Policy & Science Advisor Update

ENVIRONMENTAL RESEARCH Q2 2025

Featured Research: Offshore Wind Energy Development in New York State

Empire Wind 1 Foundation

Photo Credit: Carl LoBue, The Nature Conservancy

This summer, Empire Wind 1 and Sunrise Wind began offshore construction, culminating years of scientific investigation to identify, avoid, and minimize potential impacts to marine life and fisheries. When fully operational, the turbines will provide enough electricity to power over 1 million average New York homes. Over the past 8 years, NYSERDA's Environmental Research program has worked to fill key data and methodology gaps necessary to inform offshore wind leasing and siting decisions. Many of these efforts will continue during and after operation to evaluate the effectiveness of mitigation practices. Below is a high-level overview of steps undertaken to advance the environmentally responsible development of offshore wind in New York.

Throughout this period, NYSERDA has provided substantial funding for environmental and fisheries research to inform and reduce risks to both environmental resources and offshore wind projects and produce publicly available data to serve as the basis for future monitoring efforts. In addition, NYSERDA-led efforts to establish regional research collaboratives are enabling Atlantic coast States, federal agencies, and offshore wind developers to collaborate on establishing regional monitoring networks and data platforms to facilitate data sharing across wind projects. As we evaluate our priorities for 2026 and beyond, NYSERDA will maintain an active regional role to coordinate research and monitoring activities that address New York priorities.

A map of digital aerial survey tracks and a fish shoal observed during a survey

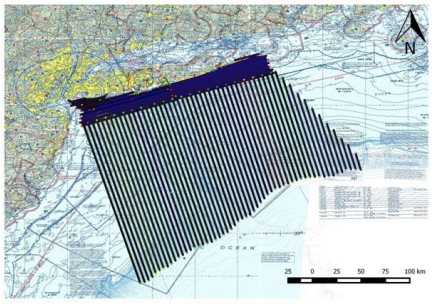

Photo Credit: Normandeau Associates

September 2025

2017-18: NYS Offshore Wind Master Plan

New York conducts 20 studies and engages with stakeholders and the public to gather data on environmental, social, economic, regulatory, and infrastructure issues relevant to offshore wind energy development. The Offshore Wind Master Plan established the technical working groups to provide advice to inform State decision making.

2016-2019: Digital Aerial Surveys

NYSERDA collects 3.6 million aerial images in the New York Bight, providing baseline information on avian and marine wildlife. This data on spatial and temporal pattens of wildlife activity informs lease area designations and impact assessments. Equinor adds to this data with monthly surveys of their lease area.

2016 – Ongoing: Whale Monitoring

Research undertaken to detect whales in near real-time throughout the Empire Wind lease area. NYSERDA funds additional whale monitoring via passive acoustic stations and mobile gliders and supports whale tagging during construction. These projects increase understanding of whale presence and behavior and help establish mitigation measures such as vessel speed and construction time of year restrictions.

2018 - 2020: Benthic Surveys

Empire Wind and Sunrise Wind conduct benthic surveys to characterize sediments, habitats, and seafloor species in the lease area and along the proposed cable routes.

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Federal and State Environmental Reviews and Public Input Periods

2016: BOEM releases Environmental Assessment for site characterization for public review and comment
2021: Notice of Intent to Prepare and Environmental Impact Statements
2022: Draft Environmental Impact Statements Issued by BOEM
2022 - 23: NYS Article VII Certificate of Environmental Compatibility and Public Need Issued
2023-24: Public Meetings and Final Environmental Impact Statements Issued
2024: BOEM issues Approvals of Construction and Operations Plan with environmental mitigation Conditions

2019 - 2020: Fishing Transit Lane Workshops

NYSERDA partnered with federal agencies and the Responsible Offshore Development Alliance to gather feedback from commercial fishermen to draft the NY Bight Transit Lane Report which looked at fishermen transit through the NY Bight to establish some guiding principles to consider when evaluating the need for "no build" zones. This report has informed the decision making of Bureau of Ocean Energy Management (BOEM) in the 2022 Final NY Bight Sale Notice to establish "no build" zones between lease areas.

Transit Areas Identified by Fishermen

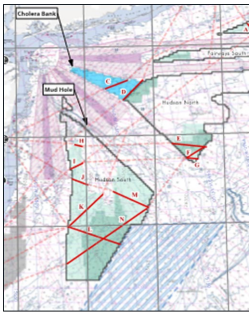

Photo Credit: NYSERDA

Spacing Between Lease Areas to Accommodate Transit

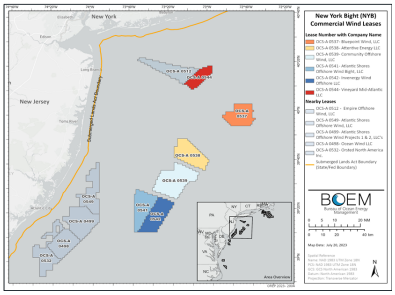

Photo Credit: NYSERDA

U.S. Fish and Wildlife Service Guidance for Tracking Birds Offshore Developed with NYSERDA Funds

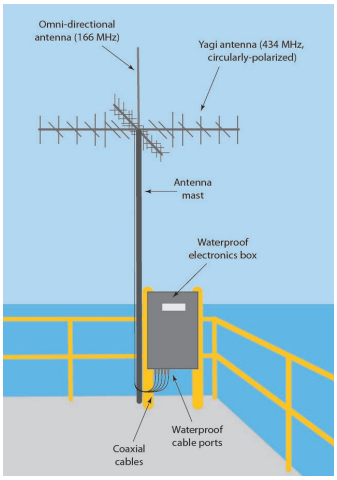

Photo Credit: US Fish and Wildlife and NYSERDA

2018 – Ongoing: NYSERDA Funds Environmental and Fisheries Research

NYSERDA works with technical working group members and regional stakeholders to determine key research initiatives and releases funding opportunities to improve the scientific and technical foundation for addressing environmental and fisheries questions related to the development of offshore wind. These projects advance our knowledge on wildlife monitoring and mitigation measures, meteorological and oceanographic conditions, and fisheries activities.

2020 - 2022: NYSERDA Conducts Geophysical and Geotechnical Investigations

NYSERDA conducts geophysical and geotechnical investigations to aid in the development of preliminary design and installation requirements for offshore wind farms by increasing our understanding of the bathymetrical, morphological and geological conditions in the New York Bight.

2022 - Ongoing: NYSERDA Advances Regional Fisheries Compensation

NYSERDA leads a multi-state effort to develop an efficient, transparent, and standardized regional fisheries compensation fund and contracts with an administrator to design and develop a comprehensive fisheries compensatory mitigation fund and claims processes.

2024: NYSERDA Contracts with Empire Wind 1 and Sunrise Wind

NYSERDA finalizes contracts with Empire Wind 1 and Sunrise Wind. The contracts include mitigation plans, a first in the nation commitment of $10,000 per megawatt to fund regional research on wildlife and commercial fisheries species, and commitments to make environmental data collected publicly available. Projects consult with the Environmental and Fisheries Technical Working Groups on their mitigation and monitoring plans.

(Article Highlight, continued…)

2025: NYSERDA Environmental and Fisheries Spatial Studies

NYSERDA publishes updated spatial studies on benthic habitats, birds and bats, fish and fisheries, and marine mammals and sea turtles and uses them to analyze environmental sensitivity to offshore wind development.

2025 and Beyond: Empire Wind 1 and Sunrise Wind Regional Monitoring Funds Advance

As part of the New York 4 offshore wind solicitation developers were required to contribute $10,000/MW to monitor wildlife and key commercial fish stocks. Empire Wind 1 contracted with the Responsible Offshore Science Alliance and the Regional Wildlife Science Collaborative to fund 10 fisheries projects, a large-scale study on hydrodynamics and ecology, and an analysis of marine bird vulnerability. Sunrise Wind has contracted with Stony Brook University to assess regional zooplankton presence, Syracuse University to understand whale acoustics, and with Atlantic Marine Conservation Society to tag seals. Sunrise Wind also contracted with the Responsible Offshore Science Alliance to launch a Request for Proposals in 2026 to fund regional monitoring and research on fisheries.

Environmental Sensitivity Map for Mid-frequency Cetaceans

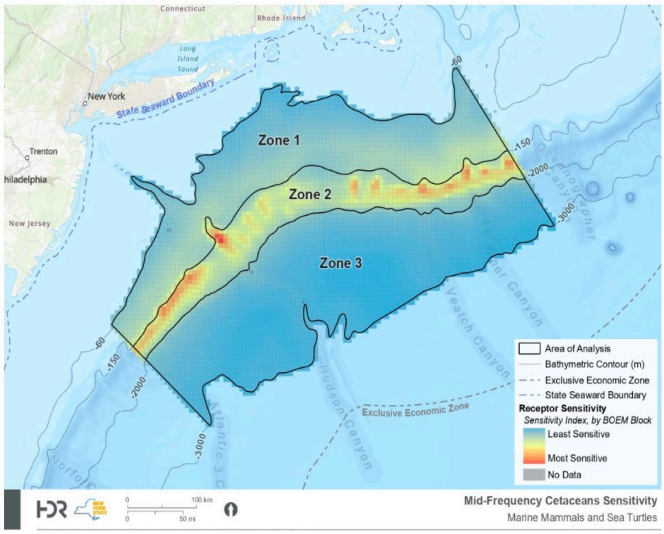

Photo Credit: NYSERDA

Construction work at Empire Wind 1

Photo Credit: Duke University

Empire Wind 1 and Sunrise Wind are expected to enter commercial operation by 2027. Once completed, these projects will join South Fork Wind giving New York three commercial scale offshore wind projects in operation, the most in the country, and signify progress towards New York's clean energy transition.

Offshore Wind

- **Regional Fisheries Compensation Fund**: The Multi-State effort to advance a regional fisheries compensation fund has continued to make progress. The Regional Fund Administrator (RFA) continues to engage with stakeholders during one-on-one meetings and stakeholder specific caucus meetings. The focus of these meeting was to discuss key components of eligibility and documentation needed to support claims. The RFA plans to meet with the oversight committees in early Q3. More information about the activities of the RFA can be found at: https://www.rfainfo.com/
- **Long Island KidWind Challenge**: Five middle school teams from the Brentwood Union Free School District showcased their engineering skills on June 4th at the inaugural Long Island KidWind Challenge, held at Suffolk County Community College. The teams competed for a chance to advance to the Global KidWind Championship, presenting innovative projects and testing their custom-built wind turbines. The event was supported by Orsted, Vineyard Wind, Cornell Cooperative Extension of Suffolk County, Whymaker and NYSERDA. Students also engaged with industry professionals who offered real-world insights, aligning with the district's Graduation PLUS+ initiative to prepare students for college and career pathways.

Compilation of Pictures from Long Island KidWind Challenge

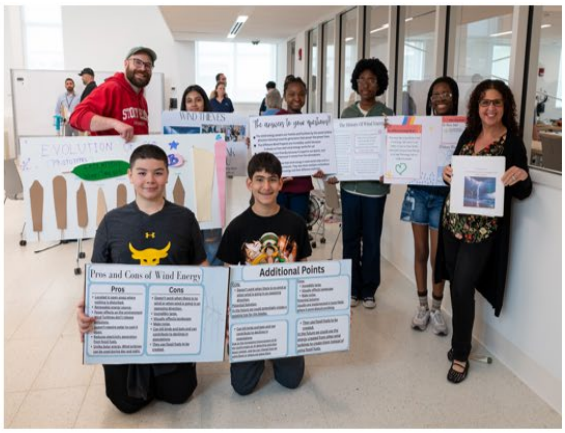

Photo Credit: NYSERDA

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- **Offshore Wind Supplier Forum:** NYSERDA and the New Jersey Economic Development Authority hosted an Offshore Wind Supplier Forum in New York City on April 25, 2025. This event convened the regional offshore wind industry with local businesses looking to supply products and services to projects on the East Coast. There were several sessions on supply chain development and ample opportunities for networking. This event was intended to connect local and international businesses to opportunities in offshore wind and help build the knowledge and relationships required to be successful in the industry.
- **Responsible Offshore Science Alliance (ROSA) Request for Proposals (RFP):** On June 18, ROSA announced over $3 million in funding to advance the regional understanding and cumulative effects of offshore wind on fish and fisheries while supporting meaningful solutions to challenges surrounding responsible ocean co-use. Funding for these projects was provided by the Empire Wind 1 projects as required by contract stipulations from the New York 4 Offshore Wind Solicitation. ROSA is funding 10 projects across three different themes that address key regional research questions identified as high priority by the ROSA and the broader fisheries and offshore wind community. Research needs were considered and prioritized from those included in ROSA's Fish and Fisheries OffshoRe Wind Research Database (FishFORWRD). More information can be found on ROSA's website: https://www.rosascience.org/regional-rfp/
- **Offshore Wind Graduate Fellowship**: NYSERDA has funded, in collaboration with ROSA, a PhD student whose research objectives align with previously identified research priorities (ROSA Gap Analysis 2024) centered around offshore wind and sea scallops. This one-year pilot graduate fellowship will focus on evaluating the potential spatial overlapping of OSW development and scallop suitable habitats and distributions, laying the foundation for future research to further explore the full scope of potential OSW impacts on the scallop fishery and help ROSA advance this regional research priority. AJ Mabaka is a PhD candidate at Stony Brook University under advisement of Dr. Yong Chen and was funded by NYSERDA's Student Equity Fund to attend the 2024 State of the Science based on his interests in the field.
- **Environmental Technical Working Group (E-TWG):** The offshore wind Environmental Technical Working Group (E-TWG) met in April to discuss new Specialist Committees to 1) address communication on potential environmental impacts from offshore wind development, 2) support the Regional Wildlife Science Collaborative's working groups' development of regional monitoring networks for birds, and 3) organize the 2026 State of the Science on Offshore Energy, Wildlife, and Fisheries.

Land Based-Renewables

- **Agricultural Technical Working Group (A-TWG):** The A-TWG met twice in Q2 2025 to receive updates and provide feedback on materials that will support the 2025 annual solicitation for large scale renewables under the Clean Energy Standard, including the 2025 Solar Siting Scorecard and guidance for Agricultural

(Land Based Renewables, continued…)

Co-Utilization Plans (ACUP); how to learn effectively from the agrivoltaics demonstration sites secured through RFP5752: Agrivoltaics Demonstration Projects; and to begin to shape the group's priorities for the next several years.

- **Agrivoltaics Specialist Committee**: A-TWG's Agrivoltaics Specialist Committee also met in Q2 2025 to hear from Caroline Marschner, Cornell Agriculture and Life Sciences, about lessons learned from their first year conducting agrivoltaics research at NY sites. The Committee also reviewed and provided feedback on the approach to encouraging and awarding points for agrivoltaics within the draft 2025 Solar Siting Scorecard.

Air Quality and Public Health

- **American Association of Aerosol Research Conference:** NYSERDA Environmental Research is a sponsor of the American Association of Aerosol Research (AAAR) Conference (https://www.aaar.org/) to be held in Buffalo, NY October 13-17, 2025. The conference will showcase the latest research in aerosol science and technology and include Plenary Lectures, Special Symposia, Poster Sessions, Oral Platform Sessions, Tutorials, and Special Events. NYSERDA is also providing travel funds for 11 students or post-doctoral associates from NYSERDA-supported research to attend and present at AAAR.

Ellen Burkhard at the Climate Solutions Summit

Photo Credit: NYSERDA

- **Climate Solutions Summit:** The inaugural Climate Solutions Summit NYC was held on April 23 and 24, 2025 on Governors Island in collaboration with the New York City Panel on Climate Change (NPCC) and the Urban Climate Change Research Network (UCCRN). This summit centered on research in coastal urban environments and offered an exciting opportunity for attendees to explore emerging research, build relationships, and form collaborations. The meeting particularly focused on addressing the challenges and developing solutions for climate resilience in these vital coastal regions. Ellen Burkhard was an invited panelist on enabling environmental observations on Governors Island: developing a strategy for on-island environmental observations, with a focus on air quality and atmospheric chemistry. Two principal investigators from NYSERDA-support research projects, Roisin Commane of Columbia University and Drew Gentner of Yale were also on this exciting panel along with Paul Shepson of State University of New York (SUNY) Stony Brook and the NYS Climate Action Council.

Ecosystem Response

- **Ecosystem Recovery from Acidification:** The State University of New York College of Environmental Science and Forestry (SUNY ESF) continues their work on Long-term Monitoring of an Adirondack Ecosystem: Effects of Climate Change on Greenhouse Gas Balance, Water quality, and Aquatic Biodiversity. Arbutus Lake, situated in SUNY ESF's Huntington Wildlife Forest, is at the center of research informing trends in dissolved organic carbon (DOC) and dissolved organic matter (DOM) in surface waters in the Adirondacks. Previous literature on browning suggested that ecosystem recovery from acidification was the leading cause for surface water browning. In May 2025, SUNY ESF along with Syracuse University published their findings that the Arbutus watershed's DOM changes are occurring in acid-resistant ecosystems, unrelated to DOC concentrations which offers new insights from previous literature. The publication can be found here: https://doi.org/10.1007/s10533-025-01242-7
- **Catskill Environmental Research & Monitoring Conference:** The 2025 Catskill Environmental Research & Monitoring (CERM) Conference will be held October 22-24 at Belleayre Mountain Resort in the Catskills. The conference is intended for researchers, students, and resource manages to contribute and collaborate on topics such as ecosystem carbon cycling, forest mapping and regeneration stream sediment management and monitoring, new technologies, human impacts on public lands, water quality and quantity, and more. Information on the conference and registration details can be found here: https://cermconference.org/

Avalanche Lake in April 2025

Photo Credit: AWI

- **Adirondack Lakes Long Term Monitoring:** Paul Smith's College Adirondack Watershed Institute (AWI) wrapped up another season of lake sampling for the Adirondack Long Term Monitoring Program. AWI continues a high sample success rate despite difficult winter and spring conditions. August lake sampling is currently underway.

Climate Change

- **State Energy Plan:** Program staff continue to co-lead development of chapters in the next State Energy Plan. This quarter, the draft climate change and resilience chapter was submitted to the State Energy Planning Board. The State Energy Plan's schedule of public hearings can be found at: https://energyplan.ny.gov/Get-Involved/Hearings

(Climate Change, continued…)

- **Program Research Plan:** Development of the climate impacts and adaptation component of the Environmental Program's research plan has begun. A process has been identified to elicit input from a wide range of stakeholders. This quarter, the program released a Request for Information (RFI) to gather input from interested stakeholders on their priority concerns regarding climate change impacts and adaptation, which will then be compiled as part of the research plan. Development of the plan will continue throughout the year.
- **NYS Adaptation and Resilience Plan (NYSARP):** Staff continue to work on the statewide adaptation plan. NYSERDA staff presented on the NYS Climate Impacts Assessment on the first NYSARP webinar in a series. The NYSARP summer webinar series is meant to introduce the NYSARP and highlight resilience-related work by different agencies.

NYSARP Webinar Series

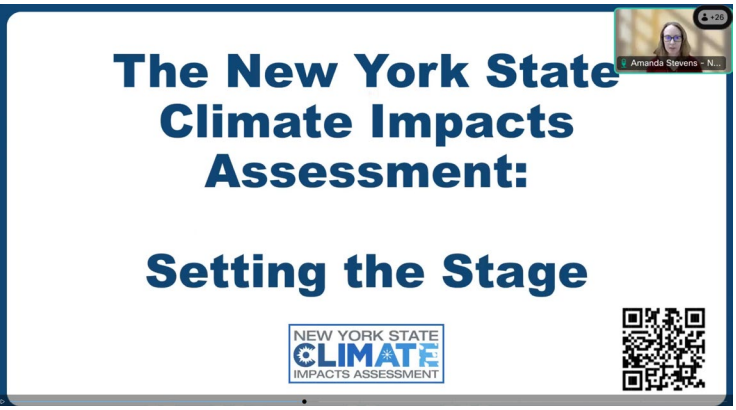

Photo Credit: NYSERDA

Current Funding Opportunities

Atlantic Sturgeon Population & Habitat Use to Inform Infrastructure Improvements (Request for Proposals 6030): NYSERDA seeks proposals to support the determination of a multi-year record of Atlantic sturgeon presence in the greater New York City region. This record will provide valuable and time-sensitive information to support effective decision-making for time-of-year restrictions, while also maintaining a critical path for energy development activities.

Climate Impacts and Adaptation Research (Program Opportunity Notice 6034): NYSERDA seeks proposals for PON 6034 to provide climate impact and adaptation research in four categories: (A) Gap analysis for underreported vulnerable populations; (B) Data and information gaps for indoor air quality and climate change; (C) Compound events; and (D) Advancing the development of ice, wind, and deluge projections. These projects should build upon existing efforts and provide results in a form that is useable by policy analysts and policymakers.

To view NYSERDA's current solicitations and funding opportunities, visit:
https://www.nyserda.ny.gov/Funding-Opportunities/Current-Funding-Opportunities

Program Reports and Papers

Air Quality and Related Health Research: Particulate Matter (PM), Ozone and Co-Pollutants

Ahmadi, M., Allen, G., Stanway, J., & Traviss, N. (2025). Effect of operating conditions and technology on residential wood stove emissions of criteria, greenhouse gas, and hazardous air pollutants. Journal of the Air & Waste Management Association, 1–20. https://doi.org/10.1080/10962247.2025.2488807

Goldberg, R., Spira-Cohen, A., Pitiranggon, M. et al. Changes in the short-term relationship between air pollution and mortality in New York City, 1990–2019. Environ Health 24, 37 (2025). https://doi.org/10.1186/s12940-025-01171-w

Tao, M., Fiore, A. M., Karambelas, A., Miller, P. J., Valin, L. C., Judd, L. M., et al. (2025). Insights into summertime surface ozone formation from diurnal variations in formaldehyde and nitrogen dioxide along a transect through New York City. Journal of Geophysical Research: Atmospheres, 130, e2024JD040922. https://doi.org/10.1029/2024JD040922

Zhang, J., Zhu, T., Zhang, Q., Ng, N, Catena, A., Schwab, M, Gonzalez-Cruz, J., Zhou, S., Xu, J., Stuart, J., Teora, A., Felton, D. and Schwab J. Tracking Variations in Heatwave-Induced https://doi.org/10.1021/acsestair.4c00260

Ecosystem Response

Beier, C.M., Badri, S.L., LoRusso, N.A. et al. Long-term changes in dissolved organic matter quality are unrelated to ecosystem recovery from acidification in the Adirondack region (New York, USA). Biogeochemistry 168, 55 (2025). https://doi.org/10.1007/s10533-025-01242-7

Öz, B., Snyder, P. K., Jiao, X., Driscoll, C. T., & Zeng, T. (2025). Photochemical production of singlet oxygen in Adirondack long-term monitoring lakes of varying browning status. Environmental Science & Technology. https://doi.org/10.1021/acs.est.5c04001