

**SUPERSTORM SANDY: THE DEVASTATING
IMPACT ON THE NATION'S
LARGEST TRANSPORTATION SYSTEMS**

HEARING

BEFORE THE

SUBCOMMITTEE ON SURFACE TRANSPORTATION
AND MERCHANT MARINE INFRASTRUCTURE,
SAFETY, AND SECURITY

OF THE

COMMITTEE ON COMMERCE,
SCIENCE, AND TRANSPORTATION
UNITED STATES SENATE

ONE HUNDRED TWELFTH CONGRESS

SECOND SESSION

DECEMBER 6, 2012

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ONE HUNDRED TWELFTH CONGRESS

SECOND SESSION

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**SUPERSTORM SANDY: THE DEVASTATING
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THURSDAY, DECEMBER 6, 2012

U.S. SENATE,
SUBCOMMITTEE ON SURFACE TRANSPORTATION AND
MERCHANT MARINE INFRASTRUCTURE, SAFETY, AND SECURITY,
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,
Washington, DC.

The Subcommittee met, pursuant to notice, at 10:38 a.m. in room SR-253, Russell Senate Office Building, Hon. Frank R. Lautenberg, Chairman of the Subcommittee, presiding.

**OPENING STATEMENT OF HON. FRANK R. LAUTENBERG,
U.S. SENATOR FROM NEW JERSEY**

Senator LAUTENBERG. Good morning. I welcome everyone to today's hearing, which I called to address the devastating impact that the Superstorm Sandy had on our region's transportation systems.

It hit squarely in our nation's most densely populated area, home to the largest and most widely used public transportation network in the country. The storm did unprecedented damage to our transportation system. Estimates of the damage have reached more than \$7 billion. We are talking about damage just to the transportation system. Across the region, train tunnels, stations, and rail yards were flooded. Rail tracks were damaged and critical equipment was ruined. And some of that equipment, unfortunately, was fairly new and most usable, and unfortunately, these pieces of equipment may have been rendered almost useless. But we are going to hear about that.

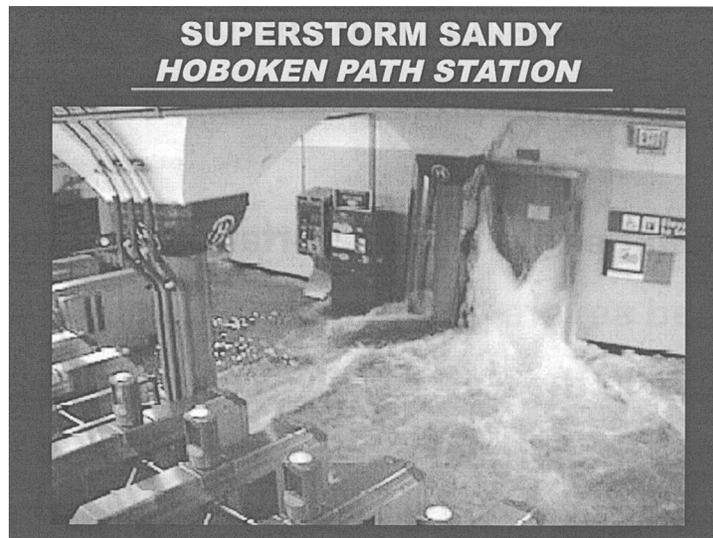
We see an almost incomprehensible example of the damage in this picture with a boat and shipping container strewn across New Jersey Transit tracks.



Senator LAUTENBERG. Roads and bridges were damaged and littered with debris. And the Holland Tunnel—it is a major commuting facility—carries thousands of vehicles every day into New York City. It was flooded.

The damage to our infrastructure did not just cause structural problems, it shut down our region. And for many commuters, getting to work became a much longer, arduous, and expensive experience.

And you can see why from this picture which shows flooding at that Hoboken PATH station.



Senator LAUTENBERG. It is hard to imagine, but the water was 6 feet high. And this station I have visited many times over the

years, a classic, old station was just put into such terrible condition and we will talk about that. What do we do? Do we just repair these things?

Anyway, with limited transit and rail access to New York, some New Jerseyans suffered multi-hour commutes at two and three times the usual cost. Or they were forced to sit in endless traffic. And by the way, in case you were not aware, there was heavy traffic before this, and so this just magnified the problem that we already had.

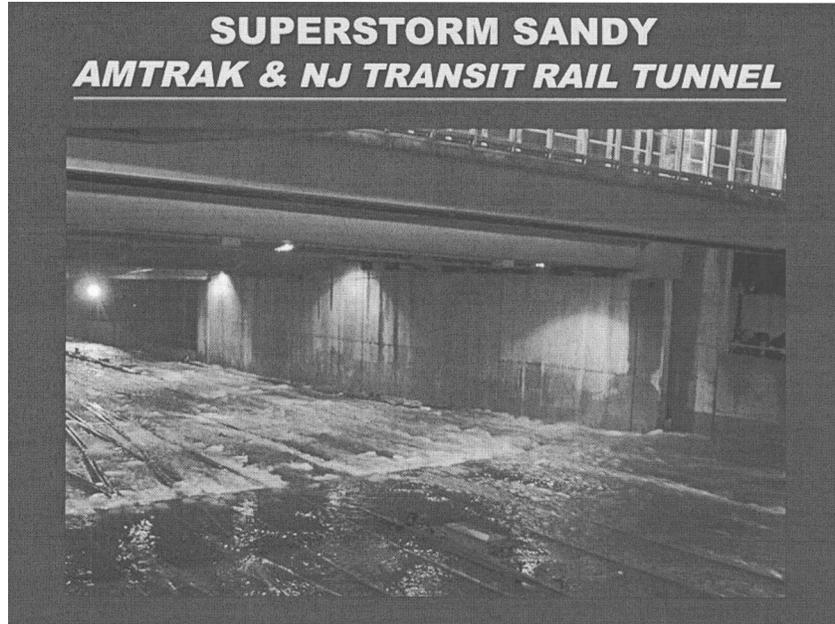
Damage to our transportation system had severe economic impacts. A prime example is the Port of New York and New Jersey, the largest port on the East Coast which supports more than 550,000 jobs in the region. Because of extensive flooding, dangerous debris in the waterways and damaged electrical systems, the port was largely shut down for days, nearly grinding commerce to a halt.

Transportation in our region has a nationwide impact. The millions of people throughout the country who ride our rails, drive through our state, or use our products that come through our port also felt the effects of Sandy.

While State and local agencies worked diligently to get our systems running again, many problems still need to be fixed, and they cannot do it all on their own.

A storm of this magnitude requires a response with the full power of the Federal Government. It will take all of us working together to make sure that our infrastructure is more resilient and better prepared for the future.

One of the projects that is going to help us get there is a new tunnel, the Amtrak Gateway Tunnel project, which will add much-needed capacity into New York City for millions of Americans using New Jersey Transit and Amtrak trains. This modern tunnel would also be better protected against flooding and provide an alternative route when disaster strikes. It would help prevent damage like we see here where the Hudson River tunnel that carries Amtrak and New Jersey Transit was turned into a river.



Senator LAUTENBERG. You can see that their tracks are visible through the water, and it is a shocking sight because you know what kind of damage this means and what we must do in such a hurry.

And now, we must also remember that Superstorm Sandy is a sign of things to come. In this changing climate, the intensity of storms has increased making extreme weather like Sandy more and more common.

As we devote resources to recovering from this storm, we have got to invest so we are better prepared for the future ones as well. And if we make these smarter investments on the front end, we can save a lot of money and heartache in the future.

Each of the witnesses here, including my fellow colleagues at the table from the region and our regional transportation agencies, have played essential roles in response to this storm. We have all been working together and we are in lockstep together because what happens in my state, our State of New Jersey, affects New York in a major way, and it is also true if the flow is reversed.

So I thank you all for testifying to get our region up and running again, and I look forward to hearing your testimony about how we can do the best job possible.

I am pleased to be here with my colleague, the Ranking Member, Senator Wicker. Senator Wicker, your comments please.

**STATEMENT OF HON. ROGER F. WICKER,
U.S. SENATOR FROM MISSISSIPPI**

Senator WICKER. Thank you, Senator Lautenberg. I want to thank you for holding this hearing and know we are eager to get to our three colleagues who will testify in just a few moments.

But let me say as a Mississippian who has experienced damage from devastating storms, I want to particularly assure those in this room that you have my condolences and my empathy at the damage and loss of life that Hurricane Sandy brought to your region. I understand the impact that a major storm can have on the lives of Americans. Even today, 7 years after Hurricane Katrina made landfall along the Gulf Coast, taking the lives over 1,800 people and causing over \$108 billion in damage, many Mississippians are still trying to rebuild.

I witnessed firsthand the devastation of Hurricane Katrina, and I can understand it can take years to recover fully. I hope recovery in New York and New Jersey will not take so long as it has for Hurricane Katrina, but I would not be surprised if, regrettably, the recovery does take a long time.

This hearing today will focus on the effects of Sandy on the transportation network of the New York-New Jersey region. Transportation infrastructure is a crucial element of our nation's economy, meeting the transportation needs for both people and freight. When the transportation network of a major city is crippled, the impacts can be felt throughout the United States.

I look forward to hearing from our witnesses about what they are doing to repair the damage done by Hurricane Sandy.

I will take a moment to mention that the assistance we Mississippians received during and after Katrina makes us all the more eager to help our fellow Americans in the Northeast recover from Sandy. For many Mississippians, helping those affected by Hurricane Sandy is an especially meaningful mission. Our own recovery following Katrina involved countless contributions of volunteers, church groups, nonprofit organizations, and emergency teams from across the Nation, including the Northeast. And we appreciate that. Today Mississippians are responding in kind by taking an active role in disaster relief efforts to assist northeastern communities in need.

For example, the Gulf Park Estates Volunteer Fire Department in Ocean Springs, Mississippi has provided a pumper truck it received after Katrina to the West Hamilton Beach Volunteer Fire Department in New York. More than 100 staff and volunteers from the Red Cross Mississippi Region did important work at shelters and distributed supplies in Pennsylvania, New Jersey, and New York. Dozens of volunteers with the Mississippi Baptist Disaster Relief Task Force volunteered to serve meals and to help remove debris and fallen trees.

I commend these volunteers as I commended the volunteers from other sections of the country that helped us in Mississippi for the valuable work they have done during this crisis. We could not have made it and the recovery from Sandy could not be complete without the help of charitable organizations and volunteers.

So thank you, Mr. Chairman, and I look forward to hearing from our colleagues and the other witnesses.

Senator LAUTENBERG. Thanks very much, Senator Wicker.

Have you got a short statement you would like to make?

Senator NELSON. Of course.

[Laughter.]

Senator LAUTENBERG. We are pleased to have our colleague from Florida because we are talking about transportation.

**STATEMENT OF HON. BILL NELSON,
U.S. SENATOR FROM FLORIDA**

Senator NELSON. I will be short and say that hurricanes are a way of life. It is part of our life in our state and, therefore, we are much more prepared. Thank goodness we have the head of FEMA who used to be the head of the emergency management services in Florida. He went through all four hurricanes that hit Florida in 2004. So he is a real professional, Craig Fugate.

But what you all are suffering is that a hurricane is not supposed to come to the Northeast and especially not in October and especially not at high tide with a full moon. And so you put all of that together and you are starting to experience some of the things in a category 1 hurricane that we experience in category 4 and 5 hurricanes. So I feel your pain and I want to help.

Senator LAUTENBERG. Thanks very much, Senator Nelson. We appreciate your words and your experiences.

We are pleased to have our distinguished colleagues, Chuck Schumer from New York and my colleague, Bob Menendez, from New Jersey. And I believe that Senator Gillibrand will be here shortly.

These Senators have been strong partners in this rebuilding effort. It is a great privilege to work together. We are a really strong team and we share the value of quick action and sufficient resources to get this job done. I mentioned we are in the largest commutation area in the country, and it takes the diligence and the skill that we have with our friends and colleagues.

So, Senator Schumer, we would like to hear from you.

**STATEMENT OF HON. CHARLES E. SCHUMER,
U.S. SENATOR FROM NEW YORK**

Senator SCHUMER. Well, thank you, Mr. Chairman. First, thanks for holding this hearing but more importantly for your great partnership as New York and New Jersey work together as a bipartisan, bi-State delegation, along with colleagues from the rest of the Northeast, to deal with this awful, awful devastation. It is good that you are in so many important positions here in this Senate that will have a lot of say in how we deal with this, and we are grateful for that, as well as your leadership.

I want to thank the Ranking Member, Senator Wicker, very much. West Hamilton Beach was in my old congressional district. It is one of the few volunteer fire departments in New York City. It is a very cohesive community right on the water, right on the great Jamaica Bay. And the generosity of Mississippians to West Hamilton Beach has been noted and much appreciated by us. And we are also glad in a certain sense—not that you suffered the same damage, but you understand what we are going through because of the devastation that Katrina wreaked on your community.

And of course, to my friend, Bill Nelson, here who, as he said, lives with hurricanes as a way of life—we are learning how tough it is and we have renewed sympathy for the people of Florida and the Gulf Coast who live with these things regularly.

New York State, as you know, suffered nearly \$7.3 billion in transportation-related damages due to Superstorm Sandy. Of that total, the New York MTA, Metropolitan Transit Authority, sustained about \$5 billion in damages. It is huge. I never saw anything like it.

We have the longest underground tunnel in the world in the Brooklyn Battery Tunnel. I take it almost every day that I am in New York City because my home in Brooklyn is connected to it. And it was totally filled with water, both tubes from one end to the other, from the Manhattan end to the Brooklyn end. There were close to 100 million gallons of water that had to be pumped out of that tunnel, and it is still not back up to snuff. That is just one of many examples. There are so many.

The MTA did a very good job. I want to congratulate Joe Lhota. They moved their rolling stock to high ground. They tried to barricade this awful flood in the best way they could but, boy, it is awful. And the MTA is the largest public transportation system in the country. It is the lifeblood of New York. It is our circulatory system. 3.5 million people go on and off Manhattan Island every day to work. Wow. 3.5 million people. I guess that is more than the number of people in Mississippi and probably more than the number of people in Dade County anyway. And we depend on it. 2.63 billion trips a year.

And as I said, the MTA took a lot of necessary precautions, but this is a 108-year-old system. It is the first major subway system in America, and it was never subjected, as you noted correctly, Senator Nelson, to the full moon and the high tide and the huge storm before. Never had anything like this. The MTA tried to put up barriers. In many cases they worked, but in other cases like the beautiful and new South Ferry Station right near the World Trade Center—the barriers were just knocked over by the high winds and flying debris. This one subway station, South Ferry, is going to cost over \$500 million, nearly \$600 million, to repair.

Many more underwater tunnels that connected the systems together are gone, and salt water, which of course we are a salt water place, is corrosive to the switches, to the tracks, and to everything else. So there is lots of permanent damage. The system is still not running up to snuff and it is our lifeblood.

So there are two points I would like to make to this Committee.

The first, we need help with mitigation. We cannot just rebuild a 108-year-old system and replace it with the parts that existed then. Most of them do not exist anymore and it does not make much sense to just redo it exactly as it is if, God forbid, there is another flood like this. So we need help with mitigation to make it stronger and better.

I know that Senator Wicker understands this. I think it passed by one vote. I was that vote in the well of the House when he and Thad Cochran—particularly it was Thad Cochran who came to me. They had to move a freight line, a big rail freight line, away from the flood plain in Mississippi. It cost close to \$1 billion, as I recall. I voted for it, understanding the need for mitigation.

We have the same need for mitigation now because you cannot replace exactly what has been damaged. But even if you could, you would not want to. You want to make sure that the next storm that

occurs—now that we are so much the wiser, Senator Nelson, we want to make sure that we are much more flood-proof. So we are going to need all kinds of things. Inflatable plugs, station seals at vulnerable points should be part of the Federal proposal.

So, first point, we need help not just in replacement but in mitigation, and it only makes sense in a large, old but vital system like this.

Second point. We need some flexibility which is related. And the good news is that we have a vehicle that is available. That is the Public Transportation Emergency Relief Program. FEMA has done a good job by and large. There were lots of mistakes, but FEMA is doing its best under difficult circumstances. But they are not experts on transportation. And Mary Landrieu particularly told us that down in the Gulf area, it was much better to deal with the Federal Transportation Administration which would be dealt with if we put money into the Public Transportation Emergency Relief Program. It is an authorized program. We did it last year in the transportation bill, but the cupboard is bare. There is no money in it.

We all understand that under the Stafford Act, we get these dollars. The MTA is a public system, but it would be much better to put it under FTA, the Public Transportation Emergency Relief Program, because they provide grants to states and public transportation systems to protect, repair, and replace equipment that has been damaged by a natural disaster. But Congress created this program to create flexibility.

Despite what FEMA has tried to do in our localities—and they are working real hard—FEMA is bound by the law to replace items to a previous condition, and as I said, that does not make sense. So the combination of having mitigation monies and doing it through the Public Transportation Emergency Relief Program makes sense. New Orleans, under the old program, was forced to actually buy old buses. That made no sense. So we need flexibility and that is why we need an FTA emergency relief account.

Bottom line, in conclusion, New York has no choice. We have to simultaneously rebuild and adapt to protect against future storms. We are a waterfront region. New York and New Jersey is a waterfront region. It has become abundantly clear we are in the path of violent new weather realities and we have to adapt.

And I want to thank the Chair and the Committee for the opportunity to speak.

Senator LAUTENBERG. Thank you very much, Senator Schumer. Senator Menendez?

**STATEMENT OF HON. ROBERT MENEDEZ,
U.S. SENATOR FROM NEW JERSEY**

Senator MENEDEZ. Thank you, Mr. Chairman. And I particularly want to say that your leadership in this committee and the Appropriations Committee is going to be so critical to the reconstruction of New Jersey, and we appreciate not only your leadership in those positions, but the leadership you have shown alongside those of us who are trying to restore the lives of New Jerseyans. And so you are critically important to our collective success for the region.

And I appreciate the comments of the Ranking Member, Senator Wicker, and Senator Nelson. As someone who has stood with the people of Mississippi and Florida each and every time that there has been an issue of devastation and recovery, I am heartened to hear the remarks that you both made because it is critically important to the people of New Jersey now. We do not have that experience. This is the first time we have had the experience. I have lived in the state my whole life and I have never seen the breadth and scope of devastation that the state has faced after Superstorm Sandy.

I appreciate the opportunity to give one or two dimensions of that. There are many but for the purposes of this hearing, just to give you a sense, the numbers are staggering across the region. We lost 34 lives during the storm. It was the largest mass transit disaster in our nation's history. Four out of 10 of the Nation's transit riders—of the Nation's total transit riders—had their commutes disrupted by the storm and many of them still do today.

New Jersey Transit alone had dozens of locomotives and rail cars damaged in the flooding, miles and miles of tracks damaged. The preliminary damage estimate provided by the State is now up to about \$37 billion. We are getting more damage numbers, but the toll to transportation and commerce is truly incalculable.

The Port of New York and New Jersey, which really most of it is on the New Jersey side and is the mega-port of the east coast, a quarter of a million jobs, \$25 billion to \$30 billion of economic activity for the Nation, suffered widespread damage. Ships were unloading during the course of the storm, but a full recovery from the damage caused at the port is going to take much longer.

The storm surge grew to 14 feet. Winds were about 90 miles per hour. More than 700 cargo containers were damaged when the surge and high winds toppled the containers onto each other. In this picture, you can see that half of a Port Authority barge was lifted onto a berth in Red Hook.



Senator MENENDEZ. In Jersey City, a float used to move railway cars broke in half and created significant damage. 150 feet of railroad track was washed away. Cargo-handling cranes and other pieces of equipment were severely damaged.

And this is also important to national security issues because in the last BRAC round, the only water port for the military in Bayonne, New Jersey was closed. And so the use of a commercial port for forward projection from the East Coast is the Port of New York and New Jersey, and when it cannot operate well, it is part of a national security imperative as well.

The trucking industry lost about 1,000 rigs to flooding at the port and other locations where they were parked, which is about 25 percent of all of the truck fleet that serves the port region.

About 16,000 cars were destroyed, a total loss. The tangled mess of colored metal scraps you see in the picture is a mix of cars and hundreds of motorcycles destroyed by the storm.



Senator MENENDEZ. Over 50 ships were diverted that were headed for New York and New Jersey. Those ships were carrying over 15,000 cargo containers and almost 10,000 automobiles.

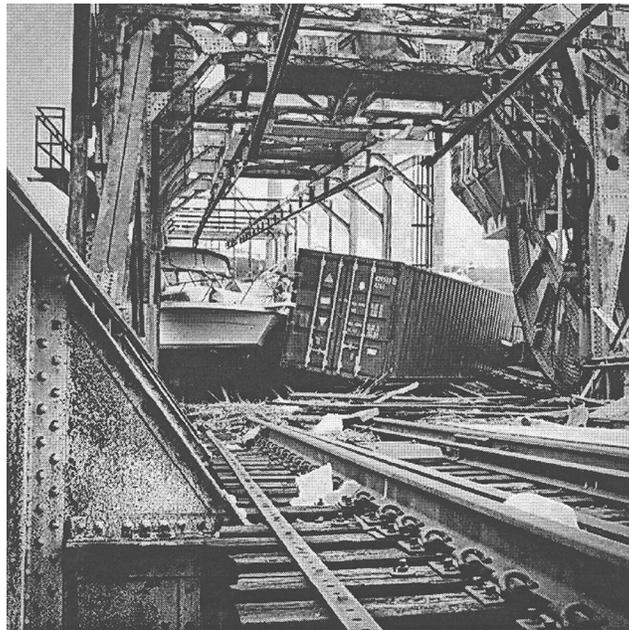
That is just one dimension.

As far as other transportation damage up and down the New Jersey coast, the sheer scope of the damage is difficult to fathom. This next picture is the Mantoloking Bridge which crosses Barnegat Bay and connects Brick with Mantoloking. As you can see in the picture, the storm surge ripped a gash right through Mantoloking, and this is some of the greatest destruction of homes in that region.



Senator MENENDEZ. Amazingly, the bridge can be repaired, but many of the surrounding homes were lost and part of that highway will need to be rebuilt.

This next picture is a shipping container and a large pleasure boat tossed onto the Morgan Rail Bridge on the north Jersey coastline, along with tons of debris, obviously killing a main artery of the State's riders.



Senator MENENDEZ. It took a lot of work to restore service on New Jersey Transit which suffered disruptions on every rail line.

And even today, as we speak, the Port Authority's PATH terminal, which is the subway between New York and New Jersey under the Hudson River, is inoperable and will not be back on line for some time. Those are tens of thousands of riders every day that are affected and, obviously, not only their commutes but the cost of their commutes has dramatically grown in the midst of a challenging economic time.

Corrosive seawater rushed into the PATH stations at Exchange Place and Hoboken, and the Hoboken station may still not be reopened for weeks.

So, Mr. Chairman, that is one dimension on transportation. We have lost thousands of homes. We have thousands of people who are out of a home. I am not talking about a second home because many people think about the New Jersey shore and they say, oh, that is about second homes. No. These are year-round communities where people have made their lives and their investments and now have seen them washed away. They do not have a place to come back home to.

And so that is why it is critically important—the work of this committee and to ask our colleagues—as we have stood with the people of the Gulf Coast in Hurricane Katrina and in Florida, the people of Joplin, Missouri after a tornado ravaged their community, when the Mississippi flooded, when crops were destroyed in the Midwest, we have been there. And since this is the United States of America, we need you to be with us.

Thank you very much, Mr. Chairman.

Senator LAUTENBERG. Thanks very much, Senator Menendez.

Senator Gillibrand is relatively new here but really fighting whenever it comes to the needs of our region and your state obviously. We are pleased to have you here. Please, your testimony.

**STATEMENT OF HON. KIRSTEN GILLIBRAND,
U.S. SENATOR FROM NEW YORK**

Senator GILLIBRAND. Thank you, Mr. Chairman, and thank you, committee members, for attending today.

You know better than anyone, Mr. Chairman, how severe this storm was and the type of destruction that was wrought throughout New York, New Jersey, Connecticut, and the surrounding region. We are still suffering gravely. There are still families who cannot return to their homes. There are businesses that are just in the early stages of figuring out how to rebuild. There were so many lives lost, so many families absolutely torn apart.

And I can tell you this is the job of the Federal Government. It is our job to protect people. It is our job to help communities rebuild when there are natural disasters that local governments just cannot afford to be able to pay for on their own.

Now, New York has been working very hard to come up with a plan about how to rebuild, but the transportation infrastructure has taken an unbelievable beating. In New York alone, 2,000 miles of roads were destroyed or damaged. 11 tunnels were flooded. And our city and our State really relies on mass transit. We are the number one users of mass transit in the country. And with our

mass transit system, miles of tracks and tunnels were flooded with corrosive salt water. 12 subway stations were damaged or destroyed, and half a million transit riders are still experiencing severe disruptions.

Now, you will have the MTA Chairman come in, which is fantastic because he can give you the nuts and bolts of the loss, the repairs, where we stand. A lot of the service is up and running now, but there are long-term repairs that must be done. You can see the nature of the storm. It just filled up the subways. When we built these subways 100 years ago, they could not have imagined this kind of flooding, this kind of storm. And so the water just rushed in and that corrosive salt water really did affect the electrical systems and the ability to get these stations back up and running.

So it is a massive undertaking. The initial estimates are that just fixing our mass transit system could cost about \$5 billion. So you can see the extent of the kind of damage and how much it really takes to do.

This is our rail system. These are the Rockaway tracks. The tracks are just washed out. So if you know anything about the geography of New York State and New York City, we have rail lines coming in and out of New York City straight up, straight west, straight east, and they are essential for commuters to get to and from work. You know, New York City is a city of 8 million people, but you have got millions of people on Long Island that come into the city every day. They either come by road or they come by rail. So that is the kind of work that is going to be needed to be done just to get our city up and running again.

I will not give much more detail. I do rely on the testimony that has been given previously and the testimony that is to come. But I just want to emphasize for our colleagues the reason why these hearings matter is because the rest of Congress, the rest of the Senate has not necessarily been to New York since the storm. They have not seen the devastation in these communities. They have not seen the destruction that was caused to so many families and so many businesses. And you know, we have seen storms before. We have seen storms all across the country. We have seen wildfires. We have seen tornadoes. We saw what happened with Hurricane Katrina. And so we know what suffering looks like. And I can tell you New York has never suffered on this level because of a natural disaster ever. And so to have the ability and wherewithal to begin to rebuild will mean that we will rely on the Federal Government.

So I want to thank you for holding this hearing, and I want to thank you for giving us the opportunity to tell these stories and to show you what really happened in New York. Thank you.

Senator LAUTENBERG. Thank you very much, Senator Gillibrand.

Senator Klobuchar requested an opportunity to give a statement. We welcome her statement.

**STATEMENT OF HON. AMY KLOBUCHAR,
U.S. SENATOR FROM MINNESOTA**

Senator KLOBUCHAR. Thank you very much. I just wanted, while Senator Gillibrand is still here, to thank all four of you, Mr. Chairman, as well as Senator Menendez and Senator Schumer. And I

have specifically talked to Senator Gillibrand at length about this, and I know, having had some version of this in Minnesota with flooding in the Red River Valley—and everyone remembers Grand Forks, but we have had similar close calls with Fargo and Morehead—what this is like for the families. And I really appreciate how you have brought this home to us in terms of the actual effects it had on people, and I think we have to remember that.

And what I remember is that New York State and New Jersey and the rest of the country stood by Minnesota and North Dakota when we had our severe weather and our severe floods or when the 35W bridge collapsed and we were able to rebuild that bridge in a year. And we saw firsthand what that was like to have a major infrastructure destruction right in the middle of our major city.

And so I think it is very important that during a time of divisiveness that we stand together and we stand for those that have been affected by this horrible storm.

I do know that our Minnesota National Guard has been out there. We consider them the best Guard in the country, Senator Gillibrand and Mr. Chairman, but you may think otherwise. But they have been out there helping, and I think that is just much of the spirit that we bring here. And we all have to understand that just as importantly as getting those emergency supplies to people, we are now at the next stage. We are at the stage of rebuilding and rebuilding means rebuilding infrastructure.

Thank you very much.

Senator LAUTENBERG. Thank you very much, Senator Klobuchar.

Now we will call our second panel to testify. We welcome this panel of transportation experts. We know that each of you in your routine duties have got so much on your hands.

The one thing I wanted to make certain that we understood is the magnitude of the support teams that came in from all over the country and the fact that it took some time to get things going, and Senator Wicker reminded us about that. But the devastation was so enormous that when we look back, a lot was done in a relatively short period of time.

So you each have major transportation responsibilities and we are glad to have you as experts testifying. And I would ask, if you can, to keep your statements within a 5-minute limit. We will allow you a couple seconds here or there if necessary, but otherwise I would ask that you do that. I will first call on Mr. Boardman.

Did Amtrak get a new name? What are we calling the organization?

Mr. BOARDMAN. Do you mean for the Northeast, the infrastructure and investment development business line for the Northeast? I am not sure of your—

Senator LAUTENBERG. No. I see National Passenger Rail Corporation.

Mr. BOARDMAN. Oh, OK. The official title.

Senator LAUTENBERG. I think of good, old Amtrak.

Mr. BOARDMAN. Amtrak, America's railroad, Senator.

Senator LAUTENBERG. Before we start, I would like to acknowledge the Deputy Secretary of Transportation, John Porcari. Is John here? Well, I would have acknowledged him if he was here. I follow instructions. OK?

And we have testimony from Deputy Secretary Porcari, and I ask unanimous consent that it be placed in the record.
 [The prepared statement of Mr. Porcari follows:]

PREPARED STATEMENT OF JOHN PORCARI, DEPUTY SECRETARY,
 U.S. DEPARTMENT OF TRANSPORTATION

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 26, 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. Carpooling 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 2 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 19. 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 29, 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 1. 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 sup-

port—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 subway 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.

Senator LAUTENBERG. So coming from where each of you has been in these past weeks, I know that there has got to be enormous frustration, enormous heartbreak in what you have seen and I'm sure each of you understands so intimately what the penalty is with having systems that cannot operate. You have used judgment and I think you have made good decisions. We will explore them a little bit here just to see what we can find out for the benefit of the record and our plans for the future.

So, Joe Boardman, the President and CEO, Amtrak is going to talk about the damage directly to Amtrak caused by the storm and how we can better protect our rail system in the future. Mr. Boardman?

**STATEMENT OF JOSEPH H. BOARDMAN, PRESIDENT AND
CHIEF EXECUTIVE OFFICER, AMTRAK**

Mr. BOARDMAN. Thank you, Senator. Thank you for your support for Amtrak for so many years. We understand what you do. And we thank all the Senators here.

I think the first thing that I would like to say—and I do have written testimony and I will be very brief here to get through this for you—is that it also impacts both other Senators here. Senator Wicker, your Crescent Service was unable to complete its trip be-

cause of what happened in New York City. And the Empire Builder, while it continued on to Chicago, could not make the transfer no matter what the case was to get to New York City. And this is the time of year when those families that are scattered across the country really are bonded by the ability of Amtrak to move them, and that is something that is not captured in the dollars and the cents here.

When we look at what we really lost in terms of revenue, we are at about \$30 million just in terms of the few days that we were out of business, and then direct cost to get things fixed were another \$30 million. So I think you are going to hear the smallest numbers today from Amtrak in terms of our actual costs, around \$60 million of impact right this minute.

Initially what we understood was that we were going to have a tail of impact of reduced revenues, and that has not happened. And one of the reasons that has not happened is that the real story here is the coordination and cooperation of the leadership that got together, and it is about the men and women of Amtrak, the men and women of New Jersey Transit, and the men and women of MTA and the Port Authority that delivered a no-nonsense delivery of services for the future.

We had four of the seven tunnels that go in New York plugged with water, and on those four tunnels, we also—and you have heard this before—had the electric system inundated by salt water which meant that we have and still have difficulties making those kinds of improvements.

And then we had the flooded electrical substation called Sub 41 in Kearny, New Jersey that did not give us enough power to move the trains in and out of New York.

But the real story for us to get done as quickly as we did—and before the end of October, we were returning service to Newark and then by early November, into New York, and even by the 2nd of November, we had service between Washington and Boston back—was the fact that we had funding in our general capital that we used after the lessons we learned of 2001, 9/11, to invest. And we invested in standpipes and fire and life safety, and those helped us pump out the tunnels. And if they had not been there, Senator, we would be not talking just days but we would be talking weeks before we would have returned service to New York City. So the right decision was made to invest.

Second, we took Recovery Act funds and we began to clear our right-of-ways early. We only had 80 downed trees on our right-of-way which allowed us again to move things back much quicker. So investment does work.

We were lucky, though. We were lucky because this is century-old infrastructure, and it has got to be rebuilt. You asked for a response about that leadership, not just of folks here but all over the Northeast, and I heard it here and will not go through it again. It was about the people that did heroic things to make this come back.

But enough is enough. It is time to repair, rebuild, and invest. We need to rebuild Substation 41. Substation 41 would have been done under ARC. It will be done under Gateway, but it needs to be done now. And our total ask here, what we are looking for to

rebuild that, to plan for high density signal systems on the East River tunnels, which are four in number, and the need for us to really get the job done, is 336 million bucks. We need that investment now, not later. We have to take action and deliver, just like we did after 9/11, the things that are necessary for us to get this done today. And when I mean today, I mean we need to start moving, planning, and constructing.

And one final project is absolutely critical to New York State, New Jersey, and even to Minnesota, and that is that we have to preserve the next two tunnels going into New York for the future. And they will be built and designed so that there is no water that can go in there. We cannot shut down the two tunnels under what transit people call the North River and I call the Hudson today at all. The only two ways in from New Jersey are through those two tubes. We need two more so that we can rebuild the existing tubes so we do not have this difficulty in the future. I need your help with that.

I appreciate the time you have given me.

[The prepared statement of Mr. Boardman follows:]

PREPARED STATEMENT OF JOSEPH H. BOARDMAN, PRESIDENT AND
CHIEF EXECUTIVE OFFICER, AMTRAK

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, 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 26th and 27th 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 Lautenberg, 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.

Senator LAUTENBERG. Thanks very much, Mr. Boardman.

Mr. Lhota is from MTA, a pretty big operation, and we are happy to have you here and ask if you would give us your view on the recovery efforts and what the damage looks like for MTA.

STATEMENT OF JOSEPH J. LHOTA, CHAIRMAN AND CEO, NEW YORK METROPOLITAN TRANSPORTATION AUTHORITY

Mr. LHOTA. Good morning and thank you, Mr. Chairman and other Senators here. And thank you for inviting me to testify before this committee on this critically important issue.

I am the Chairman and CEO of the New York State Metropolitan Transportation Authority, which is the largest transportation provider in the country. Every day the MTA moves 8.5 million people safely and securely to their jobs, their schools, shopping, medical appointments. You name it; we get them there.

Our network includes not just the New York City subway system, but the New York City buses, the Staten Island Railway, the Long Island Railroad, and Metro-North, as well as seven vehicular bridges and two tunnels.

Along with other transportation systems represented on this panel, the MTA is the lifeblood, as Senator Schumer said, of a \$1.4 trillion regional economy, the largest in the country, which makes up 11 percent of the GDP of the entire country.

Just over a month ago, Hurricane Sandy brought our system to its knees. We experienced a level of destruction that is completely unprecedented in our 108-year history. Left in the storm's wake were eight flooded subway tunnels and two vehicular tunnels, 12 subway stations with major damage, some of them absolutely de-

stroyed. We lost an entire bridge and a rail line serving the Rockaways in Queens, 15 miles of damaged or destroyed signaling, and we had rail yards and maintenance shops underwater and damaged.

Just as the superstorm was unprecedented, so was the level of our preparation, and under the leadership of Governor Andrew Cuomo, we shut down the entire system just for the second time in our 108-year history.

As it turned out, even our preparations would not, actually could not, have protected our entire system from the full force of Sandy's wrath. At the height of the storm surge, the Governor and I met at the Hugh L. Carey Brooklyn Battery Tunnel in Lower Manhattan and what we saw there was truly unbelievable. We watched more than 86 million gallons of seawater flood and rush into the two tubes of that tunnel alone.

Once Hurricane Sandy passed, our top priority was to restore service as quickly and as safely as possible. And I have to say this. I simply could not be more proud of the workers of the MTA, labor and management, who worked so well on behalf of all the people. We had buses up and running 7 hours after the storm. Nine hours after that, we were at a complete bus schedule. A few of our commuter rail lines were up and running in less than 24 hours, and we had limited subway service back in 36 hours.

Due to the complete loss of the flooded tunnels under the East River, the subway service between Brooklyn and Manhattan was completely halted. So for 3 days, we had to improvise. We used 330 buses from our existing bus fleet to replace service for the 1.4 million customers who commute every day between Brooklyn and Manhattan.

Once our tunnels were cleared and power was restored, most service was restored within a week. And today, most of our transit system is up and running.

But let me be clear. We have not restored service to the full capacity. We are nowhere near normal operations, and that will not be for quite some time. It is important to remember that hundreds of millions of gallons of salt water completely inundated our system that is over 100 years old. We will be feeling the residual effect of this storm for months, if not years to come.

In our efforts to restore service, we used over 80 percent of our inventory of equipment, nearly exhausting all of our replacement supplies. The useful life for many of our signals, switches, and relays have depleted exponentially. The South Ferry/Whitehall Station, a critical stop for riders coming in to Manhattan from Staten Island or for those workers on Wall Street was completely destroyed. The subway lines along the bridge connecting the Rockaway Peninsula to the rest of Queens is just gone. The subway tunnel for the R train connecting Brooklyn Heights to Manhattan still is not operational. We have subway lines running at slower headways, resulting in longer commutes and severe crowding.

Nearly a half million of our customers either have no service, reduced service, or have to take alternative routes. To put that into perspective, that is equal to the entire populations of the cities of Miami, Cleveland, Atlanta, or Pittsburgh that have no transportation or have their commute significantly longer.

While our preparations and quick recovery helped to limit the impact of our storm, our preliminary estimates total nearly \$5 billion in damages and this figure could possibly rise. As you know, salt water and metal and salt water and electronic devices do not mix very, very well. After marinating for weeks, the useful life for many of our signals, switches, and relays have depleted exponentially. But this figure represents just what we need to get the system back to where we were the day before the storm hit. Over and above that, it is critical that we make the critical investments we need to protect our system from future storms.

As President Obama has said, we must act and we must rebuild. When you consider the fact that the New York metropolitan region completely shuts down without the MTA and that that region makes up 11 percent of our country's GDP, this is clearly much more than a New York issue or a New York need. This is a national issue. It is a national need, and we are going to need the help of the Federal Government to help us rebuild the MTA.

And, Senator, thank you very much for this opportunity, and I look forward to questions later.

[The prepared statement of Mr. Lhota follows:]

PREPARED STATEMENT OF JOSEPH J. LHOTA, CHAIRMAN AND CEO, NEW YORK METROPOLITAN TRANSPORTATION AUTHORITY

Good morning, Chairman Lautenberg, Ranking Member Wicker, and other members of the Committee.

Thank you for inviting me to testify on this critically important issue. I'm Joseph Lhota and I am the Chairman and CEO of New York State's Metropolitan Transportation Authority, the largest transportation provider in the country. Every day, the MTA moves eight and a half million people safely and securely to their jobs, their schools, shopping, medical appointments, you name it—we take them there.

Our network includes the New York City Subways and Buses, the Staten Island Railway, the Long Island Rail Road and the Metro-North Railroad, as well as seven vehicular bridges and two tunnels.

Along with the other transportation systems represented on this panel, the MTA is the lifeblood of a \$1.4 trillion regional economy—the largest in the country and making up 11 percent of the Nation's GDP.

But just over a month ago, Hurricane Sandy brought our system to its knees. We experienced a level of destruction that is completely unprecedented in our 108-year history.

Left in the storm's wake were eight subway tunnels and two vehicular tunnels that were flooded, some completely from floor to ceiling; 12 subway stations with major damage or completely destroyed; we lost an entire bridge and rail line serving the a critical subway line serving the Rockaways in Queens; 15 miles of damaged or destroyed signaling; rail yards and maintenance shops under-water and damaged—all adding up to billions and billions of dollars in damages.

Just as this superstorm was unprecedented, so was the level of our preparation. We knew it was going to be bad and we prepared for the worst. Under the leadership of New York Governor Andrew Cuomo, we shut down the entire system for just the second time in our 108-year history—suspending service on each of our five operating agencies, and closing our two tunnels and all seven of our bridges.

As it turned out, even all our preparations would not—could not—have protected our system from the full force of Sandy's wrath. At the height of the superstorm's surge, Governor Cuomo and I met at the Hugh L. Carey Brooklyn Battery Tunnel in Lower Manhattan, and what we saw there was truly unbelievable. We watched as more than 86 million gallons of seawater flooded the two tubes of that that tunnel alone.

Once Hurricane Sandy passed, our top priority was to restore service as quickly and as safely possible. And I have to say this, I simply could not be more proud of the MTA labor and management and how they handled the storm.

Even before the superstorm was over, they were out there repairing the system. We had buses up-and-running seven hours after the storm. Only nine hours after that, buses were running full-schedule. A few of our commuter trains were running

less than 24 hours after the storm passed. Limited subway service was back 36 hours after the storm.

Due to the complete loss of the flooded tunnels under the East River, subway service between Brooklyn and Manhattan was at a complete halt. So for three days, we had to improvise. We used 330 buses from our existing bus fleet to replace service for the 1.4 million customers who commute from Brooklyn to Manhattan every day.

Some people chose to drive during this time and as a result, New York City was completely gridlocked—inundated with cars. When our network is running at full strength, it is estimated that the MTA keeps approximately 700,000 cars from entering New York City's Central Business District every day. And with our transit system crippled, cars didn't just "block the box." They blocked the entire island of Manhattan.

Once our tunnels were cleared and power was restored, most service was restored within a week. And today, most of our transit system is up-and-running.

But let me be clear: While we have restored service, we are nowhere close to normal operations and won't be for quite some time. It's important to remember that hundreds of millions of gallons of salt water completely inundated a system that's over 100 years old. We will be feeling the residual effect of this storm for months, if not years to come.

In our efforts to restore service, we used over 80 percent of our inventory of equipment, nearly exhausting all of our replacement supplies. South Ferry/Whitehall Station, which is a critical stop for those riders coming from Staten Island, as well as those riders that work near Wall Street, was completely destroyed. The subway line, along with the bridge, connecting the Rockaways Peninsula and the rest of Queens is just gone. The subway tunnel for the R train connecting Brooklyn and Manhattan still isn't operational. We have subway lines running at slower headways, resulting in longer commutes and severe crowding.

Nearly half a million of our customers either have no service, reduced service, or have to take alternative routes. To put that in perspective, that's equal to the entire populations of the cities of Miami, Cleveland, Atlanta, or Pittsburgh having no transportation or having their commute become significantly longer.

While our preparations and quick recovery helped to limit the impact of the storm, our preliminary estimates total nearly \$5 billion in damages and this figure could rise. As you know, salt water and metal, and salt water and electronic devices, don't mix very well. After marinating for weeks, the useful life for many of our signals, switches and relays have depleted exponentially. But this figure represents just what we need to get the system back to where it was the day before the storm. Over and above that, it's critical that we make the critical investments we need to protect our system from future storms.

As President Obama has said, we must and we will rebuild. New Yorkers are resilient and we always bounce back. When you consider the fact that the New York metropolitan region completely shuts down without the MTA . . . and that the region makes up a full 11 percent of our entire nation's GDP, this is clearly much more than a New York story, or a New York need. This is a national issue. A national need. And we're going to need the Federal Government's help to rebuild.

Once again, Chairman Lautenberg, thank you for holding this important hearing and for giving me the opportunity to testify before the Committee. I welcome any questions you may have.

Senator LAUTENBERG. We almost need the constant reminders about the national heirloom of this event. This is not just regional. It is not just a bi-State thing. This threads through our entire economy. And thank you very much for your testimony.

Mr. Foye, you are the Executive Director of the Port Authority of New York and New Jersey. We will hear from you about the Port Authority's efforts to recover from damage to the authority's tunnels, trains, airports, and port.

And I take a moment to remind you, Mr. Foye, that I was a Commissioner of the Port Authority before I came here, and actually I was driven to my interest here as a result of the traffic. The company I was running was ADP, a very large company, and we had vehicles crossing the river and they took longer and longer and longer to get to their destination and back. And were it not for the

technology that now you see runs rampant through our lives, we never could have done it. But the situation in the New York region is really miraculous in so many ways, and I think the agency is a great agency, not without its faults.

**STATEMENT OF PATRICK J. FOYE, EXECUTIVE DIRECTOR,
PORT AUTHORITY OF NEW YORK AND NEW JERSEY**

Mr. FOYE. Well, Chairman Lautenberg, let me begin by thanking you for your service to our country and the private sector as a Commissioner to the Port Authority and in the Senate.

Chairman Lautenberg and members of the Committee, thank you for holding this important hearing.

On behalf of the Port Authority of New York and New Jersey, Senator Lautenberg, I want to thank you personally for your tireless support of the Port Authority and our region. It is a privilege today to testify before you and this esteemed committee.

I also want to thank Governors Andrew Cuomo of New York and Chris Christie of New Jersey for their strong leadership before, during, and after Superstorm Sandy. We are truly fortunate to have such remarkable Governors leading the region through this incredibly difficult time.

I am Pat Foye, Executive Director of the Port Authority of New York and New Jersey. For those unfamiliar with the agency, we operate what is the most important multi-mode transportation network in the world.

Briefly our transportation assets include five airports, three of which comprise the busiest airport system in the country: JFK, LaGuardia, and Newark airports. We also maintain and operate four bridges, including the George Washington Bridge, as you know, Senator Lautenberg, the busiest vehicular in the world, and the Holland and Lincoln Tunnels which link New York and New Jersey. Our other assets include the world's busiest bus terminal, the largest port complex on the east coast, and a bi-State inter-rail system known as PATH.

Annually more than 109 million people use our airports, which also handle more than 2.1 million tons of cargo. About 465 million people use our Hudson River and Staten Island bridges and tunnels. Seventy-seven million people ride PATH, and about 3.4 million cargo containers move through our ports. All told, we transport nearly 700 million people a year and billions of dollars worth of goods through our vital and indispensable transportation network.

As we all now know, however, Superstorm Sandy brought this critical transportation network to a complete halt just over a month ago. Knowing a potential for widespread damage, we took all possible precautions under the direction of our Governors.

At the Port Authority we conduct exercises and drills throughout the year for all types of hazards, including major weather events. Days before Sandy arrived, we filled and placed thousands of sandbags, secured all items that could become flying debris, and installed floodgates. We also shut down vulnerable facilities a full day before the storm. For example, we took PATH out of service, brought our trains to higher ground, and closed our airports as airline tenants canceled 10,000 flights.

When Sandy struck, the devastation was great. The tidal surge that reached over 13 feet exceeded the 100-year flood level for Lower Manhattan by more than 2 feet. The storm crippled our transportation system, causing widespread flooding and power outages. We had no choice but to shutter most of our facilities.

As soon as the storm subsided, we began assessing the damage at all of our facilities. Our ports suffered extensive flooding with toppled cargo containers, washed-out access roads, twisted rail track, barges and debris tossed about on piers and, less visible but perhaps more critical, damaged electrical infrastructure. The flooding at the ports disrupted the region's supply chain, stranding cargo for weeks, and caused significant damage, including the destruction of more than 15,000 automobiles by salt water.

At the airports, LaGuardia alone had an estimated 100 million gallons of seawater flood the airfield, and at one point, you could not distinguish parts of the aeronautical areas, our runways and taxiways, from Flushing Bay. Newark, JFK, and Teterboro airports also suffered significant flooding and power outages.

The Port Authority bus terminal, the primary bus facility for New York City and the region, experienced a tremendous blow as commuter bus carriers completely halted their service, disrupting travel for over 200,000 daily passengers. The Holland Tunnel also flooded, forcing the closure of this vital transportation link between New York and New Jersey for days.

As bad as the impact was to these facilities, it soon became apparent that PATH suffered the most severe blow. This vital interstate link, built more than 100 years ago, was completely devastated by flooding. The storm water soaked caissons containing racks of critical and decades-old signal and communications equipment with corrosive seawater, causing extensive and in some cases irreparable damage.

Our PATH team worked around the clock to pump out tunnels and stations and go through the painstaking process of restoring power to the substations, testing and repairing or replacing equipment along the entire route. One of our workers, Tom O'Neill, risked his own life literally, jumping into several feet of flood water so he could restart a critical pump. Tom told me he was simply doing his job, much like the hundreds of PATH workers still toiling to restore full service to our network.

Men and women of the Port Authority Police Department made lifesaving contributions.

In spite of the devastating damage to our transit infrastructure, just one day after the storm, we were able to reopen four bridges, an action that was vital to reestablishing the connection between New York and New Jersey across the Hudson as quickly as possible.

On October 31, remarkably less than 2 days after the storm, JFK and Newark airports reopened, and the following day LaGuardia Airport restarted flight operations.

As for PATH, we were able to restore limited service one week after the storm and have since restored service to all our stations with the exception of Hoboken Station where today 90 to 100 people are working. Hoboken terminal suffered the most extreme damage.

The Port Authority has not traveled this difficult road alone. Many of the agency's partners, including USDOT, FRA, and FTA, have been incredibly supportive, as have Invensys Rail in Louisville, Kentucky; Trilogy Communications in Senator Wicker's home State of Mississippi, Pearl, Mississippi; Ansaldo in Pittsburgh, Pennsylvania; Alstom in Rochester, New York; and GE, which opened a factory in Puerto Rico at our request to manufacture PATH replacement parts that have not been made for years.

What happens in our port district and to our port district affects the entire nation. Our losses from Superstorm Sandy ripple through the entire country. We must never lose sight that recovering from Sandy is not a local issue. It is a national matter.

As Governor Cuomo noted, the past few years have shown that 100-year storms are not reserved for once in a century. It is critical that we rebuild with greater resiliency and redundancy. We will rebuild, but we need the Federal Government's help.

As you know, Senator Lautenberg, the Port Authority receives no taxpayer money from either New York or New Jersey. We rely solely on user fees, rents, tolls, and fares, and all of those revenue streams have their limitations. We are still assessing exact costs of repair and recovery, but clearly our needs are enormous. We face hundreds of millions of dollars and immediate repair costs and billions of dollars to install a mitigation project such as protecting and elevating electrical substations at PATH and the airports, as well as additional pumping capacity at LaGuardia and JFK airports to safeguard our system in the future.

In conclusion, the Obama Administration and this Congress have been great partners throughout this process, and for that we are grateful. The costs, no doubt, will be high, but they would be unfathomable in terms of the cost of lost productivity, disabled economies, and a fractured transportation network should we fail to make those repairs and investments.

The road ahead will be a challenge, but with the help of the Federal Government and our partners in the Federal Government, we know that recovery is possible.

Thank you for holding this hearing, Senator.

[The prepared statement of Mr. Foye follows:]

PREPARED STATEMENT OF PATRICK J. FOYE, EXECUTIVE DIRECTOR, PORT AUTHORITY OF NEW YORK AND NEW JERSEY

Chairman Lautenberg, Ranking Member Wicker, and members of the Committee, thank you for holding this important hearing.

Chairman Lautenberg, on behalf of the Port Authority of New York and New Jersey, I thank you for your tireless support of the Port Authority and the region. It is a privilege to testify before you and this esteemed committee.

I also want to thank Governors Andrew Cuomo of New York and Chris Christie of New Jersey for their strong leadership before, during and after Superstorm Sandy. We are truly fortunate to have such remarkable governors leading the region through this incredibly difficult time.

I am Pat Foye, Executive Director of The Port Authority of New York and New Jersey. For those unfamiliar with our agency, we operate what is arguably the most important multi-mode transportation network in the world.

Our transportation assets include five airports, three of which comprise the busiest airport system in the country: JFK, LaGuardia, and Newark Airports. We also maintain and operate four bridges including the George Washington Bridge, the busiest vehicular crossing in the world, and the Holland and Lincoln tunnels, which link New York and New Jersey. Other assets include the world's busiest bus ter-

minal; the largest port complex on the East Coast; and a bi-state commuter rail system known as PATH.

Annually, more than 109 million people use our airports, which also handle more than 2.1 million tons of cargo . . . about 465 million people use our Hudson River and Staten Island bridges and tunnels . . . 77 million people ride PATH . . . and about 3.4 million cargo containers move through our ports. All told, we transport nearly 700 million people a year and billions of dollars worth of goods through our vital and indispensable transportation network.

As we all now know, however, Superstorm Sandy brought this critical transportation network to a complete halt just over a month ago. We knew this storm would be an unprecedented weather event with the potential for widespread damage, and under the direction of our governors, we took all possible precautions.

We conducted exercises and drills throughout the year for all types of hazards, including major weather events. Days before Sandy arrived, we filled and placed thousands of sandbags, we secured all items that could become flying debris, and we closed floodgates—in short, we did everything within our power to prepare. We also shut down vulnerable parts of our facilities on Sunday, October 28, a full day before the storm. For example, we took PATH out of service and brought our trains to higher ground. We followed suit at our airports, as airline tenants worked to cancel flights and move their aircraft out of the region.

When Sandy struck, it wasn't long before our facilities were overwhelmed by the historic storm surge that followed. On the evening of Monday, October 29, as the storm swept through, the tidal surge eventually reached over 13 feet. To put this in context, the 100-year flood level for lower Manhattan is 11 feet. Superstorm Sandy exceeded this level by more than two feet.

The destruction wrought by Superstorm Sandy on the Port Authority was unprecedented and it crippled our transportation system. Through the night and into early Tuesday morning, October 30, we saw widespread flooding and power outages, forcing us to close all of our facilities except for the Lincoln Tunnel and Stewart Airport—the only facilities largely spared from the storm in great part simply because of their geographical locations.

With the airports closed and airline carriers cancelling more than 10,000 flights, the ripple effect was far and wide. Fifteen to 20 percent of all U.S. flights pass through the Port Authority's airports, and 18 percent of our Nation's international flights use New York as a gateway.

As soon as the storm subsided, we began assessing the damage at all of our facilities. Our ports suffered extensive flooding with toppled cargo containers, washed-out access roads, twisted rail track, barges and debris tossed about on piers, and, less visible—but perhaps more critical—damaged electrical infrastructure. The flooding at the ports disrupted the region's supply chain stranding cargo for weeks, and causing significant damage, including the destruction of more than 15,000 cars by the salt water.

At the airports, LaGuardia alone had an estimated 100 million gallons of seawater flood the airfield, and at one point, you could not distinguish parts of the aeronautical areas—our runways and taxiways—from Flushing Bay. Newark, JFK and Teterboro airports also suffered significant flooding and power outages.

The Port Authority Bus Terminal, the primary bus facility for New York City and the region, experienced a tremendous blow as commuter bus carriers completely halted their service. You can imagine the disruptions this caused for the 200,000 daily passengers who rely on the bus lines that serve the PABT between New York City and all of the outlying areas across several states. Sandy's impact to the region's commuter transportation network at the terminal continues to this day. The Holland Tunnel also flooded, forcing the closure of this vital transit link between New York and New Jersey for days.

As bad as the impact was to all of our facilities, it soon became apparent that PATH suffered the most severe blow. This vital interstate link that each year carries 77 million people between Newark, Jersey City, Hoboken, midtown Manhattan and lower Manhattan was completely devastated by flooding.

The historic storm surge flooded the PATH tunnels that were built more than 100 years ago underneath the Hudson River, soaking caissons containing racks of critical and decades-old signal and communications equipment with corrosive seawater, causing extensive, and in some cases, irreparable damage.

Our PATH team worked around the clock to pump out the tunnels and stations and go through the painstaking process of restoring power to the substations, testing and repairing or replacing equipment along the entire route. One of our workers, Tom O'Neill, risked his own well-being jumping into several feet of floodwaters so he could restart a critical pump. Tom O'Neill, told me he was simply "doing his job,"

much like the hundreds of PATH workers still toiling around-the-clock to restore full service to our network, something I will describe in more detail in a minute.

First, let me give you a quick summary of our efforts to return the agency's operations to normal. By late Tuesday morning, October 30, just one day after the storm, we were able to reopen our four bridges, an action that was vital to re-establishing the interstate vehicular link as quickly as possible.

On Wednesday, October 31, remarkably less than two full days after the storm, JFK and Newark airports reopened, and the following day, Thursday, November 1, LaGuardia Airport restarted flight operations. Our airport operations and maintenance crews, together with the FAA, pumped out and restored critical airfield lighting and electronics on a remarkable timetable. They cleared mountains of debris, including boats and barges that had washed up on our runways in order to get the airports reopened and to get critically needed goods and people flowing into the region again.

By Friday, November 2, the Holland Tunnel, the interstate traffic artery between Jersey City and lower Manhattan severed by the storm, reopened to buses following one of many, many heroic efforts by Port Authority staff. In the case of the Holland Tunnel, our crews pumped out an estimated 20 million gallons of water from the tubes to return them to service.

By Sunday, November 4, after the U.S. Coast Guard had surveyed the harbor to ensure the safety of ships, the first container ships began arriving at our ports, and by the following day, all the port facilities had reopened.

As for PATH, thanks to round-the-clock efforts of our team, we were able to restore limited service on PATH on Tuesday, November 6, one week after the storm, between Jersey City and midtown Manhattan, and have since restored service to all our stations with the exception of Hoboken Terminal, which suffered the most significant damage. Hoboken Station serves 8.5 million passengers a year or the equivalent of 29,000 people every weekday, so restoring this service is our number one priority. To enable crews to work on critically needed repairs, we are currently running service between 5 a.m. and 10 p.m. This allows us to complete work that would otherwise take months longer.

The Port Authority has not traveled this difficult road alone. Many of the agency's partners including the USDOT, FRA and FTA have been incredibly supportive. I would be remiss if I didn't mention Invensys Rail, headquartered in Louisville, Kentucky, whose teams have worked day and night to build a replacement switch system for us. In addition, the folks at Trilogy Communications in Pearl, Mississippi, who supplied us with 3,200 pounds of a critical communications cable on 36 hours notice over a weekend, no less. Also, the employees of Ansaldo based in Pittsburgh, Pennsylvania are building critical components so that we can restore PATH service fully and GE opened a factory in Puerto Rico at our request to manufacture replacement parts that haven't been made for years.

What happens in our Port District—and what happens *to* our Port District—affects the Nation. Now we are concerned that losses in productivity as a direct result of Superstorm Sandy also will ripple throughout the country.

With PATH operating at less than full strength and as NJ Transit continues its efforts to return to full service, people are taking longer and longer to get to work and return home. What may normally have been a 45-minute commute for many has now doubled—or worse.

We are talking about impacts to millions of people: Regional businesses and government entities employ more than eight million workers, many of whom cannot move about without public transportation.

On a normal workday, up to one million travelers use the Port Authority's Interstate Transportation Network—whether by car, train, or ferry. Another example: Ten thousand people who work at LaGuardia, nearly half the workforce there, use public transportation. At JFK, the numbers are even greater: 55 percent of the workforce or more than 35,000 people rely on mass transit. When the MTA shuts down or runs limited service, it has a direct impact on our ability to run our airports—and an incalculable impact on the livelihoods of our region's households. We are a densely populated region, the Nation's most concentrated economic center, all made possible by a vital, functioning transportation network.

The PATH system alone provides a critical transit link across the Hudson River. Commuters use PATH to travel to their offices and work locations in Lower Manhattan and Midtown and the current outages have caused significant additional burdens on workers and employers by shifting commuter flows onto already congested crossings. On a normal workday, 392,000 people travel to work in the NY metro region from New Jersey, while 127,000 travel from NY to the New Jersey counties of the Port Authority region. These last weeks have been anything but normal.

Our facilities have a tremendous impact on the regional and national economies. Our airports facilitate transport of passengers and cargo across the entire United States and the port facilities have been an increasingly important gateway for cargo on the Eastern Seaboard. Roughly 40 percent of all containerized cargo arriving at the port is destined for the Midwest or other locations in the country, so it is important that we do not lose sight of a central fact: recovering from Sandy is not a local issue for us; it is a national economic and security issue for everyone.

We will rebuild, but along with the States of New York and New Jersey, the Port Authority will need the Federal government's help. The Port Authority receives no taxpayer money from either New York or New Jersey. We rely exclusively on user fees, rents and bonds, and all of those revenue streams have their limitations. We are still assessing exact costs of repair and recovery and determining what insurance may cover, but clearly our needs are enormous: We are facing hundreds of millions of dollars in immediate repair costs, and billions more in mitigation and resiliency measures.

The Obama Administration and Congress have been such great partners throughout this process—and for that we are grateful. The costs no doubt will be high, but the costs—should we fail to make these repairs and investments—are unfathomable in terms of the cost of lost productivity, disabled economies, and a fractured transportation network.

The road ahead will be a challenge to us all, but with your help and support, I am confident we will rebuild better and stronger.

Thank you for all you have done, and for inviting me to speak today.

Senator LAUTENBERG. Thanks very much.

Mr. Weinstein, we know each other so well. We are neighbors at our professional office space across the street, and because of the densely populated character of our area, we have a lot of service to supply. And, Jim, I think you have done it well and we are proud of the people at New Jersey Transit and the sacrifices so many of them made to be on the job regardless of how they got to do it. So we are glad to hear from you.

**STATEMENT OF JAMES WEINSTEIN, EXECUTIVE DIRECTOR,
NJ TRANSIT CORPORATION**

Mr. WEINSTEIN. Thank you, Mr. Chairman. It is an honor to be here this morning, and I thank you for that, you and the other Senators. And it is an honor to have you as our senior Senator.

New Jersey Transit, like its sister agencies, began monitoring and planning for Sandy days before the storm came ashore. Personnel were put on alert, buildings battened down, equipment marshaled based on the best available weather forecasts, historical experience, and other information we had.

Shutting down and securing the largest statewide transit system in the country is a complex and time-consuming task. It takes at least 12 hours to shut down the railroad, and it must be done in a way that keeps our customers safe, our employees safe, and our equipment protected as best possible. Thus, the process must be completed hours before a storm's arrival.

Nonetheless, despite the successful shutdown of our system, the damage Sandy inflicted on our transit network was unprecedented. Every one of New Jersey Transit's 12 rail lines was damaged. Systemwide, more than 630 trees fell on rights-of-way, along with 23 miles of catenary and other wire that came down. 90-foot catenary poles 40 miles inland were snapped in half. 9 bridges, including two draw bridges, one of which you have seen in the illustrations today, suffered severe damage, including one that was knocked askew from its supports when it was hit by boats set adrift in the storm.

In addition, key electrical substations were destroyed, while signal and other critical systems were impacted. The historic Hoboken terminal and other facilities, including New Jersey Transit's main maintenance and repair facility, were flooded. The damage to rail cars and locomotives is a particular focus of our ongoing post-storm recovery efforts and analysis.

New Jersey Transit also suffered damage to the rights-of-way of our three light rail lines around the state and some effects at our 17 bus garages. But there is no denying it. The brunt of the storm fell on our rail system.

Altogether, we estimate the cost of curing Sandy's damage at nearly \$400 million. That breaks down roughly to \$100 million for rail equipment, including rolling stock, and some \$300 million to fix and replace track, wires, signaling, electrical substations and equipment, as well as to cover the costs of emergency supplemental bus and ferry service that we provided and lost revenue.

Moreover, this \$400 million does not include what we believe would need to be an \$800 million investment necessary to make our system more resilient and redundant in the face of future storms like Sandy.

New Jersey Transit staff, in close coordination with Governor Christie's office, continues to work with the Federal Transit Administration, USDOT, FEMA, Amtrak, the Port Authority of New York and New Jersey, private industry, and our insurance adjustors on all aspects of storm recovery. In the immediate wake of the storm, we created new bus and ferry service that carried thousands of commuters to and from New York while emergency repairs were made to the rail system. Rail workers fixed washouts, restrung catenary lines, removed trees, utility poles and even boats from rights-of-way and did so in record time.

Thanks to their dedication and that of the 11,000 employees of our agency, I am proud to report that New Jersey Transit's 12 rail lines are again running at more than 90 percent of full service and that we are back to full pre-hurricane service levels on our bus, light rail, and Access Link Para Transit modes.

Most importantly, I want to express my thanks to the hundreds of thousands of daily customers for their patience and understanding while New Jersey Transit and, indeed, the entire state of New Jersey continues to rebuild after this terrible storm.

Although the system has returned to near normal for our daily customers, repairs are continuing and will go on, frankly, for months. For example, two of the electrical substations that were submerged and destroyed by Sandy will take months to replace. There are no off-the-shelf replacements for such units. New substations have to be designed and built from scratch, a process that will take 6 to 9 months. Until one of these stations is restored, we can only run diesel service into Hoboken, diminishing our ability to serve the more than 30,000 people who go into Hoboken every day and use the Port Authority's PATH system, when it returns, as a gateway to the financial district in Lower Manhattan.

Another substation provides power to our Meadows Maintenance Complex in Kearny, New Jersey, and for our Rail Operations Center which is nearby. The maintenance complex is our main site for inspection and repair of our rail cars and locomotives, and we are

now using generators to provide limited electric power. But this constrains our work there. It limits our ability to recover fully. The rail operations center is the central nervous system of the entire network and controls dispatching, track switches, signals, and the like, and if it is not functioning, our railroad is not functioning.

On these and other repairs, we are working diligently with our suppliers and outside contractors to get new equipment. As I mentioned, in some cases such as the electrical substations, this requires actually designing and manufacturing new units from scratch.

But it is important, Mr. Chairman, to understand that to simply repair these substations, the maintenance facilities, and other infrastructure to their previous state just is not enough. Money invested in preventing future storm damage will limit the bill for future storm relief, as well as ensuring that our transit system has a better chance of avoiding service interruptions in the future.

For example, the electrical substations New Jersey Transit is looking at rather than just restoring is lifting them up, elevating them so they cannot be penetrated by flood waters in the future.

Repairs and resiliency both require investment, Mr. Chairman. We appreciate the Committee's interest and any assistance the Committee, Congress, and the administration can provide in helping us renew New Jersey's transit system and improve it for the future. New Jersey relies on public transportation to work.

We look forward to working with you to help restore our system and to protect its future.

I thank you again for your willingness to hold these hearings, Mr. Chairman, and would be happy to answer any questions you might have.

[The prepared statement of Mr. Weinstein follows:]

PREPARED STATEMENT OF JAMES WEINSTEIN, EXECUTIVE DIRECTOR,
NJ TRANSIT CORPORATION

Good morning Mr. Chairman and Senators.

Thank you for giving NJ TRANSIT an opportunity to appear before you today to outline the unprecedented damage Superstorm Sandy inflicted on NJ TRANSIT, the largest statewide transit agency in America. We share your interest in the need to further strengthen the resilience of our transportation system for future storms.

Sandy was a massive and merciless storm that spanned hundreds of miles, and that increased in speed and strength as it made landfall a few miles south of Atlantic City. It was a storm whose wind-driven surge decimated the coast line and severely affected inland areas, taking dozens of lives in New Jersey, and destroying thousands of homes and businesses. Sandy knocked out power to millions for days and even weeks, and dealt crushing blows to New Jersey's transit and transportation network.

Sandy's effects on New Jersey's transit system will be felt for months to come.

With that said, let me begin by providing a brief overview of NJ TRANSIT.

As the Nation's largest statewide transit agency, we provide more than 900,000 rides to our customers each day, across more than 5,300 square miles of territory, from the southern tip of New Jersey to the Hudson River, and across the Hudson to Manhattan. NJ TRANSIT's more than 11,000 employees operate fleets of more than 2,100 buses, more than 1,200 rail cars and locomotives, and nearly 100 light rail vehicles. These fleets enable us to run more than 700 trains and some 260 bus routes per day.

Mr. Chairman, Sandy demonstrated all-too graphically that transit keeps New Jersey moving, and keeps our economy moving. When transit stops, large portions of our state and our region, and the economy, stop, too.

Superstorm Sandy brought our transit system to a halt, not just in New Jersey but in the entire region. The intensity of Sandy's wrath was far beyond anything

in the history of NJ TRANSIT. Indeed, Sandy's fury was beyond anything New Jersey had experienced from a storm in generations.

NJ TRANSIT, like its sister agencies, began monitoring and planning for Sandy days before she came ashore. Personnel were put on alert, buildings battened down, equipment marshaled based on the best available weather forecasts, historical experience and other information.

Shutting down and securing a vast transit system is a complex and time-consuming task. It takes a minimum of more than 12 hours and must be done in a way that keeps our customer safe, our employees safe, and our equipment safe. The process has to begin—and be finished—long before a storm's arrival.

Despite the successful shutdown of the NJ TRANSIT system, the damage Sandy inflicted on our transit network was unprecedented.

Sandy damaged every one of NJ TRANSIT'S 12 rail lines. System-wide, more than 630 trees fell on rights-of-way, along with 23-plus miles of catenary power and other wire. Ninety-foot catenary poles 40 miles inland from the coast were snapped in half. Nine bridges, including two major draw bridges, suffered severe damage, including one that was knocked askew from its supports when it was hit by boats set adrift in the storm. Nearly eight miles of track and roadbed were washed out, much of it along our hardest-hit North Jersey Coast Line. The Coast Line was where you may have seen pictures of the large fishing boats and a metal shipping container left perched atop the tracks on railroad bridges over coastal rivers.

In addition, key electrical substations were destroyed, while signal and other critical systems were affected. The historic Hoboken Terminal and other facilities, including NJ TRANSIT'S main maintenance and repair facility, were flooded. The damage to a number of rail cars and locomotives is a particular focus of our ongoing post-storm analysis.

NJ TRANSIT also suffered damage to the rights of way of our three light rail lines around the state, and some effects at our 17 bus garages. But there is no denying the rail system took the brunt of Sandy's wrath.

Altogether, we estimate the cost of curing Sandy's damage at nearly \$400 million. That breaks down roughly into a little more than \$100 million for rail equipment, including rolling stock, and some \$300 million to fix and replace track, wires, signaling, electrical substations and equipment, as well as to cover the costs of emergency supplemental bus and ferry service, and lost revenue.

This \$400 million does not include the \$800 million we believe is necessary to mitigate and harden the transit system to make it more resilient in the face of future storms like Sandy.

I would be remiss if I did not also stress to the Committee that the work done by the men and women of NJ TRANSIT after the storm, and their colleagues at the MTA and the Port Authority, have been nothing short of Herculean.

Mr. Chairman, the workers of NJ TRANSIT put our systems back on the streets and the rails beginning within hours of the storm's passing. NJ TRANSIT staff worked with Governor Christie and his Administration, with the Federal Transit Administration, FEMA, Amtrak, private industry and our insurance adjusters on all aspects of storm recovery. Notably, we worked together to quickly create new bus and ferry service that carried thousands and thousands of commuters to and from New York each day, while emergency repairs were made to the rail system. Rail workers fixed washouts, restrung power lines, removed trees, utility poles and even boats from rights-of-way, and did so in record time.

Thanks to their dedication, I am proud to report that NJ TRANSIT'S 12 rail lines are again running more than 90 percent of full service, and that we are back to full, pre-hurricane service levels on our bus, light rail and Access Link Para transit modes.

I also want to express my thanks to our hundreds of thousands of daily customers, for their patience and understanding while NJ TRANSIT, and, indeed, the entire state of New Jersey, continues to rebuild after this terrible storm.

Although the system has returned to near normal for our daily customers, repairs are continuing and will go on for a number of months. Transit infrastructure and equipment is often large and almost always complex.

For example, two of the electrical substations that were submerged and destroyed by Sandy's flood waters will take months to replace. This is because these are large, custom-ordered pieces of equipment. There are no "off-the-shelf" replacements. New substations have to be designed and built from scratch, a process that will take six to nine months at least.

The consequences of the loss of just these two substations are significant. One is necessary to provide overhead catenary power for our Hoboken Terminal and yard. Until it is restored, we can only run diesel service in and out of Hoboken. This

greatly diminishes our ability to serve the more than 30,000 thousand customers who go to and from Hoboken each day.

Another substation provides the power for our Meadows Maintenance Complex in Kearny, New Jersey, and for our Rail Operations Center nearby. The maintenance complex is our main site for inspection and repair of rail cars and locomotives. We are now using generators to provide electric power, but they cannot provide enough electricity to operate the maintenance facility at 100 percent, thus hampering our work there. The rail operations center is the central nervous system of the entire rail network, controlling dispatching, track switches, signals and the like. And it, too, is now operating on generator power.

On these and other repairs, we are working diligently with our suppliers and outside contractors to get new equipment. As I mentioned, in some cases, such as the electrical substations, this requires actually designing and manufacturing new units from scratch.

Mr. Chairman, as you and this Committee have noted, it is vital that as NJ TRANSIT makes the repairs necessary to return our transit system to its pre-Sandy state of good repair, we also make our system more resilient to such super storms.

To simply repair substations, maintenance facilities and other infrastructure to their previous state would be an abrogation of our duty to our customers and the citizens and taxpayers of our states and of our Nation. The old saying is that an ounce of prevention is worth a pound of cure. In this case, money invested in preventing future storm damage can reduce the financial cost of future emergency storm relief—as well as ensuring that our transit systems have a better chance of avoiding service interruptions that disrupt the lives of our residents and undercut the resiliency our economy.

To return to the example of the key electrical substations, NJ TRANSIT is looking at steps such as moving them out of harm's way, or elevating those that cannot be moved to be above the level of not just 100-year storms, but super storms.

Repairs and resilience both take funding. We appreciate the Committee's interest and any help the Committee and the Congress and Administration can provide in helping us renew New Jersey's transit system, and improve it for the future.

Thank you and I will be happy to answer any questions you might have.

Senator LAUTENBERG. Thanks very much.

We are under fairly severe time pressure, but the testimony from each one of you was so important I did not want to cut short your testimony despite the fact that we went a little bit over time. So we will try to get the questions out there and get them answered fairly quickly.

And I make a note, Mr. Foye, that when the three airports that you talked about in your testimony, among the busiest in the country, do not equal today's passenger traffic that Penn Station, New York has in the same day. Try it. It is really a delight to walk through the space.

Mr. FOYE. Chairman Lautenberg, I travel through Penn Station every day, along with 500,000 other people—600,000. I am corrected.

[Laughter.]

Mr. FOYE. And I realize it is a critical piece of transportation infrastructure.

Senator LAUTENBERG. Absolutely.

I want to ask Mr. Weinstein. This is a question that has been in the news and they questioned about whether restoring the passenger rail cars at these two low-lying rail yards was made. Both the sites experienced severe damage. What prompted the decision to store the rail cars at those sites, please?

Mr. WEINSTEIN. Yes, Mr. Chairman. The decision to put the equipment in those spots—first of all, the Meadowlands Maintenance Complex, which is the one in Kearney, at any given time probably has a couple of hundred cars there lined up for inspection, for maintenance, repair, and all of that. But I think that in making

the decisions where we put equipment—and we put it in about 20 locations around the state, in rail yards in three states, in New York and Pennsylvania and in our own state. But based on the information that we had in terms of what the likelihood of flooding occurring at the Meadowlands Maintenance Complex or at the part of Hoboken terminal where the equipment was parked, they indicated that there was a likelihood in the 80 to 90 percent range that no flooding would happen there. And that, combined with the history that the Meadowlands maintenance facility has never flooded in the history of our railroad, led us to conclude that that was the appropriate place to put the equipment.

Now, obviously, we are informed by this storm and we will make adjustments in the future. But based on the information we had at the time we had to make the decision—and I point out that it takes a long time to shut down our system, as it does all of these systems, 12 hours. When we had to make the decision to shut it down at around noontime and we started to shut down around 2 o'clock on Sunday, which was well before the storm hit land, this was the best decision especially in view of the fact of what happened last year with Hurricane Irene when we stored an awful lot of equipment at our Morrisville yard in the Northeast Corridor in Morrisville, Pennsylvania just south of Trenton, and the Northeast Corridor flooded. And it stranded that equipment and prevented us from restoring the kind of service that you need, that our customers needed, that the region needed, that the economy needed. That is one of the responsibilities is in returning to normalcy, getting service back as quickly as possible, and that is another factor that informed our decisions.

Senator LAUTENBERG. Some of that equipment was relatively new, up-to-date equipment that was stored there?

Mr. WEINSTEIN. Yes, sir. I mean, we had some new dual-mode locomotives there, some of which, frankly, had not even been accepted yet that were damaged. Water penetrated up to the axles. It requires both common sense and good maintenance, as well as FRA rules, that when the bearings are penetrated, they have to be replaced. So all of that equipment has to be replaced. We had about 80 multi-level passenger cars that flooded, and because they are lower than our other equipment, it penetrated the actual cabin.

Senator LAUTENBERG. It is easy to second guess, but based on the options, Mr. Weinstein, it did not sound like there were other choices to be made.

Mr. WEINSTEIN. I think that we are constrained with the choices that we have, Senator. We will, obviously, develop, based on the information we had, other possible alternatives. But if you lay a flood plain map over our railroad in New Jersey, there are very few places that are not at some point under some circumstance prone to flooding. And those areas that are not are subject to downed trees, downed wires. Mr. Boardman talked about 11 trees coming down in the Northeast Corridor. I had 630 trees come down. And if that starts coming down on equipment, it damages the equipment every bit as badly as flooding would.

Senator LAUTENBERG. Across the panel, Sandy taught us something, a harsh lesson, about the inability of our aging infrastructure to handle such severe weather events. There is no indication

that this could not be replicated in the future. The magnitude, the devastation, the winds, the whole thing were impossible to guess in advance of the occurrence. But we now are, unfortunately, wiser as a result.

So what do we do about rebuilding? In a way I do not even like the word "rebuild" because there are changes in technology, there are changes in planning.

I spoke to the Governor, and let it be known in this public arena that I commended the Governor for his leadership in this thing. And we put aside the pitchforks and picked up the shovels together. So it was better.

So how do we go about this? And unfortunately, again the time is so limited. What are the choices that we make about the way things were or what we have to do to improve our infrastructure?

Mr. BOARDMAN. Senator, I would make one point, and I promise it will be one and I will pass it on because I know we are short on time.

We need now to make sure we guarantee access from New Jersey into New York with a new tunnel box under Hudson Yards, which is the West Side yards, before real estate development overtakes us. That is going to cost us 120 million bucks. We need to do that right now, sir.

Mr. LHOTA. Senator, I think it is really important, as you and the Congress and the administration are looking to put together a package that the states of New York, New Jersey, and Connecticut will be able to get what they are requesting, as well as all of the flexibility that they need to get what needs to be done.

For example, we need to completely rebuild the South Ferry station, and in the process of doing that, we also need to think about how much we need to do to prevent this from happening again. And I know all three states are coming together. Governor Cuomo has put together a Commission as to what we can do to prevent these surges and bring the best minds together to determine what we need to do to get that done.

But we need to do it comprehensively. It needs to be the three States. It needs to be all the local governments, and it needs to be the private sector. The private sector needs to be involved because one of the things that we have not talked about today is billions and billions of dollars of private property was also destroyed by this storm. And so I think it is really important, as the legislation is being talked about, as the supplemental resolution, understanding how broad this problem was.

We will find a way to fix this. We will find a way to get back to where we were the day before the storm. But what is really important is we all come together and try to figure out when this happens again, that we do not have this damage and we allow our economies to continue to operate immediately after the storm.

Mr. FOYE. Senator, I would offer three suggestions.

First, it is critical to remember that the New York-New Jersey region, including Connecticut, accounts for well over 10 percent of the gross domestic product of the country, well in excess of \$1 trillion. Protecting that and the tax revenues to the Federal, State, and local governments that that economy generates is critical. That

tax-generating and wealth-creating sector was basically shut down for days and in some cases weeks by the storm.

Second, building to the standards in effect the day before the storm is not only impossible, Chairman, but would be cost-ineffective. Take the case of PATH. Rebuilding an 80-year-old signal system at the Hoboken caissons—not only can it not be done, it would be impossible to do it.

Last, research by the American Society of Civil Engineers suggests that the return from mitigation spending, especially with respect to flooding, is a national return of 5 to 1, a 14 percent return if you are assuming a 50-year time period. Given that these are long-lived transportation infrastructure assets, the return to the local, State, and Federal Governments of mitigation spending is going to be substantial but would also protect this huge part of the Nation's economy.

Mr. WEINSTEIN. Senator, at the risk of repeating what has been said, I think clearly that mitigation is critical. We cannot just rebuild what was there not only because it may not be physically possible, but it would be, frankly, foolish to do so in my opinion. We need to build a system that is going to serve us well into the future and not something that is just going to get us back to where we were yesterday.

Second, we work together as a region. Mr. Boardman's system connects to my system, connects to the Port Authority's system, connects to the MTA system, and if we are not working together, then the system is not working. And if the system and the network are not working, the region is not working.

And finally, Mr. Chairman, I would suggest to you that on the issue of an additional tunnel, as you know, New Jersey Transit and New Jersey have recognized right from the start that we are going to need additional capacity going under the Hudson River. We are working with Amtrak talking about this. I know we have had discussions with you. And we need to be looking to the future and making sure that we are making the right investments not only for our State but for the region and for the country.

Senator LAUTENBERG. Thanks very much.

Time forces us to conclude. So we are going to keep the record open for any questions that are submitted to you and would ask for a prompt response within, let us say, a week after you get them.

Thanks very much to each one of you. You have got important jobs. I admire what you have done. And I hope that when we next have this kind of review that we will talk about the old days. This is not a personal thing with me. But the old days, when we had that terrible storm, and look how wonderfully everything operates now. Thank you very much.

[Whereupon, at 12 p.m., the hearing was adjourned.]

A P P E N D I X

PREPARED STATEMENT OF COMMISSIONER JAMES P. REDEKER, CONNECTICUT DEPARTMENT OF TRANSPORTATION

The Connecticut Department of Transportation (ConnDOT) is pleased to share with the Subcommittee on Surface Transportation, and Merchant Marine Infrastructure, Safety, and Security the impact of the Hurricane Sandy on Connecticut's transportation system.

The Connecticut Department of Transportation is truly a multi-modal state agency responsible for all aspects of the planning, development, maintenance and improvement of transportation in the state. Connecticut's transportation system includes approximately, 21,295 miles of improved roads (of which approximately 3,716 miles are maintained by the Department); 5,471 state and local bridges; Bradley International Airport, which is New England's second largest airport, and five other State-owned airports together with numerous municipally and privately owned airports; New Haven Line rail commuter service between New Haven and New York City and related points, operated by MTA Metro-North Railroad which provides 289 weekday trains; Shore Line East rail service between New London and New Haven and on to Stamford, operated by Amtrak which provides 26 weekday trains; and publicly and privately owned bus systems which operate 1,102 vehicles. The Department also operates a state pier complex in New London, two ferries, and numerous facilities such as transit stations, highway garages, and highway rest stops.

In 2011, the State of Connecticut was hit with both Tropical Storm Irene in August and a Nor'easter at the end of October. Shortly after the 2011 storms, Governor Dannel P. Malloy created a working group known as the "Two Storm Panel" to review the preparedness, response and recovery efforts of those storms. The Panel was also charged with producing a set of recommendations on how the state and its partners can improve the preparedness and response to natural disasters. The Panel, which was comprised of eight members with backgrounds in the military, disaster relief, municipal government, non-profit and labor sectors, held nine public meetings, during which they received extensive testimony from a number of experts on a range of issues impacted by emergency situations.

In an eerie repeat of the 2011 storms, Connecticut was hit by back-to-back storms in 2012—Hurricane Sandy, which started on Monday, October 29, 2012 and then a major snowstorm just a week later that dumped more than a foot of snow in some parts of the state on November 7, 2012. Once again, Connecticut residents were coping with extended power outages, downed trees, suspended rail operations, and flooded and treacherous roads.

Pre-Storm Sandy Preparations

Advance planning and preparation facilitated a quick response/recovery by the agency and prevented damage to major assets of the transportation system in Connecticut.

After the two storms in 2011, the Department began in earnest a comprehensive tree trimming program throughout the state, as did the major utilities in Connecticut.

Prior to Storm Sandy, ConnDOT coordinated with the Department of Energy and Environmental Protection (DEEP) to determine what temporary and emergency authorizations have been issued to cover potential storm damage.

Our highway operations bureau began preparing for Storm Sandy four days before it was to hit. All facilities were prepared and equipment—from loaders and bucket trucks to chippers and chain saws—were all fueled and readied when needed. Two Safety Advisors were deployed to the shoreline area for the duration of the storm.

The Department closed two District Maintenance garages closest to the shore and evacuated equipment and operations to alternative locations deemed safer but still in the vicinity of anticipated impacted areas.

In anticipation of flooding from storm surges, ConnDOT directed Metro-North to move rail cars from New Haven to three different locations to ride out the storm—

Bridgeport and Stamford, Connecticut and Grand Central Station in New York. Low floor buses were also evacuated from the Stamford bus facility.

ConnDOT coordinated evacuation activities for cities along the coast.

Storm Actions

Metro-North and Amtrak suspended service at approximately 9:00 p.m. on Sunday, October 28, 2012 and both railroads pre-positioned track, power and signal crews to expedite the storm recovery process. Statewide bus service was suspended at midnight on Sunday October 28, 2012.

All moveable bridges were closed for the storm and construction projects were secured to minimize damage.

The ConnDOT website was modified to provide real-time road closure information on a statewide highway map, and regular updates on road and transit conditions were provided.

Post Storm Sandy

There were a total of 286 full road closures during the storm. Within 12 hours, all but three roads were reopened to the public, and those were due to extensive impacts from downed power lines.

The day after the first storm, ConnDOT began assessing, fixing and clearing damage and continued throughout the week. Every municipality in the State was contacted by the Department and offered assistance if needed. Labor and equipment was also made available for mutual aid to New York and New Jersey.

Bradley International Airport remained open for the duration of the storm although most carriers had suspended commercial service on Monday, October 29, 2012 by about 10:30 a.m. Service resumed on a staggered basis almost exactly 24 hours later at 10:30 a.m. on Tuesday, October 30, 2012. By Wednesday, air carrier operations were 75 percent back to normal. Damage at Bradley was limited to a radio antenna located on the roof that fell through a 4' wide by 20' long skylight. Preliminary estimate of cost to repair—\$6,000.00. The only other damage suffered at Bradley was some minor roof paneling over a tug tunnel that came loose during the high winds at the peak of the storm. Estimated cost to repair—less than \$1,000.00.

Three of the five State owned and operated general aviation airports also closed. Groton-New London sustained major flooding and the Engineered Material Arresting System (EMAS) safety zones were completely submerged and compromised. The cost to replace the damaged EMAS beds is estimated at \$10 million.

Metro North. The New Haven Line (main line) sustained significant damage to catenary and signal systems from downed trees. The Waterbury, Danbury and New Canaan Branches also sustained damage due to downed trees.

Service on the New Haven Line gradually resumed on Thursday, November 1, 2012 with limited service between Stamford and Grand Central Terminal. Regular weekday service resumed between New Haven and Grand Central Terminal on Friday, November 2, 2012. Free fares were offered on both Thursday, November 1 and Friday, November 2 on the New Haven Line.

The New Canaan Branch Line sustained significant damage. Service was not resumed until November 9, 2012 necessitating bus replacement service for commuters. The Danbury and Waterbury Branch Lines resumed regular weekday service on Monday, November 5, 2012.

Amtrak. Amtrak right-of-way on both the Northeast Corridor and the Hartford Line sustained damage from downed trees. Shore Line East Service resumed on Thursday, November 1, 2012. The Northeast Corridor (Boston to New York) operated limited regional service between Boston and New Haven on Thursday, November 1, 2012. A special operating schedule for both Acela and regional service was initiated on Friday, November 2, 2012. Regular Acela and regional service was resumed on Saturday, November 3, 2012.

Amtrak operated special schedules between Springfield and New Haven on Thursday, November 1, 2012 and close to regular schedule between Springfield and New Haven and New York, Penn Station on Friday, November 2, 2012.

Freight. Minimal damage occurred on the freight lines within the state.

Preliminary estimates of the damage sustained to the federal-aid highways on the State system range from \$2 million to \$6 million for repairs to a seawall and to repair a moveable bridge. ConnDOT requested a "quick release" of Emergency Relief Funding through the Federal Highway Administration on November 1, 2012 in the amount of \$2 million, to assist in the cost of repairing damages and received approval two days later.

The Department is also seeking FEMA assistance for the reimbursable portion of the \$10 million to assist in the cost of repairing damages to the EMAS at Groton-

New London Airport, as well as substantial repairs to a gate damaged as a result of the storm.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. JOHN THUNE TO
JOHN PORCARI

Question 1. Included in MAP 21, the surface transportation reauthorization bill that was enacted earlier this year, various provisions were added to streamline the rebuilding effort following a natural disaster. These included § 1315, the categorical exclusion of “the repair or reconstruction of any road, highway, or bridge that is in operation or under construction when damaged under certain declared emergencies or disasters” from NEPA review. Can you please update the Committee on the progress of implementing these new provisions and inform us if there are any ongoing efforts to expedite this process in light of Sandy?

Answer. As part of the implementation of MAP-21, FHWA and FTA published a Notice of Proposed Rulemaking (NPRM) on October 1, 2012, pursuant to section 1315, for the categorical exclusion for emergencies. The comment period closed on November 30, and the Department is currently developing the final rule to be published in early 2013. Additionally, FTA and FHWA are preparing an NPRM pursuant to MAP-21 section 1316 to designate any project within an operational right-of-way as another NEPA categorical exclusion. This rulemaking is also on an expedited schedule for promulgation. I would note also that actions to address emergency repairs by the FHWA Emergency Relief program under 23 U.S.C. 125 are currently covered by a categorical exclusion, and other FHWA and FTA emergency actions are often covered by existing categorical exclusions, under 23 CFR 771.117(c) and (d).

Question 2. In your opinion, what other steps can this Committee take to guarantee that the Department of Transportation has the tools necessary to ensure a timely and cost efficient response to future disasters?

Answer. Responding effectively to disasters requires a package of statutory authorities, adequate funding, and well-prepared Federal staff. The Federal Highway Administration for many years has had authority under 23 U.S.C. 125 to provide Emergency Relief funding to states, and the Federal Transit Administration received similar authority in MAP-21 (section 20017) earlier this year. Funding for this program is awaiting appropriation by Congress. FHWA’s Emergency Relief program has a permanent authorization of \$100 million per year, supplemented as needed with additional appropriations. MAP-21 requires that DOT and FEMA work in concert to make sure that the use of emergency funds are coordinated. Other modes of transportation have less clear-cut funding authority. Providing other modes with comparable funding authority would help to ensure that emergency recovery needs are addressed in a mode-neutral way. For DOT modal administrations with regulatory responsibilities, expediting emergency response sometimes requires authority to waive regulatory requirements when needed. For example, after Hurricane Sandy DOT issued a Federal Regional Emergency Declaration to waive hours of service requirements for CMV operations to facilitate the states’ emergency waiver actions, and for the first time worked with state and local officials to coordinate waivers and expedited permits. Finally, responding effectively requires that emergency response staff have the necessary funding to be well-trained. Providing emergency response funding when the sun is shining is important to ensure that staff are properly trained to respond when disaster strikes. Recognizing that risks change, particularly as we consider sea level rise and other impacts of climate change, providing the Department with authority to rebuild in such a way that reduces future risks, even if that means rebuilding to different or higher standards and specifications, would help ensure that communities are more resilient in the future and save taxpayer resources in the long run.

We have found, after both Hurricane Katrina and Hurricane Sandy, that activation of MARAD training ships and Ready Reserve Force (RRF) ships can provide essential support by housing and feeding the hundreds of emergency workers that are needed to respond to a major disaster. Having a dedicated Federal maritime response capability could enhance the ability to respond to coastal disasters in a timely manner. This capability could be modeled on the RRF program, which provides the Department of Defense (DOD) with a cost-effective way to maintain maritime lift capacity to deploy U.S. Forces. A similar capability could be established to support DHS/FEMA in responding to coastal disasters. These dedicated vessels could be outfitted beforehand with equipment to provide power generation, messing and berthing, water-making capability, and command and control capability. This capa-

bility is somewhat similar to DOD's forward basing of equipment and supplies on-board ships located around the globe.

Question 3. While natural disasters are varied, we know they are inevitable and certain regions are predisposed to certain types of disasters. For instances, in my home state of South Dakota we usually contend with droughts, flooding, blizzards, and high winds. What steps are taken within the Department to ensure state and local transportation agencies are prepared? What more can be done?

Answer. The Department of Transportation has a comprehensive Emergency Response Program that includes an Emergency Response Team with representatives from all modes, with an Incident Command System structure. Besides formal training sessions, this team has been activated numerous times during my tenure at DOT and can solve complex transportation challenges that present themselves in many types of disasters. We are constantly looking for ways to improve, including participating in additional training and exercises with Federal, State, Tribal, Territorial, Local, and Private Sector partners. Additionally, our Emergency Response staff attends "One DOT" meetings all over the United States. These training and information exchange meetings bring regional DOT response staffs together on a routine basis with other regional Federal staffs as well as with our State/local partners. DOT's modal administrations work through various industry associations, airports, states, and local communities to disseminate information on best practices for disaster impact mitigation and to discuss emergency preparedness plans. FHWA works closely with AASHTO's Special Committee on Security and Emergency Management to ensure that State DOT security and emergency managers are well aware of lessons learned and best practices in emergency management. FHWA and FTA have also published a series of training documents on emergency management for state and local emergency managers, and have also provided training and workshops. FTA is also preparing guidance for its new Emergency Public Transportation Relief Program to assist transit authorities in protecting equipment and facilities from damage in the event of a disaster. FAA operates and maintains the National Airspace system, working with airports, air carriers and other entities to manage the system under constantly changing weather conditions. Continued development and implementation of the Next Generation Air Transportation System will support greater resilience and efficiency for the National Airspace System under all conditions. DOT has also actively been working with local authorities to help them identify and address their vulnerabilities to impacts of climate change such as severe weather events, sea level rise and extreme temperatures, to ensure that taxpayer resources are invested wisely and that transportation infrastructure, services and operations remain effective in current and future climate conditions. DOT has a number of active efforts under way to give transportation agencies tools for assessing vulnerability and plan for resiliency.

Question 4. What are best management practices for disaster readiness, preparation and recovery currently used by the DOT? Are current practices in agreement with other industry groups, the state of engineering science and your professional opinion?

Answer. Extensive planning, training, and coordination with stakeholders are the key best practices that all Federal agencies involved in disaster response must practice. In addition to these, DOT has found that establishment of an intermodal task force was effective in facilitating the movement of various emergency response teams, equipment, and supplies into the affected area. These teams were particularly important in moving oversize and overweight equipment such as emergency generators. Agencies with regulatory responsibilities need an effective way to coordinate and expedite regulatory flexibility during emergencies. FRA's Emergency Relief Docket is a good example of such a mechanism. DOT is also working to incorporate information on future risks and conditions in our disaster readiness and response work, as in the FTA's 2011 report, "Flooded Bus Barns and Buckled Rails," which highlights how transit agencies can factor climate change adaptation into emergency responses. In addition to our internal efforts to address all types of disaster scenarios, DOT is an active participant in the National Disaster Recovery Framework (NDRF), an interagency guide to promote effective recovery, particularly for those incidents that are large-scale or catastrophic. We contribute to and track after-action "best practices" reports for emergency response incidents and training through the FEMA Lessons Learned Information Sharing (*LLIS.gov*) website which was specifically established for this purpose. FTA strongly recommends that transit agencies adopt Continuity of Operations Plans to identify essential functions and establish alternative personnel structures, operating facilities, and communications networks when normal structures are disrupted. Finally, working with emergency response committees of transportation and research organizations such as AASHTO

and the Transportation Research Board helps to ensure that our emergency response practices reflect the latest research and experience of practitioners.

