



Photo Credit: NYSERDA Agreement 113882

ENVIRONMENTAL RESEARCH

Q1

Environmental Research Program and Science Advisors

NYSERDA's Environmental Research Program aims to increase the understanding and awareness of the environmental and public health impacts of energy choices and emerging energy options, and provide a scientific foundation for creating effective and equitable energy-related environmental policies and resource management practices.

New Program and Science Advisors are brought on periodically due to retirements, role changes or emerging topics the Program is advancing. Advisors are recommended by the Environmental Research Program and Science Advisors, and Environmental Research Program staff. Potential Advisors have specific expertise in science and policy issues pertinent to the Environmental Research Program. Potential Advisors are canvassed regarding their interest and availability to serve.

For Program Advisors, current members of the Environmental Research Program Advisory Groups are provided with background information on the new members. For potential Science Advisors, current members of the Advisory Groups are asked to consider the candidate's suitability and contributions to the program and recommend if the candidate should be approved. Potential Science Advisors approved by the Advisory Groups are presented to NYSERDA management for final approval.

NYSERDA's Environmental Research Program is pleased to introduce four new members to the Environmental Research Program Advisory Group.

Environmental Research Program Advisory Group Welcome New Members!

Anne Hawkins:

Anne Hawkins is the Executive Director of the Responsible Offshore Development Alliance (RODA); a broad membership-based coalition of fishing industry associations and fishing companies committed to improving the compatibility of new offshore development with their businesses. Anne has spent her career working to improve ocean resource management through advocacy and regulatory initiatives. Prior to joining RODA, she provided government relations support to a variety of fishing industry and ocean technology clients with a Washington, D.C. law firm. She previously held positions in fisheries management and marine regulation including at the New England Fishery Management Council and NOAA's Large Marine Ecosystems program. Throughout her career she has specialized in working with public and private sector partners to develop practical, science-based solutions to business, policy, and environmental challenges.

Anne holds Juris Doctor and Master of Marine Affairs degrees from the University of Washington and a B.A. in Conservation Biology and Political Science from the University of Wisconsin.

Jeremy Magliaro:

Jeremy Magliaro is an Environmental Policy Analyst with the NYS Office of the Attorney General (OAG) - In his current role, Jeremy supports the Attorney General's environmental and energy-related litigation and policy initiatives. His prior experience includes positions in watershed management, environmental planning, and as a campus sustainability officer. Jeremy has been actively supporting the ecosystems, climate change, and air quality work that NYSERDA's Environmental Research Program has been conducting over the last decade and we are fortunate to have him come on as a Program Advisor where he can continue to guide and inform the program.

Adam Parris:

Adam Parris is an internationally recognized thought leader with 15 years of experience working with scientists, governments, and communities to advance climate resilience and adaptation.

Adam is the Deputy Director for Climate Science and Risk Communication at the New York City Mayor's Office of Resiliency. Some of his work includes: co-convening the New York City Panel on Climate Change Steering Committee to oversee climate assessments, training and advising policy staff across New York City government in climate adaptation and resilience, building partnerships with social and environmental justice organizations, and raising funding for future research and development efforts.

In the past, Adam worked as an Executive Director for the Science and Resilience Institute of Jamaica Bay in Brooklyn, NY. In this role, Adam has conceived a resilience building initiative engaging underserved neighborhoods in Brooklyn.

Adam holds a M.S. from the University of Vermont, and a B.A. from Bucknell University. He has received several awards and has published numerous publications. Adam serves as a technical climate expert for various governmental organizations, and media, such as the New York Times.

Dr. Rachel Licker:

Rachel Licker has been a Senior Climate Scientist at the Union of Concerned Scientists since 2017. In her role, Rachel communicates climate science to both policymakers and the public. She also analyzes new developments in climate science, and tracks climate science budgets and programs in the federal government.

Prior to joining the Union of Concerned Scientists, Rachel worked as a Foreign Affairs Officer for the U.S. Department of State, where she managed the State Department's relationship with the Global Environment Facility trust fund. She also served as a liaison between civil society, non-governmental organizations, and international organizations.

Rachel was a Postdoctoral Research Associate at both Princeton University, and the University of Wisconsin, where she was also a Graduate Research Associate. Rachel has numerous peer reviewed publications.



Ecosystem Response

- Progress on a new project with Dr. Kevin Rose (Rensselaer Polytechnic Institute; "RPI") and Dr. Peter McIntyre (Cornell University) was made over the last quarter. The main goal of the project is to convene a small group of research experts, environmental policy-makers, and resource managers this summer to develop a plan to adapt and update monitoring of lakes to assure the effects of climate change are considered in future monitoring efforts. This new effort will be called "SCALE": A Survey of Climate Change and Adirondack Lake Ecosystems and will consider and leverage past investments but focus on current and impending environmental challenges to inform the conservation of NYS ecosystems. The contract with RPI is expected to be executed in Q2 2021.
- Many NYSERDA-supported projects contracted over the last five years addressing ecosystem response to atmospheric deposition of sulfur, nitrogen, and mercury have recently been completed. As a result of the data collected and analyses made through these projects, over 10 NYSERDA reports and peer-reviewed publications were developed and recently published. The links to these publications are included at the end of this Policy and Science Advisor Update. In addition, nearly 15 other peer-reviewed publications resulting from NYSERDA-supported work that were published between 2013-2019 have been added to NYSERDA's website ([NYSERDA Technical Reports - Ecosystem Response](#)).





Land Based-Renewables

- A contract was executed with Consensus Building Institute (CBI) during this quarter to provide facilitation services and support the development, design, and operation of a New York State (NYS) **Agricultural Technical Working Group (A-TWG)**. Through CBI, NYSERDA has been interviewing stakeholders who are interested and involved in the development of solar and its interaction with agricultural lands to get a better understanding of current activities in this space and what topics are of greatest interest to initially discuss within the group. The Team has also been busy scheduling and planning the first meeting to be held in Q2 2021 and trying to finalize the initial configuration of the A-TWG.
- Over the next year, Pace University ("Pace"), under the direction of Jessica Bacher, will be working with A-TWG Team to provide technical services and support for the A-TWG. As part of the project, Pace is collecting and synthesizing data to design a scorecard for NYS that can be used as a tool to help site solar projects in a smart and responsible way to be protective of our communities, land, and environment. This scorecard is anticipated to do more than just protect pollinator habitats, but promote solar siting and site management practices from a wider perspective of environmental, agricultural, and climate interests to ensure a balanced approach between renewable energy development and New York State's other goals and objectives.



Photo Credit: Barry Baldigo, USGS



Off-Shore Wind

- NYSERDA continues development of a cabling document for regulators and fishermen, pulling together concerns and information about the many variables (environmental, technological, fishing) that are considered during project development. This in-depth document will help improve conversations that both regulators and stakeholders have regarding this topic. The final document will be publicly available in late April 2021.
- NYSERDA published the Opportunity for Experienced Mariners Study to identify additional job opportunities and training measures for mariners (including fishermen) needed to capitalize on new jobs that result from OSW development to supplement their income. This includes an analysis of forecasted job availability and accessibility, a synthesis of available job training and/or certifications needed to be qualified, and recommendations for next steps. The final document can be found [here](#).
- A virtual F-TWG meeting was held on February 18, 2021. Topics for discussion included an update on the status of the 2020 Offshore Wind RFP, updates on NYSERDA funded projects, the Fisheries Knowledge Trust and Fishing Access within Turbine Arrays, an overview of the final cabling activities document (mentioned above), next steps from the ROSA Synthesis of the Fisheries Science Workshop held in October 2020, an update from NMFS on their progress on adjusting surveys to perform within turbine arrays, and the release of the draft Overview of Fisheries Compensation Document. The next meeting will be held late Q2 or early Q3 of 2021. Additional details about the F-TWG can be found [here](#).
- NYSERDA sponsored Pre-Development activities in support of Offshore Wind energy are continuing. This work is investment in data to inform developers and stakeholders about key site conditions earlier in the process, thereby reducing risk and thereby reducing energy offtake costs for New Yorkers while also accelerating development timelines. A [summary report](#) for the Digital Aerial Baseline Survey of Marine Wildlife in Support of Offshore Wind Energy was posted in Q1, 2021. Data continues to flow from the [metocean FLiDAR buoys](#) located in the New York Bight, including the posting of a [New York Bight Preliminary Energy Assessment](#). Data is also being posted as it becomes available from a [geophysical survey](#) of the Bight that NYSERDA sponsored in 2020. All data and reporting should be completed in Q2 2021.

(Offshore Wind, continued...)

- In New York's second comprehensive offshore wind procurement, NYSERDA has selected two projects for contract negotiation: Empire Wind 2 and Beacon Wind of Equinor Wind US LLC. Together, these projects total nearly 2,500 megawatts, enough to power 1.3 million homes. For more information about the projects, see the [2020 Solicitation Awards Fact Sheet](#). With these awards, New York has five offshore wind projects in active development – the largest offshore wind pipeline in the nation totaling more than 4,300 megawatts and representing nearly 50 percent of the capacity needed to meet New York's nation-leading offshore wind goal of 9,000 megawatts by 2035. The latest procurement also secured almost \$25M for monitoring of wildlife and key commercial fish stocks.
- NYSERDA and Massachusetts Clean Energy Center, in collaboration with a multisectoral Interim Steering Committee announced a Request for Qualifications (RFQL) for a Fiscal Agent for an Offshore Wind Regional Wildlife and Science Entity (RWSE). The [RFQL](#) closed on March 11 with decisions planned early in April 2021.
- Working groups launched after the 2020 State of the Science Workshop on Offshore Wind and Wildlife have been meeting in 2021 to identify research priorities for understanding offshore wind's cumulative impacts on sea turtles, marine mammals, fish, invertebrates, birds, bats, and oceanographic processes in the eastern United States. A final webinar for this effort will bring together the leads from the seven work groups to present their recommendations and discuss common themes among groups. The [final webinar](#) will be held on Friday, May 21st from 12-2 pm EDT.
- The offshore wind Environmental Technical Working Group met in February and agreed to expand its geographic scope to Maine, to include all US east coast areas with active offshore wind energy development plans. The meeting summary and presentation can be viewed [here](#).

Photo credits: [NYS Environmental Technical Working Group](#)



Climate Change

- Work has continued on the Statewide Climate Impacts Assessment. The projections team from Columbia is on track to deliver preliminary core projections in Q2, 2021. Additionally, the broader assessment team, led by NYSERDA's Assessment Coordinator, ERG, has released a Call for Experts and Stakeholders to draw participation in the technical workgroups that will be developing the foundational content of the assessment. The Call encourages applicants from a broad spectrum of perspectives and expertise. The application and more information can be found at https://erg.qualtrics.com/jfe/form/SV_chjM3jzTcCeOk2G
- A contract was initiated with the Cornell Cooperative Extension to pilot their newly developed Climate Stewards program. Modeled after the CCE's successful "Master" programs (e.g., Master Gardener), this program aims to train volunteers in climate change to work with their home communities to implement mitigation and adaptation solutions. This contract will pilot the program with several CCE county offices.





Air Quality & Public Health

Methane Emissions Estimates Projects (University of Rochester, SUNY Albany, Harrisburg University of Science and Technology, Ithaca College, and Columbia University)

- New projects focused on monitoring methane and other GHGs were kicked-off in January. These included two major efforts, awarded last year to Jim Schwab (SUNY Albany) and Arvind Ravikumar (Harrisburg University of Science and Technology) along with two new pilots by Eric Leibensperger (Ithaca College) and Roisin Commane (Columbia University). These projects were presented to the Project Advisory Committee and interested NYSDEC and NYSERDA staff in a seminar format that first identified information needs for NYSERDA and NYSDEC and then provided updates on the Long-Term Monitoring of Methane in New York State by Lee Murray (University of Rochester). All these research projects are well coordinated and together will increase the number of long-term monitoring sites for methane in NYS, provide aerial and mobile (ASRC research van) measurements of compressor stations, landfills, and potentially additional source areas. This will allow refinements to the modeling performed by the University of Rochester and bottom-up and top-down comparisons to the methane inventory in New York State. A list of the projects is given below. There is a high level of interest in these projects with approximately 100 people attending the webinar.
- Long-Term Monitoring of Methane within New York State (Phase I): Assessing the Impact of Shifting Energy Portfolios on Regional Air Quality and Climate; Lee Murray, University of Rochester
- Long-Term Monitoring of Methane within New York State Phase II: Assessing Trends in Sources and Characterizing Hot Spots; Lee Murray, University of Rochester
- Midstream Methane Emissions Characterization and Technology Assessment in NY; Arvind P. Ravikumar, Harrisburg University of Science and Technology
- Mobile Laboratory Measurements of Methane, Ethane, and Co-pollutants from Landfills, Oil and Gas Systems, and Other Sources in New York State; James Schwab, SUNY Albany
- Atmospheric Measurements in Support of Methane Source Characterization within New York State - Southern Tier/ Central NY; Eric Leibensperger, Ithaca College
- Atmospheric Measurements in Support of Methane Source Characterization within New York State – Harlem; Roisin Commane, Columbia University

(Air Quality & Public Health continued...)

Oil and Gas Combustion Emissions (Brookhaven National Laboratory)

- The largest sector of energy consumption in New York State is space heating, with the majority of such heating appliances currently using fossil fuels. The New York State Climate Leadership and Community Protection Act (CLCPA) of 2019 establishes mandates to ensure the State transitions to 100 percent renewable energy over the next 30 years. Over this time there will be significant changes in the fuels and technologies in the market, including an expected growth of renewable fuels. A new project by Thomas Butcher and Rebecca Trojanowski of Brookhaven National Laboratory in collaboration with Patricia Fritz and Nicole Vitillo of NYS Department of Health and Jon Longtin and Jake Lindberg of SUNY Stony Brook seeks to accurately analyze the performance of current and emerging heating and power producing equipment with current fossil fuels (natural gas and No. 2 oil), market-ready biofuels such as biodiesel and biogas and emerging biofuels. The project will develop high-quality, detailed emissions estimates representative of realistic operating conditions in New York State residential and small commercial buildings that may be used for updating the US EPA National Emissions Inventory, and for air planning by the New York State Department of Environmental Conservation and Public Health considerations by New York City Health and New York State Department of Health. The first meeting was held with the PAC and the project is underway.

Combining Low-Cost Air Quality Sensors with NYS Mesonet for Fine-Scale Monitoring in New York City (SUNY Albany)

- The conventional approach to monitoring air pollutants is to deploy research-grade instruments at a few select sites. While this approach provides high-accuracy benchmarks that are essential for evaluating trends in pollutants and regulatory compliance, their costs preclude dense deployments. The primary goal of this study is to pilot a dense air quality monitoring system in the New York City metropolitan area by combining low-cost air quality sensor technology with the New York State Mesonet and other sites. A major challenge will be to select sensors with adequate analytical performance in the field to allow for data analysis. This project by Scott Miller, Aynul Bari, and Sarah Lu of SUNY Albany will potentially provide useful information in the form of field sensor characterization, observational data and/or data products (i.e., model output), real-time air quality visualization tools, and source identification. This project has just begun.



Biomass

- In the last Quarterly Report we highlighted that the Alaska Department of Environmental Protection formally requested US EPA to accept the Integrated Duty-Cycle (IDC) Cordwood Stove Protocol as an alternative test method (ATM) to determine compliance with the federal New Source Performance Standard for Residential Wood Heaters Step-2 standards. To provide supporting data, NYSERDA posted an Interim Report: Development of an Integrated Duty-Cycle Test Method for Cordwood Stoves by NESCAUM. This method is the result of several years of research and we are pleased that not only did EPA accept the IDC as an ATM for Alaska, they accepted it as a Broadly Applicable ATM, meaning other states or localities may use it for regulatory or incentive programs as well.
- The Northeast States for Coordinated Air Use Management (NESCAUM) in collaboration with the Alaska Department of Environmental Conservation (ADEC) released their review of the US Environmental Protection Agency's (EPA's) program to certify new wood stoves and central heaters. For the more than 250 certified wood heaters reviewed, this report found a systemic failure of the entire certification process, including EPA's oversight and enforcement of its requirements. NESCAUM and Alaska have been briefing EPA at various levels and EPA is now conducting its own review. EPA has sent letters to the accredited test laboratories and third-party certifiers that EPA relies on to raise the issue. NESCAUM and Alaska briefed the National Association of Clean Air Agencies (NACAA). Approximately 200 people attended the webinar. They also briefed 90 people as part of EPA's Burn Wise Program, a national residential wood smoke work group.

<https://www.nescaum.org/documents/nescaum-review-of-epa-rwh-nsp-certification-program-202103.pdf>

(Biomass continued...)

- EPA is developing its own research program to validate the IDC test protocol for cord wood stoves developed by NESCAUM with NYSERDA support. This method not only provides an operational method that is more like in-use operation, it also has a fuel loading calculator and measures PM in real-time using a Tapered Element Oscillating Microbalance (TEOM). These are important advancements over existing protocols that will help regulators and technology developers better understand emissions during the combustion cycle and improve technology designs and air planning efforts such as wood stove changeouts. NYSERDA and NESCAUM are supporting EPA research efforts through training on the IDC protocol and instrumentation, as well as equipment loans to allow EPA to start sooner.

Seminar with NYSDEC

- George Allen and Lisa Rector of NESCAUM gave a seminar sponsored by NYSDEC and NYSERDA titled “**Moving Residential Wood Heat Particulate Test Methods into the 21st Century: Evaluation of Dekati extractive dilution systems coupled with a Tapered Element Oscillating Microbalance (TEOM)**”. One hundred people attended.

Program Reports & Papers posted recently include:

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

[Health and Charge Benefits From Decreasing PM2.5 Concentrations in New York State: Effects of Changing Compositions](#)

[Characterization of Intra-Continental Smoke Transport and impact on New York State Air Quality Using Aerosol Reanalysis and Multi-Platform Observations](#)

[Synergistic aircraft and ground observations of transported wildfire smoke and its impact on air quality in New York City during the summer 2018 LISTOS campaign](#)

Biomass

[Interim Report: Development of an Integrated Duty-Cycle Test Method for Cordwood Stoves](#)

Offshore Wind

[Digital Aerial Baseline Survey of Marine Wildlife in Support of Offshore Wind Energy](#)
[\[PDF\]](#)

Ecosystem Response to Atmospheric Deposition of Sulfur, Nitrogen and Mercury

[20-37 Mercury Dynamics in Finger Lakes Fish and Invertebrates](#) [\[PDF\]](#)

[20-35 Decreases in Aluminum Toxicity and Mortality of Caged Brook Trout in Adirondack Mountain Streams](#) [\[PDF\]](#)

[Biological and chemical recovery of acidified Catskill Mountain streams in response to the Clean Air Act Amendments of 1990](#)

[Trends and current status of aluminum chemistry in Adirondack headwater streams 30 Years after the Clean Air Act Amendments of 1990](#)

[Reversal of Forest Soil Acidification in the Northeastern United States and Eastern Canada: Site and Soil Factors Contributing to Recovery](#)

(Program Reports & Papers continued...)

Ecosystem Response to Atmospheric Deposition of Sulfur, Nitrogen and Mercury

[Landscape influence on the Browning of a Lake Watershed in the Adirondack Region of New York, USA](#)

[How will air quality effects on human health, crops and ecosystems change in the future? \[PDF\]](#)

[20-32 Ratios of Methylmercury to Total Mercury in Predator and Primary Consumer Insects from Adirondack Streams in New York State \[PDF\]](#)

[20-19 The Response of Streams to Changes in Atmospheric Deposition of Sulfur and Nitrogen in the Adirondack Mountains \[PDF\]](#)

[Identifying environmental threats to Common Loon reproductive success in New York's Adirondack Park \[PDF\]](#)

[Adirondack Loons: Have they benefitted from mercury emission controls? \[PDF\]](#)