Policy & Science Advisor Update

ENVIRONMENTAL RESEARCH Q3 2025

Featured Research: Agrivoltaics

Large ground mounted solar projects continue to play an important role in New York's clean energy transition. Agricultural land near transmission is, and has been, desirable for solar developers because it is often flat, open, and relatively easy to construct solar arrays on. A variety of stakeholders, including those on the Agricultural Technical Working Group (A-TWG), are concerned about potential solar development pressure on prime agricultural soils close to transmission lines, while acknowledging that solar can provide an additional revenue stream to help stabilize farm income and sustain farm operations. To address this intersection between New York State's agricultural and clean energy transition goals, A-TWG and others have called for research into agrivoltaics, or the co-utilization of land for agricultural production and solar energy generation.

Pigs Grazing in a Solar Array

Photo Credit: United Agrivoltaics

While there are a growing number of agrivoltaic research projects across the U.S. and other countries, to date there are few demonstrations at commercial scale where the costs, benefits, and the effects on farmers and communities are well documented. To address those information gaps, NYSERDA Environmental Research has launched an Agrivoltaics Research Program, and recently announced awards for two complementary efforts:

1. Enabling Cornell University to construct solar arrays at two Agricultural Experiment Stations to conduct long-term research and experimentation into identifying viable agrivoltaics production systems for high-density apple orchards (Hudson Valley) and vegetables, field and perennial forage crops (Ithaca). These agrivoltaic systems will enable experimentation on agrivoltaic management strategies across a range of disciplines such as plant genetics, soil health, and water management.
2. Supporting commercial-scale Agrivoltaics Research & Demonstration projects across the State that were competitively selected through Request for Proposals 5752. NYSERDA has awarded four projects to date, which will be conducting agriculture within a variety of solar array designs and scales, including on-farm microgrids, community solar scale installations, existing, conventionally constructed solar projects, as well as new solar construction with greater row spacing and/or panel heights. The projects will seek to demonstrate a range of agricultural production systems, including hay, vegetables, corn, dairy cows, pigs, poultry, mushrooms and herbs.

The Agrivoltaics Research Program is being executed in consultation with other teams at the Authority and the New York State Department of Agriculture and Markets.

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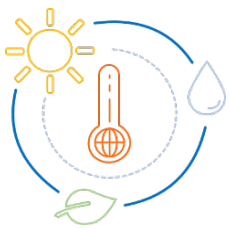
These projects will be additionally supported by a multi-disciplinary team of researchers at Cornell College of Agriculture and Life Sciences (competitively selected through Request for Qualifications 5987). Led by Louis Longchamps and co-Principal Investigators Richard Stedman and Wendong Zhang, supported by Caroline Marschner and Kathryn Walsh, the team will conduct soil and crop management, environmental and social science research at the project sites and develop a data collection and sharing portal using the Farmers Datalab model. Annual site visits open to the public and a website for sharing lessons learned will be geared to farmers and developers to explore possible agrivoltaic operations at other sites. Research findings from the demonstration projects will be regularly communicated to stakeholders, communities, and policymakers about the viability of different crops, livestock and solar configurations. Farming is underway at two of the projects and initial data and lessons learned are expected in early 2026. For more information about awarded projects, please visit this press release.

Lightstar Renewable's Plains Road Solar Array

Photo Credit: NYSERDA

Land Based-Renewables

- **Agricultural Technical Working Group (A-TWG):** A-TWG met once in Q3 2025, after member subgroups met several times to identify research, policy, and communications priorities for the A-TWG and its support contractors in the coming years. In addition to providing input on workplans, the ATWG received updates and provided feedback on the ninth annual Renewable Energy Standard (RES) request for proposals, RESRFP25-1, to advance clean energy deployments; discussed proposed key points from the A-TWG Regional Agronomic Impacts from Solar Energy (RAISE) Committee's Phase 1 study; and discussed member items including whether and how to provide A-TWG perspective and recommendations on emergent agrivoltaics policy options.



Climate Change

- **Research solicitation:** A solicitation for climate research was released in early August and closed at the end of September. The Program Opportunity Notice (PON) 6034 solicited research proposals on four topics: gaps in heat vulnerability data, climate and indoor air quality, compound events, and climate projections. The proposal response was very robust. Contract awards will be decided by the end of the year, with contracting likely to start in early 2026.
- **Program research plan:** Development of the climate impacts and adaptation component of the Environmental Program's research plan continues. The Request for Information (RFI) 6024 to gather input from interested stakeholders that was

(Climate Change, continued…)

released in Q2 2025 and completed in July 2025. An advisory group will be convened in Q4 2025 to assist with prioritization. Development of the plan will continue throughout 2026.

- **NYS Climate Impacts Assessment (NYSCIA):** Staff are working with a consultant to gather user feedback on the NYSCIA website and outputs. The first session was held this quarter in Q3 2025, engaging with NYSERDA's Energy Equity Collaborative. Two to three additional sessions focused on different audiences will be held in Q4.

Offshore Wind

- **State of the Science:** The 2026 State of the Science on Offshore Energy, Wildlife, and Fisheries will be held at Stony Brook University from June 8-11, under the theme, "Building on a strong foundation: deepening knowledge and finding collaborative solutions." Registration and the Student Equity Fund are open. The Scientific Advisory Committee, composed of members from the Environmental and Fisheries Technical Working Groups, as well as external experts, is currently reviewing abstract submissions.

Commercial Fisheries Research Foundation) on their way back from a sampling trip near Block Island Wind Farm testing innovative fishing gear as a means of co-existence between fishing and offshore wind

Photo Credit: Commercial Fisheries Research Foundation

- **Mechanical Jigging Research Project:** The Commercial Fisheries Research Foundation was competitively funded in 2023 to assess the viability of mechanical jig systems in the New York Bight and southern New England and provide commercially viable alternative gear opportunities for the fishing industry to continue to utilize areas occupied by wind farms. The second year of a three-year field sampling effort continued this quarter. Additionally, the project team brought on a student intern from the University of Rhode Island for the fall semester to help with the field work and draft schematics of the mechanical jigs. The student will earn credit at the University and get first-hand field experience and opportunities to engage with the fishing community. The technical operating details will be included in the final report and should help inform fishermen who wish to use this alternative gear type to fish amongst the offshore wind projects.
- **Glider Passive Acoustic Monitoring**: Stony Brook University, Rutgers University, and Woods Hole Oceanographic Institution published research from five years of glider missions in the New York Bight wind energy areas (WEAs) funded by NYSERDA, New York

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Fish Caught Around the Block Island Wind Farm

Photo Credit: Commercial Fisheries Research Foundation

Department of Environmental Conservation, New Jersey Department of Environmental Protection and Board of Public Utilities Research and Monitoring Initiative, Ørsted Ocean Wind, and Invenergy LLC. Monitoring marine mammals has typically been visual (from a vessel or plane) allowing for observation over a large geographic area but only for a short period of time, or via long-term stationary passive acoustic monitors with less geographic coverage. Researchers found the use of autonomous gliders for passive acoustic monitoring to be effective at detecting whale habitat use over both long temporal and large geographic scales. They observed humpback, sei, fin, and North Atlantic right whales in the Bight throughout the year, with the greatest overlap between habitat use and wind energy areas in the winter. Results from these researchers will be helpful for developing effective monitoring and mitigation strategies for offshore energy activities.

- **Substation Cooling Water Report:** NYSERDA has published a new technical report which provides an overview of cooling water systems at offshore converter stations, with a particular focus on applications in offshore wind energy development in the New York Bight region. It is designed to serve as an informational resource for stakeholders involved in offshore wind development, including developers, regulators, environmental organizations, and other interested parties who have a baseline understanding of marine infrastructure but may not be familiar with cooling water systems specifically. The publication can be found here.
- **Offshore Wind Graduate Fellowship:** The NYSERDA funded PhD candidate, AJ Mabaka, at Stony Brook University, under advisement of Dr. Yong Chen, has continued to make progress on evaluating the potential spatial overlap of offshore wind development and scallop suitable habitats and distributions. He plans to make presentations to the fishing community and at the December 18, 2025 Responsible Offshore Science Alliance (ROSA).

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Advisory Council to update stakeholders on his progress and use the meeting as an opportunity to incorporate feedback into his project. Final results are expected in Q2 2026. ROSA Advisory Council meeting details can be found here: https://www.rosascience.org/our-work/advisory-council-priorities-and-meetings/

- **Regional Boat Show:** Captain Tony DiLernia, NYSERDA's Recreational Fisheries Liaison, attended and staffed a booth the Norwalk Boat Show from September 18 through 21, 2025, show organizers reported a lower than usual attendance. However, hundreds of individuals stopped by the booth to have their questions and concerns about the development of offshore wind in New York and across the region addressed. Many of the questions focused on the Empire Wind project with folks reporting good fishing around the turbines. Other questions focused on how many turbines will be constructed and when will projects be completed. The majority of the people who stopped by the booth expressed hope that construction continues for offshore wind projects.

Tony DiLernia at Norwalk Boat Show

Photo Credit: NYSERDA

- **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 and recently held a virtual for-hire committee meeting on September 23, 2025 and a Design Oversight committee meeting in Gloucester, Massachusetts on September 23, 2025. The objectives of these meetings were to develop a cross-caucus understanding of priorities and concerns regarding loss valuation and the viability of a multi-phase, two-track claims process approach, explore consensus regarding a potential companion process for claims related to the offshore export cable corridor (OECC), and report on claimant eligibility consensus and design refinement during one-on-one meetings and stakeholder specific caucus meetings. Additionally, the RFA provided an overview of recent subgroup meetings on permit transferability and shoreside businesses. More information about these meeting and ongoing engagement activities of the RFA can be found at: www.rfainfo.com
- **Fisheries Technical Working Group (F-TWG):** The Offshore Wind Fisheries Technical Working Group (F-TWG) has created its first Specialist Committee to advance the development of a Regional Surfclam Monitoring Plan (The Plan) as identified as a need from the November 2024 Surfclam Mitigation Meeting held in Philadelphia, Pennsylvania. The Plan will focus on developing a coordinated

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approach for consistent, scientifically sound monitoring that can establish reliable baselines and detect potential changes in surfclam populations. The Specialist Committee will be responsible for drafting and refinement of The Plan's content with technical writing support from Tetra Tech (the F-TWG Technical Lead) and facilitation support from the Consensus Building Institute (the F-TWG facilitator). This committee is expected to begin work in January 2026 to develop standardized approaches that could significantly improve understanding of the surfclam resource and fishery, establish protocols that may benefit multiple stakeholders across the region, and evaluate potential impacts from offshore development. Final documents are expected to be completed by the end of 2026 with updates provided on the F-TWG website.

- **Tech Surge:** NYSERDA sponsored the Marine Technology Society's TechSurge: Fisheries and Benthic Monitoring in October 2025. Presentations and discussions at the event focused on advancements in technology and methods that will allow for advancements in technology and methods related to fisheries and habitat monitoring.

Ecosystem Response

- **Catskill Environmental Research & Monitoring Conference:** The Catskill Environmental Research & Monitoring (CERM) Conference was held October 22-24, 2025 at Belleayre Mountain Resort in the Catskills. NYSERDA was a part of the conference organizing committee and several NYSERDA funded researchers presented at the conference. The conference covered 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 can be found here.

Dr. Colin Beier's Key Note Address at CERM

Photo Credit: NYSERDA

Air Quality and Public Health

- **Projects contracted for Energy-related Air Quality and Health Effects Research:** Program Opportunity Notice 5872 requested proposals focused on two categories: A. Pollutant Trend Analyses, Source Apportionment and Accountability Studies, and B. Methane Source Characterization of Buildings for Emissions Inventory Development. Two types of projects were considered: Full-scale research proposals and Environmental Research Fellowships for PhD students or post-doctoral fellows of academic institutions located in New York State that are doing research in support of air quality and health effects. The following proposals were competitively selected and resulted in new contracts for projects that have recently started or will start very soon.
    - New York City Department of Health and Mental Hygiene, Project Director: Masha Pitiranggon, MPH; Equitable Energy Transition: Tracking Spatial and Temporal Trends in Air Pollution Exposure and Health Effects
    - University of Rochester; Project Director: David Q. Rich, ScD; Changes in NYS air pollution, traffic PM sources, & cardiorespiratory events
    - Yale University, Project Director: Drew Gentner, PhD; Contributions and evolution of energy-related and climate-influenced particulate matter in a changing New York
    - Cornell University, Project Director: K. Max Zhang, PhD; Integrated energy and environmental assessment of large loads in New York State
    - Columbia University, Project Director: Roisin Commane, PhD; CH4IMNY: CH4-Methane Intensive Measurements in New York
    - Columbia University, Project Director: Roisin Commane, PhD with Yuwei Zhao, Environmental Research Fellow; Atmospheric Inverse Modeling to Access Building Methane Emissions in NYC.
- **Publications:** The publications list below has five new open-access publications resulting from the Air Quality and Health Effects research portfolio. The publications all provide important advancements. The greenhouse gas (GHG)-related findings include:
    - Lindberg et al, 2025 - provides a wide range of criteria, GHG and air toxic emissions measurements, under a dynamic duty cycle for oil- and natural gas-fired boilers (both residential and commercial). One significant finding is that methane was 3.5 times higher for the residential natural gas appliances tested due to transient methane emissions during ignition and shutdown. This will be investigated in the field under the CH4IMNY project above.
    - Loman et al, 2025 - has successfully produced a spatially disaggregated anthropogenic methane emissions inventory for 2020 for New York at 100 m horizontal resolution and monthly temporal resolution. This bottom-up inventory work is necessary for local-scale analyses and modeling. This team is currently performing inverse modeling to produce a top-down inventory for comparison.

Program Reports and Papers

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

Li, D.; Wu, Y.; Ely, T.; Legbandt, T.; Moshary, F. (2025) Synergic Lidar Observations of Ozone Episodes and Transport During 2023 Summer AGES+ Campaign in NYC Region. Remote Sens. 2025, 17, 2303. https://doi.org/10.3390/rs17132303

Lindberg, J.; Trojanowski, R.; Galvin, S.; Butcher, T. (2025) Climate and health-relevant pollutant emissions from oil and natural gas boilers, Journal of the Air & Waste Management Association, 75:10, 789-807, https://doi.org/10.1080/10962247.2025.2547634

Loman, M.; Murray, L.; Leibensperger, E.; Maasakkers, J. (2025) A High-Resolution Inventory of Anthropogenic Methane Emissions in New York State. Environmental Science & Technology 2025 59 (32), 16933-16946. https://doi/10.1021/acs.est.5c07245

Mao, J., Yu, F., Murphy, B. N., An, J., Zhang, Y., Luo, G., et al. (2025). Improved simulation of particle number concentrations over the US: Integrating a size-resolved advanced particle microphysics model into CMAQ. Journal of Geophysical Research: Atmospheres, 130, e2025JD044021. https://doi.org/10. 1029/2025JD044021

Traviss, N.; Stanway, J.; Woodward, J.; Webler, T.; Allen, G.; Ahmadi, M. (2025) Four-year community-wide PM2.5 exposure characterization using a low-cost sensor network in a rural valley influenced by residential wood smoke, Atmospheric Environment, Volume 360, 2025, 121398, ISSN 1352-2310, https://doi.org/10.1016/j.atmosenv.2025.121398

Ecosystem Response

Andrew, A. C., Antoszewski, K., Goldberg, Z. A., Barter, J., Hain, L., DeSario, A., White, A., Roszell, C., Cole, E., Peterson, S., & Meys, B. (2025). Sheep grazing as sustainable vegetation management for solar energy production in the Northeastern USA. Frontiers in Sustainable Food Systems, 9. https://doi.org/10.3389/fsufs.2025.1625483

Baldigo, B. P., George, S. D., & Lawrence, G. B. (2025). Fish-assemblage and water-quality recovery with declining acidic deposition in Adirondack Mountain Streams, New York, USA. Freshwater Science, 000–000. https://doi.org/10.1086/738871

Offshore Wind

Gallagher, K. L., Baumgartner, M., Kohut, J., Miles, T., Flagg, C., McSweeney, J. M., Warren, J. D., & Thorne, L. (2025). Passive acoustic monitoring of baleen whales using autonomous gliders in relation to offshore wind energy areas in the new york bight. Endangered Species Research, 58, 257–273. https://doi.org/10.3354/esr01452

New York State Energy and Development Authority (NYSERDA). 2025. "Cooling Water Use at Offshore Converter Stations Final Report." NYSERDA Report Number 25-28. Prepared by Tetra Tech, Inc., Boston, MA. nyserda.ny.gov/publications