



GOAL #10

Natural Resource Conservation

We promote the conservation and efficient use of the region's natural resources.

Long Island's success over time has stemmed in many ways from its abundance of critical natural resources, from its popular sandy beaches, biodiverse bays and significant wetland habitat to still-thriving agricultural lands. Its protected pine barrens and other forested land help to replenish and protect the Island's essential drinking water aquifers, ensuring the health and quality of life on Long Island.

Long Island has some of the highest rates of carbon emissions and water consumption in the region, and declining rates of open space protection.

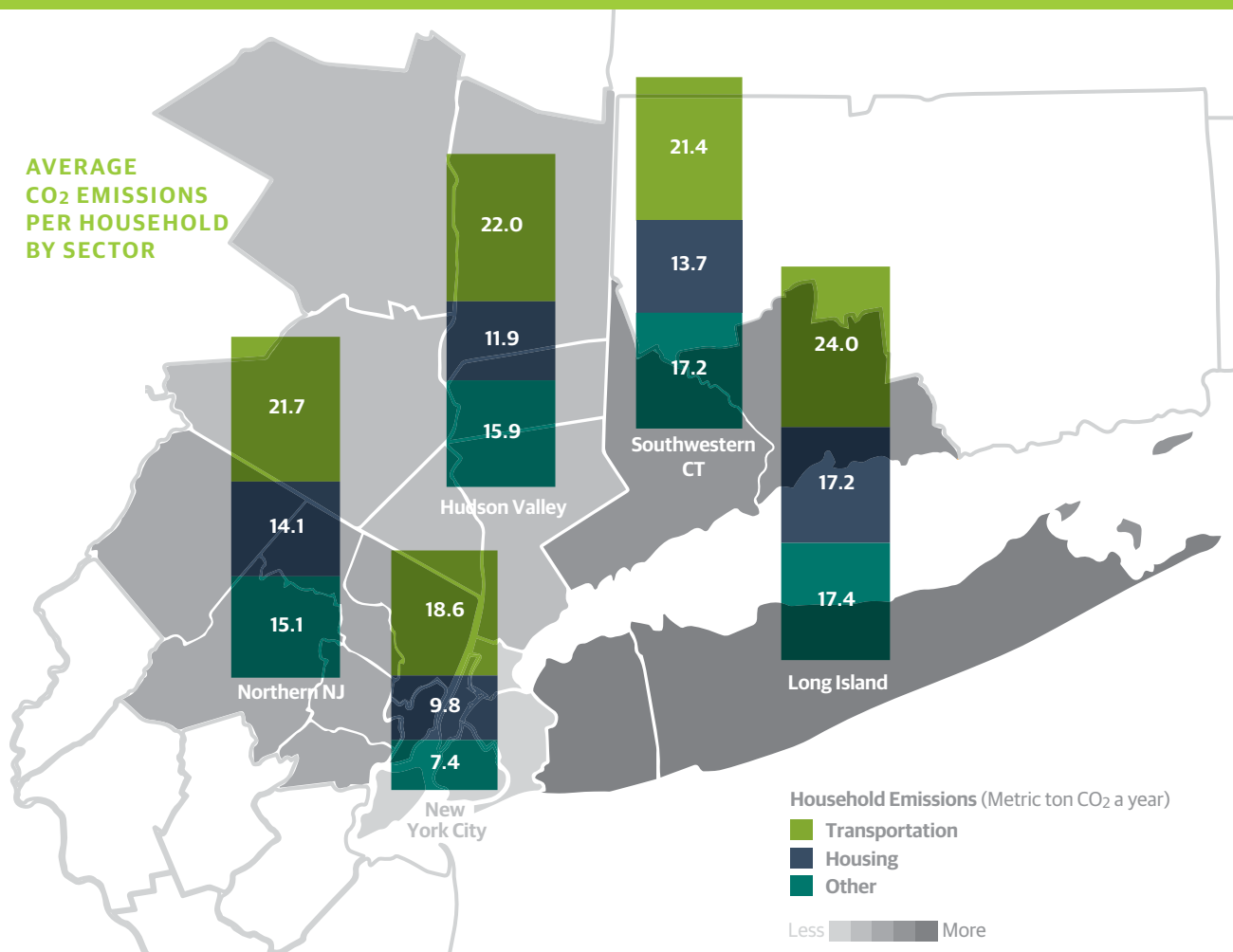
As the effects of climate change begin to intensify, these resources will become more important for reducing greenhouse gases and protecting against flooding and droughts. Over the next generation, both sea level rise and intermittent flooding from extreme storms will move farther inland, and droughts are likely to become more frequent. Conserving natural resources should attempt to maximize their benefits in adapting to climate change, and the energy use and sources

should minimize the burning of fossil fuels, the major cause of climate change.

Where that energy comes from is important to slow the rate of climate change from greenhouse gases. Water consumption helps to determine the rate at which fresh water supplies are depleted and affects vulnerability to droughts, which are likely to increase as global temperatures continue to rise. Open space is important for protecting water quality, for recreation and for helping to cool the island.

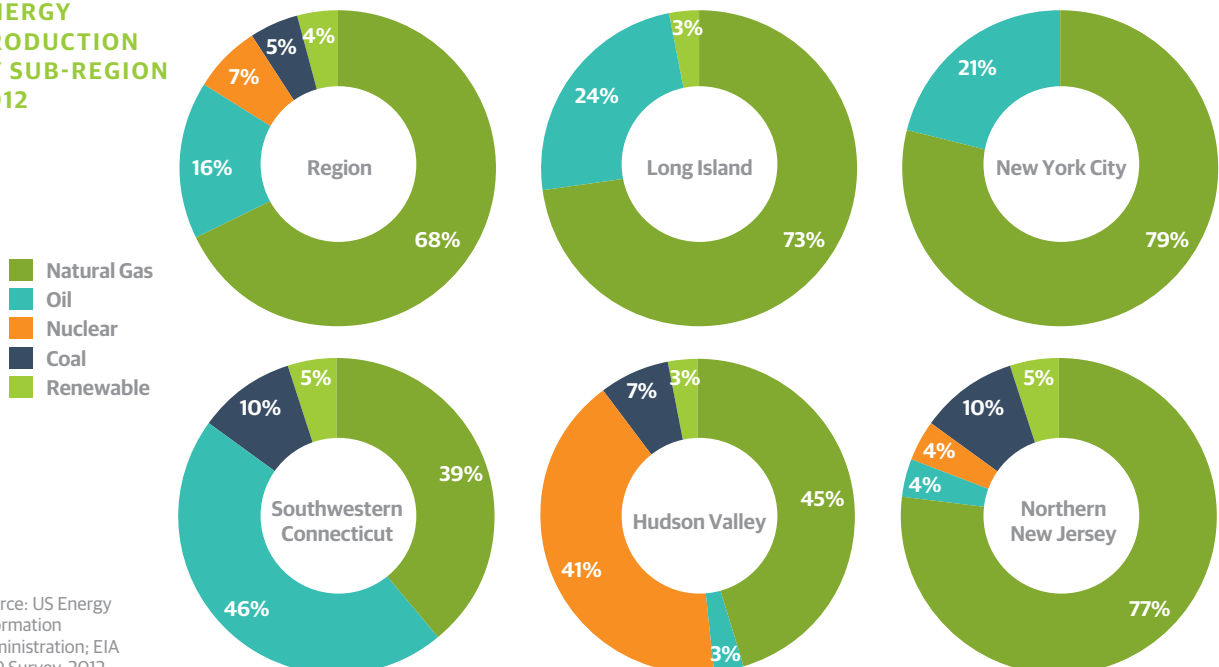
Long Island has some of the highest rates of carbon emissions and water consumption in the region, and declining rates of open space protection. These are driven in part by large homes and high rates of auto use, and reduced funding for open space protection. Climate change will make resource preservation even more critical in the future. Vegetation and wetlands absorb heat and water, providing protection against the two biggest dangers from global warming.

Long Island, like other parts of the region, also has a low use of renewable energy sources. Yet its terrain and position between Long Island Sound and the Atlantic Ocean also make it a likely location to expand use of both solar and wind energy.



Source: CoolClimate Network, 2013 <http://coolclimate.berkeley.edu/>

ENERGY PRODUCTION BY SUB-REGION 2012



Source: US Energy Information Administration; EIA 860 Survey, 2012

Long Island has the highest level of carbon emissions per household in the New York region.

impacts of climate change will require steep reductions in the amount of greenhouse gases emitted. New York State has committed to reducing its overall greenhouse gas emissions 80% by 2050, the first 40% by 2030. If the state is to reach its goal, and reduce its share of the contribution to climate change, significant cuts in emissions from all sources statewide will be necessary. Long Island households emit 35 metric tons of carbon dioxide a year, compared to 25 for the New York region overall. Emissions from both housing and transportation are higher than in any other part of the region. With more prevalence of single family homes and higher use of automobile travel than the rest of the region, these high-emitting lifestyle choices make Long Island the greatest contributor of CO₂ emissions per household in the region.

Nearly three-fourths of energy produced on Long Island comes from natural gas, only 3% from renewables

natural gas. On Long Island, energy produced is 73% reliant on natural gas, 24% dependent on oil sources, with only 3% coming from solar and other renewable sources.

All are somewhat higher than shares for the region as a whole, since some parts of the region rely on coal or nuclear energy for part of their power supply. Region-wide, 2% of energy comes from renewables. Natural gas has far fewer carbon emissions than oil and coal, but much higher shares of renewable energy would be needed to meet the state adopted target of an 80% reduction in carbon emissions by 2050. Innovations in battery storage and other energy technology are making renewable energy increasingly competitive. But no large-scale solar and offshore wind farms exist today either on Long Island or in the region. This could change substantially in the near future. In 2017, the Long Island Power Authority approved the nation's largest offshore wind farm: 15 turbines capable of powering 50,000 homes.

Carbon dioxide is the most prevalent greenhouse gas emitted by human activity and is largely responsible for global climate change. Slowing or minimizing the

Power generation remains a significant source of greenhouse gas emissions, despite improvements over the past decade largely driven by a shift to lower-emitting

LESSONS LEARNED BY NEAL LEWIS

Long Island Should Lead the Nation in Renewable Energy

Superstorm Sandy underscored Long Island's vulnerability to global warming and sea level rise, and Long Island is now poised to be a national leader in renewable energy.

Long Island already leads New York State in solar energy generation and soon could lead the state and nation in offshore wind power as well. New York State is undertaking a master plan for the waters off Long Island's south shore with a goal of building 400 wind turbines providing 2,400 MW of electricity. And LIPA recently approved the first 15 turbines in what could be among the largest areas of offshore wind generation anywhere. In addition to environmental benefits, offshore wind development has the potential to be a major job producer.

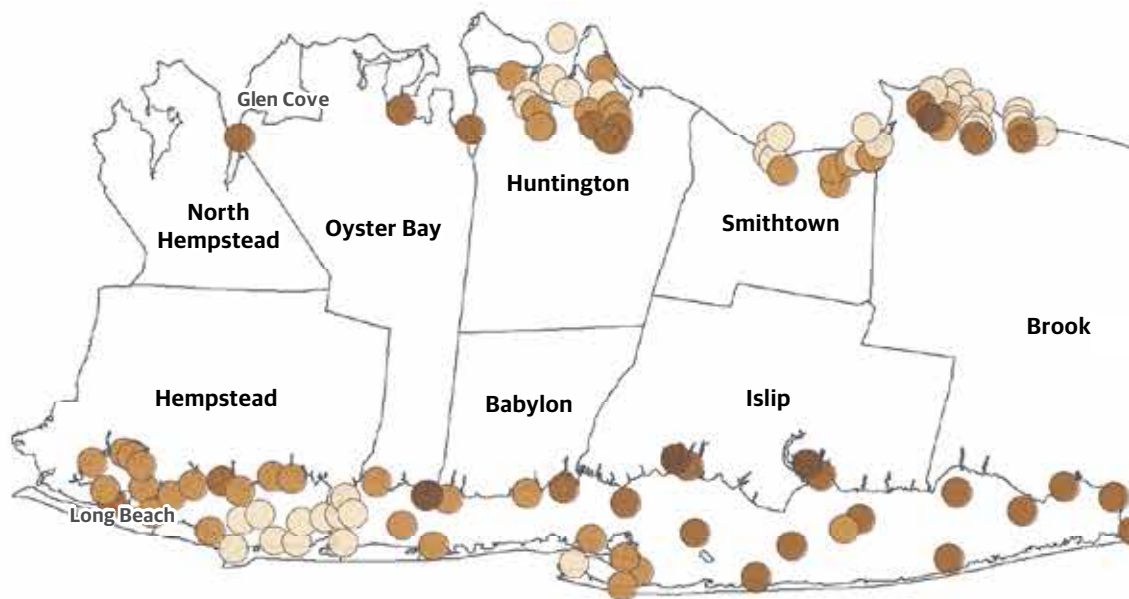
Long Island should take advantage of this opportunity to lead the nation in renewable energy.

Mr. Lewis is Executive Director of the Sustainability Institute at Molloy College.

WATER CLARITY

Mean Secchi depth

- 1 to 3 feet (murky)
- 3 to 5 feet
- 5 to 7 feet
- 7 to 14 feet (clear)



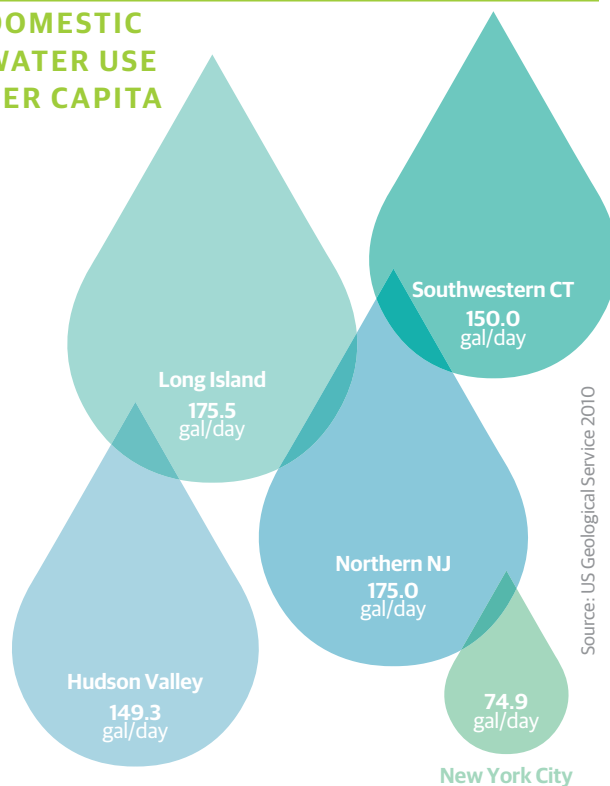
Prepared by the Center for Urban Research, CUNY Graduate Center. 2017 Data from Stony Brook University's School of Marine and Atmospheric Sciences.

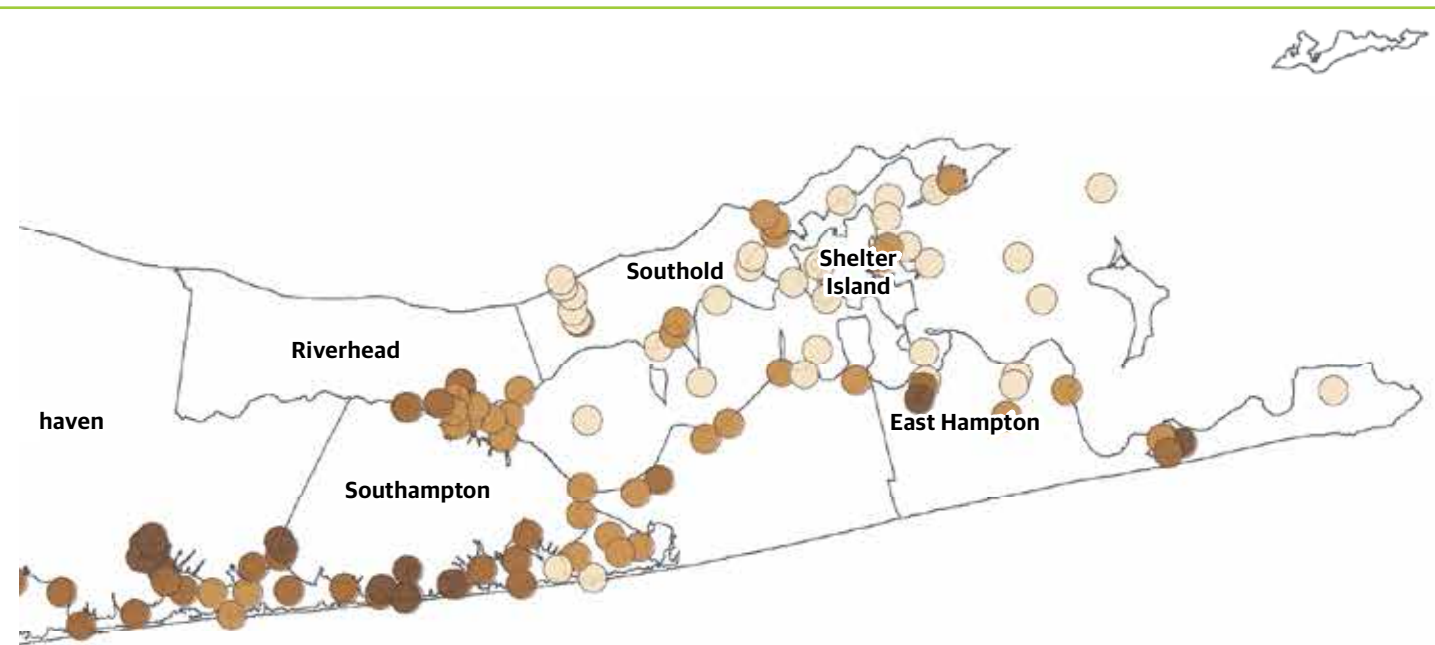
Long Island households consume more water than most parts of the New York region.

The homes, businesses and industries on Long Island could not exist without a steady and clean supply of

drinking water. Unlike other areas in the region, such as New York City or northern New Jersey, Long Island is not connected to a larger network of water supply sources. Instead, Long Island is wholly dependent on the groundwater aquifers that ebb and flow in quantity based on the amount of water consumed and the amount of water that is able to replenish these sources. Given this critical dependence, management and protection of the supply is essential, particularly as climate change makes rainfall more unpredictable and droughts more likely. Yet, Long Island households consume more water than every other part of the region except northern New Jersey. With lawns, larger homes and more cars to wash, water consumption is higher in suburban areas. And given the concentration of development along Long Island's coastline, excessive groundwater pumping near the coastline has led to "saltwater intrusion" or the contamination of portions of groundwater with salt water, making it undrinkable.

DOMESTIC WATER USE PER CAPITA





LONG ISLAND'S SOUND...

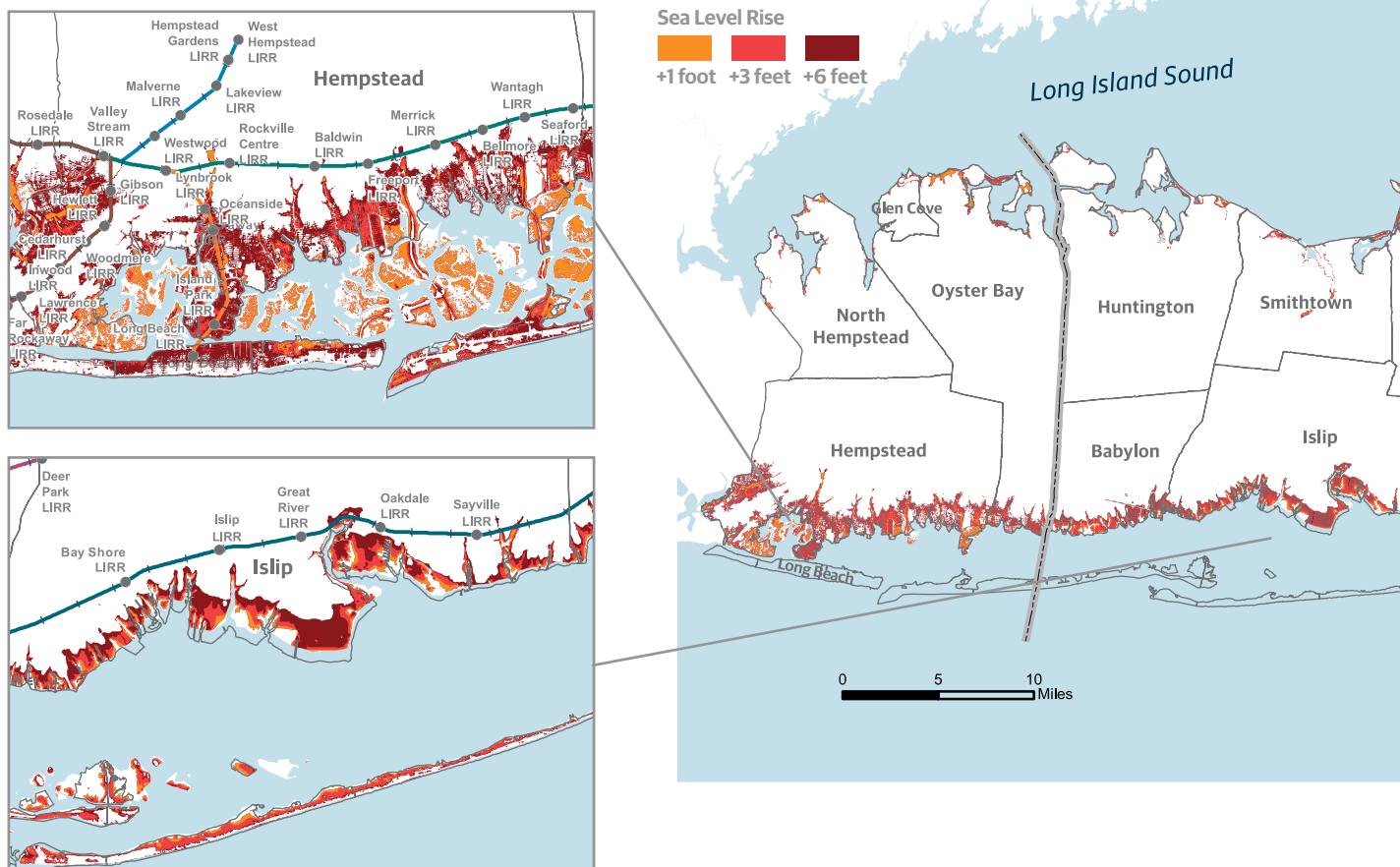
By 2050, 249,000 people could be at risk of flooding from a severe storm, up from 169,000 today.

Extreme storms like Superstorm Sandy and the surge in flooding that occurs with each one are likely to become more frequent. By 2050, sea level rise will expand the floodplain of these storms and affect the places where 249,000 people live today, around 80,000 more people than are affected by storms today. The places where 61,000 jobs are today would also be subject to storm-related flooding in 2050. And unlike the temporary flooding that occurs during storms and recedes once the storm has passed, the eventual flooding from sea level rise alone will be permanent, inundating everyday places where we currently live and work. While the exact pace and timing of sea level rise is uncertain, it is already occurring and is intensifying. Based on methodology

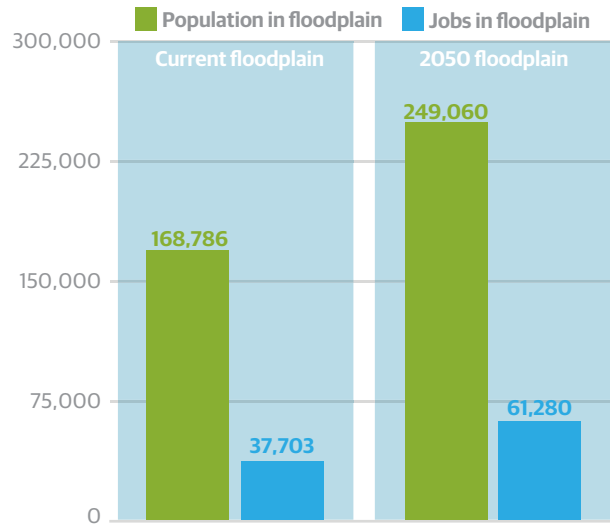
adopted by New York State, Long Island could see a one foot rise in sea levels as early as the 2030s, permanently flooding homes that currently house 10,000 people. With three additional feet of sea level rise, a possibility later this century, the homes of 50,000 people could be under water.

Charts, opposite page
Source: Data compiled by the RPA and released in their report, "Under Water."
Sources include US Decennial Census 2010, LEHD 2011, USGS Digital Elevation Model (1/9th Arcsecond resolution) NOAA Coastal Services Center, FEMA National Flood Hazard Layer, The Nature Conservancy

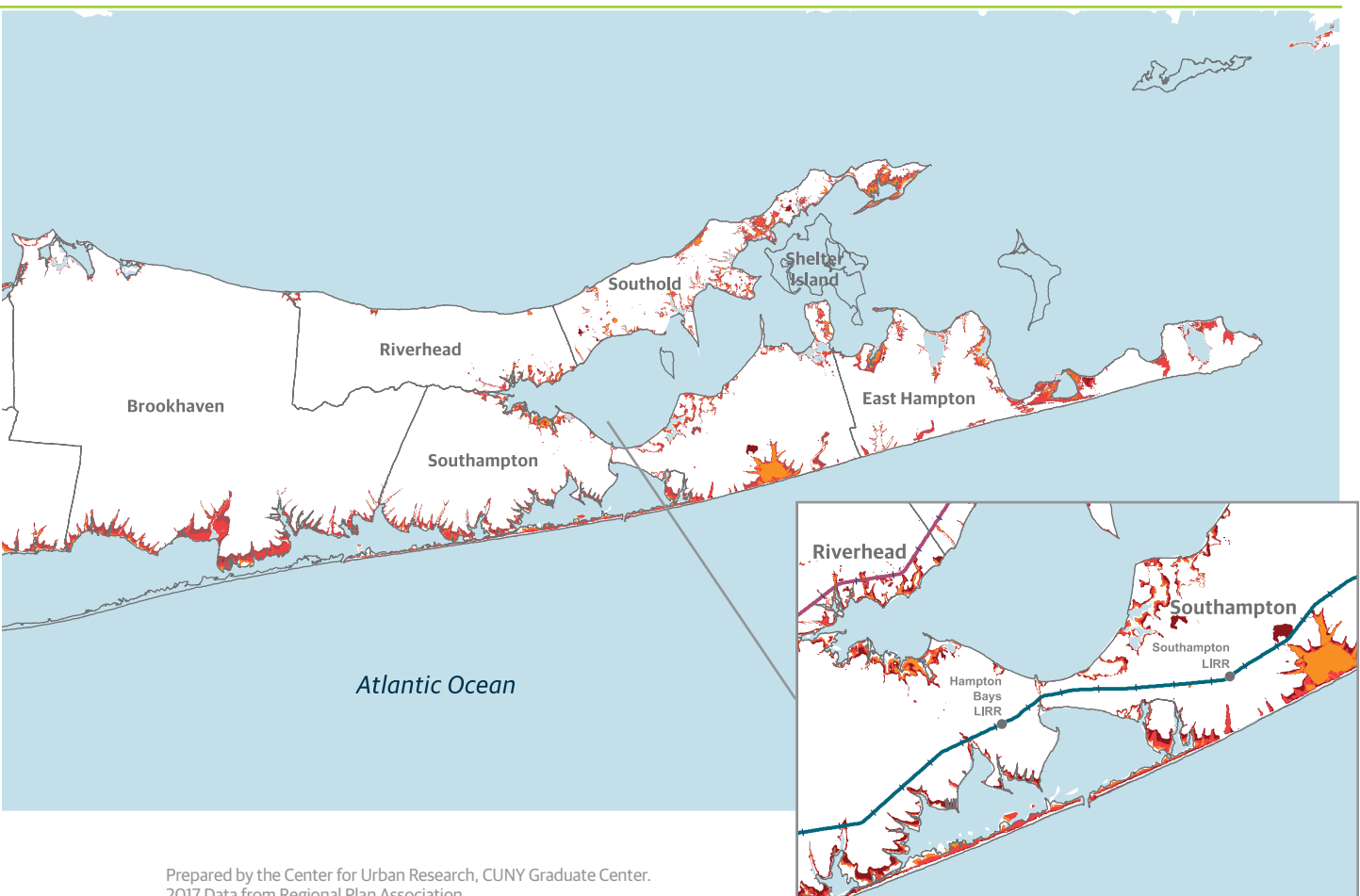
LONG ISLAND'S SEA LEVEL RISE



POPULATION AND JOBS IN THE 2050 FLOOD PLAIN ON LONG ISLAND



POPULATION AND JOBS AT RISK FROM SEA LEVEL RISE ON LONG ISLAND



Prepared by the Center for Urban Research, CUNY Graduate Center.
2017 Data from Regional Plan Association.

LESSONS LEARNED

BY PATRICK HALPIN

Conserving Long Island's Natural Resources

Long Island's natural resources still define the region, but will that be true in the future?

Most of Nassau County and the five western towns of Suffolk County had been suburbanized, industrialized, filled in and paved over, before Long Islanders came to realize that the environment is the economy. Beginning in the 1970s, an environmental awakening occurred: landfills were capped to protect aquifers; sewers built in Nassau, and sales tax increases approved in Suffolk to preserve the remaining Pine Barrens and parklands.

The challenge now is to overcome the mistakes of suburban sprawl. Will the smart-growth redevelopments of Patchogue, Westbury, Rockville Centre, Babylon and Ronkonkoma be one-offs or models for the region? Will Hempstead, Hicksville, Heartland, and Syosset's Cerro Wire be redeveloped into beautiful sustainable communities with jobs, parks, public transit and housing all in walking distance? Will Suffolk expand such needed infrastructure as sewers and high-tech septic systems and protect our water resources? The nature of Long Island is in our hands.

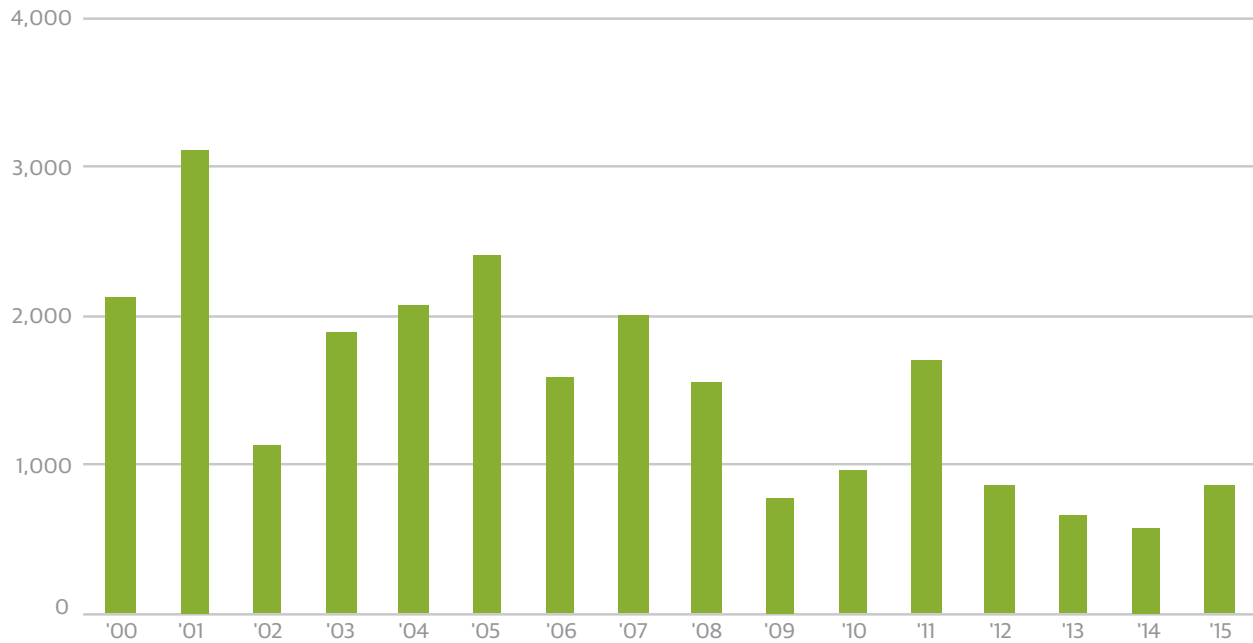
Mr. Halpin is former Suffolk County Executive.

The amount of open space that we are preserving each year is declining.

Open spaces are the places where we recreate, grow food and connect with nature. They are also the places that absorb floodwaters and stormwater, replenishing the aquifers that supply our water. Open space also serves to store carbon, clean air and cool our communities. There are 65,000 acres of protected open space on Long Island, 7.5% of Long Island's total land. However, the number of acres being preserved each year has declined sharply from an average of 2,122 acres each year in 2000-2002 to 703 in 2013-2015. There are 2,373 acres of high-quality, high-benefit unprotected open space in those two counties, land that if protected would bring the greatest environmental and climate change benefits.*

*Based on criteria developed by Regional Plan Association based on importance for climate mitigation, flood resilience, species protection, local food production and community health. See <http://fourthplan.org/action/open-space>.

ACRES OF LAND PRESERVED 2000 - 2015



Source: NYS Department of Environmental Conservation, Nassau County, Nature Conservancy, Suffolk County Planning Department, Town of Brookhaven, Town of East Hampton, Town of Huntington, Town of Riverhead, Town of Shelter Island, Town of Southampton, Town of Southold.

LESSONS LEARNED BY JIM LARGE

Collaborate to Protect Long Island's Environment

The quality of the environment impacts all aspects of our lives, and virtually everything we do has potential to damage its fragility. The threats on Long Island are serious and growing. Fortunately, there is a way forward. It requires an “all hands” effort from all who can enable corrective action.

That means that the silos must come down, and leaders at all levels of government, business, labor, and civic organizations must come together in coalitions around common priorities. But there is more: Leaders are typically driven by the will of their constituencies, so educating those constituencies and convincing them of the need to speak out is necessary as well.

Recently, against all odds, we employed this approach with great skill to advance with Governor Cuomo the LIRR Third Track initiative—an environmental priority. It produced a broad-based commitment that succeeded. We would do well to reflect on that success and activate that approach further, as we face the environmental challenges that lie ahead.

Mr. Large is former President and CEO of the Dime Savings Corporation.