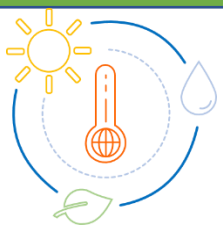
Policy & Science Advisor UPDATE

NEW YORK STATE OF OPPORTUNITY. | NYSERDA

ENVIRONMENTAL RESEARCH

Q2 2020



Climate Change

- The economic impact & projections update components of the statewide climate assessment kicked off this quarter. The economic impact component will be led by Industrial Economics and will take a detailed look at the impacts of climate change on various economic sectors in New York State. The projections update will be led by Columbia University and will include a look at new methodologies since the original ClimAID projections were developed.

- A small scoping project was initiated to better understand the availability of weather data files (TMYs) that incorporate future climate conditions (FTMYs). These files are used in building energy modeling, as well as other applications. FTMYs would allow the models to incorporate climate change into their results. This project will help us understand which FTMYs could be used in NYSERDA programs and research.

Ecosystem Response

- Even though many things paused in NYS paused due to COVID-19, some ecosystem research monitoring activities, supported by NYSERDA as well as the DEC, EPA, and USGS for over 20 years, were only down and out for a brief period of time, which is great news. The following monitoring efforts resumed in late May/early June: sampling through both the lakes (Adirondack Lakes Survey Corp.) and streams components (USGS and SUNY ESF) of the Adirondack Long Term Monitoring (ALTM); program, watershed monitoring activities at Huntington Wildlife Forest (SUNY ESF); and cloud water monitoring at Whiteface Mountain (ASRC - SUNY Albany). There was also sampling at National Atmospheric Deposition Program (NADP) National Trends Network (NTN) sites in New York City, Adirondacks, and western New York State; Mercury Deposition Network (MDN) sites in the Adirondacks and Long Island; and an Atmospheric Mercury Network (AMNet) site in the Adirondacks.

- Two recently completed projects assessed how emissions and greenhouse gases (GHGs) could be reduced and climate impacts could be mitigated in order to meet the goals of a zero-carbon emissions electricity sector by 2040 and an entirely carbon-neutral economy by 2050, as outlined in the CLCPA. The final report for the first project, led by E&S Environmental Chemistry, has been posted on NYSERDA's website. Through this project, preliminary estimates of GHG flux and carbon sequestration provided by forest, agriculture, and wetland ecosystems ("natural and working lands") in New York State (NYS) was developed. The final report for the second project, led by Guidehouse, is expected to be posted on NYSERDA's website during the third quarter of 2020. Through this project, the potential of technologies that are currently available, and those expected to be available by mid-century to capture, use, and sequester carbon in NYS was assessed.

Land Based-Renewables

- Work continues developing contracts with multiple organizations whose projects were awarded funding through Program Opportunity Notice (PON) 4270, Environmental Research-PV Site Design, Information Gaps, and Mitigation Opportunities. The proposed projects will address a wide range of environmental and societal concerns, including co-location and wildlife implications. It is anticipated that awardees will be announced during the third quarter of 2020.

- Eastern Research Group (ERG) is nearing the completion of a two-month long project where they conducted a literature synthesis and analysis that involved collecting, synthesizing, and describing the current state of knowledge around the types of materials that are used in offshore wind, terrestrial wind, solar, and battery storage systems. The project synthesizes how component parts of these systems can be disposed of, and/or handled to minimize their environmental footprint. A report is being developed that describes the findings from the literature review, identifies data gaps, and suggests potential options that NYSERDA could consider at the off-take stage to minimize renewable energy related waste.

Offshore Wind

- NYSERDA, in partnership with the Massachusetts Clean Energy Center (MassCEC), is supporting the development of a Regional Wildlife Science Entity (RWSE) to support research and monitoring of wildlife and offshore wind development. The Organizational Vision document is the result of an 18-month stakeholder engagement effort led by NYSERDA, MassCEC, the Bureau of Ocean Energy Management, the National Oceanic and Atmospheric Administration, Shell, Equinor, the Natural Resources Defense Council, and the National Wildlife Federation. The Organizational Vision laid out the mission and objectives of the RWSE, proposed organizational structure, and a vision for pilot funding.

- NYSERDA hosted a workshop in March to develop a scientific research framework to guide the long-term study of potential impacts to birds and bats from offshore wind construction and operation in the eastern United States. This collaborative effort included input from scientists, environmental nonprofits, regulators, and offshore wind developers. The agenda, meeting presentations, and workshop report can be found here.

- The 2020 State of the Science on Offshore Wind: *Cumulative Impacts to Wildlife* will be held as a virtual conference in November 2020 and follow-up workshops will be held in early 2021. More information can be found here.

- The next Environmental Technical Working Group meetings will be held in July and August 2020.

- NYSERDA, in cooperation with RODA, sponsored the development of a stakeholder driven Transit Survey Report to understand how fishermen navigate the New York Bight to inform how BOEM, USCG, and potential site lease holders could be thinking about transit lanes. This report is now final and posted on the F-TWG website (www.nyftwg.com) for public use in future conversations regarding transit in the NY Bight.

- NYSERDA is developing 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 document is scheduled to be finalized by the end of 2020.

- NYSERDA is advancing an 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, and a synthesis of available job training and/or certifications needed to be qualified. The results of this study are currently planned to be released in fall of 2020.

Air Quality & Public Health

- The Long Island Sound Tropospheric Ozone Study (LISTOS) continues to build upon field activities begun during the 2018 ozone season in the New York City (NYC) metro area and Long Island Sound region. NYS DEC is installing continuous formaldehyde analyzers in NYC (Bronx Botanical Garden) and on the north shore of Long Island (Flax Pond near Stony Brook). It is also constructing a special monitoring site on Staten Island to obtain a more detailed understanding of volatile organic compound (VOC) species and sources upwind of NYC. Research teams led by Professor John Mak, Stony Brook University, and Professor Drew Gentner, Yale University, have been collecting and analyzing speciated VOCs, including oxygenated VOCs, as part of a coordinated effort within NYC during the winter into early spring 2020. Prof. Fred Moshary, City University of New York (CUNY), is building an ozone Light Detection and Ranging (LIDAR) system that will obtain vertical profiles of transported ozone layers within the NYC region. Over the long term, the ozone LIDAR will be integrated into the Tropospheric Ozone Lidar Network (TOLNet) jointly initiated by NASA, NOAA and EPA. Dr. Janie Schwab, University at Albany, conducted additional ozonesonde balloon launches on Long Island during the 2019 ozone season to expand upon 2018 observations of vertical ozone profiles downwind of NYC. Finally, the Northeast States for Coordinated Air Use Management (NESCAUM) is establishing in-house capacity to run the photochemical grid models CMAQ and CAMx, and is collaborating with modelers at NYS DEC, EPA, Columbia University, and elsewhere to incorporate LISTOS measurements into regional air quality modeling for informing New York's air quality and energy policy decisions.

Biomass

- Work on developing new performance assessment protocols for residential wood heating is well underway. Industry, EPA, and state agencies all agree that current methods do not accurately reflect the efficiency and emissions performance of these appliances. Research has focused on protocols that reflect in-field performance and identify new measurement approaches to improve data collection efforts. The U.S. EPA accepted NYSERDA funded central heating pellet boiler protocol for use as an Alternative Test method and is currently reviewing the cordwood stove protocol. Work continues to refine protocols and assess method precision.

Program Reports and Papers posted recently include:

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

- Changes in the hospitalization and ED visit rates for respiratory diseases associated with source-specific PM2.5 in New York State from 2005 to 2016

Biomass

- Investigation of real-life operating patterns of wood-burning appliances using stack temperature data

Climate Change

- 20-06 Sources and Sinks of Major Greenhouse Gases Associated with New York State's Natural and Working Lands: Forests, Farms, and Wetlands [PDF]

Ecosystem Response to Atmospheric Deposition of Sulfur, Nitrogen and Mercury

- Mercury in fish from streams and rivers in New York State: Spatial patterns, temporal changes, and environmental drivers
- The impact of lime additions on mercury dynamics in stream chemistry and macroinvertebrates: A comparison of watershed and direct stream addition management strategies
- The response of stream ecosystems in the Adirondack region of New York to historical and future changes in atmospheric deposition of sulfur and nitrogen
- 20-06 Sources and Sinks of Major Greenhouse Gases Associated with New York State's Natural and Working Lands: Forests, Farms, and Wetlands [PDF]