

# SSPEED Center Conference

*Rice University / Houston, Texas*

*September 25, 2013*



## Hurricane Sandy Response

Prepare

Coordinate



**WHO IS IN CHARGE?**  
[SINGLE vs. UNIFIED COMMAND]

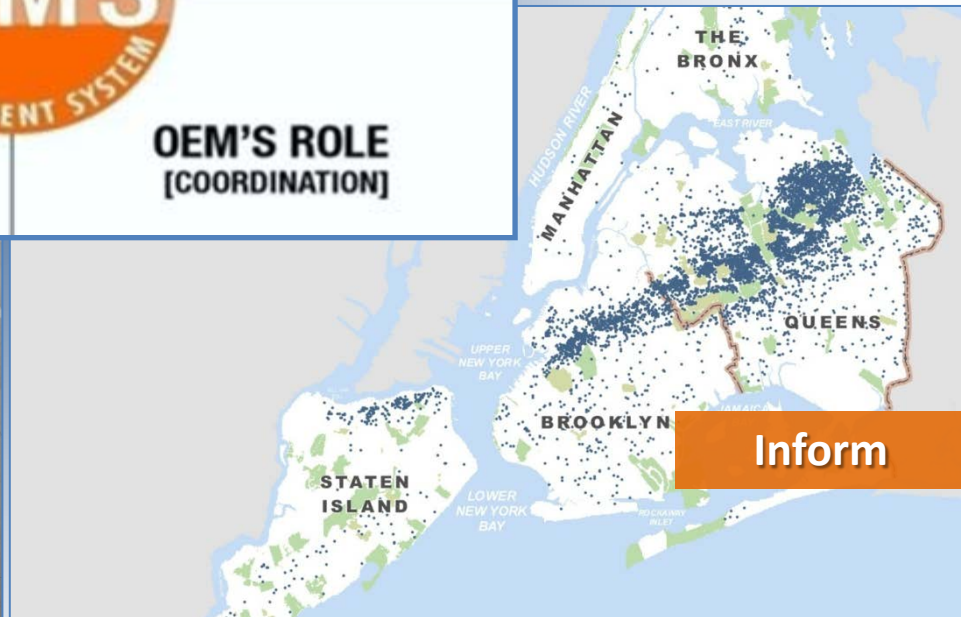
**WHAT DO AGENCIES DO?**  
[CORE COMPETENCY]



**INTEROPERABILITY**  
[ICS STRUCTURE]

**OEM'S ROLE**  
[COORDINATION]

Educate



Inform

# Complexity

**\$1.13 TRILLION GDP**

ONE-THIRD OF THE NATION'S LARGEST MEDIA COMPANIES

ELLIS ISLAND 21 ACTIVE US MILITARY INSTALLATIONS

2.5 MILLION DAILY BUS PASSENGERS

THE STATUE OF LIBERTY

THE BROOKLYN BRIDGE

THE UNITED NATIONS

92.4 MILLION ANNUAL AIR TRAVELERS

WALL STREET TWO MAJOR LEAGUE BASEBALL STADIUMS

**5 MILLION DAILY SUBWAY PASSENGERS**

THE NEW YORK STOCK EXCHANGE 22 UNDERWATER RAIL TUNNELS

61 HOSPITALS

950 COMMERCIAL VESSELS IN THE NEW YORK HARBOR

BARCLAY'S CENTER

51 MILLION ANNUAL TOURISTS

600 CULTURAL INSTITUTIONS

182 NURSING HOMES

THE EMPIRE STATE BUILDING

800,000 DAILY COMMUTERS

BROOKHAVEN NATIONAL LABORATORY

INDIAN POINT NUCLEAR POWER PLANT

**8.2 MILLION RESIDENTS**

MADISON SQUARE GARDEN

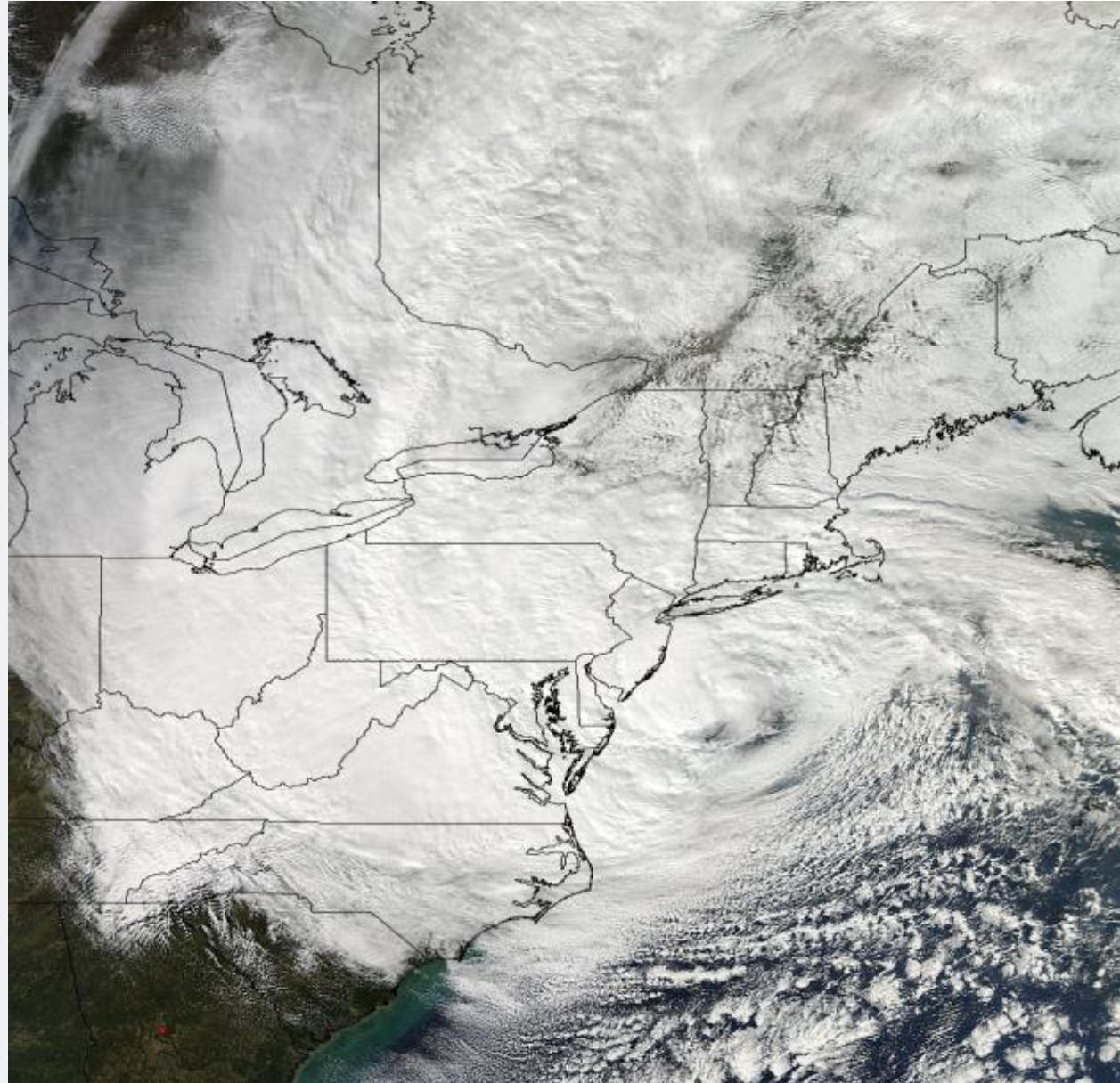
200,000 BUSINESSES

# Vulnerability



# Coastal Storm Plan

- Cat 4 Hurricane
- Landfall at AC, NJ
- NE quadrant
- Strongest winds
- 3 million evacuate
- 605,000 seek shelter

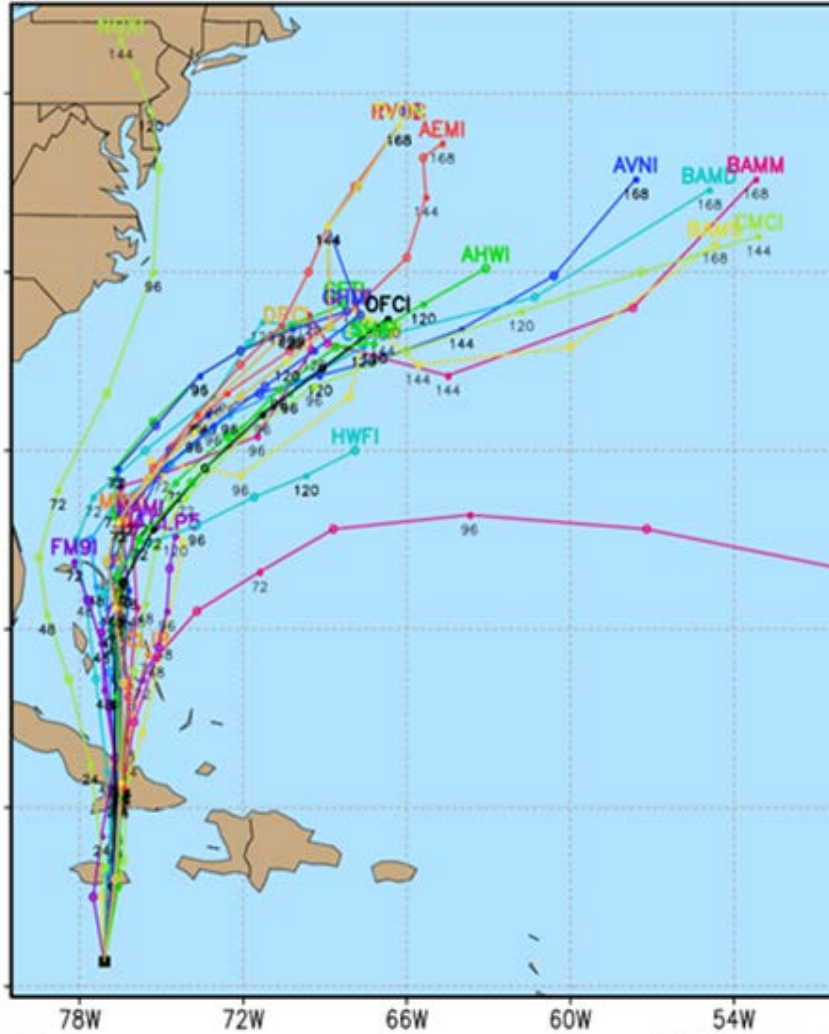


# Forecast

10/23—10/24—10/25—10/26—10/27—10/28—10/29

## October 24, 2012

### Sandy Model Tracks

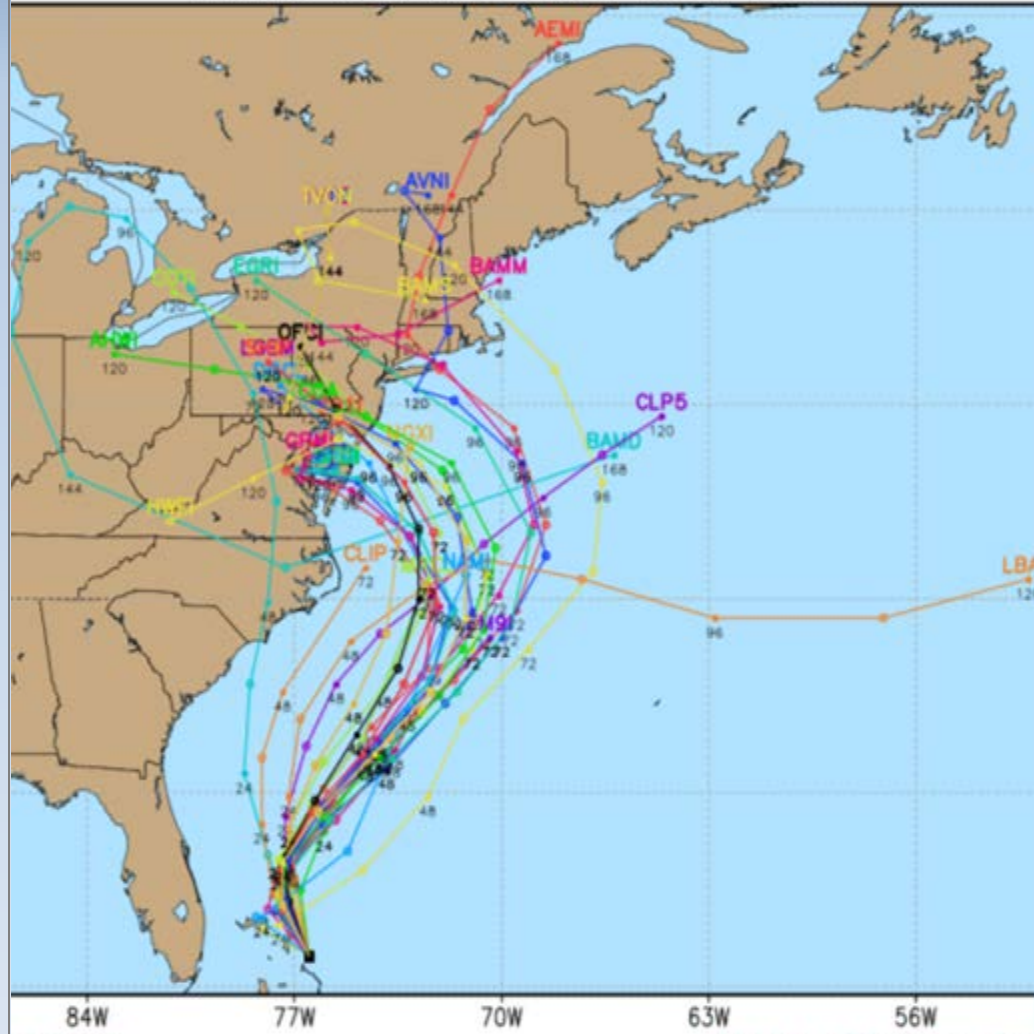


Model Plots  
ath.uwm.edu/models/  
these images is prohibited.

DISCLAIMER: Do not  
The official NHC forec  
Forecast points above are shown in 12 hr increments. Initial poi

## October 26, 2012

### Sandy Model Tracks



Model Plots  
ath.uwm.edu/models/  
ne/models

DISCLAIMER: Do not use this image  
The official NHC forecast is available  
Forecast points above are shown in 12 hr increments. Initial poi

# Decision Making

10/23—10/24—10/25—10/26—**10/27**—10/28

COASTAL HAZARD MESSAGE  
NATIONAL WEATHER SERVICE NEW YORK NY  
139 PM EDT SAT OCT 27 2012

...MODERATE TO MAJ  
TUESDAY MORNING...

CTZ009>012-NJZ006-  
/O.CON.KOKX.CF.A.0  
SOUTHERN FAIRFIELD  
SOUTHERN NEW LONDO  
NEW YORK (MANHATTAN  
KINGS (BROOKLYN)-N  
SOUTHWESTERN SUFFO  
NORTHERN NASSAU-SO  
139 PM EDT SAT OCT

...COASTAL FLOOD W  
THROUGH LATE MONDA

\* LOCATIONS...COAS  
AND EASTERN SHOR

\* TIDAL DEPARTURES  
NIGHT. 2 TO 4 FT  
POTENTIAL FOR 4  
MORNING.

\* BEACH EROSION...

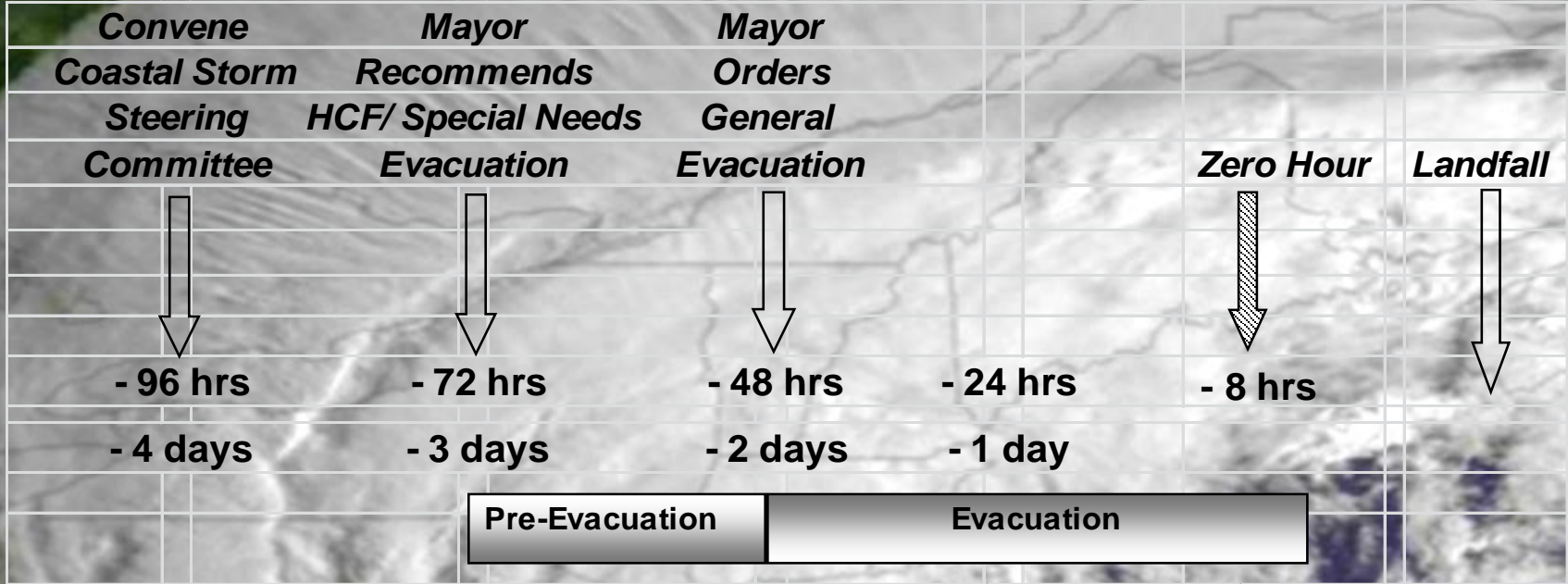
\* TIMING...MINOR C  
TIDES ON SUNDAY.  
FLOODING BY MOND  
FLOODING DURING

\* IMPACTS...A LONG  
LIKELY STARTING  
TUESDAY MORNING.  
THE MAGNITUDE OF  
MORNING'S HIGH T  
A MAJOR COASTAL  
HISTORICALLY FLO



HAND IN HAND WITH THE COASTAL FLOODING WILL BE INCREASINGLY HIGH SURF BATTERING THE COAST SUNDAY THROUGH EARLY NEXT WEEK...WITH POTENTIAL FOR MAJOR BEACH EROSION...LOCALIZED WASHOVERS...AND

# Timeline



-111 hrs  
CSSC convened

-42 hrs  
Special Instructions Issued to HCF

-22 hrs  
Shelters Open

-20 hrs  
Mandatory Evacuation Order Issued

-12 hrs  
MTA Transit Shutdown

+ 13 hrs  
Sandy makes landfall



# Landfall

10/26—10/27—10/28—10/29—10/30—10/31



# Response

**600m gallons infiltration**



**40,000 homes damaged or destroyed**



**2 million cubic yards of debris**



**800,000 customers without power**

# Recovery



# Coordination



# By the numbers

## Scale

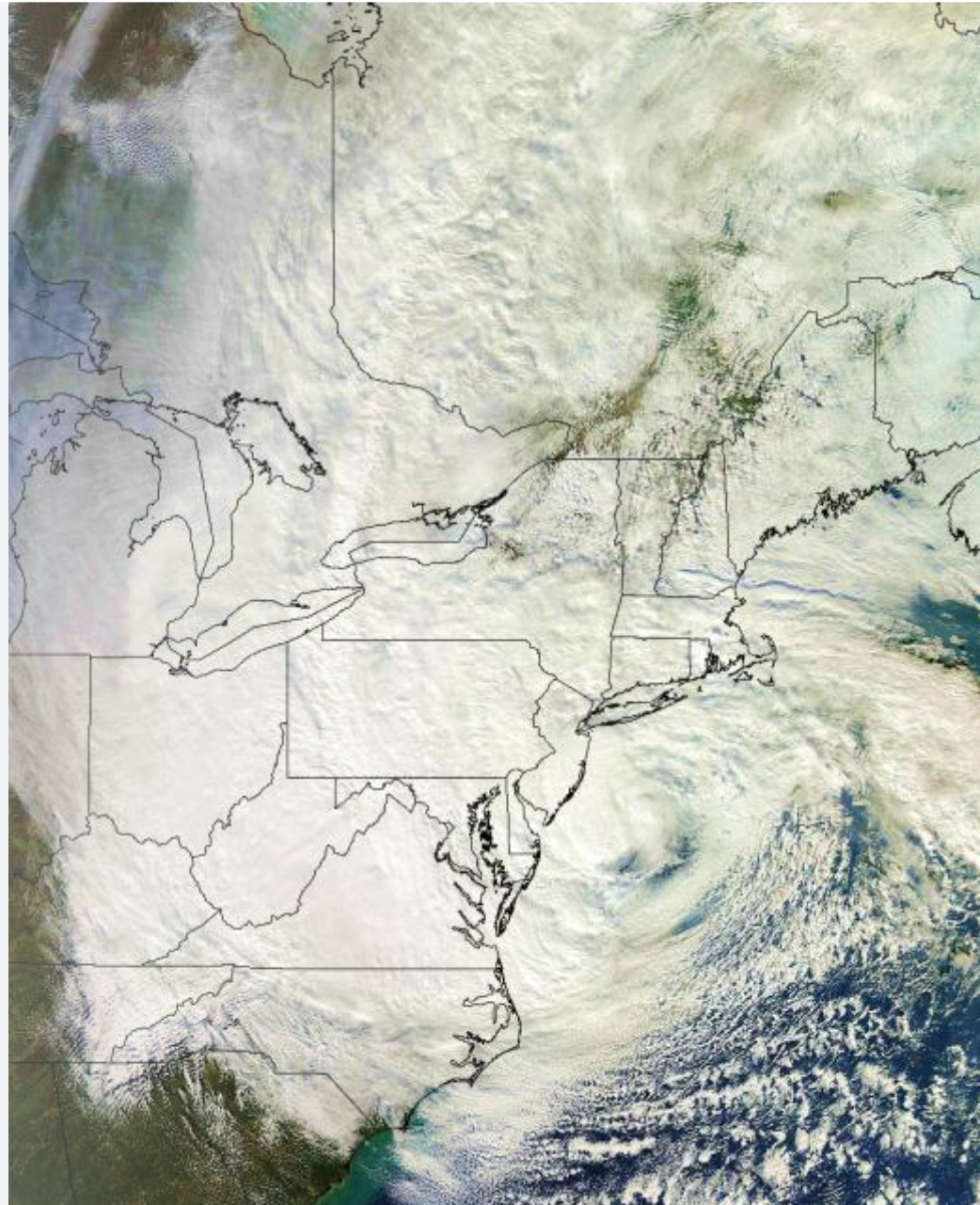
- 115 mile RMW
  - 30-45 miles typical

## Surge

- 13.88 feet
  - Old record 10.02 ft
- 32.5 foot wave in New York Harbor

## Affected Area

- 1 million people
  - 99,000 buildings
- 423 NYCHA buildings
  - 80,000 residents
- 47 healthcare facilities
  - 6 hospitals
  - 22 nursing homes



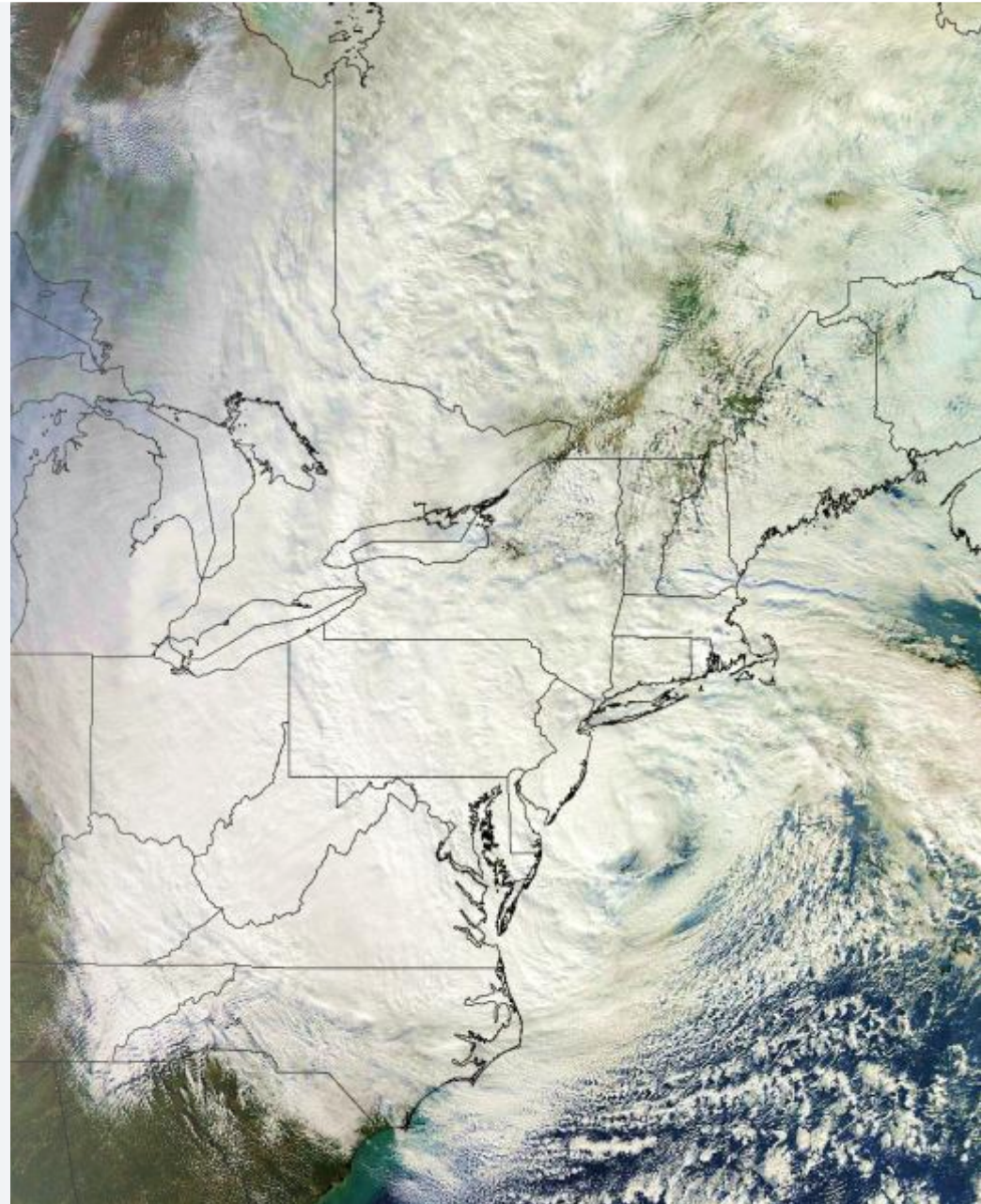
# By the numbers

## Post Impact

- 20,000 calls per hour to 911
- 2 million without power
  - 230 generators deployed
- 3,500 traffic signals down

## Sheltering

- Emergency Shelters opened: **73**
- Shelterees: **6,769**
- Staff: **4,001**
- Pets: **197**



# By the numbers

## Power

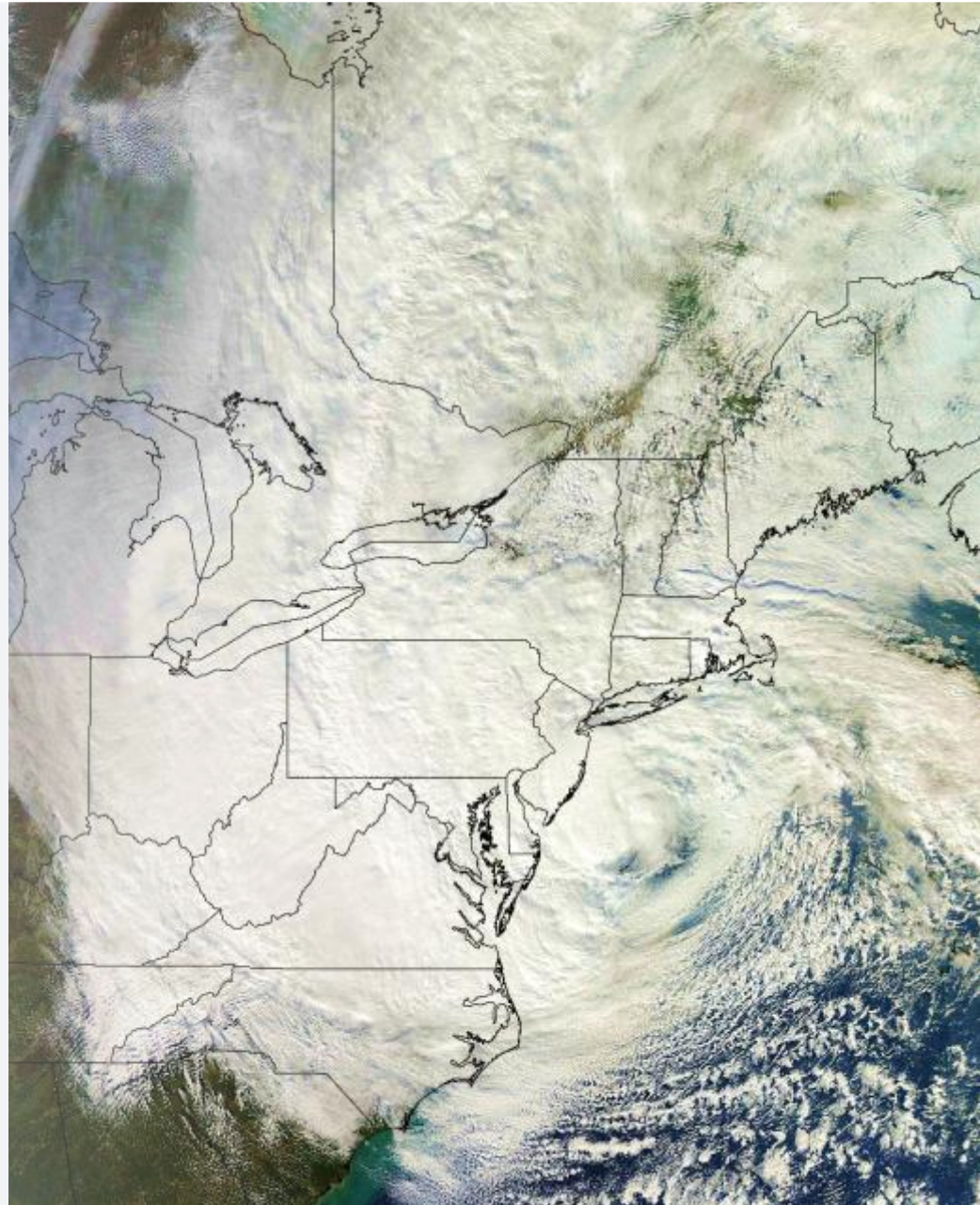
- 800,000 customers without power

## Debris

- 2 million CY
  - 20,000 trees and limbs
  - 150,000 CY from ROW
  - 3,472 cars, 72 boats

## Flooding

- 600 million gallon infiltration



# By the numbers

## Healthcare Facilities

- Evacuated: **36**
  - Hospitals: **6**
  - Nursing Homes: **18**
  - Adult Care Facilities: **12**
- **6,001** patients
  - Hospitals: **1,379**
  - Nursing Homes: **3,102**
  - Adult Care Facilities: **1,520**

## Commodities

- 2.1m shelf stable meals
- 1.5m prepared meals
- 278,000 food truck meals
- 1m bottles of water
- 166,000 blankets

