport experienced a new rainfall record. Only three months prior, heavy rains caused historic flooding in part of the Hudson Valley. Orange and Rockland counties experienced nearly eight inches of rain, destroying roads, washing away infrastructure, homes, and tragically claiming a life. The flood caused major damage to the Hudson's Popolopen Bridge and completely washed-out Route 218.<sup>162</sup>

According to the Federal Emergency Management Agency (FEMA), neither Nine Mile Point nor FitzPatrick are in flood hazard zones.<sup>163,164</sup> Ginna Nuclear Plant has not been digitally mapped by FEMA, and flood zones for the relevant area have not been updated since 1978.<sup>165</sup> Following the Fukushima Dai-ichi accident, however, NRC required all nuclear stations to conduct site-specific flood hazards walkdowns under 10 CFR 50.54(f). The FitzPatrick walkdown confirmed that the plant is located on slightly elevated terrain sloping toward Lake Ontario, such that local precipitation is discharged to the lake and heavy rainfall does not pose a flooding concern.<sup>166</sup> Similarly, Constellation's 2012 responses for Nine Mile Point and Ginna documented site-specific evaluations of probable maximum flood levels, storm surge from Lake Ontario, and Deer Creek flooding, concluding that credited plant features (e.g., shoreline revetments, flood barriers, drainage systems) provide adequate protection and remain functional.<sup>167</sup>

Flooding impacts may increase with ongoing climate change. One estimate found that not addressing coastal storm and flood-related events will cost the State \$55 billion in the next decade. By 2045, more than \$8.5 billion in residential property will be at risk of chronic flooding, and by 2100 property at risk could increase to \$98 billion in value.<sup>168</sup>

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<sup>158</sup> FracTracker Alliance, Registered Water Withdrawals in New York State, available at: <https://www.arcgis.com/home/item.html?id=b882f6afcbd144f0ae1221e23ad84df6>. Data provided by NYSDEC under a Freedom of Information Law request. See also: <https://www.fractracker.org/2013/07/ny-water-withdrawals/>.

<sup>159</sup> USGS, Water Use Data for New York, available at: <https://waterdata.usgs.gov/ny/nwis/wu>.

<sup>160</sup> Ibid.

<sup>161</sup> Cornell University, All-hazards Preparedness & Response Education Program Flooding, available at: <https://eden.cce.cornell.edu/natural-hazards/flooding/>.

<sup>162</sup> MitigateNY, Flooding, available at: [https://mitigateny.org/assess\\_risk/natural\\_hazards/flooding](https://mitigateny.org/assess_risk/natural_hazards/flooding).

<sup>163</sup> FEMA, FEMA Flood Map Service Center, Search By Address, available at: <https://msc.fema.gov/portal/search?AddressQuery=348%20Lake%20Rd%2C%20Oswego%2C%20NY%2013126>.

<sup>164</sup> FEMA, FEMA Flood Map Service Center, Search By Address, available at: <https://msc.fema.gov/portal/search?AddressQuery=348%20Lake%20Rd%2C%20Oswego%2C%20NY%2013126>.

<sup>165</sup> FEMA, Food Insurance Rate Map Community Panel Number 3608950010B, available at: <https://map1.msc.fema.gov/firm?id=3608950010B>.

<sup>166</sup> Entergy, Flooding Walkdown Report - Entergy's Response to NRC Request for Information Pursuant to 10 CFR 50.54(f) Regarding the Flooding Aspects of Recommendation 2.3 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident, available at: <https://www.nrc.gov/docs/ML1233/ML1233A379.pdf>.

<sup>167</sup> NRC, Response to 10 CFR 50.54(f) Request for Information, Recommendation 2.3, Flooding, available at: <https://www.nrc.gov/docs/ML1233/ML1233A029.pdf>.

<sup>168</sup> MitigateNY, Flooding, available at: [https://mitigateny.org/assess\\_risk/natural\\_hazards/flooding](https://mitigateny.org/assess_risk/natural_hazards/flooding).

Between 1980 and 2024, the National Flood Insurance Program (NFIP) paid out more than \$5.5 billion across approximately 130,000 claims in the State.<sup>169</sup> Wayne and Oswego County accounted for only \$5 million of these claims, or about \$110,000 per year.<sup>170</sup>

### 3.4.9 Energy and Water Resources

Water is used in many forms of electric power generation to spin turbines directly (e.g., hydropower), indirectly (e.g., steam-electric power), or for cooling generation equipment. Consequently, most of the State's electric power plants are located adjacent to major lakes, rivers, estuaries, or coastal areas. A large portion of the State's electric power, including nuclear- and gas-powered generation, is produced by heating water into steam used to spin turbines. Most electric power plants built in the U.S. before 1970, including Nine Mile Point Unit 1, Ginna, and FitzPatrick, operate with an open-loop (or once-through) cooling system.<sup>171</sup> In these systems, the facility draws large volumes of water from an adjacent water body and return it to the source at a higher temperature.<sup>172</sup> Both the extraction and return of water can result in environmental impacts. To minimize the adverse environmental impacts of such operations, Congress included Section 316(b) in the Clean Water Act (CWA) and New York State promulgated regulations (6 NYCRR Part 704.5), placing greater restrictions on once-through cooling systems to minimize the adverse environmental impacts of water intake processes and identifies closed-cycle cooling systems as the best available technology.<sup>173</sup>

After 1970, cooling towers, or closed-loop systems became the more predominant cooling system for all forms of power generation, including nuclear power. These systems operate by condensing generated turbine steam into hot water and then air-cooling the hot water in a tower – mechanically or by draft. The cooled water is collected and returned to the plant's boiler. Nine Mile Point Unit 2 uses a closed-loop cooling system. Consumed water is evaporated in the cooling tower rather than being returned to the source watershed. Dry cooling mechanisms have been installed in several locations in the State (beyond nuclear power stations) over the last ten years. While water use and associated withdrawal and discharge impacts on waterbodies and associated ecosystem are reduced by dry-cooling systems, they require higher energy usage and are currently more expensive than wet cooling systems.

Nuclear cooling withdrawals only occur in Wayne and Oswego counties and are significant, accounting for approximately 1.4 bgd of total water withdrawals in 2014.<sup>174</sup> As of 2015, all nuclear water withdrawals came from surface water sources.<sup>175</sup> Energy production associated with nuclear power water withdrawals totaled 27,073 GWh in 2024, translating to an average withdrawal rate of approximately 18 gallons of water to produce 1 kilowatt-hour (kWh) of energy.<sup>176</sup>

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<sup>169</sup> FEMA, Historical NFIP Claims Information and Trends, available at: <https://www.floodsmart.gov/historical-nfip-claims-information-and-trends?map=countries/us/us-ny-all&region=us-ny&miny=1980&maxy=2024&county=&gtype=state>.

Note: This data does not include information on flood damage that was not covered by insurance or that was covered by private insurance.

<sup>170</sup> Ibid.

<sup>171</sup> EIA, Steam Electric Plant Operation and Design Report, EIA-767, available at: [https://www.eia.gov/survey/form/eia\\_767/instructions\\_form.pdf](https://www.eia.gov/survey/form/eia_767/instructions_form.pdf).

<sup>172</sup> There are limits on both the maximum temperature the water can be returned, and the delta over current lake temperature. Both have varied over time, but in 2014 Nine Mile could not release water more than 35 °F over lake temperatures.

<sup>173</sup> NYSDEC, Aquatic Habitat Protection, available at: <https://dec.ny.gov/nature/animals-fish-plants/biodiversity-species-conservation/aquatic-habitat-protection>.

<sup>174</sup> FracTracker Alliance, Registered Water Withdrawals in New York State, available at: <https://www.arcgis.com/home/item.html?id=b882f6afcbd144f0ae1221e23ad84df6>. Data provided by NYSDEC under a Freedom of Information Law request. See also: <https://www.fractracker.org/2013/07/ny-water-withdrawals/>.

<sup>175</sup> USGS, Water Use Data for New York, available at: <https://waterdata.usgs.gov/ny/nwis/wu>.

<sup>176</sup> NYISO, Power Trends 2025: The New York ISO Annual Grid and Markets Report (April 2025). Available at: <https://www.nyiso.com/documents/20142/2223020/2025-Power-Trends.pdf/51517a1b-36fa-4f3d-d44d-eabe23598514?t=1748866865402>.

## 3.5 Climate Change and Air Quality

The climate of the State is consistent with the humid continental climate that prevails in the Northeast.<sup>177</sup> Variation across the State reflects differences in latitude, topography, and proximity to large water bodies. Due to its geographical position, the State is subject to a variety of air masses. Regional climate is shaped by two countervailing systems: cold continental air from the north and humid air from the Gulf of Mexico and adjacent subtropical waters.<sup>178</sup> A third air mass, flowing inland from the North Atlantic Ocean, produces cool, cloudy, and damp conditions, especially along coastal and southeastern portions of the State.<sup>179</sup> This maritime influence is particularly dominant in the southeastern portion of the State.

Moisture for precipitation is transported primarily from the Gulf of Mexico and Atlantic Ocean through circulation patterns and storm systems. Nearly all storm and frontal systems moving eastward across the continent pass through or near the State.<sup>180</sup> Storms that move northward along the Atlantic coast are particularly influential for Long Island and the lower Hudson Valley.<sup>181</sup> Statewide precipitation is relatively evenly distributed throughout the year (i.e., distinct dry or wet seasons are absent), although precipitation totals vary based on local topography and proximity to the Great Lakes or Atlantic Ocean. Precipitation in Oswego County is higher than State average and lower in Wayne County (see **Table 3-3**).

**Table 3-3. Annual Precipitation (Inches)**<sup>182, 183</sup>

| Year | New York State | Wayne County | Oswego County |
|------|----------------|--------------|---------------|
| 2024 | 44.30"         | 35.34"       | 49.57"        |
| 2023 | 46.92"         | 35.04"       | 46.67"        |
| 2022 | 43.13"         | 31.53"       | 46.20"        |
| 2021 | 46.25"         | 33.40"       | 47.59"        |
| 2020 | 39.28"         | 29.84"       | 38.48"        |
| 2019 | 48.22"         | 38.58"       | 51.86"        |
| 2018 | 48.59"         | 36.80"       | 44.65"        |
| 2017 | 47.38"         | 41.46"       | 53.40"        |
| 2016 | 38.17"         | 33.37"       | 44.00"        |
| 2015 | 40.64"         | 40.55"       | 43.40"        |

### 3.5.1 Climate Change

Over the last century, atmospheric concentrations of carbon dioxide (CO<sub>2</sub>) and other greenhouse gases (GHGs) have increased rapidly, primarily due to fossil fuel combustion (e.g., coal, oil, and natural gas), including to generate energy. Agriculture and other industrial processes also emit methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), and

<sup>177</sup> Department of Geography and Environmental Science, Hunter College, Climate of New York, available at: [http://www.geo.hunter.cuny.edu/courses/geog306.04\\_grande/ClimateNY\\_01.pdf](http://www.geo.hunter.cuny.edu/courses/geog306.04_grande/ClimateNY_01.pdf).

<sup>178</sup> Ibid.

<sup>179</sup> Ibid.

<sup>180</sup> Ibid.

<sup>181</sup> Ibid.

<sup>182</sup> NOAA, National Centers for Environmental Information, Climate at a Glance: Statewide Time Series, available at: <https://www.ncei.noaa.gov/access/monitoring/climate-at-a-glance/statewide/time-series>

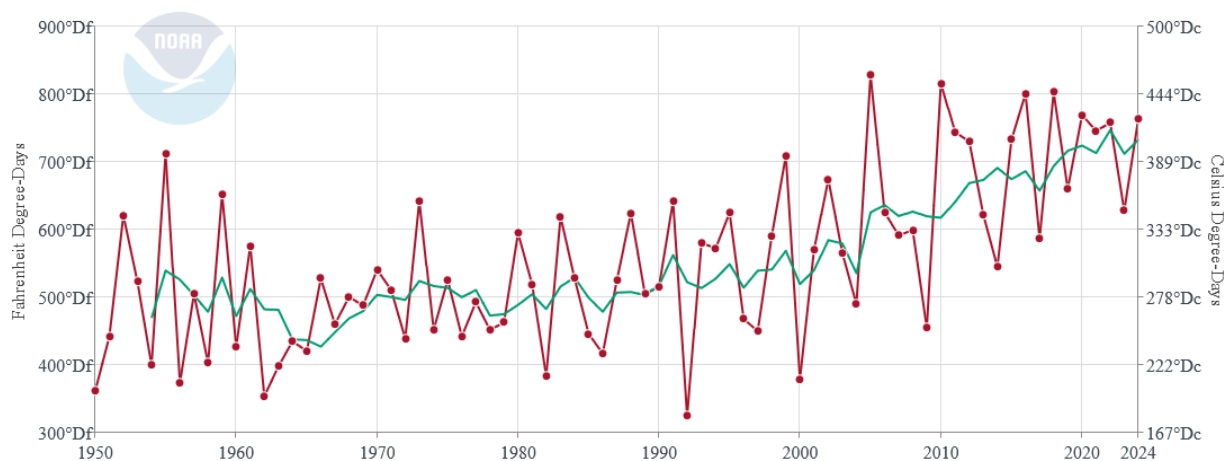
<sup>183</sup> NOAA, National Centers for Environmental information. Climate at a Glance: County Time Series, available at: <https://www.ncei.noaa.gov/access/monitoring/climate-at-a-glance/county/time-series>

halocarbons. Compared with other states, New York has relatively low per-capita energy-related GHG emissions (i.e., 8.4 metric tons of CO<sub>2</sub> per person in 2023).<sup>184</sup> This is due in part to the State's elimination of coal-fired generation and its high reliance on public transit in the State's larger cities.<sup>185</sup>

As GHG concentrations rise, more heat is trapped in the atmosphere, which increases temperatures. New York has already experienced a 3°F rise in annual temperatures since 1970, with winter temperatures increasing roughly three times faster than summer temperatures. By 2080, average annual temperatures are projected to rise another 3°F relative to 1970.<sup>186</sup>

One way to quantify increases in frequency and severity of temperature is by using Cooling Degree Days (CDDs). CDDs compare the mean outdoor temperatures to a standard baseline, usually 65°F in the U.S.<sup>187</sup> For example, a day with a mean temperature of 80°F has 15 CDDs (80 minus 65). Annual CDDs are the sum of CDDs across the year. **Figure 3-11, Figure 3-12, and Figure 3-13** show annual CDDs in the State, Wayne County, and Oswego County, along with five-year rolling averages.

**Figure 3-11. Cooling Degree Days in New York State 1950-2024<sup>188</sup>**



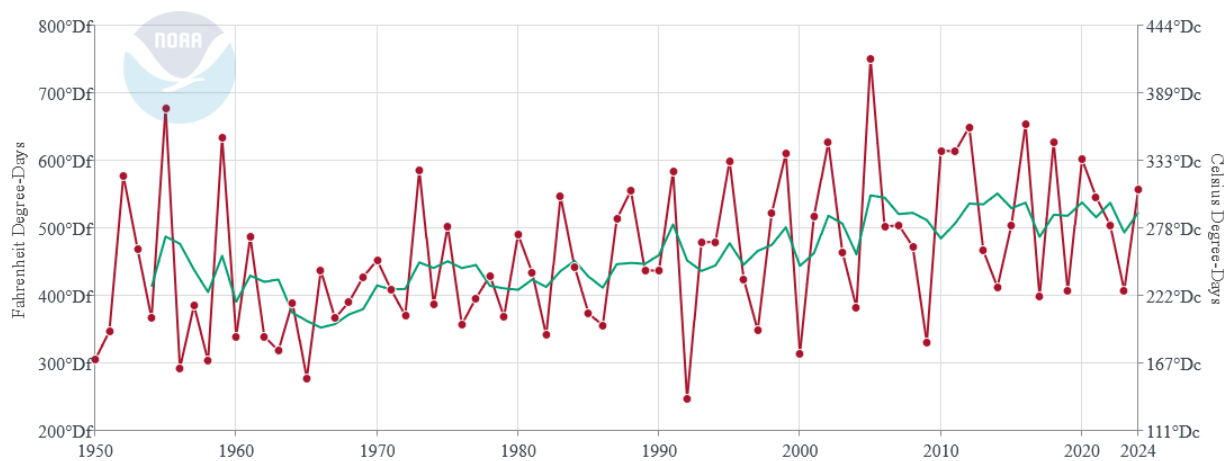
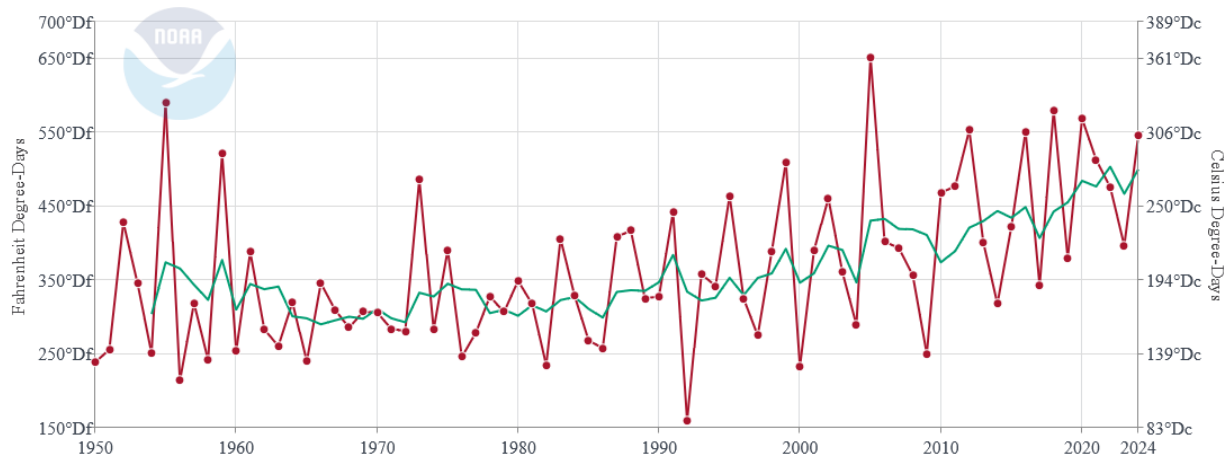
<sup>184</sup> EIA, Energy-Related CO<sub>2</sub> Emission Data Tables, available at: <https://www.eia.gov/environment/emissions/state/>.

<sup>185</sup> EIA, New York State Profile and Energy Estimates available at: <https://www.eia.gov/state/analysis.php?sid=NY>.

<sup>186</sup> NYSDEC, Climate Change Effects and Impacts, available at: <https://dec.ny.gov/environmental-protection/climate-change/effects-impacts>.

<sup>187</sup> EIA, Units and calculations explained - Degree days, available at: <https://www.eia.gov/energyexplained/units-and-calculators/degree-days.php>.

<sup>188</sup> NOAA, National Centers for Environmental information, Climate at a Glance: Statewide Time Series, available at: <https://www.ncei.noaa.gov/access/monitoring/climate-at-a-glance/statewide/time-series>

**Figure 3-12. Cooling Degree Days in Wayne County 1950-2024<sup>189</sup>****Figure 3-13. Cooling Degree Days in Oswego County 1950-2024<sup>190</sup>**

Because CO<sub>2</sub> and other GHGs remain in the atmosphere for decades or centuries, climate change impacts will persist even if emissions decline. In response, New York has adopted multiple adaptation and mitigation initiatives. In particular, the CLCPA requires statewide GHG emissions reductions of 40 percent by 2030 and 85 percent by 2050 (from 1990 levels). In general, climate change is expected to amplify hydrologic extremes, with wetter regions becoming wetter and drier regions becoming drier.<sup>191</sup> In the Northeast, rising temperatures will

<sup>189</sup> NOAA, National Centers for Environmental information, Climate at a Glance: County Time Series, available at: <https://www.ncei.noaa.gov/access/monitoring/climate-at-a-glance/county/time-series>

<sup>190</sup> Ibid.

<sup>191</sup> Adam, O., Shourky Wolff, M., Garfinkel, C. I., & Byrne, M. P., 2023, Increased uncertainty in projections of precipitation and evaporation due to wet-get-wetter/dry-get-drier biases. *Geophysical Research Letters*, 50(24), e2023GL106365, available at: <https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2023GL106365>. See also NYSDA, Impacts of Climate Change on the New York Energy System, Report Number 23-30 (December 2023), available at <https://www.nysda.ny.gov/-/media/Project/Nyserda/Files/Publications/Energy-Analysis/23-30-Impacts-of-Climate-Change-on-the-New-York-Energy-System-acc.pdf>.

intensify the water cycle through increased evaporation and precipitation. The 2024 New York State Climate Impacts Assessment finds that rising temperatures will result in more frequent and severe heatwaves, heavier rainfall and flooding, coastal erosion from sea-level rise, public health threats from heat stress and vector-borne diseases, disruptions to agriculture and water supply, and risks to infrastructure and economic stability.<sup>192</sup>

Sea levels in New York have risen about 0.14 inches per year over the past 55 years.<sup>193</sup> Projections indicate a rise of approximately 11 inches between 2020 and 2050 (around 0.37 inches per year), with a five percent probability of exceeding 11 inches.<sup>194</sup>

Rising ocean temperatures also affect coastal areas through more frequent and severe coastal storms and sea-level rise. These factors can alter sensitive coastal ecosystems, increase the risk of property damage and harm to coastal residents, decrease species diversity, and drive saltwater intrusion into freshwater supplies. As of 2016, almost 600,000 State residents live within the 100-year coastal floodplain, facing risks from severe storm events.<sup>195</sup> Of these, over 11,000 reside in Oswego County.<sup>196,197</sup> The impacts of climate change are expected to increase the vulnerability of the affected residents, especially populations with the greatest economic and social disadvantages, discussed further in [Section 3.13](#).<sup>198</sup>

Climate change is also expected to generate both immediate direct and long-term impacts on the State's nuclear infrastructure. Nuclear generation is constrained by temperature on multiple fronts. First, as temperatures rise, thermal efficiency decreases. One study found that a 1°C (1.8°F) rise reduces nuclear power supply by about 0.5 percent.<sup>199</sup> Rising temperatures also reduce generation capacity, as condenser pressure increases with ambient temperature.<sup>200</sup> Once maximum pressure is reached, fuel use must be reduced. Finally, nuclear facilities must comply with thermal discharge regulations. For example, as of 2014, cooling water discharge from Nine Mile Point Unit 1 could not exceed 115°F or exceed intake temperatures by more than 35°F.<sup>201</sup> As ambient water temperatures rise, intake water absorbs less heat before surpassing discharge thresholds, constraining generation.

Extreme weather events, such as landslides, high winds, heavy precipitation, droughts, and wildfires, can inflict significant damage on infrastructure.

New Yorkers may also face increased public health risks due to climate change. Researchers expect heat-related mortality to rise at a faster rate than cold-related deaths. From May-September 2024, Wayne County averaged 27 heat-related emergency department visits per day, compared to 21.5 per day 2019-2023 (excluding 2020).<sup>202</sup>

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<sup>192</sup> Stevens, A., & Lamie, C., Eds, New York State Climate Impacts Assessment: Understanding and preparing for our changing climate (2024), available at: <https://nysclimateimpacts.org>.

<sup>193</sup> National Sea Level Explorer, U.S. Sea Level Change, New York, available at: [https://earth.gov/sealevel/us/national-sea-level-explorer/?state=NY&scope=section\\_1](https://earth.gov/sealevel/us/national-sea-level-explorer/?state=NY&scope=section_1)

<sup>194</sup> Ibid.

<sup>195</sup> University of Nebraska Omaha, Areas of the U.S. With Most Floodplain Population Growth, available at: <https://www.unomaha.edu/college-of-public-affairs-and-community-service/governing/archive/floodplain-population-growth.php>

<sup>196</sup> Ibid.

<sup>197</sup> There are no residents listed for Wayne County. The source says "Using FEMA's National Flood Hazard Layer, we estimate just under 15 million Americans were living in FEMA-designated 100-year floodplains. This is a significant underestimate of the population living in flood prone regions, however, as FEMA's maps are considered outdated in many jurisdictions and do not account for sea-level rise. Some other counties without digital mapping data were excluded from our calculations."

<sup>198</sup> A.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, B.C. Stewart, and T.K. Maycock, USGCRP, 2023, Fifth National Climate Assessment. U.S. Global Change Research Program, available at: <https://repository.library.noaa.gov/view/noaa/61592>.

<sup>199</sup> Linnerud, K., Mideksa, T. K., & Eskeland, G. S., 2011, The impact of climate change on nuclear power supply, The Energy Journal, 32(1), 149-168. Available at: <https://journals.sagepub.com/doi/abs/10.5547/ISSN0195-6574-EJ-Vol32-No1-6>

<sup>200</sup> Ibid.

<sup>201</sup> NYSDEC, SPDES Discharge Permit Nine Mile Point Nuclear Station, LLC, available at: [https://extapps.dec.ny.gov/data/IF/SPDES/NY0001015/Permit.IndSPDES.NY0001015.2009-12-01\\_x.pdf](https://extapps.dec.ny.gov/data/IF/SPDES/NY0001015/Permit.IndSPDES.NY0001015.2009-12-01_x.pdf)

<sup>202</sup> NYDOH, New York State Heat Risk and Illness Dashboard, available at: [https://www.health.ny.gov/statistics/environmental/heat\\_dashboard/](https://www.health.ny.gov/statistics/environmental/heat_dashboard/)

Oswego County averaged 32 visits per day from May-September 2024, up from 28.5 per day during 2019-2023 (excluding 2020).<sup>203</sup>

### 3.5.2 Air Quality

New York State operates a comprehensive ambient air monitoring network.<sup>204</sup> Most of the State's air pollutants come from on- and off-road vehicles and power equipment; power plants that burn oil, gas, or coal; and industries that manufacture chemicals and other goods. Routine activities such as brush burning or residential wood heating also affect air quality.<sup>205</sup> The Division of Air Resources within the NYSDEC measures and maintains ambient air quality standards at 58 sites across the State, monitoring ozone, sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), carbon monoxide (CO), fine particulates with diameters less than 2.5 or 10 microns (PM<sub>2.5</sub> and PM<sub>10</sub>), black carbon, and other pollutants.<sup>206</sup>

The Clean Air Act (CAA) authorizes the federal EPA to establish National Ambient Air Quality Standards (NAAQS) to protect public health (via primary standards) and public welfare (via secondary standards). The NAAQS apply to six air pollutants, known as criteria pollutants: CO, lead (Pb), nitrogen dioxide (NO<sub>2</sub>), ozone, PM<sub>10</sub> and PM<sub>2.5</sub>, and SO<sub>2</sub>. For each criteria pollutant, the EPA defines a maximum allowable concentration, an averaging period, and a form of the standard to determine compliance.<sup>207</sup>

Based on high quality ground-based monitoring data, EPA designates areas as either in “attainment,” meaning the area meets the NAAQS for a given pollutant, or “nonattainment,” meaning the area does not meet the NAAQS and fails to provide sufficient air quality protection. EPA reclassifies areas that failed to meet the NAAQS but later achieved compliance as “maintenance areas,” and these areas must maintain air quality standards and implement pollution control measures over time. See [Section 3.10 Public Health](#) for more information about health impacts associated with air pollutants.

Air quality data inform the Air Quality Index (AQI), which aims to translate measured pollutant concentrations into a scale that conveys overall air cleanliness and associated health risks to the public. In 2023, the State ranked seventh worst out of the nine Northeastern states in AQI, with 19 ozone violation days (i.e., days when ground-level ozone concentrations exceed the daily NAAQS and are unhealthy for people).<sup>208</sup> Since 2000, statewide air quality has improved across several indicators in both Upstate and Downstate sites, including sustained declines in PM<sub>2.5</sub> concentrations (**Figure 3-14**).

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<sup>203</sup> Ibid.

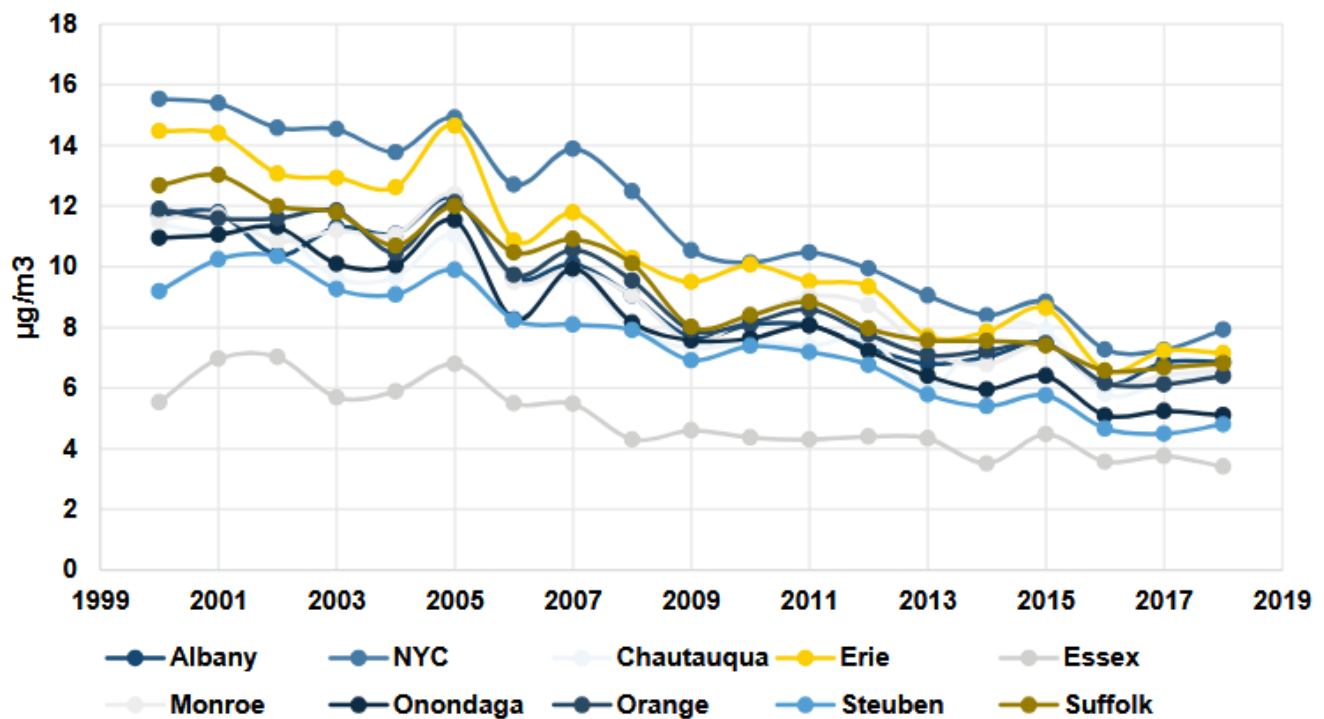
<sup>204</sup> NYSDEC, New York State Ambient Air Monitoring Network, available at: <https://dec.ny.gov/sites/default/files/2025-05/2025fiveyearassessment.pdf>.

<sup>205</sup> NYSDEC, Environmental Protection - Air, available at: <https://dec.ny.gov/environmental-protection/air-quality>.

<sup>206</sup> NYSDEC, Program to Track Air Quality, available at <https://dec.ny.gov/environmental-protection/air-quality/monitoring>.

<sup>207</sup> EPA, NAAQS Table, available at: <https://www.epa.gov/criteria-air-pollutants/naaqs-table>.

<sup>208</sup> NYSDEC, New York State Ambient Air Monitoring Network Assessment (issued May 2025), available at: <https://dec.ny.gov/sites/default/files/2025-05/2025fiveyearassessment.pdf>.

Figure 3-14. Annual Mean PM<sub>2.5</sub> Mass Across New York State by Area <sup>209</sup>

Air quality has continued to improve due to federal, State, and municipal controls on stationary and area sources (see [Section 3.5.2 Air Quality](#)), alongside improvements in mobile source emissions and efficiency. Since 1980, annual average and peak concentrations of CO, NO<sub>2</sub>, and SO<sub>2</sub> have decreased by 50% statewide.<sup>210</sup> While control technologies are required for new generating facilities, and the use of natural gas as a primary energy source (instead of oil or coal) has lowered emissions per kWh of generation, most of the largest emission sources in the State continue to be electricity generation plants, industrial processes, and transportation.<sup>211</sup> Most air quality control regions are in attainment with national standards, though ozone continues to be a planning priority.<sup>212</sup> All 62 counties are in attainment for CO, Pb, NO<sub>2</sub>, and PM<sub>2.5</sub>. One county is in nonattainment for SO<sub>2</sub> (St. Lawrence County, which is the home of the Alcoa Massena aluminum plant) and one county is in nonattainment for PM<sub>10</sub> (New York County). There are ten counties in nonattainment for ozone.<sup>213</sup>

<sup>209</sup> Note: NYC = Mean of Measurements across the 5 boroughs, Manhattan, Bronx, Queens, Brooklyn, and Staten Island. Ibid.

<sup>210</sup> Civerolo, K. L., Rattigan, O. V., Felton, H. D., & Schwab, J. J., 2017, Changes in gas-phase air pollutants across New York State, USA, *Aerosol and Air Quality Research*, 17(1), 147-16, available at: <https://link.springer.com/article/10.4209/aaqr.2016.04.0141>.

<sup>211</sup> EPA, Current Nonattainment Counties for All Criteria Pollutants, available at: <https://www3.epa.gov/airquality/greenbook/ancl.html>.

<sup>212</sup> Ibid.

<sup>213</sup> Ibid.

## 3.6 Plant and Animal Species and Biodiversity

New York State is home to tens of thousands of plants and animal species identified to date.<sup>214</sup>

### 3.6.1 Wildlife, Threatened and Endangered Species

The New York Natural Heritage Program (NYNHP) maintains a comprehensive database on the status and location of rare species and natural communities. The NYNHP currently monitors 182 natural community types, 869 rare plant species, and 482 rare animal species, including mollusks, fish, insects, mammals, amphibians, reptiles, and birds.<sup>215</sup> Of protected animal species, 53 are endangered, 41 are threatened, and 68 are species of special concern (i.e., any native species for which a welfare concern or risk of endangerment has been documented in the State).<sup>216</sup> Of the rare plant species, 349 are endangered, 155 threatened, 86 are rare, and 153 are vulnerable.<sup>217</sup>

There are 2,035 natural communities identified by NYSDEC (**Figure 3-15**), with 57 in Oswego County and 16 in Wayne County. Their locations inform biodiversity conservation, natural resource and land management, land use planning, and project and permit screening and review.<sup>218</sup>

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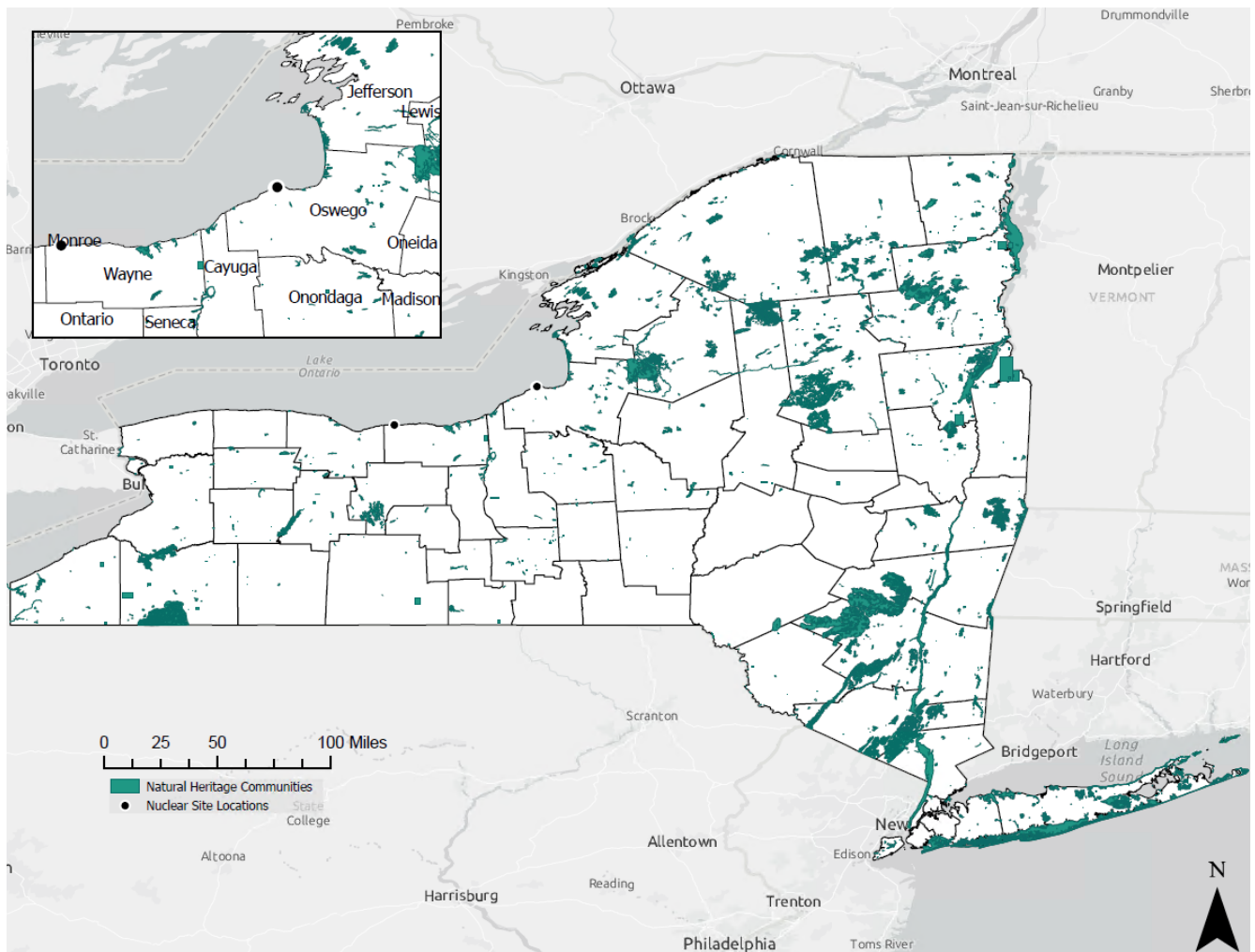
<sup>214</sup> NYSDEC, Biodiversity & Species Conservation: Sustaining New York's Animals, Plants and Ecosystems, available at: <https://dec.ny.gov/nature/animals-fish-plants/biodiversity-species-conservation>.

<sup>215</sup> NYNHP, Information Management, available at: <https://www.nynhp.org/information-management/>.

<sup>216</sup> NYSDEC, List of Endangered, Threatened and Special Concern Fish and Wildlife Species of New York State, available at: <https://dec.ny.gov/nature/animals-fish-plants/biodiversity-species-conservation/endangered-species/list>.

<sup>217</sup> New York State, 6 NYCRR 193.3, Protected native plants, available at: <https://govt.westlaw.com/nycrr/Document/I21efe775c22211ddb7c8fb397c5bd26b?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=%28sc.Default%29>.

<sup>218</sup> NYDSEC, Natural Heritage Communities, available at: [https://data.gis.ny.gov/datasets/0da09cdf37d549b1be9add9b522ee505\\_0/about](https://data.gis.ny.gov/datasets/0da09cdf37d549b1be9add9b522ee505_0/about).

Figure 3-15. Natural Communities in New York State<sup>219</sup>

According to the U.S. Fish and Wildlife Service (USFWS), eight federally listed threatened and endangered plant species are present in the State. Of the eight federally listed plant species, three are endangered and five are threatened.<sup>220</sup> The State has 26 federally listed threatened and endangered animal species, of which 14 are endangered and 12 are threatened.<sup>221</sup>

### 3.6.2 Forest Resources

In total, 18.6 million acres, or 62 percent of total State land area in New York State, is forested.<sup>222</sup> There are more than 100 species of tree, with maple, birch, and beech making up 55 percent of total forest land area in the State.<sup>223</sup> In Wayne and Oswego County, 51 percent, or more than 500,000 acres, are categorized as forest or

<sup>219</sup> Ibid.

<sup>220</sup> New York Natural Heritage Program, New York Rare Plant Status Lists, December 2023, available at: <https://www.nynhp.org/documents/5/rare-plant-status-lists-2023.pdf>.

<sup>221</sup> USFWS, Listed species with spatial current range believed to or known to occur in New York, available at: <https://ecos.fws.gov/ecp/report/species-listings-by-state?stateAbbrev=NY&stateName=New%20York&statusCategory=Listed>.

<sup>222</sup> NYSDEC, Forests, available at: <https://dec.ny.gov/nature/forests-trees>.

<sup>223</sup> NYSDEC, Forests, available at: <https://dec.ny.gov/nature/forests-trees>.

woodland.<sup>224</sup> Privately owned forests make up 21.9 million acres, while close to 5 million acres are publicly owned and managed by NYSDEC's Division of Lands and Forests.<sup>225</sup> The majority of publicly owned and managed forests, including the Adirondack and Catskill Forest Preserves, State Forests, Unique Areas, the State Nature and Historic Preserves, and Conservation Easements are managed for recreation. The NYSDEC, alongside the New York State Police Aviation Unit, conduct a two-month areal forest survey each summer. The data is used for both State level forest management and tracking of possible causal agents that threaten forests nationally.<sup>226</sup>

The State's forests are important economic resources. According to the U.S. Census, manufacturing and services related to forest products contribute \$14 billion to the New York State economy, including \$1.9 billion from forest-related tourism.<sup>227</sup> In 2022, the forest products sector produced 539 million board feet of logs and 1.5 million green tons of pulpwood and wood chips.<sup>228,229</sup> About 84 percent of pulpwood and wood chips consumed by operating mills were harvested within the State.<sup>230</sup> The 2025 Winter Stumpage Report finds 17 percent of forest production was exported, bound mainly for Canada and neighboring states.<sup>231</sup>

In addition, forests provide a valuable source of natural carbon capture. As of 2020, State forests stored approximately 1,976 million metric tons of carbon.<sup>232</sup> Net carbon storage in the State has decreased in recent decades. If trends continue, annual uptake of carbon dioxide will be 20 percent lower in 2050 compared to 1990.<sup>233</sup>

### 3.6.3 Critical Environmental Areas

Critical Environmental Areas (CEAs) designate a specific geographic area for distinct benefit or threat to human health; exceptional or unique natural setting; exceptional or unique cultural value; or inherent ecological, geological, or hydrological sensitivity to change.<sup>234</sup> CEAs are defined under 6 NYCRR § 617.14(g) of the SEQRA regulations. Counties, municipalities, and State agencies may designate specific geographic areas within their boundaries as CEAs. The purpose of the CEA designation is to alert landowners, developers, and regulatory agencies to features of importance or concern. The process encourages proactive planning to conserve critical resources, avoid hazards, and consider broad scope issues like habitat connectivity and watershed protection.<sup>235</sup> New York has 219 CEAs, with none in Wayne County and one, Sandy Pond, in Oswego County.<sup>236</sup>

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<sup>224</sup> National Agricultural Statistics Service, Cropland Data Layer 2024, available at: <https://nassgeodata.gmu.edu/CropScape/>.

<sup>225</sup> Ibid.

<sup>226</sup> NYSDEC, Forest Health, available at: <https://dec.ny.gov/nature/forests-trees/forest-health>.

<sup>227</sup> NYSDEC, Forests, available at: <https://dec.ny.gov/nature/forests-trees>.

<sup>228</sup> Board feet are units of volume for lumber, which represent a piece of wood one foot long, one foot wide, and one inch thick. Green tons are 2,000 pounds of undried biomass material, with a specific moisture content.

<sup>229</sup> NYSDEC, New York State Industrial Timber Harvest Production and Consumption Report-2022, available at: <https://dec.ny.gov/sites/default/files/2025-03/timberharvestprodconsumpreport.pdf>.

<sup>230</sup> Ibid.

<sup>231</sup> NYSDEC, Stumpage Price Report Winter 2025, available at: <https://dec.ny.gov/sites/default/files/2025-02/2025winterspr.pdf>.

<sup>232</sup> NYSDEC, New York State Forest Action Plan December 2020, available at: [https://extapps.dec.ny.gov/docs/lands\\_forests\\_pdf/nysfap.pdf](https://extapps.dec.ny.gov/docs/lands_forests_pdf/nysfap.pdf).

<sup>233</sup> Ibid.

<sup>234</sup> NYSDEC, Critical Environmental Areas, available at: <https://dec.ny.gov/regulatory/permits-licenses/segr/critical-environmental-areas>.

<sup>235</sup> Hudson River Estuary Program, Critical Environmental Areas Tools for Conservation in Your Community, available at: [https://extapps.dec.ny.gov/docs/remediation\\_hudson\\_pdf/ceafactsheet.pdf](https://extapps.dec.ny.gov/docs/remediation_hudson_pdf/ceafactsheet.pdf).

<sup>236</sup> Ibid.

## 3.7 Aesthetic and Visual Resources

New York contains a geographically diverse landscape, distinguished by its mix of mountains, forests, rivers and streams, ponds and deep glacial lakes, waterfalls, islands, barrier beaches, tidal estuaries, wetlands, and ocean shore lands. Aesthetic resources and scenic quality are typically defined by a combination of landscape characteristics and viewer activity and sensitivity. Some of these resources enjoy official designation, while others are simply perceived as attractive or sensitive to visual change. Existing aesthetic quality is often described by considering landscape character types, the expectations of different viewer groups, and official designations (as designated by a governmental body), recognizing a resource or site as having aesthetic value or sensitivity. Owing in part to its unique visual and aesthetic landscape and resources, tourism is one of the State's most important industries.

[Section 3.1](#) describes the physical characteristics of the Upstate nuclear facilities. Additional detailed descriptions of aesthetic resources surrounding the plants are available in the GEISs that the NRC published as supplements to the Generic Environmental Impact Statement for License Renewal of Nuclear Plants: Main Report (NUREG-1437, Volume 1).

### 3.7.1 Landscape Similarity Zones

New York State's landscape is varied, ranging from mountainous forests to level farmland, and from small rural hamlets to major metropolitan cities. Within this varied landscape, areas of similar landscape character are referred to as "landscape similarity zones." As shown in **Table 3-4**, the State has 18 landscape similarity zones, and each zone exhibits a distinct combination of vegetation, topography, water, and land use that defines its aesthetic quality.

**Table 3-4. New York State Landscape Similarity Zones**

|                        |                            |                           |
|------------------------|----------------------------|---------------------------|
| Undeveloped coastlines | River valleys              | Suburban commercial areas |
| Developed coastlines   | River gorges               | Urban downtowns           |
| Wooded hills           | Rural agricultural land    | Urban residential areas   |
| Forested mountains     | Rural hamlets              | Urban commercial areas    |
| Undeveloped lakeshores | Villages                   | Industrial areas          |
| Developed lakeshores   | Suburban residential areas | Highway corridors         |

### 3.7.2 Viewer Groups

The importance of scenic resources is affected, in part, by their accessibility and the sensitivity of their viewers. The value of an aesthetic or scenic resource varies from viewer to viewer, depending on each viewer's expectation of scenic quality or sensitivity to visual change. A resource may be more valuable if it is readily available and viewed by many people. **Table 3-5** summarizes the five types of viewer groups that occur within the State. These groups are not, however, mutually exclusive; that is, viewers may fall into more than one category over the course of their life.

### 3.7.3 Visually Sensitive Resources

Several sites throughout New York State are recognized for their aesthetic value under existing federal, State, or local laws. At the State level, two existing frameworks define resources of aesthetic or visual value: (1) Section 49 of the New York State Environmental Conservation Law (ECL); and (2) a policy issued in 2000 and updated in 2019 by the NYSDEC. Each framework is discussed below in more detail.

Table 3-5. Viewer Groups in New York State

| Viewer Group                    | Group Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Local Resident                  | Local residents generally view the landscape from their yards, homes, and local roads. Except when involved in local travel, these viewers are likely to be stationary and have frequent or prolonged views of certain landscape features. Local residents may view the landscape from ground level or elevations (typically upper floors/stories of homes and apartment buildings). Residents' sensitivity to visual quality is variable and may be tempered by the aesthetic character/setting of their neighborhoods.                                                                                                                                                                                                                                                                                                                                   |
| Business Employees              | Business employees work primarily in commercial, industrial, and urban landscape settings. Except while traveling to and from their places of employment, business employees generally work indoors and are focused on their job responsibilities. They typically experience limited views of the surrounding landscape and have relatively low sensitivity to visual change.                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Through-Travelers and Commuters | Through-travelers and commuters view the landscape from trains or automobiles on their way to work or other destinations. Most views will be from street level, although travelers on bridges and overpasses are afforded elevated views of the surrounding area. Commuters and through-travelers are typically moving, have a relatively narrow visual field, and for the most part are preoccupied with traffic and the roadway. Their perception and sensitivity to visual change is therefore relatively low.                                                                                                                                                                                                                                                                                                                                          |
| Recreational Users              | Recreational users include local residents involved in outdoor recreational activities at parks, playgrounds, recreational facilities and in undeveloped natural settings such as forests, fields, and water bodies. This group includes those involved in competitive sports, snowmobilers, bicyclists, hikers, joggers, recreational boaters, hunters, fishers and those involved in more passive recreational activities (e.g., picnicking or walking). Visual quality may or may not be an important part of the recreational experience for these viewers. However, scenery may be an especially important part of their recreational experience, and recreational users will often have continuous views of landscape features over relatively long periods of time. Their perception and sensitivity to visual change is therefore relatively high. |
| Tourists                        | Tourists come to certain areas of the State specifically to enjoy the cultural, recreational, and scenic resources. Tourists may view landscape features on their way to a destination or from the destination itself. Their sensitivity to visual quality and landscape character will be variable, depending on their reason for visiting an area, although this group is generally considered to have relatively high sensitivity to aesthetic quality. In many areas tourists will expect to see a variety of man-made features in the landscape, while in others, man-made features will be considered an intrusion into the natural landscape.                                                                                                                                                                                                       |

ECL Article 49 specifically designates and preserves areas of “scenic or natural beauty,” as well as areas with particular “historical, archaeological, architectural, or cultural amenities.” These assets are fundamental to the development of the State’s recreational opportunities, tourism industry, and community attractiveness, and further that they contribute to balanced economic growth and quality of life.<sup>237</sup>

In 2018, NYSDEC updated its 2000 policy on assessing and mitigating visual and aesthetic impacts to guide the evaluation of visual impacts potentially generated by proposed facilities. As part of this policy, NYSDEC defines several general categories of aesthetic resources that are considered “scenic resources of statewide significance.” If a proposed facility is within the viewshed of a designated aesthetic resource, applicants are required to implement reasonable and necessary measures to eliminate, mitigate, or compensate for any adverse aesthetic or visual impacts identified.<sup>238</sup>

<sup>237</sup> New York State Environmental Conservation Law. Article 49, Protection of Natural and Man-Made Beauty, available at: <https://www.nysenate.gov/legislation/laws/ENV/A49>.

<sup>238</sup> NYSDEC, Assessing and Mitigation Visual Impacts. Division of Environmental Permits, DEP-00-2. July 31, available at: [https://extapps.dec.ny.gov/docs/permits\\_ej\\_operations\\_pdf/visualpolicydep002.pdf](https://extapps.dec.ny.gov/docs/permits_ej_operations_pdf/visualpolicydep002.pdf).

Recognition of aesthetic quality also occurs at the local level. Counties, towns, and villages may consider local parks and recreation facilities, heavily used roads, local scenic overlooks/corridors, water bodies, and public gathering places as visually sensitive resources and may officially designate them as such in local planning documents.

## 3.8 Cultural and Historic Resources

The State contains cultural, historic, and archaeological resources, spanning prehistory through the modern era, and reflecting both natural and anthropogenic environments. This section summarizes the State's cultural and historic resources, including historic buildings, archaeological sites, burial grounds, Native American sacred sites, and other significant cultural resources.

### 3.8.1 National and State Registers of Historic Places

The National and State Registers of Historic Places (NRHP/SRHP) document historic buildings, sites, structures, objects (e.g., sculptures, statuary), and districts throughout the State. Eligibility for both registers is determined by the State Historic Preservation Office (SHPO) based on a property's age, historic significance, integrity, and context. There are 6,560 NRHP/SRHP-listed places in New York.<sup>239</sup> Properties identified by SHPO as eligible but not yet formally listed on the NRHP/SRHP receive the same level of protection as NRHP/SRHP-listed properties.

SHPO maintains the Cultural Resources Information System (CRIS), an online database with records on historic and cultural resources, including over 2 million scanned images from NRHP documents, survey reports, and archaeological inventory forms.<sup>240</sup>

Oswego County and Wayne County rely on the Division of Historic Preservation and its three bureaus (i.e., Community Preservation Bureau, Technical Preservation Bureau, and Bureau of Historic Sites & Parks) that fall under the jurisdiction of the New York SHPO to evaluate potential project impacts on cultural and historical resources.<sup>241</sup> According to the NRHP, Oswego County contains 96 historical sites and Wayne County contains 41.<sup>242</sup>

### 3.8.2 National and Historic Landmarks

The National Historic Landmarks Program, administered by the National Park Service (NPS), recognizes 276 sites within the State for their contribution to American history and culture.<sup>243</sup> National Historic Landmarks may include:

- Properties strongly associated with a significant historical event;
- Properties that best illustrate the life or work of an important historical figure;
- Exceptional examples of an architectural or engineering type; or
- Archaeological sites with potential to yield new knowledge.

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<sup>239</sup> NY Data, National Register of Historic Places, available at: <https://data.ny.gov/widgets/iisn-hnyv>.

<sup>240</sup> SHPO, CRIS: Overview, available at: <https://cris.parks.ny.gov/CRISHelp/?context=60>.

<sup>241</sup> New York State Parks, Recreation, and Historic Preservation. State Historic Preservation Office Contact, available at: <https://parks.ny.gov/shpo/contact/>.

<sup>242</sup> NY Data, National Register of Historic Places, available at: <https://data.ny.gov/widgets/iisn-hnyv>.

<sup>243</sup> NPS, List of NHLs by State, available at: <https://www.nps.gov/subjects/nationalhistoriclandmarks/list-of-nhls-by-state.htm>.

Oswego and Wayne counties contain two National Historic Landmarks, including the Nash Harbor Tug (Oswego County) and the New York State Barge Canal (spanning both counties).<sup>244</sup>

### 3.8.3 Locally Designated Historic Sites

Municipal governments throughout the State may adopt preservation ordinances, establish local preservation commissions, and designate landmarks of local significance. SHPO coordinates these efforts through the federally sponsored Certified Local Government (CLG) Program.<sup>245</sup> There are 77 CLGs in New York State.<sup>246</sup> Wayne County's town of Palmyra is registered as a CLG; Oswego County has none.<sup>247</sup>

### 3.8.4 Archaeological Resources

The State contains archaeological sites ranging from prehistoric Native American sites to historic-period resources related to European colonization and State development. While the exact number of archaeological sites is unknown, SHPO records identify approximately 23,000 archaeological sites, while the New York State Museum's records (consolidated with SHPO's database) identify approximately 12,000 sites, though many overlap.<sup>248,249</sup> Of these archaeological sites, 560 are listed on the NRHP, with another 1,100 deemed eligible by SHPO, and are thus afforded protection under federal and State law.<sup>250</sup>

### 3.8.5 Indigenous Nations Resources

The State has a rich legacy of Indigenous cultural and historical resources. Eight federally or state-recognized sovereign Indigenous nations remain within the State.<sup>251</sup> These nations include Algonquian Peoples (including the Shinnecock and Unkechaug Nations) and the Haudenosaunee Confederacy (consisting of the Cayuga Nation of Indians, Oneida Indian Nation, Onondaga Nation, St. Regis Mohawk Nation, Seneca Nation of Indians, Tonawanda Band of Seneca, and Tuscarora Nation).<sup>252</sup> No sovereign Indigenous nations are designated within Wayne or Oswego counties.<sup>253</sup>

NYSDEC recognizes a unique government-to-government relationship with these Indigenous nations. Commissioner Policy 42 (CP-42) outlines protocols for consultation on three broad categories, including natural resources, cultural resources, and subsistence resources.<sup>254</sup>

- **Natural resources:** projects affecting the over 150,000 acres of Nation lands, water or air quality, or resources of concern (e.g., wetlands, fisheries, wildlife).<sup>255</sup>

<sup>244</sup> Ibid.

<sup>245</sup> SHPO, Certified Local Governments, available at: <https://parks.ny.gov/shpo/certified-local-governments/>.

<sup>246</sup> NPS, Certified Local Government Contacts & Statistics New York, available at: <https://apps.cr.nps.gov/clgpublic/PublicPages/Results?state=New+York>.

<sup>247</sup> Ibid.

<sup>248</sup> SHPO, The New York State Historic Preservation Plan 2021-2026 (issued January 2022), available at: <https://parks.ny.gov/documents/shpo/preservation-plan/NewYorkStateHistoricPreservationPlan20212026.pdf>.

<sup>249</sup> DPS and Ecology and Environment Inc., Indian Point Contingency Plan Final Generic Environmental Impact Statement, available at: <http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7B1CFCC090-1E99-4A8C-BC0C-56764C8985AD%7D>.

<sup>250</sup> Ibid.

<sup>251</sup> New York State Museum, First Peoples, available at: <https://www.nysm.nysed.gov/exhibitions/ongoing/first-peoples>.

<sup>252</sup> New York State Education Department, Indigenous Education - Tribal Nations of New York State, available at: <https://www.nysed.gov/indigenous-education/tribal-nations-new-york-state>.

<sup>253</sup> Ibid.

<sup>254</sup> NYSDEC, Indian Nation Consultation, available at: <https://dec.ny.gov/about/dei/indian-nation-affairs/consultation>.

<sup>255</sup> New York State Coalition Against Domestic Violence, Indigenous Nations and Territories in New York State, available at: <https://www.nyscadv.org/what-we-do/projects-resources/domestic-violence-indigenous-peoples/recognized-indigenous-nations-and-territories-in-new-york-state.html>.

- **Cultural resources:** burial grounds, archaeological sites, and other culturally important places. NYSDEC review permit applications that may disturb such lands or resources.
- **Subsistence resources:** hunting, fishing, and gathering rights, which must be reviewed under CP-42 processes.<sup>256</sup>

In reviewing projects, multiple frameworks – including CP-42, the State Historic Preservation Act, and the Uniform Procedures Act – require consultation and mitigation of potential impacts to Indigenous lands and resources. Under SEQRA, State and local agencies must avoid or mitigate impacts to archeological, historical, or cultural resources significant to Indigenous nations.<sup>257</sup> SHPO often facilitates communication with Tribal Historic Preservation Officers (THPO) and provides technical assistance, particularly for projects that may affect habitation or burial sites of cultural significance to Indigenous nations.<sup>258</sup>

Indigenous peoples are included in the Disadvantaged Community criteria both as individual members of census tracts and as citizens of sovereign Nations or residents of Nation-owned territory.<sup>259</sup> If Indigenous nation-owned territory (either sovereign territory or owned) exceeds five percent of the area of a census tract, the census tract is designated a Disadvantaged Community regardless of other criteria.<sup>260</sup>

### 3.9 Waste Management

In 2018, New York residents generated 42.2 million tons of materials and waste, of which the majority was Construction and Demolition (C&D) waste (18.4 million tons, or 46 percent) followed by municipal solid waste (17.9 million tons, or 45 percent), with the remaining composed of non-hazardous industrial waste and biosolids.<sup>261</sup> Oswego County manages eight waste disposal facilities.<sup>262</sup> The closest facility to Fitzpatrick and Nine Mile Point is a transfer station northeast of Oswego.<sup>263</sup> While Wayne County does not own or operate any waste facilities, multiple municipalities in the county operate transfer sites, and there are two private landfills (plus a third that overlaps part of the county), none of which are near Ginna.<sup>264</sup> As of 2020, Wayne County generated approximately 58,000 tons of waste annually and over 90 percent ended up in landfill.<sup>265</sup>

Fossil fuel-based electricity generation creates both air pollution and solid waste. Nuclear power generation also generates hazardous waste, discussed in [Section 3.1](#). While some of the electric industry's solid waste is recycled, most is buried in landfills. In 2020, the State's ten Waste-to-Energy (WTE) facilities processed approximately four million tons of Municipal Solid Waste (MSW) and generated 2,528,260 MWh of electricity, delivering approximately two percent of the electric power generated in the State. Oswego County manages one WTE site that processes 200 tons of waste per day.<sup>266</sup> These facilities also produced approximately 960,000 tons

<sup>256</sup> NYSDEC, Indian Nation Consultation, available at: <https://dec.ny.gov/about/dei/indian-nation-affairs/consultation>.

<sup>257</sup> SHPO, Consultation on Historic Properties with Indian Nations and Tribes, available at: <https://parks.ny.gov/documents/inside-our-agency/PublicDocuments/GuidancePolicies/ConsultationofIndianNationsTribes.pdf>.

<sup>258</sup> Ibid.

<sup>259</sup> NYSDEC & NYSEDA, New York State's Disadvantaged Communities Criteria, available at: [https://climate.ny.gov/-/media/Project/Climate/Files/Disadvantaged-Communities-Criteria/LMI-dacriteria-fs-1-v3\\_acc.pdf](https://climate.ny.gov/-/media/Project/Climate/Files/Disadvantaged-Communities-Criteria/LMI-dacriteria-fs-1-v3_acc.pdf).

<sup>260</sup> Ibid.

<sup>261</sup> NYSDEC, New York State Solid Waste Management Plan December 2023, available at: <https://dec.ny.gov/sites/default/files/2023-12/finalsswmp2023.pdf>.

<sup>262</sup> Oswego County, Solid Waste Facilities and Hours of Operation, available at: [https://www.oswegocounty.com/departments/infrastructure\\_facilities\\_and\\_technology/solid\\_waste/new\\_page.php](https://www.oswegocounty.com/departments/infrastructure_facilities_and_technology/solid_waste/new_page.php).

<sup>263</sup> Ibid.

<sup>264</sup> Wayne County, Local Solid Waste Management Plan, available at: [https://www.waynecountyny.gov/DocumentCenter/View/10434/DRAFT\\_Wayne\\_County\\_LSWMP-7-6-2023-PDF?bidId=](https://www.waynecountyny.gov/DocumentCenter/View/10434/DRAFT_Wayne_County_LSWMP-7-6-2023-PDF?bidId=).

<sup>265</sup> Ibid.

<sup>266</sup> Oswego County, Energy Recovery Facility, available at: [https://www.oswegocounty.com/departments/infrastructure\\_facilities\\_and\\_technology/energy\\_recovery\\_facility.php](https://www.oswegocounty.com/departments/infrastructure_facilities_and_technology/energy_recovery_facility.php).

of non-hazardous combined ash (i.e., a combination of fly ash and bottom ash).<sup>267</sup> Electric utilities operate eight federally regulated coal ash ponds and landfills, containing more than 7 million cubic yards of waste.<sup>268</sup>

## 3.10 Public Health

Reliable electricity is especially critical during extreme weather events, ensuring hospitals, pharmacies, clinics, and emergency response centers remain operational. Access to these facilities supports the public health and safety of residents during emergencies. Beyond access to electricity, public health may be impacted by potential (though unlikely) releases of nuclear radiation, exposure to air pollutants like ozone and PM<sub>2.5</sub>, and noise.

### 3.10.1 Nuclear Radiation

NYSDEC and the New York State Department of Health (DOH) limit radiation discharges to the environment under 6 NYCRR Part 380 (Prevention and Control of Environmental Pollution by Radioactive Materials) and 10 NYCRR Part 16 Appendix 16-C (New York State Sanitary Code).<sup>269,270,271</sup> During normal operation, radiation released by commercial nuclear power plants remains well below levels that pose health risks to workers or nearby residents. Nuclear power plants continuously monitor and report radiation releases to the NRC. Reports list radioactive isotopes released, quantities, and potential doses to the public.<sup>272</sup>

In 2019, occupational radiation exposure at commercial nuclear power plants in the U.S. was estimated at 0.2 roentgen equivalent in man (rem), well below the NRC's whole body dose limit of 5 rem.<sup>273, 274</sup> For comparison, the average American receives about 0.6 rem annually from natural background radiation, while a chest CT scan delivers about 0.7 rem.<sup>275, 276</sup> Nearby residents are equally well protected from the dangers of radiation under normal operation. A person who spends a full year at the boundary of a nuclear power plant site would receive additional radiation exposure equal to less than 1 percent of common exposure from natural background sources.<sup>277</sup> Wayne and Oswego County residents experience minimal exposure to nuclear material, but both counties have radiological emergency management plans in place to respond to significant releases.<sup>278,279</sup>

Radiation exposure can be external (via deposits on the ground or contact with skin) or internal (if it is inhaled or ingested).<sup>280</sup> Short-term health effects from radiation are unlikely given typical exposure duration and magnitude. Significant exposure delivered over a short period of time could cause nausea and vomiting, known

<sup>267</sup> NYSDEC, 2020 Municipal Waste Combustion Summary Report, available at: [https://extapps.dec.ny.gov/docs/materials\\_minerals\\_pdf/wtesumrpt.pdf](https://extapps.dec.ny.gov/docs/materials_minerals_pdf/wtesumrpt.pdf).

<sup>268</sup> EarthJustice, NRDC, Toxic Coal Ash in New York: Addressing Coal Plants' Hazardous Legacy, available at: <https://earthjustice.org/feature/coal-ash-states/new-york>.

<sup>269</sup> New York State Department of Health, Environmental Radiation Surveillance Program, available at: <https://www.health.state.ny.us/environmental/radiological/radon/surveillance.htm>.

<sup>270</sup> NYSDEC, Summary Of Express Terms- 6 NYCRR Part 380, available at: <https://dec.ny.gov/regulatory/regulations/summary-of-express-terms-6-nycrr-part-380>.

<sup>271</sup> New York State Department of Health, New York State Sanitary Code 10 NYCRR Part 16 Appendix 16 Annual Limits On Intake (ALI) And Derived Air Concentrations (DAC) Of Radionuclides For Occupational Exposure; Effluent Concentrations; Concentrations For Release To Sanitary Sewage, available at: [https://www.health.ny.gov/environmental/radiological/radon/radioactive\\_material\\_licensing/docs/part16\\_appendc.pdf](https://www.health.ny.gov/environmental/radiological/radon/radioactive_material_licensing/docs/part16_appendc.pdf).

<sup>272</sup> EPA, Nuclear Power Plants, available at: <https://www.epa.gov/radtown/nuclear-power-plants>.

<sup>273</sup> NRC, Occupational Radiation Exposure at Commercial Nuclear Power Reactors and Other Facilities 2019: Fifty-Second Annual Report (NUREG-0713, Volume 41), available at: <https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr0713/v41/index.html>.

<sup>274</sup> NRC, NRC Occupational Dose Limits, available at: <https://www.nrc.gov/images/about-nrc/radiation/dose-limits.jpg>.

<sup>275</sup> EPA Radiation Sources and Doses, available at: <https://www.epa.gov/radiation/radiation-sources-and-doses>.

<sup>276</sup> FDA, What are the Radiation Risks from CT?, available at: <https://www.fda.gov/radiation-emitting-products/medical-x-ray-imaging/what-are-radiation-risks-ct>.

<sup>277</sup> NRC, Frequently Asked Questions (FAQ) About Radiation Protection, available at: <https://www.nrc.gov/about-nrc/radiation/related-info/faq.html>.

<sup>278</sup> Oswego County New York, Nuclear Preparedness, available at: [https://www.oswegocounty.com/departments/public\\_safety/emergency\\_management/nuclear\\_preparedness.php](https://www.oswegocounty.com/departments/public_safety/emergency_management/nuclear_preparedness.php).

<sup>279</sup> Constellation Energy Corporation, Emergency Planning for the R.E. Ginna Clean Energy Center Wayne County, available at: [https://www.dhss.ny.gov/system/files/documents/2024/06/2024\\_2025\\_ginna\\_wayne\\_brochure.pdf](https://www.dhss.ny.gov/system/files/documents/2024/06/2024_2025_ginna_wayne_brochure.pdf).

<sup>280</sup> Ibid.

as radiation sickness, along with skin burns and death in the following days.<sup>281</sup> The lone long-term risk of radiation exposure is increased cancer risk as correlated with exposure intensity. Exposure risk in a given scenario is dependent on a number of factors, including the energy emitted, the type of radiation (alpha, beta, gamma, x-ray), the frequency of emission, if the radionuclide is ingested, the rate at which it is metabolized by the body, and where it concentrates in the body.<sup>282</sup>

In the case of an acute scenario, protective measures for nearby communities may include sheltering in place, evacuation, distribution of potassium iodide, and restrictions of local agricultural products.<sup>283</sup>

In addition to radiation, exposure to air pollutants such as ozone and fine particulates is an important public health concern in New York.

### 3.10.2 Health Impacts from Air Pollutants: Ozone

Exposure to ozone can adversely affect human health. In the short term, high concentrations of the criteria pollutant irritate nasal, throat, and bronchial tissues, and can exacerbate asthma.<sup>284</sup> Long-term exposure is associated with increased respiratory illnesses like chronic obstructive pulmonary disease (COPD) and others, metabolic disorders, nervous system issues, reproductive issues, and both respiratory and cardiovascular-related mortality.<sup>285</sup> Groups that are particularly sensitive to ozone exposure include children, the elderly, and individuals with preexisting respiratory conditions. In addition to adverse health impacts, ozone damages forests and crops and degrades materials such as rubber, plastics, synthetic fibers, dyes, and paints.<sup>286</sup>

Ozone is a secondary air pollutant, as it is not emitted directly from a source (like a vehicle tailpipe or power plant stack). Ozone is formed from chemical interaction between ambient concentrations of NO<sub>x</sub> and volatile organic compounds in the presence of sunlight. Formation occurs most commonly over cities with large numbers of industries, power plants, and vehicles. Ozone formation depends on precursor pollutants (e.g., NO<sub>x</sub> and volatile organic compounds), meteorology, and atmospheric transport, making local mitigation challenging. In urban areas, ozone mixes with other pollutants to form smog, which reduces visibility and irritates eye tissues. Hot, dry weather is especially conducive to smog formation.

According to the American Lung Association (ALA), New York counties with the highest average annual “High Ozone Days” from 2021-2023 were Suffolk (9.8), Queens (6.0), Bronx (4.3), New York (4.0), Westchester (3.2), Chautauqua (3.0), and Richmond (3.0).<sup>287</sup> Wayne (1.3) and Oswego (0.3) counties received “C” and “B” grades, respectively. Of the 23 counties that report ozone concentration data in the State, only Hamilton County reported fewer “High Ozone Days” than Oswego County (**Figure 3-16**).<sup>288</sup>

<sup>281</sup> EPA, Radiation Health Effects, available at: <https://www.epa.gov/radiation/radiation-health-effects>.

<sup>282</sup> Ibid.

<sup>283</sup> Ibid.

<sup>284</sup> EPA, Health Effects of Ozone Pollution, available at: <https://www.epa.gov/ground-level-ozone-pollution/health-effects-ozone-pollution>.

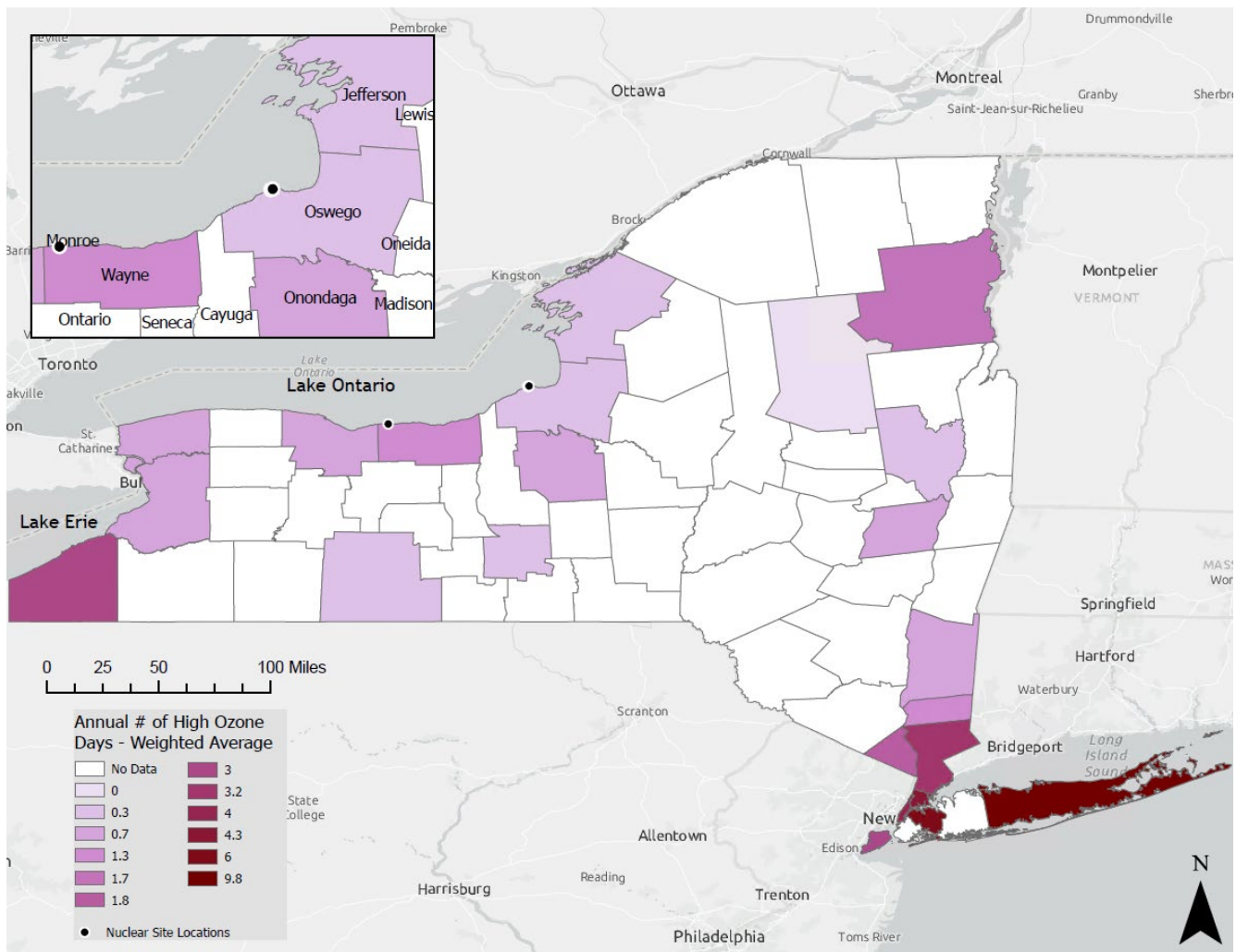
<sup>285</sup> American Lung Association, Ozone, available at: <https://www.lung.org/clean-air/outdoors/what-makes-air-unhealthy/ozone#how>.

<sup>286</sup> EPA, Ozone Layer Protection, available at: <https://www.epa.gov/ozone-layer-protection>.

<sup>287</sup> Note: New York reports data on 23 out of 62 counties. Counties with no ozone data are not considered.

Source: American Lung Association, Report Card: New York, available at: <https://www.lung.org/research/sota/city-rankings/states/new-york>.

<sup>288</sup> High Ozone Days are calculated as a weighted average number of days per year with ambient ozone over 70 parts per billion (ppb), the EPA standard. Grades are based on each county’s weighted average given a standardized grading scale. The American Lung Association’s methodology is found here: <https://www.lung.org/research/sota/about-the-report/methodology>. See the Ozone and Short-Term Particle Pollution section.

Figure 3-16. Annual Number of High Ozone Days by County in New York State<sup>289</sup>

Under EPA's 2015 8-hour ozone NAAQS, Bronx County, Kings County, Nassau County, New York County, Queens County, Richmond County, Rockland County, Suffolk County, and Westchester County are in serious nonattainment.<sup>290</sup> Both Wayne and Oswego County are in federal and State attainment.<sup>291,292</sup>

### 3.10.3 Health Impacts from Air Pollutants: Particulate Matter

Particulate matter consists of airborne solid or liquid particles that vary in size and composition. PM<sub>2.5</sub> (particulate matter with an aerodynamic diameter of 2.5 microns or less) is especially harmful to human health and causes increased hospital admissions and emergency room visits, asthma exacerbation, reduced lung

<sup>289</sup> Note: New York reports data on 23 out of 62 counties. Counties with no ozone data are not considered.

Source: American Lung Association, Report Card: New York, available at: <https://www.lung.org/research/sota/city-rankings/states/new-york>.

<sup>290</sup> EPA, Current Nonattainment Counties for All Criteria Pollutants, available at: <https://www3.epa.gov/airquality/greenbook/ancl.html>.

See also EPA, Serious nonattainment for 8-Hour Ozone (2015 Standard) Classification means the area has a design value between 0.093 and 0.105 ppm, available at: <https://www.epa.gov/green-book/ozone-designation-and-classification-information>.

<sup>291</sup> Ibid.

<sup>292</sup> NYSDEC. New York State Ambient Air Monitoring Network, available at: <https://dec.ny.gov/sites/default/files/2025-05/2025fiveyearassessment.pdf>.

function, cardiovascular disease, and premature death.<sup>293</sup> Groups that are particularly sensitive to PM<sub>2.5</sub> exposure include children, the elderly, and individuals with preexisting conditions.

Together, ozone and PM<sub>2.5</sub> significantly increase the burden of respiratory and cardiovascular diseases, particularly through asthma exacerbation, reduced lung function, and elevated premature mortality risk. Asthma is a chronic lung disease characterized by airway restriction and inflammation. As of February 2025, the New York State Asthma Dashboard reports that 9.9 percent of adults in the State have asthma.<sup>294</sup> Prevalence is higher in Wayne (12.5 percent) and Oswego (14.4) counties.<sup>295</sup> In 2021, asthma rates were highest among Latino (9.2 percent) and Black (8.2 percent) children.<sup>296</sup>

After several years of pollution control efforts, all counties in the State achieved EPA compliance for PM<sub>2.5</sub> in April 2014. Previously, New York City was out of compliance, but between 2009-2017 its mean annual PM<sub>2.5</sub> concentrations fell 28 percent. During this period, air quality advisories dropped to five from 15 between 2003-2009.<sup>297,298,299</sup> As of 2025, New York County remains in nonattainment for PM<sub>10</sub>.<sup>300</sup>

### 3.10.4 Noise

Noise pollution is an unwanted or disturbing sound that interferes with normal activities such as sleeping conversation or otherwise diminishes quality of life. Long-term exposure to noise can lead to increased stress, hypertension, ulcers, fatigue, and sleep disorders.<sup>301</sup> State regulations address noise from construction equipment, boats, shooting ranges, motor vehicles, and trains.<sup>302</sup> Noise limits apply during nuclear facility maintenance and other onsite construction activities.

Nuclear generation is not a significant noise source. Turbines and generators produce some noise, but this is contained within the facility and does not measurably affect surrounding communities.<sup>303</sup> Rather, noise pollution is primarily an urban concern unrelated to nuclear operations.<sup>304</sup>

## 3.11 Community Character

Community character is influenced in large part by shifts in population and regional economic patterns. A community's character is defined by a combination of elements, including local natural features, land uses, development patterns, population growth and density, and regional socioeconomic patterns.

Municipalities and counties typically guide community character through comprehensive plans or master plans, implemented through local land use regulations, including zoning. Community character, as described by residents, however, is more difficult to define (or legislate), and is sometimes associated with more intangible

<sup>293</sup> California Air Resources Board. Inhalable Particulate Matter and Health (PM<sub>2.5</sub> and PM<sub>10</sub>), available at: <https://ww2.arb.ca.gov/resources/inhalable-particulate-matter-and-health>.

<sup>294</sup> New York State Department of Health, New York State Asthma State Dashboard, available at: [https://apps.health.ny.gov/public/tabvis/PHIG\\_Public/asthma/](https://apps.health.ny.gov/public/tabvis/PHIG_Public/asthma/).

<sup>295</sup> New York State Department of Health, New York State Asthma County Dashboard, available at: [https://apps.health.ny.gov/public/tabvis/PHIG\\_Public/asthma/reports/#county](https://apps.health.ny.gov/public/tabvis/PHIG_Public/asthma/reports/#county).

<sup>296</sup> New York State Department of Health, New York State Asthma Socio-Demographics Dashboard, available at: [https://apps.health.ny.gov/public/tabvis/PHIG\\_Public/asthma/reports/#state](https://apps.health.ny.gov/public/tabvis/PHIG_Public/asthma/reports/#state).

<sup>297</sup> New York City Environment and Health, Breathe easy: NYC's air quality is improving (2019), available at: <https://a816-dohbsp.nyc.gov/indicatorPublic/data-stories/breatheeasy/>.

<sup>298</sup> EPA, Current Nonattainment Counties for All Criteria Pollutants, available at: <https://www3.epa.gov/airquality/greenbook/ancl.html>.

<sup>299</sup> NYSDEC, New York State Ambient Air Monitoring Network, available at: <https://dec.ny.gov/sites/default/files/2025-05/2025fiveyearassessment.pdf>.

<sup>300</sup> EPA, Current Nonattainment Counties for All Criteria Pollutants, available at: <https://www3.epa.gov/airquality/greenbook/ancl.html>.

<sup>301</sup> NYC Health, Noise, 2024, available at: <https://www.nyc.gov/site/doh/health/health-topics/noise.page>.

<sup>302</sup> Noise Free America. New York State Noise Related Statutes and Policies, available at: <https://noisefree.org/wp-content/uploads/2017/12/new-york.pdf>.

<sup>303</sup> IAEA, Sound emissions from nuclear power plants, available at: <https://inis.iaea.org/records/nywvr-qrw57>.

<sup>304</sup> NYU, Sounds of New York City, available at: <https://wp.nyu.edu/sonyc/>.

community qualities such as demographics, population density and open space, air quality, land use and neighborhood compositions, or traffic patterns.

### 3.11.1 Population

New York is the fourth most populous state in the U.S., behind California, Texas, and Florida. The U.S. Census estimates the population of the State at 19,867,248 on July 1, 2024, a 1.2 percent decrease from the State's estimated 2020 population of 20,105,171.<sup>305</sup>

The State is divided into 62 counties, 11 metropolitan statistical areas (MSAs) and five combined statistical areas (CSAs). Approximately one percent of the State's population resides within Oswego and Wayne counties, with a 2024 population of approximately 117,945 and 91,128, respectively.<sup>306</sup> Oswego and Wayne are both near the median population of counties in the State, ranking 24<sup>th</sup> and 31<sup>st</sup> out of the 62 counties, respectively.<sup>307</sup>

Population and density vary substantially across the State. Outside densely populated New York City (which is home to approximately 8.5 million residents, equivalent to almost 28,000 residents per square mile), the remainder of the State contains 11.3 million residents at a density of 242 residents per square mile.<sup>308</sup> **Figure 3-17** illustrates the relative population densities across the State. Population density outside of the New York Metropolitan area exhibits an inverse relationship, as distance to the New York City metropolitan area increases, population densities are considerably lower and development less intense; attributes reflecting communities more rural in nature. As of 2022, Oswego County had a density of 124 people per mile and Wayne County had a density of 151 people per mile.<sup>309</sup>

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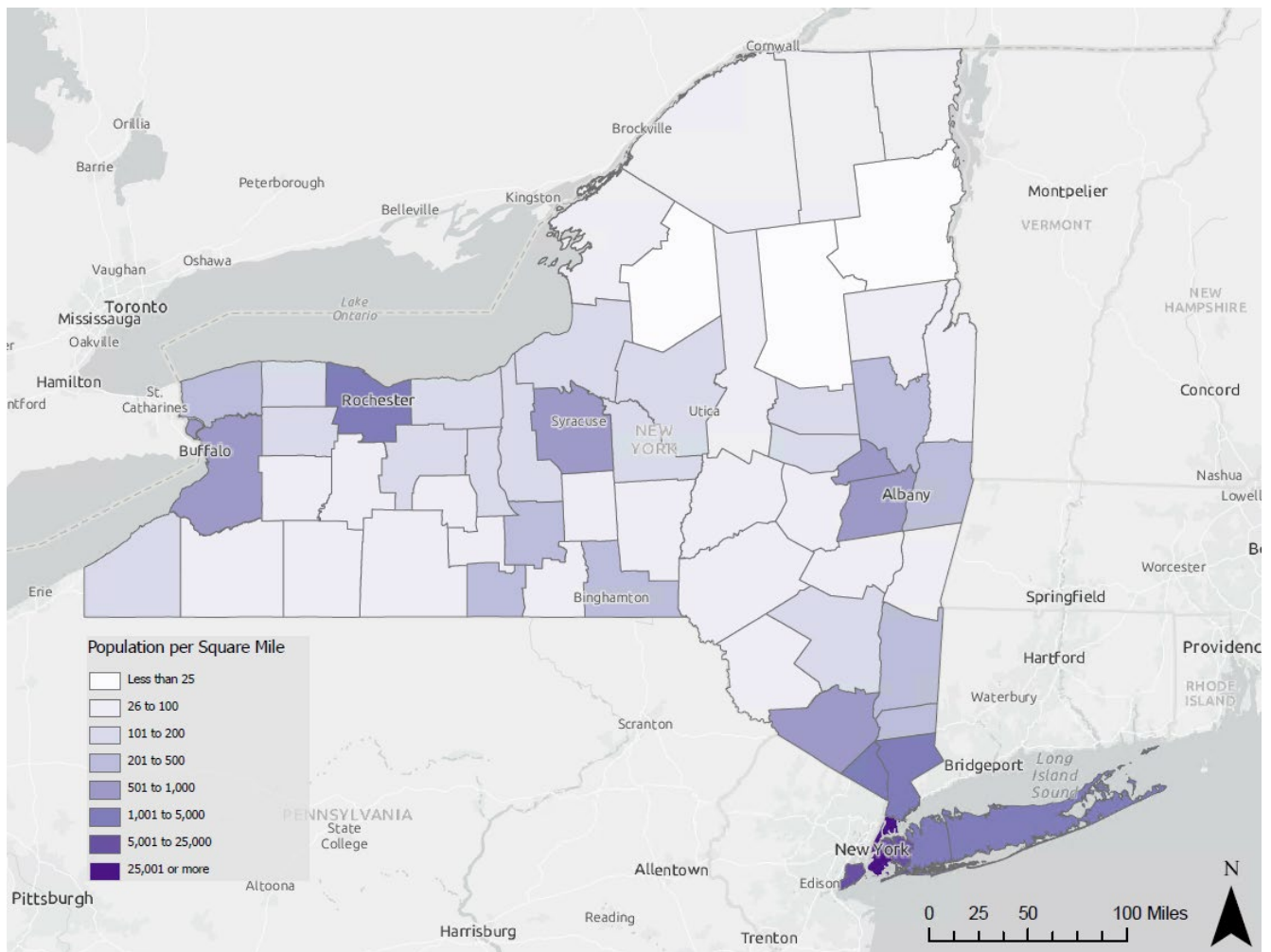
<sup>305</sup> Census Bureau, State Population Totals and Components of Change: 2020-2024, available at: <https://www.census.gov/data/tables/time-series/demo/popest/2020s-state-total.html>.

<sup>306</sup> Census Bureau, 2022 American Community Survey 5-Year Estimates, available at: <https://data.census.gov/table?q=new+york+population&g=050XX00US36075,36117&d=ACS+5-Year+Estimates+Data+Profiles>.

<sup>307</sup> Census Bureau, State and County Population Totals and Components of Change: 2020-2024, available at: <https://www.census.gov/data/tables/time-series/demo/popest/2020s-state-total.html>.

<sup>308</sup> New York State Department of Health, Vital Statistics of New York State 2022, available at: [https://health.ny.gov/statistics/vital\\_statistics/2022/table02.htm#1](https://health.ny.gov/statistics/vital_statistics/2022/table02.htm#1).

<sup>309</sup> Ibid.

**Figure 3-17. New York State Population Density by County, 2022<sup>310</sup>**

According to the New York DOH, while the State saw an overall increase in population between 2016 and 2022, much of that population growth occurred in counties outside New York City. Populations in 23 of the 57 counties outside of New York City experienced growth, including Wayne County.<sup>311,312</sup>

### 3.11.2 Community Types

While community character can sometimes appear relatively constant, it is always evolving due to shifting demographics, changes in the local and regional economy, and the passage of time. Regardless of size, commercial, industrial, or residential development projects have the potential to affect community character over both the short- and long-term. Although often difficult for residents or visitors to define, elements of community character can be highly influential in individuals' decisions to migrate, start a business, or travel to a given community. These elements can work in either positive or negative ways, either attracting or deterring residents, businesses, or visitors.

<sup>310</sup> Ibid.

<sup>311</sup> Ibid.

<sup>312</sup> New York State Department of Health, Vital Statistics of New York State 2016, available at: [https://www.health.ny.gov/statistics/vital\\_statistics/2016/](https://www.health.ny.gov/statistics/vital_statistics/2016/).

**Table 3-6** summarizes the most common community types in the State. Details on land use can be found in [Section 3.3](#).

**Table 3-6. Summary of New York Community Types<sup>313</sup>**

| Community Type      | Community Type Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Rural Agricultural  | The dominant land use in this community type is agriculture, and farm structures/equipment, livestock, and open fields are significant components of this landscape. Rural residences are typically scattered along a network of country roads. The topography in this setting will vary from hilly to flat, with a mix of crops and pastureland, woodlots and hedgerows.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Rural Hamlet        | The dominant feature in this community type is a cluster of residential structures in a largely rural setting. These areas may have a small commercial center that is usually located at an intersection of two rural roadways. Historic structures of varying significance are often present.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Village             | These communities typically consist of a concentration of residential structures with a commercial business core. Historic structures and/or historic districts are often present. The structures may be of a vernacular material or style but typically include a mix of new and old architecture. Vegetation consists of large street trees, landscaped yards, and parks. The streets are often organized in a traditional grid pattern, and the more modern commercial and industrial facilities are typically located on the village periphery.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Suburban            | Suburban residential areas consist of mostly residential structures along existing road frontage, as well as residential subdivisions with curvilinear roads and cul-de-sacs. These moderate-to-high density residential developments include larger yards and relatively modern homes of varying architectural styles and materials. Commercial portions of suburbs generally consist of strip development along a highway, including retail stores, automobile dealers, shopping centers, malls, and office- or light-industrial complexes; residential uses are limited. Suburban commercial character is typically dominated by highways, buildings, automobiles, and pavement (roads and parking lots). This type of setting usually surrounds a village or urban area; the surrounding landscape can vary from suburban residential, to farmland, to forested hills.                                                                                                                                                                                         |
| Urban               | Urban residential settings are typically dominated by 2-to 4-story masonry apartment blocks and single family and multiple family homes, although some urban residential areas (e.g., portions of New York City) feature structures much larger than this. The streets are generally organized in a grid pattern and lined by narrow sidewalks and street trees. Urban commercial areas generally feature buildings that are at least two to four stories in height, with retail storefronts along the sidewalks and upper floors that are used as offices and apartments. Urban downtowns typically occur in the center of a city and are characterized by high-rise buildings and gridded street patterns. Both urban commercial and downtown areas usually feature gridded street patterns, which are busy with traffic, and frequently accommodate on-street parking. In general, views along urban streets are framed or screened by adjacent buildings, and vegetation is typically limited to street trees, planters, pocket parks, or larger public parks. |
| Industrial          | Industrial areas are dominated by an often haphazard mix of buildings and structures associated with manufacturing, warehousing, utility, and transportation-related activities. An industrial setting often occurs along the outskirts of urban and village areas. The topography is generally flat and vegetation is limited or nonexistent. Pedestrian activity is generally insignificant, as most activity typically occurs within the industrial facilities in such areas, although some industrial settings (typically older manufacturing districts) feature limited residential uses that may contribute a degree of community character.                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Developed Shoreline | Along the State's coastlines (e.g., Long Island Sound, New York Harbor, and the Hudson River), open water is the dominant feature but is frequently interrupted by docks, piers, and/or boats. The shoreline may include natural beach or may be bulkheaded or otherwise structurally reinforced. A developed coastline will include ports, marinas, and shorefront commercial, residential, and recreational facilities. Along lakeshores other than                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

<sup>313</sup> Table source from Chapter 4.14 of the Indian Point Contingency Plan Final Generic Environmental Impact Statement, DPS and Ecology and Environment Inc. Indian Point Contingency Plan Final Generic Environmental Impact Statement, available at: <http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7B1CFCC090-1E99-4A8C-BC0C-56764C8985AD%7D>.

| Community Type | Community Type Description                                                                                                                                                                                                                                                                                                                                           |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                | those of the Great Lakes, the dominant natural feature is water, with surrounding hills and mountains typically in the background. However, the natural shoreline in these settings is interrupted by man-made features such as seasonal homes/camps, boathouses, and docks. The foreground that frames the water views includes both man-made and natural features. |

## 3.12 Transportation

The State's transportation network is a system of highways, bridges, and rail lines, with ownership divided among federal, State, county, and local entities. Passenger travel is mostly limited to personal vehicles in Upstate areas like Wayne and Oswego County, but nearby international airports connect residents to the rest of the country and world. Cargo travels through ports and over rail and highways.

### 3.12.1 Roads and Highways

New York's primary transportation network consists of the existing system of interstate highways, urban expressways, rural highways, and local streets. Ownership of the State's roads, highways, and bridges is a patchwork of federal, state, county, local, and private ownership. The New York State Thruway is maintained by the New York State Thruway Authority, while the New York State Canal Corporation – transferred from the Thruway Authority in 2017 – is now a subsidiary of the NYPA and oversees the operation and maintenance of the canal system; all other federal and State highways remain under the jurisdiction of the DOT.<sup>314</sup> While counties and municipalities are responsible for local roads and bridges, federal funds from the Federal Highway Administration (FHWA) are frequently relied upon for periodic repairs and routine maintenance.

The State's inventory of bridges includes several State and local bridges that currently require rehabilitation or replacement due to age and higher traffic loads in excess of the bridges' constructed capacity. There are currently 99 bridges in Wayne County, with 11 identified as in poor status by the New York State Department of Transportation; none in Ontario (where Ginna is located).<sup>315,316</sup> Oswego County has 234 bridges, with 32 in poor status; none in Scriba (where Nine Mile and FitzPatrick are located).<sup>317,318</sup>

In the Upstate New York region, major road travel routes include Interstate 87 (I-87) and I-90, which pass through Syracuse, Rochester, and Buffalo. Oswego County manages the maintenance of approximately 500 miles of county roads. The primary highways are I-81 and State Route 481 (NY-481). I-81 runs north-south down the central part of the county while NY-481 runs north-west from Phoenix, New York to Oswego on Lake Ontario. Both highways connect to the Thruway. Average traffic ranges from 14,000 to 33,000 vehicles per day on sections of I-81 and 2,500 to 19,000 vehicles per day on sections of NY-481. New York State Route 104 (NY-104) runs through the county east-west, largely following the shore of the lake, and terminates on the eastern edge of Oswego County.

NY-104 also runs through Wayne County. It has the highest vehicular traffic in the county with sections experiencing average daily traffic over 20,000 vehicles per day. NY-31 is south of NY-104 and runs largely

<sup>314</sup> New York State Canal Corporation, About, available at: <https://www.canals.ny.gov/About>.

<sup>315</sup> NYDOT, NY State Highway Bridge Data: July 31, 2025 Wayne County, available at: <https://www.dot.ny.gov/main/bridgedata/repository/WaynenBridgeData.pdf>

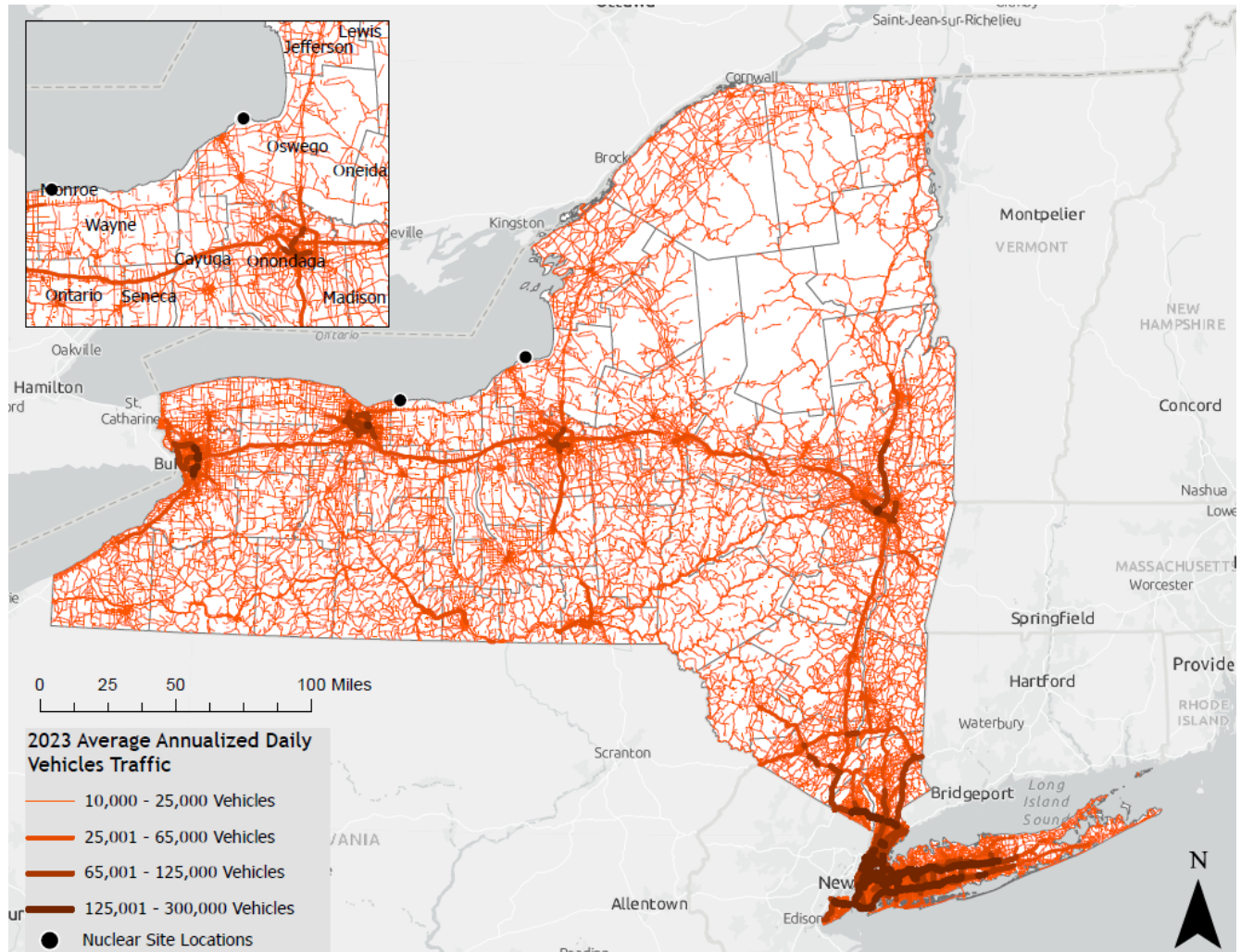
<sup>316</sup> Ibid.

<sup>317</sup> NYDOT, NY State Highway Bridge Data: July 31, 2025 Oswego County, available at: <https://www.dot.ny.gov/main/bridgedata/repository/OswegoBridgeData.pdf>

<sup>318</sup> Ibid.

parallel to it. It is the second busiest route in the county, with some sections having over 10,000 vehicles per day. Both NY-104 and NY-31 cross multiple counties. **Figure 3-18** presents the 2023 average annualized daily vehicle traffic volumes for the State.

**Figure 3-18. New York State Traffic Volumes**<sup>319</sup>



### 3.12.2 Transit, Air and Rail Services

The State maintains an extensive system of rail lines for passengers and freight. Amtrak is the sole provider of intercity rail passenger service in the State, providing passenger service over rail lines owned by freight railroads. Amtrak links Downstate with Upstate cities, including Albany, Utica, Syracuse, Rochester, Buffalo, and many other intermediate points. The owners and operators of the State's freight corridors include CSX Transportation, Canadian Pacific Railway, Canadian National Railway, and Norfolk Southern Railway.<sup>320</sup>

<sup>319</sup> NYDOT, Traffic Data Viewer, Geodatabase Shapefile, Annual Average Daily Traffic 2023 (GDB Shapefile AADT 2023.zip), available at: <https://www.dot.ny.gov/tdv>.

<sup>320</sup> NYDOT, New York State Freight Transportation Plan August 2024, available at: [https://www.dot.ny.gov/portal/page/portal/content/delivery/Main-Projects/projects/P11618881-Home/P11618881-repository/New\\_York\\_State\\_Freight\\_Plan\\_2024.pdf](https://www.dot.ny.gov/portal/page/portal/content/delivery/Main-Projects/projects/P11618881-Home/P11618881-repository/New_York_State_Freight_Plan_2024.pdf).

The Port of Oswego in Oswego County is a major multimodal connection for shipping and has received investment funds to expand and improve operations in recent years.<sup>321</sup> CSX operates rail services at the Port of Oswego. The railyard is undergoing redevelopment and will become the largest railyard in the county when complete.<sup>322</sup> The Oswego Canal also connects Lake Ontario with the Erie Canal via a system of seven locks.<sup>323</sup> In Wayne County, there is a freight rail line called the Ontario Midland that connects to the CSX network in Newark, NY, about 25 miles south-east of the Ginna nuclear facility.<sup>324</sup> The Ontario Midland line roughly follows NY-104 across the county with an extension south from Sodus to Newark.

The major public transit system in the State is the Metropolitan Transportation Authority (MTA) in New York City, which is the largest transportation network in North America.<sup>325</sup> The MTA also manages several bridges in New York City and the southeastern part of the State. Given the rural nature of Oswego and Wayne counties there is limited public transit. Both counties operate small regional transit networks with several bus routes serving the counties' residents and operating between towns and areas.<sup>326</sup>

The State has international airports Upstate in Buffalo, Albany, Rochester, and Syracuse, each of which had more than one million enplanements in 2023. In total, the U.S. Federal Aviation Authority (FAA) lists 18 active commercial service airports across the State, none of which are in Wayne or Oswego County.<sup>327</sup> Oswego County Airport, near the Fitzpatrick and Nine Mile Point nuclear facilities, is designated as a reliever airport that functions to relieve congestion at other regional airports by providing flight training and charter flights.<sup>328</sup> For commercial services, the closest airport to Oswego County is Syracuse Hancock International Airport, which saw about 1.4 million enplanements in 2024.<sup>329</sup> The airport is about 40 miles from the FitzPatrick and Nine Mile Point facilities. Frederick Douglass Greater Rochester International Airport is the closest airport to Wayne County. It had 1.3 million enplanements in 2024 and is about 30 miles from the Ginna facility.<sup>330</sup> A private airport in Wayne County called the Williamson-Sodus Airport is owned and operated by a private flying club.<sup>331</sup>

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<sup>321</sup> Ibid.

<sup>322</sup> The Port of Oswego, 2023 Annual Report (Condensed), p. 2, available at: <https://portoswego.com/userfiles/file/2023%20POA%20Annual%20Report%20-%20Condensed.pdf>

<sup>323</sup> NYDOT, New York State Freight Transportation Plan August 2024, available at: [https://www.dot.ny.gov/portal/page/portal/content/delivery/Main-Projects/projects/P11618881-Home/P11618881-repository/New\\_York\\_State\\_Freight\\_Plan\\_2024.pdf](https://www.dot.ny.gov/portal/page/portal/content/delivery/Main-Projects/projects/P11618881-Home/P11618881-repository/New_York_State_Freight_Plan_2024.pdf).

<sup>324</sup> Ontario Midland Railroad Corp, Industrial Development/Transload Facilities, available at: <https://ontariomidland.com/development/>.

<sup>325</sup> New York Metropolitan Transportation Authority, About the MTA, available at: <https://new.mta.info/about>.

<sup>326</sup> Wayne County maintains a bus network as part of the Rochester-Genesee Regional Transportation Authority's Regional Transit Service (RTS) network that serves several Upstate counties. Wayne County has 13 bus routes for local towns that operate Monday to Friday. For schedules and maps see RTS, RTS Wayne Maps and Schedules, available at: <https://www.myrts.com/Wayne/Schedules>. Oswego County Public Transit operates five bus routes, see OPT, Oswego County Public Transit Routes, Schedules and Fares, available at <https://www.oco.org/services/transportation/full-transportation-schedule/>. Fares for both services are one dollar for adults and free for a number of residents (e.g., children).

<sup>327</sup> FAA, Preliminary FY24 Enplanements at Commercial Service Airports, available at: [https://www.faa.gov/airports/planning\\_capacity/passenger\\_allcargo\\_stats/passenger/arp-cy2024-commercial-service-enplanements-prelim.pdf](https://www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/passenger/arp-cy2024-commercial-service-enplanements-prelim.pdf).

<sup>328</sup> Oswego County, Infrastructure and Technology: Airport, available at: [https://www.oswegocounty.com/departments/infrastructure\\_facilities\\_and\\_technology/airport.php](https://www.oswegocounty.com/departments/infrastructure_facilities_and_technology/airport.php).

<sup>329</sup> FAA, Preliminary FY24 Enplanements at Commercial Service Airports, available at: [https://www.faa.gov/airports/planning\\_capacity/passenger\\_allcargo\\_stats/passenger/arp-cy2024-commercial-service-enplanements-prelim.pdf](https://www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/passenger/arp-cy2024-commercial-service-enplanements-prelim.pdf)

<sup>330</sup> Ibid.

<sup>331</sup> Williamson Flying Club, Airport Info, available at: <https://www.williamsonflyingclub.com/>.

### 3.13 Socioeconomics and Environmental Justice

The socioeconomic setting that the proposed action may impact includes such topics as community demographics, employment, housing requirements, and municipal revenues. Energy resources and land uses intersect with communities and impact their characteristics. Environmental justice aims to address environmental issues and concerns that affect communities that are primarily low income and/or people of color. Given that nuclear facilities generate power that can be conveyed long distances through the grid and that ZECs can be purchased by LSEs across the State, this SGEIS considers both local and statewide issues of environmental justice.

#### 3.13.1 Demographics

**Section 3.11.1** provides general information on the population of the State, as well as Oswego and Wayne counties. It also summarizes population density in the State. People living in Oswego and Wayne counties are older and have a slightly higher portion of male residents compared to the State's average.<sup>332</sup>

According to the 2023 American Community Survey (ACS), Oswego County and Wayne County are less racially diverse than the State as a whole (see **Table 3-7**). The populations of Wayne and Oswego County are predominantly white, with no other individual demographic group exceeding five percent, except people who identified as multiracial in Wayne County. A small portion of the population in Oswego and Wayne counties identified their ethnicity as Hispanic or Latino (3.2 percent and 5.1 percent, respectively) compared to the State average of approximately 20 percent.<sup>333</sup>

**Table 3-7. Race in 2023**<sup>334</sup>

| Demographic                                | New York State | Wayne County | Oswego County |
|--------------------------------------------|----------------|--------------|---------------|
| White                                      | 57.1%          | 88.8%        | 92.8%         |
| Black or African American                  | 14.7%          | 2.4%         | 1.1%          |
| American Indian and Alaska Native          | 0.5%           | 0.3%         | 0.1%          |
| Asian                                      | 8.9%           | 0.9%         | 0.8%          |
| Native Hawaiian and Other Pacific Islander | 0.0005%        | 0.0004%      | 0.1%          |
| Other Race                                 | 9.8%           | 2.0%         | 1.1%          |
| Multiracial                                | 8.9%           | 5.6%         | 4.1%          |

#### 3.13.2 Employment

In the State, approximately 10.1 million people were employed in non-farm positions in July 2025. This represents a 1.7 percent increase compared to July 2024. According to the New York State Department of Labor, total private sector jobs (including construction) increased by 137,200 jobs during the same period, equivalent to a year-over-year growth rate of 1.6 percent.<sup>335</sup>

<sup>332</sup> American Community Survey, 5-Year Estimates Demographic and Housing Estimates 2023, available at: <https://data.census.gov/table/ACSDP5Y2023.DP05>.

<sup>333</sup> Ibid.

<sup>334</sup> Ibid.

<sup>335</sup> New York State Department of Labor, Current Employment Statistics, available at: <https://dol.ny.gov/current-employment-statistics-0>.

Data from the BLS Local Area Unemployment Statistics June 2025 update, the most recent available, shows Wayne County has an employment of 42,700 and Oswego County has an employment of 53,441. Employment in both counties has remained relatively stable since June 2024.<sup>336</sup> However, employment data for the nuclear electric power generation sector (NAICS 221113) are not disclosed at the county level by BLS to protect employer confidentiality since they would risk revealing confidential business information, and therefore do not fully capture true employment levels in Wayne or Oswego counties.<sup>337</sup> Over three quarters of workers in Wayne and Oswego counties commute to work by driving alone with an average travel time to work of 25 minutes.<sup>338</sup>

In June 2025, BLS estimated a statewide unemployment rate statewide of 4.0 percent, with Wayne County at 2.9 percent and Oswego County at 3.6 percent.<sup>339,340</sup> In both counties, the unemployment rate follows a seasonal trend with less unemployment in the spring through fall and higher unemployment in the winter.

### 3.13.3 Income and Wage Characteristics

The median family income in the State in 2025 is \$110,200. In 2025, the median family income in non-metro areas is \$82,300. Wayne County (\$103,900) and Oswego County (\$104,100) median family incomes are the highest of the counties bordering Lake Ontario. Counties with the highest median family income in the State include Westchester County (\$170,200), Suffolk County (\$164,900), and Nassau County (\$164,900). Counties with the lowest median family incomes in 2024 include Cattaraugus County (\$77,200), Fulton County (\$79,100), and Chemung County (\$81,900).<sup>341</sup> For employed individuals, BLS estimates an average annual wage of approximately \$95,000 in the State, compared to \$62,000 in Oswego County and \$57,000 in Wayne County.<sup>342</sup> By the North American Industry Classification System (NAICS) code, the largest sectors for private employment in Oswego and Wayne counties include retail trade, health care and social assistance, and manufacturing.<sup>343,344</sup>

**Table 3-8** presents key economic characteristics for the State, Wayne County and Oswego County.

<sup>336</sup> BLS, Local Area Unemployment Statistics: State and County Monthly Data, available at: <https://www.bls.gov/lau/tables.htm>.

<sup>337</sup> BLS Quarterly Census of Employment and Wages Private, NAICS 221113 Nuclear electric power generation, All Counties in New York, 2024 Fourth Quarter, available at: [https://data.bls.gov/cew/apps/table\\_maker/v4/table\\_maker.htm?type=2&st=36&year=2024&qtr=4&own=5&ind=221113&supp=1](https://data.bls.gov/cew/apps/table_maker/v4/table_maker.htm?type=2&st=36&year=2024&qtr=4&own=5&ind=221113&supp=1).

<sup>338</sup> American Community Survey, 5-Year Estimates Selected Economic Characteristics 2023, available at: <https://data.census.gov/table/ACSDP5Y2023.DP03>.

<sup>339</sup> BLS, Local Area Unemployment Statistics: State and County Monthly Data, available at: <https://www.bls.gov/lau/tables.htm>.

<sup>340</sup> Ibid.

<sup>341</sup> NYHCR, AHC Income Limits Chart, available at: [https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=https://hcr.ny.gov/ahc-income-limits&ved=2ahUKEwjD4fqz4aeJAxW\\_mYkEHXAWN3YQFnoECCKQAQ&usq=AOvVaw3xif1uynN0ANm\\_4Z\\_HBSZm](https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=https://hcr.ny.gov/ahc-income-limits&ved=2ahUKEwjD4fqz4aeJAxW_mYkEHXAWN3YQFnoECCKQAQ&usq=AOvVaw3xif1uynN0ANm_4Z_HBSZm).

<sup>342</sup> BLS, Quarterly Census of Employment and Wages Private, All Industries, All Counties in New York 2024 Fourth Quarter, available at: [https://data.bls.gov/cew/apps/table\\_maker/v4/table\\_maker.htm?type=2&st=36&year=2024&qtr=4&own=5&ind=10&supp=0](https://data.bls.gov/cew/apps/table_maker/v4/table_maker.htm?type=2&st=36&year=2024&qtr=4&own=5&ind=10&supp=0).

<sup>343</sup> BLS, Quarterly Census of Employment and Wages, Oswego County Private Employment NAICS Sectors Annual Averages, available at: [https://data.bls.gov/cew/apps/table\\_maker/v4/table\\_maker.htm?type=6&year=2024&qtr=A&own=5&area=36075&supp=0](https://data.bls.gov/cew/apps/table_maker/v4/table_maker.htm?type=6&year=2024&qtr=A&own=5&area=36075&supp=0).

<sup>344</sup> BLS, Quarterly Census of Employment and Wages, Wayne County Private Employment NAICS Sectors Annual Averages, available at: [https://data.bls.gov/cew/apps/table\\_maker/v4/table\\_maker.htm?type=6&year=2024&qtr=A&own=5&area=36117&supp=0](https://data.bls.gov/cew/apps/table_maker/v4/table_maker.htm?type=6&year=2024&qtr=A&own=5&area=36117&supp=0).

**Table 3-8. Select Economic Characteristics (2019-2023)**

| Metric                                     | New York State | Wayne County | Oswego County |
|--------------------------------------------|----------------|--------------|---------------|
| Number of Households <sup>345</sup>        | 7,668,956      | 38,222       | 47,132        |
| Homeownership rate <sup>346,347</sup>      | 54.3%          | 79.9%        | 73.9%         |
| Median home value (\$2023) <sup>348</sup>  | \$403,000      | \$163,400    | \$139,600     |
| Per capita income (\$2023) <sup>349</sup>  | \$48,590       | \$37,654     | \$35,229      |
| Persons below poverty level <sup>350</sup> | 13.7%          | 11.3%        | 16.5%         |

### 3.13.4 Housing Characteristics

In 2023, the estimated housing vacancy rate in the State was 10.2 percent, an increase from 9.4 percent in 2022.<sup>351</sup> In 2023, 46.7 percent of housing units were single unit residences, while 26.1 percent of housing units were a part of structures containing between two and 19 housing units, and 25.0 percent of housing units were a part of structures containing 20 or more housing units. Mobile homes, boats, recreational vehicles (RVs and other similar residences accounted for 2.2 percent of all housing units.<sup>352</sup>

The 2023 housing vacancy rate was 9.8 percent in Wayne County, and 13.8 percent in Oswego County.<sup>353</sup> In both counties, the share of single unit residences is significantly higher than the State. Single unit residences are 77 percent and 71 percent of total units in Wayne and Oswego County respectively.<sup>354</sup> Home ownership rates are also much higher than the State average, however the value was lower (see **Table 3-8**).

The 2023 ACS estimated that 42.5 percent of renters in the State paid gross rent costs totaling 35.0 percent or more of household income.<sup>355</sup> In Wayne and Oswego County, renters who paid gross rent costs of more than 35 percent of household income are slightly lower at 37.2 and 40.9 percent, respectively.<sup>356</sup>

According to the Federal Reserve Bank of New York, the housing boom and bust in the early part of the 2000s did not significantly impact Upstate New York, where construction activity is a relatively small part of the overall economy. As a result, home prices have generally stabilized across Upstate New York, with some parts even experiencing appreciation of home prices. For example, Buffalo, Rochester, and Syracuse all ranked in the top ten percent of cities in home price appreciation rate in 2009.<sup>357</sup>

<sup>345</sup> American Community Survey, 5-Year Estimates Selected Social Characteristics 2023, available at: <https://data.census.gov/table/ACSDP5Y2023.DP02>.

<sup>346</sup> Homeownership rate = number of owner-occupied households / number of households.

<sup>347</sup> American Community Survey, 5-Year Estimates Tenure 2023, available at: <https://data.census.gov/table/ACSDT5Y2023.B25003>.

<sup>348</sup> American Community Survey, 5-Year Estimates Selected Housing Characteristics 2023, available at: <https://data.census.gov/table/ACSDP5Y2023.DP04>.

<sup>349</sup> American Community Survey, 5-Year Estimates Demographic and Housing 2023, available at: <https://data.census.gov/table/ACSDP5Y2023.DP05>; American Community Survey, 5-Year Estimates Selected Economic Characteristics 2023, available at: <https://data.census.gov/table/ACSDP5Y2023.DP03>.

<sup>350</sup> Ibid.

<sup>351</sup> American Community Survey, 5-Year Estimates Selected Housing Characteristics 2023, available at: <https://data.census.gov/table/ACSDP5Y2023.DP04>.

<sup>352</sup> Ibid.

<sup>353</sup> Ibid.

<sup>354</sup> Ibid.

<sup>355</sup> Ibid.

<sup>356</sup> Ibid.

<sup>357</sup> Federal Reserve Bank of New York, Bypassing the Bust: The Stability of Upstate New York's Housing Markets during the Recession, available at: [http://www.newyorkfed.org/research/current\\_issues/ci16-3.pdf](http://www.newyorkfed.org/research/current_issues/ci16-3.pdf).

### 3.13.5 Municipal Revenue

Real estate property taxes (RPT) are the primary source of revenue for most cities, towns, and villages in the State. The RPT is levied in more than 4,700 taxing jurisdictions in the State, calculated based on the value of residential and non-residential real properties, with certain exceptions. Reliance on the RPT varies by type of government. In fiscal year 2023, counties across the State received 19.8 percent of their revenue from the RPT, cities received 22.4 percent, and school districts received 49.0 percent. Across all local governments, RPT accounted for 39.4 percent of total revenues.<sup>358</sup>

Major infrastructure can be a notable source of tax revenues. According to Constellation, annual property tax payments are approximately \$13.9 million from Fitzpatrick, \$30.5 million from Nine Mile Point, and \$6.4 million from Ginna.<sup>359,360,361</sup>

Other revenue sources for counties include sales and use taxes (SUT), charges for services, other taxes, State aid, and federal aid. Distribution of revenue by source is different in each county, but across the State SUT, RPT, and other taxes make up close to 70 percent of county revenue.<sup>362</sup>

### 3.13.6 Environmental Justice and Disadvantaged Communities

The federal EPA defines environmental justice as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.<sup>363</sup> Environmental justice efforts focus on improving the environment specifically minority and low-income communities and addressing disproportionate adverse environmental impacts that may exist in those communities.

NYSDEC promulgated regulations at 6 NYCRR Part 487 for incorporating environmental justice consideration into proceedings before the New York State Board on Electric Generation and the Environment for determining whether to site major electric generating facilities pursuant to Article 10 of the Public Service Law.<sup>364</sup> For matters overseen by the NYSDEC, such as NYSDEC's environmental permit review process and NYSDEC's application of the SEQRA, NYSDEC Commissioner Policy 29 on Environmental Justice and Permitting (CP-29) provides guidance to NYSDEC staff on environmental justice issues. Under CP-29, potential environmental justice areas are defined as U.S. Census block groups of 250 to 500 households each that, in the 2000 census, had populations that met or exceeded at least one of the following statistical thresholds:

1. At least 52.4 percent of the population in an urban area reporting themselves to be members of minority groups; or
2. At least 26.3 percent of the population in a rural area reporting themselves to be members of minority groups; or

<sup>358</sup> Office of the NYS Comptroller, Division of Local Government and School Accountability, Annual Report on Local Governments for Fiscal Year End 2023, available at: <https://www.osc.ny.gov/files/local-government/publications/pdf/fye2023-annualreport.pdf>.

<sup>359</sup> Constellation Energy, James A. FitzPatrick Clean Energy Center, available at: <https://www.constellationenergy.com/our-company/locations/location-sites/james-a-fitzpatrick-clean-energy-center.html>

<sup>360</sup> Constellation Energy, Nine Mile Point Clean Energy Center, available at: <https://www.constellationenergy.com/our-company/locations/location-sites/nine-mile-point-clean-energy-center.html>

<sup>361</sup> Constellation Energy, R.E. Ginna Clean Energy Center, available at: <https://www.constellationenergy.com/our-company/locations/location-sites/r-e-ginna-clean-energy-center.html>

<sup>362</sup> Office of the NYS Comptroller, Division of Local Government and School Accountability, Annual Report on Local Governments for Fiscal Year End 2023, available at: <https://www.osc.ny.gov/files/local-government/publications/pdf/fye2023-annualreport.pdf>.

<sup>363</sup> EPA, EJ 2020 Glossary, available at: [https://19january2021snapshot.epa.gov/environmentaljustice/ej-2020-glossary\\_.html](https://19january2021snapshot.epa.gov/environmentaljustice/ej-2020-glossary_.html).

<sup>364</sup> NYSDEC, EJ Related Policy And Regulations, available at: <https://dec.ny.gov/get-involved/environmental-justice/related-policy-regulations>.

3. At least 22.8 percent of the population in an urban or rural area with household incomes below the federal poverty level.<sup>365</sup>

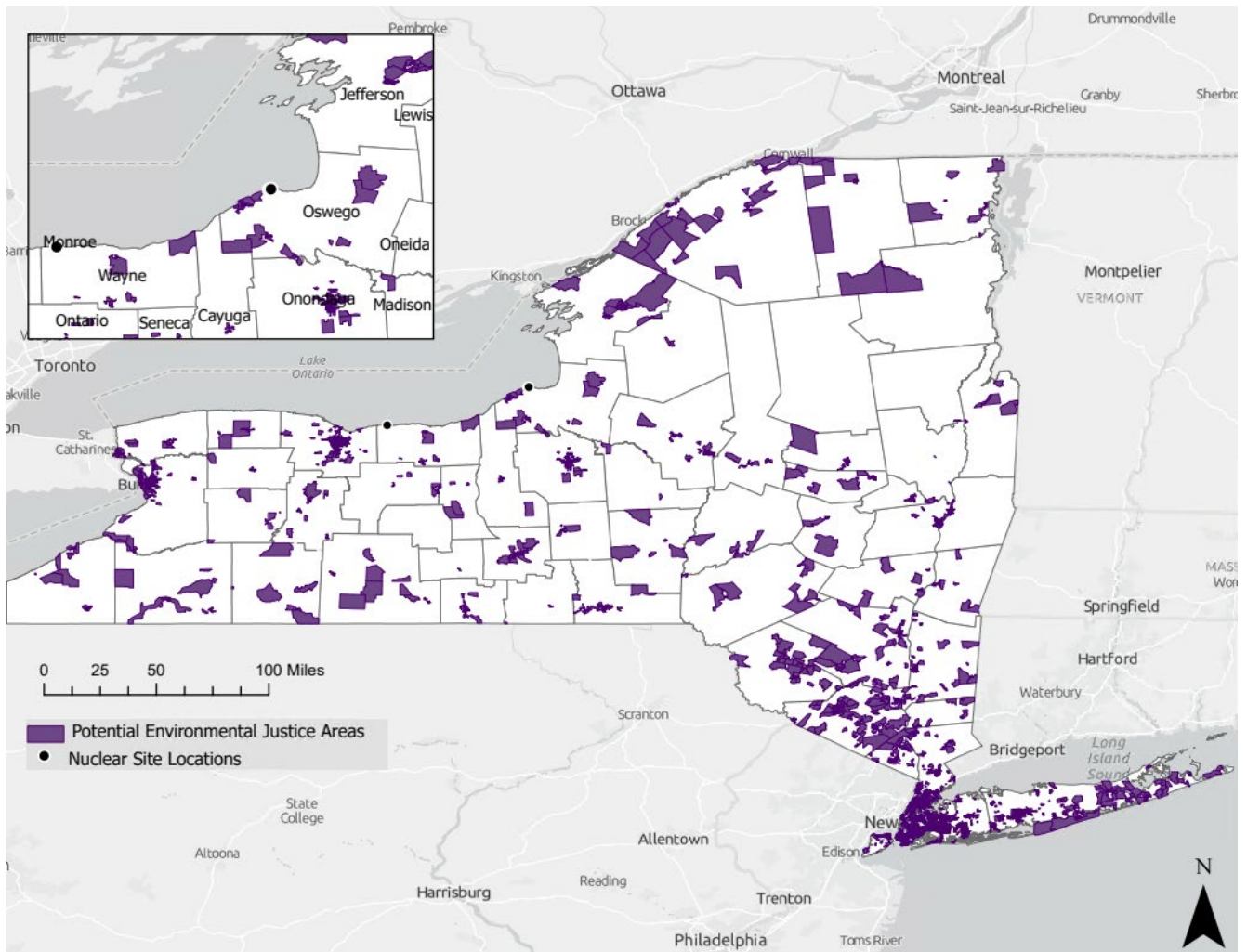
As shown in **Figure 3-19**, Potential Environmental Justice Areas (PEJAs) occur throughout the State, with an area of concentration in New York City. The PEJAs are based on 2014-2018 ACS data, which was the most recent ACS data available when the PEJAs were developed in 2020.

Disadvantaged communities have slightly different identifying characteristics than PEJAs. (see **Figure 3-20**). The CLCPA's Climate Justice Working Group (CJWG) used 45 indicators to designate the top 35 percent of burdened New York State census tracts as Disadvantaged Communities. Burden criteria include multiple indicators that represent environmental burdens or climate change risks within a community, or population characteristics and health vulnerabilities that can contribute to more severe adverse effects of climate change.<sup>366</sup> **Table 3-9** summarizes the distribution of Disadvantaged Communities in Wayne and Oswego County and across the State.

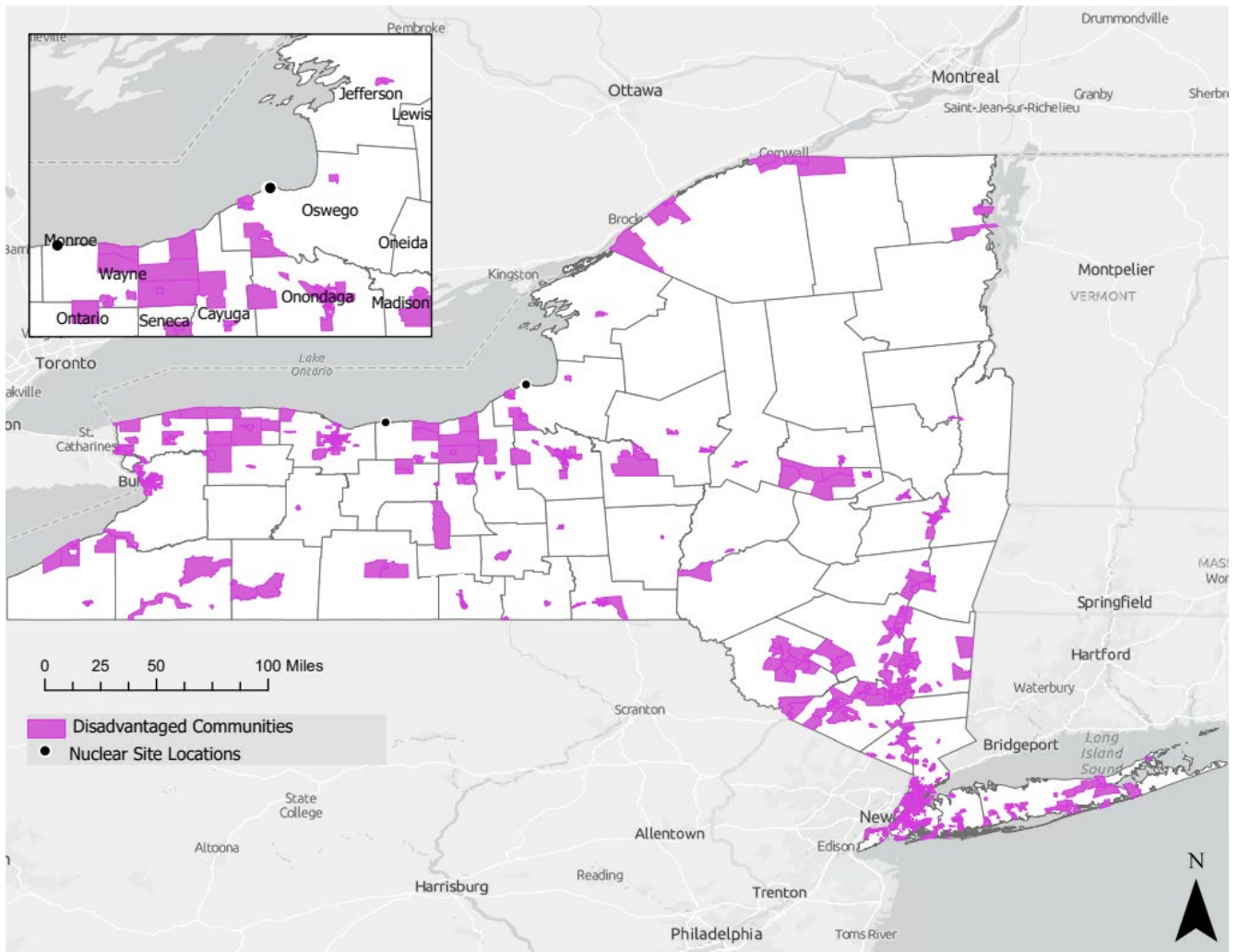
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<sup>365</sup> NYSDEC, Maps & Geospatial Information System (GIS) Tools For Environmental Justice, available at: <https://dec.ny.gov/get-involved/environmental-justice/gis-tools>.

<sup>366</sup> NYSDEC & NYSEDA, New York State's Disadvantaged Communities Criteria, available at: [https://climate.ny.gov/-/media/Project/Climate/Files/Disadvantaged-Communities-Criteria/LMI-daccriteria-fs-1-v3\\_acc.pdf](https://climate.ny.gov/-/media/Project/Climate/Files/Disadvantaged-Communities-Criteria/LMI-daccriteria-fs-1-v3_acc.pdf).

Figure 3-19. NYSDEC-Defined Potential Environmental Justice Areas in New York State<sup>367</sup>

<sup>367</sup> NYSDEC, Potential Environmental Justice Area PEJA Communities, available at: <https://data.gis.ny.gov/datasets/nysdec::potential-environmental-justice-area-peja-communities/about>

Figure 3-20. Disadvantaged Communities in New York State<sup>368</sup>

<sup>368</sup> New York Department of State, NYS Disadvantaged Communities, available at: <https://new-york-opd-geographic-information-gateway-nysdos.hub.arcgis.com/datasets/NYSDOS::nys-disadvantaged-communities-dac/about>.

**Table 3-9. Percentage of Census Tracts Designated a Disadvantaged Community<sup>369</sup>**

| Geography      | Percent of Tracts Identified as a Disadvantaged Community |
|----------------|-----------------------------------------------------------|
| Wayne          | 38%                                                       |
| Oswego         | 33%                                                       |
| New York State | 35%                                                       |

Thirty-five percent of the benefits from the State’s CLCPA investments must be directed to Disadvantaged Communities. State agencies must also consider impacts on Disadvantaged Communities in their decision-making. Disadvantaged Community indicators address environmental burden and population characteristics and health vulnerabilities. Environmental burdens are shared between land use and proximity to facilities associated with historical discrimination or disinvestment, climate change risks, and potential pollution exposures. Historical discrimination and disinvestments metrics measure individuals’ proximity to sites and facilities known for their environmental harm, such as landfills, energy plants, waste combustors, and extractive industries. Climate change risks are based on exposure to extreme heat, coastal and inland flooding, and other risks, while pollution exposure measures include vehicle emissions, particulate matter, and wastewater discharge. Population characteristics and health vulnerabilities cover income, race and ethnicity, health outcomes and sensitivities, and housing mobility and communication.<sup>370</sup>

<sup>369</sup> NY Data, Final Disadvantaged Communities 2023 Map, available at: <https://data.ny.gov/en/Energy-Environment/Final-Disadvantaged-Communities-DAC-2023-Map/6mn4-5vvz>

<sup>370</sup> NYSDEC & NYSEDA, New York State’s Disadvantaged Communities Criteria, available at [https://climate.ny.gov/-/media/Project/Climate/Files/Disadvantaged-Communities-Criteria/LMI-daccriteria-fs-1-v3\\_acc.pdf](https://climate.ny.gov/-/media/Project/Climate/Files/Disadvantaged-Communities-Criteria/LMI-daccriteria-fs-1-v3_acc.pdf).

## CHAPTER 4 | Alternatives Considered

Consistent with 6 NYCRR § 617.9(b)(5)(v), this chapter evaluates and compares reasonable alternatives to the proposed action—implementation of ZEC 2.0 (see [Chapter 1](#)). To meet SEQRA requirements, this SGEIS adopts a bounding approach that defines a range of plausible outcomes following the expiration of the current ZEC program in March 2029.

At one bound, the “no action” or baseline scenario assumes that ZEC 1.0 expires in March 2029 and is not otherwise renewed or replaced. Without this support, the Upstate nuclear fleet retires, and approximately 27,000 GWh of annual zero-emissions generation is lost. At the other bound, the proposed action assumes that ZEC support continues through 2049, preserving the fleet’s zero-emissions generation.

These bounding cases provide a clear analytical framework:

- **“No Action”:** Retirement of FitzPatrick, Ginna, and Nine Mile Point, with two sub-alternatives that represent plausible replacement pathways:
  - Alternative 1: Fossil fuels replace 100 percent of lost nuclear generation.
  - Alternative 2: Fossil fuels replace part of lost nuclear generation, supplemented by renewables, imports, and demand-side resources.
- **Proposed Action (ZEC 2.0):** Continued operation of FitzPatrick, Ginna, and Nine Mile Point through 2049.

Together, these alternatives capture the full spectrum of foreseeable environmental outcomes. Any intermediate case – such as closure of only one nuclear facility or replacement by a mixed portfolio – would fall between these bounds and is therefore encompassed within the analysis. [Chapter 5](#) presents the comparative impacts of the proposed action versus the “no action” alternatives.

### 4.1 “No Action” or Baseline Scenario

The “no action” scenario describes conditions in the absence of ZEC 2.0. This baseline provides the point of reference for assessing the environmental, economic, and social impacts of the proposed action.

As discussed in [Section 1.2.1](#) and the ZEC 2.0 White Paper, there is an ongoing need to provide the Upstate nuclear facilities with revenue certainty beyond the expiry of ZEC 1.0 in March of 2029. Available evidence indicates that the FitzPatrick, Ginna, and Nine Mile Point plants will no longer be financially viable without ZEC payments.<sup>371</sup> Without sufficient revenues to cover fixed and operating costs, Constellation – the fleet owner – would likely retire the plants. This decision could occur before March 2029, particularly without policy certainty regarding the program extension. Notably, before ZEC 1.0 ends, Constellation must decide whether to renew NRC licenses for Nine Mile Point Unit 1 and Ginna by August 2026 and September 2026, respectively.<sup>372</sup>

While the exact timing of shutdowns depends on market and operational considerations, this SGEIS evaluates the “no action” scenario across 2029-2049, the same analysis period proposed for ZEC 2.0. Specifically, the

<sup>371</sup> See ZEC 2.0 White Paper, p. 9.

<sup>372</sup> 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. 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 (May 9, 2024), available at: <https://www.nrc.gov/docs/ML2413/ML24130A126.pdf>.

baseline assumes that by March 2029 – when ZEC 1.0 expires – nuclear energy will no longer contribute to energy generation in New York State.

New York’s Draft 2025 State Energy Plan (SEP), discussed further in [Section 4.1.2](#), applies a similar assumption in its Pathways Analysis: “*Without any policy support for low-carbon energy, it is assumed that all nuclear facilities retire at the end of their 60-year licenses, which expire between 2029 and 2046.*”<sup>373</sup> As discussed in [Chapter 2](#), closure of the Upstate nuclear facilities would result in a loss of approximately 27,000 GWh of zero-emissions electricity annually.<sup>374</sup>

The following sections examine plausible replacement sources for this lost generation under the “no action” scenario. Given current market and infrastructure constraints, this SGEIS does not evaluate a scenario in which renewable sources replace 100 percent of lost nuclear capacity, and its associated firm output and electric service reliability characteristics, for the 2029-2049 time period. In recent reports, even while assuming that the State preserves the Upstate nuclear capacity, NYISO has emphasized the unprecedented scale and pace at which renewable generation capacity will need to increase to meet the State’s Zero by 40 target while ensuring system reliability.<sup>375,376,377</sup> The 2025 Draft SEP likewise cautions that “[t]here is uncertainty as to whether the continuous growth in clean energy supply resources will meet growing demand” given broader economic headwinds and the need for new firm technologies.<sup>378</sup>

Instead, the analysis focuses on two sub-alternatives that establish the range of plausible replacement pathways. In addition, potential nuclear site decommissioning activities, if initiated during the 2029-2049 period, could significantly alter the plant sites and lead to distinct environmental impacts, which are evaluated in [Chapter 5](#).

#### 4.1.1 Alternative 1: Fossil Fuels Replace 100% of Lost Nuclear Power Generation

Under Alternative 1, fossil fuel generation – primarily natural gas, with smaller contributions from oil and dual-fuel units – would replace the 27,000 GWh/year of lost nuclear generation.

##### Emissions from fossil fuel-related electricity generation

This scenario represents the upper bound of emissions impacts in this SGEIS. With ZEC 2.0, the nuclear fleet continues operating and producing net-zero emissions electricity. Without it, fossil fuel replacement leads to increases in carbon dioxide (CO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), sulfur dioxide (SO<sub>2</sub>), and particulate matter (PM).

Nuclear reactors have among the lowest lifecycle GHG emissions of any generation technology when accounting for both capital and operating phases.<sup>379</sup> Fossil generation, by contrast, directly emits CO<sub>2</sub> and other harmful air pollutants during operation. Modeling by The Brattle Group in 2015 projected that the absence of

<sup>373</sup> Draft New York State Energy Plan, Chapter 16 Pathways Analysis, (July 2025), p. 17, available at: <https://energyplan.ny.gov/Plans/Draft-2025-Energy-Plan>.

<sup>374</sup> In 2024, FitzPatrick generated 6,790 GWh of electricity, Nine Mile Point generated 15,484 GWh (Unit 1 generated 5,252 GWh and Unit 2 generated 10,233 GWh), and Ginna generated 4,799 GWh, totaling 27,073 GWh.

<sup>375</sup> See Power Trends 2025, p. 14. “Simply put, as New York seeks to retire more fossil fuel units in the coming years it will be essential to deploy new energy resources with the same reliability attributes to maintain grid reliability. Until new, non-emitting alternatives like hydrogen or advanced nuclear generation are developed and commercialized, fossil resources are needed to fill an essential role in preserving reliable grid operations.”

<sup>376</sup> NYISO, 2023-2042 System & Resource Outlook, (issued July 2024), p. 42, available at: <https://www.nyiso.com/documents/20142/46037414/2023-2042-System-Resource-Outlook.pdf>.

<sup>377</sup> NYISO RNA, p. 10.

<sup>378</sup> Draft New York State Energy Plan, Volume I: Summary for Policymakers, (July 2025), p. 28, available at: <https://energyplan.ny.gov/Plans/Draft-2025-Energy-Plan>. “There is uncertainty as to whether the continuous growth in clean energy supply resources will meet growing demand given the federal policy context, broader economic headwinds, and the need for new clean firm technologies to become commercially available. As a result, the State and electricity system operators will continue to pursue careful coordination and planning to adapt as the energy system evolves.”

<sup>379</sup> Ng, J. H. C., Vyawahare, P., Benavides, P. T., Gan, Y., Sun, P., Boardman, R., ... & Elgowainy, A. (2025). Life-cycle greenhouse gas emissions associated with nuclear power generation in the United States. *Journal of Industrial Ecology*, 29(3), 719-732, available at: <https://onlinelibrary.wiley.com/doi/full/10.1111/jiec.70008>.

generation from the Upstate nuclear plants would increase emissions by nearly 16 million tons of CO<sub>2</sub> annually, along with 13,000 tons of NO<sub>x</sub>, 3,000 tons of SO<sub>2</sub>, and 2,000 tons of PM (1,000 tons of PM<sub>2.5</sub> and 1,000 tons of PM<sub>10</sub>).<sup>380</sup> Similarly, in the 2016 CES Order, the Commission noted that retaining the Upstate fleet's zero-emissions attributes would avoid approximately 15 million tons of carbon emissions annually.<sup>381</sup>

Estimating future emissions is uncertain, as efficiency gains at newer natural gas plants may partially offset the emissions-inducing impacts of increased demand for electricity and higher load.

#### Example: Indian Point Nuclear Facility closure impacts on electricity generation

The closure of the Indian Point nuclear facility illustrates the likelihood and potential impacts of a scenario in which fossil fuels replace 100 percent of lost nuclear generation. Data from EIA show that fossil fuel-based generation in New York increased by approximately 12,700 GWh between 2019 (the last full year Indian Point Units 2 and 3 were operational) and 2022 (the first year without either reactor). Statewide electric-sector GHG emissions rose by 26 percent, from 22.12 to 27.79 million metric tons of carbon dioxide equivalents (CO<sub>2</sub>e).<sup>382</sup> Two new large natural gas plants – Cricket Valley Energy Center and Competitive Power Ventures (CPV) Valley Energy Center – offset the loss of nuclear capacity and helped maintain grid reliability.<sup>383</sup> **Figure 4-1** shows the relationship between natural gas and nuclear generation from 2017 to 2023.

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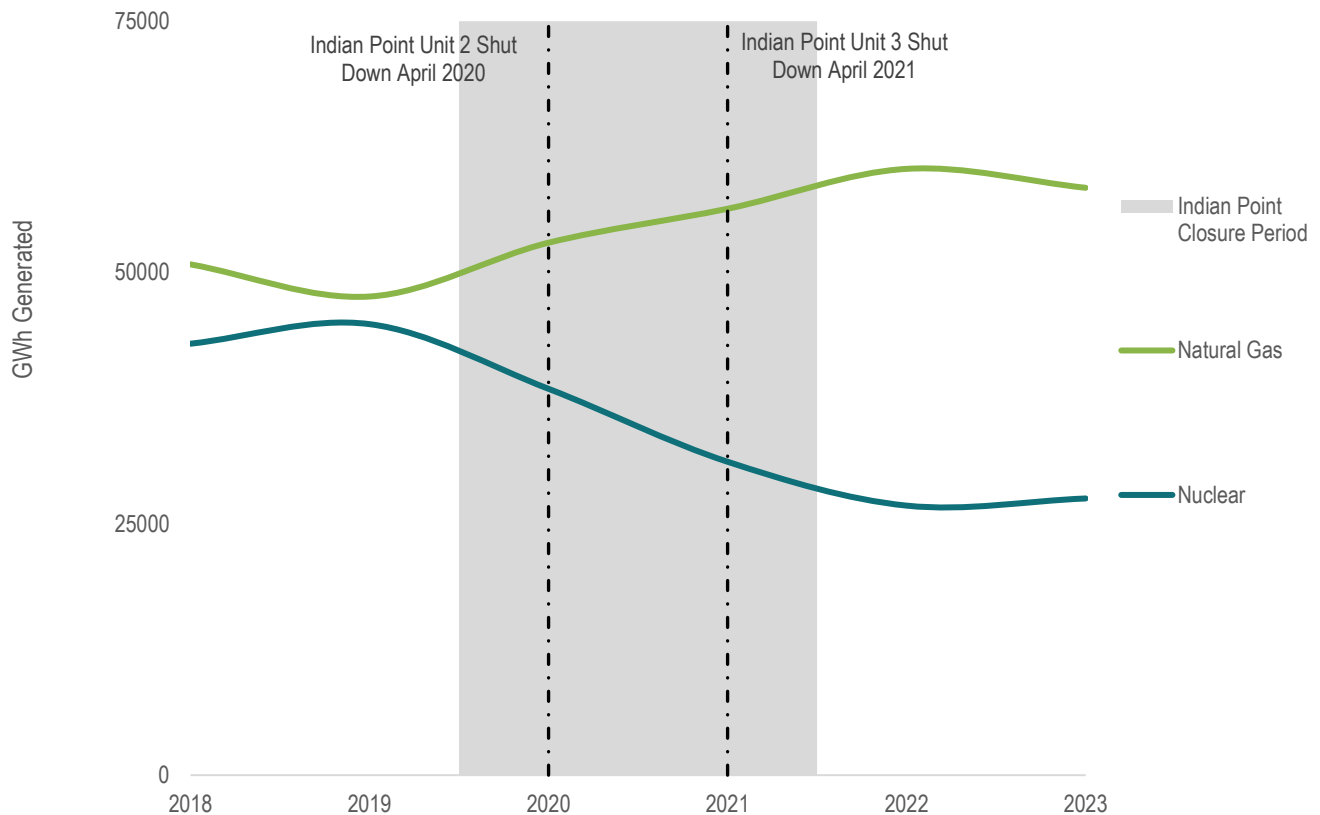
<sup>380</sup> Brattle Report, p. 11.

<sup>381</sup> CES Order, p. 19.

<sup>382</sup> New York State Department of Environmental Conservation (NYSDEC), 2024 NYS Greenhouse Gas Emissions Report: Sectoral Report #1 (issued December 2024), p. 5, available at: <https://dec.ny.gov/sites/default/files/2024-12/sr1energynysghgemissionsreport.pdf>.

<sup>383</sup> 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](https://www.nyiso.com/documents/20142/1396324/Indian_Point_Generator_Deactivation_Assessment_2017-1213.pdf/f673a0f8-5620-1d7b-4be2-99aaf781ac5c).

**Figure 4-1. Statewide Electricity (GWh) Generated During the Indian Point Nuclear Facility Closures<sup>384</sup>**



#### 4.1.2 Alternative 2: Fossil Fuels Replace Part of Lost Nuclear Power Generation

Under Alternative 2, fossil fuels would only partially replace lost generation from the Upstate nuclear facilities. Renewable energy resources, imports, energy efficiency improvements, and demand-side management would fill the remaining generation gap. This alternative assumes that State policies (e.g., CLCPA, State Energy Plans, CES) and market trends may accelerate clean energy adoption, but not at a pace sufficient to fully replace retired nuclear capacity while maintaining grid reliability – particularly if all Upstate plants retire by March 2029. The introduction to [Section 4.1](#) explained the basis for this assumption in the context of this SGEIS’s bounding approach. Renewable generation facilities take time to build and to connect to the grid. It is unclear if storage technologies are sufficiently advanced to facilitate baseload electricity generation. The forecasted growth in electricity demand, discussed in [Chapter 2](#), presents an additional challenge in maintaining grid reliability and meeting CLCPA goals. For example, NYISO’s 2023–2042 System & Resource Outlook projects that even with nuclear plants online, meeting CLCPA targets requires tripling statewide capacity and deploying at least 20 GW of new dispatchable emissions-free resources by 2040.<sup>385</sup>

<sup>384</sup> 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. EIS data for NY is available at: <https://www.eia.gov/electricity/data/browser/#/topic/0?agg=2,0,1&fuel=vvp&geo=0002&sc=g&freq=A&start=2001&end=2024&ctype=linechart&ltype=pin&rtype=s&pin=frse=0&maptype=0>.

<sup>385</sup> NYISO, 2023–2042 System & Resource Outlook, (July 2024), available at: <https://www.nyiso.com/documents/20142/46037414/2023-2042-System-Resource-Outlook.pdf>.

### Land Use Intensity of Energy

Replacing nuclear energy with renewable resources raises land-use considerations. Nuclear is the most efficient source of electricity in terms of LUIE, which measures the amount of land needed to produce one terawatt-hour of electricity per year.<sup>386</sup> For nuclear, most land impacts stem from the plant footprint, with indirect uranium mining accounting for roughly ten percent. By contrast, expanding wind and solar development requires substantial new land area, creating tradeoffs with agriculture and other land-based industries.<sup>387</sup>

### Draft SEP Analysis

The Draft 2025 SEP Pathways Analysis evaluated a series of scenarios to explore how the State could meet its energy and climate goals under different policy and technology assumptions. These pathways are not directly comparable to the bounding alternatives in this SGEIS, which present outcomes with and without ZEC 2.0. Nevertheless, the SEP provides useful context for understanding how nuclear retirements affect emissions and reliability statewide.

Two SEP scenarios are particularly relevant:

- **“No Action”:** Excluding CLCPA policies and assuming no license extensions for Upstate nuclear units, nuclear capacity declines by 1,201 MW in 2030 and 2,033 MW in 2040. This requires fossil generation through at least 2040 to meet demand, yielding increases in CO<sub>2</sub>, NO<sub>x</sub>, SO<sub>2</sub>, and PM emissions that undermine progress toward the 2040 zero-emissions electricity mandate.<sup>388</sup>
- **“Current Policies”:** Assuming implementation of enacted State and local policies, including the CLCPA, the Upstate nuclear facilities remain in operation. Under this case, the State meets the “Zero by 40” mandate, fossil fuel generation gradually decreases, nuclear provides a reliable baseload support, and emissions fall relative to the “No Action” pathway.<sup>389</sup>

## 4.2 Reasonable Policy Alternatives

Consistent with 6 NYCRR § 617.9(b)(5)(v), this SGEIS considers reasonable alternatives to the proposed action that are feasible given DPS’s objectives, responsibilities, and capabilities. The bounding approach adopted in this SGEIS defines two bounding alternatives: (1) the “no action” alternative, under which the Upstate nuclear fleet retires following expiration of ZEC 1.0 in March 2029; and (2) the proposed action, under which ZEC support continues through 2049, preserving the fleet’s zero-emissions generation.

Within this framework, reasonable policy alternatives primarily involve variations in the design or continuation of ZEC 2.0. The Commission has directed DPS Staff to evaluate how a continued ZEC program should be structured. In the ZEC 2.0 White Paper, DPS Staff proposed an option to modify or eliminate ZEC payments if facilities remain financially viable for other reasons:

*“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 program, and the Commission in its sole discretion is satisfied that the zero-emissions attributes are no*

<sup>386</sup> 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, available at: <https://doi.org/10.1371/journal.pone.0270155>.

<sup>387</sup> For additional information, see the ZEC 2.0 White Paper, pp. 22-23.

<sup>388</sup> Pathways Analysis, pp. 17-19, 32.

<sup>389</sup> Pathways Analysis, pp. 19-21, 32.

*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.”<sup>390</sup>*

Any such modifications would still fall within the bounding framework:

- If ZEC 2.0 support were reduced or eliminated prematurely, the outcome would converge toward the “no action” scenario (retirement of the fleet).
- If one or more facilities retired early, the resulting environmental outcomes would fall between Alternative 1 in the “no action” scenario (100 percent full fossil fuel replacement) and the proposed action.

Thus, while intermediate outcomes are possible, they are analytically encompassed within the bounding alternatives evaluated in this SGEIS. This ensures that the full spectrum of reasonably foreseeable impacts – from complete fleet retirement to full fleet preservation – is addressed in this SGEIS.

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<sup>390</sup> ZEC 2.0 White Paper, pp. 25-26.

## CHAPTER 5 | Environmental Impacts of Proposed Action

Consistent with 6 NYCRR § 617.10(a), State and local agencies are required to assess the potential of their actions to change the use, appearance, or condition of the environment. Specifically, this chapter evaluates the impacts that could arise from implementation of ZEC 2.0, compared to the “no action” alternatives described in [Chapter 4](#). This SGEIS assesses the potential to directly or indirectly change other aspects of the environment. Such changes include those that may not be the primary goal of the proposed action but, nonetheless, could result in significant and/or adverse impacts on the environment.

[Chapter 5](#) focuses on two types of effects: direct and indirect. In promulgating regulations under NEPA at 40 CFR §1508.1, the Council on Environmental Quality defined direct effects as those occurring at the same time and in the same place as the proposed action itself, and indirect effects as those occurring later in time and farther away, but which are still reasonably foreseeable.<sup>391</sup>

This chapter incorporates by reference the evaluation of environmental impacts in previous analyses relevant to the Upstate nuclear facilities, namely:

- [Chapter 5](#) of the 2016 SEIS (one of the Prior SEQRA Analyses introduced in [Chapter 1](#)).
- GEISs of the Upstate nuclear facilities that the NRC published as supplements to the Generic Environmental Impact Statement for License Renewal of Nuclear Plants: Main Report (NUREG-1437, Volume 1).<sup>392</sup> Note that the facilities will prepare new environmental impact statements as part of their upcoming license renewals.
- The NRC updated Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Final Report, NUREG-1437, Volume 1, Revision 2, issued August 2024 (NRC License Renewal GEIS).<sup>393</sup>

[Chapter 5](#) contains four sections:

- [Section 5.1](#) describes the framework for evaluating the environmental impacts of ZEC 2.0 and the two alternatives within the “no action” scenario;
- [Section 5.2](#) details the analysis of the direct environmental impacts of ZEC 2.0 and alternatives;
- [Section 5.3](#) details the analysis of the indirect (secondary) impacts of the proposed action; and
- [Section 5.4](#) considers the potential cumulative impacts of the proposed action when added to other past, present, and reasonably foreseeable future actions.

### 5.1 Framework for Evaluating the Environmental Impacts

This chapter considers environmental impacts of the proposed action (ZEC 2.0) and two alternatives within the “no action” scenario. In Alternative 1, fossil fuels replace 100 percent of lost nuclear generation. In Alternative

<sup>391</sup> The Council on Environmental Quality withdrew these regulations earlier this year, but these definitions are nevertheless helpful for framing this analysis.

<sup>392</sup> The main GEIS and Supplements are available at: <https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1437/index.html>. See Supplement 14 Regarding R.E. Ginna Nuclear Power Plant, Supplement 31 Regarding James A. FitzPatrick Nuclear Power Plant, and Supplement 24 Regarding Nine Mile Point Nuclear Station, Units 1 and 2. Hereafter, this SGEIS refers to the site-specific analyses as the Ginna SGEIS, FitzPatrick SGEIS, and Nine Mile Point SGEIS.

<sup>393</sup> NRC, Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Final Report, NUREG-1437, Volume 1, Revision 2, available at: <https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1437/r2/index.html>.

2, fossil fuels replace part of lost nuclear generation, supplemented by renewables, imports, and demand-side resources. Consistent with DPS's proposed timeframe for ZEC 2.0, this analysis considers impacts over the 2029-2049 period. The NRC License Renewal GEIS also evaluates impacts of continued nuclear operations over a 20-year period.

Relative to the “no action” scenario alternatives, this SGEIS evaluates the impacts that may result if the Upstate nuclear facilities continue operating under ZEC 2.0. Specifically, [Chapter 5](#) analyzes the potential impacts of routine operation, maintenance, and refurbishment activities at the FitzPatrick, Ginna, and Nine Mile Point facilities. ZEC 2.0 is not expected to result in additional significant adverse environmental impacts at the nuclear plant sites beyond those already resulting from current operations (under ZEC 1.0).

This chapter also analyzes the range of possible environmental effects of constructing, operating, and maintaining various replacement energy alternatives to nuclear power (e.g., natural gas plants, wind and solar farms, and other renewable facilities) as would be expected under the “no action” scenario alternatives. Note that potential nuclear site decommissioning activities, if initiated during the 2029-2049 period, could significantly alter the plant sites and lead to distinct environmental impacts. The NRC's GEIS on Decommissioning of Nuclear Facilities evaluates these impacts in detail.<sup>394</sup> This SGEIS does not otherwise consider decommissioning impacts because those impacts will occur under any scenario. ZEC 2.0 would only potentially affect the timing of those impacts. Given the decommissioning process would not be completed during the 2029-2049 period, this SGEIS assumes that replacement generating facilities would need to be constructed at alternate sites to the existing Upstate nuclear facilities.

## 5.2 Direct Effects

[Section 5.2](#) describes the direct environmental impacts associated with ZEC 2.0 and the “no action” alternatives. Normal operating activities at nuclear power plants that may produce environmental impacts include (1) reactor operations; (2) surveillance, monitoring, and maintenance activities; (3) waste management; (4) refueling and other outages; (5) activities needed to support facility infrastructure requirements as part of routine operations and maintenance; and (6) any refurbishment activities needed to replace and/or repair critical portions of reactor systems. The NRC most recently evaluated a comprehensive set of impacts resulting from these activities in the NRC License Renewal GEIS. This analysis considered the renewal of all nuclear power plant operating licenses in the U.S., including the Upstate nuclear facilities. The NRC established three significance levels to classify environmental impacts.

- **SMALL:** Environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource. Radiological impacts that do not exceed permissible levels in NRC regulations are considered SMALL.
- **MODERATE:** Environmental effects are sufficient to alter noticeably, but not to destabilize, important attributes of the resource.
- **LARGE:** Environmental effects are clearly noticeable and are sufficient to destabilize important attributes of the resource.<sup>395</sup>

**Table 5-1** summarizes the results of the NRC License Renewal GEIS.

<sup>394</sup> NRC, Final Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities, NUREG-0586, Supplement 1, Volumes 1 and 2, available at: <https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr0586/index.html>.

<sup>395</sup> *Ibid*, p. 1-6.

**Table 5-1. Summary Impacts of Nuclear Facility Operations<sup>396</sup>**

| Affected Environment                      | Findings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Impact Significance |
|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| Physiography, geology, and soil           | <ul style="list-style-type: none"> <li>Continued operation of nuclear facilities could result in soil disturbance, including sediment and/or any associated bedrock</li> </ul>                                                                                                                                                                                                                                                                                                                                                                               | SMALL               |
| Land use                                  | <ul style="list-style-type: none"> <li>Changes in onsite land use from continued nuclear operations and refurbishment would be small relative to the nuclear power plant site and would involve only land that the licensee controls</li> <li>No changes to offsite land use</li> <li>Use of transmission line rights-of-way from continued operations and refurbishment would continue with no change in land use restrictions</li> </ul>                                                                                                                   | SMALL               |
| Water resources                           | <ul style="list-style-type: none"> <li>Continued operation of nuclear facilities would not generate new impacts to surface water use and quality or create surface water use conflicts</li> <li>Effects on salinity gradients, temperature effects on sediment transport, altered thermal stratification of lakes, scouring from discharged cooling water, eutrophication, discharge of biocides, discharge of chemical contaminants (e.g., metals), and discharge of sanitary waste would continue</li> <li>No to minimal impacts to groundwater</li> </ul> | SMALL               |
| Climate change and air quality            | <ul style="list-style-type: none"> <li>Continued operation of nuclear facilities would generate only minor emissions from ancillary equipment, such as emergency diesel generators, auxiliary boilers, and fire pump engines</li> <li>GHGs from construction vehicles and other motorized equipment for refurbishment activities would be intermittent and temporary</li> <li>Air quality impacts associated with emergency diesel generators, fire pumps, boilers used for space heating, and cooling tower particulate emissions are minor</li> </ul>      | SMALL               |
| Plant and animal species and biodiversity | <ul style="list-style-type: none"> <li>Continued operation of nuclear facilities would not result in significant impacts to threatened or endangered species</li> <li>Minimal risk to wildlife, forest resources, and critical environmental areas beyond existing impacts</li> </ul>                                                                                                                                                                                                                                                                        | SMALL - MODERATE    |
| Aesthetic and visual resources            | <ul style="list-style-type: none"> <li>Continued operation of nuclear facilities would not change the visual appearance of plant's structures or transmission lines connecting to the facilities</li> </ul>                                                                                                                                                                                                                                                                                                                                                  | SMALL               |
| Cultural and historic resources           | <ul style="list-style-type: none"> <li>Impacts from continued operation of nuclear facilities are site-specific</li> <li>Site-specific environmental analyses for the Upstate nuclear facilities did not identify significant impacts</li> </ul>                                                                                                                                                                                                                                                                                                             | SMALL               |
| Waste management                          | <ul style="list-style-type: none"> <li>Continued operation of nuclear facilities would continue the use of nuclear fuel, production of nuclear waste, and the transport of fuel and waste to and from the facilities.</li> </ul>                                                                                                                                                                                                                                                                                                                             | SMALL               |

<sup>396</sup> Findings and impact significance based on the 2024 NRC License Renewal GEIS and site-specific SGEISs for the Upstate nuclear facilities.

| Affected Environment  | Findings                                                                                                                                                                                                                                                                                                                                | Impact Significance |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
|                       | However, the level of these impacts is not likely to exceed the ranges analyzed by the NRC                                                                                                                                                                                                                                              |                     |
| Public health         | <ul style="list-style-type: none"> <li>Continued operation of nuclear facilities would not generate new impacts to public health</li> <li>Occupational doses from continued operations and refurbishment would continue to be well below regulatory limits</li> <li>Radiation exposure and chemical hazard risks are minimal</li> </ul> | SMALL               |
| Community character   | <ul style="list-style-type: none"> <li>The NRC did not explicitly evaluate “community character” as its own resource area; impacts to resources that define character (e.g., land use, aesthetic, cultural and visual resources, socioeconomics) would be minimal</li> </ul>                                                            | SMALL               |
| Transportation        | <ul style="list-style-type: none"> <li>Continued operations and refurbishment associated with nuclear plant license renewal would not significantly change traffic volumes or patterns</li> </ul>                                                                                                                                       | SMALL               |
| Socioeconomics        | <ul style="list-style-type: none"> <li>Continued operation of nuclear facilities would not materially impact employment and income, recreation, tourism, tax revenue, community services and education, or population and housing</li> </ul>                                                                                            | SMALL               |
| Environmental justice | <ul style="list-style-type: none"> <li>Impacts from continued operation of nuclear facilities are site-specific</li> <li>Site-specific environmental analyses for the Upstate nuclear facilities did not identify significant impacts</li> <li>See <a href="#">Chapter 9</a> of this SGEIS for additional discussion</li> </ul>         | SMALL               |

Note: The NRC License Renewal GEIS did not classify, organize and evaluate the same resource areas as this SGEIS. The table notes such differences.

The nuclear plant-specific supplemental GEISs for the Upstate nuclear facilities also concluded that, combined with the mitigation measures discussed in [Chapter 6](#), the environmental impacts of continued nuclear plant operations are SMALL. Specifically, the GEISs identified SMALL impacts for the following resource areas:<sup>397</sup>

- Land use
- Ecology (including Threatened or Endangered species)
- Water use and quality - surface water
- Water use and quality – groundwater
- Air quality
- Waste
- Human health
- Socioeconomics
- Aesthetics
- Historic and archeological resources
- Environmental justice

The remainder of [Section 5.2](#) provides additional detail on the impacts to each resource area described in [Chapter 3](#). Each section describes potential environmental impacts to the State’s resources and identifies their

<sup>397</sup> NRC Supplement 14 Regarding R.E. Ginna Nuclear Power Plant. Supplement 31 Regarding James A. FitzPatrick Nuclear Power Plant, and Supplement 24 Regarding Nine Mile Point Nuclear Station, Units 1 and 2.

significance (i.e., SMALL, MODERATE, LARGE) for ZEC 2.0, Alternative 1, and Alternative 2. **Table 5-2** summarizes the results of this comparative analysis.

**Table 5-2. Significance of Impacts under ZEC 2.0 and “No Action” Alternatives**

| Affected Environment                      | ZEC 2.0         | Alternative 1  | Alternative 2  |
|-------------------------------------------|-----------------|----------------|----------------|
| Physiography, geology, and soil           | SMALL           | SMALL-MODERATE | SMALL-MODERATE |
| Land use                                  | SMALL           | MODERATE       | MODERATE-LARGE |
| Water resources                           | SMALL           | MODERATE       | SMALL-MODERATE |
| Climate Change and air quality            | SMALL           | LARGE          | MODERATE       |
| Plant and animal species and biodiversity | SMALL- MODERATE | MODERATE-LARGE | MODERATE-LARGE |
| Aesthetic and visual resources            | SMALL           | MODERATE-LARGE | MODERATE-LARGE |
| Cultural and historic resources           | SMALL           | SMALL-MODERATE | SMALL-MODERATE |
| Waste management                          | SMALL           | SMALL          | SMALL          |
| Public health                             | SMALL           | LARGE          | MODERATE       |
| Community character                       | SMALL           | MODERATE-LARGE | MODERATE-LARGE |
| Transportation                            | SMALL           | MODERATE-LARGE | SMALL-MODERATE |
| Socioeconomics                            | SMALL           | LARGE          | SMALL-MODERATE |
| Environmental justice                     | SMALL           | LARGE          | SMALL-MODERATE |

### 5.2.1 Physiography, Geology, and Soil

Direct impacts on physiography, geology, and soil for ZEC 2.0 and no action alternatives include:

#### ZEC 2.0

Continued operation of the Upstate nuclear facilities may result in soil disturbance, including sediment and/or any associated bedrock, for projects such as replacing or adding buildings, roads, parking lots, and belowground and aboveground utility structures. However, the NRC has not identified significant impacts related to geology or soil in any plant-specific environmental review.<sup>398</sup>

The Upstate nuclear facilities have operated since the 1960s and 1970s. The physiographic, geologic, and soil conditions near the facilities are well established and not expected to change as a result of continued operations during the ZEC 2.0 period (2029-2049).<sup>399</sup> Expected impacts are SMALL.

#### Alternative 1

In the absence of ZEC 2.0, the impacts on geology and soil of constructing new fossil fuel generation facilities would vary depending on project location and the land area required. Clearing and grading activities increase the risk of soil erosion and loss. Land clearing during construction and the installation of power plant structures and associated roads, parking lots, and buildings would alter surface drainage. In addition, construction of new transmission lines to connect generation facilities to the electric grid would produce similar adverse impacts. Long-term soil impacts would result from clearing and grading for permanent access/maintenance roads,

<sup>398</sup> NRC License Renewal GEIS, p. 4-15.

<sup>399</sup> However, climate change may alter the natural variability of physiography, geology, and soils.

transmission structures, transition stations, and converter stations. These activities could result in soil compaction and erosion.

Impacts on physiology, geology, and soil from operating and maintaining a fossil fuel generation facility would relate to extraction of fossil fuels, which would occur in areas away from the Upstate nuclear facilities.<sup>400</sup>

The expected direct impacts of Alternative 1 are SMALL to MODERATE.

## Alternative 2

Construction impacts on physiology, geology, and soil would be similar to the impacts associated with Alternative 1. Alternative 2 incorporates additional renewable energy sources (and not just fossil fuels). Regarding operations, some renewable energy facilities require large land areas such as solar and wind. Vegetation maintenance during operations would increase the potential for soil erosion and loss by wind and precipitation runoff.<sup>401</sup> Hydroelectric resources can change river flows and sediment loads, potentially increasing channel erosion.<sup>402</sup> Other renewable energy facilities may generate similar impacts.

The expected impacts of Alternative 2 are SMALL to MODERATE.

### 5.2.2 Land Use

Direct impacts on land use for ZEC 2.0 and no action alternatives include:

#### ZEC 2.0

Operational activities at the Upstate nuclear facilities would continue without significant changes to onsite or offsite land use. Refurbishment activities, including steam generator and vessel head replacement, only alter onsite land use temporarily.<sup>403</sup> Though expansion or new construction of onsite storage facilities may be required to accommodate additional spent nuclear fuel and low-level nuclear waste, a nuclear facility's footprint is small relative to the energy it generates. In fact, nuclear energy has the lowest median LUIE of any generating technology at just 7.1 ha/TWh/y.<sup>404</sup>

In terms of offsite impacts, the NRC concludes that continued operation or refurbishment activities at nuclear plants had little to no direct effects on land use development trends in nearby communities.<sup>405</sup> Operational activities are similar to those already occurring at the nuclear plants and would not affect offsite land use beyond the status quo. For nuclear generation, the siting of the plant itself accounts for the majority of land use impacts, while indirect land use from uranium mining accounts for about 10 percent of the total LUIE.<sup>406</sup> U.S. nuclear plants import 99 percent of their uranium needs, primarily from Canada, Australia, Russia, Kazakhstan, and Uzbekistan.<sup>407</sup>

<sup>400</sup> NRC License Renewal GEIS, Appendix D, p. D-26.

<sup>401</sup> NRC License Renewal GEIS, Appendix D, p. D-27.

<sup>402</sup> Draft New York State Energy Plan, Chapter 20, p. 11.

<sup>403</sup> NRC License Renewal GEIS, p. 4-5.

<sup>404</sup> Lovering, J., Swain, M., Blomqvist, L., & Hernandez, R. R. (2022). Land-use intensity of electricity production and tomorrow's energy landscape. *PLoS One*, 17(7), e0270155. Available at: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0270155>.

<sup>405</sup> NRC License Renewal GEIS, p. 4-6.

<sup>406</sup> ZEC 2.0 White Paper, p. 22.

<sup>407</sup> EIA, Nuclear explained: Where our uranium comes from, available at: <https://www.eia.gov/energyexplained/nuclear/where-our-uranium-comes-from.php/>. See also American Journal of Transportation, U.S. nuclear generators import nearly all the uranium concentrate they use, available at: <https://www.ajot.com/news/u.s-nuclear-generators-import-nearly-all-the-uranium-concentrate-they-use>.

Transmission line ROWs and associated land use impacts are unlikely to change with continued operation of the Upstate nuclear facilities. Transmission lines connecting to the Upstate nuclear plants limit, but do not preclude, land use in ROWs for other purposes such as agriculture and recreation.<sup>408</sup>

The expected impacts to land use of continued nuclear operations are SMALL.

### Alternative 1

Land use impacts would increase if fossil fuel plants replace 100 percent of lost nuclear generation. Construction would result in land clearing, excavation, and the installation of temporary facilities, such as material laydown areas and concrete batch plants. New construction may impact offsite land use, e.g., during the installation of new transmission lines and related infrastructure.

Including gas well pads, access roads, and pipelines, natural gas facilities have larger land use requirements than nuclear facilities. Natural gas plants have an average footprint LUIE of 410 ha/TWh/y compared to 7.1 ha/TWh/y for nuclear plants.<sup>409</sup> Considering spacing LUIE, i.e., the entire area necessary for energy production, natural gas LUIE (including all the area in between well pads, even if that land does not have any structures or roads covering it) increases to 1,900 ha/TWh/y.<sup>410</sup> Indirect land use, or the land needed for fossil-fuel extraction, comprises over 90 percent of total land use for natural gas generation.<sup>411</sup>

The NRC's SGEISs for the Upstate nuclear plants concluded that land use impacts from a natural gas-fired plant alternative were MODERATE if the facility was constructed at an alternate site.<sup>412</sup> Consistent with the NRC analysis, this SGEIS concludes that the expected impacts of Alternative 1 are MODERATE.

### Alternative 2

Like Alternative 1, replacing nuclear generation with alternative sources of energy (in addition to fossil fuels) under Alternative 2 would produce land use impacts. New York State requires utility scale renewable energy project applicants to develop plans to minimize potential agricultural and MSG 1-4 impacts, minimize forest impacts, and to consider strategies for dual use with agriculture.<sup>413,414</sup>

However, renewable generation sources like hydroelectric, solar, and wind are generally land intensive. For ground-mounted photovoltaic solar generation, the median LUIE is approximately 2,000 ha/TWh/y, more than 250 times the land use intensity of nuclear power.<sup>415</sup> Considering LUIE spacing, onshore wind turbine generation is even less efficient with 12,000 ha/TWh/y, though wind projects can be co-located with productive agricultural land, reducing its and their LUIE to 130 ha/TWh/y.<sup>416,417</sup> More broadly, co-location can reduce land

<sup>408</sup> NRC License Renewal GEIS, p. 4-6.

<sup>409</sup> Lovering, J., Swain, M., Blomqvist, L., & Hernandez, R. R. (2022). Land-use intensity of electricity production and tomorrow's energy landscape. *PLoS One*, 17(7), e0270155. Available at: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0270155>.

<sup>410</sup> Ibid.

<sup>411</sup> Ibid.

<sup>412</sup> See Section 8.2 of each SGIES.

<sup>413</sup> Draft New York State Energy Plan, Chapter 20, p. 15.

<sup>414</sup> Mineral Soil Groups (MSG) 1-4 classifications are defined and used by the NYS Department of Agriculture and Markets to classify the State's agricultural lands based upon soil productivity and capability. Each county in New York State has a listing of all soil types present in the county associated with a specific mineral soil group, MSG 1 through 10.

American Farmland Trust, Smart Solar Siting on Farmland: Achieving Climate Goals While Strengthening the Future for Farming in New York Appendix, available at: <https://s30428.pcdn.co/wp-content/uploads/2022/01/Solar-Mitigation-Framework-scenarios-White-Paper-appendix.pdf>.

<sup>415</sup> Lovering, J., Swain, M., Blomqvist, L., & Hernandez, R. R. (2022). Land-use intensity of electricity production and tomorrow's energy landscape. *PLoS One*, 17(7), e0270155. Available at: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0270155>.

<sup>416</sup> Ibid.

<sup>417</sup> Research indicates that agricultural communities are more likely to host solar projects in New York State. See Katkar, Venkatesh V., Sward, Jeffrey A., Worsley, Alex, and Zhang, Max K., 2021, Strategic land use analysis for solar energy development in New York State, *Renewable Energy*, Volume 173, p. 861-875, available at: <https://www.sciencedirect.com/science/article/abs/pii/S0960148121004900>.

use impacts by maximizing the productivity of land. For example, wind and solar farms can be co-located on spaces that support activities like boating, fishing, and energy storage facilities.<sup>418,419</sup>

Hydroelectric dams and reservoirs at a utility scale are land intensive. Dams serving as flood control could affect land use both upstream and downstream of the reservoir, extending land use impacts beyond the dam and reservoir footprint.<sup>420</sup>

New renewable generation would also require the construction of additional transmission infrastructure. Initial construction can cause forest fragmentation, siltation of streams, and destruction of wetland vegetation.<sup>421</sup> Once built, the right-of-way must be maintained. Vegetation must be cleared to prevent interference, and new infrastructure and access roads are sometimes required to adequately service transmission lines.

The expected impacts of Alternative 2 are MODERATE to LARGE.

### 5.2.3 Water Resources

The Upstate nuclear facilities are located on the coast of Lake Ontario, in its coastal area (as established by the State's Coastal Management Program). State agency actions must be consistent with the applicable State coastal policies set forth in 19 NYCRR 600.5. ZEC 2.0 will not impact coastal development, agricultural land, scenic quality, public access, recreation, and flooding and erosion hazards (see [Section 3.4.8](#)) beyond impacts already resulting from current operations (under ZEC 1.0). However, the continued operation of the Upstate nuclear facilities may impact water resources, fish and wildlife. This section evaluates impacts to surface water and groundwater resources. [Section 5.2.5](#) discusses impacts to aquatic plant and animal species. Taken together, and per 6 NYCRR § 617.9(b)(5)(vi), the findings of these two SGEIS sections indicate that the proposed action is consistent with applicable coastal policies set forth in 19 NYCRR 600.5.

Direct impacts on water resources (surface water and groundwater) for ZEC 2.0 and no action alternatives include:

#### ZEC 2.0

##### *Surface water*

The continued use of surface water for cooling at nuclear facilities poses the greatest risk of impacts to water resources.<sup>422</sup> As discussed in [Chapter 3](#), the Upstate nuclear facilities source water necessary for once-through and closed-loop cooling systems from Lake Ontario. The once-through systems of the Nine Mile Point Unit 1, Ginna, and FitzPatrick facilities draw water from Lake Ontario, allow the cooling operation to heat the water to the maximum level permissible under NYSDEC State Pollutant Discharge Elimination System permitting, and release it back into the lake. The closed-loop system of Nine Mile Point Unit 2 draws water from Lake Ontario and allows the cooling system to heat it to evaporation.

Non-cooling operating and refurbishment activities also require water use, including production of concrete, dust control, washing stations, facility and equipment cleaning, and soil compaction and excavation

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<sup>418</sup> NRC License Renewal GEIS, Appendix D, p. D-23.

<sup>419</sup> Draft New York State Energy Plan, Chapter 20, p. 15.

<sup>420</sup> NRC License Renewal GEIS, Appendix D, p. D-22.

<sup>421</sup> Ibid.

<sup>422</sup> NRC License Renewal GEIS, p. 4-16.

backfilling.<sup>423</sup> However, water consumption for these activities is insignificant compared to the water consumption required for cooling.

Continued operations would sustain water intake and discharge structures and consume large quantities of surface water from Lake Ontario. Effects on salinity gradients, temperature effects on sediment transport, altered thermal stratification of lakes, scouring from discharged cooling water, eutrophication, discharge of biocides, discharge of chemical contaminants (e.g., metals), and discharge of sanitary waste would continue.<sup>424</sup> These impacts exist currently and would not change as a result of continued operation of the Upstate nuclear facilities under ZEC 2.0.

### Groundwater

The Upstate nuclear facilities rely on Lake Ontario for cooling water and therefore have limited impacts on groundwater use and quality. The site-specific SGEISs for the Upstate nuclear facilities did not identify any potential impacts to groundwater, including contamination by radionuclides, groundwater use conflicts, and groundwater quality degradation.<sup>425</sup> The NRC evaluated groundwater use conflicts at Nine Mile Point in detail because the facility's groundwater withdrawal rate exceeded 100 GPM.<sup>426</sup> At the time (2007), the NRC's analysis concluded that the plant's dewatering activities would not impact offsite wells or nearby aquifers.<sup>427</sup> Since the publication of these SGEISs, the Upstate nuclear facilities have reported cases of groundwater leakage that posed minimal risk to the public. In September 2012, groundwater leakage at Nine Mile Point contained tritium concentrations that exceeded recommended guidelines the facility set in response to the Nuclear Energy Institute's groundwater protection initiative guidance document (2007).<sup>428, 429</sup> The FitzPatrick plant also detected tritium concentrations in groundwater that were below the plant's reporting criteria.<sup>430</sup>

Expected impacts to water resources are SMALL.

### Alternative 1

Construction of alternative generating facilities would have adverse impacts on both surface water and groundwater resources. Land clearing, excavation work, and installation of impervious surfaces could alter surface drainage patterns and groundwater recharge zones, depending on the facility's location. Surface water runoff could increase the amounts of dissolved/suspended solids and other contaminants. Leaks and spills (e.g., of petroleum or lubricant products) and stormwater runoff can adversely impact groundwater during construction.<sup>431</sup>

Construction of new transmission lines would result in additional impacts to water resources. During construction along transmission routes that cross water bodies, trenching would result in increased turbidity, potential downstream sedimentation, changes in water flow patterns, and increased likelihood of pollutants reaching waterbodies. If HDD is employed during installation of underwater cables, there is potential for leaks

<sup>423</sup> NRC License Renewal GEIS, p. 4-18.

<sup>424</sup> 2016 SEIS, p. 5-10.

<sup>425</sup> See Section 4.5 of each NRC SGIES (FitzPatrick, 2008; Ginna, 2004; Nine Mile Point, 2006).

<sup>426</sup> 10 CFR Part 51, Subpart A, Appendix B, Table B-1 establishes the thresholds that require additional analysis of impacts related to groundwater and other environmental resources. See <https://www.nrc.gov/reading-rm/doc-collections/cfr/part051/part051-appb.html>.

<sup>427</sup> Nine Mile Point SGEIS, pp. 4-41 - 4-42.

<sup>428</sup> NRC, Nine Mile Point Unit 1, Discovery of Tritium in Groundwater In-Leakage, 30-Day Report in Accordance with the Industry Ground Water Protection Initiative, September 12, 2012, available at: <https://www.nrc.gov/docs/ML1226/ML12268A049.pdf>.

<sup>429</sup> NRC, NINE MILE POINT NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT 05000220/2012005 AND 05000410/2012005, February 11, 2013, available at: <https://www.nrc.gov/docs/ML1304/ML13042A062.pdf>.

<sup>430</sup> NRC, Radioactive Effluent and Environmental Reports for James A. FitzPatrick, available at: <https://www2.nrc.gov/reactors/operating/ops-experience/tritium/plant-specific-reports/fitz>. See Attachment 7 of the 2009-2014 Radioactive Effluent Reports for details on the plant's groundwater monitoring program.

<sup>431</sup> NRC License Renewal GEIS, Appendix D, p. D-27.

of HDD fluid that could impact surface water quality. During operation, heat loss from underwater transmission lines could result in localized increases in water temperature in streams, lakes, and rivers.

In terms of operations, thermoelectric generating facilities, including those powered by fossil fuels, require a dependable and plentiful source of water for cooling. Like the Upstate nuclear facilities, fossil-fuel generation can use once-through or closed-loop cooling (e.g., cooling towers). Once-through cooling systems withdraw 10 to 100 times more water per unit of electric generation than closed-loop cooling systems as water is drawn in, heated, and released. Closed-loop cooling consumes at least twice as much water overall by heating water to evaporation.<sup>432</sup>

Both once-through and closed-loop cooling natural gas plants have lower water requirements than nuclear plants.<sup>433</sup> However, the inadvertent release of fossil fuel based pollutants can also impact water resources. For example, in 2022, the Oswego Harbor Power Plant released 500 to 750 gallons of fuel oil onto Lake Ontario after an underground fuel oil transfer pipeline failure.<sup>434</sup> The spill required a containment boom to halt the spread of oil in the lake and remove any visibly present contaminants while workers monitored groundwater and storm sewer discharge.<sup>435,436</sup>

Replacing nuclear generation with fossil fuels would likely reduce water consumption and withdrawal but could introduce new contaminants to water resources. Impacts would depend on the volume of water withdrawal, the constituents of the discharge water, the characteristics of surface water, and the new intake structures required.

The expected impacts of Alternative 1 are MODERATE.

## Alternative 2

Impacts of renewable technologies on water resources vary greatly based on technology. Photovoltaic solar and onshore wind generation require little water and produce minimal wastewater, with limited effects on land-based water resources.<sup>437</sup> Offshore wind facilities may cause localized impacts from accidental releases, sediment disturbance, construction structures, port activity, and land alterations, but these effects are generally minor.<sup>438</sup> Facilities must comply with regulations to prevent and control spills, and any accidental release would be localized and not exceed established water quality standards.<sup>439</sup>

Operating hydroelectric facilities could result in large impacts to water resources. Beyond altering natural water flow, hydroelectric dams can affect downstream water temperatures. Typically, water released from the top of the dam is warmer than pre-dam temperatures, while water released from the bottom of the dam is colder.<sup>440</sup> Water temperature in turn influences biological activity and growth, affects water chemistry, can influence water

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<sup>432</sup> NREL, A Review of Operational Water Consumption and Withdrawal Factors for Electricity Generating Technologies, available at: <https://docs.nrel.gov/docs/fy11osti/50900.pdf#:~:text=4%20Results%20Water%20Consumption%20and%20Withdrawal%20Factors,at%20each%20of%20those%20types%20of%20plants>.

<sup>433</sup> Ibid.

<sup>434</sup> Oswego County News Now, New reports unveil new details about oil spill at Oswego Harbor (October 13, 2022 Updated October 13, 2022), available at: [https://www.oswegocountynownow.com/news/new-reports-unveil-new-details-about-oil-spill-at-oswego-harbor/article\\_5c07564e-4b45-11ed-829e-83637ae60d1a.html](https://www.oswegocountynownow.com/news/new-reports-unveil-new-details-about-oil-spill-at-oswego-harbor/article_5c07564e-4b45-11ed-829e-83637ae60d1a.html).

<sup>435</sup> Ibid.

<sup>436</sup> CNYCentral, Oil spill cleanup continues in Oswego, available at: <https://cnycentral.com/news/local/oil-spill-cleanup-continues-in-oswego>.

<sup>437</sup> NRC License Renewal GEIS, Appendix D, p. D-30.

<sup>438</sup> Draft New York State Energy Plan, Chapter 20, p. 12.

<sup>439</sup> Ibid.

<sup>440</sup> NRC License Renewal GEIS, Appendix D, p. D-30.

quantity measurements, and determines the kinds of organisms that live in water bodies.<sup>441</sup> Dams also change sediment and deposition patterns, potentially degrading water quality and limiting drinking water sources.<sup>442,443</sup>

Including a mix of both fossil fuel and renewable generation as in Alternative 2 would reduce water consumption and withdrawals but may have other negative consequences. The expected impacts of Alternative 2 are SMALL to MODERATE.

#### 5.2.4 Climate Change and Air Quality

The climate and air quality impacts associated with nuclear power facilities are well established and discussed in both the original licensing and subsequent renewal documents. Direct impacts on climate change and air quality for ZEC 2.0 and no action alternatives include:

##### ZEC 2.0

Regarding emissions that impact air quality, normal operations at the Upstate nuclear facilities generate only minor emissions from ancillary equipment, including emergency diesel generators, auxiliary boilers, and fire pump engines. These combustion sources are tested intermittently, and their annual contributions to countywide emissions are typically less than 2 percent.<sup>444</sup> The Nine Mile Point Unit 2 cooling tower also produces small quantities of PM through “drift”, which is the leftover solid phase minerals dissolved in cooling influent water. Drift contributes to airborne PM once the suspended water droplets evaporate and diffuse in the atmosphere. NRC reviews have consistently found these cooling tower drift emissions to be minor and not a substantial contribution to regional air quality levels.<sup>445</sup> Typical maintenance activities (e.g. vessel head or control rod mechanism replacements) can cause short-term increases in vehicle exhaust and fugitive dust, but overall emissions remain well below EPA’s de minimis thresholds (100 tons per year for most pollutants, with lower limits in certain nonattainment areas).<sup>446</sup>

Related to global climate impacts, continued operation of the Upstate nuclear facilities would generate negligible GHG emissions during normal operations. Nuclear reactors themselves do not emit carbon dioxide during electricity generation. Small quantities of GHGs are associated with on-site support equipment, such as emergency diesel generators, auxiliary boilers, and maintenance vehicles, as well as indirect emissions from construction or maintenance activities (e.g., component replacement). The NRC has consistently concluded in plant-specific reviews that these emissions are minimal and do not contribute meaningfully to regional or global climate change.

The expected air quality and climate impacts of continued nuclear operations are SMALL.

##### Alternative 1

Under Alternative 1, replacing the lost nuclear generation with fossil fuel-fired facilities would result in significant adverse air quality impacts compared to ZEC 2.0 and Alternative 2. Construction of fossil plants and associated infrastructure (e.g., pipelines, transmission interconnections) would create temporary emissions from equipment exhaust, fugitive dust, and construction traffic.

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<sup>441</sup> USGS, Temperature and Water, available at: <https://www.usgs.gov/water-science-school/science/temperature-and-water>.

<sup>442</sup> NRC License Renewal GEIS, Appendix D, p. D-30.

<sup>443</sup> EPA, Climate Adaptation and Erosion & Sedimentation, available at: <https://www.epa.gov/arc-x/climate-adaptation-and-erosion-sedimentation>.

<sup>444</sup> NRC License Renewal GEIS, p. 4-9.

<sup>445</sup> Ibid.

<sup>446</sup> NRC License Renewal GEIS, p. 4-11.

NRC's past reviews of construction and maintenance projects at nuclear facilities show that while temporary emissions can sometimes approach the levels that trigger additional air quality review in areas with existing air pollution problems, they typically remain below federal significance thresholds when standard pollution-control practices are used.<sup>447</sup> However, substituting natural gas and other fossil units for over 27,000 GWh of lost nuclear generation would substantially increase direct emissions of CO<sub>2</sub>, NO<sub>x</sub>, SO<sub>2</sub>, volatile organic compounds (VOCs), and PM during the normal operating conditions of the new power generation facilities. These emissions would contribute to degraded air quality locally and regionally and would hinder attainment of State and federal NAAQS, especially in nonattainment or maintenance areas. Modeling by the Brattle Group (2015) estimated that fossil fuel replacement would lead to substantial increases in conventional air pollutant emissions, including more than 3,000 tons of SO<sub>2</sub>, over 13,000 tons of NO<sub>x</sub>, and particulate matter increases of roughly 18 percent for PM<sub>2.5</sub> and 16 percent for PM<sub>10</sub> across the NYISO region.<sup>448,449</sup>

With regard to global climate impacts, DPS estimated that the Upstate nuclear facilities have helped avoid over 13 million metric tons of CO<sub>2</sub> emissions each year from 2020 to 2024, equivalent to the yearly operation of 35 natural gas-fired power plants.<sup>450</sup> The closure of Indian Point illustrates how fossil fuel use and emissions increased following the retirement of the site's nuclear reactors (see [Chapter 4](#)).<sup>451</sup> CO<sub>2</sub> emissions would hinder attainment of CLCPA goals and contribute to climate change throughout the analysis period. The expected impacts of Alternative 1 are LARGE.

## Alternative 2

Although renewable energy resources would supply part of the lost generation, fossil units would likely still be needed for grid reliability in Alternative 2. Resulting emissions of CO<sub>2</sub>, NO<sub>x</sub>, SO<sub>2</sub>, and PM would be lower than those for Alternative 1 but higher than under ZEC 2.0. Developing large-scale wind and solar projects would produce construction emissions similar to other industrial projects, such as dust, equipment exhaust, and traffic emissions. These effects would be temporary and localized. Once operational, renewables produce no direct air pollutant emissions in generating electricity. Engine exhaust from worker vehicles and site inspection and maintenance activities can produce small amounts of GHG emissions.<sup>452</sup>

Similarly, because fossil fuels would only partially replace lost nuclear capacity, with renewable resources, imports, efficiency, and demand-side management filling the remainder, GHG emissions would not rise as steeply as under Alternative 1. However, GHG emissions would nevertheless still be higher than under ZEC 2.0. Renewables require significant land area but produce no direct operational emissions, and lifecycle emissions from wind, solar, and hydro are far lower than fossil units.<sup>453</sup> Thus, while Alternative 2 would partially offset GHG increases as compared to Alternative 1, the reliance on fossil fuel backup to ensure grid reliability means statewide emissions would still be materially higher than under ZEC 2.0.

Expected impacts are MODERATE.

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<sup>447</sup> Ibid.

<sup>448</sup> Brattle Report, p. 11.

<sup>449</sup> The Brattle Group has announced an updated report, commissioned by the Carbon Free NY Coalition (which includes Constellation), that will update analyses originally performed in the 2015 report. At submission, the authors do not yet have access to the 2025 edition of the report.

<sup>450</sup> ZEC 2.0 White Paper, pp. 13-14.

<sup>451</sup> NYISO, Power Trends 2022, The path to a reliable, greener grid for New York, p. 27, available at: <https://www.nyiso.com/documents/20142/2223020/2022-Power-Trends-Report.pdf/d1f9eca5-b278-c445-2f3f-edd959611903?t=165468989352>.

<sup>452</sup> NRC License Renewal GEIS, Appendix D, p. D-41.

<sup>453</sup> NREL, Life cycle greenhouse gas emissions from electricity generation: Update, 2021, (NREL/F5-6A50-80580), available at: <https://www.osti.gov/biblio/1820320>.

## 5.2.5 Plant and Animal Species and Biodiversity

### Overview

All electrical power generation has the potential to negatively affect plant and animal species and alter biodiversity. While the specific impacts depend on plant-level factors such as the volume and source of water withdrawal, energy source, and particular emissions of the plant, electrical production operations generally may impact terrestrial wildlife through disruptions and degradation of habitat, noise and vibration pollution, and physical hazards presented by plant infrastructure. Though the majority of general impacts affect terrestrial species through either temporary or permanent diminishment or degradation of habitat, aquatic species may also be impacted depending on the proximity of aquatic habitats to plant facilities, and the use of waterbodies for cooling. For example, chemical contamination from fuel or lubricant spills has the potential to affect both terrestrial and aquatic ecosystems, while thermal effluents from cooling systems may damage aquatic organisms.<sup>454</sup>

Physical habitat reduction is a ubiquitous, unavoidable, and permanent effect of industrial activity. The presence of industrial sites and cleared transmission line ROWs impacts wildlife through permanent reductions in available terrestrial habitat. Industrial and cleared areas generally provide lower-quality habitat than surrounding natural areas, supporting fewer species, limiting biodiversity, and distorting populations. Noise and vibration pollution and increased traffic and human activity near facilities can alter wildlife behavior, causing avoidance of affected areas and further decreasing viable habitats and impacting local biodiversity.<sup>455</sup>

In addition to the permanent reductions in habitat quality and availability caused by industrial development, the routine maintenance and management of developed areas exert additional pressures on plant and animal communities. Large areas of electrical generation sites are kept as landscaped areas, such as lawns, with intentionally limited plant and animal biodiversity. The maintenance of these areas presents risks to plant and animal populations through the application of herbicides and pesticides and maintenance tasks that present physical dangers such as mowing and cutting.<sup>456</sup>

Transmission lines and ROWs pose additional threats to wildlife beyond those posed directly by the facilities. Transmission lines are a collision hazard for birds, which can result in mortalities.<sup>457</sup> Transmission line ROWs also disturb adjacent habitats, providing predator species with easier access to areas and thereby impacting populations of prey species. Conversely, some wildlife, such as small rodents, may benefit from disturbed open habitats, further altering community composition.<sup>458</sup> Plants and wildlife near transmission lines are also exposed to EMF, however evidence of negative impacts from EMF exposure is limited.<sup>459</sup>

In addition to impacts on wildlife and biodiversity, forest clearing and fragmentation resulting from the construction of transmission lines decrease the resilience of forest ecosystems to regenerate or suppress fires.<sup>460</sup> Forest clearing could also disrupt the wood-using and forest product industries. Disturbances to forest resources could also affect carbon sequestration and forest carbon markets. Clearing forests for transmission lines reduces forests' capacity to store carbon, contributing to further declines in net carbon storage, which has been

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<sup>454</sup> NRC License Renewal GEIS, p.2-8, p. 4-48.

<sup>455</sup> NRC License Renewal GEIS, p. 4-48.

<sup>456</sup> NRC License Renewal GEIS, p. 4-46.

<sup>457</sup> NRC License Renewal GEIS, p. 2-8.

<sup>458</sup> NRC License Renewal GEIS, p. 4-46.

<sup>459</sup> NRC License Renewal GEIS, p. 2-8.

<sup>460</sup> NYSDEC, New York State Forest Action Plan December 2020, available at: [https://extapps.dec.ny.gov/docs/lands\\_forests\\_pdf/nysfap.pdf](https://extapps.dec.ny.gov/docs/lands_forests_pdf/nysfap.pdf).

decreasing in recent decades.<sup>461</sup> This could also impact efforts to use carbon markets to support forest conservation.<sup>462</sup>

Impacts to CEA and endangered, threatened or special concern species are of particular significance in the context of electrical generation, as these resources are highly sensitive to disturbance and play an essential role in maintaining ecological integrity. The only CEA located within a county that hosts an Upstate nuclear facility is the Sandy Ponds in Oswego County. However, there is no evidence of impacts to the Sandy Ponds from power generation in Oswego County.<sup>463</sup> Additionally, more than one hundred and fifty endangered, threatened or special concern species live in New York State.<sup>464</sup> However, of these, the NRC identifies only Shortnose sturgeon (*Acipenser brevirostrum*), and Atlantic sturgeon (*Acipenser oxyrinchus*) as being potentially significantly affected by power generation through impacts to the Hudson River, which is designated as a critical habitat for sturgeon.<sup>465</sup> The Upstate nuclear facilities, however, do not discharge to the Hudson River.

The following subsections discuss the specific additional impacts to terrestrial and aquatic plant and animal species and biodiversity posed by ZEC 2.0 and the no action alternatives.

## Impact on Terrestrial Species

### ZEC 2.0

In addition to the general industrial and power generation and transmission impacts, nuclear facilities pose unique risks to terrestrial species. Plants and wildlife in the vicinity of nuclear facilities may be exposed to radionuclide (e.g., krypton, xenon, argon, tritium, iodine, cesium, strontium, cobalt, and chromium) releases through gaseous emissions, radioactive particulates, or liquid effluents. Plants can absorb contaminated water through their roots and transfer these contaminants to animals through ingestion. Animals may be exposed to radionuclides through direct contact with contaminated media or inhalation or ingestion of contaminated matter.<sup>466</sup> However, terrestrial organism exposure to radionuclides during normal plant operation is unlikely to pose substantial risks.<sup>467</sup> The NRC also notes that nuclear cooling towers pose small risks to plants and animals. Cooling towers can damage terrestrial plants through particulate and ice deposits and are a collision risk for birds and bats that can result in injury or mortality.<sup>468</sup>

The expected impacts of continued operation of nuclear facilities on terrestrial organisms are SMALL to MODERATE.

### Alternative 1

If nuclear plants are replaced with fossil-fuel generation, the transition would create multiple stressors on plants, wildlife, and biodiversity. Since fossil-fuel generation is more land-intensive than nuclear power generation, construction and clearing required for new fossil-fuel facilities would further reduce terrestrial habitats, displacing or killing wildlife in the process. Similarly, habitat loss and subsequent impacts to wildlife and

<sup>461</sup> NYSDEC, New York State Forest Action Plan December 2020.

<sup>462</sup> NYSDEC, Forest Carbon Markets, available at: <https://dec.ny.gov/nature/forests-trees/climate-change/forest-carbon-markets>

<sup>463</sup> NRC, 2024 Annual Radiological Environmental Operating Report for the James A. FitzPatrick Nuclear Power Plant, Nine Mile Point Nuclear Station Unit 1, and Nine Mile Point Nuclear Station Unit 2 (issued May 13, 2025), available at: <https://www.nrc.gov/docs/ML2513/ML25133A245.pdf>.

<sup>464</sup> NYSDEC, List of Endangered, Threatened and Special Concern Fish and Wildlife Species of New York Stat, available at: <https://dec.ny.gov/nature/animals-fish-plants/biodiversity-species-conservation/endangered-species/list>.

<sup>465</sup> NRC License Renewal GEIS, p. 4-106.

<sup>466</sup> NRC License Renewal GEIS, p. 4-50.

<sup>467</sup> NRC License Renewal GEIS, p. 2-8.

<sup>468</sup> NRC License Renewal GEIS, p. 2-8.

biodiversity are likely to be more severe under Alternative 1 relative to continued operation of the Upstate nuclear facilities.

Fossil fuel alternatives also present fuel-specific risks to terrestrial organisms that extend beyond the general ecological impacts of power plant construction and operation. The construction and maintenance of natural gas pipelines can result in further habitat reduction and degradation, and the risk of leaks or spills from natural gas infrastructure poses a direct hazard to terrestrial ecosystems.<sup>469</sup>

The expected impacts of Alternative 1 are MODERATE to LARGE.

### Alternative 2

If the retirement of the Upstate nuclear facilities leads to the construction of additional renewable energy sources such as utility-scale solar and wind installations, the resulting expansion of land conversion and infrastructure development would further reduce habitat quality and impact terrestrial species. While the operational impacts of renewable energy facilities are generally minimal, they may pose risks to specific species. Large-scale wind energy development poses particular risks to flying species, most notably birds and bats, which are vulnerable to collisions with turbine blades, potentially resulting in injuries and mortalities. In New York, threatened or endangered species such as the Indiana bat (*Myotis sodalis*), the northern long-eared bat (*Myotis septentrionalis*), and raptors including the bald eagle (*Haliaeetus leucocephalus*) and short-eared owl (*Asio flammeus*) may be at risk where their ranges overlap with suitable wind development areas.<sup>470</sup> These species already face multiple ecological stressors, including white-nose syndrome in bats and habitat loss for raptors, and additional turbine-related mortality could exacerbate population declines.<sup>471</sup>

Given the additional renewable energy-specific impacts in conjunction with the fossil fuel-specific impacts and general energy production, the expected impacts of Alternative 2 are MODERATE to LARGE.

### Impact on Aquatic Species

#### ZEC 2.0

Nuclear power generation can directly affect aquatic species if cooling systems withdraw water from and discharge water to aquatic habitats. The release of heated effluents may cause heat shock in fish and other aquatic organisms, leading to mortality, injury, behavioral disruptions, and sublethal stress, which increases vulnerability to predation, parasitism, and disease. Thermal plumes may also act as barriers to migration for fish and other mobile species. In addition to thermal effects, cooling water intake structures can cause entrainment of small organisms such as eggs, larvae, and plankton, which are drawn into the system and killed, as well as impingement of larger organisms like fish, which become trapped against intake screens.<sup>472</sup> Additionally, as with the terrestrial species discussed above, aquatic species may be exposed to radionuclides, though these exposures do not pose a substantial risk.<sup>473</sup>

The Upstate nuclear facilities have historically been found to have low potential impacts on endangered species. For example, a DOE sponsored analysis determined that FitzPatrick presented “low” impact ratings with respect

<sup>469</sup> NRC License Renewal GEIS, Appendix D, pp. D-31 - D-32

<sup>470</sup> 2016 SEIS, pp. 3-6 - 3-7, p. 5-33

<sup>471</sup> 2016 SEIS, pp. 3-6 - 3-7

<sup>472</sup> NRC License Renewal GEIS, pp. 3-60 - 3-61

<sup>473</sup> NRC License Renewal GEIS, pp. 4-94 - 4-96.

to endangered species concerns.<sup>474</sup> Ongoing obligations under ZEC 2.0 are expected to remain limited to continued compliance with routine operational safeguards.

The expected impacts to aquatic species of continued nuclear plant operation are SMALL to MODERATE.

#### *Alternative 1*

Construction of fossil fuel–fired generating facilities poses risks to aquatic species and habitats through several mechanisms including temporary disturbance of the riverbed, increases in sediment disturbance, increases in turbidity, and water quality degradation. During construction, dredging and other in-water work has the potential to directly damage aquatic habitats and species. Additionally, spills and leaks of petroleum, oil, and lubricants from construction equipment may contaminate waterbodies and harm aquatic organisms.<sup>475</sup>

Once constructed, the operation of fossil fuel plants poses many of the same risks to aquatic species as nuclear power plants. Fossil fuel plants utilize similar cooling systems that can impact aquatic species through thermal effluents, impingement, and entrapment.<sup>476</sup>

The expected impacts of Alternative 1 on aquatic species are MODERATE to LARGE.

#### *Alternative 2*

The impacts to aquatic organisms and habitats from replacing nuclear generation with renewable energy depend on the type of renewable source developed. Expansion of hydropower through upgrades to existing facilities or retrofitting of non-powered dams can directly affect river ecosystems by altering flow, changing dissolved oxygen concentrations, presenting physical hazards such as barriers to fish passage, and direct takings due to contact with turbines.<sup>477</sup> All hydroelectric projects in New York State require intake protection and downstream passage sites for fish species to maintain aquatic habitats.<sup>478</sup> While hydropower facilities primarily impact riparian environments, offshore wind development primarily affects marine environments. Installing turbines and laying submarine cables can disturb benthic environments, increase turbidity, and displace habitat. However, there is evidence that turbine foundations may also create artificial reef conditions that attract fish and invertebrates.<sup>479</sup> In general, renewable energy facilities that require large amounts of land relative to nuclear or fossil fuel facilities are likely to yield habitat alteration and loss.<sup>480</sup>

The expected impacts of Alternative 2 on aquatic species are MODERATE to LARGE.

### 5.2.6 Aesthetic and Visual Resources

Direct impacts on aesthetic and visual resource for ZEC 2.0 and no action alternatives include:

#### **ZEC 2.0**

Continued operation of the Upstate nuclear facilities would not change the aesthetic and visual resources in the surrounding areas. Cooling towers and the containment building are the most easily observed structures of the facilities, followed by the transmission lines towers, although the lines themselves are not distinguishable from

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<sup>474</sup> Pacific Northwest National Laboratory, Threatened and Endangered Species Evaluation for Operating Commercial Nuclear Power Generating Plants (January 2004), available at: [https://www.pnnl.gov/main/publications/external/technical\\_reports/PNNL-14468.pdf](https://www.pnnl.gov/main/publications/external/technical_reports/PNNL-14468.pdf).

<sup>475</sup> NRC License Renewal GEIS, Appendix D, p. D-30.

<sup>476</sup> NRC License Renewal GEIS, p. 4-25, and Appendix D, p. D-31.

<sup>477</sup> 2016 SEIS, pp. 5-52 - 5-53.

<sup>478</sup> Draft New York State Energy Plan, Chapter 20, p. 19.

<sup>479</sup> 2016 SEIS, pp. 5-44 - 5-45.

<sup>480</sup> NRC License Renewal GEIS, Appendix D, p. D-32.

other power plant lines. Further, the NRC's environmental reviews have shown that nuclear power plants and transmission lines do not change in appearance over time.<sup>481</sup> Thus, the expected impacts are SMALL.

#### Alternative 1

Construction of new fossil fuel based generating facilities would affect the aesthetic and visual resources in host communities. Visual impacts during construction would include land clearing, excavation, and the installation of temporary facilities (e.g., material laydown areas and concrete batch plants). Construction of new transmission lines would result in new aesthetic impacts.

Upon completion, natural gas plants comprise a series of buildings for fuel combustion along with tall smokestacks that will direct the spent fuels smoke into the atmosphere. In addition to new structures, natural gas plants produce visible condensate plumes.<sup>482</sup> One study found that 56 percent of boilers have smokestacks that do not have proper scrubbers to reduce the SO<sub>2</sub> emissions, and about 63 percent of boilers do not have post-combustion controls for NO<sub>x</sub> emissions.<sup>483</sup> Byproducts of fossil fuel generation could result in a dark, thick smoke, leading to more severe aesthetic and visual impacts.

The expected impact of Alternative 1 is MODERATE to LARGE.

#### Alternative 2

With renewables complementing fossil fuel generation in Alternative 2, aesthetic and visual impacts would vary depending on the type and location of renewable energy constructed. Solar and wind power would require less construction than natural gas plants, but other renewable facilities such as hydroelectric are more time and resource intensive.

Aesthetic and visual impacts also vary depending on individual preferences. While polling data indicates a decline in support for wind and solar power sources, the overall perception across the U.S. remains positive.<sup>484</sup>

Aesthetic and visual impacts are closely tied to land use impacts ([Section 5.2.2](#)). The expected impacts of Alternative 2 are MODERATE to LARGE.

### 5.2.7 Cultural and Historic Resources

Direct impacts on cultural and historic resources for ZEC 2.0 and no action alternatives include:

#### ZEC 2.0

Continued operation of the Upstate nuclear power facilities is unlikely to impact local archeological and/or historical sites in the surrounding area. The NRC License Renewal GEIS notes that such impacts are site-specific. The SGEISs for the Upstate nuclear facilities all concluded that expected impacts are SMALL.<sup>485</sup>

#### Alternative 1

Archeological and historical sites are protected resources that may sustain damage from digging, heavy equipment, uprooting trees, exposure to erosion or the elements, or vandalism. Construction of fossil fuel facilities could cause disruptions to archeological and historical sites in surrounding areas. Historical and

<sup>481</sup> NRC License Renewal GEIS, p. 4-8.

<sup>482</sup> NRC License Renewal GEIS, Appendix D, p. D-23.

<sup>483</sup> Epstein, Keith, The Center for Public Integrity, Decades after Clean Air Act, most smokestacks still lack scrubbers, available at: <https://publicintegrity.org/environment/epa-wants-to-limit-pollution-from-tall-smokestacks/>.

<sup>484</sup> Pew Research Center. How Americans View National, Local, and Personal Energy Choices, available at: <https://www.pewresearch.org/science/2024/06/27/how-americans-view-national-local-and-personal-energy-choices/>.

<sup>485</sup> See Section 4.4.5 of each SGEIS.

archeological sites are often sensitive to groundwork. Any land needed to support an alternative energy facility, including roads, transmission corridors, rail lines, or other ROWs, would also need to be assessed.<sup>486</sup> Cultural resource surveys would precede construction of new facilities.

Federal and State laws govern the protection of archeological and historical sites. At the federal level, impacts on archeological and historic sites are site specific and will undergo a review under section 106 of the National Historic and Preservation Act (NHPA).<sup>487</sup> An NHPA section 106 review refers to 36 CFR Part 800 (“Protection of Historic Properties”) and “requires Federal agencies to take into account the effects of their undertakings on historic properties and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings.” An official NHPA section 106 consultation would need to occur on a site-by-site basis.

At the State level, each construction project funded, licensed, or approved by State or federal agencies must undergo a review by the State Historic Preservation Office’s archeology unit to determine whether the project site falls within a known area of archeological sensitivity. If the site falls within such an area, phased surveys would determine the extent of the potential impact.<sup>488</sup> If artifacts are discovered as part of the predevelopment review, additional surveys may be required. Federal process dictates that any impacts to historic and archaeological resources should be avoided, minimized or mitigated – in that order.<sup>489</sup>

Given existing mitigation measures, expected impacts of Alternative 1 are SMALL to MODERATE.<sup>490</sup>

### Alternative 2

Similar to Alternative 1, Alternative 2 would entail construction of renewable energy capacity in addition to fossil fuel generating plants. Given the location of new facilities is unknown, the impacts to cultural and historic resources are uncertain but expected to be SMALL to MODERATE.

## 5.2.8 Waste Management

Direct impacts on waste management for ZEC 2.0 and no action alternatives include:

### ZEC 2.0

Waste management at nuclear plants is highly regulated because of the potential environmental impacts of radioactive wastes (including liquids, gases, and solids). [Section 3.1](#) describes the relevant waste streams. Waste collection, treatment, packaging, and loading onto conveyance vehicles for shipment offsite can adversely affect the other environmental resources discussed throughout [Chapter 5](#). The NRC’s environmental analyses (the main and supplemental GEISs referenced at the beginning of this chapter) therefore emphasize the role of NRC regulations, in addition to plant-specific technical plans and reporting requirements, in mitigating the risks of waste management.

The 2024 NRC License Renewal GEIS focuses on five waste management issues, summarized in **Table 5-3** below.

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<sup>486</sup> NRC License Renewal GEIS, Appendix D, p. D-34

<sup>487</sup> NRC License Renewal GEIS, p 3-81.

<sup>488</sup> NYS Parks, Recreation, and Historic Preservation. Environmental Review, available at: <https://parks.ny.gov/shpo/environmental-review/>.

<sup>489</sup> 36 CFR § 800.6.

<sup>490</sup> See Chapter 8 of each SGEIS.

Table 5-3. NRC's Summary of Waste Management Impacts<sup>491</sup>

| Issue                                               | Findings                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Impact Significance | Additional Guidance Regarding Nuclear Waste Management                                                                                                                                                                                                      |
|-----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Low-level waste storage and disposal <sup>492</sup> | <ul style="list-style-type: none"> <li>Most low-level waste is shipped offsite for disposal, either immediately after generation or after a brief storage period onsite; environmental impacts are assessed based on the plant's specific arrangements</li> <li>The comprehensive regulatory controls that are in place and the low public doses being achieved at reactors ensure that the radiological impacts on the environment would be minimal</li> </ul> | SMALL               | 10 CFR 20.1406                                                                                                                                                                                                                                              |
| Onsite storage of spent nuclear fuel                | <ul style="list-style-type: none"> <li>Accumulated quantities of waste requiring long-term storage or disposal will increase over time</li> <li>The expected increase in the volume of spent fuel from an additional 20 years of operation can be safely accommodated with small environmental impacts through dry or pool storage</li> </ul>                                                                                                                   | SMALL               | <p>2014 Continued Storage of Spent Nuclear Fuel, Final Rule (79 FR 56238)<sup>493</sup></p> <p>2014 Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel (NUREG-2157; Continued Storage GEIS) (79 FR 56263)<sup>494</sup></p> |

<sup>491</sup> NRC License Renewal GEIS, Section 4.11 (Waste Management and Pollution Prevention). Also see 10 CFR Appendix B to Subpart A—Environmental Effect of Renewing the Operating License of a Nuclear Power Plant, available at: [https://www.nrc.gov/reading-rm/doc-collections/cfr/part051/part051-appb.html#N\\_3\\_51appb](https://www.nrc.gov/reading-rm/doc-collections/cfr/part051/part051-appb.html#N_3_51appb).

<sup>492</sup> Low-level waste is radioactive material that (1) is not high-level radioactive waste, spent nuclear fuel, or by-product material (as defined in Section 11e(2) of the AEA of 1954 [42 U.S.C. 2014(e)(2)]) and (2) is classified by the NRC, consistent with existing law, as low-level radioactive waste (as defined in the Low-Level Radioactive Waste Policy Amendments Act of 1985, as amended, Public Law 99-240; 42 U.S.C. § 2021b et seq.).

<sup>493</sup> U.S. Federal Register, Continued Storage of Spent Nuclear Fuel, Final Rule, (79 FR 56238), available at: <https://www.federalregister.gov/documents/2014/09/19/2014-22215/continued-storage-of-spent-nuclear-fuel>.

<sup>494</sup> NRC, Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel, NUREG-2157, Volume 1, available at: <https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr2157/index.html>.

| Issue                                                                            | Findings                                                                                                                                                                                                                                                                                                  | Impact Significance | Additional Guidance Regarding Nuclear Waste Management                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Offsite radiological impacts of spent nuclear fuel and high-level waste disposal | <ul style="list-style-type: none"> <li>• Ultimate disposal of spent fuel in a potential future geologic repository is a separate and independent licensing action</li> <li>• Impacts presented in the Continued Storage GEIS are not sufficiently large to warrant site-specific NEPA analysis</li> </ul> | SMALL               | <p>Continued Storage GEIS</p> <p>NRC, Environmental Impact Statement for Interim Storage Partners LLC's License Application for a Consolidated Interim Storage Facility for Spent Nuclear Fuel in Andrews County, Texas, (NUREG-2239, Final Report)<sup>495</sup></p> <p>NRC, Environmental Impact Statement for the Holtec International's License Application for a Consolidated Interim Storage Facility for Spent Nuclear Fuel in Lea County, New Mexico (NUREG-2237, Final Report)<sup>496</sup></p> <p>DOE, Final Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada<sup>497</sup></p> <p>DOE, Final Supplemental Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada<sup>498</sup></p> <p>Supplement to the U.S. Department of Energy's Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada (NUREG-2184, Final Report)<sup>499</sup></p> |

<sup>495</sup> NRC, Environmental Impact Statement for Interim Storage Partners LLC's License Application for a Consolidated Interim Storage Facility for Spent Nuclear Fuel in Andrews County, Texas, NUREG-2239, Final Report, available at: <https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML21209A955>.

<sup>496</sup> NRC, Environmental Impact Statement for the Holtec International's License Application for a Consolidated Interim Storage Facility for Spent Nuclear Fuel in Lea County, New Mexico, NUREG-2237, Final Report, available at: <https://www.nrc.gov/docs/ML2218/ML22181B094.pdf>. Supplement 1 available at: <https://www.nrc.gov/docs/ML2229/ML2229A238.pdf>.

<sup>497</sup> DOE, EIS-0250: Final Environmental Impact Statement, Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada, available at: <https://www.energy.gov/nepa/articles/eis-0250-final-environmental-impact-statement>.

<sup>498</sup> DOE, EIS-0250-S1: Final Supplemental Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada, available at: <https://www.energy.gov/nepa/eis-0250-s1-final-supplemental-environmental-impact-statement-geologic-repository-disposal>.

<sup>499</sup> NRC, Supplement to the U.S. Department of Energy's Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada, NUREG-2184, available at: <https://www.nrc.gov/docs/ML1612/ML16125A032.pdf>.

| Issue                                     | Findings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Impact Significance | Additional Guidance Regarding Nuclear Waste Management                                                                                                              |
|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mixed-waste storage and disposal          | <ul style="list-style-type: none"> <li>Accumulated quantities of mixed waste requiring long-term storage or disposal will increase over time</li> <li>Extended operation of nuclear facilities will not increase the small, continuing risk to human health and the environment posed by mixed waste</li> <li>The comprehensive regulatory controls and the facilities and procedures that are in place ensure proper handling and storage, as well as negligible doses and exposure to toxic materials for the public and the environment</li> </ul> | SMALL               | NRC, 2013 Generic Environmental Impact Statement for License Renewal of Nuclear Plants: Main Report, Final Report (NUREG-1437, Volume 1, Revision 1) <sup>500</sup> |
| Nonradioactive waste storage and disposal | <ul style="list-style-type: none"> <li>Nuclear plants generate small quantities of hazardous waste during operation and maintenance</li> <li>EPA strictly regulates the management of hazardous waste at nuclear plants</li> <li>Facilities and procedures are in place to ensure continued proper handling, storage, and disposal, as well as negligible exposure to toxic materials</li> </ul>                                                                                                                                                      | SMALL               | 2013 Generic Environmental Impact Statement for License Renewal of Nuclear Plants: Main Report, Final Report (NUREG-1437, Volume 1, Revision 1)                     |

Given that the Upstate nuclear facilities are currently operating and have already produced spent nuclear fuel, the impacts determined through the NRC’s Continued Storage GEIS are applicable under ZEC 2.0 and the “no action” alternatives. The Continued Storage GEIS considers impacts under normal operating conditions as well as environmental impacts of postulated accidents including severe accidents and potential acts of sabotage or terrorism. The environmental impacts of sustained operations of the Upstate nuclear facilities would not exceed those anticipated in the Continued Storage GEIS.<sup>501</sup>

The NRC License Renewal GEIS, the 2016 SEIS, and the Code of Federal Regulations summarize additional impacts related to waste management. For example, to continue operating, the Upstate nuclear plants require continued use of uranium fuel processed at designated offsite uranium fuel cycle facilities. The 2016 SEIS summarized the impacts related to the uranium fuel cycle based on 10 CFR 51.51 (Uranium fuel cycle environmental data—Table S-3).<sup>502</sup> Similarly, drawing from 10 CFR 51.52 (Environmental effects of transportation of fuel and waste—Table S-4), the 2016 SEIS also summarized the impacts of transporting fuel and waste to and from a light-water-cooled nuclear power reactor.<sup>503</sup> These impacts and CFR tables have not changed since publication of the 2016 SEIS.

Overall, the waste management impacts of ZEC 2.0 are SMALL.

<sup>500</sup> NRC, Generic Environmental Impact Statement for License Renewal of Nuclear Plants—Final Report, NUREG-1437, Volume 1, Revision 1, available at: <https://www2.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1437/r1/index>.

<sup>501</sup> 2016 SEIS, p. 5-11.

<sup>502</sup> 2016 SEIS, pp. 5-11 - 5-14.

<sup>503</sup> 2016 SEIS, p. 5-15.

### Alternative 1

Construction of fossil fuel generating facilities produces various wastes, including fluids from onsite maintenance of vehicles and equipment (such as used lubricating oils, hydraulic fluids, glycol-based coolants, and spent lead-acid batteries). Additional wastes may arise from equipment maintenance and corrosion-control measures, including solvents, paints, and protective coatings. Typical construction debris—such as lumber, stone, brick—and packaging materials, primarily wood and paper, are also expected. All materials and wastes would be collected onsite and then either recycled or sent to licensed offsite disposal and treatment facilities.

Operation and maintenance of the facility would generate solid waste throughout its lifecycle. Wastes routinely associated with the maintenance of mechanical and electrical equipment include used lubricating oils and hydraulic fluids, cleaning solvents, corrosion control paints and coatings, and dielectric fluids.<sup>504</sup>

Relative to the State's existing waste production from electricity generation (see [Section 3.9](#)) and applicable regulations (see [Section 6.2.4](#)) expected impacts of Alternative 1 are SMALL.

### Alternative 2

Construction impacts on waste management would be similar to those for Alternative 1. Regarding operations, the transition to renewable energy will produce wastes such as batteries, solar panels, and wind turbines. According to NYSEDA, waste from end-of-life renewable energy infrastructure is expected to increase significantly as more battery, solar, and wind projects come online in the State.<sup>505</sup>

Relative to the State's existing waste production from electricity generation (see [Section 3.9](#)) and applicable regulations (see [Section 6.2.4](#)) expected impacts of Alternative 2 are SMALL.

## 5.2.9 Public Health

The public health impacts associated with nuclear power facilities are well documented in NRC licensing and renewal reviews. Direct impacts on public health for ZEC 2.0 and no action alternatives include:

### ZEC 2.0

Continued operation of the Upstate nuclear facilities would not result in significant new public health impacts beyond those associated with existing operations. The NRC License Renewal GEIS concludes that radiological and nonradiological health impacts of nuclear facility operations are SMALL when releases remain within regulatory limits, a finding consistently applied across U.S. plants.<sup>506</sup> Routine monitoring and reporting under NRC oversight ensures that effluent releases remain within permissible limits, resulting in radiation exposures to workers and nearby residents that are far below NRC dose limits and comparable to natural background exposure levels (see [Chapter 3](#)). Consistent with NRC findings, occupational and public doses remain well below the standards in 10 CFR Part 20 and that the continuing efforts to maintain doses at as low as is reasonably achievable (ALARA) levels have been successful.<sup>507</sup>

Beyond radiological dose, the NRC License Renewal GEIS evaluates other human health stressors, finding nonradiological health pathways to be limited in scope under continued operation. Chemical discharges (e.g., biocides, small-volume wastes, trace metals) are regulated under effluent permits and are SMALL when permit conditions are met.<sup>508</sup> Potential microbiological effects in receiving waters are generally SMALL, though site-

<sup>504</sup> NRC License Renewal GEIS, Appendix D, pp. D-38 - D-39.

<sup>505</sup> Draft New York State Energy Plan, Chapter 20, p. 24.

<sup>506</sup> NRC License Renewal GEIS, p. 4-118 - 4-132.

<sup>507</sup> NRC License Renewal GEIS, p. 4-121.

<sup>508</sup> NRC License Renewal GEIS, p. 4-124 - 4-126.

specific surveillance continues.<sup>509</sup> Health effects from electromagnetic fields (EMF) associated with onsite and directly connected transmission remain UNCERTAIN according to the NRC License Renewal GEIS, with no generic impact level assigned.<sup>510</sup> Physical occupational hazards are managed under established safety programs and are SMALL.<sup>511</sup>

Importantly, nuclear facilities do not emit air pollutants such as ozone precursors, PM<sub>2.5</sub>, PM<sub>10</sub>, SO<sub>2</sub> or NO<sub>x</sub> during electricity generation, avoiding associated population-level health burdens such as asthma, cardiovascular disease, and premature mortality (see [Chapter 3](#)). Noise from turbines, pumps, and cooling systems is largely contained on site and does not measurably affect surrounding communities.

Taken together, continued operation under ZEC 2.0 would result in SMALL public health impacts.

### Alternative 1

If nuclear generation were entirely replaced with fossil fuel generation, public health impacts would increase substantially. Combustion of fossil fuels produces direct emissions of criteria air pollutants – including PM<sub>2.5</sub>, PM<sub>10</sub>, NO<sub>x</sub>, SO<sub>2</sub>, and VOCs – which contribute to ozone formation and smog. These pollutants are strongly associated with respiratory and cardiovascular illnesses, asthma hospitalizations, decreased lung function, and premature mortality. Vulnerable populations, including children, the elderly, and individuals with preexisting conditions, would be disproportionately affected.

The siting of new fossil generation facilities could place additional burdens on communities already experiencing environmental stressors, particularly disadvantaged communities identified under the CLCPA. These concerns are especially relevant in urban areas and along industrial corridors with cumulative air quality burdens. Construction and operation of new fossil plants would also introduce worker health and safety risks related to hazardous materials, fuel handling, and high-temperature industrial processes.

On balance, the expected public health impacts of Alternative 1 are LARGE.

### Alternative 2

A mixed replacement scenario would produce health outcomes between ZEC 2.0 and Alternative 1. Although renewable resources such as wind and solar do not emit pollutants during operation, fossil fuel generation would still be required to maintain grid reliability, resulting in continued emissions of criteria pollutant emissions and associated health effects, though at lower levels than under Alternative 1. Communities located near fossil fuel facilities would therefore continue to face elevated exposure risks.

Construction of renewable energy projects and associated transmission lines could generate temporary health and safety risks, including increased traffic accidents, fugitive dust, equipment emissions, and worker occupational hazards. Hydroelectric resources may alter aquatic conditions and could indirectly influence public health through water quality and pathogen dynamics. While less severe than those associated with fossil combustion, these risks remain meaningful at scale.

For these reasons, the expected public health impacts of Alternative 2 are MODERATE.

## 5.2.10 Community Character

Direct impacts on community character for ZEC 2.0 and no action alternatives include:

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<sup>509</sup> NRC License Renewal GEIS, p. 4-126 - 4-127.

<sup>510</sup> NRC License Renewal GEIS, p. 4-127 - 4-128.

<sup>511</sup> NRC License Renewal GEIS, p. 4-128 - 4-129.

## ZEC 2.0

The continued operation of the Upstate nuclear facilities will have SMALL impacts, if any, on community character. The plants have long operating histories and are well-established in Oswego and Wayne counties. ZEC 2.0 would therefore not directly affect local or regional population growth, economic patterns, natural features, land uses, culture, or development patterns.

### Alternative 1 and Alternative 2

In both “no action” alternatives, closure of the Upstate nuclear facilities could affect the indicators like development patterns and land uses (and others) that collectively define community character. The SGEISs for the Ginna, FitzPatrick, and Nine Mile Point facilities concluded that closure of the facilities would result in MODERATE to LARGE socioeconomic impacts due to decreases in employment and tax revenues in Oswego and Wayne counties.<sup>512</sup> However, the SGEISs did not evaluate a scenario in which fossil fuels or renewable energy facilities replace nuclear generation capacity. Construction of replacement facilities could produce short-term and long-term impacts in the host communities (not necessarily within Oswego and Wayne counties). Residents and businesses may experience short-term disruptions due to construction activities, including increased noise, traffic congestion, and visual changes during the building phase. Construction could disrupt land use, cultural, and aesthetic resources. Temporary job opportunities may also impact local economies by bringing new residents and businesses to communities.

Longer term, the closure of the Upstate nuclear plants and the introduction of new generating facilities may lead to changes in population density and demographic composition in some areas, depending on the location of, and jobs supported by, the new facilities. Since population magnitude and density vary widely across the State, the differing community types summarized in [Section 3.11.2](#) would each experience unique impacts under the “no action” alternatives.

Ultimately, impacts to community character depend on which communities host any new generating facilities to replace lost nuclear generation in the State. Communities within Oswego and Wayne counties may experience MODERATE to LARGE impacts, at least temporarily, due to closure of the Upstate nuclear plants.

## 5.2.11 Transportation

Direct impacts on transportation for ZEC 2.0 and no action alternatives include:

### ZEC 2.0

Transportation impacts depend on the size of the workforce, the capacity of the local road network, traffic patterns, and the availability of alternate commuting routes to and from the nuclear plant. Traffic may increase during refurbishment projects, refueling, and maintenance outages, which are activities that temporarily require more workers. However, the NRC concluded that transportation impacts during license renewal terms would be SMALL and identical to existing impacts for all nuclear plants in the U.S.<sup>513</sup> The SGEISs for the Ginna, FitzPatrick, and Nine Mile Point facilities reached the same conclusion, considering public transportation impacts and specific traffic conditions at access roads to the facilities and other local roadways.<sup>514</sup>

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<sup>512</sup> See Chapter 8 and Table 8-1 in each SGEIS. The Ginna SGEIS identified SMALL to MODERATE socioeconomic impacts, while the FitzPatrick and Nine Mile Points SGEISs identified MODERATE to LARGE socioeconomic impacts.

<sup>513</sup> NRC License Renewal GEIS, p. 4-118.

<sup>514</sup> See Section 4.4.4 of each SGEIS.

### Alternative 1

Construction of a replacement fossil fuel based generating facility may disrupt operations and cause temporary disturbances, including temporary roadway lane closures, reduced shoulders, or the presence of heavy equipment and construction personnel along the roads. Transportation during construction would include commuter vehicles and truck, barge, or rail material and equipment delivery to and from the construction site. Increases in traffic to and from the construction site could also require changes to existing transportation infrastructure and traffic patterns. The NRC identified larger transportation impacts for coal-fired power plants compared to natural gas plants.<sup>515</sup> This SGEIS assumes that natural gas plants would primarily replace nuclear power in Alternative 1. Overall, the construction and operation of natural gas plants typically require a larger workforce than renewable energy facilities.<sup>516</sup> The expected impacts on traffic of Alternative 1 are MODERATE to LARGE.

### Alternative 2

Similar to impacts associated with Alternative 1, constructing renewable energy facilities would also increase traffic in host communities. The impacts would vary depending on each community's infrastructure and ability to manage changing traffic patterns or volume. Compared to Alternative 1, the expected impacts on traffic of Alternative 2 are SMALL to MODERATE because renewable facilities require a smaller workforce to construct and operate.

## 5.2.12 Socioeconomics and Environmental Justice

The socioeconomic and environmental justice impacts associated with nuclear power facilities have been discussed in prior environmental reviews and remain an important consideration for State decision-making. Direct impacts on socioeconomic and environmental justice for ZEC 2.0 and the “no action” alternatives include:

### ZEC 2.0

Continued operation of the Upstate nuclear facilities under ZEC 2.0 would preserve the existing socioeconomic contributions of FitzPatrick, Ginna, and Nine Mile Point to Wayne and Oswego counties. These facilities provide long-term, high-wage employment in a region where average wages remain below the statewide average, contribute substantially to municipal revenues through property taxes, and support local service industries through secondary economic activity. As detailed in [Chapter 3](#), Constellation pays approximately \$13.9 million annually in property taxes for the Fitzpatrick site, approximately \$30.5 million annually for the Nine Mile Point site, and approximately \$6.4 million annually for the Ginna site, representing meaningful shares of various local budgets.

Employment at the nuclear facilities also sustains local housing demand and supports community stability in counties where vacancy rates exceed the statewide average. NRC's License Renewal GEIS reviews also evaluated related factors such as recreation, tourism, community services and education, and population and housing, concluding that the impacts of continued nuclear operations are generally SMALL and consistent with the capacity of host communities to absorb them.<sup>517</sup> Temporary housing demand can increase during refueling outages, but these effects are short-lived and localized. Moreover, by avoiding emissions of ozone precursors and criteria pollutants such as PM<sub>2.5</sub>, SO<sub>2</sub>, and NO<sub>x</sub>, nuclear operations help reduce environmental and health burdens that disproportionately affect disadvantaged communities across New York. Consistent with the NRC

<sup>515</sup> NRC License Renewal GEIS, Appendix D, p. D-36.

<sup>516</sup> NRC License Renewal GEIS, Appendix D, p. D-36.

<sup>517</sup> NRC License Renewal GEIS, p. 4-114 - 4-118.

License Renewal GEIS, socioeconomic and environmental justice impacts under ZEC 2.0 are expected to remain SMALL.

**Chapter 9** provides additional analysis of potential socioeconomic and environmental justice impacts of ZEC 2.0.

### Alternative 1

If nuclear generation were entirely replaced with fossil fuel generating facilities, socioeconomic effects would be mixed. Construction of new fossil generation could provide short-term employment, but permanent staffing needs at fossil fuel plants are generally lower than at nuclear plants.<sup>518</sup> In addition, nuclear plants offer higher wages than others in the energy sector for comparable positions such as engineers, technicians, and plant operators.<sup>519</sup> As a result, long-term economic contributions would likely diminish relative to continued nuclear operations. Property tax contributions could also shift away from Wayne and Oswego counties, depending on the siting of replacement facilities, reducing revenues for local governments and school districts and creating budgetary pressures for community services and education.

From an environmental justice perspective, increased fossil fuel generation would elevate emissions of ozone precursors PM<sub>2.5</sub>, SO<sub>2</sub>, and NO<sub>x</sub>, which disproportionately affect low-income and minority populations living near existing fuel plant sites. Many of these communities are already classified as disadvantaged communities under the CLCPA. Increased exposure could worsen health disparities and impose indirect economic costs through elevated medical expenses and reduced quality of life. Overall, the socioeconomic and environmental justice impacts under Alternative 1 are expected to be LARGE.

### Alternative 2

Under a mixed replacement scenario, socioeconomic and environmental justice impacts would be intermediate. Renewables and transmission buildout would create construction jobs and, in some cases, ongoing maintenance positions. However, these benefits would not fully offset the loss of stable, high-wage nuclear employment in Wayne and Oswego counties. Property tax revenues for host municipalities could also decline depending on the siting of replacement resources.

From an environmental justice perspective, reliance on renewables would reduce pollutant burdens relative to Alternative 1, but continued fossil fuel generation would maintain localized health risks for disadvantaged communities near those plants. In addition, renewable siting in rural areas may create land use conflicts, including potential displacement of agricultural activities, changes to rural community character, and impacts on recreation and scenic resources. Population and housing effects could also emerge in host areas during periods of large-scale construction, though such effects remain temporary and limited in scale. On balance, Alternative 2 would result in SMALL to MODERATE socioeconomic and environmental justice impacts.

## 5.3 Indirect Effects

The SEQRA Handbook defines a secondary or indirect impact as one which is reasonably foreseeable, occurs at a later time or at a greater distance from the source, and is likely the result of the proposed action.<sup>520</sup> There

<sup>518</sup> For nuclear, see Chapter 9 and the NRC License Renewal GEIS, Table 3.8-1, p. 3-83; for a comparison of coal and nuclear employment, see DOE, Office of Nuclear Energy, Coal-to-Nuclear Transitions: An Information Guide, p. 8, available at: <https://www.energy.gov/sites/default/files/2024-05/Coal-to-Nuclear%20Transitions%20An%20Information%20Guide.pdf>. The natural gas power generation industry employed 127,800 workers in 2024. As of 2023, the United States had 2,084 natural gas plants, implying an average of 61 employees per plant; actual employment varies by facility.

<sup>519</sup> DOE, Advantages and Challenges of Nuclear Energy, June 11, 2024, available at: <https://www.energy.gov/ne/articles/advantages-and-challenges-nuclear-energy?utm;> DOE, 2025 United States Energy and Employment Report, Table 2 (p. 9) and Table 14 (p. 60), available at: [https://www.energy.gov/sites/default/files/2025-08/National%20USEER\\_08282025.pdf](https://www.energy.gov/sites/default/files/2025-08/National%20USEER_08282025.pdf).

<sup>520</sup> NYSDEC, The SEQR Handbook (Fourth Addition, 2020), available at: [https://extapps.dec.ny.gov/docs/permits\\_ej\\_operations\\_pdf/seqrhandbook.pdf](https://extapps.dec.ny.gov/docs/permits_ej_operations_pdf/seqrhandbook.pdf).

should be a reasonably close causal relationship between the proposed action and the environmental impacts. Similarly, NEPA regulations at 40 CFR § 1508.1 (since rescinded) defined indirect effects as those effects caused by the action that are later in time or farther removed in distance but are still reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air, water and other natural systems, including ecosystems.

ZEC 2.0 will maintain the zero-emissions environmental attributes of the Upstate nuclear facilities. In so doing, the proposed action supports the State's progress towards CLCPA goals, including renewable energy and zero-emissions targets. Assuming more renewable energy facilities come online in the State, and fossil fuel generating plants retire, reasonably foreseeable indirect impacts of the proposed action include statewide reductions in GHGs and criteria air pollutants, improved public health outcomes, and environmental benefits. These impacts are indirect in that they depend upon other actions to materialize; continued operation of the Upstate nuclear plants under ZEC 2.0 can support and facilitate the State's broader energy transition goals.

### 5.3.1 Greenhouse Gases

As discussed in [Chapter 3](#) and [Section 5.2.4](#), GHGs such as CO<sub>2</sub> contribute to the trend of rising average temperatures, changes in precipitation patterns, increased frequency and severity of heatwaves, increased flooding, rising sea levels, and increased threats to public health. By supporting the phasing out of fossil fuel generation plants, ZEC 2.0 is expected to contribute to the reduction of the State's GHG emissions, the benefits of which will extend beyond the State's borders.

### 5.3.2 Criteria Air Pollutants

Fossil fuel electric generation is a source of criteria air pollutants, including CO<sub>2</sub>, CO, and heavy metals. The release of SO<sub>2</sub> and NO<sub>x</sub> from fossil fuel power plants also leads to the formation of PM, ozone, and other acidic compounds in the air. Mercury compounds are another pollutant from fossil fuel energy generation, particularly from coal-powered plants.<sup>521</sup> Criteria air pollutants adversely impact local and regional air quality. These pollutants can negatively affect air quality, visibility, and public health. The proposed action, by supporting the phasing out of fossil fuel generation plants, will contribute to the reduction of criteria air pollutants like SO<sub>2</sub> and NO<sub>x</sub>.

### 5.3.3 Public Health

Emissions from fossil fuel-based electric generation can negatively affect human health. Exposure to ozone can aggravate lung diseases including asthma, emphysema, and chronic bronchitis, as well as increase the risk of premature mortality from heart or lung disease. Health effects from PM<sub>2.5</sub> include aggravated asthma, irregular heartbeat, decreased lung function, nonfatal heart attacks, and premature mortality in those with heart or lung disease.<sup>522</sup> NO<sub>x</sub> can increase the risk of respiratory diseases and exacerbate existing respiratory symptoms, especially in children, the elderly, and the disadvantaged. Individuals with asthma may experience aggravated symptoms when exposed to NO<sub>x</sub>.<sup>523</sup> Additionally, exposure to NO<sub>x</sub> can cause irreversible structural changes to the lungs. One study estimated health impacts from fossil fuel energy sources at \$362 billion to \$886 billion in economic value annually, based on premature mortality, workdays missed, and direct costs to the U.S.

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<sup>521</sup> EIA, Electricity Explained: Electricity and the Environment, available at: [https://www.eia.gov/energyexplained/index.php?page=electricity\\_environment](https://www.eia.gov/energyexplained/index.php?page=electricity_environment).

<sup>522</sup> EPA, Particulate Matter (PM) Pollution: What are the harmful effects of PM? Available at: <https://www.epa.gov/pm-pollution/particulate-matter-pm-basics#effects>.

<sup>523</sup> EPA, Nitrogen Dioxide (NO<sub>2</sub>) Pollution: What are the harmful effects of NO<sub>2</sub>? Available at: <https://www.epa.gov/no2-pollution/basic-information-about-no2#Effects>.

healthcare system resulting from PM<sub>2.5</sub>, NO<sub>x</sub>, and SO<sub>2</sub>.<sup>524</sup> The same study estimated that the economic value of negative health impacts was equal to approximately \$0.14 to \$0.31 per kWh.<sup>525</sup> These costs may be even higher if GHG emissions are included.<sup>526</sup> The proposed action is expected to contribute to further reductions in such air emissions and related costs and health impacts.

### 5.3.4 Water, Land and Ecological Resources

As discussed throughout [Section 5.2](#), replacing the Upstate nuclear facilities with fossil fuel generating plants would lead to adverse impacts on land use, water resources, plants, animals, and biodiversity. Extending the ZEC program would help mitigate the impacts to these resources associated with the burning of fossil fuels.

## 5.4 Cumulative Impacts

6 NYCRR § 617.9(b)(5)(iii)(a) requires agencies to consider the “reasonably related short-term and long-term impacts, cumulative impacts, and other associated environmental impacts” of actions on the environment and existing natural resources. SEQRA does not expressly define “cumulative impacts.” However, it is useful to note that NEPA regulations at 40 CFR § 1508.1 defined cumulative impacts as the impacts on the environment that result from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. This section evaluates potential negative and beneficial cumulative impacts.

### 5.4.1 Potential Negative Cumulative Impacts

This analysis of cumulative impacts only considers resources and environmental conditions that could be affected by ZEC 2.0, including the effects of continued reactor operations during the 2029-2049 period and any refurbishment activities at the Upstate nuclear facilities. For there to be a cumulative effect, the proposed action (implementation of ZEC 2.0) must have an incremental new, additive, or increased physical effect or impact on the resource or environmental condition beyond what is already occurring. The Upstate nuclear plants have operated for decades. To the extent that operating the plants produces cumulative environmental impacts, many such impacts have likely already materialized and are reflected in [Chapter 3](#) (baseline environmental conditions) and the preceding sections of [Chapter 5](#).

However, this SGEIS does not rule out the possibility that ZEC 2.0 will result in cumulative environmental impacts. An impact to a resource may be SMALL by itself but could result in a MODERATE or LARGE impact when considered with the impacts of other actions or activities on the affected resource. Similarly, if a local resource is imperiled, even a SMALL individual impact could be important if it contributes to or accelerates the overall resource decline.

The NRC License Renewal GEIS evaluated potential cumulative impacts of continued nuclear operations but noted that such impacts are unique to each nuclear power plant. The SGEISs for the Ginna, FitzPatrick, and Nine Mile Point facilities evaluated plant-specific cumulative impacts. None of the three analyses identified potential cumulative impacts that should be classified as MODERATE or LARGE. Specifically, the analyses reported the following findings:

<sup>524</sup> Machol, Ben and Rizk, Sarah, 2013, Economic Value of U.S. Fossil Fuel Electricity Health Impacts, Environment International, February 2013, Volume 52. p 75-80, available at: <https://www.sciencedirect.com/science/article/abs/pii/S0160412012000542>.

<sup>525</sup> Gerdes, Justin, How Much Do Health Impacts From Fossil Fuel Electricity Cost The U.S. Economy, April 8, 2013, available at: <https://www.forbes.com/sites/justingerdes/2013/04/08/how-much-do-health-impacts-from-fossil-fuel-electricity-cost-the-u-s-economy/#34b3aaffc679>.

<sup>526</sup> Ibid.

- Continued operation of the plants' cooling systems would only result in SMALL cumulative impacts on local water quality or aquatic resources.
- Continued operation of transmission lines associated with the plants would only result in SMALL cumulative impacts to terrestrial resources, wetlands, floodplains, aquatic resources, or human health.
- Continued operation of the plants would not contribute to adverse cumulative impacts to aquatic or terrestrial species, including threatened or endangered species.
- Continued operation of the plants would only result in SMALL cumulative socioeconomic impacts. The analysis considered socioeconomic factors such as housing, public services, offsite land use, employment, and Environmental Justice.
- Cumulative radiological impacts of continued operation of the plants would be SMALL.

#### 5.4.2 Potential Cumulative Benefits

ZEC 2.0 is part of a broader suite of policies and initiatives that the State designed to reach climate and energy goals. The proposed action is related to and will interact with other ongoing State energy initiatives, including, but not limited to: the CLCPA, Clean Energy Fund, and State Energy Plans.

## CHAPTER 6 | Regulatory Framework and Mitigation of Potential Adverse Impacts

Consistent with 6 NYCRR § 617.9(b)(5)(iv) and § 617.11(d)(5), this chapter describes the variety of measures available to minimize or avoid, to the maximum extent practicable (incorporating all practicable mitigation measures), potentially adverse environmental impacts that may result from implementation of the proposed action in New York State.

Specifically, this chapter discusses mitigation in two parts:

- **Section 6.1** describes the federal laws for nuclear power facilities that establish the minimum requirements for mitigation of risk, in particular the federal Atomic Energy Act of 1954 and Nuclear Regulatory Commission regulations.
- **Section 6.2** discusses other potentially applicable federal and State regulations as they relate to environmental protection and public health.

This chapter is not intended to provide an exhaustive list of potentially applicable laws or mitigation measures, but rather a general overview of the key statutes, regulations, and means by which adverse environmental impacts may be mitigated in implementing ZEC 2.0. Note that continuation of the ZEC program would not increase the number of nuclear power facilities or their capacity in the State. Instead, ZEC 2.0 would establish a funding mechanism to keep New York's existing nuclear fleet commercially viable through 2049, thereby retaining any existing potential risks associated with the nuclear facilities' continued operation. The Ginna, FitzPatrick, and Nine Mile Point plants have operated for decades and developed increasingly sophisticated processes to identify, minimize, and mitigate risks to human health and the environment. Similarly, federal and State oversight has evolved and improved over time.

### 6.1 Federal Oversight

One key mitigation measure is compliance with existing federal and State regulations, which are designed specifically to protect human health and the environment from activities that could otherwise result in significant and/or adverse impacts. The framework for this oversight stems from the Atomic Energy Act of 1954 (AEA, the Act), which established the federal government's authority over nuclear materials and created the U.S. Nuclear Regulatory Commission's predecessor, the Atomic Energy Commission. When the NRC was formed in 1974, it inherited this statutory mandate, giving it jurisdiction over commercial nuclear power plants through licensing, inspection, and enforcement. The NRC's mission states, "The NRC protects public health and safety and advances the nation's common defense and security by enabling the safe and secure use and deployment of civilian nuclear energy technologies and radioactive materials through efficient and reliable licensing, oversight, and regulation for the benefit of society and the environment."<sup>527</sup>

#### 6.1.1 Federal Atomic Energy Act

The AEA established a comprehensive framework for the development, regulation, and control of nuclear materials and facilities in the United States. Central to the statute is the requirement that any commercial use of nuclear energy be carried out under federal license and subject to rigorous oversight. Key provisions of the AEA include:

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<sup>527</sup> NRC, Information on the NRC, available at: <https://www.nrc.gov/about-nrc.html>.

- **Licensing and Safety Oversight:** The Act requires all nuclear reactors and fuel cycle facilities to operate under licenses issued by the NRC, with ongoing monitoring, inspection, and enforcement programs to ensure compliance with safety standards.
- **Emergency Preparedness:** The Act obligates licensees to prepare and maintain emergency plans in coordination with state and local authorities, ensuring readiness for radiological incidents.
- **Waste Management and Decommissioning:** The AEA directs the NRC to regulate the safe handling, storage, and disposal of nuclear materials, as well as the decommissioning of facilities once they cease operation.
- **Federal-State Cooperation:** The Act authorizes the NRC to enter into agreements with states, such as New York, to delegate certain regulatory functions, creating the “Agreement State” structure (discussed further in [Section 6.1.3](#)).

Through these provisions, the AEA provides the statutory authority that underpins the NRC’s regulatory regime and divides responsibilities between states and the federal government.

### 6.1.2 Relevant Nuclear Regulatory Commission Regulations

The NRC implements the AEA through a set of federal regulations codified in Title 10 of the Code of Federal Regulations (10 CFR). These regulations establish detailed requirements for facility design, operation, security, and environmental protection. The most relevant parts relating to safety and impact mitigation of nuclear power facilities include:

- **10 CFR Part 20 (Standards for Protection Against Radiation):** Establishes limits for occupational and public radiation exposure, mandates monitoring and reporting, and requires licensees to minimize radiation doses under the “as low as reasonably achievable” (ALARA) principle. Part 20 implements the ALARA principle through mandatory radiation protection programs, workplace controls, and effluent limits, ensuring that both occupational and offsite exposures remain as far below regulatory thresholds as practicable.
- **10 CFR Part 50 (Domestic Licensing of Production and Utilization Facilities):** Provides the primary licensing framework for commercial nuclear reactors, including design, construction, operation, and safety analysis requirements. Part 50 incorporates general design criteria (10 CFR Part 50, Appendix A), quality assurance standards (10 CFR Part 50, Appendix B), effluent and radiological protection objectives (10 CFR Part 50, Appendix I), and emergency preparedness and accident mitigation requirements (10 CFR Part 50, Appendix E), emergency core cooling system (ECCS) rules, and beyond-design-basis event strategies that together ensure reactors are built and operated with multiple layers of safety and risk mitigation. Requirements under 10 CFR Part 50 include:
  - **§ 50.36a** requires nuclear power reactor licensee to submit annual Radioactive Effluent Release Reports (RERRs) to the NRC. These reports document the quantities of radioactive materials released in liquid and gaseous effluents, demonstrate compliance with the design objectives and dose limits established in 10 CFR Part 50, Appendix I, and describe the effectiveness of the licensee’s effluent control program in keeping exposures as low as reasonably achievable.
  - **§ 50.36a** and 10 CFR Part 50, Appendix I also require facilities to submit Annual Radiological Environmental Operating Reports (referred to as “Environmental Reports”) that provide the

measurements of radioactive materials found in the environment surrounding the power plant.<sup>528</sup> The NRC provides additional guidance on how to prepare the Environmental Reports.<sup>529</sup>

- **10 CFR Part 52 (Licenses, Certifications, and Approvals for Nuclear Power Plants):** Governs the issuance of early site permits, standard design certifications, combined licenses, standard design approvals, and manufacturing licenses for nuclear power facilities.
- **10 CFR Part 72 (Licensing Requirements for the Independent Storage of Spent Nuclear Fuel):** Governs dry cask storage systems and independent spent fuel storage installations, ensuring safe interim management of radioactive waste.
- **10 CFR Part 73 (Physical Protection of Plants and Materials):** Sets standards for security, including requirements for armed response forces, access controls, and contingency planning against potential sabotage or terrorism.
- **10 CFR Part 100 (Reactor Site Criteria):** Establishes siting criteria for nuclear plants, addressing seismic risk, population density, and potential accident consequences to minimize public health and safety risks.

Together, these regulations implement the AEA's mandate by defining technical and safety standards, inspection regimes, and enforcement mechanisms. For the Upstate nuclear facilities, these federal requirements serve as the primary line of defense against radiological risk, ensuring that public health, worker safety, and the environment are safeguarded throughout the plants' lifecycles.

### 6.1.3 Balance of Federal and State Responsibilities

New York State agencies play a role in ensuring the safe use and disposal of radioactive materials. State authority extends beyond radioactive material licensing to encompass radiological health regulations, low-level waste management, emergency preparedness through response plans coordinated by the New York State Division of Homeland Security and Emergency Services (DHSES), and environmental review of non-reactor nuclear projects under SEQRA.<sup>530</sup> These State-specific mandates ensure that radiation protection, waste oversight, and community safety are embedded within broader environmental and public health frameworks. Through these and other various laws, the New York Department of Labor, NYSDOH, and the NYSDEC all play a role in nuclear facility regulations.<sup>531</sup>

Federal regulations primarily govern facility-level safety, security, and decommissioning, while the State retains responsibility for complementary radiation protection, environmental protection, public health, and public safety functions. [Section 6.2](#) highlights how federal and State responsibilities overlap to minimize and mitigate risks to the environment, public health, and disadvantaged communities.

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<sup>528</sup> The RERs and Environmental Reports are available at:

NRC, Radioactive Effluent and Environmental Reports for Ginna, 2024, available at: <https://ww2.nrc.gov/reactors/operating/ops-experience/tritium/plant-specific-reports/ginna>.

NRC, Radioactive Effluent and Environmental Reports for James A. FitzPatrick, 2024, available at: <https://ww2.nrc.gov/reactors/operating/ops-experience/tritium/plant-specific-reports/fitz>.

NRC, Radioactive Effluent and Environmental Reports for Nine Mile Point 1 & 2 (2025), available at: <https://ww2.nrc.gov/reactors/operating/ops-experience/tritium/plant-specific-reports/nmp1-2>.

<sup>529</sup> NRC, Regulatory Guide RG 1.21, Revision 3, Measuring, Evaluating, and Reporting Radioactive Material in Liquid and Gaseous Effluents and Solid Waste, available at: <https://www.nrc.gov/reading-rm/doc-collections/reg-guides/power-reactors/rg/division-1/division-1-21.html>.

<sup>530</sup> New York State authority over radiological health regulations and low-level waste management is codified at 10 NYCRR Part 16 and Environmental Conservation Law (ECL) Articles 27 and 29, respectively.

<sup>531</sup> A list of New York State regulations pertaining to nuclear facilities can be found at NRC: NMSS - State Regulations and Legislation, available at: <https://www.nrc.gov/agreement-states/new-york.html>.

## 6.2 Applicable Federal and State Environmental Regulations

Compliance with federal and State regulations beyond those promulgated by the NRC further reduces risks to the environment and public health. Together, federal and State requirements ensure that pollutant emissions and radionuclide releases from nuclear power facilities are tightly controlled, maintaining protection of public health and the environment while supporting continued operation under the proposed action.

The following subsections summarize relevant regulatory requirements.

### 6.2.1 Environmental Review Requirements

The Upstate nuclear facilities are subject to both federal and State environmental reviews.

#### NEPA (National Environmental Policy Act)

- **Federal context:** NEPA (42 U.S.C. §§ 4321–4370h) requires federal agencies to assess environmental impacts before undertaking “major federal actions significantly affecting the quality of the human environment.”
- **Relevance to proposed action:** ZEC 2.0 itself is a State-level program, so NEPA does not apply directly to the proposed action. However, NEPA remains relevant because nuclear power plants operate under licenses from the NRC. License renewals, significant modifications to the facility, or federal approvals require environmental review under NEPA (10 CFR Part 51.53(c)).

#### SEQRA (State Environmental Quality Review Act)

- **State context:** SEQRA (Environmental Conservation Law Article 8; 6 NYCRR Part 617) requires all New York State agencies to assess environmental impacts of discretionary actions they undertake, fund, or approve.
- **Relevance to proposed action:** This SGEIS is prepared in accordance with SEQRA.

### 6.2.2 Atmospheric Resources

Several federal and State regulations govern air quality to mitigate risks from both conventional air pollutant emissions (i.e., non-radioactive air pollutants such as sulfur dioxide or particulate matter) and radionuclide releases associated with nuclear power plant operations (e.g., tritium, carbon-14). While nuclear reactors themselves produce no combustion-related air pollutants during electricity generation, support systems such as auxiliary boilers, emergency diesel generators, and cooling towers can emit conventional pollutants. In addition, very small amounts of airborne radionuclides may be released under strictly regulated conditions, typically as a byproduct of normal plant operations such as steam system leaks, off-gassing from reactor coolant, or controlled ventilation of containment structures. These releases are monitored continuously, must remain within the dose objectives of 10 CFR Part 50, Appendix I, and are subject to the ALARA standard to ensure that public exposure remains below federal health-based limits.

The Clean Air Act (CAA, 42 U.S.C. §§ 7401–7671q) is the primary federal statute addressing air quality. Under the CAA, EPA has established National Ambient Air Quality Standards (NAAQS) for six “criteria pollutants” (42 U.S.C. § 7409; 40 CFR Part 50) to protect public health and welfare. Areas that do not meet NAAQS are designated as nonattainment areas (42 U.S.C. § 7407(d)), which triggers more stringent permitting requirements for new or modified emission sources under the Nonattainment New Source Review program (42 U.S.C. § 7503; 40 CFR Part 51, Subpart I). Although air quality in New York is largely in attainment, parts of the State remain in nonattainment for ozone. The entire State is part of the Ozone Transport Region (42 U.S.C. § 7511c), requiring enhanced control measures.

For nuclear facilities, these CAA requirements apply primarily to support equipment. Auxiliary boilers and backup diesel generators are regulated through Title V operating permits (40 CFR Part 70; 6 NYCRR Part 201), which consolidate all applicable federal and State emission limits into a single enforceable permit. Many of these units are also subject to the National Emission Standards for Hazardous Air Pollutants (NESHAPs) that impose emission limits, work practices, and monitoring requirements for hazardous air pollutants.<sup>532,533</sup> New or modified stationary sources may also trigger Prevention of Significant Deterioration (CAA § 165; 40 CFR § 52.21; 6 NYCRR Part 231) or Nonattainment New Source Review (CAA § 173; 40 CFR Part 51, Subpart I; 6 NYCRR Part 231), which require the use of Best Available Control Technology (BACT) or Lowest Achievable Emission Rate (LAER) controls, respectively.

Nuclear power plants are also subject to federal radiation protection standards that limit airborne radionuclide emissions to the public. Under 10 CFR Part 20 (radiation protection standards) and 10 CFR Part 50, Appendix I (effluent design objectives), as well as 40 CFR Part 190 (EPA environmental radiation protection standards for the nuclear fuel cycle), facilities must ensure that routine effluent releases result in no more than a small fraction of the annual public dose limit. Plant design features and continuous environmental monitoring ensure compliance with regulatory thresholds and the ALARA principle.<sup>534</sup>

At the State level, New York's air regulations (6 NYCRR Parts 200, 201, and 212) govern permitting and control of stationary sources, while 6 NYCRR Subpart 217-3 restricts unnecessary idling of heavy-duty vehicles, reducing emissions during construction or maintenance activities. Additional plant-specific measures, such as drift eliminators on cooling towers, use of ultra-low sulfur fuels, and emissions monitoring, further minimize air quality impacts.

### 6.2.3 Water Resources

The continued operation of the Upstate nuclear facilities is subject to a range of federal and State water protection requirements designed to prevent adverse impacts on rivers, lakes, wetlands, and coastal waters. The Clean Water Act (CWA) establishes the primary framework (33 U.S.C. § 1251 et seq.), with implementation delegated to NYSDEC through the State Pollutant Discharge Elimination System (SPDES) program.<sup>535</sup> Under CWA Section 402 (33 U.S.C. § 1342), nuclear facilities must maintain SPDES permits covering thermal discharges, process wastewater, and stormwater runoff. These permits incorporate New York State water quality standards (6 NYCRR Parts 700–706), ensuring that discharges from ongoing plant operations do not violate designated uses or impair aquatic ecosystems.

In addition, given that all three Upstate nuclear facilities are located along Lake Ontario, they must comply with the New York State Coastal Management Program.<sup>536</sup> This program requires review of industrial operations that may affect coastal resources, ensuring alignment with statewide coastal policies and local waterfront revitalization plans.

Other provisions, such as the NYSDEC Freshwater Wetlands Act (ECL Article 24; 6 NYCRR Parts 662–665) and related jurisdictional classifications, are more relevant to the siting or expansion of facilities rather than their continued operation, since existing plants already operate under delineated and permitted conditions. Similarly,

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<sup>532</sup> These include Reciprocating Internal Combustion Engines (RICE) MACT (40 CFR Part 63, Subpart ZZZZ) for diesel generators and various boiler MACT standards (40 CFR Part 63, Subparts DDDDD or JJJJJJ).

<sup>533</sup> While 40 CFR Part 61, Subpart H establishes NESHAP requirements for radionuclide emissions at DOE and NRC-licensed facilities, commercial nuclear power plants are not regulated under this provision. Instead, NRC retains exclusive authority over radioactive effluent releases under the Atomic Energy Act. As a result, NESHAP applicability at nuclear power plants is limited to non-radiological support equipment (e.g., boilers, diesel generators) rather than the reactor itself.

<sup>534</sup> For example, high efficiency particulate air (HEPA) and charcoal filters on ventilation systems.

<sup>535</sup> ECL Article 17, Title 8; 6 NYCRR Part 750.

<sup>536</sup> Executive Law Article 42; 19 NYCRR Part 600, available at: [https://dos.ny.gov/system/files/documents/2020/06/19nycrr\\_part\\_600-603.pdf](https://dos.ny.gov/system/files/documents/2020/06/19nycrr_part_600-603.pdf).

local government implementation of the wetlands program (authorized under ECL § 24-0501) may apply in limited circumstances where municipalities maintain additional protective standards.

## 6.2.4 Waste Management

Many of the regulations in 10 CFR (including Parts 20, 50, 61, 71, 72, and 73) establish baseline safety standards for handling, storing, transporting, and disposing of nuclear materials. The NRC retains direct authority over reactor safety, spent fuel, and high-level radioactive waste, while New York, as an Agreement State, regulates byproduct materials, source materials, and certain low-level and mixed wastes. State agencies such as NYSDEC and NYSDOH also implement delegated federal programs, such as the Resource Conservation and Recovery Act (RCRA), CAA, and CWA, and enforce State-specific rules like 6 NYCRR Part 380 regarding radiation control.

Waste streams from nuclear power facilities are legally defined and understood based on their regulatory context (e.g., “Low-Level Operational Wastes” versus more general categories such as “Industrial Hazardous Wastes”). **Table 6-1** describes the risk-mitigating regulations applicable to waste streams that the Upstate nuclear facilities produce.

**Table 6-1. Waste Stream Categories and Relevant Governing Regulations**

| Waste Type                                   | Description                                                                                                                                                                                  | Applicable Regulations (Federal & New York)                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| High-Level Spent Nuclear Fuel                | Highly radioactive used fuel assemblies removed from reactors that continue to generate heat and require secure long-term storage and eventual disposal. (NWPA, 42 U.S.C. § 10101(12), (23)) | <b>Federal:</b> AEA; Nuclear Waste Policy Act (NWPA); NRC regulations in <b>10 CFR Part 72</b> (Independent Spent Fuel Storage Installations), <b>10 CFR Parts 60/63</b> (geologic disposal).<br><b>New York:</b> As an NRC Agreement State, NYSDOH and NYSDEC oversee radiation safety programs for certain materials; however, spent fuel remains directly under NRC jurisdiction.                                                                                                   |
| Low-Level Operational Wastes                 | Contaminated clothing, filters, resins, tools, and facility hardware containing small amounts of radioactivity. (42 U.S.C. § 2021b–d)                                                        | <b>Federal:</b> AEA; Low-Level Radioactive Waste Policy Act (LLRWPA) (42 U.S.C. §§ 2021b–2021j); NRC regulations and operating standards in <b>10 CFR Part 61</b> (disposal).<br><b>New York:</b> NYSDEC regulates waste disposal facilities under 6 NYCRR Part 380 (Rules for Radiation Control).                                                                                                                                                                                     |
| Mixed Wastes                                 | Materials that contain both radioactive constituents and hazardous chemical components. (42 U.S.C. § 6903(41))                                                                               | <b>Federal:</b> Dual regulation under AEA/NRC and EPA’s RCRA (40 CFR Parts 260–279).<br><b>New York:</b> NYSDEC implements RCRA through 6 NYCRR Parts 370–376 (hazardous waste management regulations); 6 NYCRR Part 380 applies where radioactive material is present.                                                                                                                                                                                                                |
| Conventional Industrial and Hazardous Wastes | Non-radioactive wastes typical of industrial facilities, including solvents, oils, construction debris, and chemicals.                                                                       | <b>Federal:</b> RCRA (Subtitle C & D); Clean Water Act (CWA); Clean Air Act (CAA); OSHA standards.<br><b>New York:</b> NYSDEC implements RCRA through 6 NYCRR Parts 370–376; wastewater discharges regulated under SPDES permits, New York’s implementation of the National Pollutant Discharge Elimination System (NPDES); State CAA permitting under 6 NYCRR Parts 200–257.                                                                                                          |
| Controlled Radiological Effluents            | Gaseous or liquid discharges containing trace amounts of radioactivity that are monitored, treated, and released under strict limits.                                                        | <b>Federal:</b> NRC regulations in 10 CFR Part 20 (standards for protection against radiation) and 10 CFR Part 50, Appendix I (effluent limits); EPA environmental radiation protection standards in 40 CFR Part 190 (dose limits for the uranium fuel cycle); CWA/NPDES permits for liquid discharges.<br><b>New York:</b> NYSDEC implements SPDES permits for liquid effluents; radiological discharges regulated under 6 NYCRR Part 380; NYSDOH oversees public health protections. |

### 6.2.5 Land and Zoning

Local land use and zoning regulations generally do not apply to the continued operation of the Upstate nuclear facilities supported by the proposed action. Under the AEA, radiological safety and continued operation are matters of federal authority, preempting local zoning control. However, zoning considerations may become relevant after decommissioning, when a site may be repurposed for alternative uses that require local land-use approvals (e.g., redevelopment for commercial, residential, or industrial purposes). Any rezoning actions would then become subject to SEQRA review.

### 6.2.6 Environmental Justice and Disadvantaged Communities

Environmental justice (EJ) is a central consideration in New York's energy and environmental policy framework. Several State laws and policies establish requirements to ensure that disadvantaged communities are protected from disproportionate impacts and equitably share in the benefits of clean energy programs. **Table 6-2** below highlights the key environmental justice and disadvantaged communities regulations and policies most relevant to the continuation of nuclear power facilities under the proposed action, summarizing their core requirements and explaining how each relates to extended nuclear operations.

**Table 6-2. Relevant New York State Environmental Justice and Disadvantaged Communities Policies for Nuclear Operations**

| Regulation / Policy                                                        | Key Requirements                                                                                                                                                                                                                                                                                            | How It Relates to Continued Nuclear Operations                                                                                                                                                                                                     |
|----------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DEC Commissioner Policy CP-29 (Environmental Justice and Permitting, 2003) | Requires EJ analysis in NYSDEC permitting. Enhanced public participation for projects near EJ communities. Assessment of disproportionate impacts and required mitigation.                                                                                                                                  | Ensures that communities near nuclear facilities are meaningfully engaged, provided accessible information, and consulted on mitigation for any localized risks from extended operations.                                                          |
| Climate Leadership and Community Protection Act (CLCPA) (2019)             | At least 35% (goal of 40%) of clean energy program benefits must flow to disadvantaged communities. Agencies must integrate EJ into decision-making and ensure equitable distribution of climate benefits. Strengthened public participation, monitoring, and accountability.                               | The proposed action would keep nuclear plants online, avoiding GHG and co-pollutant emissions. Under CLCPA, these benefits must be evaluated for their distributional impacts and contribute to the equitable allocation of clean energy benefits. |
| DEC Commissioner Policy CP-42 (Climate Justice Policy, 2020)               | Implements CLCPA mandates within NYSDEC programs. Requires NYSDEC to avoid disproportionate pollution burdens in disadvantaged communities. Ensures climate and air quality benefits flow equitably to EJ communities.                                                                                      | Reinforces that nuclear plant operations under the proposed action cannot increase burdens on disadvantaged communities, while recognizing that zero-carbon electricity contributes directly to CLCPA equity and climate goals.                    |
| Climate Justice Working Group (CJWG)                                       | Established under the CLCPA. Develops the criteria to identify disadvantaged communities and ensure that frontline and otherwise underserved communities benefit from the State's historic transition to cleaner, greener sources of energy, reduced pollution and cleaner air, and economic opportunities. | State agencies, offices, authorities, and divisions shall not disproportionately burden disadvantaged communities and shall prioritize reductions of GHG emissions and co-pollutants in disadvantaged communities.                                 |

### 6.2.7 Threatened and Endangered Species

In the context of the proposed action, the federal Endangered Species Act (ESA) and related New York State laws do not impose new requirements tied to continued operation of the Upstate nuclear facilities. Instead, they ensure that facilities remain accountable for ongoing compliance. NRC licensees must manage vegetation, water use, and site activities in a manner that avoids harm to protected species and their habitats, while maintaining any existing State or federal “take” (defined broadly to include killing, harming, harassment, or significant habitat modification) authorizations. The following requirements help ensure that extended nuclear operations under ZEC 2.0 proceed without increasing risks to threatened or endangered species.

#### The Endangered Species Act

The Upstate nuclear facilities must comply with the ESA.<sup>537</sup> They must ensure that routine operations, maintenance, or site management activities do not result in adverse impacts to federally listed species or their critical habitats. If operational activities could cause a take, the ESA requires the Upstate nuclear plants to coordinate with the U.S. Fish and Wildlife Service (USFWS) or National Marine Fisheries Service (NMFS).

#### New York State Endangered and Threatened Species Regulations (6 NYCRR Part 182)

At the State level, New York’s ECL and its implementing regulations at 6 NYCRR Part 182 provide complementary protections for endangered and threatened species (collectively, State-listed species). These regulations prohibit the take of State-listed species, which includes actions that kill, harm, harass, or degrade occupied habitat. The Upstate nuclear facilities are located on the shore of Lake Ontario, in which State-listed species such as lake sturgeon are present. If the Upstate nuclear facilities cannot fully avoid adverse impacts to State-listed species, they require a Part 182 permit.<sup>538</sup>

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<sup>537</sup> 16 U.S.C. §§ 1531-1544, Endangered Species Act, available at: <https://uscode.house.gov/view.xhtml?path=/prelim@title16/chapter35&edition=prelim>.

<sup>538</sup> NYSDEC, DEC’s Endangered Species Regulations, available at: <https://dec.ny.gov/nature/animals-fish-plants/biodiversity-species-conservation/endangered-species/regulations>.

## CHAPTER 7 | Unavoidable Adverse Impacts

6 NYCRR § 617.9(b)(5)(iii)(b) requires an analysis of unavoidable adverse impacts in environmental impact statements. Unavoidable adverse impacts are impacts that, if the proposed action is implemented, cannot be avoided or adequately mitigated. In other words, the impacts would still occur after application of all feasible mitigation measures. [Chapter 5](#) discusses the potential impacts that may result from implementation of ZEC 2.0 and the continued operation of the Upstate nuclear facilities. Some of these impacts, though minimal, are unavoidable even while considering the regulatory framework and mitigation techniques discussed in [Chapter 6](#). Like [Chapter 5](#), this chapter relies upon the NRC License Renewal GEIS and the site-specific SGEIS for the Upstate nuclear facilities to analyze unavoidable adverse impacts (classified as SMALL, MODERATE, or LARGE).

The NRC License Renewal GEIS identified unavoidable impacts inherent to nuclear power plant operations. For example, minor unavoidable adverse impacts on air quality would occur due to emission and release of various chemical and radiological constituents into the environment from plant operations.<sup>539</sup> Other unavoidable adverse impacts include the permanent physical features of the plants, surface water use, thermal effluents discharged to the environment from the power conversion equipment, and entrainment and impingement of aquatic organisms in the cooling water system. The generation of spent fuel and nuclear wastes is also unavoidable.<sup>540</sup>

However, many of the above ZEC 2.0 impacts would be smaller compared to corresponding impacts that would occur under Alternative 1 and Alternative 2 evaluated in this SGEIS. Replacement generating facilities would involve significant construction, discussed in [Chapter 5](#). Conversely, adverse impacts associated with the initial construction of the Upstate nuclear plants have been avoided, have been mitigated, or have already occurred. Further, operation of fossil fuel plants would result in major impacts to certain resources including air quality and public health, with limited measures available to mitigate these impacts.

The plant-specific SGEIS determined that the continued operation of the Upstate nuclear facilities would result in SMALL unavoidable impacts and that no additional mitigation measures were necessary to address such impacts. The analyses also concluded that alternative scenarios to nuclear license renewal (e.g., replacement of nuclear power with fossil fuel or renewables generation) would not result in smaller impacts compared to continued operation of the nuclear plants.<sup>541</sup>

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<sup>539</sup> NRC License Renewal GEIS, p. 4-171.

<sup>540</sup> *Ibid.*, p. 4-172.

<sup>541</sup> See Section 9.1.1 of each SGEIS.

## CHAPTER 8 | Irreversible and Irretrievable Commitment of Resources

Consistent with 6 NYCRR § 617.9(b)(5)(iii)(c), this chapter discusses irreversible and irretrievable commitments of resources associated with the proposed action. The purpose of this chapter is to identify any natural, agricultural, and man-made resources consumed, converted, or otherwise made unavailable for future use as a consequence of the proposed action.

According to the NRC, “[i]rreversible and irretrievable commitment of resources for electrical power generation are considered to include the commitment of land, water, energy, raw materials, and other natural and human-made resources required for power plant operations during the license renewal term and any refurbishment activities that might be carried out that would not otherwise have taken place if the operating licenses had not been renewed.”<sup>542</sup> This chapter focuses on resources associated with the continued operation (rather than the initial construction) of the Upstate nuclear facilities under ZEC 2.0.

Necessary resources include the energy and water needed to run the plants, the nuclear fuel used by the reactors to generate electricity, and the land required to house the plants and to permanently dispose of the radioactive and nonradioactive wastes.<sup>543</sup> Nuclear plants recycle or reuse some of these resources, e.g., water returned to surface waterbodies and equipment that could be useful at other nuclear reactors. However, some water evaporates during nuclear operations, any fossil fuels used to support nuclear operations would be permanently spent, and not all related nuclear equipment can be recycled or reused.

The disposal or storage of wastes, including spent nuclear fuel, represents the most significant irreversible and irretrievable commitment of resources. The treatment of all wastes would require the permanent commitment of energy and fuel and could result in the irreversible commitment of land and structures for disposal facilities.<sup>544</sup> The plant-specific SGEIS also determined that fuel use and permanent storage space represent major irreversible and irretrievable commitment of resources.<sup>545</sup>

Actions under Alternative 1 and Alternative 2 would also entail the irreversible and irretrievable commitment of energy, water, chemicals, and fossil fuels.<sup>546</sup> Construction activities would require fuel, energy, and water, regardless of the replacement generating facility. Operational impacts would vary depending on the energy sources that replace nuclear power.

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<sup>542</sup> NRC License Renewal GEIS, p. 4-174.

<sup>543</sup> Ibid.

<sup>544</sup> Ibid.

<sup>545</sup> See Section 9.1.2 of each SGEIS.

<sup>546</sup> NRC License Renewal GEIS, p. 4-175.

## CHAPTER 9 | Growth-Inducing Aspects and Socioeconomic Impacts

Consistent with 6 NYCRR § 617.9(b)(5)(iii)(d), this chapter discusses the potential growth-inducing aspects and socioeconomic impacts of the proposed action. This chapter has four sections:

- [Section 9.1](#): introduces the analytic framework for the analysis of growth-inducing aspects and socioeconomic impacts of the proposed action;
- [Section 9.2](#): discusses the primary growth-inducing and socioeconomic impacts of the proposed action;
- [Section 9.3](#): discusses the indirect growth-inducing and socioeconomic impacts of the proposed action; and
- [Section 9.4](#): describes how primary and indirect impacts may be distributed geographically, focusing on potential impacts to agricultural land, environmental justice areas, and disadvantaged communities.

### 9.1 Analytic Framework

This chapter discusses potential direct and indirect growth-inducing aspects and socioeconomic impacts associated with ZEC 2.0. Extension of the ZEC program promotes growth-inducing aspects pertaining to three main criteria: electric system reliability, economics and employment, and public policy objectives. [Section 9.2](#) describes direct impacts of ZEC 2.0, such as generation of reliable baseload electricity and maintenance of employment and economic activity in communities near the Upstate nuclear facilities. [Section 9.3](#) discusses how the proposed action may produce indirect impacts, including indirect economic effects in the Upstate nuclear facilities' host communities and across the State. [Section 9.4](#) discusses the distribution of impacts, including environmental justice and disadvantaged communities concerns.

### 9.2 Direct Impacts

ZEC 2.0 is expected to yield primary impacts through sustaining current economic activity, electric grid capacity, and reliability associated with the existing nuclear facilities. A reliable, modern grid will ensure New York businesses and residents continue to receive reliable electric service and will leverage opportunities for economic development. Similarly, extending the ZEC program will maintain employment and economic activity tied to the continued operation of the Upstate nuclear facilities in Oswego and Wayne counties.

#### 9.2.1 Electric System Reliability

The generation of electricity in the State serves local electricity demand (load) and facilitates the balancing of the NYISO power system. Maintaining the system is crucial for economic growth and job stability, especially in sectors that depend on continuous power like healthcare, technology, and manufacturing.

Reliability refers to the ability to operate the electric system within limits and without major interruption of service to consumers. Nuclear facilities generally operate at a high capacity factor (see [Chapter 2](#)) providing stable, baseload power to the electric grid. Maintaining consistent power generation in the State can prevent, or reduce the duration of, power outages associated with congestion, extreme weather events, and equipment failures. Nuclear power generation supports resource adequacy, a key measure of electric grid reliability that NYISO defines as “the ability of the electric systems to supply the aggregate electrical demand and energy

requirements for their customers, taking into account scheduled and reasonably expected unscheduled outages of system elements.”<sup>547</sup>

Narrowing statewide system margins – the ability to supply firm load for specific system conditions (e.g., summer or winter peaks) without resorting to emergency procedures – provide a grid reliability challenge. According to the 2024 NYISO Reliability Needs Assessment, the State is experiencing narrowing reliability margins due to increasing demand for electricity accompanied by generating facility retirements (primarily gas turbine generators).<sup>548</sup> Under certain scenarios, NYISO forecasts that overloads of transmission facilities, or negative system margins, may occur in 2034 due to insufficient generation reserves to reliably meet demand across the State.<sup>549</sup>

Maintaining resource adequacy also enhances the State’s ability to adapt to the potential adverse impacts of climate change. As discussed in [Chapter 3](#), studies have documented the potential for climate change to contribute to sea level rise, storm surge, inland flooding, extreme precipitation events, and extreme heat – all of which are factors that could challenge New York’s existing electricity system.

Maintaining grid reliability benefits both utilities and customers by avoiding costs and lost productivity associated with power outages, in turn promoting growth-inducing impacts by attracting investment and development in energy intensive industries that require a reliable grid (e.g., data centers).<sup>550</sup> Poor grid reliability exposes consumers to power outages that affect communications, water, transportation, business, health, and safety.<sup>551</sup> From 2020 through 2024, excluding major storms, the State’s electric utilities reported 78,645 service interruptions, or 9.61 interruptions per 1,000 customers served, per year on average.<sup>552</sup> This resulted in a loss of 10.2 million annual customer-hours (the time a customer is without electric service). The average duration of electric service loss per customer affected (CAIDI) was 1.95 hours, excluding major storms, over the same five-year period.<sup>553</sup>

## 9.2.2 Economic and Employment Impacts

The continued operation of the Upstate nuclear plants will maintain long-term employment opportunities for regular maintenance and operational activities at the plants as well as potential short-term employment during any increases in repair and maintenance activities. Existing nuclear power infrastructure requires ongoing monitoring, maintenance, and upgrades to optimize performance and ensure reliability. These tasks create permanent jobs for skilled workers and operators, most of which require training and expertise in areas like electrical engineering and operations research, typically requiring at a minimum an associate or bachelor’s degree.<sup>554</sup> These positions offer competitive compensation and benefits, with nuclear engineer wages (BLS

<sup>547</sup> NYISO, 2023-2032 Comprehensive Reliability Plan (issued November 2023), p. 39, available at: <https://www.nyiso.com/documents/20142/2248481/2023-2032-Comprehensive-Reliability-Plan.pdf/c62634b6-cdad-31dc-5238-ee7d5eaece04>.

<sup>548</sup> NYISO, Reliability Needs Assessment Report (issued November 2024) (NYISO RNA), pp. 9-11, available at: <https://www.nyiso.com/documents/20142/2248793/2024-RNA-Report.pdf>.

<sup>549</sup> NYISO RNA, p. 10.

<sup>550</sup> NYISO, Powering Large-Scale Economic Development Projects Requires Proactive Planning and Additional Resources, March 13, 2024, available at: <https://www.nyiso.com/-/powering-large-scale-economic-development-projects-requires-proactive-planning-and-additional-resources>.

<sup>551</sup> FEMA, Preparedness Community, Power Outage | Impact, available at: [https://www.ready.gov/sites/default/files/2024-03/ready.gov\\_power-outage\\_hazard-info-sheet.pdf](https://www.ready.gov/sites/default/files/2024-03/ready.gov_power-outage_hazard-info-sheet.pdf).

<sup>552</sup> DPS, 2024 Electric Reliability Performance Report (June 2025), available at: <https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=B0056597-0000-C149-A13C-FCA9758F4D01>.

<sup>553</sup> Ibid.

<sup>554</sup> BLS, Occupational Outlook Handbook: Nuclear Engineers, available at: <https://www.bls.gov/ooh/architecture-and-engineering/nuclear-engineers.htm>.

See BLS, Occupational Outlook Handbook: Nuclear Technicians, available at: <https://www.bls.gov/ooh/life-physical-and-social-science/nuclear-technicians.htm>

estimates a median of \$127,520 annually) above the wages of other types of engineers and far above overall median wages in Wayne County, Oswego County and the State (see [Section 3.13.3](#) for more detail on wages).<sup>555</sup>

Stable employment promotes economic activity and growth at the local, regional, and State levels.

Cumulatively, the three Upstate nuclear facilities employ nearly 1,800 people (as of February 2024). Ginna employs 387, FitzPatrick employs 523, and Nine Mile Point employs 888.<sup>556</sup> Oswego County in particular benefits from the Upstate nuclear facilities, where at the end of 2024, Constellation was ranked as the largest private employer in the county.<sup>557</sup>

### Tax Impacts

The continued operation of the Upstate nuclear facilities directly supports the tax bases of Oswego County, Wayne County, and the State. The facilities pay property taxes to county and local governments while employees pay State income tax. As of 2024, the direct tax contributions of the three facilities supported by ZECs to local and county governments are:<sup>558</sup>

- **Ginna:** Paid approximately \$6.4 million in annual property taxes.
- **FitzPatrick:** Paid approximately \$13.9 million in annual property taxes.
- **Nine Mile Point:** Paid approximately \$30.5 million in annual property taxes.

Combined, the three facilities pay \$51 million in property taxes (with \$6.4 million to Wayne County and \$44.4 million to Oswego County).<sup>559</sup> For Oswego County, these tax payments represented approximately 18 percent of the county's total budget of \$253 million in 2024.<sup>560</sup> In Wayne County, the Ginna facility's tax payments represent approximately three percent of the county's total budget of \$213 million in 2024.<sup>561</sup> Local taxes support a wide range of services including education and health services in the community. Tax revenues also allow counties to invest in economic development and other activities that can support growth-inducing activities in the region.

## 9.3 Indirect Impacts

The continued operation of the Upstate nuclear plants under the proposed action supports existing jobs and promotes indirect economic effects in local communities and across the State. Employees at the facilities spend their income on goods and services. Given the rural nature of the facilities, it is likely that employees live in and commute from neighboring towns, keeping the spending local and supporting their local economies.<sup>562</sup> They would also pay property taxes (if they own their residences) and sales taxes. Employees with families would also send their children to local schools and other programs, indirectly supporting community engagement and cohesion. In addition to full-time employees, staffing increases during maintenance and refueling outages to

<sup>555</sup> Ibid.

<sup>556</sup> Constellation Energy, Our Locations, available at: <https://www.constellationenergy.com/our-company/locations/location-sites>.

<sup>557</sup> Oswego County Business Magazine, Top Employers 2024 (December 20, 2024), available at <https://oswegocountybusiness.com/publishers-note-top-employers/>.

<sup>558</sup> Constellation Energy, Our Locations, available at: <https://www.constellationenergy.com/our-company/locations/location-sites>.

<sup>559</sup> Ibid.

<sup>560</sup> Oswego County, 2024 Adopted County Budget (December 14, 2023), available at: <https://cms3.revize.com/revize/repository/oswegocountyny/Administrator/Budget/2024%20Adopted%20Budget.pdf>.

<sup>561</sup> Wayne County, State of the County, September 28 2023, available at: <https://www.waynecountyny.gov/DocumentCenter/View/10829/article>.

<sup>562</sup> For example, U.S. Census data from the OnTheMap tool shows that 47 percent of employees employed in the vicinity of Nine Mile Point and Fitzpatrick live within 10 miles while an additional 33 percent live 10 to 24 miles away (96 percent do not live in the immediate vicinity). Most workers are commuting from the south-west and south, the direction of Oswego (town) and Fulton. Source: Census Bureau, OnTheMap: Distance/Direction Analysis, available at <https://onthemap.ces.census.gov>,

address additional technical and staffing needs during these periods, which typically occur for one to two months on an 18-to-24-month cycle.<sup>563</sup> NRC estimates that staffing during these outage periods can increase by 200 to 900 additional workers.<sup>564</sup> These temporary increases in worker numbers benefit the regional economy through the workers' expenditures on goods and services such as local lodging and meals that supports additional employment and business activity in the region.<sup>565</sup>

Additions to and maintenance of existing clean power generating infrastructure are critical to meet future energy needs and to help the State meet its clean energy and climate goals. The proposed action interacts with other climate and energy policies to promote renewable energy development in the State. As described throughout this SGEIS, the anticipated difference between the proposed action and the “no action” alternatives is the continued operation of the Upstate nuclear facilities, which provide zero-emissions electricity to consumers throughout the State.

By supporting the State's transition to an emissions-free grid by 2040 (consistent with the CLCPA), the proposed action is expected to contribute to the State reducing its reliance on fossil fuels. The Final Supplemental GEIS for the CLCPA (a Prior SEQRA Analysis introduced in [Chapter 1](#)) and the CLCPA Scoping Plan (the Scoping Plan) have identified several growth-inducing and socioeconomic impacts resulting from large-scale clean energy resources and lower statewide emissions compared to historical baseline energy emissions.<sup>566, 567</sup> These include, but are not limited to, the creation of new clean energy jobs across various sectors; economic development opportunities from expanding renewable industries; and investments in grid modernization that support long-term cost savings and resilience. Both documents also note the potential for associated public health co-benefits from improved air quality and the potential for land use changes, infrastructure demands, and workforce transition challenges, as fossil fuel facilities are retired. To the extent that ZEC 2.0 facilitates the State achieving its CLCPA goals, the proposed action would indirectly contribute to the CLCPA's associated growth-inducing and socioeconomic impacts.

## 9.4 Distribution of Impacts

This section considers the distribution of ZEC 2.0's growth-inducing and socioeconomic impacts across the State. The nature of an impact, its burden on local communities, and the timing of its effects will vary by geography, community characteristics, and local economic and environmental conditions.

### 9.4.1 Geographic Distribution

Distributional analysis is critical under SEQRA and the CLCPA, which require State agencies to evaluate whether policies have disproportionate effects on disadvantaged communities. Distributional analysis involves assessing who bears the burdens and who receives the benefits of a proposed action (i.e., the distribution of impacts across populations and geographies). This includes evaluating how air quality, public health, employment, and economic activity are distributed geographically and demographically, and whether disadvantaged communities are disproportionately exposed to adverse impacts or excluded from policy benefits.

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<sup>563</sup> NRC License Renewal GEIS, p. 3-19 and p. 3-83.

<sup>564</sup> Ibid.

<sup>565</sup> NRC License Renewal GEIS, p. 3-83.

See also: Nuclear Energy Institute (NEI), Economic Impacts of the R.E. Ginna Nuclear Power Plant (issued February 2015), available at: <https://www.nei.org/resources/reports-briefs/economic-impacts-ginna-nuclear-power-plant>.

NEI estimates that Ginna employs approximately 800 to 1,000 additional workers during reactor refueling outages. Overall, NEI estimated Ginna supports an additional 200 jobs in outage years (converted to full-time equivalents) directly and indirectly in the State.

<sup>566</sup> 2020 SGEIS, Chapter 9, p.9-1 to 9-7.

<sup>567</sup> New York State Climate Action Council, New York State Climate Action Council Scoping Plan (2022), Chapter 10, pp. 125-145, available at: <https://climate.ny.gov/resources/scoping-plan>.

Section 7(2) of the CLCPA requires all State agencies, when considering permits, licenses, or other administrative decisions, to evaluate whether such decisions are inconsistent with or will interfere with attainment of statewide GHG emission limits. Section 7(3) further requires agencies to ensure that actions do not disproportionately burden disadvantaged communities.<sup>568</sup>

The State’s zero-emission nuclear generation is concentrated in Oswego and Wayne counties, while population and load centers are concentrated Downstate. The geographic distribution of growth-inducing and socioeconomic impacts under ZEC 2.0 is twofold:

- Local socioeconomic benefits concentrate in Wayne and Oswego counties where the Upstate nuclear facilities are located.
- Statewide electric system reliability, GHG reductions, and air quality benefits extend beyond the host communities to regions that would otherwise experience higher fossil fuel-related impacts under the “no action” alternatives.

Under ZEC 2.0, Oswego and Wayne counties would continue to realize the direct local economic benefits described above, including:

- High-wage, long-term employment in counties where average wages are below the statewide average.
- Over \$50 million annually in property tax contributions across the three facilities, representing meaningful shares of local municipal and school district budgets.
- Secondary economic activity in industries that depend on the nuclear workforce (i.e., jobs and businesses supported by the spending of nuclear facility employees).

Under the “no action” alternatives, it is uncertain where replacement generating facilities would be sited. Therefore, the geographic distribution of employment, economic activity, tax revenues, and other socioeconomic impacts of Alternatives 1 and 2 is not reasonably foreseeable.

However, maintaining electric system reliability and efficiency affects the entire State, including population-dense Downstate areas. The distribution of environmental impacts, which influence socioeconomic conditions, would be experienced in different ways across the State depending on the impact. Impacts on water and soil quality are more localized to the host communities while impacts on air quality are both local and lead to changes in ambient air pollution concentrations statewide. This SGEIS assumes that ZEC 2.0 would result in less fossil fuel-generated electricity relative to the “no action” alternatives. The proposed action would thus contribute to, or at minimum would not impede, the State’s progress in reducing GHGs and improving air quality.

In contrast, under the “no action” alternatives, fossil fuel consumption and GHG emissions would increase. As discussed in [Section 2.3](#), the closure of the Indian Point facility in 2020 illustrates how new fossil fuel plants replaced nuclear capacity and increased GHG emissions across the State. Between 2019 (the last full year of Indian Point operation) and 2022 (the first year without the reactors), fossil-based generation in the State increased by approximately 12,700 GWh, and statewide electric-sector GHG emissions rose by 26 percent. Two large new natural gas plants, Cricket Valley Energy Center (1,020 MW) and CPV Valley Energy Center (678 MW), and a smaller one, Bayonne Energy Center II (120 MW), have offset the lost nuclear capacity and have

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<sup>568</sup> New York State Climate Action Council, New York State Climate Action Council Scoping Plan (2022), available at: <https://climate.ny.gov/resources/scoping-plan>.

helped to maintain system reliability.<sup>569</sup> All three of these facilities are located Downstate in the Hudson Valley (Cricket and CPV) and New York City (Bayonne) NYISO zones.<sup>570</sup>

Finally, GHG and air quality effects under the “no action” alternatives will also have broader consequences. Because GHGs drive global climate change regardless of where they are emitted, retirements that increase fossil fuel combustion in the State would add to cumulative emissions that worsen climate impacts such as sea level rise, inland flooding, and extreme heat. These climate-related hazards disproportionately affect vulnerable populations, including disadvantaged communities, which often have less adaptive capacity and face greater health and economic risks. By maintaining nuclear generation under ZEC 2.0, the State helps avoid additional fossil emissions that can further exacerbate climate change and its associated impacts. This underscores SEQRA’s and CLCPA’s requirements that agencies evaluate not only local distributional impacts but also how actions contribute to or help avoid long-term climate risks, particularly for disadvantaged communities.

### 9.4.2 Sectoral Distributions

Distributional impacts also vary by sector. The proposed action supports the nuclear power industry, which has one of the lowest land-use intensities of any electricity generating source. By preserving existing nuclear facilities, ZEC 2.0 would eliminate the need for replacement land conversion to backfill lost nuclear generation, thereby minimizing additional demands on rural economies and agricultural land. Although decommissioning of nuclear plants and construction of replacement generation resources would also generate short-term employment, as described in [Chapter 5](#), those jobs are temporary. Employment related to decommissioning would be concentrated at or near the Upstate nuclear facilities. Employment related to constructing replacement generation resources, by contrast, would be geographically diffuse. Continued operation under ZEC 2.0 sustains long-term, high-wage employment in host communities. Sectoral impacts thus vary between ZEC 2.0, Alternative 1, and Alternative 2.

For example, partially replacing 27,000 GWh of nuclear generation with new renewable capacity (i.e., Alternative 2) would require significant land area for the generating facilities and supporting transmission infrastructure. Analyses conducted for proposed regulations promulgated under the RAPID Act have highlighted concerns about potential land use conflicts between constructing transmission infrastructure and agricultural uses, particularly where large-scale solar projects or new transmission infrastructure overlap with productive farmland.<sup>571</sup> To address these risks, the State has established measures such as the Farmland Protection Working Group, which coordinates agency efforts to minimize impacts on productive agricultural soils and guide siting of renewable energy facilities.<sup>572</sup>

Alternative 1’s 100 percent fossil fuel replacement scenario presents a different distributional profile. While fossil fuel plants require less land than large-scale renewable buildouts and could leverage some existing land capacity, Alternative 1 would result in significant air quality and public health burdens associated with fossil fuel burning.

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<sup>569</sup> NYISO, Generator Deactivation Assessment Indian Point Energy Center, December 12, 2017, available at: [https://www.nyiso.com/documents/20142/1396324/Indian\\_Point\\_Generator\\_Deactivation\\_Assessment\\_2017-1213.pdf/f673a0f8-5620-1d7b-4be2-99aaf781ac5c](https://www.nyiso.com/documents/20142/1396324/Indian_Point_Generator_Deactivation_Assessment_2017-1213.pdf/f673a0f8-5620-1d7b-4be2-99aaf781ac5c)

<sup>570</sup> Ibid.

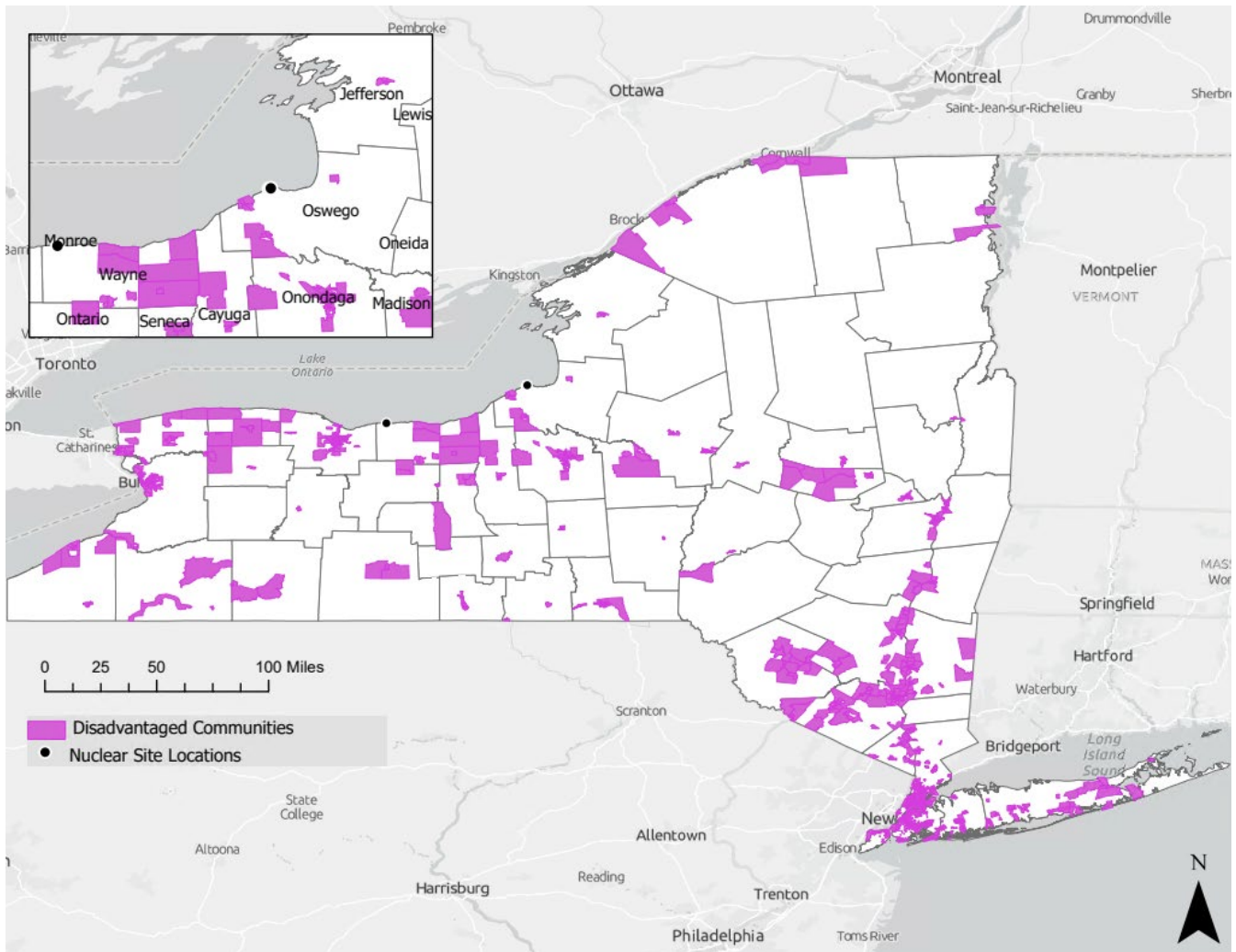
<sup>571</sup> Case 24-M-0433, Draft Generic Environmental Impact Statement In the Matter of the Rules and Regulations for the Environmental Review, Permitting, and Siting in this State of Major Renewable Energy Facilities and Major Electric Transmission Facilities Under the Renewable Action Through Project Interconnection and Deployment Act (RAPID Act), available at: <https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=90DADA93-0000-C713-811A-3B1771FEE38B>.

<sup>572</sup> New York State Department of Agriculture and Markets, Farmland Protection Working Group, available at: <https://agriculture.ny.gov/land-and-water/farmland-protection-working-group>.

### 9.4.3 Environmental Justice and Disadvantaged Communities Impacts

As described in [Section 3.13.6](#), disadvantaged communities are distributed statewide and are heavily concentrated in New York City, Long Island, and the Mid-Hudson region, where cumulative environmental burdens and energy insecurity are greatest. In New York City alone, 44 percent of census tracts are designated as disadvantaged communities, and nearly 30 percent of residents are considered energy insecure. Increased reliance on the existing Downstate fossil fuel plants under the “no action” alternatives would exacerbate existing vulnerabilities, as fossil fuel plants generate more air pollutant emissions that are most heavily concentrated near the emissions source. **Figure 9-1** shows areas with disadvantaged communities in the State, specifically showing those near the nuclear facilities Upstate.

Both Oswego and Wayne counties are home to communities designated as disadvantaged. As shown in **Figure 9-1**, disadvantaged communities are located along Lake Ontario in proximity to the FitzPatrick, Nine Mile Point, and Ginna facilities. Approximately 33 percent of census tracts in Oswego County and 38 percent in Wayne County are designated as disadvantaged communities (see [Section 3.13.6](#), **Table 3-9**). These designations reflect multiple burdens, including relatively high poverty rates, elevated energy cost burdens, and health vulnerabilities such as asthma prevalence and the prevalence of other chronic conditions. Both counties also include rural and shoreline communities at risk from flooding and climate-related hazards. The presence of disadvantaged communities in nuclear host counties underscores the importance of ensuring ZEC 2.0 does not impose new localized environmental burdens and that host communities share equitably in the economic and environmental benefits of continued nuclear operation.

**Figure 9-1. Disadvantaged Communities in New York State<sup>573</sup>**

Disadvantaged communities in New York have been disproportionately exposed to pollutants from fossil fuel-fired power generation due to plant location. As described in [Chapters 3](#) and [Chapter 5](#), air quality impacts are a central driver of health disparities: elevated concentrations of PM<sub>2.5</sub> and ground-level ozone (related to fossil fuel combustion emissions) are linked to higher rates of asthma, reduced lung function, and premature mortality.<sup>574,575</sup> As of 2025, the New York State Asthma Dashboard reports that 9.9 percent of adults statewide have asthma, with substantially higher prevalence in Wayne County (12.5 percent) and Oswego County (14.4 percent).<sup>576</sup> Asthma rates are also elevated among Latino (9.2 percent) and Black (8.2 percent) individuals. Despite recent improvements, the State continues to experience poor air quality; in 2023, the State ranked seventh worst among nine Northeastern states in AQI, a comprehensive measure of air pollution, with 19 days

<sup>573</sup> New York Department of State, NYS Disadvantaged Communities, available at: <https://new-york-opd-geographic-information-gateway-nysdos.hub.arcgis.com/datasets/NYSDOS::nys-disadvantaged-communities-dac/about>.

<sup>574</sup> California Air Resources Board, Inhalable Particulate Matter and Health (PM<sub>2.5</sub> and PM<sub>10</sub>), available at: <https://ww2.arb.ca.gov/resources/inhalable-particulate-matter-and-health>.

<sup>575</sup> EPA, Health Effects of Ozone Pollution, available at: <https://www.epa.gov/ground-level-ozone-pollution/health-effects-ozone-pollution>.

<sup>576</sup> New York State Department of Health, New York State Asthma County Dashboard, available at: [https://apps.health.ny.gov/public/tabvis/PHIG\\_Public/asthma/reports/#county](https://apps.health.ny.gov/public/tabvis/PHIG_Public/asthma/reports/#county).

violating the ozone standard.<sup>577</sup> These health burdens not only harm individuals but also reduce workforce participation, limit school attendance, and increase reliance on social safety nets. Avoiding additional fossil fuel generation under ZEC 2.0 therefore provides long-term public health benefits, relieving disadvantaged communities already overburdened by poor air quality.

The distributional consequences for disadvantaged communities differ substantially between the proposed action and the “no action” alternatives:

- **Proposed Action (ZEC 2.0):** maintains existing nuclear generation, thereby preventing additional GHG and air pollutant emissions. The primary effect is avoidance of new burdens, rather than introduction of new site-level benefits.
- **Alternative 1:** would likely result in substantial adverse health impacts in disadvantaged communities due to higher pollutant exposures from increased fossil fuel generation, assuming additional generation comes from existing peaker plants that are disproportionately located within disadvantaged communities. These impacts would add to existing environmental and health burdens in overburdened communities.
- **Alternative 2:** would result in small to moderate health impacts, with renewable deployment offsetting some but not all fossil fuel-related burdens in disadvantaged communities.

At the facility level, the NRC License Renewal GEIS found that human health and environmental impacts of continued nuclear operation are generally SMALL, with no disproportionate burden on minority or low-income populations. NRC categorized environmental justice as a Category 2 (site-specific) issue, meaning impacts warrant review at individual facilities but have not been found to pose significant generic concerns. In Wayne and Oswego counties, where approximately one-third of census tracts are designated as disadvantaged communities, the presence of existing vulnerabilities underscores the importance of site-specific review. While NRC’s analyses indicate that continued nuclear operations themselves do not create disproportionate burdens to disadvantaged communities, the proximity of disadvantaged communities to the Upstate nuclear facilities highlights the need for ongoing monitoring and engagement to ensure that any cumulative impacts are addressed. The primary distributional concern in this SGEIS therefore remains less about direct plant-site impacts and more about the statewide consequences of replacement generation.

In addition to health burdens, disadvantaged communities also face heightened vulnerability to power reliability and affordability issues. Outages disproportionately affect disadvantaged communities, which often have older housing and infrastructure, limited resources for backup power, and fewer financial and technical means to cope with service disruptions. As a result, recovery in these communities may take longer, as residents and institutions face greater challenges in repairing damage, replacing spoiled goods or medications, and resuming normal activities. Nuclear facilities contribute to system reliability by providing dependable, fuel-secured baseload generation, reducing reliance on fossil fuel peaker power plants in Downstate disadvantaged communities. Maintaining nuclear output under ZEC 2.0 therefore directly supports equitable access to reliable power, which is essential for schools, healthcare facilities, and emergency services in vulnerable communities.

On balance, ZEC 2.0 results in SMALL site-level environmental justice impacts – that is, impacts in the immediate vicinity of the nuclear facilities themselves, which the NRC has found to be minimal and without disproportionate effects on disadvantaged communities. At the same time, ZEC 2.0 provides statewide benefits by preventing additional fossil generation. By contrast, the “no action” alternatives, particularly if dominated by

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<sup>577</sup> NYSDEC, New York State Ambient Air Monitoring Network Assessment (issued May 2025), available at: <https://dec.ny.gov/sites/default/files/2025-05/2025fiveyearassessment.pdf>.

fossil fuel replacement, would impose LARGE adverse environmental justice impacts on disadvantaged communities, worsening air pollution burdens, increasing energy insecurity, and undermining CLCPA equity objectives.

## CHAPTER 10 | Effects on the Use and Conservation of Energy Resources

Consistent with 6 NYCRR §617.9(b)(5)(iii)(e), this chapter considers the potential impacts of the proposed action on the use and conservation of energy, including the use of renewable energy sources.

The CLCPA sets climate and clean energy goals, encompassing climate change impact adaptation, reductions in GHG emissions, and investments in renewable energy technologies, as well as job creation and energy worker transitions and the protection of disadvantaged communities. The CLCPA facilitates a transition in the use and conservation of energy in the State. As part of this transition, continued operation of the Upstate nuclear facilities will generate emissions-free electricity and accommodate the forecasted growth in electricity demand in the State over time. The proposed action could support the State's conservation of fossil fuels and other energy resources required to construct, operate, and maintain non-nuclear generating facilities that could replace nuclear capacity under Alternatives 1 and 2.

The proposed action will not impact the demand for energy and will instead support the State's ability to meet such demand. [Chapter 2](#) describes the drivers and forecasts of electricity demand and renewable energy capacity additions in the State.

This SGEIS also addresses how the proposed action will contribute to the CLCPA's GHG emission reduction targets. Section 7(2) of the CLCPA requires State agencies to consider whether administrative decisions are inconsistent with or will interfere with the attainment of the statewide GHG emission limits set by the law. [Chapter 5](#) explains that ZEC 2.0 is expected to support GHG emission reductions in the State. The results of this SGEIS indicate that extending the ZEC program through 2049 is not inconsistent with, and will not interfere with, the statewide GHG emission limits set by the CLCPA.

## CHAPTER 11 | References

- 10 CFR Part 51, Subpart A, Appendix B, Table B-1, available at: <https://www.nrc.gov/reading-rm/doc-collections/cfr/part051/part051-appb.html>.
- 16 USC §§1531–1544, Endangered Species Act, available at: <https://uscode.house.gov/view.xhtml?path=/prelim@title16/chapter35&edition=prelim>.
- 36 CFR § 800.6, Resolution of adverse effects, available at: <https://www.ecfr.gov/current/title-36/chapter-VIII/part-800/subpart-B/section-800.6>.
- A.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, B.C. Stewart, and T.K. Maycock, USGCRP, 2023, Fifth National Climate Assessment. U.S. Global Change Research Program, available at: <https://repository.library.noaa.gov/view/noaa/61592>.
- Adam, O., Shourky Wolff, M., Garfinkel, C. I., & Byrne, M. P., 2023, Increased uncertainty in projections of precipitation and evaporation due to wet-get-wetter/dry-get-drier biases. *Geophysical Research Letters*, 50(24), e2023GL106365, available at: <https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2023GL106365>.
- American Community Survey, 5-Year Estimates Demographic and Housing Estimates 2023, available at: <https://data.census.gov/table/ACS5Y2023.DP05>.
- American Community Survey, 5-Year Estimates Tenure 2023, available at: <https://data.census.gov/table/ACS5Y2023.B25003>.
- American Farmland Trust, Smart Solar Siting on Farmland: Achieving Climate Goals While Strengthening the Future for Farming in New York Appendix, available at: <https://s30428.pcdn.co/wp-content/uploads/2022/01/Solar-Mitigation-Framework-scenarios-White-Paper-appendix.pdf>.
- American Journal of Transportation, U.S. nuclear generators import nearly all the uranium concentrate they use, available at: <https://www.ajot.com/news/u.s-nuclear-generators-import-nearly-all-the-uranium-concentrate-they-use>.
- American Lung Association, Ozone, available at: <https://www.lung.org/clean-air/outdoors/what-makes-air-unhealthy/ozone#how>.
- American Lung Association, Report Card: New York, available at: <https://www.lung.org/research/sota/city-rankings/states/new-york>.
- 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/>
- BLS, Local Area Unemployment Statistics: State and County Monthly Data, available at: <https://www.bls.gov/lau/tables.htm>.
- BLS, Occupational Outlook Handbook: Nuclear Engineers, available at: <https://www.bls.gov/ooh/architecture-and-engineering/nuclear-engineers.htm>
- BLS, Occupational Outlook Handbook: Nuclear Technicians, available at: <https://www.bls.gov/ooh/life-physical-and-social-science/nuclear-technicians.htm>

- BLS, Quarterly Census of Employment and Wages Private, NAICS 221113 Nuclear electric power generation, All Counties in New York, 2024 Fourth Quarter, available at: [https://data.bls.gov/cew/apps/table\\_maker/v4/table\\_maker.htm#type=2&st=36&year=2024&qtr=4&own=5&ind=221113&supp=1](https://data.bls.gov/cew/apps/table_maker/v4/table_maker.htm#type=2&st=36&year=2024&qtr=4&own=5&ind=221113&supp=1).
- BLS, Quarterly Census of Employment and Wages Private, All Industries, All Counties in New York 2024 Fourth Quarter, available at: [https://data.bls.gov/cew/apps/table\\_maker/v4/table\\_maker.htm#type=2&st=36&year=2024&qtr=4&own=5&ind=10&supp=0](https://data.bls.gov/cew/apps/table_maker/v4/table_maker.htm#type=2&st=36&year=2024&qtr=4&own=5&ind=10&supp=0).
- BLS, Quarterly Census of Employment and Wages, Oswego County Private Employment NAICS Sectors Annual Averages, available at: [https://data.bls.gov/cew/apps/table\\_maker/v4/table\\_maker.htm#type=6&year=2024&qtr=A&own=5&area=36075&supp=0](https://data.bls.gov/cew/apps/table_maker/v4/table_maker.htm#type=6&year=2024&qtr=A&own=5&area=36075&supp=0).
- BLS Quarterly Census of Employment and Wages, Wayne County Private Employment NAICS Sectors Annual Averages, available at: [https://data.bls.gov/cew/apps/table\\_maker/v4/table\\_maker.htm#type=6&year=2024&qtr=A&own=5&area=36117&supp=0](https://data.bls.gov/cew/apps/table_maker/v4/table_maker.htm#type=6&year=2024&qtr=A&own=5&area=36117&supp=0).
- 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/>.
- California Air Resources Board. Inhalable Particulate Matter and Health (PM2.5 and PM10), available at: <https://ww2.arb.ca.gov/resources/inhalable-particulate-matter-and-health>.
- 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), available at: <https://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?Mattercaseno=14-E-0270>.
- Case 15-E-0302, Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and a Clean Energy Standard, Department of Public Service Staff Zero-Emissions Credit Program Extension Proposal (issued July 31, 2025), available at: <https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={20FE6198-0000-CF2B-A36D-8B6869CF6E5E}>.
- Case 15-E-0302, Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and a Clean Energy Standard, Order Adopting a Clean Energy Standard (issued August 1, 2016) (CES Order), see also NYSERDA, Clean Energy Standard, available at: <https://www.nyserdera.ny.gov/All-Programs/Clean-Energy-Standard>.
- Case 21-E-0130, Joint Petition of Exelon Corporation and Exelon Generation Company, LLC for a Declaratory Ruling Disclaiming Jurisdiction Over or Abstaining from Further Review of the Proposed Transaction, or in the Alternative, an order Authorizing the Proposed Transaction, Order Asserting Jurisdiction, Approving and Adopting Joint Proposal, and Continuing Lightened Regulation (issue December 16, 2021), available at: <https://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterSeq=64826>.
- Case 24-M-0433, Draft Generic Environmental Impact Statement In the Matter of the Rules and Regulations for the Environmental Review, Permitting, and Siting in this State of Major Renewable Energy Facilities

and Major Electric Transmission Facilities Under the Renewable Action Through Project Interconnection and Deployment Act (RAPID Act), available at:

<https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={90DADA93-0000-C713-811A-3B1771FEE38B}>.

Census Bureau, 2022 American Community Survey 5-Year Estimates, available at:

<https://data.census.gov/table?q=new+york+population&g=050XX00US36075,36117&d=ACS+5-Year+Estimates+Data+Profiles>.

Census Bureau, OnTheMap: Distance/Direction Analysis, 2025, available at <https://onthemap.ces.census.gov>.

Census Bureau, State and County Population Totals and Components of Change, 2020-2024, available at:

<https://www.census.gov/data/tables/time-series/demo/popest/2020s-state-total.html>.

Census Bureau, State Population Totals and Components of Change: 2020-2024, available at:

<https://www.census.gov/data/tables/time-series/demo/popest/2020s-state-total.html>.

City of Oswego, Planning & Zoning, available at: <https://www.oswegony.org/government/planning-zoning>.

City University of New York. Soils of New York State, available at:

[http://www.geo.hunter.cuny.edu/courses/geog306.04\\_grande/7-Soils%20Handout.pdf](http://www.geo.hunter.cuny.edu/courses/geog306.04_grande/7-Soils%20Handout.pdf).

Civerolo, K. L., Rattigan, O. V., Felton, H. D., & Schwab, J. J., 2017, Changes in gas-phase air pollutants across New York State, USA, *Aerosol and Air Quality Research*, 17(1), 147-16, available at:

<https://link.springer.com/article/10.4209/aaqr.2016.04.0141>.

CNYCentral, Oil spill cleanup continues in Oswego, available at: <https://cnycentral.com/news/local/oil-spill-cleanup-continues-in-oswego>.

Consolidated Laws of New York, Energy Chapter 17-A, Article 6 – Energy Planning, September 22, 2014, available at: <https://www.nysenate.gov/legislation/laws/ENG/6-102>.

Constellation Energy Corporation, Emergency Planning for the R.E. Ginna Clean Energy Center Wayne County, available at:

[https://www.dhss.ny.gov/system/files/documents/2024/06/2024\\_2025\\_ginna\\_wayne\\_brochure.pdf](https://www.dhss.ny.gov/system/files/documents/2024/06/2024_2025_ginna_wayne_brochure.pdf).

Constellation Energy, James A. FitzPatrick Clean Energy Center, available at:

<https://www.constellationenergy.com/our-company/locations/location-sites/james-a-fitzpatrick-clean-energy-center.html>

Constellation Energy, Nine Mile Point Clean Energy Center, available at:

<https://www.constellationenergy.com/our-company/locations/location-sites/nine-mile-point-clean-energy-center.html>

Constellation Energy, R.E. Ginna Clean Energy Center, available at: <https://www.constellationenergy.com/our-company/locations/location-sites/r-e-ginna-clean-energy-center.html>

Cornell University, All-hazards Preparedness & Response Education Program Flooding, available at:

<https://eden.cce.cornell.edu/natural-hazards/flooding/>.

Department of Geography and Environmental Science, Hunter College, Climate of New York, available at:

[http://www.geo.hunter.cuny.edu/courses/geog306.04\\_grande/ClimateNY\\_01.pdf](http://www.geo.hunter.cuny.edu/courses/geog306.04_grande/ClimateNY_01.pdf).

- DOE, EIS-0250: Final Environmental Impact Statement, Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada, available at: <https://www.energy.gov/nepa/articles/eis-0250-final-environmental-impact-statement>.
- DOE, EIS-0250-S1: Final Supplemental Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada, available at: <https://www.energy.gov/nepa/eis-0250-s1-final-supplemental-environmental-impact-statement-geologic-repository-disposal>.
- DOE, National Transmission Needs Study (October 2023), available at: [https://www.energy.gov/sites/default/files/2023-12/National%20Transmission%20Needs%20Study%20-%20Final\\_2023.12.1.pdf](https://www.energy.gov/sites/default/files/2023-12/National%20Transmission%20Needs%20Study%20-%20Final_2023.12.1.pdf).
- DOE, NUCLEAR 101: How Does a Nuclear Reactor Work?, available at: <https://www.energy.gov/ne/articles/nuclear-101-how-does-nuclear-reactor-work>.
- DPS and Ecology and Environment Inc., Indian Point Contingency Plan Final Generic Environmental Impact Statement, available at: <http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7B1CFCC090-1E99-4A8C-BC0C-56764C8985AD%7D>.
- DPS, 2024 Electric Reliability Performance Report (June 2025), available at: <https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=B0056597-0000-C149-A13C-FCA9758F4D01>.
- Draft New York State Energy Plan, Chapter 16 Pathways Analysis (July 2025), p. 22-27, available at: <https://energyplan.ny.gov/Plans/Draft-2025-Energy-Plan>.
- Draft New York State Energy Plan, Volume I: Summary for Policymakers, (July 2025), p. 28, available at: <https://energyplan.ny.gov/Plans/Draft-2025-Energy-Plan>.
- EarthJustice, NRDC, Toxic Coal Ash in New York: Addressing Coal Plants' Hazardous Legacy, available at: <https://earthjustice.org/feature/coal-ash-states/new-york>.
- ECL Article 17, Title 8; 6 NYCRR Part 750. Available at: [https://nyruralwater.org/sites/default/files/Part\\_750\\_SPDES\\_Final\\_11-30-2016.pdf](https://nyruralwater.org/sites/default/files/Part_750_SPDES_Final_11-30-2016.pdf).
- EIA, Electric Power Annual, Sales to End-Users. Available at: [https://www.eia.gov/electricity/annual/table.php?t=epa\\_02\\_08.html](https://www.eia.gov/electricity/annual/table.php?t=epa_02_08.html).
- EIA, Electricity, Interactive Data Tools, 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&matype=0>.
- EIA, Electricity Explained: Electricity and the Environment, available at: [https://www.eia.gov/energyexplained/index.php?page=electricity\\_environment](https://www.eia.gov/energyexplained/index.php?page=electricity_environment).
- EIA, Energy-Related CO2 Emission Data Tables, available at: <https://www.eia.gov/environment/emissions/state/>.
- EIA, Glossary, available at: <https://www.eia.gov/tools/glossary/>.
- EIA, Historical Electrical Generation by State 1990 to 2023 (October 2023), available at: <https://www.eia.gov/electricity/data/state/>.

EIA, New York State Profile and Energy Estimates available at:

<https://www.eia.gov/state/analysis.php?sid=NY>.

EIA, Nuclear explained: Where our uranium comes from, available at:

<https://www.eia.gov/energyexplained/nuclear/where-our-uranium-comes-from.php/>.

EIA, Steam Electric Plant Operation and Design Report,. EIA-767, available at:

[https://www.eia.gov/survey/form/eia\\_767/instructions\\_form.pdf](https://www.eia.gov/survey/form/eia_767/instructions_form.pdf).

EIA, Units and calculations explained – Degree days, available at: <https://www.eia.gov/energyexplained/units-and-calculators/degree-days.php>.

EIA, U.S. Nuclear Generation and Generating Capacity for 2022–2024, available at:

<https://www.eia.gov/nuclear/generation/>.

EIS data for NY, 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>.

Entergy, Flooding Walkdown Report - Entergy's Response to NRC Request for Information Pursuant to 10 CFR 50.54(f) Regarding the Flooding Aspects of Recommendation 2.3 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident, available at:

<https://www.nrc.gov/docs/ML1233/ML12332A379.pdf>.

EPA, Climate Adaptation and Erosion & Sedimentation, available at: <https://www.epa.gov/arc-x/climate-adaptation-and-erosion-sedimentation>.

EPA, Current Nonattainment Counties for All Criteria Pollutants, available at:

<https://www3.epa.gov/airquality/greenbook/ancl.html>.

EPA, EJ 2020 Glossary, available at: [https://19january2021snapshot.epa.gov/environmentaljustice/ej-2020-glossary\\_.html](https://19january2021snapshot.epa.gov/environmentaljustice/ej-2020-glossary_.html).

EPA, Health Effects of Ozone Pollution, available at: <https://www.epa.gov/ground-level-ozone-pollution/health-effects-ozone-pollution>.

EPA, NAAQS Table, available at: <https://www.epa.gov/criteria-air-pollutants/naaqs-table>.

EPA, Nitrogen Dioxide (NO<sub>2</sub>) Pollution: What are the harmful effects of NO<sub>2</sub>? Available at:

<https://www.epa.gov/no2-pollution/basic-information-about-no2#Effects>.

EPA, Nuclear Power Plants, available at: <https://www.epa.gov/radtown/nuclear-power-plants>.

EPA, Ozone Layer Protection, available at: <https://www.epa.gov/ozone-layer-protection>.

EPA, Particulate Matter (PM) Pollution: What are the harmful effects of PM? Available at:

<https://www.epa.gov/pm-pollution/particulate-matter-pm-basics#effects>.

EPA, Radiation Health Effects, available at: <https://www.epa.gov/radiation/radiation-health-effects>.

EPA, Radiation Sources and Doses, available at: <https://www.epa.gov/radiation/radiation-sources-and-doses>.

- EPA, Serious nonattainment for 8-Hour Ozone (2015 Standard) Classification means the area has a design value between 0.093 and 0.105 ppm. See <https://www.epa.gov/green-book/ozone-designation-and-classification-information>.
- Epstein, Keith, The Center for Public Integrity, Decades after Clean Air Act, most smokestacks still lack scrubbers, available at: <https://publicintegrity.org/environment/epa-wants-to-limit-pollution-from-tall-smokestacks/>.
- Erie Canalway National Heritage Center, The Canal System Today, available at: <https://eriecanalway.org/learn/history-culture/canal-today>.
- Executive Law Article 42; 19 NYCRR Part 600, available at: [https://dos.ny.gov/system/files/documents/2020/06/19nycrr\\_part\\_600-603.pdf](https://dos.ny.gov/system/files/documents/2020/06/19nycrr_part_600-603.pdf).
- FAA, Preliminary FY24 Enplanements at Commercial Service Airports, available at: [https://www.faa.gov/airports/planning\\_capacity/passenger\\_allcargo\\_stats/passenger/arp-cy2024-commercial-service-enplanements-prelim.pdf](https://www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/passenger/arp-cy2024-commercial-service-enplanements-prelim.pdf).
- FDA, What are the Radiation Risks from CT?, available at: <https://www.fda.gov/radiation-emitting-products/medical-x-ray-imaging/what-are-radiation-risks-ct>.
- Federal Reserve Bank of New York, Bypassing the Bust: The Stability of Upstate New York's Housing Markets during the Recession, available at: [http://www.newyorkfed.org/research/current\\_issues/ci16-3.pdf](http://www.newyorkfed.org/research/current_issues/ci16-3.pdf).
- FEMA, FEMA Flood Map Service Center, Search By Address, available at: <https://msc.fema.gov/portal/search?AddressQuery=348%20Lake%20Rd%2C%20Oswego%2C%20NY%2013126>.
- FEMA, Food Insurance Rate Map Community Panel Number 3608950010B, available at: <https://map1.msc.fema.gov/firm?id=3608950010B>.
- FEMA, Historical NFIP Claims Information and Trends, available at: <https://www.floodsmart.gov/historical-nfip-claims-information-and-trends?map=countries/us/us-ny-all&region=us-ny&miny=1980&maxy=2024&county=&gtype=state>.
- FEMA, Preparedness Community, Power Outage | Impact, available at: [https://www.ready.gov/sites/default/files/2024-03/ready.gov\\_power-outage\\_hazard-info-sheet.pdf](https://www.ready.gov/sites/default/files/2024-03/ready.gov_power-outage_hazard-info-sheet.pdf).
- Food and Agriculture Organization of the United Nations, Geospatial information for sustainable food systems, available at: <https://www.fao.org/geospatial/our-work/what-we-do/land-cover-and-land-use/en/>
- FracTracker Alliance, Registered Water Withdrawals in New York State, available at: <https://www.arcgis.com/home/item.html?id=b882f6afcbd144f0ae1221e23ad84df6>. Data provided by NYSDEC under a Freedom of Information Law request. See also: <https://www.fractracker.org/2013/07/ny-water-withdrawals/>.
- Gerdes, Justin, How Much Do Health Impacts From Fossil Fuel Electricity Cost The U.S. Economy (April 8, 2013), available at: <https://www.forbes.com/sites/justingerdes/2013/04/08/how-much-do-health-impacts-from-fossil-fuel-electricity-cost-the-u-s-economy/#34b3aaffc679>.
- Hudson River Estuary Program, Critical Environmental Areas Tools for Conservation in Your Community, available at: [https://extapps.dec.ny.gov/docs/remediation\\_hudson\\_pdf/ceafactsheet.pdf](https://extapps.dec.ny.gov/docs/remediation_hudson_pdf/ceafactsheet.pdf).

- IAEA, Sound emissions from nuclear power plants, available at: <https://inis.iaea.org/records/nywvr-qrw57>.
- 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, available at: <https://doi.org/10.1371/journal.pone.0270155>.
- 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). Available at: <https://onlinelibrary.wiley.com/doi/full/10.1111/jiec.70008>.
- Katkar, Venktesh V., Sward, Jeffrey A., Worsley, Alex, and Zhang, Max K., 2021, Strategic land use analysis for solar energy development in New York State, Renewable Energy, Volume 173, p. 861-875, available at: <https://www.sciencedirect.com/science/article/abs/pii/S0960148121004900>.
- Lawrence Berkeley National Laboratory (LBNL) Queued Up: 2024 Edition Characteristics of Power Plants Seeking Transmission Interconnection As of the End of 2023, (April 2024), available at: [https://emp.lbl.gov/sites/default/files/2024-04/Queued%20Up%202024%20Edition\\_1.pdf](https://emp.lbl.gov/sites/default/files/2024-04/Queued%20Up%202024%20Edition_1.pdf).
- Linnerud, K., Mideksa, T. K., & Eskeland, G. S., 2011, The impact of climate change on nuclear power supply, The Energy Journal, 32(1), 149-168. Available at: <https://journals.sagepub.com/doi/abs/10.5547/ISSN0195-6574-EJ-Vol32-No1-6>
- Lovering, J., Swain, M., Blomqvist, L., & Hernandez, R. R. (2022). Land-use intensity of electricity production and tomorrow's energy landscape. PLoS One, 17(7), e0270155. Available at: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0270155>.
- Machol, Ben and Rizk, Sarah, 2013, Economic Value of U.S. Fossil Fuel Electricity Health Impacts, Environment International, February 2013, Volume 52. p 75-80, available at: <https://www.sciencedirect.com/science/article/abs/pii/S0160412012000542>.
- MitigateNY, Flooding, available at: [https://mitigateny.org/assess\\_risk/natural\\_hazards/flooding](https://mitigateny.org/assess_risk/natural_hazards/flooding).
- National Agricultural Statistics Service, Cropland Data Layer 2024, available at: <https://nassgeodata.gmu.edu/CropScape/>.
- National Climatic Data Center, The Climate of New York, available at: [http://www.geo.hunter.cuny.edu/courses/geog306.04\\_grande/ClimateNY\\_01.pdf](http://www.geo.hunter.cuny.edu/courses/geog306.04_grande/ClimateNY_01.pdf).
- National Sea Level Explorer, U.S. Sea Level Change, New York, available at: [https://earth.gov/sealevel/us/national-sea-level-explorer/?state=NY&scope=section\\_1](https://earth.gov/sealevel/us/national-sea-level-explorer/?state=NY&scope=section_1)
- National Water Summary, Wetland Resources, available at: <https://www.fws.gov/sites/default/files/documents/National-Water-Summary-Wetland-Resources-New-york.pdf>.
- New York City Environment and Health, Breathe easy: NYC's air quality is improving (2019), available at: <https://a816-dohbesp.nyc.gov/IndicatorPublic/data-stories/breatheeasy/>.
- New York Department of Health, Drinking Water Program: Facts and Figures, available at: [https://www.health.ny.gov/environmental/water/drinking/facts\\_figures.htm](https://www.health.ny.gov/environmental/water/drinking/facts_figures.htm).

- New York Department of State, NYS Disadvantaged Communities, available at: <https://new-york-opd-geographic-information-gateway-nysdos.hub.arcgis.com/datasets/NYSDOS::nys-disadvantaged-communities-dac/about>.
- New York Metropolitan Transportation Authority, About the MTA, available at: <https://new.mta.info/about>.
- New York Natural Heritage Program, New York Rare Plant Status Lists, December 2023, available at: <https://www.nynhp.org/documents/5/rare-plant-status-lists-2023.pdf>.
- New York State Canal Corporation, About, available at: <https://www.canals.ny.gov/About>.
- New York State Climate Action Council, New York State Climate Action Council Scoping Plan (2022), available at: <https://climate.ny.gov/resources/scoping-plan>.
- New York State Climate Impacts Assessment, Climate Impact Spotlight: The Great Lakes Region, available at: <https://nysclimateimpacts.org/explore-by-region/the-great-lakes-region/>.
- New York State Coalition Against Domestic Violence, Indigenous Nations and Territories in New York State, available at: <https://www.nyscadv.org/what-we-do/projects-resources/domestic-violence-indigenous-peoples/recognized-indigenous-nations-and-territories-in-new-york-state.html>.
- New York State Comptroller, A Profile of Agriculture in New York State, available at: <https://www.osc.ny.gov/files/reports/pdf/profile-of-agriculture-in-nys.pdf>.
- New York State Department of Environmental Conservation (NYSDEC), 2024 NYS Greenhouse Gas Emissions Report: Sectoral Report #1 (issued December 2024), p. 5, available at: <https://dec.ny.gov/sites/default/files/2024-12/sr1energynysghgemissionsreport.pdf>.
- New York State Department of Health, Environmental Radiation Surveillance Program, available at: <https://www.health.state.ny.us/environmental/radiological/radon/surveillance.htm>.
- New York State Department of Health, New York State Asthma County Dashboard, available at: [https://apps.health.ny.gov/public/tabvis/PHIG\\_Public/asthma/reports/#county](https://apps.health.ny.gov/public/tabvis/PHIG_Public/asthma/reports/#county).
- New York State Department of Health, New York State Asthma Socio-Demographics Dashboard, available at: [https://apps.health.ny.gov/public/tabvis/PHIG\\_Public/asthma/reports/#state](https://apps.health.ny.gov/public/tabvis/PHIG_Public/asthma/reports/#state).
- New York State Department of Health, New York State Asthma State Dashboard, available at: [https://apps.health.ny.gov/public/tabvis/PHIG\\_Public/asthma/](https://apps.health.ny.gov/public/tabvis/PHIG_Public/asthma/).
- New York State Department of Health, New York State Sanitary Code 10 NYCRR Part 16 Appendix 16 Annual Limits On Intake (ALI) And Derived Air Concentrations (DAC) Of Radionuclides For Occupational Exposure; Effluent Concentrations; Concentrations For Release To Sanitary Sewage, available at: [https://www.health.ny.gov/environmental/radiological/radon/radioactive\\_material\\_licensing/docs/part16\\_appendc.pdf](https://www.health.ny.gov/environmental/radiological/radon/radioactive_material_licensing/docs/part16_appendc.pdf).
- New York State Department of Health, Vital Statistics of New York State 2022, available at: [https://health.ny.gov/statistics/vital\\_statistics/2022/table02.htm#1](https://health.ny.gov/statistics/vital_statistics/2022/table02.htm#1).
- New York State Department of Health, Vital Statistics of New York State 2016, available at: [https://www.health.ny.gov/statistics/vital\\_statistics/2016/](https://www.health.ny.gov/statistics/vital_statistics/2016/).

- New York State Department of Labor, Current Employment Statistics, available at: <https://dol.ny.gov/current-employment-statistics-0>.
- New York State Education Department, Indigenous Education – Tribal Nations of New York State, available at: <https://www.nysed.gov/indigenous-education/tribal-nations-new-york-state>.
- New York State Environmental Conservation Law. Article 49, Protection of Natural and Man-Made Beauty, available at: <https://www.nysenate.gov/legislation/laws/ENV/A49>.
- New York State Museum, First Peoples, available at: <https://www.nysm.nysed.gov/exhibitions/ongoing/first-peoples>.
- New York State Parks, Recreation, and Historic Preservation. State Historic Preservation Office Contact, available at: <https://parks.ny.gov/shpo/contact/>.
- New York State Upstate, New York adds 1 million acres of wetlands, sparking concern among lakefront landowners, available at: <https://www.newyorkupstate.com/outdoors/2025/01/new-york-adds-1-million-acres-of-wetlands-sparking-concern-among-lakefront-landowners.html>.
- New York State, 6 CRR-NY 193.3 Protected native plants, available at: <https://govt.westlaw.com/nycrr/Document/I21efe775c22211ddb7c8fb397c5bd26b?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=%28sc.Default%29>.
- Ng, J. H. C., Vyawahare, P., Benavides, P. T., Gan, Y., Sun, P., Boardman, R., ... & Elgowainy, A. (2025). Life-cycle greenhouse gas emissions associated with nuclear power generation in the United States. *Journal of Industrial Ecology*, 29(3), 719-732, available at: <https://onlinelibrary.wiley.com/doi/full/10.1111/jiec.70008>.
- NOAA, Classifying Estuaries: By Water Circulation, available at: [https://oceanservice.noaa.gov/education/tutorial\\_estuaries/est05\\_circulation.html](https://oceanservice.noaa.gov/education/tutorial_estuaries/est05_circulation.html).
- NOAA, National Centers for Environmental Information, Climate at a Glance: Statewide Time Series, available at: <https://www.ncei.noaa.gov/access/monitoring/climate-at-a-glance/statewide/time-series>
- Noise Free America. New York State Noise Related Statutes and Policies, available at: <https://noisefree.org/wp-content/uploads/2017/12/new-york.pdf>.
- Northeast Power Coordinating Council, Northeast Gas/Electric System Study (January 21, 2025), p. 4, available at: [https://cdn.prod.website-files.com/67229043316834b1a60feba3/678fee912264907c381a0f68\\_NPCC%20Northeast%20Gas%20Electric%20System%20Study.pdf](https://cdn.prod.website-files.com/67229043316834b1a60feba3/678fee912264907c381a0f68_NPCC%20Northeast%20Gas%20Electric%20System%20Study.pdf).
- NPS, Certified Local Government Contacts & Statistics New York, available at: <https://apps.cr.nps.gov/clgpublic/PublicPages/Results?state=New+York>.
- NPS, List of NHLs by State, available at: <https://www.nps.gov/subjects/nationalhistoriclandmarks/list-of-nhls-by-state.htm>.
- NRC, 2024 Annual Radiological Environmental Operating Report for the James A. FitzPatrick Nuclear Power Plant, Nine Mile Point Nuclear Station Unit 1, and Nine Mile Point Nuclear Station Unit 2 (issued May 13, 2025), available at: <https://www.nrc.gov/docs/ML2513/ML25133A245.pdf>.

- NRC, Docket No. 50-220 et al., Nine Mile Point Nuclear Station, Unit 1, Updated Notice of Intent to Pursue Subsequent License Renewal Applications (May 9, 2024), available at: <https://www.nrc.gov/docs/ML2413/ML24130A126.pdf>.
- 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>.
- NRC, Environmental Impact Statement for Interim Storage Partners LLC's License Application for a Consolidated Interim Storage Facility for Spent Nuclear Fuel in Andrews County, Texas, NUREG-2239, Final Report, available at: <https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML21209A955>.
- NRC, Environmental Impact Statement for the Holtec International's License Application for a Consolidated Interim Storage Facility for Spent Nuclear Fuel in Lea County, New Mexico – Final Report (NUREG-2237, Initial Report), available at: <https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr2237/initial/index.html>.
- NRC, Final Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities, NUREG-0586, Supplement 1, Volumes 1 and 2, available at: <https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr0586/index.html>.
- NRC, Frequently Asked Questions About Liquid Radioactive Releases, available at: <https://www.nrc.gov/reactors/operating/ops-experience/tritium/faqs.html>.
- NRC, Frequently Asked Questions (FAQ) About Radiation Protection, available at: <https://www.nrc.gov/about-nrc/radiation/related-info/faq.html>.
- NRC, Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel, NUREG-2157, Volume 1, available at: <https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr2157/index.html>.
- NRC, Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Final Report, NUREG-1437, Volume 1, Revision 2, available at: <https://www2.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1437/r1/index>, p. 3-2 (NRC License Renewal GEIS).
- NRC, Generic Environmental Impact Statement for License Renewal of Nuclear Plants—Final Report, NUREG-1437, Volume 1, Revision 1, available at: <https://www2.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1437/r1/index>.
- NRC, Glossary, available at <https://www.nrc.gov/reading-rm/basic-ref/glossary/licensing-basis.html>.
- NRC, Information on the NRC, available at: <https://www.nrc.gov/about-nrc.html>.
- NRC, New York: Agreement State Information, 2025, available at: <https://www.nrc.gov/agreement-states/new-york.html>.
- NRC, NINE MILE POINT NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT 05000220/2012005 AND 05000410/2012005, February 11, 2013, available at: <https://www.nrc.gov/docs/ML1304/ML13042A062.pdf>.
- NRC, Nine Mile Point Unit 1, Discovery of Tritium in Groundwater In-Leakage, 30-Day Report in Accordance with the Industry Ground Water Protection Initiative, September 12, 2012, available at: <https://www.nrc.gov/docs/ML1226/ML12268A049.pdf#:~:text=On%20August%2013,%202012,%20analys>

[es%20of%20samples%20taken,approximately%2033,000%20to%2044,000%20picocuries%20per%20liter%20\(pCi/l\).](#)

NRC: NMSS – State Regulations and Legislation, available at: <https://www.nrc.gov/agreement-states/new-york.html>.

NRC, NUREG-1350, Vol. 35 (Information Digest 2024-2025), Appendix A, available at: <https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1350/index.html>.

NRC, NRC Occupational Dose Limits, available at: <https://www.nrc.gov/images/about-nrc/radiation/dose-limits.jpg>.

NRC, Occupational Radiation Exposure at Commercial Nuclear Power Reactors and Other Facilities 2019: Fifty-Second Annual Report (NUREG-0713, Volume 41), available at: <https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr0713/v41/index.html>.

NRC Radioactive Effluent and Environmental Reports for Ginna, available at: <https://www.nrc.gov/reactors/operating/ops-experience/tritium/plant-specific-reports/ginn.html>

NRC, Radioactive Effluent and Environmental Reports for James A. FitzPatrick, 2024, available at: <https://www2.nrc.gov/reactors/operating/ops-experience/tritium/plant-specific-reports/fitz>.

NRC, Radioactive Effluent and Environmental Reports for James A. FitzPatrick, available at: <https://www2.nrc.gov/reactors/operating/ops-experience/tritium/plant-specific-reports/fitz>. See Attachment 7 of the 2009-2014 Radioactive Effluent Reports for details on the plant's groundwater monitoring program.

NRC, Radioactive Effluent and Environmental Reports for Nine Mile Point 1 & 2, (2025) available at: <https://www2.nrc.gov/reactors/operating/ops-experience/tritium/plant-specific-reports/nmp1-2>.

NRC, Regulatory Guide RG 1.21, Revision 3, Measuring, Evaluating, and Reporting Radioactive Material in Liquid and Gaseous Effluents and Solid Waste, available at: <https://www.nrc.gov/reading-rm/doc-collections/reg-guides/power-reactors/rg/division-1/division-1-21.html>.

NRC, Response to 10 CFR 50.54(f) Request for Information, Recommendation 2.3, Flooding, available at: <https://www.nrc.gov/docs/ML1233/ML12335A029.pdf>.

NRC, Supplement to the U.S. Department of Energy's Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada, NUREG-2184, available at: <https://www.nrc.gov/docs/ML1612/ML16125A032.pdf>.

NREL, Life cycle greenhouse gas emissions from electricity generation: Update, 2021 (NREL/FS-6A50-80580), available at: <https://www.osti.gov/biblio/1820320>.

NREL, A Review of Operational Water Consumption and Withdrawal Factors for Electricity Generating Technologies, available at: <https://docs.nrel.gov/docs/fy11osti/50900.pdf#:~:text=4%20Results:%20Water%20Consumption%20and%20Withdrawal%20Factors,at%20each%20of%20those%20types%20of%20plants>.

NY Data, Final Disadvantaged Communities 2023 Map, available at: <https://data.ny.gov/en/Energy-Environment/Final-Disadvantaged-Communities-DAC-2023-Map/6mn4-5vvz>

NY Data, National Register of Historic Places, available at: <https://data.ny.gov/widgets/iisn-hnyv>.

- NYC Health, Noise, 2024, available at: <https://www.nyc.gov/site/doh/health/health-topics/noise.page>.
- NYDOH, New York State Heat Risk and Illness Dashboard, available at: [https://www.health.ny.gov/statistics/environmental/heat\\_dashboard/](https://www.health.ny.gov/statistics/environmental/heat_dashboard/)
- NYDOS, Land Use Planning and Regulation, available at: [https://video.dos.ny.gov/lg/handbook/html/land\\_use\\_planning\\_and\\_regulation.html](https://video.dos.ny.gov/lg/handbook/html/land_use_planning_and_regulation.html).
- NYDOT, New York State Freight Transportation Plan August 2024, available at: [https://www.dot.ny.gov/portal/page/portal/content/delivery/Main-Projects/projects/P11618881-Home/P11618881-repository/New\\_York\\_State\\_Freight\\_Plan\\_2024.pdf](https://www.dot.ny.gov/portal/page/portal/content/delivery/Main-Projects/projects/P11618881-Home/P11618881-repository/New_York_State_Freight_Plan_2024.pdf).
- NYDOT, NY State Highway Bridge Data: July 31, 2025 Oswego County, available at: <https://www.dot.ny.gov/main/bridgedata/repository/OswegoBridgeData.pdf>
- NYDOT, NY State Highway Bridge Data: July 31, 2025 Wayne County, available at: <https://www.dot.ny.gov/main/bridgedata/repository/WaynenBridgeData.pdf>
- NYDOT, Traffic Data Viewer, Geodatabase Shapefile, Annual Average Daily Traffic 2023 (GDB Shapefile AADT 2023.zip), available at: <https://www.dot.ny.gov/tdv>.
- NYDSEC, Natural Heritage Communities, available at: [https://data.gis.ny.gov/datasets/0da09cdf37d549b1be9add9b522ee505\\_0/about](https://data.gis.ny.gov/datasets/0da09cdf37d549b1be9add9b522ee505_0/about).
- NYHCR, AHC Income Limits Chart, available at: [https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=https://hcr.ny.gov/ahc-income-limits&ved=2ahUKEwjD4fqz4aeJAxW\\_mYkEHXAWN3YQFnoECCkQAQ&usg=AOvVaw3xifluynN0ANm\\_4Z\\_HBSZm](https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=https://hcr.ny.gov/ahc-income-limits&ved=2ahUKEwjD4fqz4aeJAxW_mYkEHXAWN3YQFnoECCkQAQ&usg=AOvVaw3xifluynN0ANm_4Z_HBSZm).
- NYISO, 2023–2042 System & Resource Outlook, (July 2024), available at: <https://www.nyiso.com/documents/20142/46037414/2023-2042-System-Resource-Outlook.pdf>.
- NYISO, 2024 Reliability Needs Assessment (November 2024), available at: <https://www.nyiso.com/documents/20142/2248793/2024-RNA-Report.pdf>.
- NYISO, 2023-2032 Comprehensive Reliability Plan (issued November 2023), p. 39, available at: <https://www.nyiso.com/documents/20142/2248481/2023-2032-Comprehensive-Reliability-Plan.pdf/c62634b6-cdad-31dc-5238-ee7d5eaece04>.
- NYISO, 2023-2042 System & Resource Outlook (The Outlook) (issued July 23, 2024), Appendix E, available at: <https://www.nyiso.com/documents/20142/46037616/Appendix-E-Renewable-Profiles-Variability.pdf/76833f16-ca0b-0439-6bac-e45eb75d88fe>.
- NYISO, Gold Book 2025, Baseline Forecast Dataset (April 2025), available at: <https://www.nyiso.com/documents/20142/51231901/2025-Gold-Book-Baseline-Forecast-Tables.xlsx/29e041cb-52b1-49a0-ac48-010b71a0eea7>. (Gold Book Baseline Forecast Dataset)
- NYISO, Gold Book 2025, Load & Capacity Data (April 2025), available at: <https://www.nyiso.com/documents/20142/2226333/2025-Gold-Book-Public.pdf/088438e1-02f1-5316-211b-dbca17c01b4b>. (Gold Book)

- NYISO, Gold Book 2025, NYCA Existing Generating Facilities dataset, available at: <https://www.nyiso.com/documents/20142/51231901/2025-NYCA-Existing-Generating-Facilities.xlsx/6a8b1cda-6bf3-f546-0f18-737a7835c686>.
- 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](https://www.nyiso.com/documents/20142/1396324/Indian_Point_Generator_Deactivation_Assessment_2017-1213.pdf/f673a0f8-5620-1d7b-4be2-99aaf781ac5c).
- NYISO, Power Trends 2022, The path to a reliable, greener grid for New York,. p. 27, available at: <https://www.nyiso.com/documents/20142/2223020/2022-Power-Trends-Report.pdf/d1f9eca5-b278-c445-2f3f-edd959611903?t=165468989352>.
- NYISO, Power Trends 2025: The New York ISO Annual Grid and Markets Report (April 2025). Available at: <https://www.nyiso.com/documents/20142/2223020/2025-Power-Trends.pdf/51517a1b-36fa-4f3d-d44d-cabe23598514?t=1748866865402>.
- NYISO, Reliability Needs Assessment Report (issued November 2024), pp. 9-11, available at: [https://www.nyiso.com/documents/20142/2248793/2024-RNA-Report.pdf/0fe6fd1e-0f28-0332-3e80-28bea71a2344 \(NYISO RNA\)](https://www.nyiso.com/documents/20142/2248793/2024-RNA-Report.pdf/0fe6fd1e-0f28-0332-3e80-28bea71a2344 (NYISO RNA))
- NYNHP, Information Management, available at: <https://www.nynhp.org/information-management/>.
- NYS GIS Clearinghouse, NYS Aquifers, available at: <https://data.gis.ny.gov/datasets/sharegisny::nys-aquifers/about>.
- NYS Parks, Recreation, and Historic Preservation. Environmental Review, available at: <https://parks.ny.gov/shpo/environmental-review/>.
- NYSDEC & NYSERDA, New York State's Disadvantaged Communities Criteria, available at: [https://climate.ny.gov/-/media/Project/Climate/Files/Disadvantaged-Communities-Criteria/LMI-daccriteria-fs-1-v3\\_acc.pdf](https://climate.ny.gov/-/media/Project/Climate/Files/Disadvantaged-Communities-Criteria/LMI-daccriteria-fs-1-v3_acc.pdf).
- NYSDEC, 2020 Municipal Waste Combustion Summary Report, available at: [https://extapps.dec.ny.gov/docs/materials\\_minerals\\_pdf/wtesumrpt.pdf](https://extapps.dec.ny.gov/docs/materials_minerals_pdf/wtesumrpt.pdf).
- NYSDEC, Aquatic Habitat Protection, available at: <https://dec.ny.gov/nature/animals-fish-plants/biodiversity-species-conservation/aquatic-habitat-protection>.
- NYSDEC, Assessing and Mitigation Visual Impacts. Division of Environmental Permits, DEP-00-2. July 31, available at: [https://extapps.dec.ny.gov/docs/permits\\_ej\\_operations\\_pdf/visualpolicydep002.pdf](https://extapps.dec.ny.gov/docs/permits_ej_operations_pdf/visualpolicydep002.pdf).
- NYSDEC, Biodiversity & Species Conservation: Sustaining New York's Animals, Plants and Ecosystems, available at: <https://dec.ny.gov/nature/animals-fish-plants/biodiversity-species-conservation>.
- NYSDEC, Climate Change Effects and Impacts, available at: <https://dec.ny.gov/environmental-protection/climate-change/effects-impacts>.
- NYSDEC, Critical Environmental Areas, available at: <https://dec.ny.gov/regulatory/permits-licenses/seqr/critical-environmental-areas>.
- NYSDEC, DEC's Endangered Species Regulations, available at: <https://dec.ny.gov/nature/animals-fish-plants/biodiversity-species-conservation/endangered-species/regulations>.

- NYSDEC, EJ Related Policy And Regulations, available at: <https://dec.ny.gov/get-involved/environmental-justice/related-policy-regulations>.
- NYSDEC, Environmental Protection – Air, available at: <https://dec.ny.gov/environmental-protection/air-quality>.
- NYSDEC, Forest Health, available at: <https://dec.ny.gov/nature/forests-trees/forest-health>.
- NYSDEC, Forests, available at: <https://dec.ny.gov/nature/forests-trees>.
- NYSDEC, Freshwater Wetlands Permits, available at: [https://dec.ny.gov/regulatory/permits-licenses/waterways-coastlines-wetlands/freshwater-wetlands#:~:text=Jurisdictional%20protections%20for%20previously%20mapped%20freshwater%20wetlands,and%20Classification%20regulations%20\(6%20NYCRR%20Part%20664\)](https://dec.ny.gov/regulatory/permits-licenses/waterways-coastlines-wetlands/freshwater-wetlands#:~:text=Jurisdictional%20protections%20for%20previously%20mapped%20freshwater%20wetlands,and%20Classification%20regulations%20(6%20NYCRR%20Part%20664)).
- NYSDEC, Groundwater, available at: <https://dec.ny.gov/nature/waterbodies/groundwater>.
- NYSDEC, Indian Nation Consultation, available at: <https://dec.ny.gov/about/dei/indian-nation-affairs/consultation>.
- NYSDEC, Lakes and Rivers, available at: <https://dec.ny.gov/nature/waterbodies>.
- NYSDEC, List of Endangered, Threatened and Special Concern Fish and Wildlife Species of New York State, available at: <https://dec.ny.gov/nature/animals-fish-plants/biodiversity-species-conservation/endangered-species/list>.
- NYSDEC, Maps & Geospatial Information System (GIS) Tools For Environmental Justice, available at: <https://dec.ny.gov/get-involved/environmental-justice/gis-tools>.
- NYSDEC, New York State Ambient Air Monitoring Network, available at: <https://dec.ny.gov/sites/default/files/2025-05/2025fiveyearassessment.pdf>.
- NYSDEC, New York State Ambient Air Monitoring Network Assessment (issued May 2025), available at: <https://dec.ny.gov/sites/default/files/2025-05/2025fiveyearassessment.pdf>.
- NYSDEC, New York State Forest Action Plan December 2020, available at: [https://extapps.dec.ny.gov/docs/lands\\_forests\\_pdf/nysfap.pdf](https://extapps.dec.ny.gov/docs/lands_forests_pdf/nysfap.pdf).
- NYSDEC, New York State Industrial Timber Harvest Production and Consumption Report-2022, available at: <https://dec.ny.gov/sites/default/files/2025-03/timberharvestprodconsumpreport.pdf>.
- NYSDEC, New York State Solid Waste Management Plan December 2023, available at: <https://dec.ny.gov/sites/default/files/2023-12/finalsswmp2023.pdf>.
- NYSDEC, Open Space Conservation Plan, available at: <https://dec.ny.gov/nature/open-space/open-space-conservation-plan>.
- NYSDEC, Potential Environmental Justice Area PEJA Communities, available at: <https://data.gis.ny.gov/datasets/nysdec::potential-environmental-justice-area-peja-communities/about>
- NYSDEC, Program to Track Air Quality, available at <https://dec.ny.gov/environmental-protection/air-quality/monitoring>.

- NYSDEC, Regulatory Freshwater Wetlands, available at: [https://data.gis.ny.gov/datasets/b7cbbb6d520e428792d48b20ff63c0f3\\_0/explore?location=42.661726%2C-75.818139%2C7.57](https://data.gis.ny.gov/datasets/b7cbbb6d520e428792d48b20ff63c0f3_0/explore?location=42.661726%2C-75.818139%2C7.57).
- NYSDEC, Regulatory Tidal Wetlands, available at: [https://data.gis.ny.gov/datasets/661acb5eaffb4be39b0d6d2203e636c3\\_1/explore](https://data.gis.ny.gov/datasets/661acb5eaffb4be39b0d6d2203e636c3_1/explore).
- NYSDEC, SPDES Discharge Permit Nine Mile Point Nuclear Station, LLC, available at: [https://extapps.dec.ny.gov/data/IF/SPDES/NY0001015/Permit.IndSPDES.NY0001015.2009-12-01.\\_x.pdf](https://extapps.dec.ny.gov/data/IF/SPDES/NY0001015/Permit.IndSPDES.NY0001015.2009-12-01._x.pdf)
- NYSDEC, State Pollutant Discharge Elimination System (SPDES) Permit Program documents available at: <https://www.dropbox.com/scl/fo/6s8i1v7pbcohfnbfmqlj/ACKEWArNuGy3iLqHopfaBl8?rlkey=qd5hlivma057i76tnqo1yk2t0&e=1&dl=0>.
- NYSDEC, Stumpage Price Report Winter 2025, available at: <https://dec.ny.gov/sites/default/files/2025-02/2025winterspr.pdf>.
- NYSDEC, Summary Of Express Terms- 6 NYCRR Part 380, available at: <https://dec.ny.gov/regulatory/regulations/summary-of-express-terms-6-nycrr-part-380>.
- NYSDEC, The SEQR Handbook (Fourth Addition, 2020), available at: [https://extapps.dec.ny.gov/docs/permits\\_ej\\_operations\\_pdf/seqrhandbook.pdf](https://extapps.dec.ny.gov/docs/permits_ej_operations_pdf/seqrhandbook.pdf).
- NYSDEC, Waterbody Inventory/ Priority Waterbodies List (WI/PWL) Layer, available at: <https://data.gis.ny.gov/maps/fe6e369f89444618920a5b49f603e34a/about>.
- NYSDEC, Waters of New York, available at: [https://extapps.dec.ny.gov/docs/fish\\_marine\\_pdf/gsfishing7.pdf](https://extapps.dec.ny.gov/docs/fish_marine_pdf/gsfishing7.pdf).
- NYSDEC, Watersheds, available at: <https://dec.ny.gov/nature/waterbodies/watersheds>.
- NYSDEC. Forest Carbon Markets, available at: <https://dec.ny.gov/nature/forests-trees/climate-change/forest-carbon-markets>
- NYSDEC. New York State Ambient Air Monitoring Network, available at: <https://dec.ny.gov/sites/default/files/2025-05/2025fiveyearassessment.pdf>.
- NYSERDA, Advanced Nuclear Energy, available at: <https://www.nyserdera.ny.gov/All-Programs/Advanced-Nuclear-Energy>.
- NYSERDA, Impacts of Climate Change on the New York Energy System, Report Number 23-30 (December 2023), available at <https://www.nyserdera.ny.gov/-/media/Project/Nyserda/Files/Publications/Energy-Analysis/23-30-Impacts-of-Climate-Change-on-the-New-York-Energy-System-acc.pdf>.
- NYSERDA, LSE Obligations, available at: <https://www.nyserdera.ny.gov/All-Programs/Clean-Energy-Standard/LSE-Obligations>.
- NYSERDA, Update on the NYSERDA Agricultural Strategies and Agricultural Mitigation Fund, available at: <https://www.greenegovernment.com/wp-content/uploads/2022/01/NYSERDA-Ag-Strategies-and-Ag-Mitigation-Fund-B.-Peterson-Presentation-1.21.22.pdf>.
- NYSPSC, Indian Point Contingency Plan, Final Generic Environmental Impact Statement (2013), available at: <http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7B1CFCC090-1E99-4A8C-BC0C-56764C8985AD%7D>.

- NYU, Sounds of New York City, available at: <https://wp.nyu.edu/sonyc/>.
- OCWA, Sources of Water, available at: <https://www.ocwa.org/about/sources-of-water/>.
- 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](https://www.governor.ny.gov/sites/default/files/atoms/files/Renewable_Energy_Letter.pdf).
- Office of the NYS Comptroller, Division of Local Government and School Accountability, Annual Report on Local Governments for Fiscal Year End 2023, available at: <https://www.osc.ny.gov/files/local-government/publications/pdf/fye2023-annualreport.pdf>.
- Ontario Midland Railroad Corp, Industrial Development/Transload Facilities, available at: <https://ontariomidland.com/development/>.
- OPT, Oswego County Public Transit Routes, Schedules and Fares, available at <https://www.oco.org/services/transportation/full-transportation-schedule/>.
- Oswego County Business Magazine, Top Employers 2024 (December 20, 2024), available at: <https://oswegocountybusiness.com/publishers-note-top-employers/>.
- Oswego County New York, Nuclear Preparedness, available at: [https://www.oswegocounty.com/departments/public\\_safety/emergency\\_management/nuclear\\_preparedness.php](https://www.oswegocounty.com/departments/public_safety/emergency_management/nuclear_preparedness.php).
- Oswego County News Now, New reports unveil new details about oil spill at Oswego Harbor (October 13, 2022 Updated October 13, 2022), available at: [https://www.oswegocountynewsnow.com/news/new-reports-unveil-new-details-about-oil-spill-at-oswego-harbor/article\\_5c07564e-4b45-11ed-829e-83637ae60d1a.html](https://www.oswegocountynewsnow.com/news/new-reports-unveil-new-details-about-oil-spill-at-oswego-harbor/article_5c07564e-4b45-11ed-829e-83637ae60d1a.html).
- Oswego County, 2024 Adopted County Budget (December 14, 2023), available at: <https://cms3.revize.com/revize/repository/oswegocountyny/Administrator/Budget/2024%20Adopted%20Budget.pdf>.
- Oswego County, Energy Recovery Facility, available at: [https://www.oswegocounty.com/departments/infrastructure\\_facilities\\_and\\_technology/energy\\_recovery\\_facility.php](https://www.oswegocounty.com/departments/infrastructure_facilities_and_technology/energy_recovery_facility.php).
- Oswego County, Infrastructure and Technology: Airport, available at: [https://www.oswegocounty.com/departments/infrastructure\\_facilities\\_and\\_technology/airport.php](https://www.oswegocounty.com/departments/infrastructure_facilities_and_technology/airport.php).
- Oswego County, Solid Waste Facilities and Hours of Operation, available at: [https://www.oswegocounty.com/departments/infrastructure\\_facilities\\_and\\_technology/solid\\_waste/new\\_page.php](https://www.oswegocounty.com/departments/infrastructure_facilities_and_technology/solid_waste/new_page.php).
- Pacific Northwest National Laboratory, Threatened and Endangered Species Evaluation for Operating Commercial Nuclear Power Generating Plants (January 2004), available at: [https://www.pnnl.gov/main/publications/external/technical\\_reports/PNNL-14468.pdf](https://www.pnnl.gov/main/publications/external/technical_reports/PNNL-14468.pdf).
- Pew Research Center. How Americans View National, Local, and Personal Energy Choices (June 27, 2024), available at: <https://www.pewresearch.org/science/2024/06/27/how-americans-view-national-local-and-personal-energy-choices/>.

- PR NEWswire, Entergy to Close James A. FitzPatrick Nuclear Power Plant in Central New York, (November 2, 2015), available at: <https://www.prnewswire.com/news-releases/entergy-to-close-james-a-fitzpatrick-nuclear-power-plant-in-central-new-york-300170100.html>.
- Public Service Law § 66-p.
- R.E. Ginna Nuclear Power Plant Application for Renewed Operating License Appendix E – Environmental Report, p.2-1, available at: <https://www.nrc.gov/reactors/operating/licensing/renewal/applications/ginna/er.pdf>.
- RTS, RTS Wayne Maps and Schedules, available at: <https://www.myrts.com/Wayne/Schedules>.
- SHPO, Certified Local Governments, available at: <https://parks.ny.gov/shpo/certified-local-governments/>.
- SHPO, Consultation on Historic Properties with Indian Nations and Tribes, available at: <https://parks.ny.gov/documents/inside-our-agency/PublicDocuments/GuidancePolicies/ConsultationofIndianNationsTribes.pdf>.
- SHPO, CRIS: Overview, available at: <https://cris.parks.ny.gov/CRISHELP/?context=60>.
- SHPO, The New York State Historic Preservation Plan 2021-2026 (issued January 2022), available at: <https://parks.ny.gov/documents/shpo/preservation-plan/NewYorkStateHistoricPreservationPlan20212026.pdf>.
- Soil Science Society of America, Honeoye New York State Soil, available at: <https://www.soils4teachers.org/files/s4t/k12outreach/ny-state-soil-booklet.pdf>.
- State University of New York Environmental Science and Forestry, Salmon River Watershed Natural Resources Viability Analysis, available at: <https://www.tughill.org/wp-content/uploads/2011/10/SRWatershedNaturalResourcesViabilityAnalysis6-30-08.pdf>.
- Stevens, A., & Lamie, C., Eds, New York State Climate Impacts Assessment: Understanding and preparing for our changing climate (2024), available at: <https://nysclimateimpacts.org>.
- The Port of Oswego, 2023 Annual Report (Condensed), p. 2, available at: <https://portoswego.com/userfiles/file/2023%20POA%20Annual%20Report%20-%20Condensed.pdf>
- U.S Federal Register, Continued Storage of Spent Nuclear Fuel, Final Rule, (79 FR 56238), available at: <https://www.federalregister.gov/documents/2014/09/19/2014-22215/continued-storage-of-spent-nuclear-fuel>.
- USGS, Physiographic divisions of the conterminous U.S., available at: <https://catalog.data.gov/dataset/physiographic-divisions-of-the-conterminous-u-s>.
- University of Nebraska Omaha, Areas of the U.S. With Most Floodplain Population Growth, available at: <https://www.unomaha.edu/college-of-public-affairs-and-community-service/governing/archive/floodplain-population-growth.php>
- USDA Census of Agriculture, Wayne County, available at: [https://www.nass.usda.gov/Publications/AgCensus/2022/Online\\_Resources/County\\_Profiles/New\\_York/cp36117.pdf](https://www.nass.usda.gov/Publications/AgCensus/2022/Online_Resources/County_Profiles/New_York/cp36117.pdf).

USDA Census of Agriculture, Oswego County, available at:

[https://www.nass.usda.gov/Publications/AgCensus/2022/Online\\_Resources/County\\_Profiles/New\\_York/cp36075.pdf](https://www.nass.usda.gov/Publications/AgCensus/2022/Online_Resources/County_Profiles/New_York/cp36075.pdf).

USDA Economic Research Service, Cash receipts by commodity, available at:

[https://data.ers.usda.gov/reports.aspx?ID=4055#Pb1f88e1051fb46a0aececa11d2c74149\\_2\\_17iT0R0x32](https://data.ers.usda.gov/reports.aspx?ID=4055#Pb1f88e1051fb46a0aececa11d2c74149_2_17iT0R0x32).

USDA, 2022 Census of Agriculture Oswego County, available at:

[https://www.nass.usda.gov/Publications/AgCensus/2022/Online\\_Resources/County\\_Profiles/New\\_York/cp36075.pdf](https://www.nass.usda.gov/Publications/AgCensus/2022/Online_Resources/County_Profiles/New_York/cp36075.pdf).

USDA, 2022 Census of Agriculture Wayne County, available at:

[https://www.nass.usda.gov/Publications/AgCensus/2022/Online\\_Resources/County\\_Profiles/New\\_York/cp36117.pdf](https://www.nass.usda.gov/Publications/AgCensus/2022/Online_Resources/County_Profiles/New_York/cp36117.pdf).

USDA, Market Value of Agricultural Products Sold Including Landlord's Share, Food Marketing Practices, and Value-Added Products: 2022 and 2017, available at:

[https://www.nass.usda.gov/Publications/AgCensus/2022/Full\\_Report/Volume\\_1,\\_Chapter\\_1\\_State\\_Level/New\\_York/st36\\_1\\_002\\_002.pdf](https://www.nass.usda.gov/Publications/AgCensus/2022/Full_Report/Volume_1,_Chapter_1_State_Level/New_York/st36_1_002_002.pdf) (USDA Market Values).

USFWS, Listed species with spatial current range believed to or known to occur in New York, available at:

<https://ecos.fws.gov/ecp/report/species-listings-by-state?stateAbbrev=NY&stateName=New%20York&statusCategory=Listed>.

USGS, Geology and ground-water resources of Oswego County, New York, available at:

<https://www.usgs.gov/publications/geology-and-ground-water-resources-oswego-county-new-york>.

USGS, Temperature and Water, available at: <https://www.usgs.gov/water-science-school/science/temperature-and-water>.

USGS, Water Use Data for New York, available at: <https://waterdata.usgs.gov/ny/nwis/wu>.

USGS. Detailed Aquifer Mapping in Wayne County, New York, The Fairport-Lyons Channel Aquifer, available at: <https://www.usgs.gov/centers/new-york-water-science-center/science/detailed-aquifer-mapping-wayne-county-new-york#overview>

Wayne County Water & Sewer Authority. Water Quality, available at: <https://wcwsa.org/water-quality/>.

Wayne County, Local Solid Waste Management Plan, available at:

[https://www.waynecountyny.gov/DocumentCenter/View/10434/DRAFT\\_Wayne\\_County\\_LSWMP-7-6-2023-PDF?bidId=](https://www.waynecountyny.gov/DocumentCenter/View/10434/DRAFT_Wayne_County_LSWMP-7-6-2023-PDF?bidId=).

Wayne County, State of the County, September 28 2023, available at:

<https://www.waynecountyny.gov/DocumentCenter/View/10829/article>.

Williamson Flying Club, Airport Info, available at: <https://www.williamsonflyingclub.com/>.

WNA, Reactor Database Search, Fitzpatrick, available at: <https://world-nuclear.org/nuclear-reactor-database/details/fitzpatrick>.

WNA, Reactor Database Search, Nine Mile Point Unit 1, available at: <https://world-nuclear.org/nuclear-reactor-database/details/Nine-Mile-Point-1>.

WNA, Reactor Database Search, Nine Mile Point Unit 2, available at: <https://world-nuclear.org/nuclear-reactor-database/details/Nine-Mile-Point-2>.

WNA, Reactor Database Search, R.E. Ginna, available at: <https://world-nuclear.org/nuclear-reactor-database/details/R.E.-Ginna>.

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

NEW YORK STATE DEPARTMENT OF STATE  
COASTAL MANAGEMENT PROGRAM

Coastal Assessment Form

A. INSTRUCTIONS (Please print or type all answers)

1. State agencies shall complete this CAF for proposed actions which are subject to Part 600 of Title 19 of the NYCRR. This assessment is intended to supplement other information used by a state agency in making a determination of significance pursuant to the State Environmental Quality Review Act (see 6 NYCRR, Part 617). If it is determined that a proposed action will not have a significant effect on the environment, this assessment is intended to assist a state agency in complying with the certification requirements of 19 NYCRR Section 600.4.
2. If any question in Section C on this form is answered "yes", then the proposed action may affect the achievement of the coastal policies contained in Article 42 of the Executive Law. Thus, the action should be analyzed in more detail and, if necessary, modified prior to either (a) making a certification of consistency pursuant to 19 NYCRR Part 600 or, (b) making the findings required under SEQR, 6 NYCRR, Section 617.11, if the action is one for which an environmental impact statement is being prepared. If an action cannot be certified as consistent with the coastal policies, it shall not be undertaken.
3. Before answering the questions in Section C, the preparer of this form should review the coastal policies contained in 19 NYCRR Section 600.5. A proposed action should be evaluated as to its significant beneficial and adverse effects upon the coastal area.

B. DESCRIPTION OF PROPOSED ACTION

1. Type of state agency action (check appropriate response):
- (a) Directly undertaken (e.g. capital construction, planning activity, agency regulation, land transaction) ☒
- (b) Financial assistance (e.g. grant, loan, subsidy) ☐
- (c) Permit, license, certification ☐
2. Describe nature and extent of action: Extension of the existing zero-emissions credit (ZEC) program, which compensates  
New York State's existing nuclear electric generating facilities for their zero-emissions environmental attributes.
3. Location of action: Statewide
- | County | City, Town or Village | Street or Site Description |
|--------|-----------------------|----------------------------|
|--------|-----------------------|----------------------------|
4. If an application for the proposed action has been filed with the state agency, the following information shall be provided:
- (a) Name of applicant: \_\_\_\_\_
- (b) Mailing address: \_\_\_\_\_
- (c) Telephone Number: Area Code (\_\_\_\_) \_\_\_\_\_
- (d) State agency application number: \_\_\_\_\_
5. Will the action be directly undertaken, require funding, or approval by a federal agency?
- Yes ☐ No ☒ If yes, which federal agency? \_\_\_\_\_

C. COASTAL ASSESSMENT (Check either "YES" or "NO" for each of the following questions)

YES NO

1. Will the proposed activity be located in, or contiguous to, or have a significant effect upon any of the resource areas identified on the coastal area map:
- (a) Significant fish or wildlife habitats? ..... ☐ ☒
- (b) Scenic resources of statewide significance? ..... ☐ ☒
- (c) Important agricultural lands? ..... ☐ ☒
2. Will the proposed activity have a significant effect upon:
- (a) Commercial or recreational use of fish and wildlife resources? ..... ☐ ☒
- (b) Scenic quality of the coastal environment? ..... ☐ ☒
- (c) Development of future, or existing water dependent uses? ..... ☐ ☒
- (d) Operation of the State's major ports? ..... ☐ ☒
- (e) Land and water uses within the State's small harbors? ..... ☐ ☒
- (f) Existing or potential public recreation opportunities? ..... ☐ ☒
- (g) Structures, sites or districts of historic, archeological or cultural significance to the State or nation? ..... ☐ ☒

3. Will the proposed activity involve or result in any of the following:
- (a) Physical alteration of two (2) acres or more of land along the shoreline, land under water or coastal waters? . . . .    ✓
  - (b) Physical alteration of five (5) acres or more of land located elsewhere in the coastal area? . . . . .    ✓
  - (c) Expansion of existing public services of infrastructure in undeveloped or low density areas of the coastal area? . . . . .    ✓
  - (d) Energy facility not subject to Article VII or VIII of the Public Service Law? . . . . . ✓
  - (e) Mining, excavation, filling or dredging in coastal waters? . . . . .    ✓
  - (f) Reduction of existing or potential public access to or along the shore? . . . . .    ✓
  - (g) Sale or change in use of state-owned lands located on the shoreline or under water? . . . . .
  - (h) Development within a designated flood or erosion hazard area? . . . . .    ✓
  - (i) Development on a beach, dune, barrier island or other natural feature that provides protection against flooding or erosion? . . . . .    ✓
4. Will the proposed action be located in or have a significant effect upon an area included in an approved Local Waterfront Revitalization Program? . . . . .    ✓

D. SUBMISSION REQUIREMENTS

If any question in Section C is answered "Yes", AND either of the following two conditions is met:

Section B.1(a) or B.1(b) is checked; or  
Section B.1(c) is checked AND B.5 is answered "Yes",

THEN a copy of this completed Coastal Assessment Form shall be submitted to:

New York State Department of State  
Office of Coastal, Local Government and Community Sustainability  
One Commerce Plaza  
99 Washington Avenue, Suite 1010  
Albany, New York 12231-0001

If assistance or further information is needed to complete this form, please call the Department of State at (518) 474-6000.

E. REMARKS OR ADDITIONAL INFORMATION

Preparer's Name: Ryan Coyne  

(Please print)

Title: Senior Attorney Agency: New York State Department of Public Service

Telephone Number: ( 518 ) 474-3137 Date: 9/15/2025

# Short Environmental Assessment Form

## Part 1 - Project Information

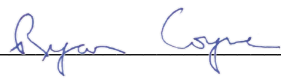
### Instructions for Completing

**Part 1 – Project Information.** The applicant or project sponsor is responsible for the completion of Part 1. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification. Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information.

Complete all items in Part 1. You may also provide any additional information which you believe will be needed by or useful to the lead agency; attach additional pages as necessary to supplement any item.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                                                         |                                            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------|--------------------------------------------|
| <b>Part 1 – Project and Sponsor Information</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                                                         |                                            |
| Name of Action or Project:<br>Proposed Zero-Emissions Credit Program Extension (ZEC 2.0)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |                                                         |                                            |
| Project Location (describe, and attach a location map):<br>Statewide                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |                                                         |                                            |
| Brief Description of Proposed Action:<br>The Public Service Commission (Commission) is considering the recommendations in the Department of Public Service Staff Zero-Emissions Credit Program Extension Proposal (the White Paper), filed by Department of Public Service Staff (Staff) on July 31, 2025. The White Paper evaluates the need to retain the State's existing fleet of three zero-emission nuclear generation resources in Upstate New York, towards achievement of the Statewide renewable energy and zero emissions targets set forth in the Climate Leadership and Community Protection Act. The White Paper then proposes continuing the existing Zero Emissions Credit (ZEC) program, with modifications to the methodology used to calculate ZEC compensation levels, in order to support the extended operation of these resources through 2049. The White Paper is available for public review on the Commission's website under Matter No. 15-E-0302. |  |                                                         |                                            |
| Name of Applicant or Sponsor:<br>New York State Public Service Commission                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  | Telephone: 518-474-6530<br>E-Mail: secretary@dps.ny.gov |                                            |
| Address:<br>Empire State Plaza, Agency Building 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                                         |                                            |
| City/PO:<br>Albany                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  | State:<br>NY                                            | Zip Code:<br>12223                         |
| 1. Does the proposed action only involve the legislative adoption of a plan, local law, ordinance, administrative rule, or regulation?<br>If Yes, attach a narrative description of the intent of the proposed action and the environmental resources that may be affected in the municipality and proceed to Part 2. If no, continue to question 2.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  | NO<br><input type="checkbox"/>                          | YES<br><input checked="" type="checkbox"/> |
| 2. Does the proposed action require a permit, approval or funding from any other government Agency?<br>If Yes, list agency(s) name and permit or approval:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  | NO<br><input type="checkbox"/>                          | YES<br><input type="checkbox"/>            |
| 3. a. Total acreage of the site of the proposed action? _____ acres<br>b. Total acreage to be physically disturbed? _____ acres<br>c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? _____ acres                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |                                                         |                                            |
| 4. Check all land uses that occur on, are adjoining or near the proposed action:<br><input type="checkbox"/> Urban <input type="checkbox"/> Rural (non-agriculture) <input type="checkbox"/> Industrial <input type="checkbox"/> Commercial <input type="checkbox"/> Residential (suburban)<br><input type="checkbox"/> Forest <input type="checkbox"/> Agriculture <input type="checkbox"/> Aquatic <input type="checkbox"/> Other(Specify):<br><input type="checkbox"/> Parkland                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |                                                         |                                            |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                    |                                                                                                     |                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|
| 5. Is the proposed action,<br>a. A permitted use under the zoning regulations?<br>b. Consistent with the adopted comprehensive plan?                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | NO<br><br><input type="checkbox"/><br><br><input type="checkbox"/>                                 | YES<br><br><input type="checkbox"/><br><br><input type="checkbox"/>                                 | N/A<br><br><input type="checkbox"/><br><br><input type="checkbox"/> |
| 6. Is the proposed action consistent with the predominant character of the existing built or natural landscape?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | NO<br><br><input type="checkbox"/>                                                                 | YES<br><br><input type="checkbox"/>                                                                 |                                                                     |
| 7. Is the site of the proposed action located in, or does it adjoin, a state listed Critical Environmental Area?<br>If Yes, identify: _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | NO<br><br><input type="checkbox"/>                                                                 | YES<br><br><input type="checkbox"/>                                                                 |                                                                     |
| 8. a. Will the proposed action result in a substantial increase in traffic above present levels?<br>b. Are public transportation services available at or near the site of the proposed action?<br>c. Are any pedestrian accommodations or bicycle routes available on or near the site of the proposed action?                                                                                                                                                                                                                                                                                             | NO<br><br><input type="checkbox"/><br><br><input type="checkbox"/><br><br><input type="checkbox"/> | YES<br><br><input type="checkbox"/><br><br><input type="checkbox"/><br><br><input type="checkbox"/> |                                                                     |
| 9. Does the proposed action meet or exceed the state energy code requirements?<br>If the proposed action will exceed requirements, describe design features and technologies:<br>_____<br>_____                                                                                                                                                                                                                                                                                                                                                                                                             | NO<br><br><input type="checkbox"/>                                                                 | YES<br><br><input type="checkbox"/>                                                                 |                                                                     |
| 10. Will the proposed action connect to an existing public/private water supply?<br>If No, describe method for providing potable water: _____<br>_____                                                                                                                                                                                                                                                                                                                                                                                                                                                      | NO<br><br><input type="checkbox"/>                                                                 | YES<br><br><input type="checkbox"/>                                                                 |                                                                     |
| 11. Will the proposed action connect to existing wastewater utilities?<br>If No, describe method for providing wastewater treatment: _____<br>_____                                                                                                                                                                                                                                                                                                                                                                                                                                                         | NO<br><br><input type="checkbox"/>                                                                 | YES<br><br><input type="checkbox"/>                                                                 |                                                                     |
| 12. a. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places?<br>b. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory? | NO<br><br><input type="checkbox"/><br><br><input type="checkbox"/>                                 | YES<br><br><input type="checkbox"/><br><br><input type="checkbox"/>                                 |                                                                     |
| 13. a. Does any portion of the site of the proposed action, or lands adjoining the proposed action, contain wetlands or other waterbodies regulated by a federal, state or local agency?<br>b. Would the proposed action physically alter, or encroach into, any existing wetland or waterbody?<br>If Yes, identify the wetland or waterbody and extent of alterations in square feet or acres: _____<br>_____<br>_____                                                                                                                                                                                     | NO<br><br><input type="checkbox"/><br><br><input type="checkbox"/>                                 | YES<br><br><input type="checkbox"/><br><br><input type="checkbox"/>                                 |                                                                     |

|                                                                                                                                                                                                                                                                                                                                                                                                        |                          |                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|
| 14. Identify the typical habitat types that occur on, or are likely to be found on the project site. Check all that apply:<br><input type="checkbox"/> Shoreline <input type="checkbox"/> Forest <input type="checkbox"/> Agricultural/grasslands <input type="checkbox"/> Early mid-successional<br><input type="checkbox"/> Wetland <input type="checkbox"/> Urban <input type="checkbox"/> Suburban |                          |                          |
| 15. Does the site of the proposed action contain any species of animal, or associated habitats, listed by the State or Federal government as threatened or endangered?                                                                                                                                                                                                                                 | NO                       | YES                      |
|                                                                                                                                                                                                                                                                                                                                                                                                        | <input type="checkbox"/> | <input type="checkbox"/> |
| 16. Is the project site located in the 100-year flood plan?                                                                                                                                                                                                                                                                                                                                            | NO                       | YES                      |
|                                                                                                                                                                                                                                                                                                                                                                                                        | <input type="checkbox"/> | <input type="checkbox"/> |
| 17. Will the proposed action create storm water discharge, either from point or non-point sources?<br>If Yes,                                                                                                                                                                                                                                                                                          | NO                       | YES                      |
|                                                                                                                                                                                                                                                                                                                                                                                                        | <input type="checkbox"/> | <input type="checkbox"/> |
| a. Will storm water discharges flow to adjacent properties?                                                                                                                                                                                                                                                                                                                                            | <input type="checkbox"/> | <input type="checkbox"/> |
| b. Will storm water discharges be directed to established conveyance systems (runoff and storm drains)?<br>If Yes, briefly describe:                                                                                                                                                                                                                                                                   | <input type="checkbox"/> | <input type="checkbox"/> |
| _____<br>_____                                                                                                                                                                                                                                                                                                                                                                                         |                          |                          |
| 18. Does the proposed action include construction or other activities that would result in the impoundment of water or other liquids (e.g., retention pond, waste lagoon, dam)?<br>If Yes, explain the purpose and size of the impoundment:                                                                                                                                                            | NO                       | YES                      |
| _____<br>_____                                                                                                                                                                                                                                                                                                                                                                                         | <input type="checkbox"/> | <input type="checkbox"/> |
| 49. Has the site of the proposed action or an adjoining property been the location of an active or closed solid waste management facility?<br>If Yes, describe:                                                                                                                                                                                                                                        | NO                       | YES                      |
| _____<br>_____                                                                                                                                                                                                                                                                                                                                                                                         | <input type="checkbox"/> | <input type="checkbox"/> |
| 20. Has the site of the proposed action or an adjoining property been the subject of remediation (ongoing or completed) for hazardous waste?<br>If Yes, describe:                                                                                                                                                                                                                                      | NO                       | YES                      |
| _____<br>_____                                                                                                                                                                                                                                                                                                                                                                                         | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>I CERTIFY THAT THE INFORMATION PROVIDED ABOVE IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE</b><br><br>Applicant/sponsor/name: <u>New York State Public Service Commission</u> Date: <u>9/15/2025</u><br><br>Signature: <u></u> Title: <u>Senior Attorney</u>                                                 |                          |                          |

## Attachment A

### Short Environmental Assessment Form

#### Part 1 - Project Information

The Public Service Commission (Commission) is considering the recommendations made in the Department of Public Service Staff Zero-Emissions Credit Program Extension Proposal (the Staff Proposal), filed by Department of Public Service Staff (Staff) on July 31, 2025. The Staff Proposal recommends continuing the existing Zero Emissions Credit (ZEC) program, with certain modifications to the methodology used to calculate ZEC compensation levels. The Staff Proposal's intent is to preserve the zero-emissions environmental attributes of New York State's existing nuclear electric generating facilities through at least 2049.

Each of these three facilities have operated pursuant to federal Nuclear Regulatory Commission licenses for decades, and the proposed action is not expected to alter the nature or intensity of their operations. Continued operation of the nuclear facilities may, however, affect certain environmental features. These impacts may include, but are not limited to, impacts to surface water use and quality associated with water withdrawals and discharges, air quality impacts associated with the operation of auxiliary equipment, and natural resource and human health impacts associated with the continued use of nuclear fuel and production of nuclear waste. The proposed action may also have statewide environmental effects insofar as the nuclear facilities' continued operation would affect the characteristics of the state's electrical grid as a whole.

Please see Parts 2 and 3 of this Short Environmental Assessment Form for further discussion of environmental resources that may be affected by the proposed action.

Project:

Date:

## ***Short Environmental Assessment Form***

### ***Part 2 - Impact Assessment***

**Part 2 is to be completed by the Lead Agency.**

Answer all of the following questions in Part 2 using the information contained in Part 1 and other materials submitted by the project sponsor or otherwise available to the reviewer. When answering the questions the reviewer should be guided by the concept “Have my responses been reasonable considering the scale and context of the proposed action?”

|                                                                                                                                                                            | No, or<br>small<br>impact<br>may<br>occur | Moderate<br>to large<br>impact<br>may<br>occur |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|------------------------------------------------|
| 1. Will the proposed action create a material conflict with an adopted land use plan or zoning regulations?                                                                | <input checked="" type="checkbox"/>       | <input type="checkbox"/>                       |
| 2. Will the proposed action result in a change in the use or intensity of use of land?                                                                                     | <input checked="" type="checkbox"/>       | <input type="checkbox"/>                       |
| 3. Will the proposed action impair the character or quality of the existing community?                                                                                     | <input checked="" type="checkbox"/>       | <input type="checkbox"/>                       |
| 4. Will the proposed action have an impact on the environmental characteristics that caused the establishment of a Critical Environmental Area (CEA)?                      | <input checked="" type="checkbox"/>       | <input type="checkbox"/>                       |
| 5. Will the proposed action result in an adverse change in the existing level of traffic or affect existing infrastructure for mass transit, biking or walkway?            | <input checked="" type="checkbox"/>       | <input type="checkbox"/>                       |
| 6. Will the proposed action cause an increase in the use of energy and it fails to incorporate reasonably available energy conservation or renewable energy opportunities? | <input checked="" type="checkbox"/>       | <input type="checkbox"/>                       |
| 7. Will the proposed action impact existing:                                                                                                                               | <input checked="" type="checkbox"/>       | <input type="checkbox"/>                       |
| a. public / private water supplies?                                                                                                                                        | <input checked="" type="checkbox"/>       | <input type="checkbox"/>                       |
| b. public / private wastewater treatment utilities?                                                                                                                        | <input checked="" type="checkbox"/>       | <input type="checkbox"/>                       |
| 8. Will the proposed action impair the character or quality of important historic, archaeological, architectural or aesthetic resources?                                   | <input checked="" type="checkbox"/>       | <input type="checkbox"/>                       |
| 9. Will the proposed action result in an adverse change to natural resources (e.g., wetlands, waterbodies, groundwater, air quality, flora and fauna)?                     | <input type="checkbox"/>                  | <input checked="" type="checkbox"/>            |
| 10. Will the proposed action result in an increase in the potential for erosion, flooding or drainage problems?                                                            | <input checked="" type="checkbox"/>       | <input type="checkbox"/>                       |
| 11. Will the proposed action create a hazard to environmental resources or human health?                                                                                   | <input type="checkbox"/>                  | <input checked="" type="checkbox"/>            |

Project:

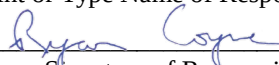
Date:

## ***Short Environmental Assessment Form***

### ***Part 3 Determination of Significance***

For every question in Part 2 that was answered “moderate to large impact may occur”, or if there is a need to explain why a particular element of the proposed action may or will not result in a significant adverse environmental impact, please complete Part 3. Part 3 should, in sufficient detail, identify the impact, including any measures or design elements that have been included by the project sponsor to avoid or reduce impacts. Part 3 should also explain how the lead agency determined that the impact may or will not be significant. Each potential impact should be assessed considering its setting, probability of occurring, duration, irreversibility, geographic scope and magnitude. Also consider the potential for short-term, long-term and cumulative impacts.

Please see Attachment B.

|                                                                                                                                        |                                                                                                                                                                                                                                                                              |
|----------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/>                                                                                                    | Check this box if you have determined, based on the information and analysis above, and any supporting documentation, that the proposed action may result in one or more potentially large or significant adverse impacts and an environmental impact statement is required. |
| <input type="checkbox"/>                                                                                                               | Check this box if you have determined, based on the information and analysis above, and any supporting documentation, that the proposed action will not result in any significant adverse environmental impacts.                                                             |
| New York State Public Service Commission                                                                                               | 9/15/2025                                                                                                                                                                                                                                                                    |
| Name of Lead Agency                                                                                                                    | Date                                                                                                                                                                                                                                                                         |
| Ryan Coyne                                                                                                                             | Senior Attorney                                                                                                                                                                                                                                                              |
| Print or Type Name of Responsible Officer in Lead Agency                                                                               | Title of Responsible Officer                                                                                                                                                                                                                                                 |
| <br>Signature of Responsible Officer in Lead Agency | <br>Signature of Preparer (if different from Responsible Officer)                                                                                                                                                                                                            |

**PRINT FORM**

## Attachment B

### Short Environmental Assessment Form

#### Part 3 – Determination of Significance

On May 15, 2025, the New York State Public Service Commission (the Commission) directed Department of Public Service (DPS) Staff to prepare a white paper evaluating a potential extension of the Zero Emissions Credit (ZEC) Program. The Commission is now considering the recommendations made in the Zero-Emissions Credit Program Extension Proposal (the Staff Proposal), filed by DPS Staff on July 31, 2025. The Staff Proposal recommends continuing the existing ZEC program, with certain modifications to the methodology used to calculate ZEC compensation levels. The Staff Proposal's intent is to preserve the zero-emissions environmental attributes of New York State's existing nuclear electric generating facilities through at least 2049. This is an Unlisted Action under the State Environmental Quality Review Act, and the location of the action is statewide.

Each of the three upstate nuclear facilities have operated pursuant to, among other regulations, federal Nuclear Regulatory Commission licenses for decades, and the proposed action is not expected to alter the nature or intensity of their operations. Continued operation of the nuclear facilities may, nevertheless, affect certain environmental features.

First, each facility withdraws the water necessary for its cooling systems from Lake Ontario. The once-through systems of the Nine Mile Point Unit 1, Ginna, and FitzPatrick facilities release heated water back to the lake, subject to certain limits imposed under each facility's State Pollutant Discharge Elimination System permit. The closed-loop system of Nine Mile Point Unit 2, by contrast, draws water from Lake Ontario and allows the cooling system to heat it to evaporation. Continued operations at the facilities would therefore continue to impact Lake Ontario.

Relatedly, continued operations at the upstate nuclear facilities may also affect aquatic species. The facilities' cooling systems withdraw water from and discharge water to aquatic habitats. The release of heated effluents is known to impact certain fish and other aquatic organisms. Additionally, cooling water intake structures can cause entrainment of small aquatic organisms if they are drawn into the system and killed. Impingement of larger organisms like fish, which can become trapped against intake screens, is also a potential impact.

Additionally, continued operations at the upstate nuclear facilities may have impacts related to the management of hazardous wastes. Continued operations will necessarily result in the continued generation of certain wastes, including radioactive wastes. Those

wastes include spent nuclear fuel, which is highly radioactive. Because the federal government has not yet developed a consolidated interim or permanent repository for spent nuclear fuel, that waste would continue to be stored on site in either the facilities' spent fuel pools or in dry casks on each facility's Independent Spent Fuel Storage Installation. The continued storage of spent nuclear fuel at the upstate nuclear facilities may thus result in significant adverse environmental impacts.

Finally, 6 NYCRR § 617.10(d)(4) states that a supplement to a Generic Environmental Impact Statement (GEIS) must be prepared if a subsequent proposed action was not addressed or was inadequately addressed in the GEIS and if the subsequent action may have one or more significant adverse environmental impacts. The 2016 Final Supplemental Generic Environmental Impact Statement that assessed the impacts of, among other things, the initial iteration of the ZEC program evaluated only the potential environmental impacts associated with the original ZEC program, which is scheduled to expire in 2029. The proposed supplemental action by the Commission involves the design and implementation of an extended ZEC program that would support the extended operation of the upstate nuclear facilities through 2049. Because the previous impacts analysis did not assess the impacts of extending the ZEC program through 2049, the Commission should determine that a supplemental GEIS is required.

In light of the foregoing, the Commission should issue a positive declaration for purposes of Environmental Conservation Law Article 8 and require the preparation of a supplemental generic environmental impact statement.