Regional Plan Association

MAKE THE ROAD NEW YORK

Equitable Adaptation

Building climate change adaptation capacity for Make the Road NY and Central Queens

May 2019

Acknowledgments

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Make the Road NY

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Cover Image
A pedestrian plaza in Corona Queens by New York City Department of Transportation

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Introduction

Make the Road New York (MRNY) serves immigrants and community members throughout the five boroughs of New York at their three centers in Brooklyn, Queens, and Staten Island. They provide services and guidance to new and resident immigrants in the form of legal services, education, community organizing, and enacting policy change.

At the start of the Fourth Plan planning process, RPA kicked off a comprehensive community engagement process which enabled community organizations like the Housing and Community Development Network of New Jersey, New York Communities for Change, Community Voices Heard, Right to the City, Partnership for Strong Communities, and Make the Road New York and Connecticut to provide feedback and criticisms to our recommendations. We recognized through conversations with staff and organizers that low-income households and communities of color will be most affected by the outcomes of our recommendations regarding governance, transportation, the environment, economic development, and housing.

Our partnership with MRNY continues through the Equitable Adaptation project. We recognized that communities of East Elmhurst and Corona as well as other low-income communities of color experience climate change differently than other communities like the coastal towns of Mastic Beach on Long Island or Sea Bright, NJ. Rising sea levels affect residents of coastal towns in that their home experience storm-related flooding. For communities that are more inland, the same weather occurrence can create a domino effect that affects a resident's ability to get to their job or school, their physical and mental health, and their safety. This project aims to increase the capacity of members and organizers to fight the variety of causes and the detrimental effects of climate change.

Process

RPA and MRNY staff met for preliminary discussions on which climate change issues might resonate most with MRNY BASTA! members and the community. These discussions helped illuminate an approach to communicating the effects of climate change with the workshop participants—namely, that many environmental problems the community is already experiencing will get worse with climate change. The project consisted of four workshops with MRNY's core team of community activists, known as BASTA!, and the development and dissemination of a climate resilience survey to nearly 400 community members.

Based on these initial conversations, RPA designed three workshops to help identify key focus areas and priority issues. The first workshop's goal was to help participants recognize the connections between climate change and the everyday issue that residents face. Using colorful schematic diagrams of bodies, apartments, and the neighborhood, facilitators asked participants to share the kinds of problems they face during different types of extreme weather events. For example, when prompted about heavy rains, participants discussed flooded basement apartments, leaks and molding, and foul smells in parts of the neighborhood. Participants wrote their answers on post-it notes and placed them in the appropriate place on the diagrams. Workshops 2 and 3 explored the main problem issues that were discussed in the first workshop. RPA proposed solutions that address those problems. The discussions from workshops 2 and 3 helped identify which solutions to prioritize and include in the Adaptation Action plan.

Working together the two organizations successfully educated and influenced each other, deepening the skill and knowledge of each organization, as they worked closely with community members and BASTA!. Over the course of the four workshops, RPA and BASTA! explored the direct and indirect impacts of climate change on the neighborhoods of Central Queens. Through workshop outcomes, along with the community-wide survey, the project team discovered the intersecting impacts of climate change across environmental, social and health-related issues. Based on this knowledge, the team has developed a set of 13 actionable strategies that can be implemented at the individual, community and policy levels. The recommendations may be broadly applicable to communities facing similar climate and equity challenges, but are largely contingent on the institutional and organizing work of MRNY. However, the collaborative planning process undertaken by the project team is certainly replicable, and can be read about in our **accompanying community process white paper**.

Climate Change in Central Queens

The most visible symbol of New York City's climate change impacts is the damage wrought by Hurricane Sandy in 2012. The billions of dollars in damage, destroyed homes, and lost lives are a powerful sign of what can happen if communities are not prepared for the effects of climate change. But an increased chance of devastating hurricanes is only one effect, and not even the deadliest.

Extreme heat is expected to take the lives of many more people in the coming century than storms and flooding. Sea level rise flooding occurs gradually over decades, but will permanently inundate communities and critical infrastructure.

The effects of climate change will be felt by everyone, but some communities will face greater challenges than others, due to extreme impacts, or a lack of resources to address the challenges, or both. The type and severity of the impacts can depend on a number of factors, including geographic location, income level, race or ethnicity, migration status, disability, and economic activity. The geographic location of the community could mean it lies in a flood zone, or in a particular climatic zone, for example, or in an area dependent on unreliable public transportation. In other cases, a lack of economic, political, or social resources makes dealing with climate change impacts more difficult. Most of the time, it is a combination of the two.

Coping with the impacts of climate change is called "adaptation" and includes reducing the harm caused by heat waves and flooding. Preventing the causes of climate change is called "mitigation" and includes reducing greenhouse gas emissions by transitioning to renewable energy and increasing energy efficiency. The ability for a community to address the impacts of climate change is called "adaptation capacity."

Adaptation capacity depends on many factors, from physical infrastructure to social ties to equipping residents with the right knowledge. Understanding the social, economic, and political dimensions of a community, as well as geographic and physical factors, are critical to understanding how to build climate change adaptation capacity. This section attempts to combine these factors, utilizing demographic data, existing research, workshops and conversations with MRNY members and staff, and a climate resilience survey with nearly 350 responses (see Appendix A).

Community Profile

The MRNY center in Jackson Heights serves members primarily from the Jackson Heights, Elmhurst, and Corona neighborhoods of Queens, but also a significant amount from other parts of Queens. Nearly two-thirds of respondents to the climate resilience survey lived in these three neighborhoods, which is hereafter referred to as Central Queens. For demographic analysis, we used census tracts that most closely aligned with community districts 403 and 404 that make up Central Queens. (See Appendix B) This area is 58 percent Latino, higher than the 29 percent of the population citywide.

The eastern half of Queens is one of the most ethnically diverse parts of the entire country. While this diversity is a huge contributor to the communities' vibrant and rich cultural life, it also points to some special considerations that must be kept in mind when addressing climate change. Thirty-three percent of households in central Queens only speak limited English, with two thirds of them (21 percent of total households) native Spanish speakers. Linguistic isolation, or not being fluent in the dominant language of an area, can make it harder for authorities and residents to communicate with each other.

More than a third (35 percent) of residents of Central Queens are non-U.S. citizens, compared with 17 percent for New York City, which can complicate or prevent some residents from accessing resources available to US citizens. Further complicating matters, in September 2018, the US Justice Department announced changes to their immigration policy, that would consider whether green card applicants receive public benefits in renewing their status. Applicants who receive too many benefits (the amount is unclear) would be designated a "public charge" and are more likely to be denied permanent resident status. This change has long-lasting implications, as it may erode trust in gov-

Manhattan Blackout, Hurricane Sandy
Reeve Jolliffe

ernment programs even if the rule is eventually rescinded, as the possibility for reinstating the rule will likely deter immigrants from enrolling in critical public services.

Queens Community Districts 3 and 4 have a lower poverty rate than New York City as a whole, but greater than the rest of Queens. Sixteen percent of families in Central Queens make below the poverty level, with an additional 32 percent below 200% of poverty level.

Nearly 70 percent of households in Central Queens rent their homes, similar to the percentage of New Yorkers overall. However, the rent burden in Central Queens is even higher than the rest of New York City and Queens, with 60 percent of households spending more than 30 percent of their income on rent, and 35 percent spending more than 50 percent. When rent burden is so high, the potential for policies and projects to result in rent increases must be understood and mitigated. Many popular solutions and strategies for long-term climate adaptation benefit property owners directly through incentives or tax breaks, and others add value to the community by making it safer or more aesthetically pleasing, which can translate to increased rent. Adaptation strategies that benefit renters directly have rarely been discussed.

Building age and condition is also an important metric for understanding how climate change will affect the community, along with how it should be addressed. More than 80 percent of buildings in the study area were built before 1970, and 30 percent were built before 1940.

Local Effects of Climate Change

Heat

Over the next few decades, New York City is expected to experience more frequent and longer heat waves. As soon as the 2020s, the city is likely to experience 26-31 days over 90 degrees on average, about 50 percent more than the 18-day average between 1970-2000. By the 2080s, that is likely to be more than 60 days over 90 degrees. Compounding higher temperatures, dense urban areas tend to experience even higher temperatures than surrounding areas due to the urban heat island (UHI) effect. Impervious surfaces (e.g. paved areas and buildings) absorb heat and slowly radiate it, causing local temperatures to rise. This becomes especially problematic at night, when impervious surfaces are still retaining much of the daytime heat, meaning that nighttime brings little relief from high temperatures. Extreme heat can raise stress levels, worsen air pollution, and cause illnesses that require hospitalization, and even death. Extreme heat can cause a range of health issues, including heat stroke, heat exhaustion, dehydration, kidney disease. Heat-related stress can also exacerbate cardiovascular and respiratory diseases and effect cognitive ability.

Heat can also trigger asthma due to higher levels of pollution or even the hot air itself.

Bus Post-Blizzard
MTA

Trees, plants, and green spaces help cool their immediate areas, counteracting UHI. The larger the greenspace, the greater the cooling effect. Trees and green spaces also help remove the pollutants that are exacerbated during extreme heat impervious surfaces can also be treated to reduce the amount of heat they absorb, such as by painting them white.

It is the biggest climate change-related threat facing New York City in terms of mortality. While the central Queens communities are not among the absolute highest risk (which includes the South Bronx, Harlem, and Central Brooklyn), the area is in the next most severe tier. The New York City Department of Health and Mental Hygiene (DOHMH) Heat Vulnerability Index classifies parts of Elmhurst and Corona as moderate-high vulnerability to heat, with Jackson Heights and East Elmhurst classified as moderate vulnerability. The risks of heat are not just a matter of location, but of individual and social factors as well. The elderly and people with disabilities are most vulnerable to heat-related illness, particularly those who are low-income. People who live in temperate climates like New York are also more susceptible to extreme heat than those who reside in hot or tropical climates, and buildings are less likely to be designed to mitigate high temperatures.

Air conditioning is often essential for keeping cool, but it also has several downsides. It uses a great deal of energy, which is both expensive and generates more greenhouse gas. For many families, air conditioners can make electricity bills prohibitively expensive, and cumulatively, a city full of running air conditioners can force ConEdison to power up so-called "peaker" plants—back-up power plants that tend to be more polluting—in order to meet demand. The amount of electricity needed by air conditioners puts the electrical grid at risk of so-called "brownouts," where parts of the electrical grid is overloaded and shuts down.

Nearly two-thirds of survey respondents were worried about staying cool during a heat wave, and nearly half were concerned about illnesses like heat stroke and asthma and about increased pollution, and over 40 percent were concerned about power outages. Twenty percent of respondents did not have an air conditioner in their homes. The majority (64 percent) of respondents stay home to keep cool during a heat wave, though nearly 40 percent visit parks, 25 percent escape the heat at school or work, and only 20 percent visit city cooling centers.

Although rising warm temperatures are almost certain, scientists are less clear on whether winter temperatures will also become warmer. Evidence is emerging that points to a much more varied and extreme winter weather.[1]

Storms

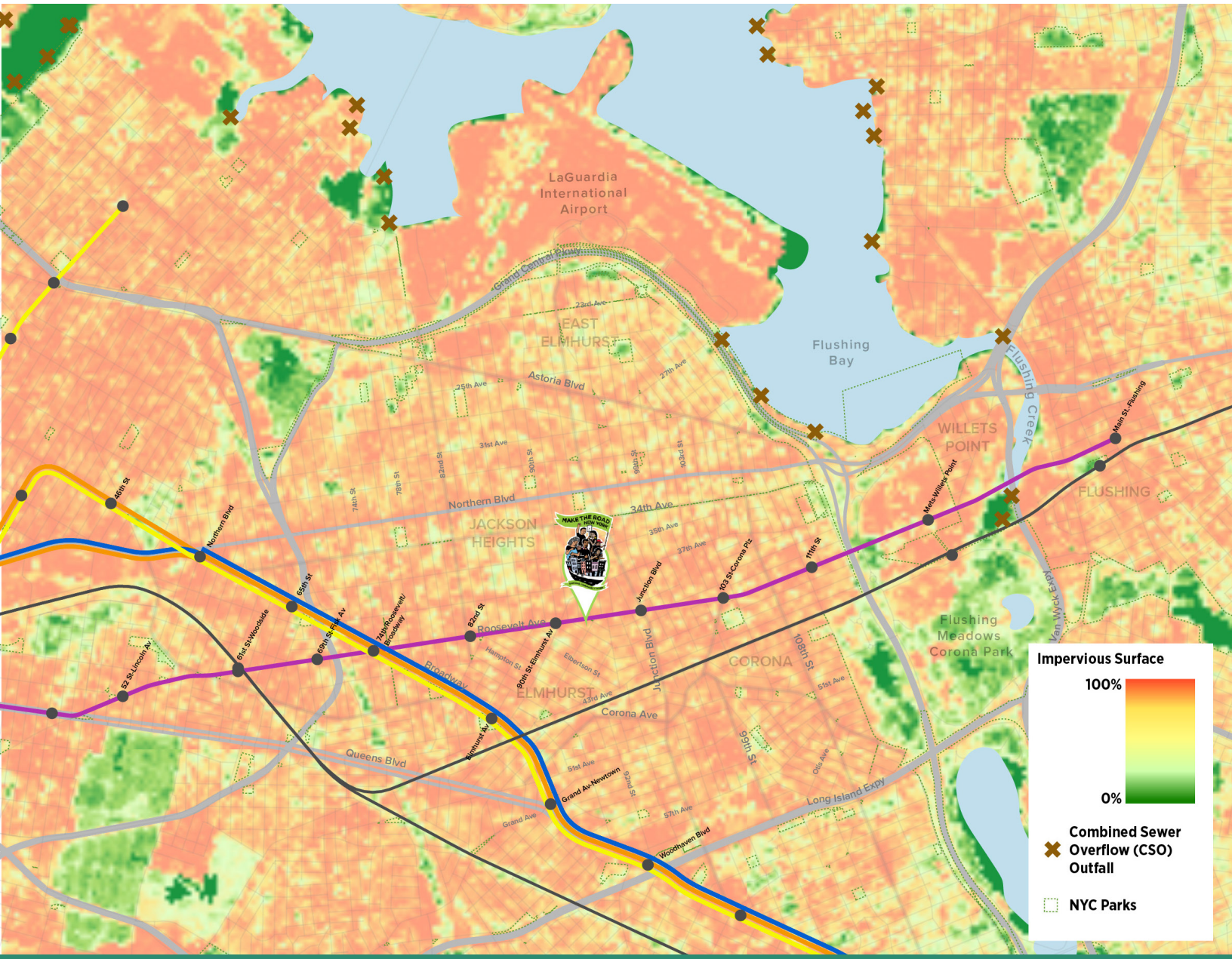
The neighborhoods within the study area are on relatively elevated ground, and face little direct threat from storm surge or sea level rise in the coming decades. However, storm-related flooding will still affect the communities in a number of ways. Stormwater runoff easily overloads New York's antiquated sewage system, causing untreated sewage to spill into local waterways. Rain and storms can cause leaking in roofs and basements in inadequately maintained buildings, leading to water damage and mold.

The three important areas peripheral to the study area that are considerably vulnerable to storm surge and sea level rise are LaGuardia Airport, and Willets Point, an area where a large new development is being proposed, and Flushing Meadows Corona Park, a critical recreational and environmental asset for the community. 41 percent of survey respondents reported encountering flooding in Flushing Meadows Corona Park. As sea level rises over the coming decades, the low-lying park will become more susceptible to flooding, with areas currently used for soccer, picnicking, and other recreational activities becoming increasingly unusable. With a lack of alternative green spaces within the surrounding neighborhoods, this could become a significant quality of life issue.

1 NPCC p 27 https://nyaspubs.onlinelibrary.wiley.com/doi/epdf/10.1111/nyas.12586

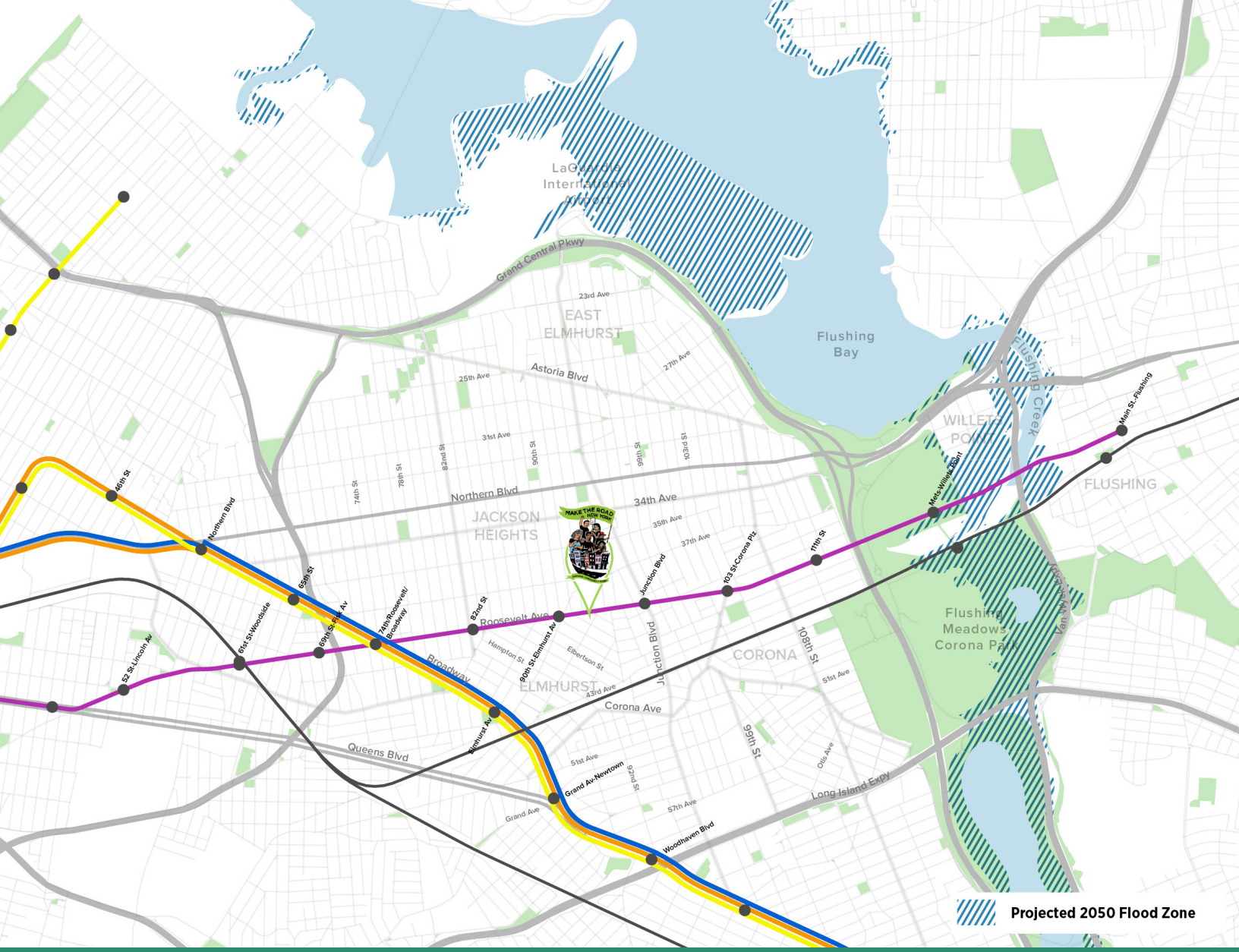
Even outside the flood zone, poorly maintained buildings are susceptible to damage, leaks, and basement flooding during storms and heavy rains. In the survey, more than half of respondents feared for their personal or family safety during storms and heavy rains, and 37 percent worried about damage to their home or its contents. Water damage can cause mold that can exacerbate respiratory ailments like asthma.

Nearly half of survey respondents worried about pollution, including foul odors, during storms and heavy rains. These bad smells are often caused by the discharge of raw sewage into local waterways during storms. New York City has a combined sewer system, meaning that household sewage and stormwater flow into the same system. Under normal circumstances, both flow to the local wastewater treatment plant. When rainfall is heavy, however, the treatment plant reaches capacity and the combined, untreated stormwater and sewage is discharged to avoid backing up the system. This is called Combined Sewer Overflow (CSO). There are 12 CSO outflow locations along Flushing Bay and Flushing Creek, which dumped a combined 2 billion gallons of untreated sewage in 2015. These CSO events do not only cause unpleasant odors, but contribute greatly to New York City's water pollution and making the city's waterways unsuitable for swimming and fishing.



Impervious surface and Combined Sewer Overflow (CSO)Outfalls

Hard surfaces like roads and buildings absorb heat, raising the temperature higher than surrounding areas. They also divert stormwater into the antiquated New York City sewer system, which contributes to the pollution of local waterways like Flushing Creek and Flushing Bay.



Projected areas at risk from coastal flooding by 2050

Most of the central Queens community is not at high risk from coastal flooding in the next few decades, though three key sites are at risk: Flushing Meadows Corona Park, LaGuardia International Airport, and Willets Point.

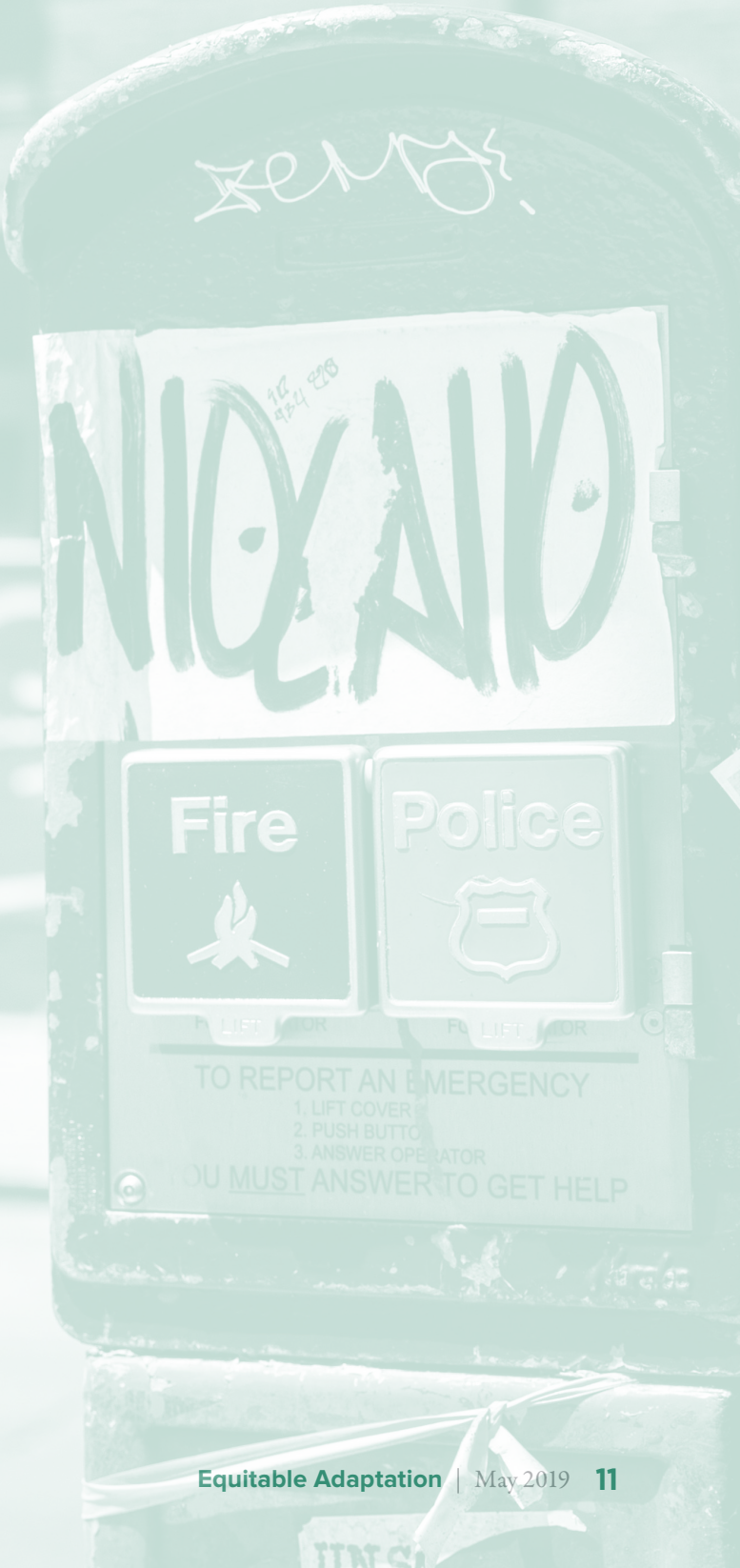
Disruption

Storms and extreme weather can have a serious and disruptive effect on household finances when people are unable to get to work, open their businesses, or have to stay home to look after children when schools are closed. For low-income residents who work for hourly wages, missing work due to climate-related disasters means losing money they count on to meet expenses. In the long term, climate change will cause widespread damage to industries from agriculture to tourism, which will have far-reaching effects on all parts of the economy, hurting workers in all sectors.

Climate change will cause big shifts in the economy, driven by both the changing environment and the policies adopted in response to it. If it goes unaddressed, climate change has the potential to hurt workers in every sector of the economy. Transitioning to a low-carbon economy has the potential to create jobs, but only if policy is designed properly. Polluting and greenhouse gas-emitting industries will have to adapt or be phased out, which may put many jobs at risk. At the same time, opportunities for new kinds of jobs—so-called "green jobs"—are emerging, and it is critical that workers in at-risk industries are given the resources to make the transition to the new low-carbon economy, including not only job training, but unemployment benefits and relocation funds, to bridge the gap. Legislation like that proposed by the NY Renews coalition calls this "Just Transition".

Personal Adaptation

Climate change adaptation, like climate change mitigation, generally requires collective action. However, there are small actions that individuals and families can take to cope with the stressors of climate change. It is important that the burden not be placed on individuals, particularly those who are already bearing a higher burden of environmental costs due to their income, race or ethnicity, age, or migration status. MRNY can help its members through developing and disseminating pedagogical tools and information—either internally or in partnership with other organizations.



Franck Michel

Healthy Homes Action Guide

During extreme weather, homes can become dangerous for their inhabitants. Nearly two-thirds of those who were surveyed have difficulty staying cool during heat waves, and half are worried about heat-exacerbated illnesses,. During storms, 50 percent are worried about personal safety and 36 percent are worried about damage to their homes. While most ways to address these concerns require collective or government action, there are numerous small, no-cost actions that individuals can take to make their home safer and more comfortable. These strategies can be collected and designed into a user-friendly, easy-to-read and well-illustrated booklet or pamphlet. This can serve to effectively communicate and teach simple, economical and short-term strategies or actions that members of the community can themselves put in practice in their homes to enhance resilience and adaptation to climate change. The guide would include step-by-step instructions for strategies including:

- **Keep your home cool in summer**
  When your home is cooler than outside, close windows and curtains to keep it cool. When it is warmer inside than outside, open windows and shutters - you can also aim a fan outside.
- **Keep your home warm in winter**
  Keep windows that get direct sun unshaded during the day and cover all windows and blinds at night to keep the heat in.
- **Prevent mold at home**
  You can prevent mold by drying up wet areas quickly and keeping humid areas well-aired, such as bathrooms, laundry room and kitchen. You can clean up small mold patches yourself with detergent - just be sure to protect your hands and eyes, and wear an N-95 respirator. For large mold areas, you need to request professional help.
- **Minimize exposure to lead**
  Minimize exposure to lead by cleaning up dust, especially on the floor, near windows and entrance, and wash children's toys frequently.

To make it accessible to a broad audience, health, regulatory and scientific information can be illustrated. The Center for Urban Pedagogy in NYC has made numerous brochures through their "Making Policy Public" program, to educate a wide audience, including non-English speakers, about topics regarding new

Jason Leung

environmental laws, public space usage, and migrants' rights.[2] These brochures seek to reduce knowledge gaps that are the result of inaccessible policy and technology language. New York City has also developed a series of brochures to communicate useful information to different communities, such as an emergency preparedness comic in partnership with Marvel, and a brochure on stormwater and flooding.[3]

This catalogue needs various resources that could make it costly. It involves a researcher, who would complete the content, a graphic designer, to make the document, and the printing costs.

While there are some examples of guides with similar information, this catalogue could be tailored to the specific needs of the MRNY Queens community. Printed copies could be distributed to organizers, who could provide the pamphlets to others in the community. It could also be distributed through different communication means, including digital media, social networks, or posters at the MRNY office. The guide could also be produced in partnership with other organizations or institutions that might be interested in communicating this information. While the guide would require resources in the form of research, graphic design, and printing costs, the overall costs would be relatively low.

2 http://welcometocup.org/Store?product_id=17 and http://welcometocup.org/file_columns/0000/1350/weact_medium_.pdf

3 Ready Girl comic book. http://read.marvel.com/#/labelbook/42172, http://www.nyc.gov/html/dep/pdf/brochures/flood-preparedness-flyer.pd

Family Emergency Plan

With an increase in extreme weather events expected in the coming decades, it is crucial that households be prepared in the event of a breakdown in communications or transportation. A family emergency plan consists of critical information that families, friends or households will need in case of emergency. A plan should account for the different types of emergencies, as well as identify specific responsibilities for each member of the group in the event of an emergency. Family emergency plans are not only for weather and climate-related emergencies but can include man-made disasters and hostile activities by agencies like ICE.

A typical plan would include each family member's contact information, agreed meeting places, escape routes, a contact for someone outside the neighborhood, children evacuation sites, specific plans for households with disabilities and any pet, shelter place inside home, among other information that becomes crucial in natural or man-made disaster events.[4]

In addition to creating a plan, families should prepare an emergency kit with essential supplies to survive an emergency, such as a flashlight, bottled water, nonperishable food, battery-operated radio, first aid kit, and copies of important documents.[5] The American Red Cross makes available a family emergency plan template, in English and Spanish, which can serve as a guideline to help families complete the necessary information.

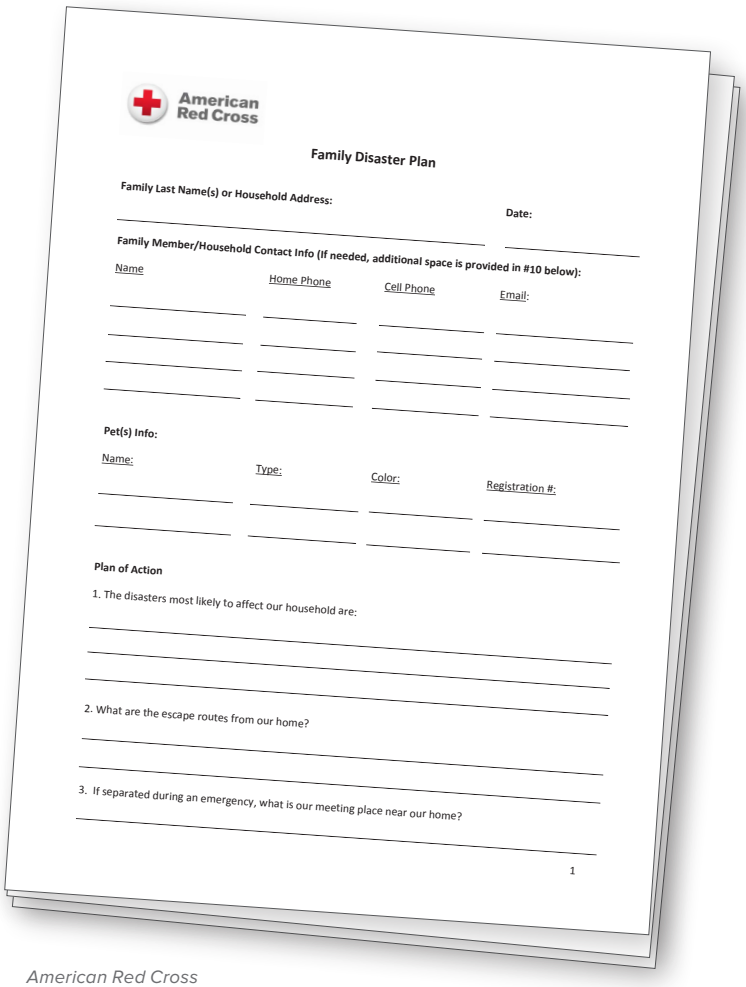
Despite its simplicity and longtime advocacy by emergency preparedness professionals, motivation remains a barrier for creating family emergency plans. In some cases, even people who think about climate disasters and emergency preparedness for a living often have not created their own family emergency plan. However, templates make the development of emergency plans simple and fast.

MRNY can help promote the creation of family emergency plans through the dissemination of information, posters, or by incorporating the activity into workshops. MRNY can make a Family Emergency Plan template available in its offices and assist its members in completing it. Finally, MRNY can hand out maps as well as display them in their headquarters to share the locations of emergency shelters and meeting places within the neighborhood and Hurricane Evacuation zone. MRNY can also implement a community preparedness plan based on the NYC Emergency Management department's Community Preparedness toolkit.[6] The toolkit aims to make communities more resilient and make a wider impact by distributing responsibilities among community members.

4 American Red Cross. http/www.cigna.com

5 https://www1.nyc.gov/site/em/ready/get-prepared.page

6 Hurricane evacuation finder: http://maps.nyc.gov/hurricane/


American Red Cross

Family Disaster Plan

Family Last Name(s) or Household Address:

Date:

Family Member/Household Contact Info (If needed, additional space is provided in #10 below):

Name | Home Phone | Cell Phone | Email:

Pet(s) Info:

Name: | Type: | Color: | Registration #:

Plan of Action

1. The disasters most likely to affect our household are:

2. What are the escape routes from our home?

3. If separated during an emergency, what is our meeting place near our home?

1

Workshops for Managing Stress

The effects of climate change will have an effect on nearly all aspects of daily life. The disruptions, health issues, and discomfort caused or exacerbated by climate change threaten to increase chronic stress. MRNY members already deal with stressful circumstances in their fight to secure fair pay, end harassment by landlords, and resist the unjust deportation and child separation policies of the federal government. While ultimately these core issues need to be resolved, stress reduction tools can help members cope on a day-to-day basis.

MRNY members expressed particular interest in meditation and breathing techniques for stress management. There are various approaches to reduce stress via meditation and breathing. Perhaps the most studied stress reduction method is Mindfulness-Based Stress Reduction, a method mind-body medicine intervention that uses tools such as breathing and body awareness to help people cope more effectively with issues such as chronic pain, stress, and illness.[7] However, it requires a significant time commitment - 26 hours of study - which makes it both expensive to implement and hard for residents to participate in. Other forms of teaching breathing techniques and meditation approaches such as mindfulness also exist and show some promise although results may vary.[8] Actual availability of such tools varies. Calls to health centers and a review of internet advertising reveals that while there are many class offerings in Queens, they are not free and rarely culturally or linguistically appropriate.

MRNY can take a multi-pronged approach to offering such services. Firstly, NYC Well's website provides multilingual tips for managing stress, which MRNY can turn into flyers and other materials for members.

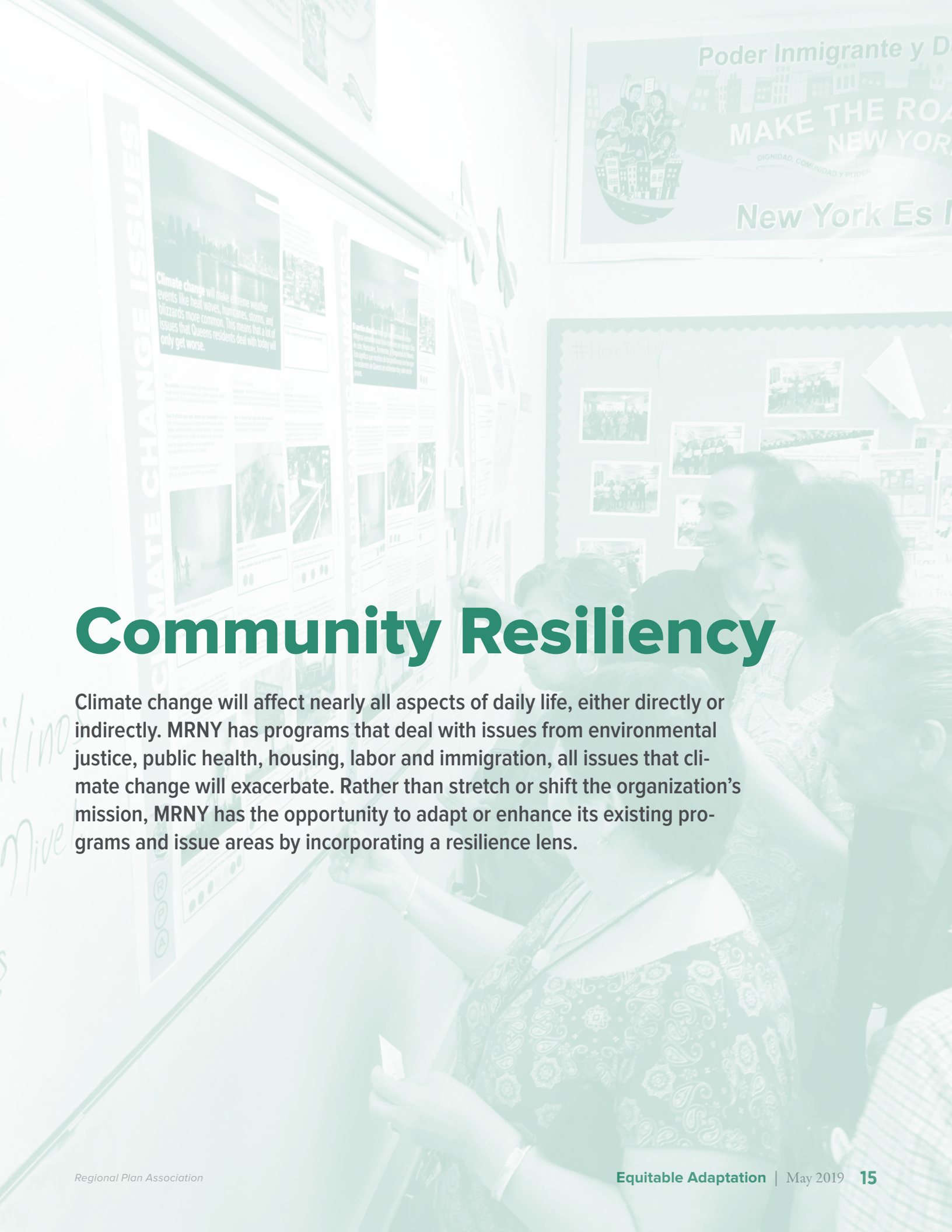
Additionally MRNY can work with other Queens institutions to offer stress reduction offerings. For example, the New York Public Library offers free meditation classes in some of its locations. MRNY can approach the Queens library, which already offers a rich variety of services to residents, to develop a similar curriculum in locations serving current MRNY members. New York Presbyterian has a presence in Queens. It also has an integrative health unit which offers stress reduction classes. New York Presbyterian already supports Mental Health First Aid in Queens as part of its community services plan. MRNY can brief local hospitals, NYC's department of health and human hygiene on the community needs it identified in order to get them to expand to offering such services through NYC Well and other such initiatives.

Crowded Subway
asto

Another option is for MRNY to identify a funder to provide services in their own offices. The cost for offering a class should be the cost of the space and teacher, which can be in the $2,500 - $10,000 per year, depending on the precise program.

7 https://www.sciencedirect.com/science/article/pii/S002239991500080X

8 https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/1809754?__hstc=3584879.822a9c3981f04695664b9dc054b5f524.1523145601970.1523145601971.1523145601972.1&__hssc=3584879.1.1523145601973&__hsfp=1773666937



Community Resiliency

Climate change will affect nearly all aspects of daily life, either directly or indirectly. MRNY has programs that deal with issues from environmental justice, public health, housing, labor and immigration, all issues that climate change will exacerbate. Rather than stretch or shift the organization's mission, MRNY has the opportunity to adapt or enhance its existing programs and issue areas by incorporating a resilience lens.

Education and Training for Green Jobs

As industries begin to shift from high-carbon to low-carbon, driven by both government-imposed regulation and self-interest in reducing costs through efficiencies, such a major shift will cause disruption for many workers. However, there is a significant opportunity, as many studies have estimated that far more jobs will be created by the low-carbon economy than the current high-carbon economy. Even so, policy and programs must be carefully designed to ensure that workers undergo a just transition to the low-carbon, or "green" economy, and that green jobs are accessible for workers of all skill levels.

The term "green jobs" has become a buzzword in recent years, but the term can have different meanings depending on the context. At its broadest definition, green jobs are jobs that contribute in some way to reducing the causes or effects of climate change or increasing sustainability, and most are associated with the building, energy, and transportation sectors—where there is the most room for carbon reduction. But the definition can also include jobs that are involved in designing, building, and maintaining green infrastructure, jobs involved in building or installing green energy infrastructure like solar panels and wind turbines, or even jobs that help people prepare for the effects of climate change. In most cases, the jobs themselves are familiar occupations like gardeners, construction workers, manufacturers, healthcare workers, and architects, but the difference is how their work is applied. Green jobs exist at every skill level, but it is critical that policy is designed to ensure that green jobs are also good jobs at every skill level.

New York City and State have advanced some green jobs policies, but most are in beginning stages, and there are few green jobs programs that have clear avenues of participation by interested workers. For example, workers interested in training programs like NYSERDA's Green Jobs - Green New York (GJGNY) program or Building Operations and Maintenance program to increase energy efficiency must apply through their employers. In 2017, in partnership with a coalition of labor unions called the Climate Jobs New York Initiative, Governor Cuomo announced $1.5 billion of investment in renewable energy in the energy, building, and transport sectors. Also in 2017, Mayor de Blasio announced energy efficiency requirements that mandate building retrofits for 14,500 if the city's least efficient buildings, a policy that the city estimates will create 17,000 green jobs.

There are a variety of different levels at which MRNY could help advance a green jobs workforce. MRNY can disseminate information to members seeking career assistance on the types and benefits of green jobs. This would introduce many to lesser-known career pathways. At the programmatic level, MRNY offers affordable OSHA training as part of its adult education and workforce development program. MRNY could explore partnering with providers to offer training in a variety of green jobs programs.

Solar Panel Installation
MariaGodFrida - Pixabay

At the policy level, MRNY can advocate for Just Transition policies that support workers in high-carbon industries transition to low-carbon industries. Just Transition policies can include requirements that workers be provided job training, help to find a new job, extended unemployment benefits or pensions, and funding for community development. In 2016, New York State provided $30 million over five years to the Town of Tonawanda for economic development after its local coal power plant was shut down, but this was a one-off example. More systematic Just Transition policies can help ensure that the low-carbon economy is not merely generating green jobs, but also good jobs. One example of the proposed legislation is the Polluters' Fee proposal being developed by the NY Renews coalition, already supported by MRNY, which would allocate 7 percent of the estimated $7 billion revenue generated from polluter fees to a Worker and Community Assurance Fund. An additional policy could include a task force to oversee the implementation of Just Transition and green jobs programs.

Green the Streets

Currently, streets and sidewalks comprise an estimated 33.6 percent of all impervious surfaces in New York City.[9] This leads to both increasing Combined Sewer Overflow (CSO) and urban heat island effect. Impervious surfaces such as regular asphalt lead to a great amount of stormwater runoff draining into the sewer system, producing CSO and regular pavement absorbs a significant amount of light and radiation and emits it as heat, warming the city.

Greening streets by planting not just trees, but also rain gardens or bioswales (gardens that collect stormwater flowing off the street) provides many benefits, including reducing stormwater runoff, reducing the urban heat island effect and providing shade, and providing aesthetic relief from the endless pavement. The New York City Department of Environmental Protection (DEP) leads a multi-agency Green Infrastructure Program that includes implementing rain gardens. As part of New York City's Sustainable Stormwater Management Plan, the city committed to reducing the amount of untreated sewage released into the city's waterways during storms by 3.8 billion gallons per year.[10] To date, the city has greened 467 acres of space and is creating 4,000 rain gardens, including 200 rain gardens in the neighborhoods of Elmhurst, and Corona, though few have been implemented in Jackson Heights, East Elmhurst, or Woodside so far.

There are several ways rain gardens and other green infrastructure build neighborhood resiliency. Keeping stormwater out of the city's combined sewer system means less sewage and litter dumped into waterways like Flushing Bay and the East River, and less noxious odors coming from waterways after heavy rains. Reducing pollution from untreated sewage helps bring back marine life and gradually creates healthier conditions for activities like fishing, canoeing or kayaking, and eventually swimming. The trees planted in rain gardens can also trap 110 pounds of CO2 after only three years. Studies have shown trees and other plants can reduce urban air pollution like particulate matter.[11]

Rain gardens work by collecting stormwater from the streets through curb cuts. The water is gradually absorbed into the ground, watering specially selected plants, many of which can help absorb contaminants from the stormwater. Each installation has the capacity to collect up to 2,500 gallons of stormwater, which is absorbed into the ground within 48 hours, preventing mosquito breeding. NYC Parks is tasked with maintenance of the rain gardens twice per week, but some residents are unhappy with the amount of litter that can wash off the street and into the gardens. Staffing for the city's green infrastructure maintenance has rapidly increased, growing to over 100 workers in 2018.[12] These jobs provide training in horticulture and plant care, including certification through a partnership with the New York Botanical Garden. Maintenance facilities currently exist in Brooklyn and the Bronx, but with the rapid expansion of the program, MRNY could advocate for an additional facility in central Queens.

In light of the Green Infrastructure Plan, the NYC Department of Transportation (DOT) is also testing resilient pavements for streets and sidewalks through pilot projects, including porous asphalt, interlocking permeable concrete, and porous concrete. These materials are not necessarily more expensive but do demand more maintenance. In addition, the DOT is testing High Albedo Asphalt for roadways, which has a high solar reflectance Index, absorbing less heat, and ultimately mitigating urban heat island effect. Japan, Germany, and Canada are leaders in permeable pavements. Japan began using pervious pavement as early as 1973 in Tokyo, and in the 1980s pervious pavements became a nationwide standard with an accompanying street-construction manual specific to pervious pavements. In Canada, Vancouver carried out its City Lane Program in 2011 using porous asphalt on city roadways to improve infiltration. These programs have proved beneficial for reducing stormwater runoff as well as urban noise and heat island effect.

MRNY can have an active role in monitoring the Green Infrastructure Plan that is being implemented in Central Queens. It is crucial that the DOT intervenes on the roads that lead to the main CSO points along the Flushing Bay watershed, such as Astoria Boulevard and 81st among others (see map). In addition, MRNY can advocate for a more sustainable development in Queens and put pressure on future developments and redevelopments to make them include permeable materials and green infrastructure in their plans.

9 Bash, Brana, et all. (2012) Roadmap for impervious pavements in New York City.

10 NYC Sustainable Stormwater Management Plan

11 https://www.sciencedirect.com/science/article/pii/S1352231016307336

12 http://www.nyc.gov/html/dep/pdf/green_infrastructure/gi_annual_report_2018.pdf

Climate Risk Training for Community Health Workers

In New York City, around 85 percent of heat-related deaths are caused by exposure within the home, according to DOHMH.[13] Groups like the elderly and those with chronic medical conditions have some of the highest vulnerability to extreme temperatures and heat waves and also receive services from home health care aides. Home health care aides are already trained to conduct home assessments for asthma risk factors, and some public health agencies have begun to develop quick assessments designed to identify heat risk factors in the home. These assessments can then be used to identify individuals most at risk and target interventions. It is crucial that any assessment be concise and relatively simple, as home health aides are often responsible for many different kinds of tasks already.

Program training
myfuture

One of the first home heat assessment programs, the Fresno County Department of Public Health in California, developed the "Nurses for Cool and Healthy Homes" program in partnership with students from the University of Michigan. The program implemented methods from similar home asthma assessments, and even met with the local utility company, Pacific Gas & Electric (PG&E), to learn how their technicians conduct home energy assessments. The students and nurses developed a checklist and made improvements as it was tried in the field. The resulting assessment took only three minutes to complete and included items like window condition, the presence of working air conditioner, and conditions that would prevent the use of an air conditioner, as well as simple instructions for making the appropriate energy and health referrals depending on the result of the assessment.

New York City has just begun to develop its own climate risk training program for home health aides. The pilot program consists of a heat-health module for continuing education trainers developed by DOHMH that is now part of the curriculum at three homecare providers that employ nearly 8,000 home health aides.[14,15] The aim of the City's program is to gather information and connect vulnerable residents to city services.

MRNY currently has a successful community health worker (CHW) training program. As the city seeks to expand the program to other trusted community members like community health workers, MRNY may be able to work with DOHMH and their CHW training vendor to incorporate the heat-health training module into their CHW program.

13 Wheeler, K., et al. (2013). Heat illness and deaths—New York City, 2000-2011. MMWR Morbidity and Mortality Weekly Report. 62(31): 617-21. Available at: https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6231a1.htm.

14 City of New York. (2017) Cool Neighborhoods NYC: A Comprehensive Approach to Keep Communities Safe in Extreme Heat.

15 The three providers are Sunnyside Community Services, Allen Health Care Services, and Best Choice Home Health Care.

Expand the Cool Roofs Program

Urban heat island effect, when buildings and paved surfaces absorb heat causing higher temperatures in the city than in surrounding areas, is already a serious issue during the summer months. With extreme temperatures and heat waves expected to become much more frequent in the coming decades, it is critical that the buildings and infrastructure be adapted to help cool the City's communities rather than warm them. One economical strategy is to apply a white, reflective coating to building roofs, which prevents buildings from absorbing as much heat.

CoolRoofs is a program based in New York City focused not only on making rooftops less heat-absorbent and more energy efficient but also providing training and workforce development. This program is a partnership between the NYC Department of Small Business Services, the Mayor's Office of Sustainability, the Mayor's Office of Resiliency and Sustainable South Bronx, a division of The HOPE Program. In addition to the training in roof cooling technologies, participants earn certifications such as OSHA30, 4-hour Flagger, and 4-Hour Scaffolding, which give them more opportunities to work in the industrial and construction sectors.[16] The cool roofs program is funded by the city. Their 2017 budget was $850,000, covering training, materials, as well as the salaries for the workers who run the program.

The CoolRoofs program consists of applying a white, reflective surface to rooftops. The surface is covered by a paint-like coating that is rolled or sprayed onto the roof. The white layer reflects rather than absorbs heat, which reduces cooling costs, energy consumption and greenhouse gas emissions. The program offers cool roof installations at no cost to non-profits and affordable or low-income housing and offers low-cost installations (cost of materials only) to private building owners who agree to share electricity data for two years preceding and two years following the installation.

Since 2009 the program has coated 9.2 million square feet of rooftop on over 800 buildings. The CoolRoofs program has enrolled 234 individuals in its training program. 204 have finished training and 109 participants were placed to opportunities. According to the Department of Small Business Services, although official data is yet to be released on the effectiveness of cool roofs, anecdotal accounts from building owners who have participated in the program have been positive. Most tenants have experienced a reduction in air temperature in their apartments.

MRNY can build capacity benefiting from this program in different ways. First, as a non-profit organization, MRNY is eligible for a no-cost cool roof installation in its buildings. Second, MRNY can inform and assist its members in applying for this program and finally, we suggest that the CoolRoofs program is connected to the existing OSHA training that MRNY is providing. This aims to strengthen the objective of making MRNY's members better trained and equipped to find jobs in the construction and green infrastructure sector. MRNY can also educate tenants on the program and help them advocate for cool roofs on their buildings that will create energy savings for tenants and help cool the neighborhood at a minimal cost to landlords.

Roof Coating
Coffee

16 NYC Small Business Services. Apply for a training in the Industrial or Construction field. https://www1.nyc.gov/site/sbs/careers/industrial-training.

ABCs of Environmental Home Health

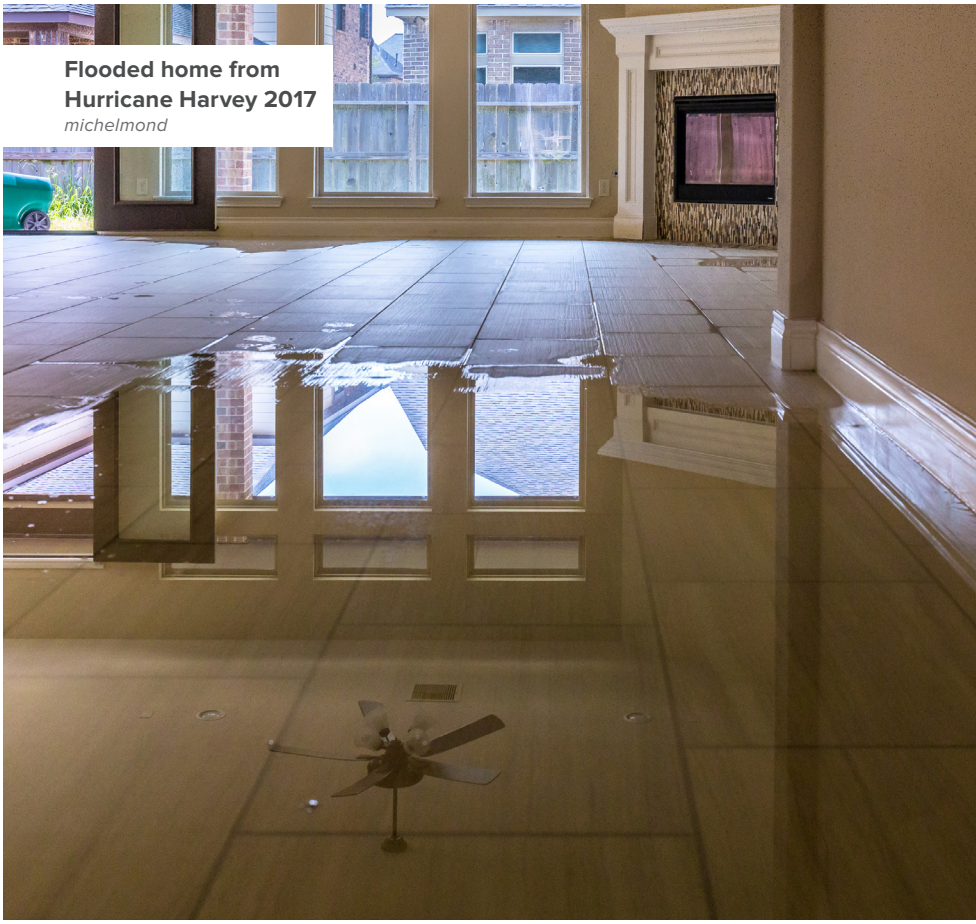
The first step to preventing a problem is knowing the warning signs that precede. ABCs of Environmental Home Health Hazards Training aims to educate people on identifying those warning signs and how to address them. These trainings aim to help professionals who typically work with vulnerable populations to identify environmental hazards within their homes that would otherwise go unnoticed and unaddressed.

These trainings are conducted DOHMH through their Healthy Homes program. These day-long trainings bring experts on the various issues to address and educate the basics of home health safety. This includes lead poisoning prevention, mold hazards, pest control, and fire safety tips. Educating professionals who have the first-hand contact with the most vulnerable can prevent a problem like lead paint exposure or mold from detrimentally affecting one's health.

A similar program aimed at identifying and addressing health hazards exists in Southern California. Strategic Actions for a Just Economy (SAJE), non-profit organization in South Los Angeles, runs a Healthy Homes Initiative which trains local residents to secure healthy solutions to housing problems. This program goes beyond simply educating professionals and residents by working on a pilot program with the County of Los Angeles' Department of Public health to improve housing code enforcement.[17] This step reinforces the importance of maintaining home health standards and moves to make owners accountable. By collaborating with community-based organizations, LA County's health department has been able to "increase inspection access to multiple dwelling units, improve education outreach to residents, encourage the use of integrated pest management applications to reduce pesticide exposure, and identify the measurable correlation of resident health and sustained code compliance."

The DOHMH has shown that they are open to improving this training in the past. Previously, these sessions were aimed at only home health workers (HHAs) but now is open to anyone who works with children or vulnerable populations. Recent trainings have included mid-level managers, education directors, health coordinators, service coordinators, program coordinators, outreach coordinators, supervisors, health educators, case managers, case planners, family workers, trainers, home visitors, faith leaders, or direct service staff. Recent conversations with DOHMH staff suggest that they are open to expanding the programs to include issues pertaining to climate risk if there is a sustained effort that calls for it.

MNRY and RPA can jointly push for the program expansion to address issues that are exacerbated by extreme weather events and climate change. A collective effort could show DOHMH that additional training on climate risk issues are important and are needed in communities.



Flooded home from Hurricane Harvey 2017
michelmond

17 SAJE - What We Do http://www.saje.net/what-we-do/

Collective Advocacy

Climate change adaptation is an enormous undertaking, and it will take a collective effort. Government policy that mitigates climate change and gives resources and options to communities to adapt must be adopted. MRNY successfully organizes and advocates for policy changes that make New York a better place for all. MRNY has an opportunity to push for cross-cutting, co-beneficial policies that help adapt its community to the effects of climate change, as well as address other issue areas.

Carlos Encarnación

NY Renews Coalition

A significant aspect of this collaboration between MRNY and RPA is building climate change adaptation capacity by identifying existing MRNY programs that have the potential for a resiliency component. However, before the initiation of this project, MRNY already demonstrated its recognition of the overlap between its advocacy for environmental justice, public health, and labor issues in joining NY Renews. NY Renews is a coalition of nearly 150 organizations across New York State advocating for far-reaching policy changes to mitigate climate change and its threats, especially to low-income communities and communities of color. The coalition is currently advocating for two ambitious pieces of legislation in Albany.

The New York State Climate and Community Protection Act

The Climate and Communities Protection Act (CCPA) is a bill that would mandate 50 percent renewable energy statewide by 2030 and cut 100 percent of fossil fuels statewide by 2050. The policies would be enforceable and enact benchmarks to hold the state accountable. It also contains strong equity provisions to ensure that 40 percent of clean energy funds are reinvested in disadvantaged communities.

The bill passed the New York State Assembly as A8270A, but Senate bill S6617A did not make it out of committee during the 2018 legislative session. NY Renews will continue to advocate for the bill in the next session.

Just Transition + Polluter Fee

NY Renews is also developing a new piece of legislation that would compensate for the true costs of pollution to society by imposing a fee on greenhouse gas emitters. A $35 per ton of emissions fee could generate more than $7 billion each year. This new legislation would then use this revenue to create a Climate Jobs and Infrastructure Fund for large-scale climate infrastructure projects; a Community Just Transition Fund for community-led energy and adaptation projects in disadvantaged communities; a Worker and Community Assurance Fund to retrain workers for new green energy industries and support them through the transition; and New York Energy Rebate Fund, which would provide energy rebates and utility assistance for low- and middle-income residents and small businesses. The future bill would build on the CCPA, if passed, and provide an extra incentive to reduce greenhouse gas emissions.

Energy Resistance March
Takver

Ban Diesel Buses

According to the U.S. Environmental Protection Agency (EPA), diesel exhaust poses one of the greatest public health risks of all air pollutants. Diesel combustion releases fine particles and gases into the air commonly known as soot. Diesel soot contains toxins that can be inhaled into the deepest parts of the lungs and enter the bloodstreams of people who are exposed to such pollutants. This can cause many health problems, including asthma, bronchitis, cancer and premature death.[18]

According to a recent Metropolitan Transportation Authority (MTA) budget proposal, 1,700 new buses are set to be purchased in the next five years. Of the 1,700 new buses, approximately 1,300 of them are diesel-fueled.[19] MTA's use of diesel buses was brought to the attention to New Yorkers and other decision makers with the planning and release of MTA and DOT's joint mitigation plan for L train riders.[20] The plan relies heavily on predominantly diesel powered shuttle bus lines to connect commuters Manhattan. Citizens and NYC City Council members have brought attention to this and has placed pressure on the MTA to make drastic changes to their policies and existing contracts with bus manufacturing companies.

At the federal level, the Federal Transit Administration (FTA) launched in 2017 and 2018 the Bus and Bus Facilities Infrastructure Investment Program[21], which together make available more than $420 million in grants to support High –Tech Low-No Buses. Cities including Lubbock, Texas; Jacksonville, FL and the Alaska Department of Transportation received some of this funding to change old diesel buses for electric ones and the associated charging infrastructure.

Considering the great negative impact that diesel can have on people's health, as well as its contribution to exacerbating climate change, MRNY can join efforts of politicians, community organizations and activists that are already advocating for cleaner and healthier energies. These actors and organizations include Village and Chelsea community groups, disabled-rights activists and elected officials, who have been actively protesting against the recently purchased diesel-powered fleet that will mitigate the effects of the L train closure. The MTA has the potential to play an important role in enhancing urban resilience through the complete phase-out of Diesel-powered buses. This action would demonstrate global leadership in the use of green infrastructure.

Bus Idling
MTA

18 State of New Jersey. Department of Environmental Protection. Bureau of Mobile Sources. May, 2015. https://www.nj.gov/dep/stopthesoot/diesel-healthconcerns.htm

19 MTA 2018 Adopted Budget February Financial Plan 2018 – 2021 http://web.mta.info/mta/news/books/docs/MTA-2018_Adopted-Budget-February-Financial-Plan_2018-2021.pdf

20 L-pocalpyse No! Plan would add 200 diesel buses http://thevillager.com/2018/03/01/l-pocalpyse-no-plan-would-add-200-diesel-buses/

21 Federal Transit Administration (2017) U.S. Department of Transportation Announces $55 million in grants to support High –Tech Low-No Buses, American Manufacturing https://www.transit.dot.gov/about/news/FY17-Low-No-Project-Selections

Make Cooling Centers Visible

With the number of heat waves expected to triple in the coming decades, staying cool will become an even more urgent need for New York City residents than it is today. Around 20 percent of survey respondents at MRNY do not have an air conditioner in their homes, and many who do must forgo using it due to utility costs. The city provides cooling centers throughout the five boroughs to help address this issue, but only half of the survey respondents without air conditioners report using them.

Cooling centers are public, air-conditioned facilities that offer people free relief from extreme heat. NYC has agreements with public and privately-owned facilities, including libraries, community centers, senior centers, and NYCHA buildings, to open their facilities to the public when the heat index is dangerously high. These facilities provide a cool space for people who do not have access to a cool environment or air conditioning, particularly those who are at risk for heat-related illness.[22]

The cooling centers nearest the MRNY Queens office include:

- Astoria Library at 14-01 Astoria Blvd.
- Woodside Library at 54-22 Skillman Ave.
- Sunnyside Library at 43-06 Greenpoint Ave.
- Jackson Heights Library at 35-51 81st St.

Cooling centers can have other social benefits in addition to public health. In Japan, for example, the "Cool Share" program (and its counterpart, "Warm Share") is a campaign supported by facilities with cooling and heating systems, including spas, public libraries, community centers and others, to encourage families to use these facilities to stay warm or cool instead of using their private air conditioning or heating systems. Many businesses participate voluntarily by placing a blue logo outside their establishment, signaling that people are free to use their facilities to cool off. The program has three main intentions: to save energy, to reduce utility bills and to strengthen community spaces of belonging.[23]

Even though most cooling centers are located within public community facilities, such as public libraries or seniors centers, most MRNY members indicated that they did not know that those facilities serve as cooling centers. Those that were aware

Cooling Center Sign
Takver

of local cooling centers felt that their limited operating hours precluded their use. While some facilities have extended hours during major heat waves, most facilities are only open during regular business hours, despite daily summer temperatures often peaking around 6pm.

Cooling centers can be difficult to find. The NYC Emergency Management cooling center finder only works on days when temperatures are dangerously high. This means the tool is reactive rather than preventive. Furthermore, cooling centers do not display adequate signage, although the city has implemented a signage improvement plan since the summer of 2017. Each cooling center is required to display a 24" x 36" vinyl sign at their main entrance to notify the community that the facility is being used as a cooling center.[24] In addition, many cooling centers are not accessible to people with disabilities.

MRNY can communicate their community of cooling centers location by displaying a map of them in their headquarters and watching that these centers have proper signage. MRNY can also consider working with similar organizations to advocate for more accessibility and transparency in the city's cooling center program, such as including maps of nearby, open cooling centers on LinkNYC terminals. The Japanese "Cool Share" program could also serve as a model for local businesses and organizations in central Queens, though it would require a concerted campaign and organizer resources to implement.

22 NYC website. https://www1.nyc.gov/nyc-resources/service/4843/cooling-center

23 Hosaka, Hosaka. Saving by Sharing the warmth or coolness.

24 Health Home Aides report Cool neighborhoods NYC, p. 31

Expand Energy Assistance Programs

Even for households that have the adequate heat and cooling available in their homes, the utility costs can be burdensome for many. Around 80 percent of survey respondents have an air conditioner, but feedback from MRNY members indicated that they cannot always use them due to the high cost of utility bills. With extreme heat events becoming much more frequent in the coming decades, and with winter temperatures potentially remaining a threat to livelihood, it is critical that households be provided with the resources to remain comfortable and healthy year-round.

HEAP is a New York State program in the Office of Temporary and Disability Assistance that helps low-income people pay for the heating and cooling of their homes. Based on income, household size, primary heating source, and the presence of children younger than six, a person older than 60, or a disabled person, HEAP pays the benefit amount directly to the utility on behalf of the household. For example, a household with an electric or natural gas primary heat source may be eligible for over $350.

HEAP offers an emergency benefit if your electricity or natural gas is shut-off or will be shut off or if you are out of fuel or will run out soon. Your household's available monthly resources must be no more than $2000 for households without someone age 60 or older, or $3000 if someone in your household is age 60 or older. HEAP also provides cooling assistance for a household to purchase one air conditioner or fan up to $800 including installation costs. In order to qualify, your total monthly income must be under $3,031 for a household of two.[25] In addition to HEAP, New York City Human Resources Administration offers the Utility Assistance Program (UAP) to help families or individuals who are disabled, mentally impaired, or reside in hazardous environments and need help paying for energy bills.

These programs can help reduce the costs of heating and cooling the homes of community members, and, in doing so, provide much needed relief from extreme temperatures year-round. However, most MRNY workshop participants had not heard about the program, and many voiced concerns about legal status relative to state-sponsored programs that require proof of citizenship or another documented immigration status.

MRNY can advocate for legislation that expands HEAP to include a larger base benefit amount for low-income renters who do not pay heating costs directly to the vendor, and an increased maximum gross monthly income to be able to include more MRNY members. Information about this program can be shared with MRNY members to increase awareness about these opportunities to save.

Air Conditioning Units
Paul Pellegrino

25 http://otda.ny.gov/programs/heap/#income-limits

Improve Housing Quality Enforcement

Housing quality issues are exacerbated by the effects of climate change. Poorly maintained buildings are susceptible to damage, leaks, and basement flooding during storms and heavy rains. Water damage can cause mold that can exacerbate respiratory ailments like asthma. Approximately half of the survey respondents feared for their personal or family safety during storms and heavy rains, and 38 percent worried about damage to their home or its contents. Homes also may not be compatible with high temperatures, especially if they lack operable windows or are built from materials that absorb heat particularly well, as with many older buildings.

The New York City Housing and Preservation Development (HPD) has several programs aimed at keeping homes safe and healthy. The Division of Code Enforcement sends inspectors to investigate 311 complaints. The Division of Maintenance's Emergency Repairs Program responds to urgently hazardous conditions if the landlord is unwilling to fix the problem in a timely manner. The Division of Special Enforcement runs the Alternative Enforcement Program (AEP), which identifies "severely distressed" properties and requires owners to make repairs or face fines. The AEP works by identifying the most poorly maintained residential buildings in the city, sets deadlines for landlords to make the necessary repairs, and issues fines or makes emergency repairs at the landlord's expense.

MRNY authored a 2013 report evaluating the AEP's first few years after its establishment in 2007. The report found that while AEP had a major impact in improving overall physical housing quality for buildings enrolled in the program, it also had several shortcomings, including not all problems being repaired, a lack of communication between HPD and tenants, and a significant number of tenants facing pressure from landlords to move out during the AEP process. The report recommends expanding the program to include more buildings, engaging directly with tenants in AEP buildings, including informing tenants of their rights and creating a Repair Enforcement Board.

MRNY could append their recommendations for improving housing enforcement to include climate issues explicitly as housing quality indicators. This would mean landlords would be required to ensure that homes meet a minimum climate health standard, such as fresh air circulation or offset heat-absorbing buildings with a cool roof. Many of these requirements would be low cost, such as removing window guards and stops in homes with no children under 11, or taking advantage of the city's Cool Roofs program (see page 19). Others, such as establishing a maximum indoor temperature—especially for the homes of vulnerable groups—may require a better understanding of the implications and enforceability of such a regulation. The city has begun to recognize some of these needs but has not yet developed a strategy.

Conclusion

The impacts of climate change affect everyone. But increases in extreme heat, flooding, pollution and disruptions to everyday services like transportation are making bad conditions even worse for those who are already struggling, including low-income residents and communities of color. As described in this report, the communities of Central Queens are no exception.

Together with MRNY, we worked closely with residents and key stakeholders to identify the way the impacts of climate change affect themselves and their community, directly and indirectly. Our series of 13 recommendations at the individual, community and government levels can expand and advocate for much-needed green programs and create new services. But we also know that Central Queens isn't the only region facing these climate change complexities. There are countless communities in the region that are also particularly vulnerable to extreme heat, flooding, and pollution. While these recommendations are specific to Central Queens, we hope this report provides an indepth look at what needs to be done to better prepare and help low-income residents and communities of color in the face of climate change.

RPA and MRNY will continue our collaboration, working at the individual, community and government levels to advance these recommendations. In doing so, we aim to address climate change head-on, while ensuring that the solutions don't perpetuate the same, tired and cruel cycles of inequity, but instead create new opportunities for inclusion and healthier, more resilient communities in Central Queens and beyond.

Appendix A: Community Resilience Survey

Climate Resilience Survey

Equitable Adaptation | Regional Plan Association + Make the Road NY

Climate Resilience

1. Are you concerned about how climate change will affect your quality of life?
- ☐ Very concerned
- ☐ Somewhat concerned
- ☐ Not concerned

2. Have you been been deeply affected by a climate event (storms, hurricanes, heatwave, blizzard, etc.) in the last 10 years?
- ☐ If yes, what kind _____
- ☐ No

3 Have you helped support family or friends outside of New York who were affected by a climate event?
- ☐ If yes, what kind _____
- ☐ No

Heat

4. What issues concern you during a heat wave? (check all that apply)
- ☐ Illness (including heat stroke and asthma attacks)
- ☐ Difficulty staying cool
- ☐ Power outage (brownout)
- ☐ Pollution
- ☐ None/Not sure
- ☐ Other _____

5. Do you have an air conditioner in your home?
- ☐ Yes
- ☐ No

6. Where do you go to cool off during a heat wave? (check all that apply)
- ☐ Home
- ☐ Work or School
- ☐ Park
- ☐ City cooling center
- ☐ A friend or family's home
- ☐ Other _____
- ☐ None/Not sure

Rain and Storms

7. Do you have issues with flooding in your home?
- ☐ If yes, what kind? _____
- ☐ No

8. Have you encountered flooding in Flushing Meadows Corona Park?
- ☐ Yes
- ☐ No

9. Have you had issues with flooding elsewhere?
- ☐ If yes, where and what kind? _____
- ☐ No

10. What issues concern you during heavy rain and storms? (check all that apply)
- ☐ Damage to your home or its contents
- ☐ Personal safety (yourself or family members)
- ☐ Flooding in Flushing Meadows Corona Park or other parks
- ☐ Power outage
- ☐ Pollution (including bad smells)
- ☐ Other _____
- ☐ None/Not sure

Snow and Blizzards

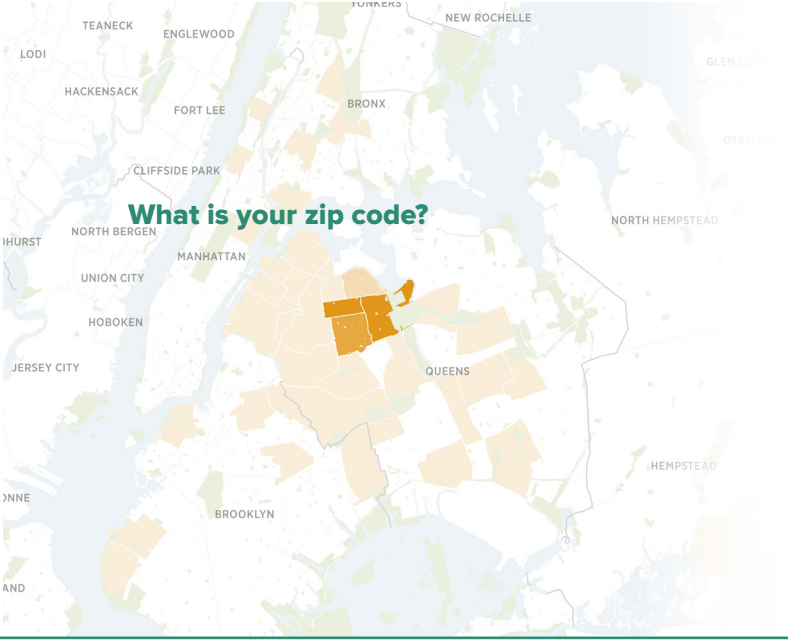
11. What issues concern you during snowfall and blizzards? (check all that apply)
- ☐ Damage to your home or its contents (e.g. from ice)
- ☐ Personal mobility issues (difficulty getting around)
- ☐ Disruption to roads, busses, or trains
- ☐ Other _____
- ☐ None/Not sure

Personal Information

12. What is your zipcode? _____

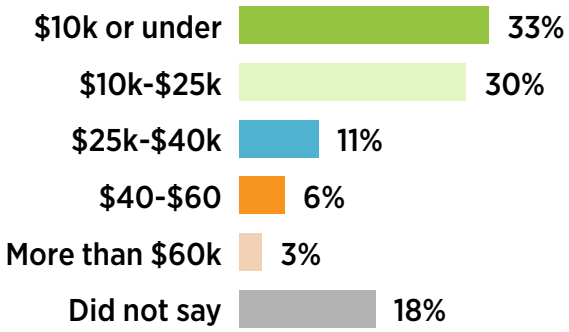
13. Do you rent or own your home?
- ☐ Own
- ☐ Rent

14. What is your household income range?
- ☐ $ 10,000 or less
- ☐ $ 10,001 - $ 25,000
- ☐ $ 25,001 - $ 40,000
- ☐ $ 40,001 - $ 60,000
- ☐ More than $ 60,000

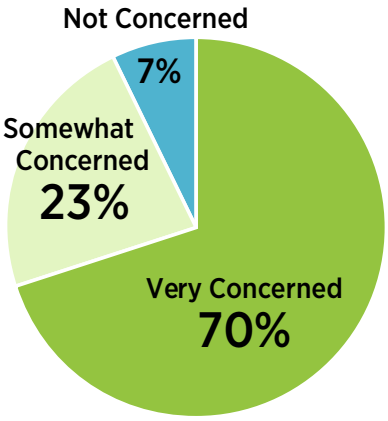


What is your zip code?

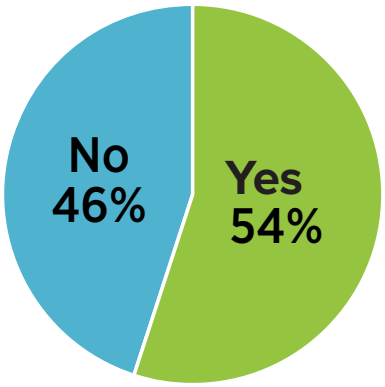
What is your household income range?



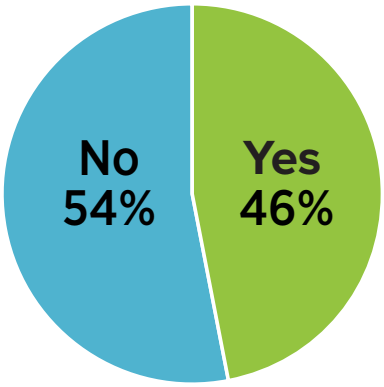
1. Are you concerned about how climate change will affect your quality of life?



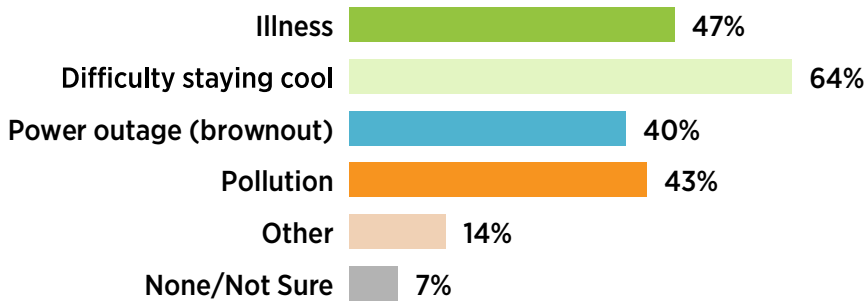
2. Have you been deeply affected by a climate event (storms, hurricanes, heatwave, blizzard, etc.) in the last few years?



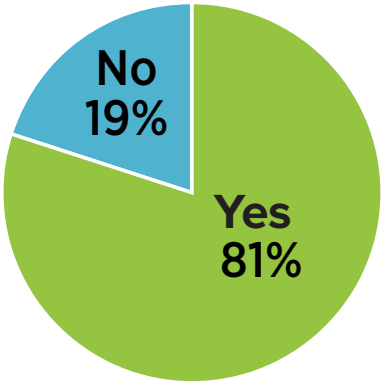
3. Have you helped support family or friends outside of New York who were affected by a climate event?



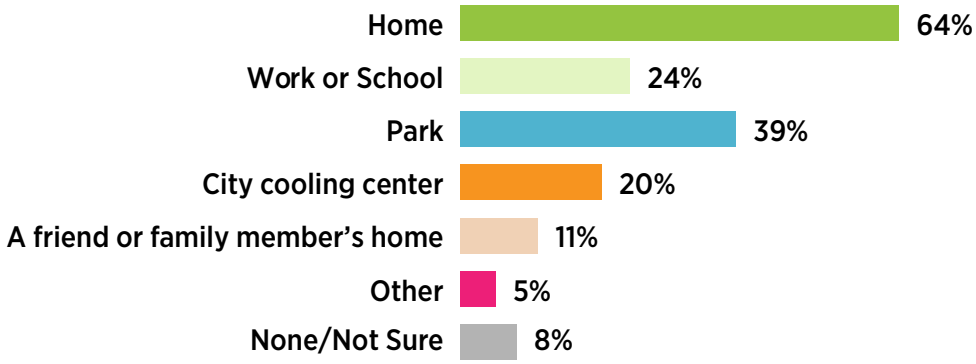
4. What issues concern you during a heat wave? (check all that apply)



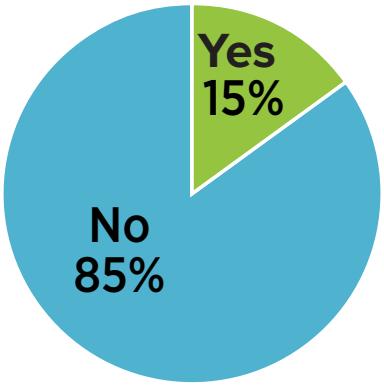
5. Do you have an air conditioner in your home?



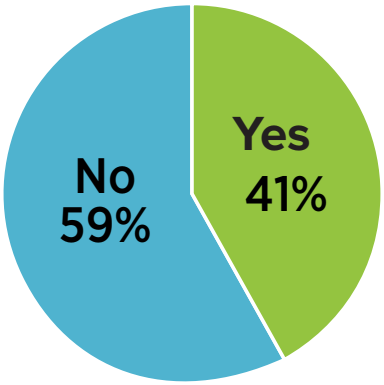
6. Where do you go to cool off during a heat wave? (check all that apply)



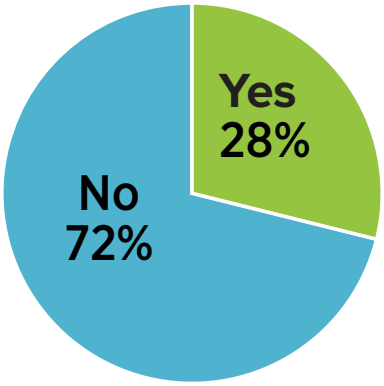
7. Do you have issues with flooding in your home?



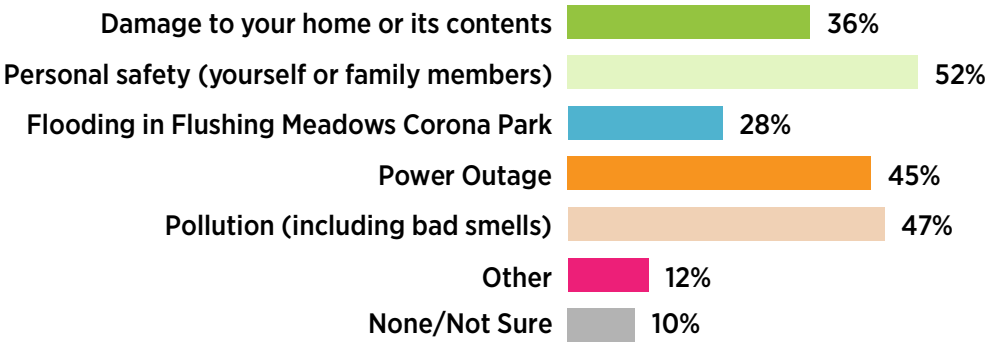
8. Have you encountered flooding in Flushing Meadows Corona Park?



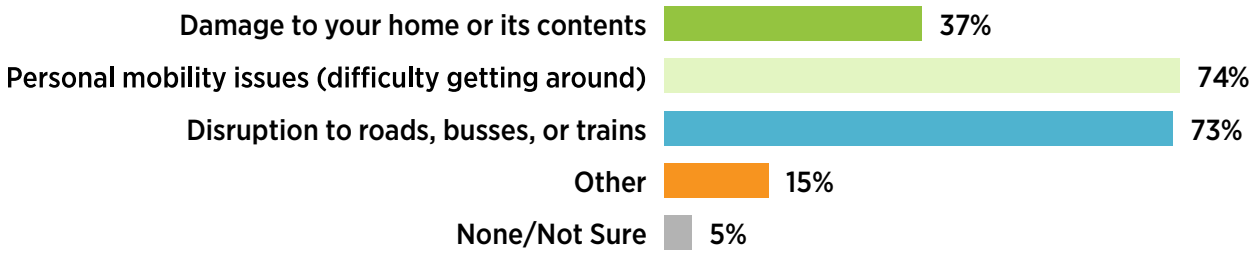
9. Have you had issues with flooding elsewhere?



10. What issues concern you during heavy rain and storms? (check all that apply)



11. What issues concern you during snowfall and blizzards? (check all that apply)



Appendix B: Community Profile

Population by Race

	White *	Hispanic	Black*	Asian*	Other*
New York	32%	29%	22%	14%	3%
Queens	26%	28%	17%	25%	4%
CB403 & CB404	**8%**	**58%**	**6%**	**26%**	**2%**

*Non-Hispanic

Population by Citizenship Status

	US Citizen	Non-US Citizen
New York	83%	17%
Queens	79%	21%
CB403 & CB404	**65%**	**35%**

Population by Linguistic Isolation

	Limited English, Spanish Speaking	Limited Enlgish, All Languages
New York	7%	15%
Queens	7%	19%
CB403 & CB404	**21%**	**33%**

Population by Poverty Level

	50 percent of poverty level	100 percent of poverty level	200 percent of poverty level
New York	20.3	9%	40%
Queens	14.6	6%	35%
CB403 & CB404	**16%**	**7%**	**48%**

Households by Rent as a Percentage of Household Income

	Less than 30 percent	30 percent or more	50 percent or more
New York	44%	51%	28%
Queens	41%	53%	29%
CB403 & CB404	**35%**	**60%**	**35%**

Households by Housing Tenure

	Renter	Owner
New York	68%	32%
Queens	56%	44%
CB403 & CB404	**70%**	**30%**

Households by Overcrowding

	Renting Households	Percent Overcrowding*
New York	2,128,004	4%
Queens	437,941	5%
CB403 & CB404	**73,229**	**10%**

*More than 1.5 people per room

Housing Units by Year Built

	After 2000	1970-1999	1940-1969	Before 1940
New York	7%	15%	36%	41%
Queens	6%	12%	51%	31%
CB403 & CB404	**6%**	**13%**	**53%**	**29%**

Regional Plan Association

Regional Plan Association is an independent, not-for-profit civic organization that develops and promotes ideas to improve the economic health, environmental resiliency and quality of life of the New York metropolitan area. We conduct research on transportation, land use, housing, good governance and the environment. We advise cities, communities and public agencies. And we advocate for change that will contribute to the prosperity of all residents of the region. Since the 1920s, RPA has produced four landmark plans for the region, the most recent was released in November 2017. For more information, please visit rpa.org or fourthplan.org.

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