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U.S. SENATE

"Superstorm Sandy: The Devastating Impact on the Nation's Largest Transportation Systems"

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Chairman Lautenberg, Ranking Member Wicker, and Members of the Subcommittee:

Thank you for inviting me to appear before you today to discuss the impact of Hurricane Sandy on the transportation system in the affected states. I welcome the Subcommittee's interest in this critically important topic.

Hurricane Sandy had a devastating effect on our Nation's citizens living along the Eastern Seaboard. There were 131 fatalities in the states where the hurricane came ashore, and about 8.3 million people lost electrical power. Tens of thousands of homes and businesses have been damaged or destroyed, and many will be homeless for months while the damage is repaired. Just two weeks ago I was able to visit New Jersey with Vice President Biden, Senator Lautenberg, and other New Jersey officials to see first-hand the devastation that had occurred. Secretary LaHood joins me in expressing our condolences to the families who have lost their loved ones, and our determination to do everything we can to get the families whose homes have been destroyed back on their feet. The transportation system also suffered extensive damage, amounting to billions of dollars. At the same time, the affected cities and states have done an impressive job of responding to the disaster, with the help of their federal partners.

The devastating effects of the storm raise important questions about how to rebuild and how we can mitigate the effects of similar storms in the future. As we rebuild, we need to focus our attention on ensuring that our transportation system is more resilient, on building more redundancy into the system, and on approaching the transportation planning process in a more regional way so as to coordinate the plans of the affected states.

I want to discuss briefly the damage that was done to the transportation system, how the local authorities and the Department of Transportation (DOT) acted to mitigate and repair that damage, and what we need to do as we move forward to reduce the severity of such natural disasters in the future. I want to make clear that any damage estimates I am citing should not be construed as requests for Federal funding. That is impacted by another set of issues, including statutory eligibility and the applicability of private insurance, that we are working with operators on to understand better where these questions are applicable.

Damage to the Transportation System

Hurricane Sandy did not bring with it the powerful winds that some hurricanes have had. But it did bring with it an extremely powerful storm surge which, combined with high tides, caused a 14-foot storm surge in New York harbor that caused extensive flooding in New York, New Jersey, and Connecticut. Sandy had tropical force winds over an 820-mile-wide area, and its "destruction potential," as measured by the National Oceanic and Atmospheric Administration, measured 5.8 on a scale of 6.

The most damaging impact of the storm, from a transportation standpoint, was on the highway, transit, and rail tunnels in and out of Manhattan. All seven of the subway tunnels under the East River flooded, as did the Hudson River subway tunnel, the East River and Hudson River commuter rail tunnels, and the subway tunnels in lower Manhattan. Three of the four highway tunnels into Manhattan flooded, leaving only the Lincoln Tunnel open. While some subway service was restored three days after the storm, the PATH train service to the World Trade Center was only restored on November 26th, four weeks after the storm, and subway service between the Rockaway peninsula and Howard Beach is not expected to be re-opened for months.

In New Jersey, commuter rail and transit damage included flood damage to 72 locomotives and 311 cars at the Meadowlands Maintenance Complex and Hoboken Terminal, damage to 3 moveable bridges, and damage to the catenary on the Gladstone line, which only returned to service this week. We are working with both New York and New Jersey to thoroughly assess the cost associated with the overall damage to subway lines and other transit equipment. Note that the recently-passed transportation reauthorization, MAP-21, authorized the Public Transportation Emergency Relief Program. That authorization positions the Federal Transit Administration to better assist its State and local partners in responding to disasters in concert with, but without duplicating the work of, the Federal Emergency Management Administration (FEMA), once funds are appropriated.

Highways were extensively damaged in all the affected states, but particularly in New Jersey and New York. This includes damage to tunnels, movable bridges, and traffic signals, especially due to mechanical and electrical systems being submerged in salt water. In New Jersey, Route 35 along the Jersey shore was particularly hard hit, and in New York the Ocean Parkway in Nassau and Suffolk Counties was extensively damaged. Significant damage also occurred in Connecticut, Rhode Island, North Carolina, and Virginia. Hurricane Sandy also damaged roads on federal lands in New York, New Jersey, Rhode Island, West Virginia, Virginia, Maryland, and North Carolina.

While some highways were closed due to flooding and other damage, more people were trying to use the highways that were open. With much of the transit system shut down, gridlock quickly appeared on many roads, especially in Manhattan. Car-pooling restrictions were imposed on all the bridges into Manhattan (except the George Washington Bridge) to allow more traffic movement. Five petroleum terminals in New Jersey and New York were shut down due to flooding, and loss of electrical power caused the Colonial Pipeline terminal in Linden, New Jersey to be shut down. Shutdowns in pipelines and petroleum terminals led to shortages of gasoline and diesel fuel at service stations, and some stations that had fuel could not pump it because they lacked electrical power to operate their pumps. Sixty-seven percent of the service stations in the New York metropolitan area were closed on November 2nd due to lack of fuel or electrical power. Fuel shortages were worsened by fuel demands from people using emergency

generators (in New Jersey, 65 percent of customers lost power). As a result, many people who lost transit service also effectively lost the ability to use highways as well.

The aviation system was also extensively damaged. Both LaGuardia and John F. Kennedy Airports flooded, and Newark Airport was also closed. The three major airports were able to restore normal air traffic operations by the end of the week. Some of the air navigation systems were located on piers out in the water and were severely damaged, and some electric power distribution systems may require immediate replacement or replacement prior to normal replacement schedules.

Amtrak was fully shut down in the New York area for two days, and full service was not restored until November 19th. Amtrak had four tunnels flood, causing significant damage to its signal systems and burning out pumps. Track was damaged by washouts, debris slides, and damage to ballast, and six hi-rail and work trucks were lost. Amtrak had to remove 80 trees from its right-of-way, including 15 that had damaged the catenary. Freight railroads in the region generally did not have serious damage, except for the NY/NJ Railroad (formerly the NY Cross Harbor Railroad), which had four trailers housing office space swept into the harbor, two float barges destroyed, and a float bridge damaged. We understand that Amtrak and NY/NJ Railroad will file insurance claims on their losses.

The seaports were also adversely affected by the storm. All the seaports from Baltimore to Boston closed as a precaution on October 29th, and all had re-opened two days later except for the Port of New York and New Jersey (PONY/NJ). PONY/NJ suffered from lack of electric power and damage to equipment that prevented it from fully re-opening until November 7th. Marine petroleum terminals were also damaged, making it impossible for several days to deliver petroleum products to customers. About 6,000 containers and 3,500 vehicles were diverted to other ports, primarily the Port of Virginia. Press reports of estimates by private consultants suggest that costs to privately-owned cargo shippers and carriers due to delays will be about $1 billion. The extent of cargo diversion was reduced because shipowners slowed their vessels at sea to delay their arrival.

The pipeline system also suffered damage and lost electrical power to run pumps, leading to shut-downs of several days. In some cases pipelines with damaged automatic controls were operated manually with emergency generators to maintain deliveries. Natural gas transmission and distribution systems were much more heavily affected than petroleum product pipelines.

Emergency Responders, State and Local Government Agencies, and Ordinary Citizens Responded Creatively to the Crisis

Despite the widespread damage and dangerous conditions, emergency responders performed heroically in the face of the unprecedented destruction. They saved lives of people in danger at substantial risk to themselves. Moreover, ordinary citizens, transportation authorities, and government agencies in the storm-struck area responded creatively to the challenge. Water ferries between New Jersey and Manhattan quickly became a popular option, as did the East River Ferry after it resumed service on November 1st. New ferry services were started between the Rockaways and Manhattan and between Staten Island and Manhattan, and alternative rail and bus service was provided. The Metropolitan Transportation Authority (MTA) implemented a system of "bus bridges," or temporary shuttle bus networks, to replace the lost transit service through the East River subway tunnels. The New York City Department of Transportation established dedicated bus lanes on the Williamsburg and Manhattan Bridges, as well as on several Manhattan streets, to keep the buses moving. Bicycle ridership on the East River Bridges tripled. Transit authorities and customers used social media to keep informed of which transit lines were open and which were closed, and the MTA provided revised service maps to show which lines were operating. As highway tunnels were restored to service, they were restored first for transit buses, and later to all vehicles. The New York City Police Department stepped forward to enforce carpooling restrictions on bridges, regulate lines at gas stations, and regulate lines at bus stops. The Governor of New Jersey and the City of New York both established an odd/even gasoline rationing system to reduce lines at gas stations. Overall, states and local governments, and the people of New York and New Jersey, met the challenge in their typically indomitable spirit.

What Has USDOT Done to Assist the States and Cities Affected by the Hurricane?

The Department of Transportation is responsible under the National Response Framework, in coordination with the Federal Emergency Management Agency (FEMA), for coordinating Emergency Transportation issues as part of the overall federal emergency response. Prior to Hurricane Sandy's landfall, our National Response Program staff deployed to FEMA's National and Regional Response Coordination Centers and to their Joint Field Offices. A wide range of DOT agencies responded immediately with the resources available to them to help the people and communities stricken by the hurricane.

The Federal Highway Administration (FHWA) used its "Quick Release" Emergency Relief authority between October 30 and November 1 to release $29 million to five states for emergency repairs: $10 million each to New York and New Jersey, $4 million to North Carolina, $3 million to Rhode Island, and $2 million to Connecticut. These Quick Release funds are the first installment of FHWA's Emergency Relief assistance. Another $20 million was released to New York State last week. FHWA also expedited the movement of overweight and oversize loads into the affected area.

The Federal Motor Carrier Safety Administration (FMCSA) issued an Eastern Regional Emergency Declaration, temporarily lifting hours-of-service requirements and other regulations on interstate trucking carriers to speed the movement of emergency supplies into the affected area. DOT also established an Interstate Petroleum Transport Team to resolve issues that might impede speedy delivery of fuel and relief supplies to the affected region. For example, FMCSA connected FEMA and the Defense Logistics Agency with fuel haulers and other trucking carriers that could move fuel and equipment to repair electric power transmission facilities.

The Federal Transit Administration (FTA) has provided technical assistance to affected transit authorities and has worked with FEMA through the General Services Administration's Federal Acquisition Service to procure 250 buses to replace lost commuter rail and transit service in New Jersey, particularly allowing commuters to take buses to ferry terminals for the trip into Manhattan. FTA also worked with the Chicago Transit Authority to secure signal equipment to replace equipment damaged by Hurricane Sandy.

The Federal Railroad Administration (FRA) opened an Emergency Relief Docket before the hurricane made landfall that allowed FRA to provide waivers to its hours of service and equipment inspection requirements to facilitate response and recovery. FRA conducted a series of conference calls with affected railroads to assess their needs and process requests under the Emergency Relief Docket.

The Federal Aviation Administration (FAA), despite damage to its Air Navigation Services equipment, was able to restore normal air traffic operations quickly by using emergency equipment and making necessary repairs and replacements. I would like to caution that FAA's cost estimates are still preliminary, because FAA continues to inspect its equipment to determine if permanent replacements need to be made and to ensure that no latent damage will cause the equipment to malfunction in the future. While the functionality of some equipment has been degraded, FAA constantly updates the aviation community through Notices to Airmen to advise pilots of current system status and restrictions related to equipment or airspace limitations. These adjustments ensure that a full margin of safety is maintained in the face of service degradations caused by system outages.

The Maritime Administration (MARAD) activated two training ships from the New York and Massachusetts maritime academies to provide emergency relief support – the Training Ship *Empire State* from the State University of New York Maritime College and the Training Ship *Kennedy* from the Massachusetts Maritime Academy. MARAD also activated one of its Ready Reserve Force ships, the SS *Wright*, from Baltimore, MD. Over the past month, these vessels have housed and fed nearly 900 emergency responders every day – urban search and rescue teams, disaster medical assistance teams, DHS surge personnel, FEMA Corps volunteers, Red Cross and other non-governmental organization teams, and community relations teams. MARAD also consulted with the Department of Homeland Security (DHS) on issuing special purpose waivers of the Jones Act to facilitate deliveries of refined petroleum products to the New York/New Jersey area. MARAD consulted quickly with U.S.-Flag vessel operators to assess U.S.-Flag vessel availability before advising DHS on the need for waivers. Eleven vessels made use of the waivers and carried more than 2.7 million barrels of petroleum products into the affected area. The U.S. Merchant Marine Academy at Kings Point was also affected by the

hurricane, experiencing a 14-foot storm surge and loss of electrical power. Back-up power allowed basic services to continue until commercial power was restored.

The Pipeline and Hazardous Materials Safety Administration (PHMSA) issued emergency special permits allowing manual control of fuel transfer systems at petroleum terminals. PHMSA also assisted in coordinating emergency repair of gas distribution lines, tracked the availability of fuel distribution facilities, monitored damage and restoration, authorized waivers of hazardous materials regulations to speed transport of relief supplies, and advised other government agencies on safe transportation of hazardous materials.

Finally, 58 DOT employees were deployed at Joint Field Offices in New York and New Jersey to assist state and local governments and other infrastructure owners to restore transportation infrastructure.

Where Do We Go From Here?

The devastation of Hurricane Sandy brings into sharp relief the need for us to do a better job of building a transportation system that can survive a disaster like this and recover quickly. I think we need to emphasize three "R"s in thinking about how to rebuild in the wake of this disaster: Resilience, Redundancy, and Regionalism.

First, we need to build our transportation systems so that they are more resilient in the face of high winds and storm surges. By far the most significant damage was due to flooding of tunnels. We need to design highway, rail, and subway tunnels so that they are more resistant to flooding. The MTA had taken some steps, in response to past flooding due to intense rainstorms and Hurricane Irene in 2011, to make the subways tunnels more flood-proof. These efforts have included raising station entrances and ventilating grates, improving pumps, and pre-deploying pumps and personnel to speed MTA's emergency response capability. But they were clearly not enough and we need to do more. We need to provide transportation agencies with better information and tools to enhance the resilience of their infrastructure. At DOT, we are conducting research to identify vulnerable infrastructure and ways of making it more resistant to damage. This includes a comprehensive study in the Gulf Coast region, another area vulnerable

to extreme weather events, as well as several pilot projects to conduct system and infrastructure risk assessments, including one in New Jersey.

Second, we need to build more redundancy into our transportation system, so that when one part of the system goes down, other parts can pick up the slack. We could see the importance of this in the reaction to Hurricane Sandy. When the subway tunnels went down, we had to rely more on transit buses. We enhanced the effectiveness of transit buses by creating more bus-only lanes. We relied more on ferry service, and established dedicated transit bus lines to transport passengers to the ferry terminals. Ferry service has been critical not only in the case of Hurricane Sandy, but in earlier disasters like the 9/11 terrorist attacks and the Northeast Blackout of 2003 as well. We relied more on walking and bicycling. We need to reduce the necessity of passengers substituting private automobiles for transit service; as we have seen, that approach leads to gridlocked roads and gasoline shortages.

Third, we need to address these problems in a regional way. Particularly for a metropolitan area like New York, which extends across parts of three states, the need for a regional approach is critical. The Port Authority of New York and New Jersey, the North Jersey Transportation Planning Authority, and the New York Metropolitan Transportation Council, of course, provide venues for regional planning and coordination. Other coordinating mechanisms, such as the Northeast Corridor Commission, the I-95 Corridor Coalition, and the Coalition of Northeastern Governors, provide additional opportunities to coordinate transportation planning, but we need more than those.

One promising effort is the FRA's NEC Future program – an effort to define, evaluate, and prioritize future investment alternatives for the Northeast Corridor through the year 2040. This program will develop a Passenger Rail Corridor Investment Plan to guide investments in the Northeast Corridor over the next 30 years. NEC Future gives us the opportunity to develop a more resilient rail network in the Northeast Corridor that provides redundancy for other passenger modes and that grows out of a regional dialogue with states and other stakeholders in the Northeast Corridor.

Part of that regional effort is the Gateway Project to expand rail capacity from New Jersey into New York Penn Station. This project, which would double passenger rail capacity between Newark and New York and expand capacity at Penn Station by 50 percent, is vital to meeting the future transportation needs of the New York region and building in the redundancy needed to preserve transportation capacity in the face of events like Hurricane Sandy. It would involve building a new tunnel under the Hudson that would be designed to prevent flooding and to permit rapid recovery from emergencies and disruptions. It would also harden Penn Station and other rail tunnels against future flooding. We look forward to working closely with Amtrak, the states of New Jersey and New York, and local authorities in both states to complete this critically important project. It is an essential part of a regional approach, and an important example of the kind of resilience and redundancy we need to build into our transportation system – protecting the rail system and offering an alternative to air and highway capacity when the capacity of those systems is curtailed by storms and other emergency events.

The National Freight Strategic Plan that is mandated by MAP-21 gives us an opportunity to look at the resilience and redundancy needs of the freight system, and how they can be incorporated into our freight infrastructure investment programs. As states develop State Freight Plans, they need to reach out to neighboring states to coordinate their planning efforts. We need to make efforts to expand the regional coordination of these plans so as to build resilience and redundancy into an overall regional transportation plan.

Hurricane Sandy has been a tragic but important wake-up call on the need to build more resilience, redundancy, and regional coordination into our transportation system. Last week, Senator Schumer called for a comprehensive study of the range of options available to protect New York harbor and the surrounding area from disastrous storms in the future. The Department of Transportation stands ready to work with our federal, state, and local partners, public and private, to address these needs in a regionally coordinated way.

I thank the Subcommittee for inviting me to testify today and would be happy to respond to any questions that you have.