Hurricane Sandy and Critical Health Infrastructure

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AMS Panel
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Hurricane Sandy, 28 October 2012

Source: NOAA
Urban Lifelines and Infrastructure System Failures

- Water Supply
- Electricity
- Transportation
- Gasoline Supply
- Pharmacy – Drug Supply
General Observations about Impacts and Vulnerabilities

- Cascading system impacts
- Uneven geography – not all on the coast, but most impactful on coast
- Role of ecosystem protection opportunities – lost and found – e.g. wetlands
- Data rich assessment – smart city context yielding critical data – challenge is how to use it
- A lot more impact and vulnerability work to be done

- Highly complex systems require significant redundancy and context specific vulnerabilities – e.g. health care system dependent on adequate assess to electrical power, internet, wireless phone service
Hurricane Sandy and Critical Health Infrastructure

- Direct loss of life and injury
- Direct loss of medical and health facilities
- Indirect loss of medical health services and access to medical health services because of loss of electrical power, mobility loss – e.g. public transit, internet loss,
- Interacting with a highly dependent populous
Cascading Vulnerability Pathways
Loss of Electrical Power in Days Following

Point-in-time Customer Outages

Customer Outages by Outage Cause
% of daily total

Estimate of customer-side outages

1 A total of 805,000 customers lost power after the storm, but point-in-time daily estimates are lower because accounts went on and offline at different times

2 Increase in customer outages due to the impact of nor'easter on Nov. 7

Source: Con Edison, LiPA
High-rise commercial buildings that lost telecommunications service during Sandy took weeks or months to restore service because of damage to copper cables, and difficulties in restoring power and replacing flood-damaged equipment in individual buildings.
Citywide Bed Capacity Reductions in Nursing Homes and Adult Care Facilities

8% capacity reduction 1 week after Sandy

7% capacity reduction 3 days after Sandy

Beds out of service October 27-November 29

4 weeks after storm, 5% capacity remained down while facilities recovered

Source: NYSDOH
Citywide Emergency Department Visits Needing Dialysis

Number of visits

Oct. 15  Oct. 22  Oct. 29  Nov. 5

Hurricane Sandy  5 days afterward

Source: DOHMH