



Superstorm Sandy Lessons Learned from a Major Port and Supply Chain Disruption



Background

- Based on the case study undertaken for 2014 national report.
 - *Making US Ports Resilient as Part of Extended Intermodal Systems*
- Develop a set of high level guidelines, informed by expert opinions and illustrated by example case studies, that will help seaport authorities and transportation agencies, to minimize the extent and duration of lost cargo throughput resulting from such disruptions.
- Conducted in-depth interviews with more than 15 major public agencies, port terminal operators, carriers, railroads, trucking firms and other supply chain users.
 - Ongoing discussions since the case study was completed.

The opinions and conclusions expressed or implied in this presentation and report that will be released are those of the researchers who performed the research and are not necessarily those of the Transportation Research Board, the National Research Council, or the program sponsors.

How Do Sandy and Past Disruptions Frame the Discussion?

- Learn what worked and didn't work
- Understand how agencies and organizations worked together
- Differentiate between the shorter- and longer-term impacts
 - Short term impacts and recovery affect immediate capital needs and operations
 - Longer term impacts affect outlooks and long term positions



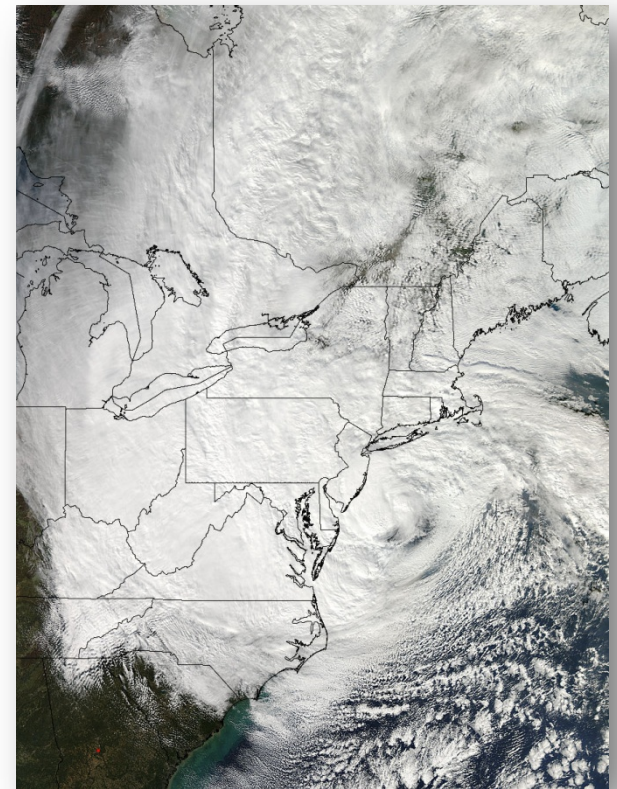
Defining Sandy as a Supply Chain Disruption

Characteristics	Superstorm Sandy
Geographical Scope Affected	<ul style="list-style-type: none">• Extensive – the entire East Coast• At landfall – the New York-New Jersey Region
Freight Facilities Affected	<ul style="list-style-type: none">• All• Ports closed along the East Coast in the storm’s path• Railroads, trucking lines, airports and air cargo, pipelines (power outages, flooding, damage)
Commodities and Shipments Affected	<ul style="list-style-type: none">• Occurred during peak delivery week• Multiple commodities and shipments affected
Recovery Time from Disruption	<ul style="list-style-type: none">• Port of New York-New Jersey closed for nearly a week• Physical repairs to facilities still occurring

Categories from: Methodologies to Estimate the Economic Impacts of Disruptions to the Goods Movement System, NCHRP 732 (2012)

East Coast Preparations

- Monitoring starts a week before, with agencies and carriers tracking the storm and preparing.
 - USCG issues warnings and sets port conditions as the Sandy progresses.
 - Carriers determine vessel actions.
- As Sandy progresses:
 - Port coordination groups (such as MTSRU) mobilize.
 - Equipment and facilities are secured.
 - Transportation providers start planning for diverted shipments.
 - Railroads reposition equipment and determine train actions.



Source: NASA

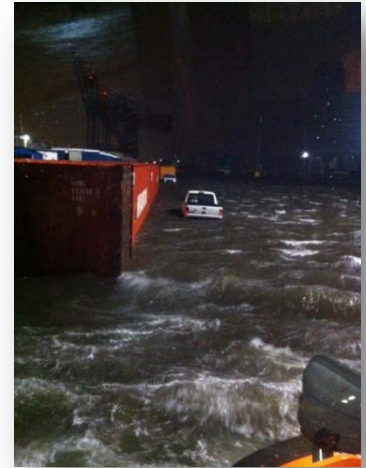
The Port of New York and New Jersey



Source: Port Authority of New York and New Jersey (PANYNJ)

Port Preparation

- Notification to tenants began Thursday, Oct. 25 (USCG Sector NY Hurricane/Severe Weather Plan + PA's Emergency Op's. Plan)
 - PA Emergency Operations Center activated on Oct. 28
 - Until Sunday, Oct. 28th, there was a false sense of security
 - Oct. 28 National Weather Service briefing indicated surge of 6-11' above normal high tide
 - PA decision to close terminals to all but essential personnel by 2359 hours
- Mon -Oct. 29 –1200 hours ---all tenant personnel and PA contract security ordered off port; Port Commerce and PAPD staff vacated at 1915 hours (just prior to surge)
- Mon., Oct 29 –2000 hours ---NOAA reported water levels at the Battery and Bergen Point @ 9-10' above MHW; winds @ 80-90 mph; surge 13 -14'.



Source: PANYNJ Presentation at 11/30 NAIOP/CSCMPNJ seminar

New York/New Jersey Port Damage

- **Extensive infrastructure damage**
 - Flooding (Water level in buildings @ 3-5')
 - Utilities ---general commercial power, motors, controllers
 - Sewage/fire pump motors and controllers
 - Loss of rail relays and switches
 - Security fencing and guard booths destroyed
 - Damage to cranes and cargo handling equipment
 - Debris in roadways, channels and berths
 - Road and rail track damage
 - Total loss of rail car float and rail transfer bridge at Greenville
 - 57 vessels diverted by carriers
- **Cargo impacts**
 - Toppled container stacks
 - Lost containers
 - Autos destroyed by flooding and fire
- **Cruise Passenger Auto Damages**



Greenville Yard



Greenville before

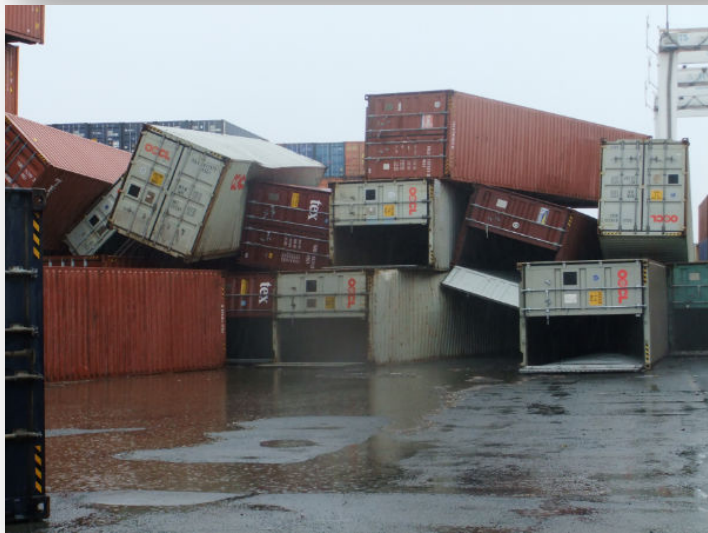


Greenville after Sandy

Terminals



Cargo Impacts



Security Fencing and Gate Houses



Chassis, Drayage Truck and Access Road Damage



Building Damage and Flooding

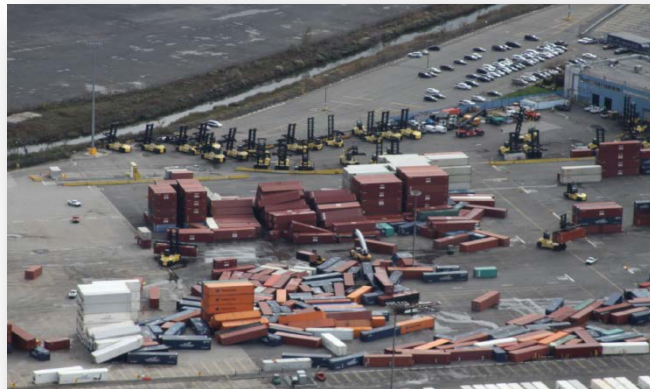


Red Hook Barge at/on Berth 6

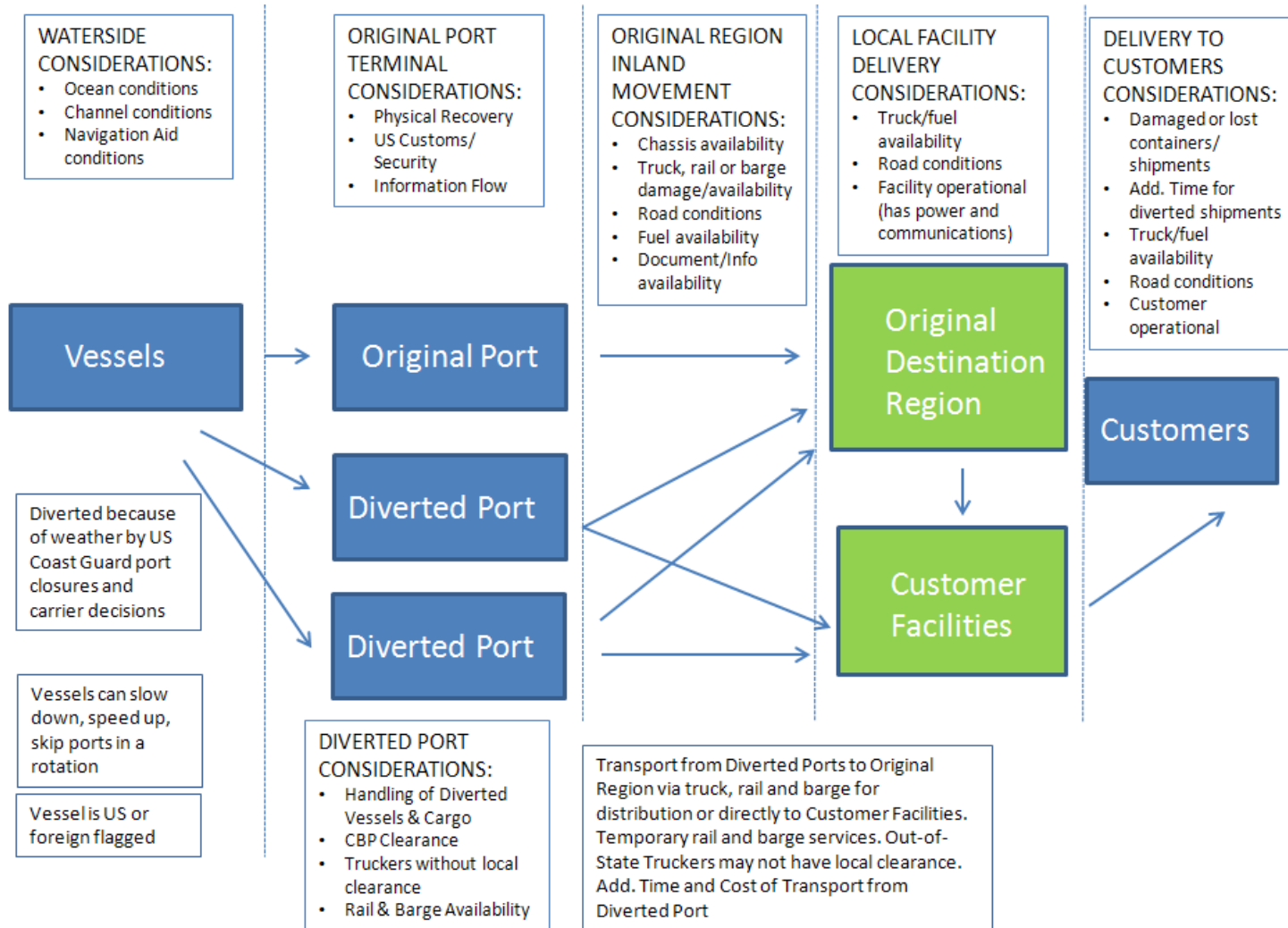


NY-NJ Port Return to Operation Time Line

- Tues, Oct. 30 – Assessment, response, recovery and restoration begins
- Friday, Nov. 2:
 - USCG re-opens Port to deep draft commercial traffic
 - First vessel arrival at PA facilities - *Brilliance of the Seas* at Cape Liberty
- Sat. Nov. 3 – Power restored at Elizabeth (location of Maher and APM)
- Sun. Nov. 4 –Maher / APM work 5 vessels
- Mon. Nov. 5 –Truck gates at all container terminals opened for business
- Mon./Tues. Nov. 5 & 6 –All remaining container terminals work their first vessels



Import Container Disruption Topography



Three Sets of Activities for Freight Movement

Activities	Definitions and Examples
Physical Flows	<ul style="list-style-type: none">• Any physical activity directly needed for freight movement• Vessels, terminals, railroads, trucks, pipelines, aircraft, warehouses and distribution centers
Communication & Information Flows	<ul style="list-style-type: none">• Any information and transactional exchange needed for freight movement• Bills of lading, financial flows, customer notifications, delivery appointments, warehouse management systems, inter-agency communications, etc.
Regulatory Considerations	<ul style="list-style-type: none">• Any gov't regulations, rules, and agency activities needed for or shaping freight movement• USCG, CBP, truck driver credentials, Jones Act

Categories from: Methodologies to Estimate the Economic Impacts of Disruptions to the Goods Movement System, NCHRP 732 (2012)

Physical Flows

- Identified that electrical power is crucial to expediting recovery.
 - Today's ports and supply chains rely on electrical power.
 - Utilities were part of MTSRU but also responding to extensive damage and priorities in a multi-state geographical area.
- Learned from previous events, such as Katrina, how to prepare physically for disruptions.
- Saw that “modal flexing” is essential to handling diverted containers.
- Determined that ports are less prepared for surges in vessels and container movements.
- Consider how to balance resiliency and maintenance costs.
- Keep the goods flowing.



Communications and Information Flows

- Required for ports and supply chain systems.
 - Alerts, websites, transactional information, warehouse management systems, worker-related systems.
- Need established port groups for preparation, recovery and response.
 - Working relationships and responsibilities.
 - Existing contracts can assist in modal flexing and equip. replacement.
- Cannot operate information systems without power.
 - Pre-set conference calls helped.
 - Back up systems at other sites can be used.



Regulatory Considerations

- The Merchant Marine Act of 1920, commonly referred to as the Jones Act, requires that goods and passengers transported solely between U.S. ports must be done on U.S. made and staffed vessels.
- CBP inspections and processing of import containers.
 - Security perimeter fencing and radiation detection portals need to be in place to resume operations.
 - Diverted containers need authorization from CBP to move by a permit to transfer within the original port, in-bond transfer between ports, or by entry release/clearance by CBP prior to inland movement.
- Credentialing of truck drivers handling diverted cargo.
- Commonsense solutions can expedite recovery.



Takeaways

- Learn and improve from every disruption.
- Expect the unexpected.
 - Sandy highlighted power, communications and surge issues.
- Focus on commonsense solutions.
- Maintain and nurture recovery units such as MTSRUs.
- Take care of your workers.
- Remember the customer: “We all serve the customer. Look for the best solution for the customer.”



Thank you!

Anne Strauss-Wieder
A. Strauss-Wieder, Inc.
asw@as-w.com
www.as-w.com

