

**TESTIMONY**

**OF**

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**BEFORE THE**

**SENATE COMMITTEE ON COMMERCE, SCIENCE, AND**

**TRANSPORTATION SUBCOMMITTEE ON SURFACE**

**TRANSPORTATION AND MERCHANT MARINE**

**INFRASTRUCTURE, SAFETY, AND SECURITY**

**HEARING**

**“SUPERSTORM SANDY: THE DEVASTATING IMPACT ON THE**

**NATION’S LARGEST TRANSPORTATION SYSTEMS”**

**THURSDAY, DECEMBER 6, 2012**

**10:30 A.M.**

**RUSSELL SENATE OFFICE BUILDING, ROOM 253**

Good morning, Mr. Chairman, and thank you for the invitation to testify today.

As you know, Hurricane Sandy was a sudden and unprecedented event, leaving us no more than a couple of days to plan and prepare for impact and recovery. I think we came through it well, and I'd like to pay tribute up front to the men and women of Amtrak and to our partner carriers. All of these folks really came together and pooled their resources very effectively to prepare for the storm and get service restored once it had hit. They helped us and we helped them, and that cooperation was a very important part of the larger effort to get the region moving again in the aftermath of the storm.

While we didn't get much time to prepare, I think we made good use of the time we had. Our Engineering staff began planning on October 25<sup>th</sup>, while the center of the storm was still south of Florida. We fueled vehicles, and we positioned them along with materials and equipment to address likely problems with the electric traction and signal systems. We inspected areas that were known to be at risk for flooding, and we disabled several of the remotely controlled signal and switch complexes – what we call “interlockings” – that were at risk from high water. On the 26<sup>th</sup> and 27<sup>th</sup> we positioned 22 repair crews for our electrical system at strategic spots, we removed critical equipment from low-lying areas, and we brought in generators and other equipment to ensure we had pumping capacity and backup power capacity at likely spots. We manned all of our communication centers to ensure that we were tracking events and coordinating the inspection teams that we dispatched to monitor the system's condition. In coordination with the other NEC commuter railroads, we made a deliberate decision to shut down the railroad on Monday, October 29, and this allowed us to bring

equipment into the yards and park it, and kept us from having to deal with stranded trains and passengers.

While I'm going to speak to the damage we had to deal with and our efforts to address it, I do want to stop before I go any further to highlight a couple of key points that I'm sure many of the other people here today will testify to. One is that we had an absolutely tremendous amount of cooperation and assistance from our partner railroads who were also affected – this includes Long Island Railroad, Norfolk Southern, CSXT Transportation, of course, and Metro-North and New Jersey Transit, and we worked with other carriers up and down the Eastern Seaboard. But the cooperation and teamwork in the New York area played a big part in the speedy restoration of service, and before I talk about the sterling work our folks did, I want to make sure that you know that our partners were with us every step of the way, and we appreciate all of their help.

And we needed it, because Sandy lived up to billing. The storm surge in lower Manhattan inundated the West Side Yard and flowed back toward Penn Station. When it came to the Manhattan end of the North River tunnels it flowed down into them – ultimately some 3.25 million gallons of water flowed down into those two tunnels. The track damage was minor, but the signal system and the electrically-powered sump pumps were basically destroyed and required complete replacement. The East River Tunnels were more heavily damaged, with more significant track damage and a much higher degree of immersion, since they were nearly full – they had more than 7 million gallons of water in them, although the two parallel tunnels which are operated by the Long Island Railroad were fortunately not flooded.

The Con-Ed power outages in Long Island deprived Penn Station and Sunnyside Yard in Queens of electrical power, freezing trains in place; other outages disabled the electrical system

at various points south of Wilmington. The electrical and signal systems suffered damage both from high winds, which blew debris into wires and ripped down lines, and from water infiltration, which caused electrical shorts and other problems. The Kearny electrical substation that provides power to a section of the NEC Leading to the Hudson River tunnels was totally flooded. High winds damaged crossing gates and blew debris such as metal roofing onto the tracks. Debris also clogged drains, leading to pooling of water and requiring immediate cleaning to avert further damage. In some places, track and roadbed structure was flooded or eroded. Large movable components such as switches were jammed with debris; smaller movable components such as relays were destroyed by flying debris and required replacement. Many structures suffered damage from winds or water. Two New Jersey Transit stations served by Amtrak, Princeton Junction station and Trenton suffered from roof damage and flooding, respectively, while water infiltration at the Washington Union station control center required pumping. Approximately nine miles of the New York City-Albany line were flooded to just below track level by the Hudson River.

I think we kept abreast of the accumulating damage pretty well, so we always had a picture of what the storm was doing and had done. Diesel locomotives and inspection cars patrolled the territory around the clock during and after the storm, to identify damage and assess risk of further damage. Most areas were inspected multiple times, for a total of nearly 2,353 miles of infrastructure inspection (Amtrak is responsible for maintaining 363 miles of the 457 mile NECmainline).

Work began early on clearance and recovery. Trains of rock ballast were loaded and positioned prior to storm landfall on Monday morning to address erosion and flooding and the

entire right-of-way was inspected during and after the storm to identify damage and ensure safety. Every movable bridge was inspected and as the storm moderated we were able to begin the work of recovery. We ultimately had to remove 80 trees from the right-of-way and repair the electrical system in 15 places – which is, for reasons I will get into shortly, fewer than we might have expected. There were two washouts to be replaced and a serious debris slide, but once the water receded, we were able to quickly and easily restore the four interlockings we shut down. CSXT helped us get a ballast train from Albany down to Trenton, and New Jersey Transit loaned us their “Aqua Train” which is very helpful in clearing light deadfall off the right-of-way and washing the ballast, so that we could keep the drainage-ways clear to ensure a solid and stable track structure. With a lot of support from our partner railroads, contractors, and our own workforce, which put in a lot of long hours under very difficult conditions, we were able to reduce our challenges to the Hudson River tunnels and the Kearny substation pretty quickly, and we restored service between Washington and Newark, New Jersey on Tuesday, October 31.

The tunnels serving New York were, however, a different matter. They required pumping, and once the water level was down, they had to be dried out and thoroughly inspected. The electric traction systems were generally fine, because the water didn’t get high enough to knock them out, but the signal systems and internal pumping systems were basically destroyed and required wholesale replacement. The Kearny substation was under water, and it had to be pumped out, cleaned out, inspected, and a lot of key electrical components had to be either repaired or replaced. We were able to reopen the southernmost of the Hudson River tunnels, known to the railroad as the North River tunnels on Wednesday, November 1, and with the support and assistance of Long Island Railroad, we were able to restore a limited Boston to

Washington service on the evening of Friday, November 2. The East River tunnels were put back into service on November 10 and 11, and the northern North River tube came back into service on November 12. It took about four days to get the Kearny Substation restored, but that came back online on November 16. During this time, we were able to provide some assistance to our partners at Long Island Railroad, New Jersey Transit, and Metro-North, and I hope we were as helpful to them as they were to us.

While the work that went into the recovery effort was absolutely tremendous, there's another aspect of it that I alluded to before, and that's "the work we didn't have to do." I want to make sure I mention that, because I know how hard many members of this Committee have worked to ensure that our capital program is adequately funded. Over the last decade, Congress has invested substantial sums in our capital program. Some of this money has come in annual appropriations, and some came in the \$1.3 billion grant Amtrak received directly under the terms of the American Recovery and Reinvestment Act (ARRA). While we're typically familiar with the contributions this funding makes to the most visible parts of our capital program – replacement of infrastructure or equipment that is in disrepair or in danger of "aging out" – it has also been used for programs that improve the resilience of our system.

The first area is our Fire and Life Safety program for the tunnels into and out of New York. We realized in 2001 that Amtrak had some potential vulnerabilities associated with the New York tunnels, and I give my predecessors credit for the speed with which they moved to address these vulnerabilities once they were identified, and the work that was done to ensure that the improvements were funded. A standpipe system was installed; this was designed to allow the fire department to pipe water into the tunnels in the event of a fire. Vertical turbine pumps with

a capacity of 700 gallons per minute were installed to assist with drainage, access stairways were rebuilt and a basket recovery system installed. Ventilation shafts were rebuilt and new ventilating plants installed at the tops of the shafts to ensure a sufficient supply of air into the tunnels.

The wisdom of these investments became apparent when we found ourselves with four flooded tunnels. The access improvements allowed us to get down into the tunnels to inspect them; the standpipe system gave us a point to hook the pumps up to and a means to evacuate the water from the tunnels, and the turbine pumps helped us pump the water out of the tunnels. Finally, the ventilation system helped us get the diesel fumes from the pumps out of the tunnel and dry out the tunnels once the water was pumped out. These improvements meant a difference of days, and perhaps weeks, in the restoration of service into and out of New York, and up and down the East Coast.

Similarly, one of the very first projects we undertook with ARRA money was the cleanup of our right-of-way. Trees are beautiful things, so this was not an easy task, but they're a challenge to a railroad, particularly if it's electrified like the Northeast Corridor is. Whenever you get a good strong wind, something blows down, and it doesn't necessarily need to be a whole tree. A dead limb can shut down the electrical or signal systems if it falls in the right place. So we undertook a right-of-way cleaning and clearing program as soon as we had the money we took on the task of undertaking the necessary pruning and tree removal. We've done about 230 miles of tree removal since 2008, and the result wasn't a complete absence of deadfall – this storm was much too strong for that – but a manageable amount.

Similarly, we did a lot of work cleaning out the culverts and ditches that carry runoff water away from our roadbed. Doing this ensures effective drainage, and prevents water accumulation and the challenges that come with it, such as erosion damage or the wholesale washout of track structure and electrical and signal components. We did have two washouts, but set against the magnitude of the storm, that's a pretty low number.

So if there's a single idea I would ask the Committee to take away from this hearing, it's this: investment works. We may take the benefits of it for granted sometimes, but storms like this really illustrate the vital point, which is that investment buys more than just capacity – it buys resilience. That's a resilience the larger community needs in times like this, to help it recovery from the effects of the disaster.

I say this because we have spent a great deal of money on this infrastructure, and I'm confident that we can keep it in service for decades to come. But storms like this highlight the fragility of century old structures, and the challenges that come when we're confronted with weather and conditions the designers never anticipated. They also highlight the lack of capacity. If we are going to continue to support the region and provide for its growth, capacity is going to be an issue, and we will need to address it. That means making the investments we need now for systems that will provide additional capacity of a day-to-day basis, and additional resilience in a crisis like this one.

One lesson we've learned is that high density signaling in the East River Tunnels between New York and Queens would be a simple and comparatively inexpensive improvement that would greatly improve our operational flexibility. We have high density signaling in the two North River Tunnels between New York and New Jersey to accommodate the traffic, but it



hasn't been installed in the East River Tunnels because there are four of them. Because the damage in the two flooded East River tunnels was more extensive, we have not yet been able to return them to full service, and that meant that the undamaged pair of tunnels has had to carry a heavier traffic load. We can do it, but high density signaling would allow us to carry a much heavier traffic load on the same infrastructure, and would provide a much greater degree of flexibility and resilience. We would like to obtain planning funding to begin the process of improving the signal system.

While we've been able to restore Substation 41 at Kearny to service, it's clearly vulnerable to flooding and we want to rebuild it atop a platform that will be above the high water line, and we would like to make the platform's footprint large enough so that we could add additional electrical capacity at some point in the future to support our plans for additional capacity into and out of New York. We also need to improve the resilience of the infrastructure at Penn Station, so we can ensure that the station's infrastructure and power supply are capable of resisting a flood of the magnitude of Sandy.

We need this because I believe we need the Gateway Program. As you know, Amtrak has a vision for expanded track, tunnel and terminal capacity in New York City, and you, Chairman Lautenberg, and other members of this Committee have supported it energetically. We've always known that the city needs more rail capacity, and now it should be clear that our rail transportation system as a whole needs more resilience. That means a better ability to resist damage, recover from an event, and return the system to service, and those requirements translate into more capacity, pure and simple. We will continue to work with the existing infrastructure, of course, but there are finite limits to what we can accomplish, and the southern

entrance to the city's rail terminals is basically operating at those limits on a good day. To address these three infrastructure needs – improving our signals, hardening the infrastructure, and beginning the design and construction of the Gateway project – and to cover the estimated operating losses we incurred during the storm, Amtrak will need a total of about \$336 million.

We need a system that's robust enough to support our operational needs not just on good days, but every day. And for that reason, I would close by thanking Senator Lautenburg, the Committee and the Department of Transportation for all the support they have given us as we have developed and publicized this plan. We appreciate your support, and we look forward to working with you to making the Gateway Project a reality.