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Patrick Mulvihill, Senior Policy Analyst
Jonathan Seltzer, Senior Finance Analyst

Committee on Housing & Buildings
Audrey Son, Counsel
Genan Zilkha, Counsel
Jose Conde, Senior Policy Analyst
Charles Kim, Policy Analyst
John Basile, Senior Financial Analyst

THE NEW YORK CITY COUNCIL
Jeffrey Baker, Legislative Director

COMMITTEE REPORT OF THE INFRASTRUCTURE DIVISION
Terzah Nasser, Deputy Director

COMMITTEE ON RESILIENCY AND WATERFRONTS
Hon. Justin Brannan, Chair

COMMITTEE ON HOUSING AND BUILDINGS
Hon. Robert E. Cornegy, Jr., Chair

November 19, 2021

State of Housing Resiliency along the Waterfront

INT. NO. 2189: By Council Members Gjonaj, Yeger, Brannan, Rose, Ampry-Samuel, Vallone, Cornegy, Moya, Koo, Reynoso, Holden, Adams, Koslowitz and Ulrich

TITLE: A Local Law in relation to requiring the office of long-term planning and sustainability to study underground power lines

INTRODUCTION

On November 19, 2021, the Committee on Resiliency and Waterfronts, chaired by Council Member Justin Brannan, and the Committee on Housing and Buildings, chaired by Council Member Robert E. Cornegy, Jr., will hold a joint hearing on the State of Housing Resiliency along the Waterfront and hear Int. No. 2189, A Local Law in relation to requiring the office of long-term planning and sustainability to study underground power lines. Those invited to testify include representatives from the Mayor's Office of Climate Resiliency (MOCR), the Department of Housing and Buildings (DOB), various climate, resiliency and environmental advocates and other interested parties.

BACKGROUND

In 2012, Superstorm Sandy flooded approximately 17% of New York City's (the City) total land mass, or 51 square miles.[1] By the end of 2012, DOB had identified approximately 800 buildings that had been damaged or destroyed, and thousands of housing units that had suffered some amount of damage.[2] Superstorm Sandy caused an estimated $19 billion in losses to the City.[3] Along with damage to residential and commercial property, the storm damaged critical City

[1] James Barron, "New York's Next Nickname: The Big Sponge?" THE NEW YORK TIMES (September 27, 2018), https://www.nytimes.com/2018/09/27/nyregion/new-york-flooding.html
[2] NYC Special Initiative for Rebuilding and Resiliency Report, A Stronger, More Resilient New York, Foreword from Michael Bloomberg, https://www1.nyc.gov/office-of-the-mayor/news/201-13/mayor-bloomberg-outlines-ambitious-proposal-protect-city-against-effects-climate-change (last accessed 10/22/19)
[3] *Id.*

infrastructure and services.[4] Nearly two million people lost power at some point during the storm. Con Edison's steam system was unable to service one-third of its customers for nearly two weeks.[5] Flood damage at critical facilities in Lower Manhattan, Red Hook, and the Rockaways disrupted landline and internet service for up to eleven days.[6] Six hospitals, and 500 buildings with doctors' offices, clinics, and other outpatient facilities, were forced to close due to flooding.[7]

Less than nine years after Superstorm Sandy, Tropical Storms Elsa, Henri, and Ida hit the City. On July 8, 2021, Tropical Storm Elsa inundated the City with rainfall, causing severe flooding along roads, highways and in subway stations, resulting in the temporary suspension of service on several subway lines.[8] Tropical Storm Elsa was followed by Tropical Storm Henri on August 21, 2021, which was then followed by Tropical Storm Ida on September 1, 2021.[9] Tropical Storm Ida set record rainfalls in Central Park and caused the National Weather Service to issue a Flash Flood Emergency for the City.[10] Tropical Storm Ida caused some roadways to be flooded with so much water that the streets were unpassable to vehicular traffic. In some areas, vehicles were left abandoned or stranded. Even more devastating, at least 15 people are known to have died in New York State as a result of Tropical Storm Ida, 13 of them in the City, including a two year

[4] PlaNYC, "Sandy and Its Impacts," *available at* http://www.nyc.gov/html/sirr/downloads/pdf/final_report/Ch_1_SandyImpacts_FINAL_singles.pdf
[5] *Id.*
[6] *Id.*
[7] *Id.*
[8] Nicholas Reimann, "Tropical Storm Elsa Floods New York City Subways as Storm Races Through Northeast," Forbes, July 9, 2021, available at https://www.forbes.com/sites/nicholasreimann/2021/07/09/tropical-storm-elsa-floods-new-york-city-subways-as-storm-races-through-northeast/?sh=7b96a687589b.
[9] Jesse McKinley, Dana Rubinstein and Jeffery C. Mays, "The Storm Warnings were Dire. Why Couldn't New York be Protected?" NY Times, September 3, 2021, available at https://www.nytimes.com/2021/09/03/nyregion/nyc-ida.html.
[10] "NYC National Weather Service issues first Flash Flood Emergency; wettest hour ever in Central Park," Eyewitness News, WABC-TV, September 2, 2021, available at https://abc7ny.com/flash-flood-emergency-new-jersey-flooding-york-city-hurricane-ida/10993344/.

old.[11] Most of these victims were trapped in basement apartments. After the storm, Mayor Bill de Blasio stated that travel bans and evacuations of basement apartments, neither of which were employed prior to Tropical Storm Ida, might need to be required in the future.[12]

Sea Level Rise

With 520 miles of coastline bordering the ocean, rivers, bays, and inlets, the City is particularly vulnerable to the impacts of sea-level rise, storm surge, and high-tide or sunny-day flooding.[13] According to a Union of Concerned Scientists study, New York State ranks third in the nation for the most homes at risk of coastal inundation by the end of the 21st century.[14] The East and Gulf Coasts of the United States are undergoing some of the fastest rates of sea level rise, with coastal flooding rates in 2012 averaging once every three months, up from once every five years in the 1950's.[15] Nationally, more than 300,000 homes with a collective value of $117.5 billion, and 14,000 commercial properties valued at $18.5 billion are at risk of chronic flooding within the next 30 years.[16] In New York State, 15,500 homes, representing a population of approximately 42,000 people and valued at approximately $8.5 billion, primarily clustered in Long Island (Hempstead, Babylon), and Queens, risk increased nuisance flooding by 2045.[17] By 2100, 143,000 properties in New York State, housing approximately 366,000 people, and valued at approximately $98 billion, risk the same fate.[18] The homes at risk by 2045 contributed about $170 million dollars

[11] NY Times, "What we know about the people who died in the flooding," Sept. 2, 2021, available at: https://www.nytimes.com/2021/09/02/nyregion/ida-new-york-city-deaths.html?mc_cid=36f003b6fd&mc_eid=8dd499739f.
[12] McKinley, *supra* note 9.
[13] Sunny day flooding, also known as tidal flooding, is the temporary inundation of low lying areas due to exceptionally high tide events.
[14] New Study Finds 143,000 New York Homes Worth $98 Billion will be at Risk from Tidal Flooding. https://www.ucsusa.org/press/2018/new-study-finds-143000-new-york-homes-at-risk-from-tidal-flooding ("UCS Study")
[15] Dahl, K.A. et al., Effective inundation of continental United States communities with 21st century sea level rise. Elem Sci Anth, 5, p.37. 2017 DOI: http://doi.org/10.1525/elementa.234.
[16] UCS Study, *supra* note 14.
[17] *Id.*
[18] *Id.*

in tax revenue by 2018 figures, and those at risk by 2100 represent $2 billion of tax revenue.[19] Additionally, 2,700 homes that will be at risk in Queens by 2045 are largely concentrated in environmental justice communities.[20]

Flooding

A report by the National Oceanic and Atmospheric Administration (NOAA) forecasts that, by 2100, "high tide flooding will occur 'every other day' (182 days/year) or more often under the Intermediate Low Scenario within the Northeast and Southeast Atlantic … ."[21] The report also projects that the low and high end estimates of high tide flood frequency along the coast of the Northeast Atlantic "will reach on average about 235 and 365 days/year (with 95 and 100% from tides)" respectively.[22] The City's waterfront communities face significant threats from extreme weather events and high tides, and projections show that these communities will experience greater and more frequent damage because of climate-related weather events and sea level rise. Neighborhoods such as Broad Channel, Howard Beach, Hamilton Beach,[23] Rosedale, Far Rockaway, Coney Island, Stapleton, Arrochar, and Midland Beach,[24] where eight New Yorkers drowned in Sandy's floodwaters,[25] already regularly experience tidal inundation, a trend that will only be exacerbated by continued sea level rise.

[19] *Id.*
[20] *Id.*
[21] National Oceanic and Atmospheric Administration (NOAA), Patterns and Projections of High Tide Flooding Along the U.S. Coastline Using a Common Impact Threshold," (February 2018) at ix, https://tidesandcurrents.noaa.gov/publications/techrpt86_PaP_of_HTFlooding.pdf
[22] *Id.* at 25
[23] Nathan Kensinger. *In Queens, chronic flooding and sea-level rise go hand in hand*. October 12, 2017. Curbed NY. https://ny.curbed.com/2017/10/12/16462790/queens-climate-change-jamaica-bay-flooding-photos
[24] Amy Plitt. *These NYC Neighborhoods Experience Chronic Street Flooding.* December 3, 2018. Curbed NY. https://ny.curbed.com/2018/12/3/18015910/new-york-weather-street-flooding-rainfall
[25] *Id.*

Urban areas are also highly susceptible to pluvial flooding, which is flooding caused by rainfall.[26] Concrete surfaces that exist throughout the City prevent rainfall from infiltrating the ground and increase inland flooding risks. Sea barriers and coastal defenses put in place to protect against coastal storm surge will not solve flooding caused by heavy rainfall events.[27]

Disproportionate Impacts of Flooding on Low-Income and Minority Communities

Urban flooding, and its disproportionate impact on minority and low-income communities, is a major concern as climate change worsens. The most vulnerable residents, those who live in flood-prone areas with little green space to absorb the floodwaters, are often poor and members of minority groups.[28] According to a recent study led by researchers at the University of Arizona, people who are Black, Hispanic, or of low-income are more likely to live in areas at high risk from flooding from natural disasters.[29] According to Sam Brody, a flood expert at Texas A&M University, "[u]rban flooding is a growing source of significant economic loss, social disruption and housing inequality."[30] Storms indiscriminately affect all residents – rich and poor. However, "the capacity to respond to and recover from flooding is much lower in socially vulnerable populations that even in the best of times are struggling to function."[31] Additionally, more people die from floodwaters than from any other effect of a hurricane, and flood damage is more likely to harm or kill those most vulnerable.[32]

[26] Ivan Maddox, *Three common types of flood explained*, Intermap, October 13, 2014, available at: https://www.intermap.com/risks-of-hazard-blog/three-common-types-of-flood-explained.
[27] Casey Crownhart, MIT Technology Review, *How Ida dodged NYC's flood defenses*, Sept. 3, 2021, available at: https://www.technologyreview.com/2021/09/03/1034315/ida-dodged-nyc-flood-defenses-climate-change-storm/
[28] Thomas Frank, E&E News, "Flooding Disproportionately Harms Black Neighborhoods," June 2, 2020, available at: https://www.scientificamerican.com/article/flooding-disproportionately-harms-black-neighborhoods/.
[29] Kyle Mittan, University of Arizona News, "Black and Hispanic People More Likely to Live in High-Risk Flood Zones, Study Finds, October 5, 2020, available at: https://news.arizona.edu/story/black-and-hispanic-people-more-likely-live-high-risk-flood-zones-study-finds.
[30] Frank, *supra* note 28.
[31] *Id*.
[32] Crownhart, *supra* note 27.

Future Storms and Flooding Events

Global warming is expected to cause sea level rise and storms to intensify in the City.[33] A 2017 study by climate experts estimated that over the next 300 years, there will be higher seas, larger storm surges, and more frequent, intense hurricanes.[34] In today's warmer climate, 7.5 foot floods are projected to happen every 25 years as opposed to 7.5 foot floods occurring only a few times per millennium in the past.[35] Predictions state that by 2030, these floods will occur every five years.[36]

On August 9, 2021, the Intergovernmental Panel on Climate Change (IPCC) issued its most recent working group report (the IPCC Report),[37] which included the most current understanding of the climate system and climate change. Co-authored by 234 scientists from around the world, the IPCC Report found that the world is now two degrees Fahrenheit warmer than it was in 1850-1900 and is warming at an unprecedented rate. Further, human influences on the climate are "making extreme weather and climate events – like heat waves, heavy rain, and droughts – more frequent and severe, putting more people, property, and natural resources in harm's way."[38] The IPCC Report concluded that, until global net zero emissions of greenhouse gases is reached, it will be impossible to limit warming to any temperature threshold.[39] However, the authors did assert that switching to renewables, using electric vehicles, better insulating homes and businesses, and

[33] Robinson Meyer, Climate Change Will Bring Major Flooding to New York Every 5 Years, The Atlantic, October 24, 2017, available at: https://www.theatlantic.com/science/archive/2017/10/climate-change-nyc-floods/543708/
[34] *Id.*
[35] *Id.*
[36] *Id.*
[37] IPCC, 2021: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte, V., P. Zhai, A. Pirani, S. L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M. I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J. B. R. Matthews, T. K. Maycock, T. Waterfield, O. Yelekçi, R. Yu and B. Zhou (eds.)]. Cambridge University Press. In Press.
[38] NOAA, Climate.gov, "Release of the IPCC 6th Assessment Report Working Group I," Aug. 9, 2021, available at: https://www.climate.gov/news-features/understanding-climate/release-ipcc-6th-assessment-report-working-group-1.
[39] *Id.*

using and supporting sustainable, climate-smart practices are steps that can, and should, be taken now.[40]

Additionally, a recent study by NOAA found that coastal communities experienced twice as many high-tide flooding days from May 2020 to April 2021 as they did 20 years ago.[41] William Sweet,[42] an oceanographer at NOAA who has been researching high-tide flooding for more than a decade, stated that "[t]he inflection points . . . are already occurring [in areas such as New York. This is] not a problem a decade from now. It's a problem *now*, and it's going to get worse."[43] To protect against coastal flooding, planners and engineers design for the extreme event. However, when it comes to flooding from precipitation, infrastructure should be designed to be "agile and flexible" because such flooding events are unpredictable.[44]

The New York City Panel on Climate Change (NPCC), an advisory body formed by local law[45] to regularly review and report on scientific climate data, has suggested that if climate change begins to follow the Antarctic Rapid Ice Melt (ARIM) projections,[46] portions of Coney Island, Red Hook, Howard Beach, the Rockaway Peninsula, the east and west coasts of Staten Island, the Lower Manhattan waterfront, and areas around the Gowanus Canal, Newtown Creek, and Pelham

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[40] *Id.*
[41] Jim Morrison, *Sunny-Day Flooding is About to Become More than a Nuisance*, Science, Aug. 2, 2021, available at: https://www.wired.com/story/sunny-day-flooding-is-about-to-become-more-than-a-nuisance/.
[42] Dr. William Sweet has testified before the Council on issues of sea level rise and sunny-day flooding. *See* https://legistar.council.nyc.gov/LegislationDetail.aspx?ID=4648808&GUID=BD0E6E77-3181-409C-AC23-BD913EBF7C44&Options=Advanced&Search= and https://legistar.council.nyc.gov/LegislationDetail.aspx?ID=4146641&GUID=0C9B61CF-51E6-4F50-B8DA-C8D06CD87E4E&Options=Advanced&Search=.
[43] Jim Morrison, *supra* note 41.
[44] *Id.*
[45] *See* Local Law 42 for the year 2012, https://legistar.council.nyc.gov/LegislationDetail.aspx?ID=1107144&GUID=FB5DD6B3-D9D2-4C02-AD0F-61FF1A91BA88&Options=ID|Text|&Search=New+York+City+Panel+on+Climate+Change
[46] The Antarctic Rapid Ice Melt (ARIM) scenario, which is an upper-end, but low-probability, projection based on advances in the understanding of ice sheet behavior. ARIM signifies an increase in long-term risk and so was not projected to fall outside the ranges of the NPCC's general projections until the 2080s.

Bay may be permanently inundated with water by 2080 if coastal protections are not put in place.[47] In the NPCC's 2019 report,[48] the panel reviewed existing climate science data and used new methods to determine whether, and in what ways, the City would experience extreme temperatures, heavy downpours, drought, sea level rise, and coastal flooding.[49] The NPCC projects that the City will be subjected to increasing multi-hazard risks, including sea level rise, precipitation and extreme temperature, "some of which may exacerbate the impacts or severity of others." [50]

The impacts of sea level rise on the City's built environment would most directly appear through coastal storm flooding, regular tidal flooding, or land inundation.[51] Under the ARIM scenario, which projects 114 inches (9.5 feet) of sea level rise by 2100, the permanent loss of land to inundation would occur by 2100 in some low-lying areas.[52] The City could face monthly tidal flooding of some areas by the 2050's.[53] NOAA projects that in the 2030's there will be 20 to 40 flood days, and by the 2050's there will be 50 to 135 flood days annually in The Battery area in Lower Manhattan.[54] This means that, in the future, over the course of a third of the year, Lower Manhattan may suffer from tidal flooding.[55]

In 1968, Congress passed the National Flood Insurance Act of 1968 (1968 Act),[56] which created the National Flood Insurance Program (NFIP). Flood insurance is not included in property

[47] *See*, Securing Our Future: Strategies for New York City in the Fight Against Climate Change, The New York City Council, March 2020, available at: http://council.nyc.gov/data/wp-content/uploads/sites/73/2020/03/Securing-our-Future_Report-2020.r4.pdf
[48] *Special Issue: Advancing Tools and Methods for Flexible Adaptation Pathways and Science Policy Integration*, March 2019, Volume 1439, Annals of the New York Academy of Science https://www.nyas.org/annals/special-issue-advancing-tools-and-methods-for-flexible-adaptation-pathways-and-science-policy-integration-new-york-city-panel-on-climate-change-2019-report-vol-1439
[49] Securing Our Future, *supra* note 48.
[50] *Id.*
[51] *Id.*
[52] *Id.*
[53] *Id.*
[54] *Id.*
[55] *Id.*
[56] The National Flood Insurance Act, 42 U.S.C. 4001 *et seq.*, available at: https://www.fema.gov/media-library-data/20130726-1545-20490-9247/frm_acts.pdf.

insurance and, at the time of the 1968 Act's passage, coverage for floods "was virtually unavailable" in the private market.[57] Consequently, NFIP has provided flood insurance to homeowners, renters, and business owners if they are in a participating community.[58] The program "aims to reduce the impact of flooding on private and public structures…by providing affordable insurance to property owners[,]…and reduce[] the socio-economic impact of disasters."[59] Properties within the special flood hazard area (SFHA), which is the 1% flood zone, and have a federally-backed mortgage, or have experienced a flood disaster event, must have flood insurance.[60]

On April 1, 2020, NFIP released an average countrywide rate increase of 9.9%, with the average flood insurance premium increasing from $993 to $1,092.[61] FEMA has developed a new flood insurance rating system, entitled "Risk Rating 2.0," to more accurately reflect flood risk by considering a broader range of variables.[62] In determining flood insurance premiums, FEMA's current methodology only looks at the property's Flood Insurance Rate Map (FIRM) zone, its base flood elevation, the foundation type, and structural elevation if the property is located within the SFHA.[63] Additionally, FEMA currently only uses FEMA-sourced data and the frequency of the

[57] "Flood Insurance/National Flood Insurance Program (NFIP)", National Association of Insurance Commissioners and the Center for Insurance Policy and Research, last updated October 1, 2020, available at: https://content.naic.org/cipr_topics/topic_flood_insurancenational_flood_insurance_program_nfip.htm.
[58] FEMA "Flood Insurance Reform" accessible at https://www.fema.gov/flood-insurance-reform. NFIP has over five million flood insurance policies, which provide more than $1.3 trillion in coverage, and almost 22,500 communities in 56 states and jurisdictions participate in NFIP. "What Happens in the National Flood Insurance Program (NFIP) Lapses?" Congressional Research Service, updated October 2, 2020, available at: https://fas.org/sgp/crs/homesec/IN10835.pdf.
[59] NYC Housing Recovery, "National Flood Insurance Program (NFIP)," last accessed November 1, 2020, available at https://www1.nyc.gov/site/housingrecovery/resources/national-flood-insurance-program-nfip.page#:~:text=The%20National%20Flood%20Insurance%20Program,and%20enforce%20floodplain%20management%20regulations.
[60] NYC Flood Maps, Overview, last accessed November 2, 2020, available at: https://www1.nyc.gov/site/floodmaps/insurance/overview.page.
[61] Brian Ford, Insurance Resources, "April 1, 2020 NFIP Changes: Flood Rates Set to Rise Again, May 21, 2020, available at: https://insuranceresourcesllc.com/april-1-2020-nfip-changes-flood-rates-set-to-rise-again/.
[62] FEMA, Risk Rating 2.0: Equity in Action, available at: https://www.fema.gov/flood-insurance/risk-rating.
[63] FEMA, Answers to Questions About the NFIP, available at: https://www.fema.gov/media-library-data/20130726-1438-20490-1905/f084_atq_11aug11.pdf.

1% annual chance of flooding.[64] Under Risk Rating 2.0, FEMA uses other federal government data sources as well as commercially-available third party data sources to determine premiums.[65] Risk Rating 2.0 considers the cost to rebuild the property, different types of flood risk, and the distance to the coast or another flooding source, and will "equitabl[y] distribute premiums across all policyholders based on home value and a property's unique flood risk."[66] Beginning on October 1, 2021, all new policies became subject to Risk Rating 2.0; existing policyholders will be subject to the new rating system if they renew their policies on or after April 1, 2022.[67]

In the City, more than 53,000 properties, which includes 19,440 single-family homes, have flood insurance policies.[68] Of those properties, 60% of flood insurance premiums will increase under FEMA's new rating system.[69] In the City's ten poorest zip codes, 38% of premiums will increase and 62% will decrease.[70] For those properties whose flood insurance will increase, most will see increases of about $120 per year, although about 10% will see increases well above $120 per year.[71]

As sea level continues to rise, causing heavier floods in certain areas, policymakers are beginning to explore the benefits of relocating entire communities rather than reconstructing these areas after severe weather and flooding.[72] In August 2020, FEMA detailed a $500 million program

[64] FEMA, available at: https://www.fema.gov/media-library-data/1513200364180-bab79b0ae4855f62ebc94baa06fc0186/Common_Questions_Fact_Sheet.pdf.
[65] FEMA, available at: https://www.fema.gov/flood-insurance/work-with-nfip/risk-rating. FEMA will incorporate data sets from the U.S. Geological Survey; National Oceanic and Atmospheric Administration Sea, Lake, and Overhead Surges from Hurricanes (SLOSH); U.S. Army Corps of Engineers; among others.
[66] FEMA, Risk Rating 2.0: Equity in Action, available at: https://www.fema.gov/flood-insurance/risk-rating.
[67] *Id.*
[68] Samantha Maldanado, The City, "Flood Insurance Hikes Haunt Homeowners still Recovering from Ida and Henri," October 12, 2021, available at: https://www.thecity.nyc/2021/10/12/22723591/flood-insurance-hikes-haunt-homeowners.
[69] *Id.*
[70] *Id.*
[71] *Id.*.
[72] Christopher Flavelle, U.S. Flood Strategy Shifts to 'Unavoidable' Relocation of Entire Neighborhoods, The New York Times, August 26, 2020, available at: https://www.nytimes.com/2020/08/26/climate/flooding-relocation-managed-retreat.html

to pay for large-scale relocation nationwide due to the United States Army Corps of Engineers (USACE) warning to elected officials that they need to agree to force residents out of their homes or face forfeiting federal money for flood-protection projects.[73] The U.S. Department of Housing and Urban Development (HUD) has also begun a similar $16 billion program.[74] In a 2018 National Climate Assessment, 13 federal science agencies stated that the need for retreat or relocation from parts of the coast is "unavoidable in all but the very lowest sea level rise projections."[75] In addition, federal spending due to severe weather has totaled approximately half a trillion dollars since 2005 which has led to the fact that some areas cannot be protected.[76]

Extreme Heat

Temperatures have been rising more rapidly over the last century, and one in ten Americans are currently living in rapidly heating regions, which include the City.[77] Heatwaves in the City are exacerbated by the Urban Heat Island (UHI) effect, a phenomenon in which urban areas experience higher temperatures than surrounding suburban and rural areas, largely because of heat-retaining concrete and asphalt, less vegetation, and more industrial functions.[78] According to a study by the University of Maryland published in 2019, temperatures in New York City will be up to 5°C warmer, with a climate similar to Jonesboro, Arkansas by 2080.[79]

Urban areas can be up to 5.4 degrees Fahrenheit warmer during the day and up to 22

[73] *Id.*
[74] *Id.*
[75] *Id.*
[76] *Id.*
[77] Steven Mufson, Chris Mooney, Juliet Eilperin and John Muyskens, "2°C: Beyond The Limit, Extreme Climate Change has Arrived in America," *The Washington Post,* August 13, 2019, available at: https://www.washingtonpost.com/graphics/2019/national/climate-environment/climate-change-america/.
[78] *Id.*
[79] Pam Radtke "Death, blackouts, melting asphalt: ways the climate crisis will change how we live," *The Guardian,* August 20, 2019, available at: https://www.theguardian.com/cities/2019/aug/20/death-blackouts-melting-asphalt-ways-the-climate-crisis-will-change-how-we-live?utm_campaign=citylab-daily-newsletter&utm_medium=email&silverid=%25%25RECIPIENT_ID%25%25&utm_source=newsletter.

degrees Fahrenheit hotter at night than surrounding rural and suburban areas, affecting City residents' quality of life and the City's infrastructure.[80] For example, buildings retain heat overnight, which prevents people from sleeping well, air pollution can be worse on hotter days and that may lead to respiratory problems, and warmer conditions may also lead to heavy rainfall causing flooding.[81]

Over the last decade, the City has experienced some of its hottest summer months ever recorded,[82] and heat waves like the one that hit the City in July 2019 are expected to become more frequent. The New York City Panel on Climate Change (NPCC) predicts that heat waves, which are defined as three or more days with temperatures at or above 90 degrees Fahrenheit, will be longer, hotter and more frequent especially in areas where the UHI effect is present, like many areas in the City.[83] NPCC also predicts for the 2020s that the City will experience two to four heat waves per year, with each heat wave lasting four to six days.[84] By 2050, the frequency of heat waves and the number of days above 90 degrees Fahrenheit is expected to nearly triple.[85]

In June 2017, the City launched a $106 million Cool Neighborhoods NYC resiliency program to reduce heat-related health impacts and deaths by lowering temperatures in heat-vulnerable neighborhoods and strengthening social networks.[86] The City committed $82 million

[80] See: "Cool Neighborhoods NYC: A Comprehensive Approach to Keep Communities Safe in Extreme Heat," June 2017, available at: https://www1.nyc.gov/assets/orr/pdf/Cool_Neighborhoods_NYC_Report_FINAL.pdf
[81] Radtke, *supra* note 79.
[82] Jeff Coltin, "Bracing for Heat Waves and Hurricanes During a Pandemic," *City & State New York*, May 6, 2020 available at: https://www.cityandstateny.com/articles/policy/small-business/coronavirus-adjusts-plans-future-emergencies.html.
[83] New York City Panel on Climate Change" 2019 Report, Chapter 2: New Methods for Assessing Extreme Temperatures, Heavy Downpours, and Drought, section 2.3 'Extreme temperature and humidity,'", (March, 2019, available at: https://nyaspubs.onlinelibrary.wiley.com/doi/10.1111/nyas.14007#nyas14007-bib-0047.
[84] *Id.*
[85] *Id.*
[86] *See*, The Official Website of the City of New York, *Mayor Announces Program to Help Curb Effects of Extreme Summer Heat*, June 14, 2017, available at: https://www1.nyc.gov/office-of-the-mayor/news/411-17/mayor-program-help-curb-effects-extreme-summer-heat

to fund street tree plantings in the South Bronx, Northern Manhattan, and Central Brooklyn.[87] Additional trees would be planted in parks and the City intends to support forest restoration throughout the five boroughs.[88] Cool Neighborhoods NYC also expands on current heat reduction efforts, such as NYC CoolRoofs, provides climate risk training for home health aides, and assists qualified households in paying utility bills to operate air conditioners.[89]

Relocating Power Lines Underground

Power lines in the City are located both above and below ground, with the majority located underground. In the Bronx, 20% of power lines are above ground; in Brooklyn, 12% are above ground; in Manhattan, none are above ground; in Queens, 22% are above ground; and in Staten Island, 72% are above ground.[90] Overall, 86% of electric load and 82% of customers in New York City are served by underground distribution networks.[91]

Severe weather events with high winds such as Superstorm Sandy in 2012 and Tropical Storm Isaias in 2020 knocked down above ground power lines, resulting in numerous power outages.[92] Relocating such power lines to underground locations, where feasible, may mitigate power outages during future severe weather events. In 2013, pursuant to Local Law 13 of 2013 (Local Law 13),[93] the Mayor's Office of Long-Term Planning and Sustainability (OLTPS), together with Con Edison and the New York State Department of Public Service, conducted a

[87] *Id.*
[88] *Id.*
[89] *Id.*
[90] OLTPS, Utilization of Underground and Overhead Power Lines in the City of New York, December 2013, available at: http://www.nyc.gov/html/planyc2030/downloads/pdf/power_lines_study_2013.pdf.
[91] *Id.*
[92] *See* Briefing Paper and Committee Report for the Committees on Consumer Affairs and Business Licensing, Resiliency and Waterfronts, Parks and Recreation, and Environmental Protection; Oversight: Tree Removals and the Restoration of Power in the Aftermath of Tropical Storm Isaias, September 14, 2020, available at: https://legistar.council.nyc.gov/LegislationDetail.aspx?ID=4617667&GUID=532A706D-92BA-413F-981D-C3E1E0CB54EC&Options=Advanced&Search=.
[93] Int. 985-A–2012, available at: https://legistar.council.nyc.gov/LegislationDetail.aspx?ID=1265030&GUID=B7837994-DE7C-4ED4-9A69-6CCA4886509F&Options=ID|Text|&Search=985-a.

study of the feasibility of undergrounding power distribution lines in the City and examined whether specific areas would benefit from undergrounding these lines.[94] OLTPS found that moving electric service underground in every area with overhead distribution wires would be prohibitively expensive – to convert Con Edison's electric overhead lines to underground feeders in the City would cost approximately $18.5 billion.[95] The study also discussed the potential benefit of identifying specific geographic areas where Con Edison could underground power lines, as opposed to a system-side approach.[96]

As the study, conducted pursuant to Local Law 13, was almost seven years ago, and since neighborhoods with above ground power lines continue to experience downed lines and outages, Int. No. 2189, discussed below, would require an updated study.

Green Infrastructure

Green infrastructure,[97] which includes rain gardens, bioswales, green roofs, permeable pavement, urban tree canopies and green streets,[98] are techniques that help absorb and filter runoff, floodwaters and heavy precipitation. In 2010, the City released a Green Infrastructure Plan to improve water quality and manage stormwater runoff through a mixture of green and gray infrastructure[99] techniques. The Green Infrastructure Plan focused on five key components: (1) building cost-effective gray infrastructure; (2) optimizing the existing wastewater system; (3)

[94] OLTPS, Utilization of Underground and Overhead Power Lines in the City of New York, December 2013, available at: http://www.nyc.gov/html/planyc2030/downloads/pdf/power_lines_study_2013.pdf.
[95] *Id.*
[96] *Id.*
[97] Green infrastructure is defined as "the range of measures that use plant or soil systems, permeable pavement or other permeable surfaces or substrates, stormwater harvest and reuse, or landscaping to store, infiltrate, or evapotranspirate stormwater and reduce flows to sewer systems or to surface waters." Water Infrastructure Improvement Act, Publ. Law 115-436, 132 Stat. 5558 (Jan. 14, 2019), available at: https://www.congress.gov/115/plaws/publ436/PLAW-115publ436.pdf.
[98] U.S. Environmental Protection Agency, "*What is Green Infrastructure?*" (last visited Oct. 14, 2021), available at: https://www.epa.gov/green-infrastructure/what-green-infrastructure#bioswales.
[99] Gray infrastructure refers to traditional infrastructure like sewers, tunnels and wastewater that are used to store water pending its eventual treatment. Securing our Future Report, at 57 (March 2020), available at: http://council.nyc.gov/data/wp-content/uploads/sites/73/2020/03/Securing-our-Future_Report-2020.r4.pdf.

controlling runoff from 10% of impervious surfaces through green infrastructure; (4) institutionalizing adaptive management, model impacts, measure CSOs, and monitor water quality; and (5) engaging and enlisting stakeholders.[100] Since 2010, the New York City Department of Environmental Protection "has built more than 11,000 curbside rain gardens, infiltration basins, and implemented best practices in green infrastructure."[101]

In March 2021, the Council passed Int. No. 2092, which became Local Law 41 of 2021 (Local Law 41).[102] Local Law 41 requires OLTPS to develop climate resiliency design guidelines (CRDG), pursuant to a pilot program, for City capital projects. The CRDG will incorporate forward-looking climate change data in the design of City capital projects and will be used throughout the design process.[103] The CRDG will help ensure that resilient design becomes an integral component of the City's planning process, risk management, and financial planning of building and infrastructure. Additionally, the CRDG would incorporate both "soft" (i.e., green infrastructure) and "hard" resiliency strategies to account for and address multiple climate hazards.[104]

UPDATES TO THE NEW YORK CITY CONSTRUCTION CODES

In October of 2021, the Council passed Int. No. 2261, which became Local Law 126 of 2021 (Local Law 126). Local Law 126 updated the New York City Construction Codes. Local

[100] NYC DEP, NYC Green Infrastructure Plan (2010), available at: https://www1.nyc.gov/assets/dep/downloads/pdf/water/stormwater/green-infrastructure/nyc-green-infrastructure-plan-2010.pdf.
[101] Testimony of Jainey Bavishi, Director of Mayor's Office of Climate Resiliency, before NYC Council Committees on Resiliency and Waterfronts, Environmental Protection and Transportation, Sept. 14, 2021, available at: https://legistar.council.nyc.gov/LegislationDetail.aspx?ID=5125582&GUID=4C0F9495-7E85-42A4-94B6-1332268FDFE5&Options=&Search=.
[102] Local Law 48 of 2015. https://legistar.council.nyc.gov/LegislationDetail.aspx?ID=1688033&GUID=46C4E2FE-0532-4B83-8841-FBC4012A4433&Options=ID|Text|&Search=48
[103] NYC Mayor's Office of Climate Resiliency, Climate Resiliency Design Guidelines Version 4.0, September 2020, available at: https://www1.nyc.gov/assets/orr/pdf/NYC_Climate_Resiliency_Design_Guidelines_v4-0.pdf.
[104] *Id*.

Law 126 included several revisions that will help to improve the City's sustainability and resiliency efforts. These revisions include expanding the "applicability of flood zone requirements of the 100-year flood hazard area to all critical facilities (including fire, rescue, ambulance, police stations, and designated emergency shelters) located in the 500-year flood zone," mandating annual inspections, conducted visually, of "dry floodproofing systems and triennial full-scale deployment of dry floodproofing in the presence of a special inspection agency," supporting the "use of alternative energy production processes, including hydrogen fuel cells," and increasing the availability of sustainable building materials, such as "cross-laminated timber and structural composite lumber."[105]

Appendix G of the New York City Building Code governs Flood Proof Construction. Local Law 126 expands the circumstances in which pre-FIRM construction, i.e. construction completed, or under construction as of November 16, 1983, or completed after November 16, 1983 but not located in a special flood hazard area at the start of construction,[106] would be required to comply with Appendix G. Amendments to Appendix G further provide that floodway encroachments that increase the level of the base flood will be permitted so long as there is both an application for a conditional FIRM revision and approval from FEMA.[107] In addition, under Appendix G, new buildings built in coastal high-hazard areas and coastal A-Zones are only authorized to be built inland of the reach of mean high tide.[108]

Appendix G further prohibits the placement of both new and replacement manufactured homes in coastal high-hazard areas.[109] In A-Zones, new, replaced, and substantially improved

[105] New York City Department Of Buildings Testimony Before The New York City Council Committee On Housing and Buildings June 14, 2021, available at https://legistar.council.nyc.gov/View.ashx?M=F&ID=9506217&GUID=BA8A4AC2-D465-401D-A846-84C079BAF564
[106] *See* BC G101.
[107] BC G103.5.1.
[108] BC G303.
[109] BC G305.

manufactured homes, including mechanical equipment and outside appliances, must be elevated and placed on a permanent and reinforced foundation.[110]

In April of 2021, the Council also passed Int. No. 2198, which became Local Law 43 of 2021 (Local Law 43). Local Law 43 requires that most newly constructed or substantially improved buildings located in the floodplain be elevated an additional one-to-two feet, or by the 500-year flood elevation, depending on the type of structure, to provide additional floodproofing of those structures. Local Law 43 was incorporated into Local Law 126.

ADDITIONAL ISSUES

On June 24, 2021, a twelve-story beachfront condominium in Miami, Florida partially collapsed, killing 98 people.[111] The Champlain Towers South, located a block away from North Beach Oceanside Park,[112] collapsed as a result of water penetration and corrosion of the reinforcing steel, which caused the long-term degradation of the reinforced concrete structural supports in the ground-level parking garage under the housing units.[113] The building endured coastal Florida's hurricanes, storm surges, and salty air that can penetrate concrete and rust the rebar and steel columns inside.[114] Buildings in Miami-Dade County are required to undergo an inspection 40 years after they were built. According to media reports, the Champlain Towers South had undergone such an inspection in 2018 during which the inspector noted that the building had suffered

[110] *Id.*
[111] Anjali Singhvi et al., The Surfside Condo was Flawed and Failing. Here's a Look Inside, The NY Times, September 1, 2021, available at: https://www.nytimes.com/interactive/2021/09/01/us/miami-building-collapse.html.
[112] Bob D' Angelo, *Surfside Condo Collapse: 5 Things to Know About Champlain Towers South*, Cox Media Group National Content Desk, June 24, 2021, available at: https://www.kiro7.com/news/trending/surfside-condo-collapse-5-things-know-about-champlain-towers-south/Z3AVM32AO5GM7ATSG2VFFXFBRM/
[113] Three years before the collapse, major structural damage, including cracked columns, beams and walls in the parking garage, were recorded by an engineer inspecting the building. Additionally, residents complained about water coming in through their windows and balconies as well as the concrete on many balconies deteriorating. Mike Baker, Anjali Singhvi and Patricia Mazzei, *Engineer Warned of Major Structural Damage at Florida Condo Complex*, The New York Times, June 26, 2021, available at: https://www.nytimes.com/2021/06/26/us/miami-building-collapse-investigation.html.
[114] *Id*.

"concrete structural damage to concrete structural slabs on the pool deck due to failed waterproofing."[115] The building's management association had planned to repair the damages, however there were delays due to COVID and debates between board members as to which repairs should be prioritized.[116] Repairs were estimated at $15 million.[117] The tragedy ignited safety concerns from elected officials, as well as residents living in high-rise buildings throughout the country.

Buildings located along the City's waterfront are also susceptible to such issues because of their proximity to salt water. Exposure to flooding from seawater can corrode building infrastructure over time.[118] In addition, sea levels are rising more rapidly in the Northeast than in other places, such as Florida, causing the New York and New Jersey coastlines to sink at a rate of approximately one millimeter per year.[119] However, most of Manhattan is comprised of hard bedrock, and is better able to support larger buildings than the sandy soil typically found near the City's coastline.

Several recent mixed-use waterfront development projects plan to incorporate resiliency measures and affordable housing, including the River Ring in Williamsburg,[120] Brooklyn, the Fordham Landing project in University Heights, the Bronx, and the Bronx Point project in Mott

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[115] Jade Lawson, *What we know about the Surfside condo collapse*, ABC News, September 19, 2021, available at: https://abcnews.go.com/US/surfside-condo-collapse/story?id=80068218

[116] Mike Baker, Anjali Singhvi and Patricia Mazzei, *Engineer Warned of Major Structural Damage at Florida Condo Complex*, The New York Times, June 26, 2021, available at: https://www.nytimes.com/2021/06/26/us/miami-building-collapse-investigation.html.

[117] Lawson, *supra* note 115.

[118] Lydia McMullen-Laird, *Could A Surfside Building Disaster Happen On the NY or NJ Coast?*, Gothamist, July 26, 2021, available at: https://gothamist.com/news/could-surfside-building-disaster-happen-ny-or-nj-coast?sfmc_id=2841485&utm_campaign=Gothamist%20Daily%20Newsletter&utm_content=2021726&utm_id=17292&utm_medium=nypr-email&utm_source=sfmc&utm_term=https%3A%2F%2Fgothamist.com%2Fnews%2Fcould-surfside-building-disaster-happen-ny-or-nj-coast.

[119] *Id*.

[120] *Id*.

Haven, the Bronx.[121] The River Ring would include two towers (710 feet and 560 feet) with 1,700 rental units, of which 263 would be "deeply affordable."[122] River Ring, which would be located in both the 100-year and 500-year floodplains, would also include a shoreline park, a walkway, and constructed wetlands.[123] The developer of River Ring, Two Trees Management, has stated that it will be "a new model for urban waterfront resiliency."[124] Fordham Landing, located between the Harlem River and the Major Deegan Expressway, and in the floodplain, would include approximately 2,400 units, of which 602 would be affordable.[125] The project would also add wetlands, tidal gardens, an urban beach, a boathouse, and playing fields.[126] Bronx Point, located in, and adjacent to, the floodplain, would include 1,000 units of housing, 542 of which would be permanently affordable,[127] a waterfront esplanade, 2.8 acres of public open space, and be home to the Universal Hip Hop Museum, which broke ground in May 2021.[128]

LEGISLATION

Below is a brief summary of the legislation being considered today by this Committee. This summary is intended for informational purposes only and does not substitute for legal counsel. For more detailed information, you should review the full text of the bill, which is attached below.

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[121] Lois Weiss, *NYC's Waterfront is About to Get a Multi-billion Dollar Facelift*, The New York Post, June 10, 2021, available at: https://nypost.com/2021/06/10/nycs-waterfront-is-about-to-get-a-multi-billion-dollar-facelift/.
[122] Kim Velsey, *River Ring, Two Trees'* Other *Eye-Catching Project on the Williamsburg Waterfront*, Curbed, September 1, 2021, available at: https://www.curbed.com/2021/09/everything-we-know-about-two-trees-river-ring.html.
[123] Willey Blackmore, *Towers in a Flood Zone? Two Trees Just Wants You to Look At the Wetland Up Front*, Curbed, April 28, 2001, available at: https://www.curbed.com/2021/04/river-ring-two-trees-williamsburg-waterfront.html.
[124] Velsey, *supra* note 122.
[125] *Plans filed for mega $2 Billion development in The Bronx*, Welcine2TheBronx, November 12, 2022 available at: https://welcome2thebronx.com/2021/11/12/plans-filed-for-mega-2-billion-development-in-the-bronx/
[126] Louis Weiss, *$3.5B Fordham Landing project going up near Harlem River*, The New York Post, May 21, 2019, available at: https://nypost.com/2019/05/21/3-5b-fordham-landing-project-going-up-near-harlem-river/.
[127] Devin Gannon, *Construction set to begin at huge South Bronx complex with Universal Hip Hop Museum*, 6sqft, January 6, 2021, available at: https://www.6sqft.com/construction-of-mixed-use-complex-with-universal-hip-hop-museum-set-to-begin-in-the-south-bronx/.
[128] Clodagh McGowan, *Groundbreaking held for Universal Hip Hop Museum in the Bronx*¸NY1, May 20, 2021, available at: https://www.ny1.com/nyc/all-boroughs/arts/2021/05/20/groundbreaking-held-for-universal-hip-hop-museum-in-the-bronx.

Int. No. 2189, A Local Law in relation to requiring the office of long-term planning and sustainability to study underground power lines

Int. No. 2189 would require the Office of Long-Term Planning and Sustainability to conduct a study on the feasibility of relocating above ground power lines underground. Trees that topple during storms can cause long-lasting power outages in areas with above-ground power lines. Meanwhile, areas with underground power lines are less likely to suffer power outages resulting from storms.[129] As climate change will continue to bring intense storms and rainfall to New York, underground power lines can ensure that New Yorkers in these hard-hit areas continue to have power.[130]

This local law would take effect immediately.

[129] AM New York Editorial Board, *It's time to bury the power lines all across New York City* AMNY, August 6, 2020, available at: https://www.amny.com/opinion/editorial-its-time-for-bury-the-power-lines-all-across-new-york-city/

[130] Kathryn Prociv and Denise Chow, *Wetter and warmer: How climate change is fueling hard-to-predict storms*, NBC News, https://www.nbcnews.com/science/science-news/climate-change-fuels-hard-predict-storms-hit-new-york-city-area-rcna1878

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Int. No. 2189

By Council Members Gjonaj, Yeger, Brannan, Rose, Ampry-Samuel, Vallone, Cornegy, Moya, Koo, Reynoso, Holden, Adams, Koslowitz and Ulrich

A Local Law in relation to requiring the office of long-term planning and sustainability to study underground power lines

Be it enacted by the Council as follows:

Section 1. a. Definitions. As used in this section the term "office" means the office of long-term planning and sustainability.

b. Within six months of the effective date of this local law, the office shall conduct a study and submit a report to the mayor and the speaker of the council on the utilization of underground power lines in the city. To the extent that the data required by this subdivision has been made available by electric corporations that provide electric service in the city, such study shall include, but need not be limited to, the following information for the most recent calendar year that such data is available, disaggregated by borough and community district, and any other areas as defined by the office:

1. The names of electric corporations that provide electric service in the city, including the number of residential customers and commercial customers serviced by underground power lines and above ground power lines by each such electric corporation, and the average cost per mile for maintenance and repair of underground power lines and above ground power lines for each such electric corporation;

2. The total number of power outages resulting from a failure of all electric utility infrastructure servicing a customer that were directly caused by damage resulting from weather events for the past ten years, including but not limited to damage resulting from: heat; cold; rain;

flooding; trees; and wires downed by wind, snow or ice. The report shall provide a summary and statistical analysis of the data collected for each outage, including:

(a) The number of customers affected;

(b) The estimated number of persons affected;

(c) Critical electric utility infrastructure affected;

(d) Whether the power lines were located underground or above ground;

(e) The cause and length of time of each such outage; and

(f) The cost of restoring service;

3. The total number of power outages resulting from a failure of all electric utility infrastructure servicing a customer other than those directly caused by damage resulting from weather events, disaggregated by the cause of such outages. The report shall provide a summary and statistical analysis of the data collected for each outage, including:

(a) The number of customers affected;

(b) The estimated number of persons affected;

(c) Critical electric utility infrastructure affected;

(d) Whether the power lines were located underground or above ground;

(e) The cause and length of time of each such outage; and

(f) The cost of restoring service;

4. The estimated per mile cost of undergrounding power lines within the city, including a breakdown of the costs for labor and materials, and the variables, including population density, that would affect the final cost of undergrounding; and

5. A list of neighborhoods or service areas where relocating above ground power lines to underground locations would not be practical or would result in more severe power outages and

the considerations that went into such determinations, and a list of neighborhoods or service areas where relocating above ground power lines to underground locations would be most advantageous and the considerations that went into such determinations.

§ 2. This local law takes effect immediately.

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11/25/2020