



Gowanus Canal

Sustainability and Resiliency

Planning for sustainability means that the activities we undertake today will not compromise our resources in the future. Planning for resiliency means that people, buildings, neighborhoods, the economy and public services will be ready to withstand and adapt to the impacts of climate change.

The Gowanus neighborhood faces challenges to sustainability and resiliency that include flood risk and historically contaminated land. Residents and businesses experience stormwater-related flooding of streets and basements, and recall inundation and damage from Hurricane Sandy in 2012. A legacy of pollution led to the Superfund designation of the Canal and the need for substantial remediation of several sites throughout the neighborhood. The City is aligned with and committed to ongoing coordination around the overall clean-up of the Canal and surrounding area (see Environmental Remediation, pages 26-29).

For years, the Gowanus community has been working toward a sustainable and resilient future, led by the efforts of a number of community based organizations. The objectives below were identified from input and ideas of community organizations, City agencies and residents, whose interests and ideas ranged from building energy to open space, from transportation to sewer infrastructure and from sanitation to emergency response. Each strategy represents an important step toward Gowanus's bright future as a model green neighborhood. Together, along with strategies outlined in other sections, the strategies outlined below will help move the neighborhood toward a more sustainable and equitable future by tackling the root of many existing environmental issues, including the impacts of climate change, Urban Heat Island effect and brownfield contamination.

Goal 1: Support existing and future sustainability efforts to make Gowanus a model green neighborhood

Efficiency and Alternative Energy Foster growth in solar power capacity

Renewable energy can be harnessed through solar panels installed on building roofs, above parking spaces, and wherever the sun shines.

- A 2012 citywide zoning amendment known as *Zone Green*, written by DCP based on recommendations from the mayoral Green Codes Task Force, removed zoning impediments to the construction and retrofitting of green buildings, including building height limitations that applied to solar panels. Zoning now allows solar installations on roofs across the city.
- Several neighborhoods have made advances toward the City's goal of installing one gigawatt of solar capacity citywide by 2030 by participating in solar incentives programs through the NYC Solar Partnership, an initiative of the City University of New York (CUNY), Mayor's Office of Climate Policy & Programs and NYC Economic Development Corporation (EDC). Brooklyn Community District 6, which includes Gowanus, participated in a "Solarize" campaign in 2015-2016 which gave owners of homes and businesses access to discounts on the cost of solar panel installation.
- The Mayor's Office of Sustainability (MOS) plans to work with the Gowanus community and Brooklyn Community Board 6 to explore the lessons learned from the Solarize campaign and the potential to reinstate or pilot incentives available for properties in Gowanus.

Support Gowanus district energy microgrid development

A district energy microgrid is a system that distributes energy to connected buildings in a local area. This power is used on-site, reducing reliance on the electric grid. By serving the energy demands of multiple buildings, district systems can achieve energy efficiency and gain carbon emissions reductions, in addition to reducing local air pollutants and enhancing resiliency. Certain building types, such as hospitals and campuses, can serve as anchor institutions to a broader district system. District energy systems can be developed in phases, where future development can be integrated into an existing district system by making buildings "district-ready."

- DCP and the Mayor's Office of Climate Policy & Programs will explore ways to encourage new and retrofitting developments in and around Gowanus to be designed "district-ready" for future microgrid technology and infrastructure. They will also provide links to technical assistance to developers and others in the Gowanus community.
- DCP and the Mayor's Office of Climate Policy & Programs will examine the Zoning Resolution and address potential impediments to district-ready development.



New York City's 2014 commitment to reduce greenhouse gas emissions 80 percent by 2050.
Source: MOS



Rain garden - NYC Green Infrastructure Program,
Source: DEP

Water Management and Treatment

Use grey and green infrastructure to reduce local combined sewer overflows

The Gowanus neighborhood is primarily served by combined sewers where both stormwater runoff and sanitary waste are conveyed to the waste water treatment plant for treatment. During some rain events, this mixture may overwhelm the sewers and trigger combined sewer overflows (CSOs). A variety of new infrastructure and site design techniques can reduce CSOs.

- NYC Department of Environmental Protection (DEP) will construct underground CSO facilities to intercept, screen and store combined sanitary waste and stormwater runoff in order to pump it back to the wastewater treatment plant for treatment. The facilities will be constructed at the head end of the Canal (Nevins Street and Butler Street) and mid-canal (2nd Avenue and 5th Street), and are expected to significantly reduce CSOs in the Gowanus Canal.
- Construction has begun on the City's High Level Storm Sewer project along 3rd Avenue. Three miles of new high-capacity sewer lines will help to reduce the amount of pollution that may be discharged into the Canal during heavy rain storms, as well as street flooding.
- DEP has built 70 rain gardens across neighborhoods in the Gowanus watershed, including in Carroll Gardens, Gowanus and Park Slope. It is estimated that these rain gardens will capture six million gallons of stormwater each year, thereby reducing CSOs into the Canal and improving the health of the waterway.
- In addition, DEP partners with other City agencies to retrofit City-owned property with green infrastructure such as permeable pavement, turf fields and on-site rain gardens. Within the Gowanus watershed, DEP has completed green infrastructure construction at one school, and is currently in design on two other schools, three parks and two NYCHA developments. DEP is actively exploring opportunities for green infrastructure retrofitting at schools, parks and NYCHA developments in the Gowanus community.

Increase the amount of local stormwater managed on-site

On-site stormwater management systems, such as tanks, underground storage, green roofs, rain gardens and porous paving materials that can manage runoff from impervious surfaces through retention or detention systems, can improve drainage.

- The City's Stormwater Performance Standard requires that new development and alterations in combined sewer areas adhere to strict limits on the rate of flow allowed from their sites and buildings into the sewer system. A 2012 amendment resulted in a 90 percent reduction in allowable flow for larger developments. New development may use green infrastructure techniques such as green roofs and rain gardens to meet the allowable flow rate. Find design guidelines and more information at <http://www.nyc.gov/html/dep/html/stormwater/index.shtml>.
- Sponge Park, located at the end of 2nd Street on the west side of the Canal, was designed to capture and clean up one million gallons of stormwater runoff annually. The 1,800 square foot park provides a model for green infrastructure



Sponge Park - 2nd Street

for Canal-adjacent properties to capture stormwater before it reaches the Canal. Lessons learned from the Sponge Park pilot, which is overseen and maintained by DEP, have been incorporated into this document's waterfront open space framework.

Study local drainage patterns and sewer capacity

The Gowanus community experiences street flooding and sewer backup indicative of drainage capacity issues. A study of drainage in the area could be used to improve decisions on infrastructure investment and land use.

- DEP will develop an assessment of drainage issues and future needs in Gowanus, considering existing conditions, projected sea level rise and potential growth and development.

Waste and Litter Reduction

Encourage composting in homes and businesses

Food scraps, spoiled food, food-soiled paper, yard trimmings and plants – collectively known as organics or organic waste – comprise almost one-third of the waste that the NYC Department of Sanitation (DSNY) collects. This material can be diverted from landfills and processed to create soil-enhancing compost.

- Community District 6 is one of the first neighborhoods to be served by DSNY as an NYC Organics pilot. Compostable materials are placed in brown bins for DSNY curbside collection. Residents can also drop off certain food scraps at sites including Big Reuse Brooklyn (69 9th Street) and Carroll Gardens Green Market (Carroll Street between Smith and Court streets) during collection times.

Improve waste collection

Land use changes and redevelopment may result in new demand for street cleaning, waste collection and other services in and around Gowanus.

- The City will monitor the need for sanitation services and opportunities to adjust service schedules.

Goal 2: Support existing and future efforts to encourage flood-resilient buildings and community preparedness

Reduce Flood Risk

Update regulations to reduce risk of damage to homes and businesses in the floodplain

As part of the City's ongoing climate resiliency initiatives, DCP is working with coastal communities to update the special zoning regulations that apply in the floodplain. These regulations promote flood-resistant building design.

Transit and transportation planning is a key part of an affordable and equitable neighborhood and can also improve local air quality and reduce traffic and noise. Transportation strategies for Gowanus are described on pages 72-77.

“When the water level of the Gowanus rises during storms, adding more greenery and land mass that absorb part of the rainfall can help quell residential flooding, and is another step towards sustainable and responsible development.”

Comment from PlanGowanus.com



Floodproofing strategy

- Through engagement with the Gowanus community, DCP received feedback and ideas for improvement on the existing regulations to assist Gowanus in preparing for climate change. The proposed updates to the Zoning Resolution would include requirements and allowances to support flood-resistant construction in M-zoned areas, including the Industrial Business Zone (IBZ), the construction of active mixed-use buildings in and around the floodplain, and the retrofitting and flood protection of attached homes.
- A Waterfront Access Plan could respond to the unique issues that climate change poses to the context of the Canal, while leveraging new development along the Canal to make extra preparations for climate change and sea level rise, including resilient and elevated shoreline design.
- The City supports the continued study of neighborhood-, city- and regional-scale flood protection infrastructure investment, including an integrated flood protection system approach, in partnership with the U.S. Army Corps of Engineers and other agencies.

Improve capacity of infrastructure to meet increased demand

Increased storm frequency and sea level rise due to climate change will increase demand on urban drainage systems and the risk of local flooding during storms.

- Construction has begun on the High Level Storm Sewer project along 3rd Avenue. Three miles of new high-capacity sewer lines will help to reduce street flooding and pollution discharged into the Canal during heavy rain storms.
- The City will invest nearly \$34 million on three projects in the IBZ to upgrade and replace critical water and sewer infrastructure. These projects will relieve sewer back-ups, reduce flooding during storms, and improve drinking water quality and fire protection. The projects include installation of storm and sanitary sewers and replacement of combined sewers and water mains on 9th Street between 2nd Avenue and the Canal and on 9th Street between Smith Street and the Canal, set to start in early 2019, as well as installation of combined relief sewers and replacement of water mains on 7th Street between 3rd and 4th Avenues, set for 2019, and storm, combined, and sanitary sewer and water main replacement on 3rd and Hamilton Avenues between 14th Street and 29th Street, also planned for 2019. Additionally, DEP will study and evaluate 10th street between 2nd and 3rd avenues.
- Waterfront street ends, such as Degraw and Sackett streets, can also be designed to address climate change impacts and improve pedestrian access.

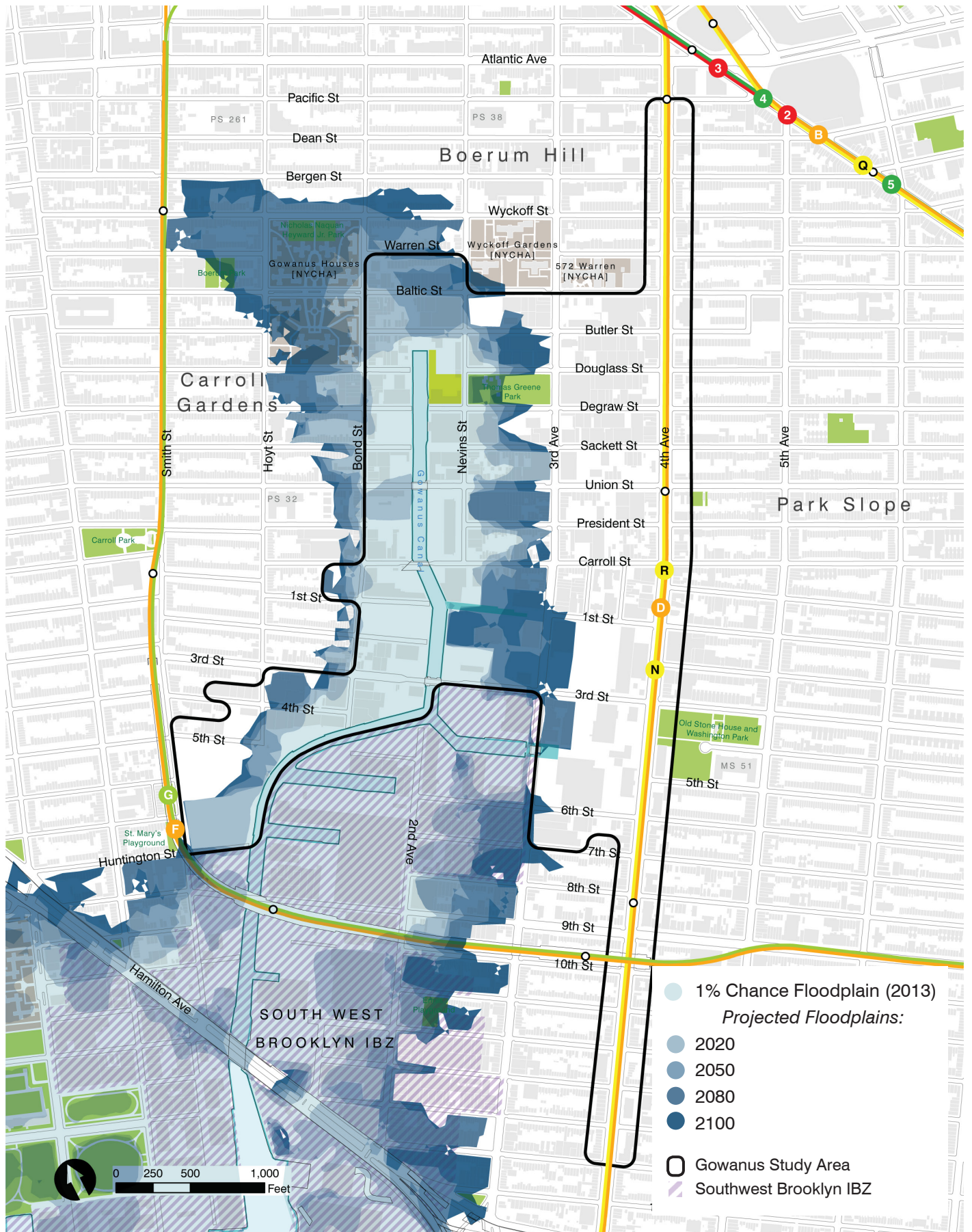
A key objective for

Gowanus is the creation and enhancement of accessible **open space** throughout the neighborhood. Goals and visions for Gowanus's parks and open spaces, including opportunities to improve the local environment and encourage the community to explore and play outside, is described on pages 30-37.

Social and Economic Resiliency

Engage community members and organizations in a community emergency response planning process

The Gowanus community has many local resources to support a planning process that addresses needs related to vulnerable community members, evacuation plans and communication systems in the event of an emergency.



Projections generated by the Institute for Sustainable Cities at CUNY using FEMA and NPCC data, including projected sea level rise



Post-Sandy community outreach

- The Sustainability and Resiliency Working Group began identifying hazards, vulnerabilities, resources and means of facilitating community members and organizations to develop and maintain a community emergency response plan.
- Gowanus community members are encouraged to become representatives of their community in the Community Preparedness Program, which provides guidance for the most common hazards in New York City, connects community organizations and networks to the Emergency Operations Center and offers training in capacity building. Through outreach and training, this program brings together leaders from volunteer programs, community and nonprofit organizations and government to promote local preparedness.
- The *Emergency Planning Toolkit* was created to guide community organizations, such as civic groups, faith-based groups and ad hoc organizations, through steps to create emergency plans together. The toolkit and template are available at http://www1.nyc.gov/site/em/community_business_plan.page.

Connect NYCHA and other area residents to green jobs opportunities

New investments and incentives for building energy efficiency, alternative energy generation, flood resilient construction and contamination remediation will provide opportunities for training and employment in the growing “green jobs” field.

- In 2017, the City launched the Green Jobs Corps, a program in partnership with the Building Construction Trades Council to train and hire 3,000 New Yorkers for careers in sustainability. The Mayor’s Office of Climate Policy & Programs facilitates opportunities for residents to obtain training and enter the green jobs workforce, including the NYCHA Pre-Apprenticeship Program for Recovery and Resiliency (<http://opportunitynycha.org/>), Workforce Development with NYC Cool Roofs (<http://nyc.gov/coolroofs>), and NYC Building Operator Training by CUNY’s Building Performance Lab (<http://www.cunybpl.org/opstraining/>).
- NYC Office of Environmental Remediation (OER) works with non-profit partners who offer job training for environmental field technicians, including safety certifications, initial job placement and career mentoring. More information on the BrownfieldWorks! program is available at <http://www1.nyc.gov/site/oercommunity/resources/brownfield-jobs.page>.
- To better connect residents to available jobs, the City will first analyze the existing talent and skills gaps for NYCHA residents and then promote career pathways, particularly for government-sponsored projects and jobs generated by local businesses and development (see Economic and Job Development, pages 58-71).

The Gowanus community has a wealth of experience and resources to support the goals of economic resiliency and emergency preparedness. **Local nonprofit and advocacy organizations** will be critical partners in achieving these goals and in helping the community prepare for and respond to hazards and emergency events.