



**Homeland Security**

Homeland Infrastructure Threat and Risk Analysis Center (HITRAC)

**National Protection and Programs Directorate**  
**Office of Infrastructure Protection**  
 Incident Analysis Summary

## Hurricane Irene Analysis Summary: ADVISORY 24

27 August 2011, 1100 EDT

	<p><b>Forecast Storm Characteristics</b></p> <ul style="list-style-type: none"> <li>▪ Near boundary of Category 2/3 hurricane at landfall</li> <li>▪ Maximum sustained winds of 110 miles per hour with higher gusts</li> <li>▪ Tropical storm force winds up to 290 miles from center of circulation; hurricane force winds up to 90 miles from center of circulation</li> <li>▪ Estimated storm surge of up to 11 feet</li> <li>▪ Rainfall accumulations of 6 to 10 inches expected with isolated maximum amounts of 15 inches</li> </ul>						
<b>Population, Power, Economic Impacts</b>							
<b>Daytime Population within Potential Surge Zones</b> (Number of people living within each flood depth range)	<table border="1"> <tr> <td>8–12 feet</td> <td>220,000</td> </tr> <tr> <td>4–8 feet</td> <td>330,000</td> </tr> <tr> <td>1–4 feet</td> <td>196,000</td> </tr> </table>	8–12 feet	220,000	4–8 feet	330,000	1–4 feet	196,000
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4–8 feet	330,000						
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<b>Estimated Economic Impacts</b>							
Direct GDP loss due to electric power outage	\$1.92 billion						
<b>Facilities of Interest</b>							
<b>Major Seaports</b>	<ul style="list-style-type: none"> <li>▪ Port complex of Newport News and Norfolk, Virginia</li> <li>▪ Port of Baltimore, Maryland</li> <li>▪ Port of New York/New Jersey</li> </ul>						
<b>Expected Major Airport Closures</b>	<ul style="list-style-type: none"> <li>▪ DCA lies within the storm surge inundation area</li> <li>▪ All NYC-area airports are in surge zone</li> </ul>						
<b>Dams</b>	<ul style="list-style-type: none"> <li>▪ 236 high-risk dams located within wind area</li> </ul>						
<b>Water Distribution Treatment Plants</b> (Plants affected by potential storm surge)	<ul style="list-style-type: none"> <li>▪ Brick Township Municipal Utility, NJ</li> </ul>						
<b>Major Wastewater Treatment Facilities</b> (Large plants affected by potential storm surge)	<ul style="list-style-type: none"> <li>▪ NYCDEP Newtown Creek Water Pollution Control Facility, NY</li> <li>▪ NYCDEP North River Water Pollution Control Facility, NY</li> </ul>						

The following table presents a summary of potential infrastructure impacts by sector that could arise in the Northeastern states from Hurricane Irene.

## Potential Impacts by Infrastructure Sector

Infrastructure	Local/ Regional Impact Level	National Impact Level	Impact   
Food and Agriculture			Logistical difficulties will make distribution and availability of basic food supplies locally difficult.
Banking and Finance			Local banking/ATM access disruptions in outage regions. Delays may occur in processing insurance claims.
Chemical: Plants			High short-term regional impact (700+ facilities) due to power outages. Potential isolated supply chain impacts.
Dams			If a dam fails, there will be notable local impacts. No regional or national impacts are expected. There are 256 high-risk dams in the projected Irene wind area.
Emergency Services			Demand for emergency services is expected to be significant. Some services can be expected to be covered if the National Guard is activated.
Energy: Electric Power			Restoration time is 4 to 14 days after the damage assessment is completed. 3 generating plants in hurricane zone, no expected national impacts.
Information Technology			Regional effects are high due to key internet facilities in projected surge zone including MAE East, New York International Internet Exchange, and Flag Telecom landing.
Hospitals			27 hospitals in the expected 100% electric power outage area. These are assumed to have some back up generation, which should sustain them unless they run out of fuel. 8 hospitals in > 3 feet surge area; 3 days to evacuate those facilities
Petroleum			Some disruption could occur due to electric power loss or delay in receiving water shipment. Available fuel stocks are sufficient such that severe shortages of fuel are not expected.
Telecomm: Wireline			Local calls may be dropped or incomplete. Most impacted area codes: 551 and 201, New Jersey; 646 and 212, Manhattan; 516 and 631, Nassau County and Suffolk County; and 609 in Ocean County. No expected national impacts.
Telecomm: Wireless			Local impacts due to downed towers, misdirected antennas, and failures of battery backup-systems in power outage regions.
Transport: Road/Rail			Storm surges along the Northern Atlantic states may have a significant regional disruption on rail transport in the short term.
Transport: Airports			Flooding and power outages at DCA and ORF as well as some level of inundation at all NYC airports could have regionally significant impact and potential national slowdowns in air traffic.
Transport: Maritime			Direct damage to port facilities and aids to navigation expected as a result of inundation and storm surge. Port of New York/New Jersey heavily impacted by surge.
Water: Drinking Water			No regional or national impacts expected.
Water: Wastewater			No regional or national impacts expected.