



FIGHTING CLIMATE CHANGE

WITH OFFSHORE WIND

Long Island, like coastal communities around the globe, is under threat due to climate change. Already there is a documented 2°F rise in global temperatures over the last 50 years, and the EPA estimates we there will be a 4.5°F to 10°F increase by the 2080s.¹ Climate experts are predicting that throughout this century, we are likely to experience longer and more extreme heat waves, degraded air quality, and a higher risk of heat related illness and death, particularly in urban areas like the NY tri-state area.



2020

HOW CLIMATE CHANGE IMPACTS OUR COMMUNITIES

Sea Level Rise

As temperatures rise, thermal expansion in our oceans, coupled with the melting of glaciers and ice sheets, is causing sea level rise. Since 1880, scientists documented an 8-9 inch sea level rise.² It is predicted that by 2050 sea level will rise an additional 8-30 inches, and by 2100 sea level will rise 18-50 inches. New York State predicts we could experience a 75 inch sea level rise³ if we do not ramp up efforts to fight climate change by making better energy, infrastructure, and land use decisions. Here on Long Island, the National Ocean and Atmospheric Administration (NOAA) predicts under its worst-case scenario a 6 ft sea level rise will cause most of the barrier islands and homes south of Merrick Road to be flooded or under water, with more than 150 municipalities impacted.⁴

Extreme Weather Events

Throughout the country, we are experiencing an increase of extreme weather events, with “100-year storms” becoming more regular occurrences. Since the 1950s, the northeast has documented a 70% increase in rainfall during heavy precipitation events, the highest in the nation.⁵ NOAA predicts that in a worst-case scenario, the average high tide in NYC

will be 2 feet higher than the storm surge during Superstorm Sandy. In addition to the increase in extreme rain and snowfall, increasing summer temperatures also increase the likelihood of severe droughts, which threaten agriculture and irrigation, particularly in areas that rely on aquifers.



Ocean Acidification

Greenhouse gas emissions are not only causing increasing temperatures—they are also causing changing pH levels in our oceans and estuaries. Ocean acidity has increased 30% since the industrial revolution,⁶ and marine scientists are documenting harmful impacts to our marine environment and economy. In 2014, a Canadian shell fishing company reported losing 10 million sea scallops and \$10 million from ocean acidification.⁷ Ocean acidification will be an increasing problem throughout the northeast including adverse impacts to clams, oysters, and other shellfish, which are particularly vulnerable

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to intense acidification. In the next 100-200 years, squid will take up to an extra 24 hours to hatch and spawn will be smaller, making the species increasingly more vulnerable to predators.⁸ To protect our fish and shellfish species, we must work quickly to mitigate climate change impacts on our oceans and estuaries.



Source: Climate Central
https://xs.climatecentral.org/#12/40.6882/-73.6290?scenario=extreme_p50

Rising temperatures, extreme weather events, sea level rise, and ocean acidification will all pose an increasing threat to Long Island and our sustainability.

- Increasing water temperatures in Long Island Sound make our region inhospitable for cold water species, such as winter flounder and lobster, while warm water species make their way up to Long Island waters. Many invasive plants, including weeds like the mile-a-minute vine, kudzu,⁹ and hydrillia¹⁰ are already disrupting native plants in Long Island ecosystems. The sea squirt and Asian shrimp, which are native to

the warm waters of the Pacific, have been found in Long Island Sound over the last two decades and now threaten Long Island's native shellfish.¹¹

- Sea level rise and increased flooding on the north and south shore worsens the impacts of storms on our coastline. Homes and infrastructure are being raised, including roads in Freeport, Lindenhurst, Smithtown, and Southampton, as well as the Shelter Island ferry, while residents in the most vulnerable communities are facing managed retreat and home buyouts.



- The New York City Panel on Climate Change estimates that rising sea temperatures over the last century increased the area flooded by Superstorm Sandy by 25 miles.¹² The storm destroyed or damaged 95,000 buildings on Long Island and caused billions of dollars in damages.¹³

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- In addition to severe flooding during rain and snow events, “sunny day” flooding, or flooding solely due to high tide and not precipitation, poses a real risk to south shore communities. Coastal communities across the US are already experiencing three times more high tide flood days than just 20 years ago, and the trend will only grow worse.¹⁴ In Mastic Beach Village, which is experiencing some of the worst impacts of sea level rise, roads are frequently so severely flooded that residents often cannot cross the street or visit neighbors.¹⁵
- Long Island has experienced a shift in seasons. Warmer winters coupled with longer, hotter summers are creating more hospitable conditions for pests like the southern pine beetle, lone star tick, deer tick, and mosquitos, as well as pollen, ragweed, and poison ivy. While this means a longer agricultural growing season, it also means that pests that threaten local crops will grow larger, faster, and lay more eggs,¹⁶ while more water will be required to irrigate farms.
- Suffolk County regularly receives an “F” for air quality from the American Lung Association.¹⁷ Increasing temperatures, and in turn worsening air quality during summer heat waves, will cause further health risk from poor air quality for at-risk residents.
- Our best natural defense against flooding and climate change are our wetlands and sea grass, which soak up storm surges and protect coastal infrastructure. Both Nassau and Suffolk Counties have lost significant quantities of these natural buffers. Overdevelopment as well as nitrogen pollution from sewage and septic systems, which weakens sea grass's root system, play a role in the loss of these important habitats.¹⁸
- Climate change also plays a significant role in the loss of our wetlands. As wetlands experience sea level rise and saltwater intrusion, they begin migrating inland or become submerged in open water if they cannot migrate fast enough. Climate change poses a serious threat to our remaining wetlands, and our wetlands are crucial to combating the impacts of climate change.¹⁹



Tidal Wetlands at Flax Pond in Old Field, NY
Source: DEC

- Harmful algal blooms (HABS) plague nearly every waterway on Long Island, from the western Long Island Sound to the Peconic Estuary. These HABS, the result of nitrogen pollution from sewage, cause fish die offs, beach closures, impaired waterways, and human health impacts. Unfortunately, climate change is likely to exacerbate our HAB problem, with cyanobacteria and algae blooms thriving in warmer waters, and the die off of algae leading to lower dissolved oxygen and higher CO2 levels in our waterways.^{20,21} HABS and low dissolved oxygen could also compound the loss of clam and scallop populations in our bays and estuaries due to ocean acidification.²²
- Long Island relies on aquifers for 100% of our drinking water, which are already experiencing saltwater intrusion and contamination issues. Rising sea levels push saltwater into our aquifer system contaminating our fresh water supply.

If we are going to sustain our way of life on Long Island, we must do everything we can to fight climate change.

Transitioning to Renewable Energy

In 2019 New York State passed the strongest climate law in the nation—the Climate Leadership and Community Protection Act (CLCPA). The CLCPA mandates NY achieve 70% renewable energy by 2030 and carbon-free electricity by 2040. Long Island will play a key role in the state’s transition from fossil fuels to renewable energy. We cannot succeed in meeting these critical goals without offshore wind—the CLCPA mandates that NY procure 9,000MW of offshore wind by 2035. Furthermore, a recent study found that to meet the 2040 goal of carbon-free electricity, offshore wind capacity will need to grow to 25 gigawatts (GW); supplying 34% of New York load in 2040.²³

Long Island has three legacy fossil fuel power plants, located in Northport, Port Jefferson, and Island Park, which provide 40% of the island's generation capacity for electricity. Due to increased energy efficiency and renewable energy, including solar power, the need for these antiquated plants has greatly declined, but they still provide 22% of Long Island’s energy.²⁴ We also generate power from a combined cycle power plant in Yaphank, known as Caithness, as well as over 30 additional fossil fuel “peaker plants”. Peaker plants are



smaller fossil fuel power plants that were originally built to meet electricity needs during high demand, such as summer time.²⁵ If we are going to fight climate change here on Long Island, we need to transition away from fossil fuels and embrace renewable energy, particularly offshore wind and solar.

Long Island's vast offshore wind potential will allow us to significantly reduce the greenhouse gas emissions that contribute to climate change and to curb our reliance on polluting fossil fuels. A study of wind energy impacts in the eastern USA, conducted by the National Renewable Energy Laboratory, concluded that "Wind generation displaces carbon-based fuels, directly reducing carbon dioxide (CO₂) emissions. Emissions continue to decline as more wind is added to the supply picture."²⁶ In fact, the first 2,400 megawatts (MW) of offshore wind energy developed to meet New York's target would reduce greenhouse gas emissions in the state by more than 5 million tons each year, the equivalent of removing nearly one million cars from the road by 2030.²⁷ By embracing offshore wind, Long Island can fight climate change and protect our communities.

Offshore Wind

Long Island is poised to be an offshore wind leader, with five proposed offshore wind

farms that can generate over 4300 MW of power which can supply power for over 2 million homes.

- The South Fork Wind Farm off the coast of Montauk, will power 70,000 homes on the south fork of Long Island with renewable energy.²⁸ Choosing this project was a major milestone, with Long Island having the choice between the state's first offshore wind farm or a new fossil fuel power station located on the south fork. The public overwhelmingly supported wind over fossil fuels, and the South Fork Wind Farm was selected in 2015.

In 2019, New York State awarded bids to two offshore farms that will provide a combined 1,700 MW of wind power to Long Island and New York City. These projects are due to be completed by 2024.²⁹

- The Sunrise Wind Farm will be located off the south shore of Long Island. This project is estimated to begin construction in 2022 and will generate 880 MW of power for 500,000 homes.³⁰
- The Empire Wind Farm will be located approximately 20 miles off the coast of the Rockaways and generate approximately 800 MW of energy, which will also power 500,000 homes.³¹



The South Fork, Sunrise, and Empire Wind Farms will be the first in a series of offshore wind projects that will allow us to achieve 9,000 MW by 2035. New York State predicts these offshore wind farms will create 10,000 local jobs in manufacturing, installation, and operations.³² Each project is required to undergo an in-depth environmental review process, including opportunities for public comment. In 2021, Governor Cuomo announced the selection of two additional offshore wind farms – Beacon Wind and Empire Wind 2 – which will generate enough energy to power 1.3 million homes in New York City and Long Island.³³

Next Steps

Supporting well-sited, environmentally responsible offshore wind farms is critical to mitigating the impacts of climate change and achieving a carbon-free power sector by 2040. If you would like to learn more about these offshore wind farms, find studies on the environmental impact of offshore wind development, or find out about upcoming opportunities for public input, that information has been compiled on NYSERDA's website at <https://www.nyserda.ny.gov/All-Programs/Programs/Offshore-Wind>.

Wind Works Long Island is a coalition of environmental, labor, faith-based and community groups. We are a growing force behind educating the Long Island community on the benefits of renewable energy, particularly offshore wind. This coalition formed in 2020 to support responsibly-sited offshore wind farms off the coast of Long Island and foster public engagement in the ongoing environmental and technical review processes for these critical projects. Wind Works Long Island believes that public understanding of offshore wind and support for individual wind farms is critical to meeting New York's climate change goals and transition our island away from fossil fuels. While some of our core coalition members have been at the forefront of the fight for offshore wind on Long Island for over a decade, many of our key members have mobilized in response to the current need for offshore wind projects that hold the promise of finally bringing clean, renewable wind energy to our communities. Please visit our website for more information at windworkslongisland.org.



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