

# Social Resiliency

**Strategy: Strengthen community capacity to prepare for, respond to, and recover from emergencies**

Approaches to increasing the resiliency of the Red Hook community may include development of implementable emergency plans, increasing communications and coordination amongst key community organizations, and other examples below:

## Create a community preparedness plan



### Broadmoor Community Emergency Response Team (CERT) – New Orleans, LA

After Katrina, the Broadmoor Improvement Association (BIA) used FEMA's CERT program to train 20 residents in basic disaster response skills.

The Broadmoor CERT maintains a list of residents who might need evacuation assistance, contacts them in the case of an emergency, and coordinates provision of rides by neighbors to designated evacuation pick-up points in the citywide City Assisted Evacuation (CAE) plan.

The BIA maintains a toll-free check-in number that allows residents to report themselves as "safe and sound," and a community forum on their website where residents can post their whereabouts.

## Increase resiliency and coordinate communications



### Occupy Sandy Online Information Sharing – NYC and New Jersey

The Occupy Sandy volunteer effort, supported by 5,000-10,000 volunteers, leveraged a wide variety of free and open-source tools for information sharing and response support:

Logged requests for assistance, to track requests for disaster relief supplies like food, water, dry goods, and cleaning supplies.

Used social media as a primary source of information for information sharing to and from the field throughout recovery efforts.

Created a centralized website, Occupy Sandy Recovery, and an online map to provide information, connect individuals with resources, collect donations, and register and direct volunteers in New Jersey, Coney Island, Greenpoint, the Rockaways, and Staten Island.

## Support and increase capacity of nonprofits



### Enterprise Partners Learning Center for Resilience

Enterprise Community Partners established a program to provide affordable housing organizations in New York City technical support and funding to increase the resiliency of their affordable properties and increase their capacity to serve residents in future emergency situations. 12 affordable housing organizations overseeing nearly 300 buildings and 12,000 units, are participating in the program. Carroll Gardens Association Inc. is amongst the recipients. Key aspects of the Learning Center for Resilience program include:

Help organizations develop comprehensive disaster preparedness and response plans for the housing portfolios

Support organizations' analysis of resilient retrofit options

Identify potential financing mechanisms to implement the recommendations



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### Increase access to local healthcare



#### CVS Mobile Pharmacy

Mobile pharmacies can bring critical medication into communities after emergency events. A number of operators provide such services including CVS, the Department of Veterans Affairs, and FEMA.

Because Red Hook lacks large healthcare facilities within in the community, a mobile pharmacy could be a critical part of an emergency response system. A community organization or emergency center could provide such a service from their facility.

### Develop or retrofit flood resistant emergency/ community center



#### St. Frances de Sales Parish – Belle Harbor, NY

Located in Belle Harbor in Rockaway West, St. Frances de Sales Parish is home to a school with a large indoor gymnasium and outdoor playground. Though the facility is not flood-proof, it sustained limited damage and became a critical information, distribution, and service center for the community.

Occupy Sandy took over the school's facilities and set up a center distributing a wide variety of goods and services. Community members could pick up donated clothing, toiletries, and cleaning supplies in the school's gymnasium. The Parish opened its upper floors to government agencies and medical services. Community members additionally went to St. Frances to get information about recovery resources and procedures.

This center is a great example of how a community center, can be converted into emergency response center in times of need. If such a building were retrofitted with back-up power and flood-proof technologies, it would become a reliable center for community support through all conditions.



# Social Resiliency

## Initial Projects/ Recommendations

- Create emergency response and preparedness plan
- Increase resiliency and coordinate communications
- Support and increase capacity of nonprofits
- Increase access to local healthcare
- Provide flood-proof emergency/community center

## Questions

- What does social resiliency mean to you?
- Where are there opportunities for a resilient emergency/community center?
- What gaps exist in nonprofit service provision today?
- What is the biggest gap in healthcare access for Red Hook residents?

## Actions, Plans, and Services Underway

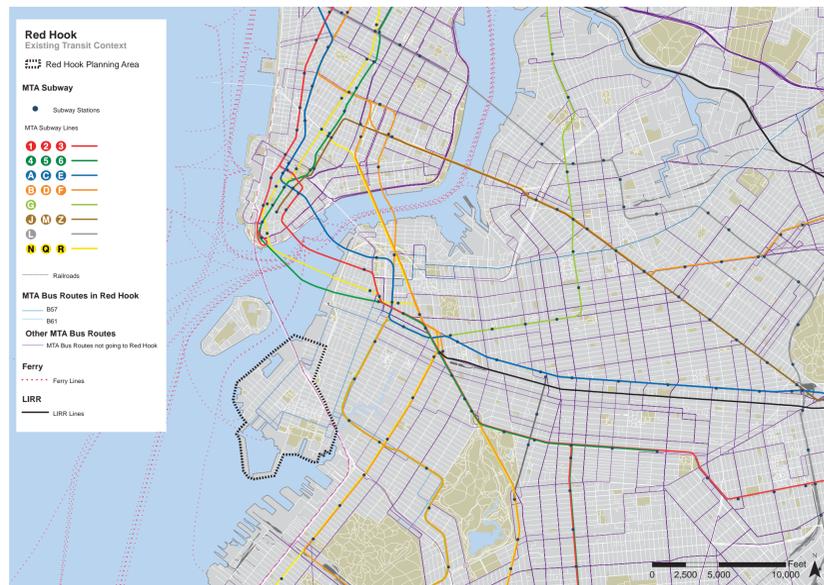
- Red Hook Initiative study of community response post-Sandy
- SBIDC Small Business Preparedness Plan
- Red Hook Coalition American Red Cross grant for aspects of emergency preparedness (CERT trainings, teen CERT, food security, medical network)
- Red Hook Coalition funding for long-term recovery plan
- Added Value Community Food Assessment



# Transportation

Strategy: Increase transit connectivity and ensure redundant transportation / transit options to facilitate evacuation and rebuilding.

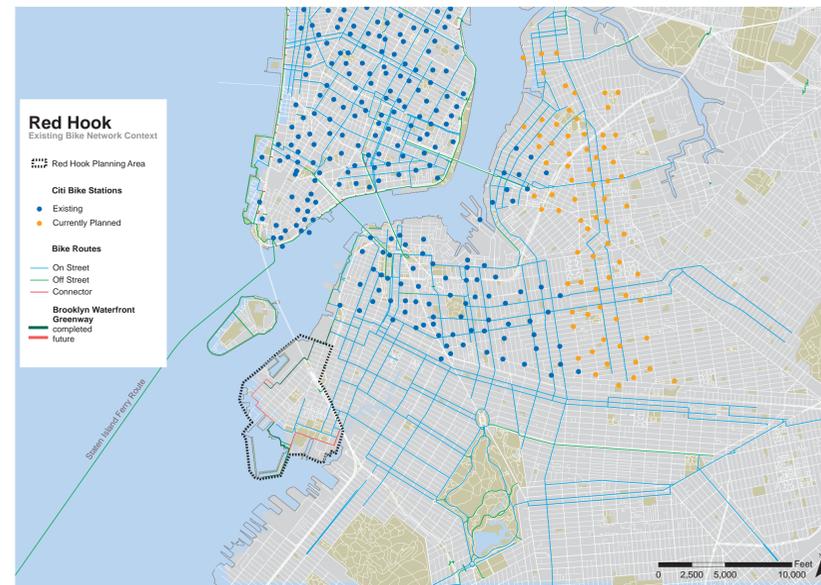
## Existing Transit



Red Hook is under-served by transit relative to many surrounding neighborhoods. At the previous public meeting a number of approaches to improving transit access were suggested including: direct bus service to Manhattan, enhanced ferry access, and streetcar.

What are your thoughts and suggestions?

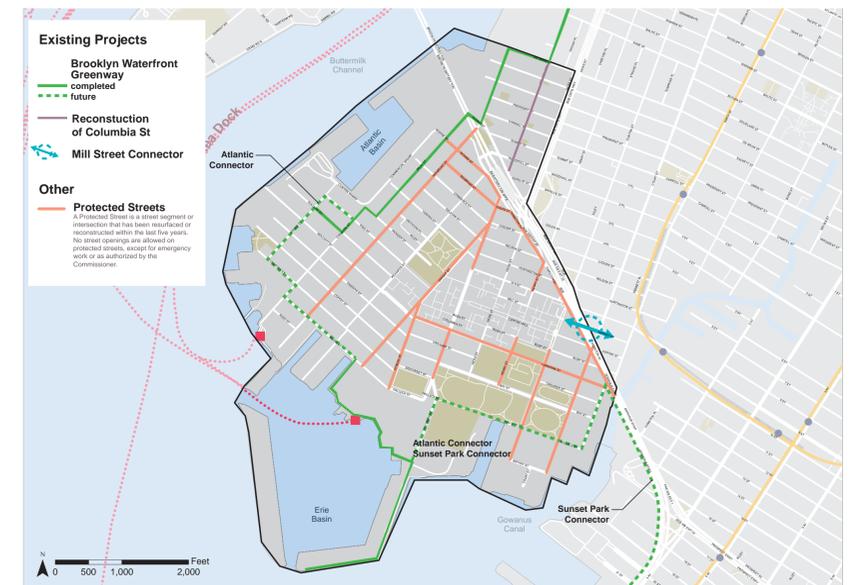
## Existing Bike



People have also suggested that expansion of the bicycle network, including extension of Citibike to Red Hook would improve access and enhance transportation options.

What are your thoughts and suggestions?

## Recent, Ongoing, and Planned Projects



Providing more and better pedestrian connections between Red Hook and surrounding neighborhoods has also been suggested. Some projects are already underway, but pedestrian access could still be improved.

What are your thoughts and suggestions?



# Transportation

Strategy: Increase transit connectivity and ensure redundant transportation / transit options to facilitate evacuation and rebuilding.

## Potential Approaches

A number of suggestions have been made for how access to/from Red Hook might be enhanced both in emergencies and day to day. These include:

### Direct Bus to Manhattan:

- what route might it take?
- where should bus stops be?

### Enhance Ferry Access:

- where / how frequent should service be?

**Streetcar:** The DOT studied the feasibility of streetcar service for Red Hook in 2011 and determined not to pursue streetcar.

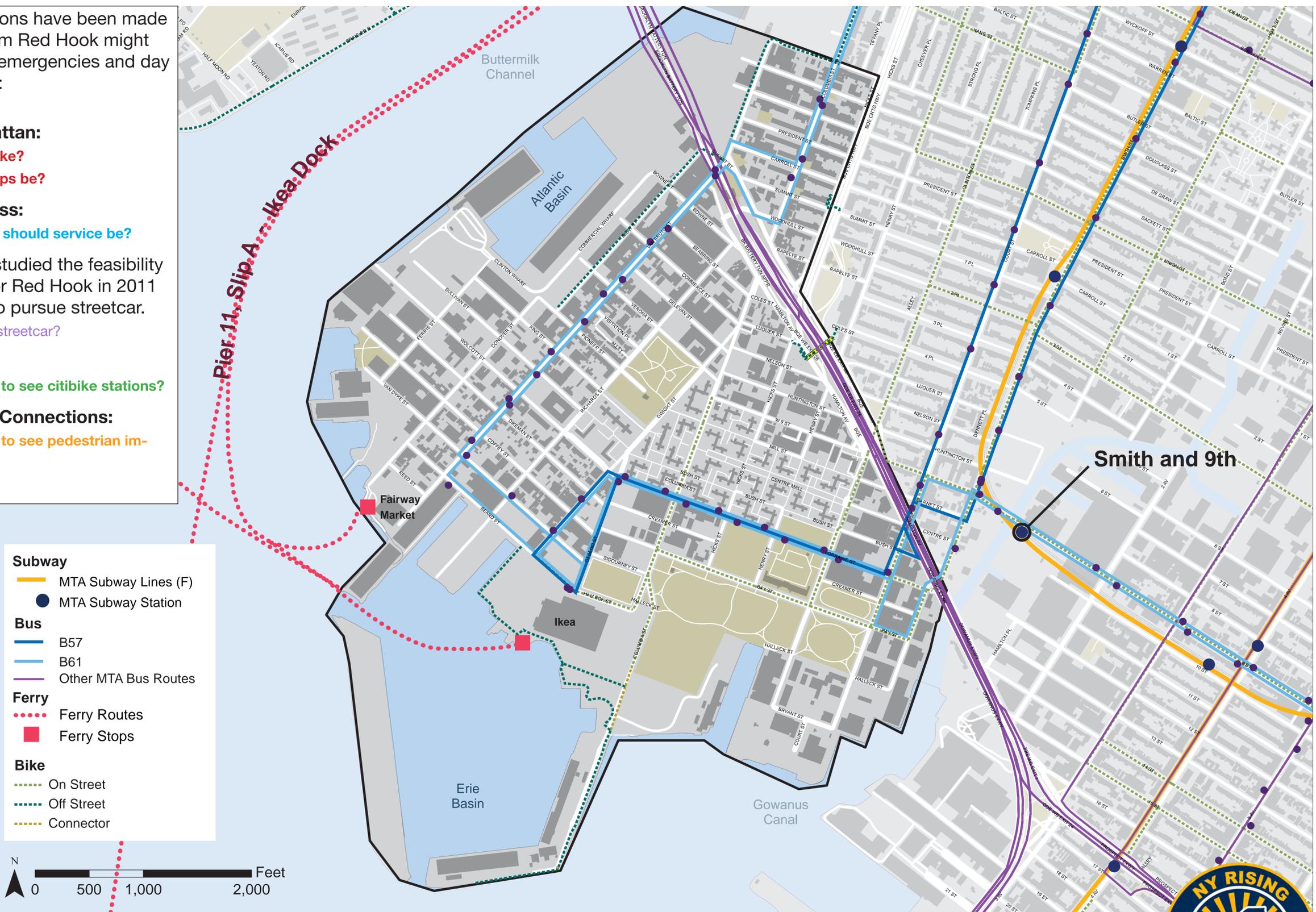
- Do you want to revisit streetcar?

### Expand Citibike:

- where would you like to see citibike stations?

### Improve Pedestrian Connections:

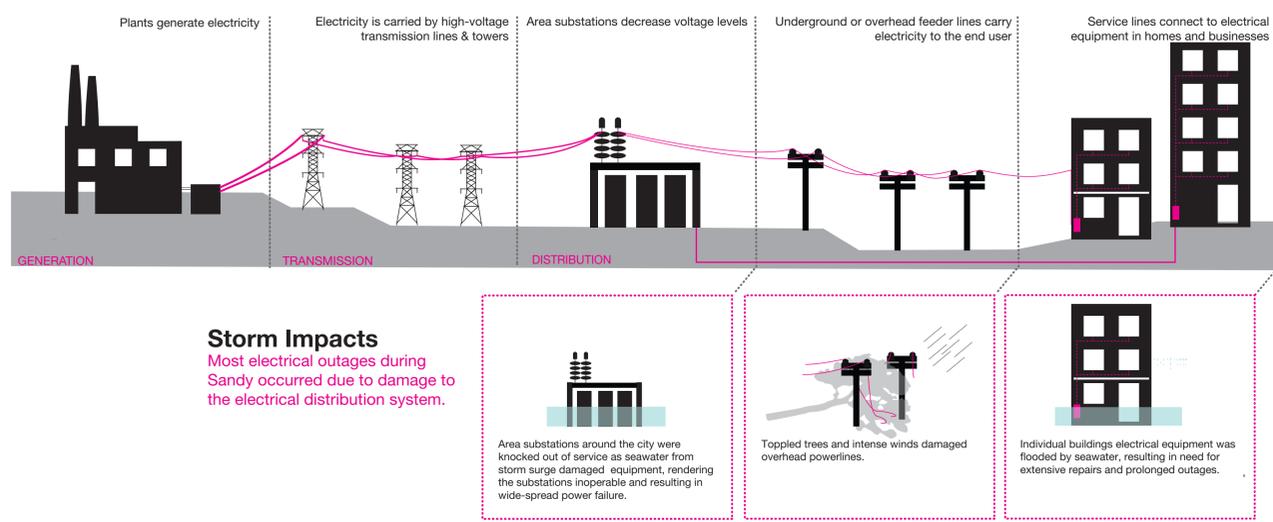
- where would you like to see pedestrian improvements?



# Power

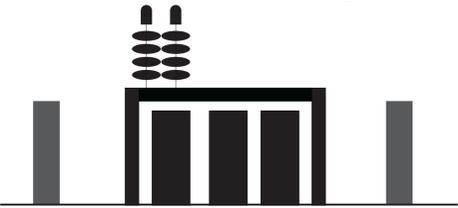
## Strategy: Create opportunities for alternative power generation and distribution

### Existing Conditions



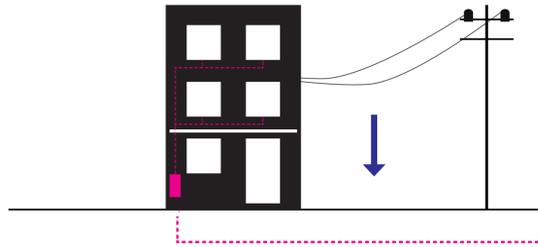
### Potential Approaches

#### Protect the Existing Distribution System



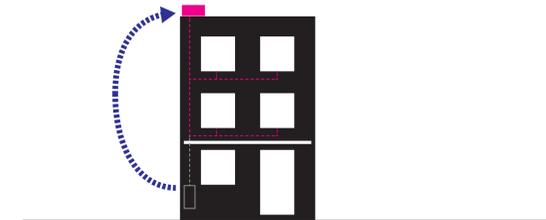
#### Substations

Substations can be protected from future flood damage in many ways: floodwalls or other measures can protect facility perimeters; equipment can be raised; back-up generators, flood sensors, and/or submersible equipment can be installed; and/or backup connections can be installed to be ready for temporary mobile substations.



#### Service Lines

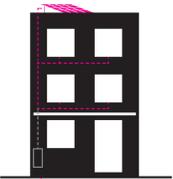
The overhead distribution system can be protected from future damage by strengthening and relocating power lines, maintaining trees properly, or by relocating some or all of the system below ground. New smart-grid technologies can be installed on distribution systems, reducing the number of citizens affected when a powerline goes down.



#### Home Equipment

Home electrical equipment including switches, sockets, breakers, and wiring, can be raised to prevent future damage from floodwater, in addition to replacing it with submersible electrical equipment.

### Alternative Energy Sources



#### Solar

The roofs of large waterfront commercial buildings as well as expansive parking lots are opportunity sites for large-scale solar generations. The top floor of walkups can be wired to use solar as off grid power during emergencies.



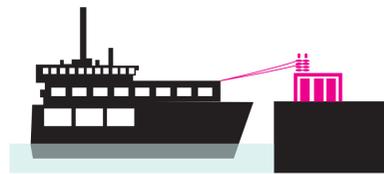
#### Wind

Wind power, when combined with an energy storage system, can feed into the existing grid while still functioning if the grid goes out.



#### Gas

Traditional gas-powered backup generators can still be an important source of power and can supplement other alternative energy sources.



#### Shipping Power / Power Barges

Ships generate their own power when at sea and sometimes 'plug into' the grid when they come to port, but in an emergency, this ship-based power can be used as one power supply for the community.



#### Microgrids

A microgrid is a small portion of the larger electrical grid that can be disconnected from the rest of the grid during an emergency. The microgrid can therefore act as a self-sufficient unit when the larger grid is compromised. Potential Microgrid locations include:

- Waterfront commercial connected to local residential
- NYCHA facilities



# Transportation

## Initial Projects/ Recommendations

- Direct Bus to Manhattan
- Enhanced Ferry Access
- Streetcar
- Citibike extension to Red Hook
- Hamilton Ave footbridge
- Improved pedestrian crossing at Clinton / West 9th
- Pedestrian Improvements on Beard St
- Greenway along Commercial Wharf near Container Terminal
- Footbridge across the Gowanus Canal to Sunset Park

## Questions

- What is the most important form of transportation during an emergency?
- What transportation improvement would have helped the most during and after Sandy?
- What form of transportation do you use each day?
- Where and how do you commute to work / school / other destinations?

## Actions, Plans, and Services Underway

- Mill Street Connector: extension through Garnett Street
- Brooklyn Waterfront Greenway: Atlantic Basin Connector & Sunset Park Connector
- Reconstruction of Columbia Street and surrounding streets
- Red Hook Transportation Needs Study (NYCDCP)
- Brooklyn Streetcar Feasibility Study (NYCDOT)
- Comprehensive Citywide ferry study (NYCEDC, NYHarborWay, WAVES)
- Past direct bus access studies (MTA)
- A Stronger More Resilient New York (SIRR Report), Chapter 10: Transportation
- Protected Streets

# Power

## Initial Projects/ Recommendations

- Microgrids
- Alternative energy generation
- Wind / water turbines
- Geothermal
- Solar
- Install backup generators
- Ship power / power barges

## Questions

- What is the most critical activity you would want power restored for after a disaster?
- Is it important that resilient power also be “green”?
- What other power options would you like to see explored?

## Actions, Plans, and Services Underway

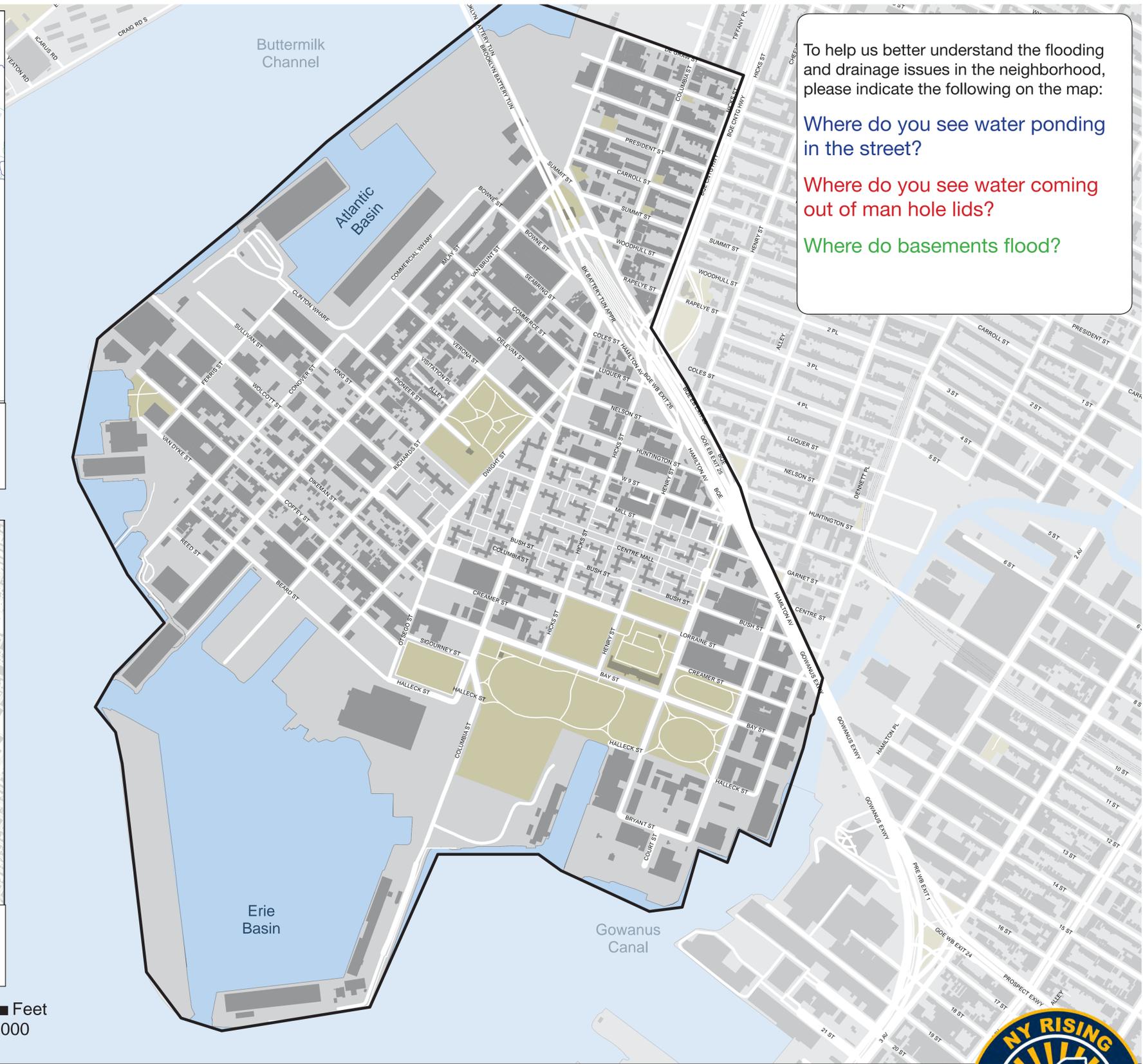
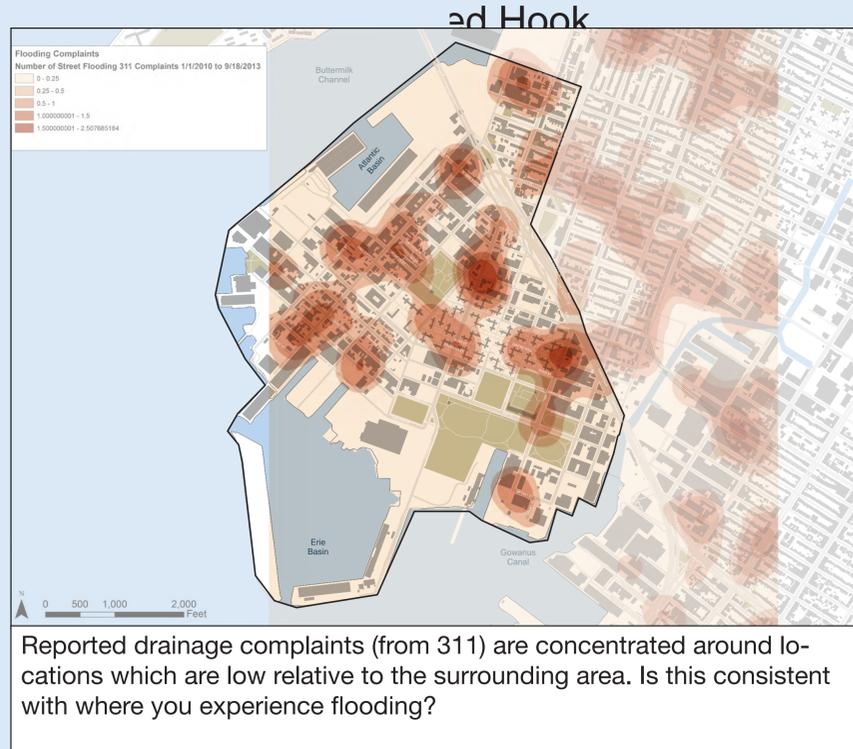
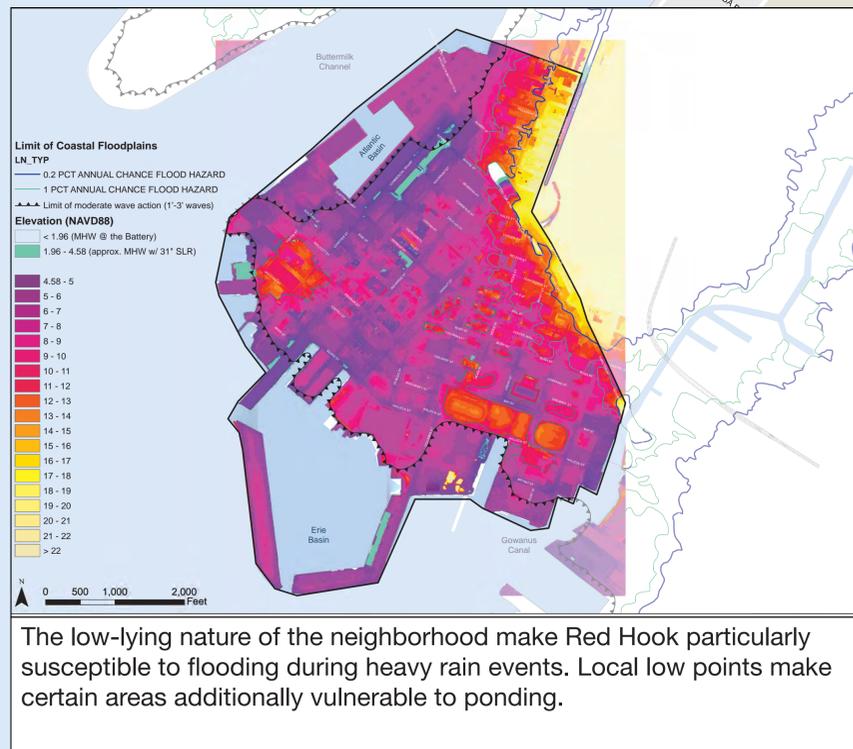
- ConEd Post Sandy Enhancement Plan
- CUNY Solar Empowerment Zone
- A Stronger More Resilient New York, Chapter 6: Utilities



# Drainage

## Strategy: Improve drainage and reduce flooding from sewer back-up

Many locations in Red Hook Suffer from frequent flooding of low-lying areas and back-up of storm sewers into the street. residents have also identified frequent basement flooding.

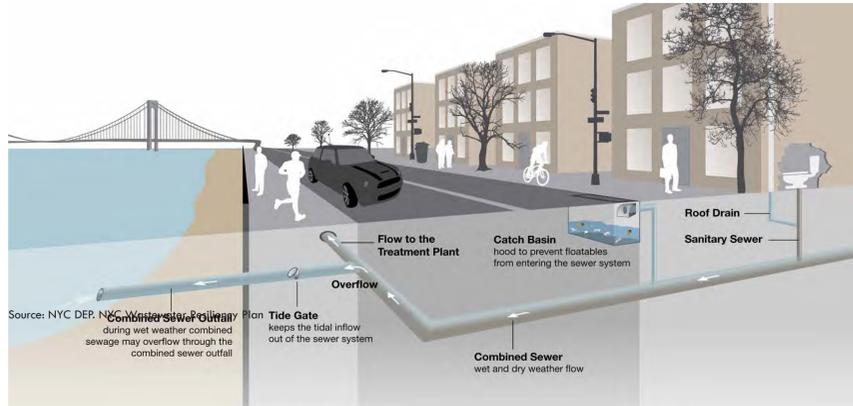


# Drainage

## Strategy: Improve drainage and reduce flooding from sewer back-up

### Existing Conditions

Red Hook is served by a combined sewer system.



“Almost two-thirds of New York City’s sewer system is a **combined sewer** that collects wastewater and stormwater runoff from properties and streets. During heavy rain-fall or snow-melt, excess flows through the plant can wash out the biological unit’s organisms that break down and treat waste. To protect the treatment plants and to prevent upstream flooding during high rainfall, New York City’s 149 miles of interceptor sewers are designed with “regulators” that have overflow weirs to divert combined stormwater and wastewater into New York City’s surrounding waterways when storm flows exceed the capacity of the system. These are combined sewer overflows or CSOs. New York City’s combined sewer system has 422 sewer regulators that can discharge CSOs.”

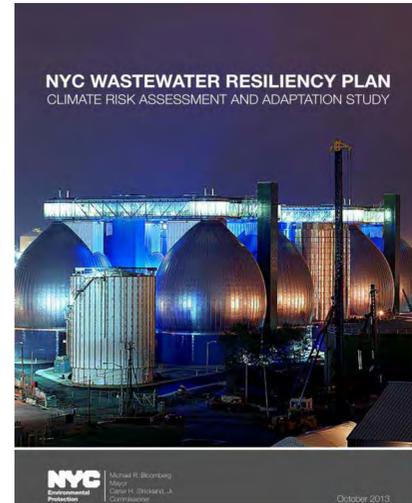
- NYC DEP. NYC Green Infrastructure Plan

The wastewater treatment plants and pump stations that serve Red Hook are at risk.



### Current Plans

#### NYC DEP Wastewater Resiliency Plan



- Identified plant-specific resiliency upgrades for the 14 at-risk wastewater treatment plants.
- Identified station-specific resiliency upgrades for the 58 at-risk pumping stations.
- Analyzed need, feasibility, and benefit of tide gates on storm sewer outfalls
- Calculated the cost of repair needed to the system.



#### Van Brunt Pump Station

- Was completely inundated during Sandy and is at high risk of future inundation
- DEP estimated cost of flood protection measures at \$2.75M
- Is among DEP’s **top 5 priority pumping stations for improvement**



#### Red Hook Wastewater Treatment Plant

- DEP identified flood adaptation strategies including elevating and flood-proofing equipment, sandbags, and sealing buildings.
- DEP estimated the cost of protective measures at \$18.6M

Source for all of the above: NYC DEP. NYC Wastewater Resiliency Plan

### Potential Approaches

Strategies to address drainage problems resulting from ...

#### heavy rainfall events

- Improve Maintenance of stormdrains
  - regularly remove sediment, garbage etc. which clog drains and reduces capacity of system
- Repair / upgrade of system
  - Identify pinch points in the system - locations where pipes are under capacity, or damaged – and target these locations for upgrades.
- Green infrastructure: Green Roofs, Blue Roofs, On-street Bioswales
  - Green infrastructure providing detention and retention will attenuate runoff within the watershed and provide additional capacity within the drainage system
  - Flooding and sewer backup isn’t about the rain falling in Red hook: Red Hook is at the bottom of the watershed; any detention or retention strategies should extend into neighborhood “up the hill” from Red Hook as well.

#### high tide events

- Ensure functionality of tide gates: ongoing maintenance to ensure that tide gates work properly during high tides and storm events.

#### surge events

- Protect pump stations and wastewater treatment plants: while a severe surge event will overwhelm the system for the duration of the storm, protecting wastewater treatment plants and pump stations can ensure the sewer system is back up and running immediately after the storm event.

