

ENVIRONMENTAL RESEARCH

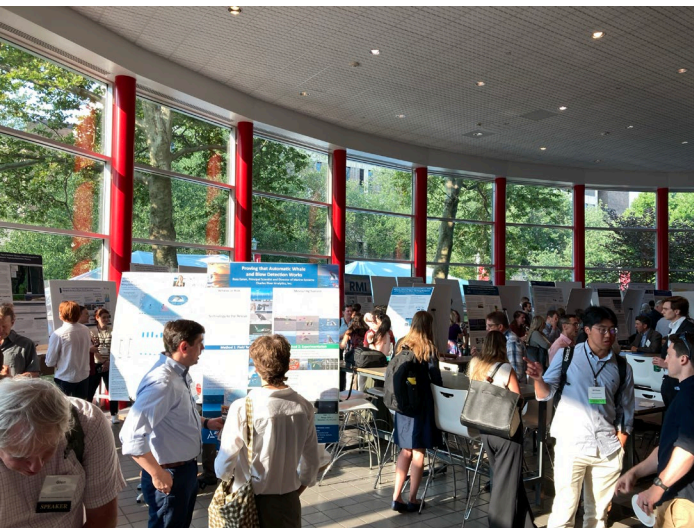
Q3 2024

Featured Event: 2024 State of the Science Workshop on Offshore Wind Energy, Wildlife, and Fisheries

In July, NYSERDA hosted the 4th biennial [State of the Science Workshop](#) on Offshore Wind Energy, Wildlife, and Fisheries on behalf of the State Offshore Wind [Environmental](#) and [Fisheries](#) Technical Working Groups (E- and F-TWGs). The Workshop brought nearly 400 researchers, industry members, regulators, fisheries and environmental stakeholders, and students to Stony Brook University to discuss the latest findings, emerging technologies, and best practices for environmentally responsible offshore wind energy development. Notably, this was the first Workshop to emphasize fisheries research related to offshore wind development. Under the theme, *Taking an Ecosystem Approach: Integrating Offshore Wind, Wildlife and Fisheries*, sessions focused on data sharing and regional collaboration, monitoring methods, research gaps and lessons learned, mitigation approaches, and related topics.

Over three and a half days, the Workshop featured 27 sessions that included presentations and panel discussions, two evening poster sessions, technology demonstrations, and a several optional meetings and workshops. Presentations featured advancements in research from three federal agencies, learnings from several US offshore wind developers, and progress from US regional science organizations. Highlights from the Workshop included a keynote from Woods Hole Oceanographic Institute Senior Scientist, Dr. Glen Gawarkiewicz on how climate change is influencing ocean processes on the continental shelf and slope, and a plenary talk from Lucas Shumaker and Dr. Kelsey Leonard on best practices for engaging Indigenous engagement within the offshore wind industry. [Recordings](#) from all sessions are available for viewing.

State of the Science Poster Session



2024 State of the Science Workshop

July 16-19, 2024

Taking an Ecosystem Approach:
Integrating Offshore Wind,
Wildlife, and Fisheries

(Article Highlight, continued...)

State of the Science Tech Café



Photo Credit: NYSERDA

A priority for this Workshop was connecting researchers with innovative technology being developed for monitoring and mitigating the impacts of offshore wind development on the environment. To accomplish this, the [Regional Wildlife Science Collaborative](#) for Offshore Wind partnered with the Marine Technology Society to host a MiniTech Surge and Tech Café. This initiative fostered discussions among technology service providers, industry members, and environmental scientists about new technologies, tools, and methodologies for monitoring the marine environment, specifically focusing on data collection platforms, future data needs, and roadblocks in science interpretation workflows. The Tech Café featured live demonstrations of those cutting-edge technologies and platforms.

To enhance accessibility to information and opportunities related to offshore wind energy and research, NYSERDA offered a New York State Student Equity Fund to cover the costs of attending the Workshop for students from historically underrepresented groups with an interest in pursuing a career related to offshore wind energy development and environmental or fisheries research. Student recipients were matched with members of the E- and/or F-TWG for mentorship before and during the Workshop.

The State of the Science Workshop was first convened in 2018, shortly after the publication of the New York State [Offshore Wind Master Plan](#), which highlighted the need for engagement with technical stakeholders. The State established Technical Working Groups focusing on four key areas: Environment, Commercial Fisheries, Maritime, and Jobs and Supply Chain to provide advice and guidance on responsible offshore wind development. The E-TWG hosts the State of the Science Workshop as part of its mission to inform the broader stakeholder community on the state of knowledge on potential wildlife and fisheries impacts from offshore wind development. The Workshop has grown significantly in size each year, becoming the largest forum for presenting research on environmental issues related to offshore wind energy development.



Offshore Wind

- Regional Fisheries Compensation Fund:** The Multi-State effort to advance a regional fisheries compensation fund has continued to make significant progress. BrownGreer in partnership with the Carbon Trust has been competitively selected as administrator to design and develop a regional fisheries compensation program, which seeks to provide fair and equitable financial compensation to commercial and for-hire recreational fishermen impacted by the development of offshore wind. The states, offshore wind developers, and fishing industry members have selected individuals to sit on a Design Oversight Committee (DOC) and a For-Hire Recreational Committee (FHRC), which are short-term governance structures created to provide advice, guidance and support oversee the work of the selected administrator to the administrator during the design and development phase. Additionally, details can be found in this [press release](#).

Student Posters at American Floating Offshore Wind Technical Summit

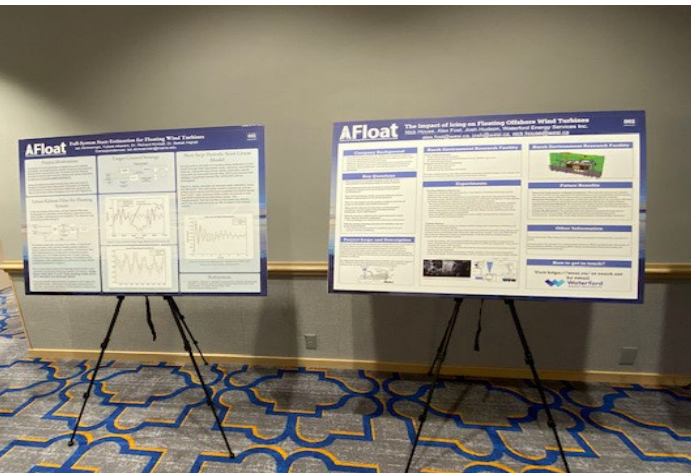


Photo Credit: NYSERDA

Field Season Deployment of Remotely Operated Vehicle



Photo Credit: Nature Conservancy and Stony Brook University

- American Floating Offshore Wind Technical Summit:** Morgan Brunbauer and Peter Lion (Offshore Wind Team) attended the American Floating Offshore Wind Technical Summit in Portland, Maine from September 24 and 25. The Summit convened stakeholders from all corners in a collective effort to advance floating offshore wind across the region and United States. It brought together technical, regulatory, and permitting experts to share ideas and solutions, tackling issues through problem-solving, barrier removal, risk mitigation, and partnerships.
- Nature Conservancy and Stony Brook University:** The Nature Conservancy and Stony Brook University had a successful field season refining several sampling methods that could be used to monitor potential ecological effects of wind turbine foundations. The team deployed conventional traps, stereo camera traps, baited remote underwater video (BRUV), tagged black sea bass, collected water samples for eDNA analysis, and trialed methods for diet analysis. The team has communicated extensively with the fishing community through phone calls, fishing and boat shows, presentations to fishing clubs, and announcements at the New York Marine Resources Advisory Council Meetings.

(Offshore Wind, continued...)

- **Inform Transmission Pre-Development Research RFI:** A Request for Information ([RFI 5925](#)) was released to solicit input from offshore wind transmission developers and other stakeholder to identify opportunities that could reduce transmission project costs and/or timelines, mitigate stakeholder impacts, or provide environmental benefits. Responses are due on December 20, 2024.

Captain Tony DiLernia at Norwalk Boat Show



Photo Credit: NYSERDA

- **Fisheries Technical Working Group (F-TWG) :** The F-TWG met in September to learn about the ongoing Bureau of Ocean Energy Management (BOEM) funded effort to assess how the construction of multiple offshore wind energy facilities in the Mid-Atlantic Bight will affect local and regional hydrodynamics under average seasonal conditions and the resultant impact on circulation and sediment, nutrient, and larval transport. This study is in final review by BOEM and is scheduled to be released by the end of 2024.
- **NYSERDA Recreational Fisheries Liaison:** Captain Tony DiLernia, NYSERDA's Recreational Fisheries Liaison, attended and staffed a booth the Norwalk Boat Show from September 19 through 22, 2024, show organizers reported an attendance of approximately 9,000. and hundreds of individuals stopped by the booth to have their questions and concerns about the development of offshore wind in NY and across the region addressed.
- **Webinar Series:** NYSERDA continues to host a monthly offshore wind webinar series, [Learning from the Experts](#). Recent webinars have discussed the commercial sale of offshore wind generation, the use of remote technology to support offshore wind maintenance and operations, with upcoming webinars on electromagnetic fields and the scaling up of offshore wind turbines coming later this fall.



Land Based-Renewables

- Rutgers Agrivoltaics Tour:** Over the summer, staff from NYSERDA, New York Power Authority (NYPA), Cornell University and American Farmland Trust (AFT) toured Rutgers University [Agrivoltaics Research Program's](#) (RAP) systems in New Jersey. RAP is a multidisciplinary group of Rutgers faculty and staff committed to designing and conducting applied agrivoltaics research and outreach. RAP has Agrivoltaics Research and Demonstration systems at three New Jersey Agricultural Extension Station locations in Northern, Central, and Southern New Jersey. These locations provide the ability to test agrivoltaics technologies across diverse soil types and climatic conditions. Participants were afforded the unique opportunity to see firsthand the initial tomato, eggplant and pepper seedlings being planted within a bifacial single axis tracker array. The left image shows a research plot being prepared for soy beans also within a bifacial single axis tracker array. The right image captures the group that toured the sites in front of a vertical bifacial array intended to maximize the land available between rows of solar panels for agricultural use. Kicking the tires so to speak on a real demonstrate site was invaluable as we strive to offer a broader understanding of the costs, benefits, opportunities, and market potential for agrivoltaics in New York State. A sincere thank you to the talented and gracious RAP team that hosted the New York State delegation.

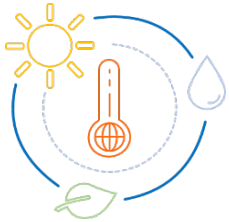
Research Plot Being Prepared for Soy Beans

Rutgers Agrivoltaics Tour Group



Photo Credit: NYSERDA

- The Agricultural Technical Working Group (A-TWG):** The Agrivoltaics and Regional Agronomic Impact from Solar Energy (RAISE) specialist committees each held one meeting. The Agrivoltaics September meeting was the committees twelve meeting overall. The group got to hear from two expert guest speakers in the industry, Christina Couch from American Farmland Trust (AFT) and Dr. Daniel Ward, Director, Rutgers Agricultural Research & Extension Center. Christina shared with the group an update from AFT's initial launch of their Agrivoltaics Farmer & Rancher Training program in New Jersey and an overview of the training curriculum. Dr. Daniel Ward enlightened the group with the year-one lessons learned at their three New Jersey Agricultural Extension Station agrivoltaic research systems.



Climate Change

- **Climate Impact Assessment:** While the assessment was published earlier this year, work has continued on product development and outreach. The chapters are expected to be published in the New York Academy of Sciences' peer-reviewed journal later this year. The projections have been published on [OpenNY](#), the State's data repository. The economic assessment continues to progress.
- **Research Agenda:** Program staff are taking preliminary steps towards developing a research agenda for the climate change impacts assessment and adaptation research portfolio. These initial steps will include compiling research gaps previously identified in the literature, and conducting preliminary conversations with State agencies and stakeholders. There will be other opportunities for engagement.



Ecosystem Response

- **Annual Loon Census:** In the summer of 2024, the Adirondack Center for Loon Conservation (ACLC) conducted their annual loon census. Monitoring for this year's census spanned 119 Adirondack lakes of which 72 were observed on a weekly basis. Results from previous years can be viewed on an interactive map on the ACLC website here: <https://www.adkloon.org/ny-loon-census-results>
- **Huntington Forest Long Term Monitoring:** In June, SUNY ESF has installed a methane flux tower at Adjudiamo Flow, approximately 1 kilometer east of Arbutus Pond. The methane flux tower is funded in part by NYSERDA and is expected to be operational in Fall 2024. The State University of New York College of Environmental Science and Forestry (SUNY ESF) continues to expand their long-term monitoring of an Adirondack ecosystem to more directly and effectively incorporate weather and climate as a 'driver' of key ecosystem processes. SUNY ESF uses an intensive ecosystem-approach of monitoring green house gases fluxes and carbon and nutrient cycling in forest soils and surface waters to understand and predict future change.



Air Quality and Public Health

- **Integrated duty-cycle test method for residential wood stoves precision study:** The Northeast State for Coordinated Air Use Management (NESCAUM) developed the Integrated-Duty Cycle (IDC) test method for wood stoves for NYSERDA. This method assesses appliance performance under variable conditions encountered in home use within a single test run rather than current steady state test runs. The method assesses cold-start, maintenance, and overnight fires which require multiple fuel reloading. The method also requires three replicate runs, which assess performance repeatability. The purpose of this method is to achieve emissions like field use, which is currently absent in the test methods used now. NESCAUM also developed a real-time PM emission measurement method for use in a dilution tunnel, rather than the single filter measurement currently used. This approach provides temporal resolution that identifies when peak emissions occur during a multi-hour test.

EPA announced when its intent to use the IDC test methods for certifying wood stoves under their federal regulation. To assess the precision of the IDC test methods, EPA set up an IDC study using three pairs of cordwood stoves (non-catalytic, hybrid, and catalytic) using two labs and more than 100 replicate test runs. The stoves were tested in pairs in a west coast lab funded by EPA and an east coast lab funded by NYSERDA. Both labs used a common cord wood fuel type (maple) and a local fuel (Douglas fir) on the west coast and on the east coast (birch). The data from each of the labs has been posted to EPA's docket. EPA planned to hold a stakeholder meeting on October 16, 2024. Finalizing the IDC will be an important step in updating the New Source Performance Standard for Residential Wood. Finalizing the IDC will be an important step in updating the New Source Performance Standard for Residential Wood.

Greenhouse Gas for Cities Workshop Presentation



Photo Credit: Columbia University

- Greenhouse Gas for Cities Workshop:** Róisín Commane of Columbia University presented an overview her project, *Attribution of anthropogenic methane sources in downstate New York: Measuring methane, ethane, and co-pollutants from urban landfills, sewage and natural gas combustion*, that was funded in part by NYSERDA, during her opening remarks at the Greenhouse Gases for Cities workshop on Sept 24th, 2024 organized by Columbia University and the US Greenhouse Gas Center. The panel, chaired by Róisín, included colleagues from

the National Aeronautics and Space Administration, National Oceanic and Atmospheric Administration, National Institute of Standards and Technology and White House Office of Science and Technology Policy, and were joined by Ona Papageorgiou from New York State Department of Environmental Conservation and Ross MacWhinney from New York City Office of Management and Budget who spoke about their data needs.

- NYSERDA released Program Opportunity Notice (PON) 5872, Energy-Related Air Quality and Health Effects Research:** This PON seeks to support research projects and fellowships to improve the scientific and technical foundation for addressing key energy policy-relevant questions related to air quality, public health and greenhouse gas inventories. Targeted research categories include: 1) air pollutant trend analysis, source apportionment and public health studies to assess changes due to air quality regulatory programs, energy policies, and electricity, heating and transportation market trends and 2) methane emissions source characterization of buildings for emissions inventory development. Proposals were due October 31, 2024.

Program Reports and Papers

Program Reports & Papers posted recently include:

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

Karambelas, A., Miller, P. J., Underhill, J., Pleim, J., Zalewsky, E., & Jakuta, J. (2024). Ozone sensitivity to high energy demand day electricity and onroad emissions during LISTOS. *Journal of the Air & Waste Management Association*, 74(11), 804–819, <https://doi.org/10.1080/10962247.2024.2396400>.

Quan Qi, Fangqun Yu, Arshad A. Nair, Sam S.S. Lau, Gan Luo, Imran Mithu, Wangjian Zhang, Sean Li, Shao Lin, Hidden danger: The long-term effect of ultrafine particles on mortality and its sociodemographic disparities in New York State, *Journal of Hazardous Materials*, Volume 471, 2024, 134317, ISSN 0304-3894, <https://doi.org/10.1016/j.jhazmat.2024.134317>.

Land Based Renewables

Henry J. Williams, Yipu Wang, Bo Yuan, Haomiao Wang, K. Max Zhang, (2024). Rethinking agrivoltaic incentive programs: A science-based approach to encourage practical design solutions, *Applied Energy*. <https://doi.org/10.1016/j.apenergy.2024.124272>.