

# New York City Coastal Storm Plan (CSP)

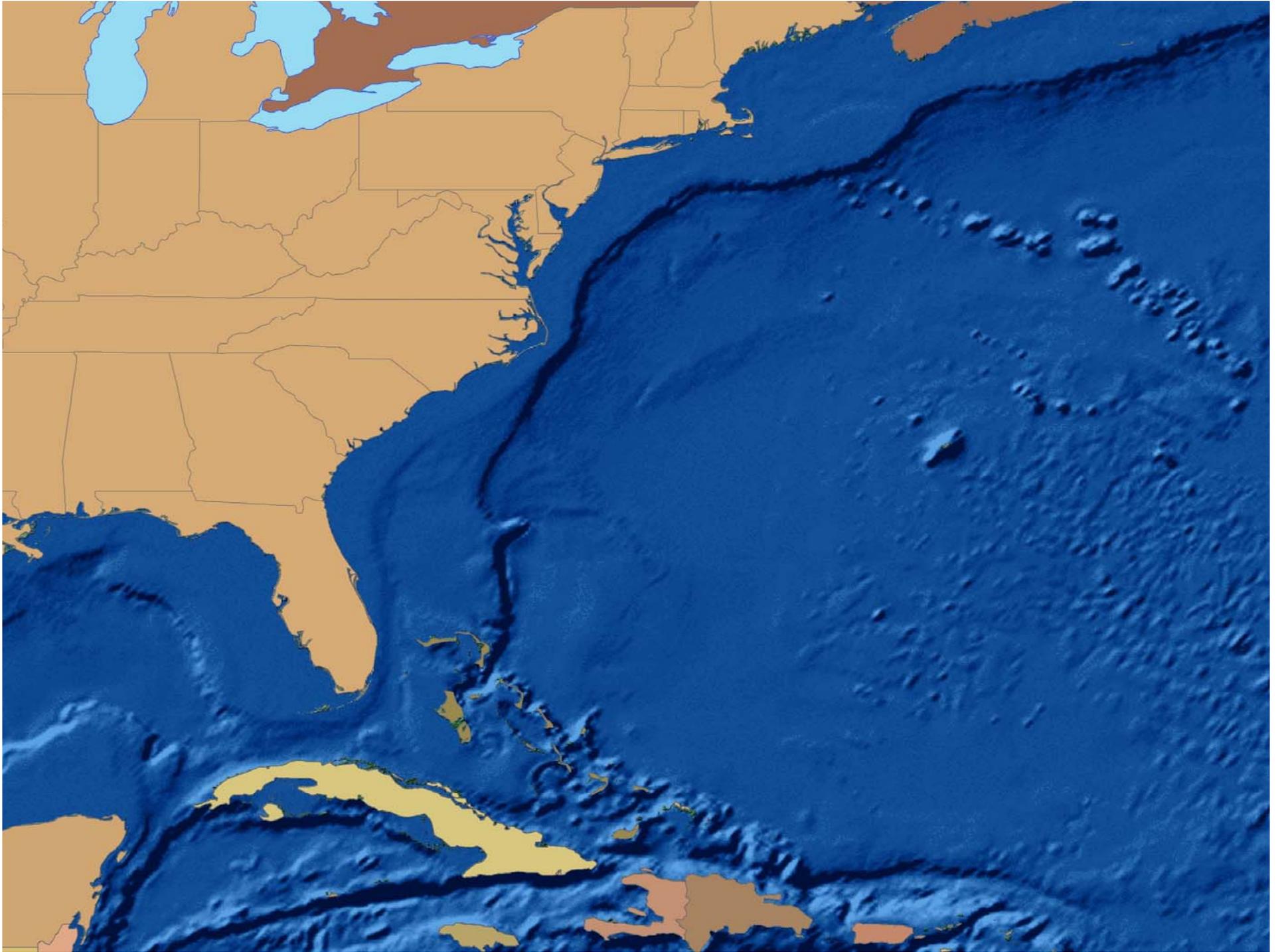
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June 28, 2006

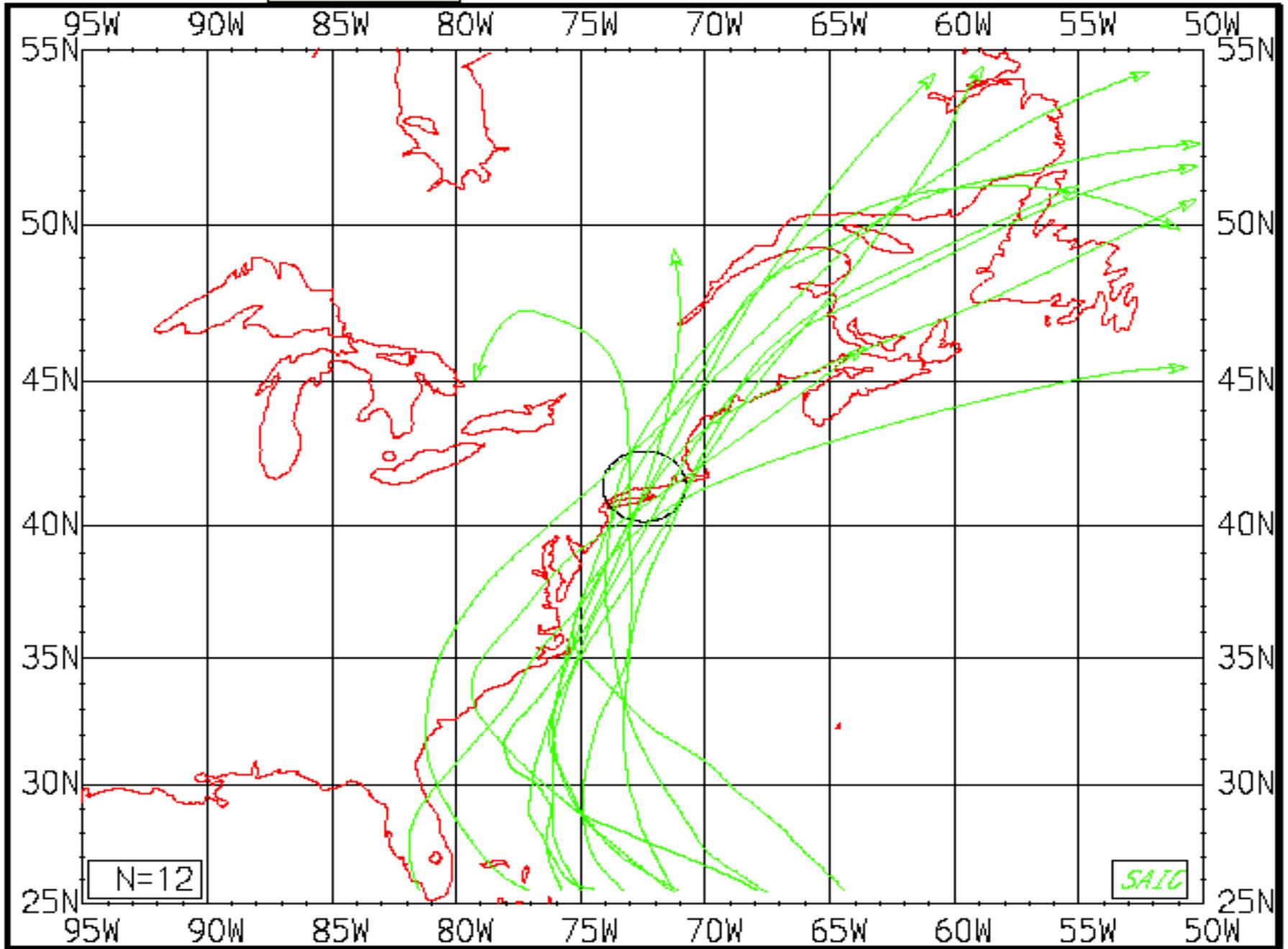
Michael R. Bloomberg, Mayor  
Joseph F. Bruno, Commissioner

New York City  
Office of Emergency Management





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HURRICANES PASSING WITHIN 75 N. MI. OF MONTAUK PT, NY 1886-2000



Long Island Sound

Atlantic Ocean

“New York Bight”

# Severity and Probability

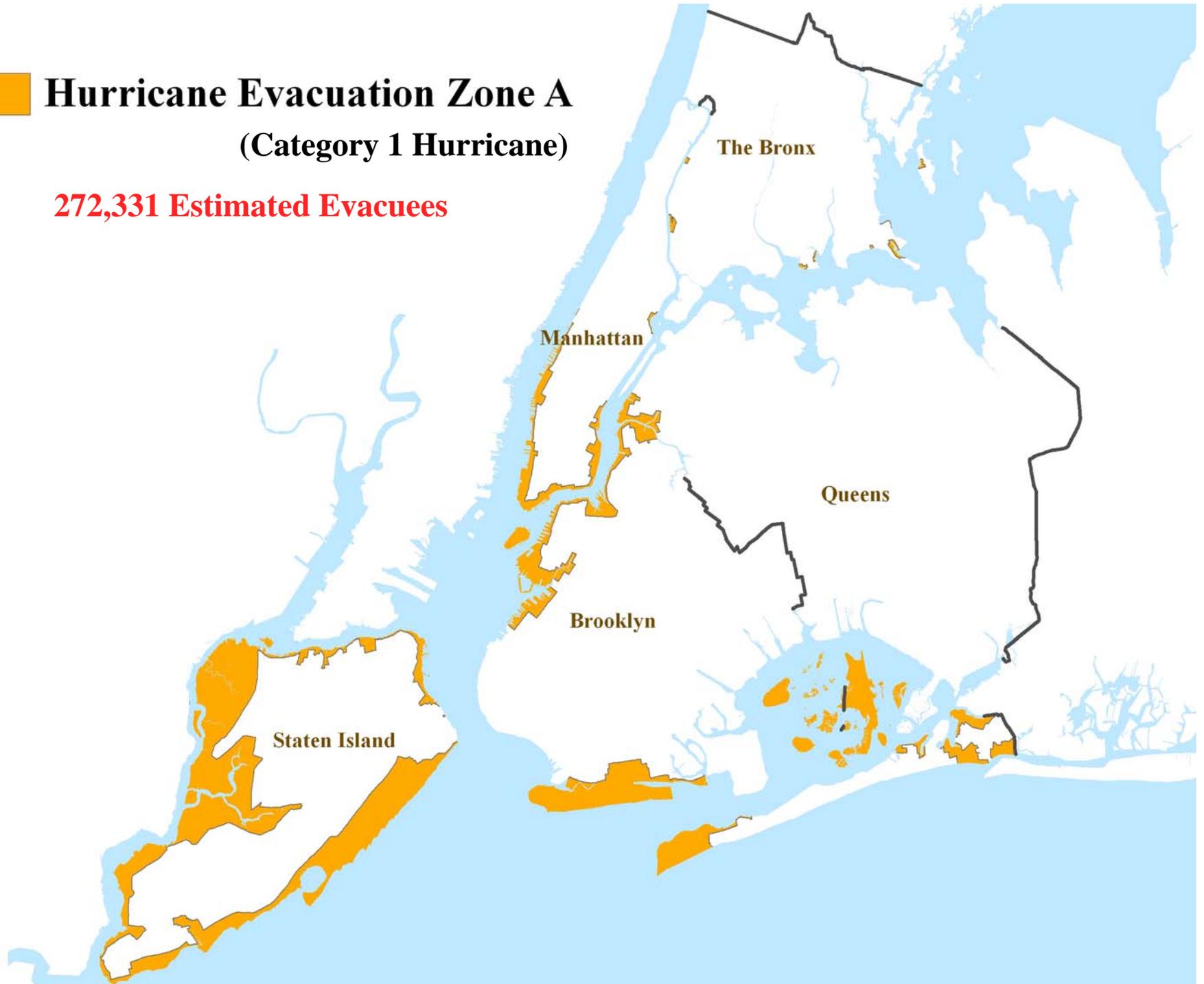
- Hurricane Season lasts from June 1 through November 30; on average, six storms threaten the Northeastern United States each year. Due to water temperatures, the New York hurricane season is generally considered to start on August 1.

Category	Storm Surge (NYC)	Winds	Damage
1	6.1-10.5 ft	74-95 mph	Moderate
2	13.0-16.6 ft	96-110 mph	Moderate-Severe
3	14.8-25 ft	111-130 mph	Extensive
4	24.6-31.3 ft	131-155 mph	Extreme
5	Not predicted	> 155 mph	Catastrophic

- If a hurricane does hit New York City, waterfront areas in every borough could experience severe flooding in the wake of a storm surge.

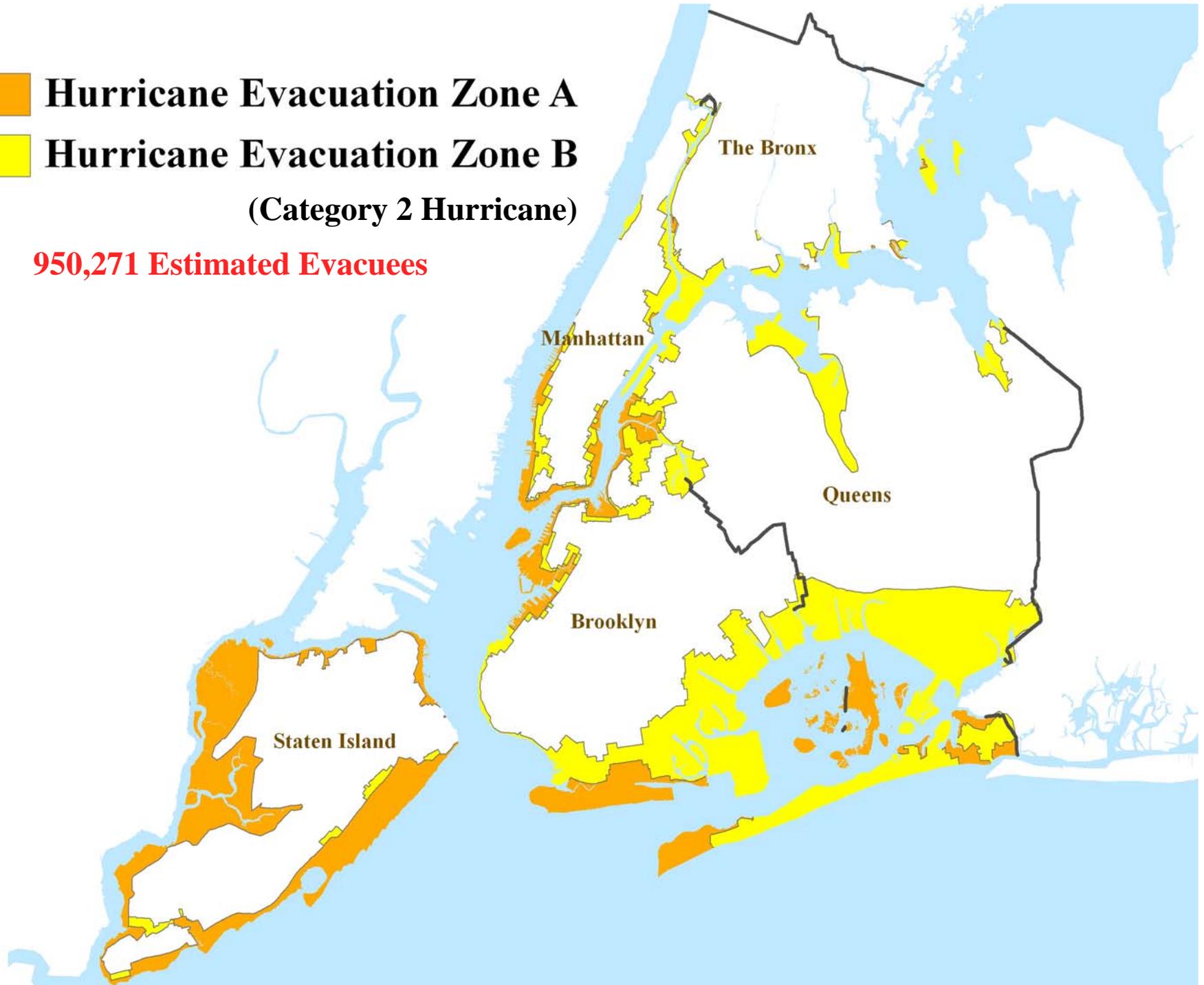
**Hurricane Evacuation Zone A**  
**(Category 1 Hurricane)**

**272,331 Estimated Evacuees**



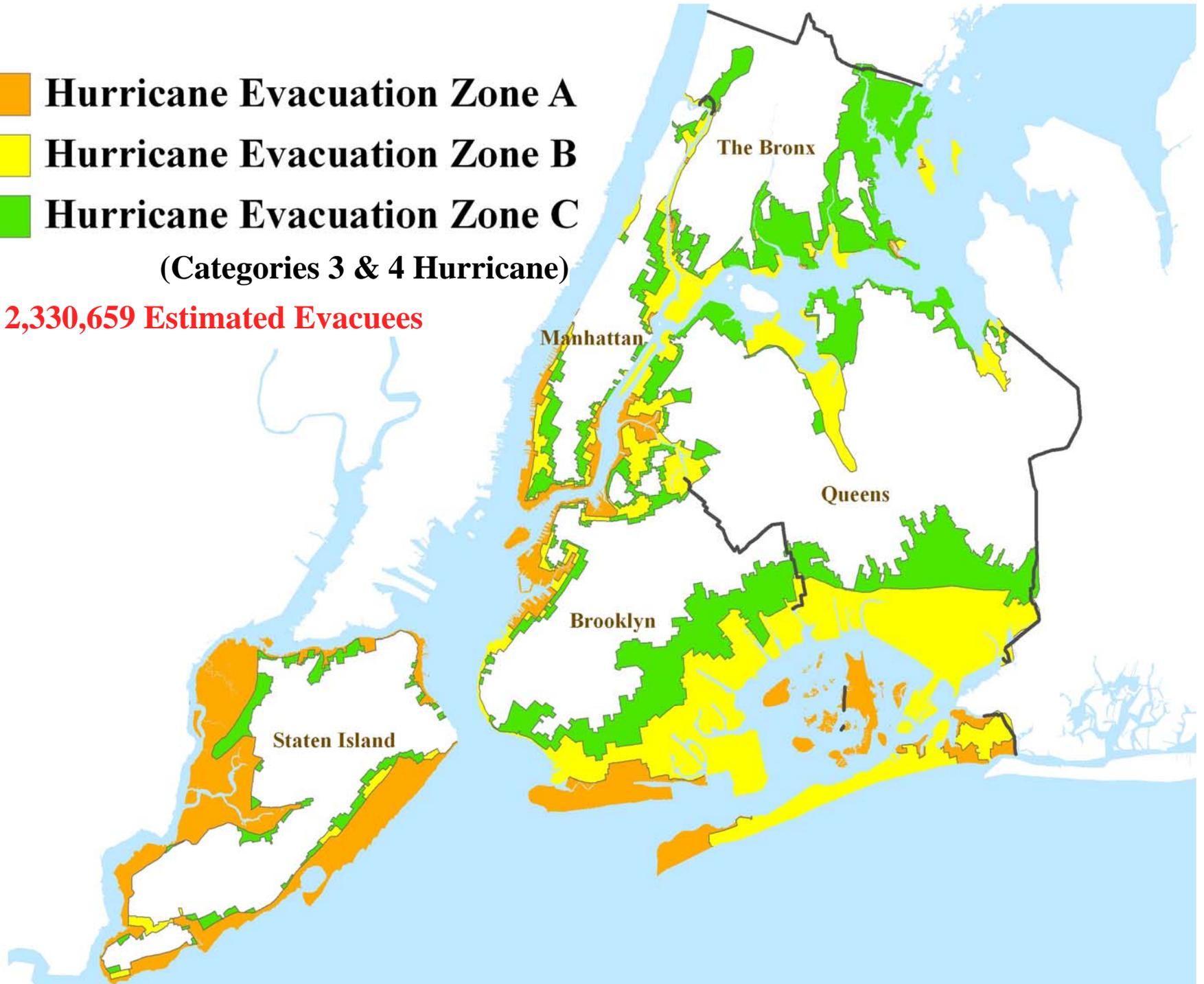
**Hurricane Evacuation Zone A**  
**Hurricane Evacuation Zone B**  
**(Category 2 Hurricane)**

**950,271 Estimated Evacuees**



-  Hurricane Evacuation Zone A
  -  Hurricane Evacuation Zone B
  -  Hurricane Evacuation Zone C
- (Categories 3 & 4 Hurricane)

**2,330,659 Estimated Evacuees**



# Potential Storm Impact

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Evacuation Order Scope	
Zone A (Category 1 Hurricane)	272,331
Zones A & B (Category 2 Hurricane)	950,271
Zone C (Categories 3 & 4 Hurricane)	2,330,659
Other Evacuees*	714,162
<b>Total Potential Evacuees</b>	<b>3,044,821</b>

\*"Other Evacuees" are people who will evacuate from non-flood zones

# Coastal Storm Plan Partners

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- **City:** NYPD, FDNY, DOT, DOHMH, DSNY, DOE, HHC, HRA, DOB, DHS, DCAS, DEP, CUNY and other agencies
- **State:** MTA, TBTA, Port Authority, NYS Department of Health, the NYS Emergency Management Office (SEMO), the Army National Guard and others
- **Federal:** National Weather Service, FEMA, Department of Homeland Security, U.S. Coast Guard, Army Corps of Engineers and others
- **Private:** ConEdison, Keyspan, Verizon and others
- **Non-Profit:** American Red Cross and others

# CSP Key Elements

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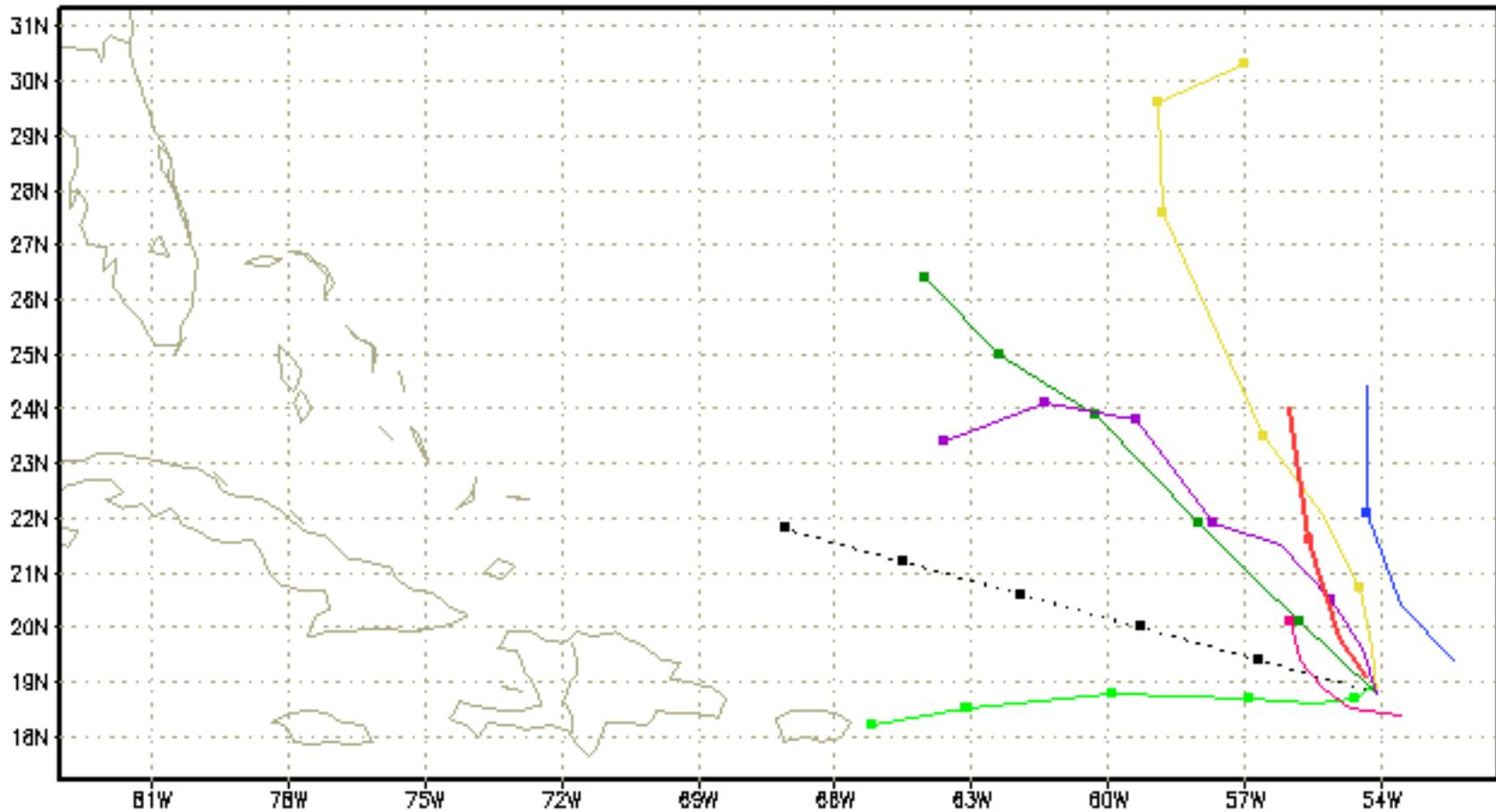
- 1. Storm Tracking**
- 2. Evacuation**
- 3. Sheltering**
- 4. Public Information**

# 1. Storm Tracking

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- OEM monitors and interprets weather data in conjunction with the National Weather Service (NWS).
- Hurricane Evacuation (HURREVAC) software determines the probability and timing of a hurricane strike up to 120 hours before possible landfall.

..... XTRAP 22/1253Z    ——— BAMD 22/1253Z    ——— NHCA98E 22/1253Z    ——— UKMET 22/0600Z  
 ——— NHC ADV 22/1500Z    ——— BAMB 22/1253Z    ——— LBAR 22/1253Z    ——— GFDL 22/1118Z



**Sample Hurricane Model Track Forecast Output**

# 2. Evacuation

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## Primary Responder Roles

- **Police** – Evacuation traffic control, shelter security, routine law enforcement coverage
- **Fire** – Healthcare facility evacuation, homebound evacuation operations, routine Fire and EMS coverage
- **Sanitation** – Preparation for recovery (e.g., cleanup, debris management)
- **HHC** – Evacuation of hospitals in flood zones, staffing Special Medical Needs (SMN) shelters

# Evacuation: Transportation

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## ➤ Roadway Management

- Designate evacuation routes, deploy traffic control personnel and tow trucks and modify signal timing to favor evacuating traffic
- Request waiver of roadway tolls
- Embargo non-emergency street construction
- Implement snow emergency traffic regulations and suspend street cleaning rules

## ➤ Increasing Public Transportation Capacity

- Increase subway and bus service into/out of flood zones and to Evacuation Centers
- Enhance Metro North and PATH service for out-of-city evacuation
- Request waiver of public transportation fares
- Modify TLC regulations to maximize passenger-carrying capacity of taxis and for-hire vehicles

# Evacuation: Healthcare Facilities

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## ➤ Determine ability to evacuate

- FDNY to visit each facility during monitoring phase
- Provide weather and evacuation information
- Report evacuation ability, resource needs and status to EOC

## ➤ Monitor status and provide resources

- OEM to monitor evacuation through EOC
- Activate Private Ambulance Coordination Center (PACC)
- Augment with additional personnel and vehicle resources

## ➤ Primary vehicle types

- Ambulances
- Ambulettes (MTA Access-A-Ride) with lift equipment
- FFA Units (MTA/ DOE bus staffed with firefighters)

# Evacuation: Special Needs and Homebound Populations

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## ➤ Advance Warning System

- Engage agencies and their clients in pre-season preparedness
- Targeted pre-storm outreach to seniors and people with disabilities
- Enhanced evacuation and sheltering information
- Coordinate agency activities during evacuation

## ➤ Homebound

- Capacity to evacuate thousands of people
- Triage to determine evacuation assistance needs

## ➤ Primary vehicle types

- Ambulances
- FFA Units (MTA/ DOE bus staffed with firefighters)
- Ambulettes (MTA Access-A-Ride) with lift equipment
- Sedans

# 3. Sheltering

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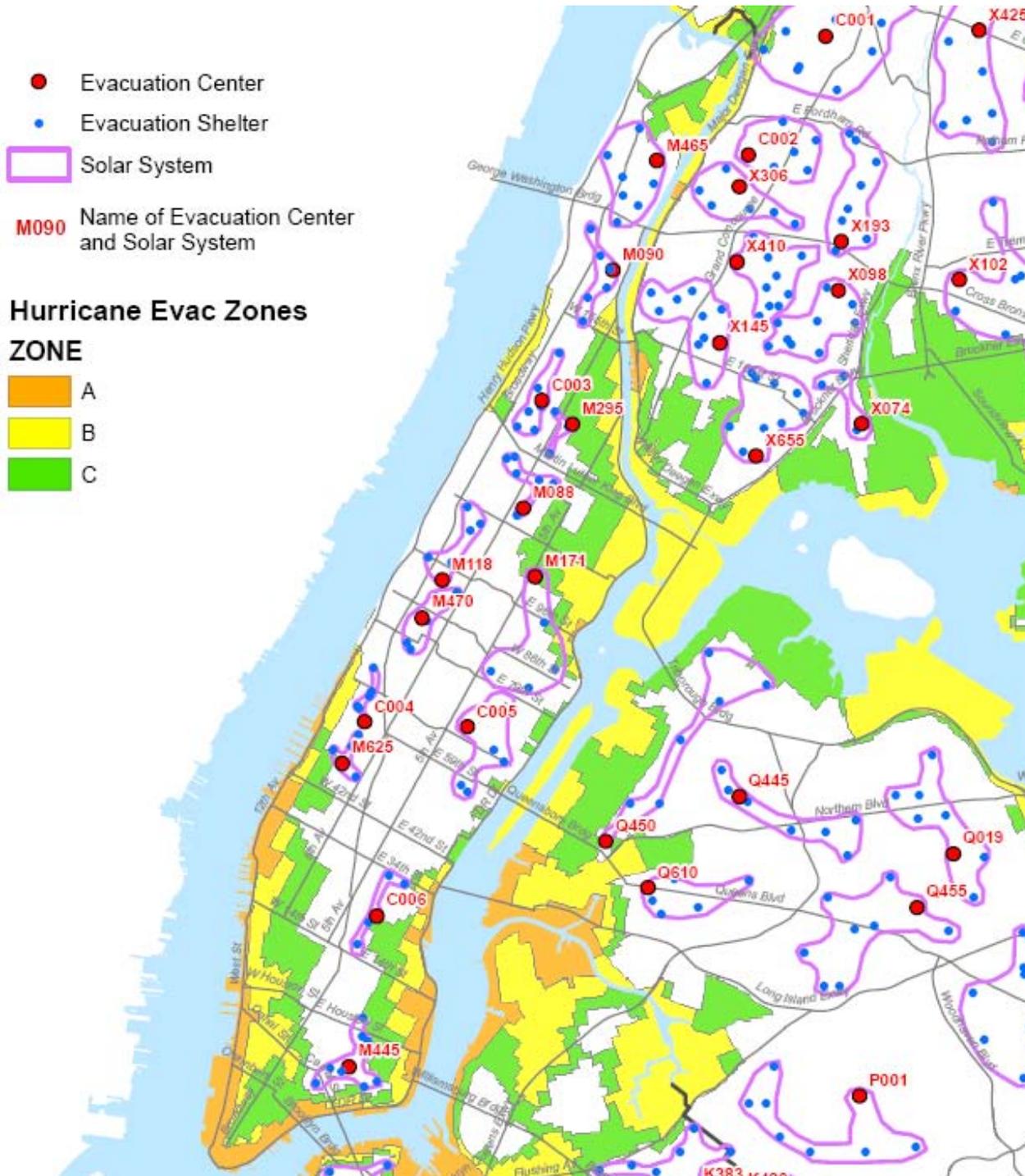
Order Scope	Evacuees	Shelterees
Zone A (Category 1)	272,331	52,835
Zones A & B (Category 2)	950,271	186,177
Zones A, B & C (Categories 3 & 4)	2,330,659	459,088
Other Evacuees & Shelterees	714,162	146,240
Totals	3,044,821	605,328

\*“Other Evacuees” are people who will evacuate from non-flood zones

# Citywide Sheltering Facilities

- Evacuation Centers and Hurricane Shelters are spread throughout the five boroughs.

Borough	Evacuation Centers	Hurricane Shelters	Special Medical Needs Shelters
Manhattan	13	79	2
Bronx	13	104	1
Brooklyn	18	144	2
Queens	16	151	2
Staten Island	5	23	1
<b>Totals</b>	<b>65</b>	<b>501</b>	<b>8</b>



## The Solar System Model

- Evacuation Centers and Hurricane Shelters will be organized into Solar Systems
- Each Evacuation Center will function as the “center” of a Solar System and will coordinate staffing and evacuation inflow for 5 to 10 Hurricane Shelters.
- The Solar System model is scalable and ensures flexibility in the City’s hurricane response.

# CSP Shelter Staffing

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- In a Category 4 hurricane, the City will need approximately 34,000 staff per day for up to 9 days.
- City employees will provide the majority of our staffing needs, and we have met with the Municipal Labor Council to review the staffing plan.
- We will work with City Agencies to recruit and train volunteers and otherwise designate staff who will be on call in the event that the coastal storm plan is activated.
- The Department of Homeless Services has partnered with the American Red Cross of Greater New York and the Red Cross will provide volunteer staff for the Evacuation Centers and Hurricane Shelters.

# 4. Public Information

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- OEM's Joint Information Center (JIC) will provide accurate information to the media and public.
- Other means of communications:
  - Emergency Alert System (EAS)
  - NYC-TV
  - 311
  - [www.nyc.gov](http://www.nyc.gov)

# READY NEW YORK

## HURRICANES AND NEW YORK CITY

Many people believe that hurricanes only affect areas far south of New York. But coastal storms, including hurricanes, can and do impact the City. In fact, New York's densely populated and highly developed coastline makes the City among the areas most vulnerable to hurricane-related damage.

Due to regional geography, hurricanes in New York City – though infrequent – can do more damage than hurricanes of similar strength in the southern United States. In a major hurricane, storm surge could put some parts of New York City under more than 30 feet of water. The New York City Office of Emergency Management works to ensure the City is prepared for coastal storms and hurricanes. Read on to learn more about how you can prepare.



New York City  
Office of Emergency Management

Michael R. Bloomberg, Mayor  
Joseph F. Bruno, Commissioner  
2006 edition



cover photography: Jonbit and Gasho, Queens C314

### COASTAL STORM TERMS

**Hurricane Season**  
June 1 to November 30\*

**Tropical Cyclone**

An organized rotating weather system that develops in the tropics and has a warm center of low barometric pressure

**Tropical Storm**

A tropical cyclone with sustained winds of 39-73 mph

**Hurricane**

A tropical cyclone with sustained winds of 74 mph or greater

**Hurricane Watch**

Issued for a coastal area when there is a threat of hurricane conditions within 24-36 hours

**Hurricane Warning**

Issued when hurricane conditions are expected in a specified coastal area in 24 hours or less. Hurricane conditions include winds of 74 mph or higher and/or dangerously high tides or waves.

\*Historically, the greatest potential for hurricanes in New York City occurs from August to October.

### HOW IS HURRICANE STRENGTH MEASURED?

Hurricanes are categorized according to wind strength using the Saffir-Simpson Hurricane Scale. A Category 1 storm has the lowest wind speeds, while a Category 5 has the strongest.

Type of Tropical Cyclone	Category	Potential for Damage	Wind Speed (in MPH)
Hurricane	1	Minimal	74-95
Hurricane	2	Moderate	96-110
Hurricane	3	Extensive	111-130
Hurricane	4	Extreme	131-155
Hurricane	5	Catastrophic	156+

### RESOURCES

**NYC Office of Emergency Management**  
[NYC.gov/oem](http://NYC.gov/oem)

**NY State Emergency Management Office**  
[www.nysemo.state.ny.us](http://www.nysemo.state.ny.us)

**Federal Emergency Management Agency**  
[www.fema.gov](http://www.fema.gov)

**Department of Homeland Security**  
[www.ready.gov](http://www.ready.gov)

**American Red Cross in Greater New York**  
[www.nyredcross.org](http://www.nyredcross.org)  
877-RED-CROSS

**National Hurricane Center/Tropical Prediction Center**  
[www.nhc.noaa.gov](http://www.nhc.noaa.gov)

**National Weather Service**  
[www.weather.gov](http://www.weather.gov)

**NOAA All Hazards Radio** broadcasts National Weather Service warnings, watches, forecasts, and other hazard information 24 hours a day.

In the event of an approaching hurricane, call 311 (TTY: 212-504-4115) or access [NYC.gov](http://NYC.gov) for tips and information.

## HOW CAN I PREPARE MYSELF?

The best way to prepare for a hurricane evacuation is to know your evacuation zone and develop a plan ahead of time.

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## DETERMINE IF YOU LIVE IN AN EVACUATION ZONE

Use the Hurricane Evacuation Zone Finder at [NYC.gov/oem](http://NYC.gov/oem), call 311 (TTY: 212-504-4115), or consult the map provided in this brochure to find out if your address is located in an evacuation zone.

Areas of the City subject to storm surge flooding are divided into three zones based on how storms of different strengths will affect them. Residents in some or all of these zones may need to evacuate depending on the strength of the approaching storm.

### IF YOU LIVE IN AN EVACUATION ZONE

#### Prepare A Disaster Plan

Develop a plan with your household members that outlines what to do, how to find each other, and how to communicate if a hurricane strikes New York.

#### Know Where You Will Go

The City strongly recommends evacuees stay with friends or family who live outside evacuation zone boundaries. For those who have no other shelter, the City will open hurricane shelters throughout the five boroughs.

To ensure efficient use of resources, the City will ask all evacuees to report to an evacuation center. Once at the evacuation center, evacuees will either be assigned to a hurricane shelter in the same facility or transported to an associated hurricane shelter by bus.

To find the location of your evacuation center, use the Hurricane Evacuation Zone Finder at [NYC.gov/oem](http://NYC.gov/oem), call 311 (TTY: 212-504-4115), or consult the map provided in this brochure.

#### Keep a Go Bag Ready

Every household member should have a small Go Bag – a collection of items you may need during an evacuation packed in an easy-to-carry container such as a backpack. A Go Bag should be easily accessible if you have to leave your home in a hurry. (See Go Bag list on the right)

#### Assemble an Emergency Supply Kit

Depending on the severity of the storm, you may be instructed to shelter in place (stay at home) during a hurricane even if you live in an evacuation zone. Keep enough supplies in your home to survive for at least three days. (See Supply list on the right)

### IF YOU DO NOT LIVE IN AN EVACUATION ZONE

#### Assemble an Emergency Supply Kit

All areas of the City could face hurricane-related hazards such as high winds, flooding, tornadoes, and loss of utilities. You may be instructed to shelter in place (stay at home) for several days until the hurricane passes. (See Supply list on the right)

### IF YOU LIVE IN A HIGH-RISE APARTMENT BUILDING

Residents of high-rise apartment buildings may face special risks from hurricanes even if they live safely outside evacuation zone boundaries.

If you live in a high-rise building outside an evacuation zone, be prepared to take shelter on or below the 10th floor.

If you live in a high-rise building located in an evacuation zone, heed evacuation orders.



### A GO BAG SHOULD INCLUDE

- Copies of your important documents in a waterproof and portable container (insurance cards, photo IDs, proof of address, etc.)
- Extra set of car and house keys
- Credit/ATM cards and \$50-\$100 cash in small denominations
- Bottled water and nonperishable food such as energy or granola bars
- Flashlight
- Battery-operated AM/FM radio and extra batteries
- Up-to-date medication information and other essential personal items. Keep a list of the medications each member of your household takes, why they take them, and their dosages. Also include all doctors' names and phone numbers
- First-aid kit
- Contact and meeting place information for your household and a small regional map
- Child care supplies or other special care items

### AN EMERGENCY SUPPLY KIT SHOULD INCLUDE

- One gallon of drinking water per person per day
- Nonperishable, ready-to-eat canned foods and manual can opener
- First-aid kit
- Flashlight
- Battery-operated AM/FM radio and extra batteries
- Whistle
- Iodine tablets or one quart of unscented bleach (for disinfecting water ONLY if directed to do so by health officials) and eyedropper (for adding bleach to water)
- Personal hygiene items: soap, feminine hygiene products, toothbrush, toothpaste, etc.
- Phone that does not rely on electricity
- Child care supplies or other special care items

### BEFORE THE STORM

#### Stay Informed

For the latest information about an approaching storm or to find out if you should evacuate, stay tuned to TV and radio broadcasts, access [NYC.gov](http://NYC.gov), or call 311 (TTY: 212-504-4115).

#### Secure Your Home

If a tropical storm or hurricane watch is issued:

- Bring inside loose, lightweight objects, such as lawn furniture, garbage cans, garden tools, and toys.
  - Anchor objects that will be unsafe to bring inside, like gas grills or propane tanks. Turn off propane tanks.
  - Shutter windows securely and brace outside doors.
  - Place valuables in waterproof containers or plastic bags.
- #### Help Others Prepare
- Check on friends, relatives, and neighbors, especially those with disabilities or special needs, and assist them with their preparation and evacuation.

If you live outside an evacuation zone, offer to shelter family and friends who may need to evacuate.

#### If Asked to Evacuate, Do So Immediately

The City will communicate specific instructions about which areas of the City should evacuate through local media.

#### If the City Issues an Evacuation Order for Your Area:

- Evacuate immediately.
- If you are going to an evacuation center, pack lightly, and bring:
  - Your Go Bag
  - Sleeping bag or bedding
  - Required medical supplies or equipment
- Let friends or relatives know where you are going.

### WHAT ABOUT MY PETS?

Make sure your disaster plan addresses what you will do with your pet if a hurricane requires you to leave your home. Plan to shelter your pet at a kennel or with friends or relatives outside the evacuation area.

Be sure you have supplies ready for your pet in the event of an evacuation, including food, a leash, a muzzle, proof of shots, and a cage or carrier.

### ACCOUNT FOR YOUR SPECIAL NEEDS

- Consider your capabilities and make sure your preparedness plan addresses how your special needs affect your ability to evacuate.
- Determine if you will need assistance and arrange help from friends, family, or neighbors.
- Consider additional supplies and equipment that you may need to bring with you, such as medical devices and backup equipment.
- Include additional time and evaluate your transportation options.

Llame al 311 (TTY: 212-504-4115) o visita [NYC.gov/oem](http://NYC.gov/oem) para obtener acceso a este folleto en español.

Per ottenere una copia di questa pubblicazione in lingua italiana, chiamare il 311 (TTY: 212-504-4115) o recarsi all'indirizzo web [NYC.gov/oem](http://NYC.gov/oem).

Rele 311 (TTY: 212-504-4115) o swa wizite [NYC.gov/oem](http://NYC.gov/oem) pou jwenn tiliv sa a an Kreyòl.

Telefonować pod nr 311 (teletekst dla osób z upośledzeniem słuchu: 212-504-4115) lub wejść na stronę [NYC.gov/oem](http://NYC.gov/oem), aby przeczytać broszurę w jęz. polskim.

Звоните 311 (TTY: 212-504-4115) или посетите [NYC.gov/oem](http://NYC.gov/oem) чтобы получить эту брошюру на русском языке.

한국어로 된 브로셔 인수를 원하시면 311 (TTY: 212-504-4115) 로 전화하시거나 또는 [NYC.gov/oem](http://NYC.gov/oem) 을 방문하십시오.

請致電 311 (TTY: 212-504-4115) 或訪問 [NYC.gov/oem](http://NYC.gov/oem) 查看中文版的手冊。

311 (TTY: 212-504-4115) پر کال کریں یا اردو میں اس کتابچہ تک رسائی کے لیے [NYC.gov/oem](http://NYC.gov/oem) ملاحظہ فرمائیں۔

اطلب هاتف رقم 311 (TTY: 212-504-4115) أو قم بزيارة موقع الإنترنت [NYC.gov/oem](http://NYC.gov/oem) لقراءة هذا الكتيب باللغة العربية.

311 (TTY: 212-504-4115) אויער באזונט [NYC.gov/oem](http://NYC.gov/oem) צו זעהן דעם בראשור אין אידיש.