

The New York Times

Power Failures

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UPDATED October 29

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Assessing the Damage From Hurricane Sandy

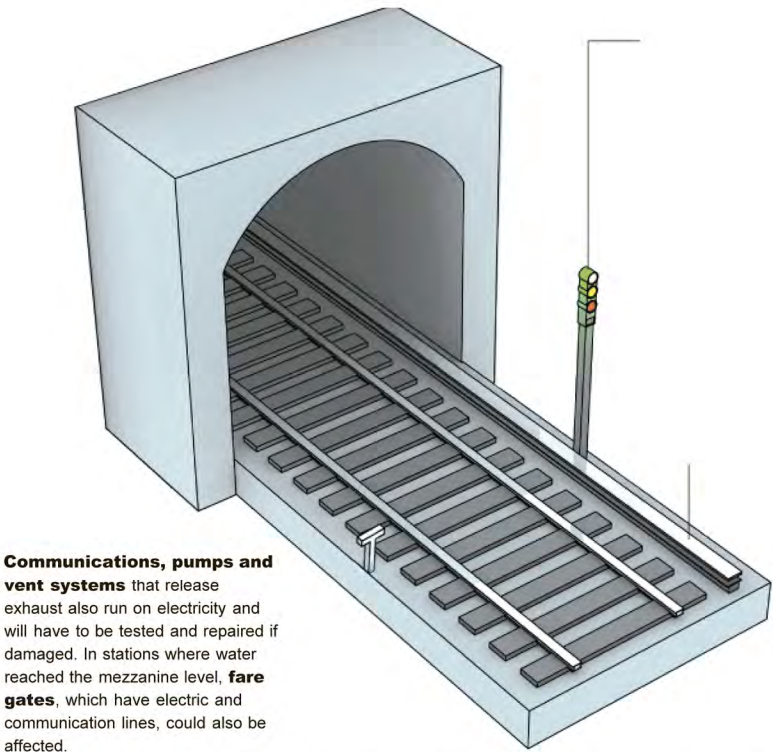
For the latest updates, view the [status of subways and other New York City services](#), track power failures in [the city](#) and the [Northeast](#), and see [aerial photographs](#) of the destruction in New Jersey.

Subways and Buses

Subway service resumes for much of the system Thursday, but service below 34th street will remain suspended. All seven of the tunnels under the East River were flooded in the storm, but the Metropolitan Transportation Authority said that three of these would be clear by Thursday. Mayor Bloomberg said that subway service between Brooklyn and Manhattan would be suspended at least until the weekend. Buses began running regular routes on Wednesday. [View the latest subway and bus service information here.](#) »

Oct. 31: Bringing the Subway Back

The first step in restoring New York's subway system is getting the water out. After that the Metropolitan Transit Authority faces a more daunting task — inspecting, cleaning and repairing all of the electrical components that are crucial to the safety of the trains.



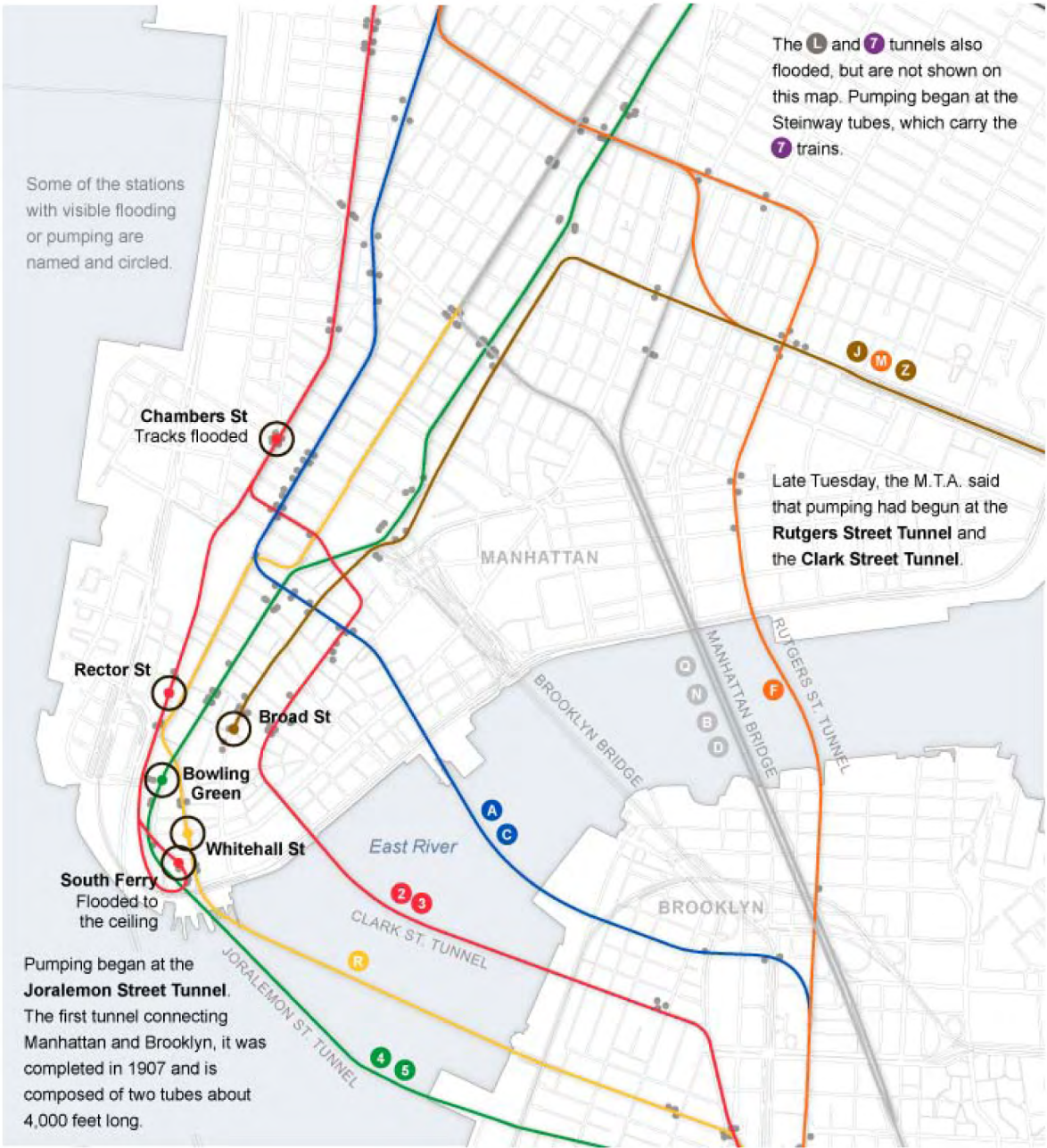
Communications, pumps and vent systems that release exhaust also run on electricity and will have to be tested and repaired if damaged. In stations where water reached the mezzanine level, **fare gates**, which have electric and communication lines, could also be affected.

Critical **signal systems** that prevent train collisions will need to be evaluated. The segments of wiring that detect trains along every part of a track, connections to the signals, and connections to control rooms will all need to be cleaned of salt water, which can cause corrosion, and tested for damage.

Power to propel the trains is conducted through the electrified **third rail** of the tracks, which were shut off ahead of the storm. The rails will have to be cleaned of corrosive salt water deposits and inspected for damage before power is restored.

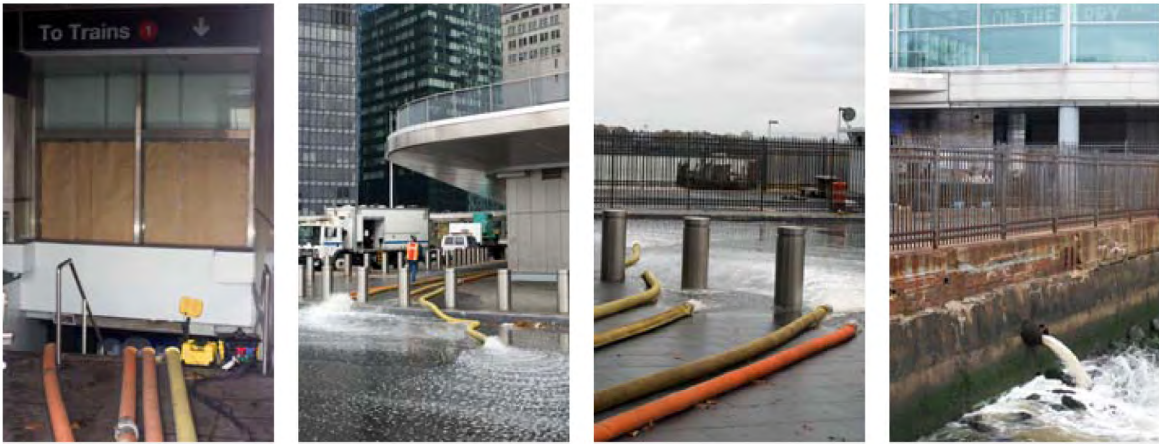
Oct. 30: Work Begins on Flooded Subways

Seven subway tunnels under the East River were flooded by the storm, most of them in Lower Manhattan, where a 14-foot storm surge topped subway entrances and grates.

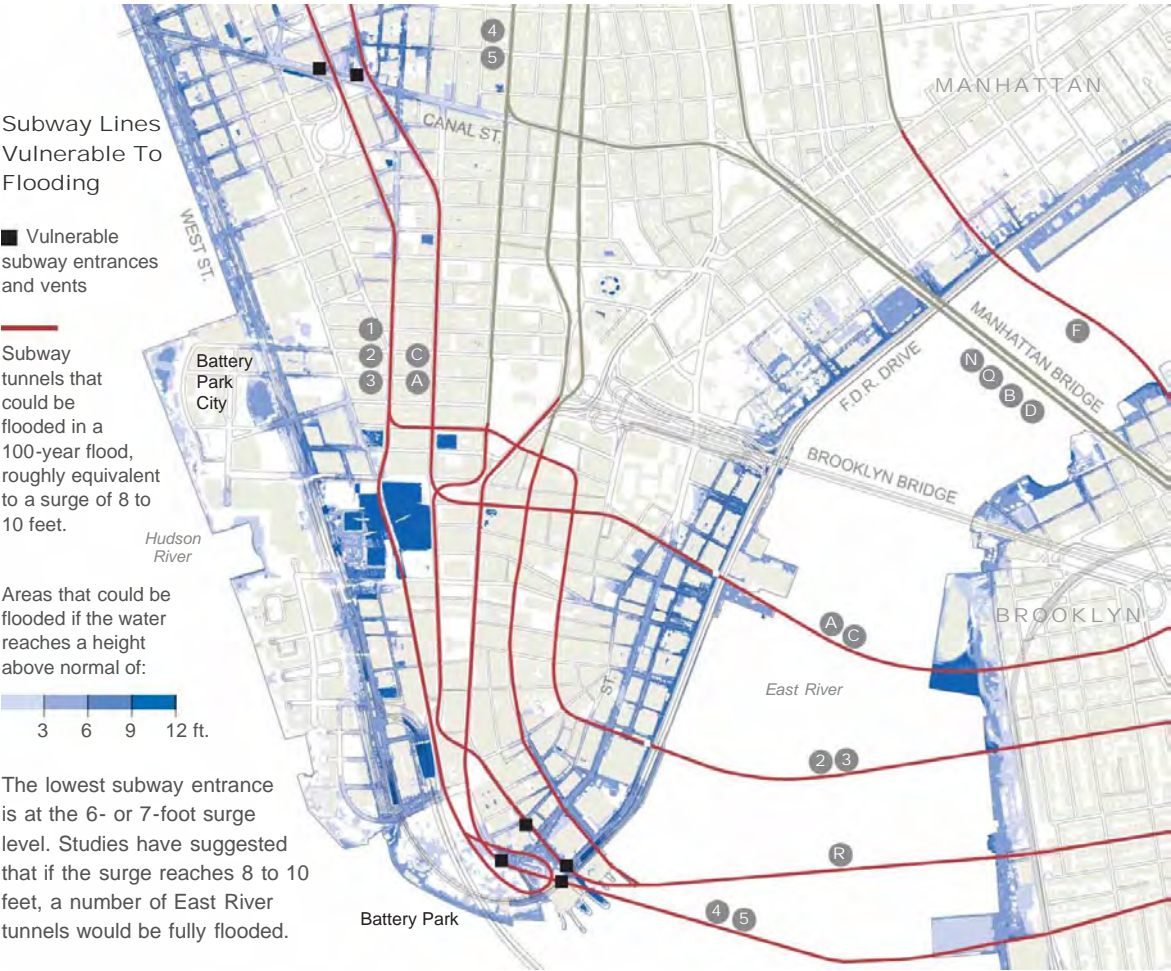


The Scene in Lower Manhattan

MTA crews pumped water out of Whitehall Terminal and into the East River.



Oct. 29: Where Manhattan is at Risk for Flooding



Source: Elevation data from Sean C. Ahearn and Gordon Green, Center for Advanced Research of Spatial Information, Hunter College

Power Failures

As of Wednesday afternoon, only small pockets of power had been restored to the area below 34th street, and traffic lights were not operating. In an update Wednesday, Mayor Bloomberg said he expected that most power in the city would be restored by Sunday, when the New York Marathon will be held. Governor Cuomo said that Westchester and Long Island were likely to wait longest for full power restoration. [Track power outages in the region.](#) »



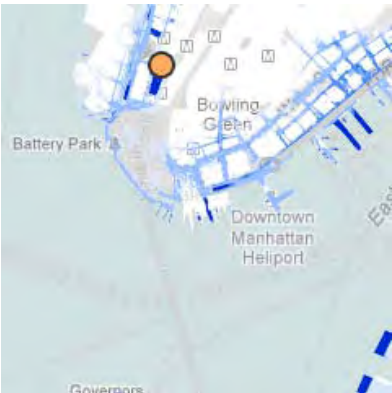
Tunnels, Trains and Airports

New York City bridges re-opened Tuesday afternoon, while the Brooklyn-Battery Tunnel and Queens-

Midtown Tunnel remained closed after severe flooding. Restoring the tunnels will present one of the most serious challenges to the city; once pumped out, they will need to be cleaned of sludge and debris. According to Governor Cuomo, the PATH tubes between New Jersey and New York have been entirely filled with seawater.

LaGuardia airport remains closed, and the Port Authority has given no official estimate for re-opening. JFK and Newark airports began to receive some flights on Wednesday. Flooding on Long Island has suspended most service on the LIRR, but the Ronkonkoma and Port Washington branches will partially resume service on Thursday morning. Service on the lower Harlem Line of Metro-North was partially restored Wednesday, but the railroad's other lines remain suspended. [View latest service information.](#) »

A traffic camera show floodwaters in the Brooklyn Battery Tunnel



Areas of lowest elevation

Metropolitan Transit Authority

Wastewater

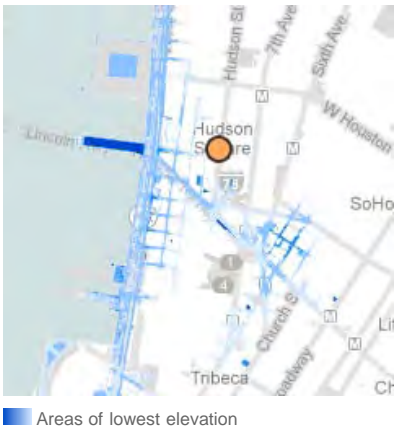
Five of New York's 14 wastewater treatment plants are in the lowest-lying areas of the city, within the mandatory evacuation zone. When the plants get filled to capacity or flooded, sewage and stormwater mix and bypass the plant, flowing directly into New York's waterways — and now, into flooded streets and buildings.



Flooding

The storm surge flooded parts of the Manhattan waterfront, neighborhoods including Red Hook in Brooklyn and Long Island City in Queens, and coastal areas in Staten Island. FEMA sent a four-person "unwatering" team to [drain out downtown](#).

Flood waters reached the corner of Canal and Hudson Streets. Most of Manhattan south of 34th Street lost power Monday night because of flooded electrical equipment.





Preston Rescigno/Getty Images

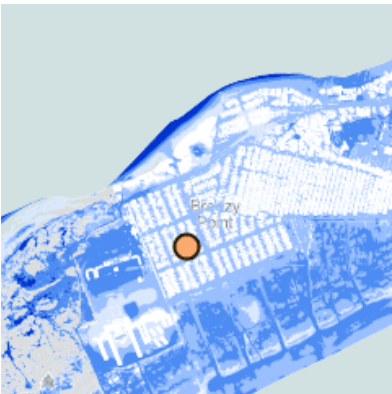
Fires

At least 111 homes were destroyed by a wind-fueled fire in Breezy Point, Queens, where severe flooding kept fire engines from the blaze. On Tuesday, Mayor Michael R. Bloomberg said that there had been at least 23 other major fires in the city.

In Breezy Point, on the Rockaways, a fire destroyed at least 111 homes.



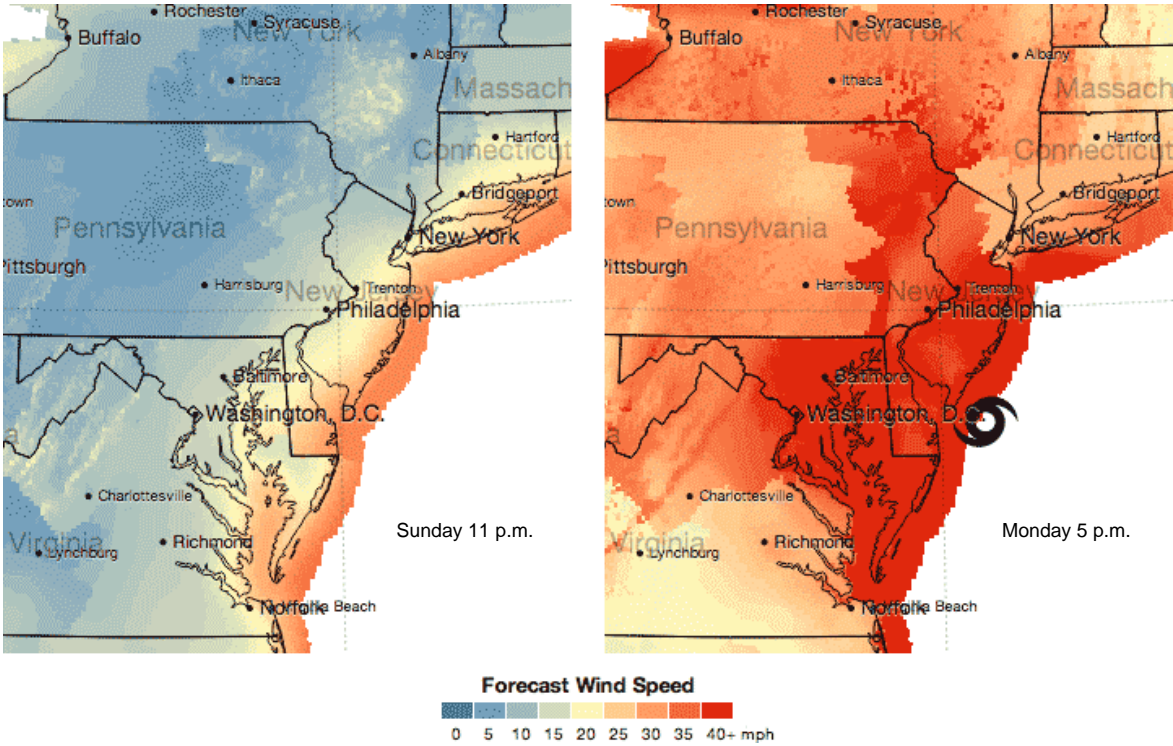
Kirsten Luce for The New York Times



Areas of lowest elevation

Wind

Hurricane Sandy made landfall near Atlantic City with maximum sustained winds of about 80 miles per hour according to the National Hurricane Center. [View time-lapse maps of Hurricane Sandy's winds.](#) »



Source: National Digital Forecast Database