



Office of Infrastructure Protection

Mid-Atlantic Area Hurricane Analysis Summary

	<h3><u>Storm Characteristics</u></h3> <ul style="list-style-type: none"> • Category 4 • Maximum sustained winds > 145 mph • Estimated storm surge peak of 8 feet within Chesapeake Bay • Landfall: Elizabeth City, NC • Major cities most impacted: Washington DC; Norfolk, Virginia Beach, Baltimore 	
Population		
Population within Potential Surge Zones (depth of water estimated in residential areas)	> 6-8 feet	0.04 M
	> 1-5 feet	1.09 M
	In any surge	1.13 M
Population Impacted by Potential Power Outages (widespread power outages expected in Washington DC area, localized outages expected as far as NYC, Newark, and Greensboro NC) Times to restoration are after damage assessment	Affected	> 16 M
	10 days	80% restored
	2 weeks	Fully restored
Estimated Economic Impacts		
Direct costs for business interruptions	\$9-17 billion	
Total costs for business interruptions	\$26-50 billion	
Facilities / Issues of Interest		
Population (large population in areas of projected power outage)	<ul style="list-style-type: none"> • A storm of this size and location has potential to affect many large cities 	
Expected Major Airport Closures (strong potential for flooding, surge inundation)	<ul style="list-style-type: none"> • Baltimore-Washington Intl • Washington Dulles Intl • Washington Reagan National 	
Commodity Transportation (precautionary measures limit damage)	<ul style="list-style-type: none"> • Potential impacts to ports, rail lines 	
Mass Transportation (potential for flooding of subway tunnels)	<ul style="list-style-type: none"> • Metro system has several stations in potential surge zone 	
Major Wastewater Treatment Facilities (impacted by storm surge)	<ul style="list-style-type: none"> • Water distribution not highly affected • 6 wastewater plants affected by surge 	

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Impacts by Infrastructure Sector

Infrastructure	Level	Impacts	L -Low	M -Medium	H -High
Ag: Production	L	<ul style="list-style-type: none"> No nationally significant impacts expected; hurricanes can transport crop diseases 			
Ag: Food Distribution	M	<ul style="list-style-type: none"> Potential for impacts due to the long-term power outage, potential degradation in transportation capacity and high-density population in the impacted areas 			
Banks & Finance	L	<ul style="list-style-type: none"> No long-term impacts expected due to backup systems 			
Chemical: Plants	L	<ul style="list-style-type: none"> Minor impacts expected. Commodity chemical facilities primarily produce plastics and resins for use as synthetic fibers 			
Commercial Facilities	L	<ul style="list-style-type: none"> Impacts may be locally or regionally significant 			
Dams		<ul style="list-style-type: none"> Not analyzed 			
Defense Industrial Base		<ul style="list-style-type: none"> Not analyzed 			
Emergency Services	M	<ul style="list-style-type: none"> Emergency response delays expected due to transportation, electrical power, and telecommunications disruptions Communications disruptions could impact 911 service 			
Energy: Electric Power	H	<ul style="list-style-type: none"> Widespread power outages expected from Norfolk/Virginia Beach to Washington DC Localized outages expected in neighboring states 80% restoration expected within 10 days following damage assessment Full restoration may take 2 weeks following damage assessment 			
Energy: Natural Gas	L	<ul style="list-style-type: none"> No major impacts expected for natural gas pipelines or LNG sites 			
Energy: Petroleum	L	<ul style="list-style-type: none"> Petroleum capacity within the total affected area as a % of national capacity: <ul style="list-style-type: none"> Crude Oil Processing capacity: 10 % Gasoline Production capacity: 10 % 			
Government Facilities	L	<ul style="list-style-type: none"> Impacts due to power outages typically up to 48 hours after damage assessment Impacts expected due to transportation and telecommunications disruptions 			
Information Technology	L	<ul style="list-style-type: none"> Impacts may be locally or regionally significant 			
National Monuments	L	<ul style="list-style-type: none"> Temporary closures expected Potential for damage was not assessed 			
Nuclear Facilities	M	<ul style="list-style-type: none"> A significant percentage of nuclear generation in the region will be shut due to the storm, emphasizing the importance of having black-start capable plants Only one nuclear generation plant (Surry) is close to the potential surge zone 			
Postal & Shipping	M	<ul style="list-style-type: none"> Expect delays due to transportation impacts 			
Hospitals & Nursing Homes	M	<ul style="list-style-type: none"> Evacuations and potential closure of some facilities in impacted area will increase demand on neighboring regional facilities 			
Telecomm: Wireline	H	<ul style="list-style-type: none"> Expect damage to telecommunications infrastructure (poles and overhead lines) Restoration of full service may take weeks 			
Telecomm: Wireless		<ul style="list-style-type: none"> Not analyzed 			
Transport: Road/Rail	H	<ul style="list-style-type: none"> Ground transportation impacts due to flooding and debris 			
Transport: Airports	H	<ul style="list-style-type: none"> Expect delays and cancellations due to power outage impacts 			
Transport: Seaports	M	<ul style="list-style-type: none"> Expect damage or disruption at several ports and marine facilities having commercial and/or military importance 			
Water: Drinking Water	M	<ul style="list-style-type: none"> Water treatment plants unlikely to experience power outages lasting > 4 days Likely need for boil orders and/or bringing water into the area Loss of water supply could impact fire fighting capabilities 			
Water: Wastewater	M	<ul style="list-style-type: none"> 6 wastewater treatment plants combined flow of 109 MGD could be off-line due to storm surge inundation Some discharge of raw sewage into coastal waters possible 			

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