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# *Committee Meeting*

of

SENATE LEGISLATIVE OVERSIGHT COMMITTEE

ASSEMBLY JUDICIARY COMMITTEE

*“The Committees will receive testimony from Federal and regional transportation agencies on rail safety issues; and from transportation experts and other invited guests on NJ Transit management, operations, funding, and safety issues”*

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**LOCATION:** Committee Room 4  
State House Annex  
Trenton, New Jersey

**DATE:** December 6, 2016  
10:00 a.m.

**MEMBERS OF COMMITTEES PRESENT:**

Senator Robert M. Gordon, Chair

Assemblyman John F. McKeon, Chair  
Assemblyman Gordon M. Johnson, Vice Chair  
Assemblyman Joseph A. Lagana  
Assemblyman Andrew Zwicker



**ALSO PRESENT:**

Miriam Bavati  
Sarah A. Fletcher  
*Office of Legislative Services*  
*Committee Aides*

Mark J. Magyar  
*Senate Majority*  
Kate McDonnell  
*Assembly Majority*  
*Committee Aides*

Christopher Emigholz  
*Senate Republican*  
Derek DeLuca  
*Assembly Republican*  
*Committee Aides*

***Meeting Recorded and Transcribed by***  
The Office of Legislative Services, Public Information Office,  
Hearing Unit, State House Annex, PO 068, Trenton, New Jersey

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ROBERT M. GORDON  
Chairman

LORETTA WEINBERG  
Vice-Chair

M. TERESA RUIZ  
PAUL A. SARLO  
THOMAS H. KEAN, JR.  
JOSEPH M. KYRILLOS, JR.

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## New Jersey State Legislature

SENATE LEGISLATIVE OVERSIGHT COMMITTEE  
STATE HOUSE ANNEX  
PO BOX 068  
TRENTON NJ 08625-0068

### COMMITTEE NOTICE

TO: MEMBERS OF THE SENATE LEGISLATIVE OVERSIGHT COMMITTEE  
FROM: SENATOR ROBERT M. GORDON, CHAIRMAN  
SUBJECT: COMMITTEE MEETING - DECEMBER 6, 2016

*The public may address comments and questions to Sarah A. Fletcher, Committee Aide, or make bill status and scheduling inquiries to Shirley Link, Secretary, at (609)847-3855, fax (609)292-0561, or e-mail: OLSAideSLO@njleg.org. Written and electronic comments, questions and testimony submitted to the committee by the public, as well as recordings and transcripts, if any, of oral testimony, are government records and will be available to the public upon request.*

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**The Senate Legislative Oversight Committee will jointly meet with the Assembly Judiciary Committee on Tuesday, December 6, 2016 at 10:00 AM in Committee Room 4, 1st Floor, State House Annex, Trenton, New Jersey.**

**The committees will receive testimony from federal and regional transportation agencies on rail safety issues, and from transportation experts and other invited guests on NJ Transit management, operations, funding, and safety issues.**

Issued 11/23/16

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JOHN F. McKEON  
Chair

GORDON M. JOHNSON  
Vice-Chair

JOSEPH A. LAGANA  
ELIZABETH MAHER MUOIO  
ANDREW ZWICKER  
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**New Jersey State Legislature**  
**ASSEMBLY JUDICIARY COMMITTEE**  
STATE HOUSE ANNEX  
PO BOX 068  
TRENTON NJ 08625-0068

**COMMITTEE NOTICE**

**TO: MEMBERS OF THE ASSEMBLY JUDICIARY COMMITTEE**

**FROM: ASSEMBLYMAN JOHN F. McKEON, CHAIRMAN**

**SUBJECT: COMMITTEE MEETING - DECEMBER 6, 2016**

*The public may address comments and questions to Miriam Bavati, Committee Aide, or make bill status and scheduling inquiries to Denise Darmody, Secretary, at (609)847-3865, fax (609)292-6510, or e-mail: OLSAideAJU@njleg.org. Written and electronic comments, questions and testimony submitted to the committee by the public, as well as recordings and transcripts, if any, of oral testimony, are government records and will be available to the public upon request.*

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**SENATOR ROBERT M. GORDON (Chair):** This joint meeting of the Senate Legislative Oversight Committee and the Assembly Judiciary Committee will come to order.

Would you all please rise and join me in the Pledge of Allegiance? (all recite pledge)

Good morning, everyone, and welcome to the third joint meeting of the Senate Legislative Oversight and the Assembly Judiciary Committees.

Today we will hear testimony from Amtrak and the American Public Transportation Association, also known as APTA. For anyone not familiar with APTA, it is a nonprofit organization that advocates, at both the Federal and the state levels, for public transportation programs and services. Representatives of both organizations will discuss their experiences -- or their members' experiences with the implementation of Positive Train Control, or PTC.

As a reminder to the attendees here today, Congress has required that all railroad mainlines with regularly scheduled intercity and commuter rail passenger service fully implement PTC by December 2018. According to recent testimony provided by New Jersey Transit, the agency is on track to complete PTC implementation by the 2018 deadline.

Amtrak completed activation of its PTC system on the Northeast Corridor between New York and Washington, D.C., in December of 2015. As one of the first agencies to implement the system, it is fair to say that Amtrak had the opportunity to set certain technology standards.

Because New Jersey Transit operates on the same track as Amtrak, it is incumbent on New Jersey Transit to develop a system that works seamlessly with Amtrak's system. Interoperability is key the success. We hope that Amtrak can offer some insight today into their decision-making process regarding what types of technology they chose to utilize, and what lessons they may have learned during the implementation process.

Likewise, I believe it will be helpful to hear what lessons have been learned from APTA members. If they can point to other systems and other states that have established best practices for the implementation and continued operation of PTC systems, we should look to those outcomes and see how New Jersey Transit can emulate their success.

I hope that both Amtrak and APTA can each speak to how PTC implementation fits into the overall safety policies of their respective operations. While many of us are convinced that significant improvements in safety can be achieved through PTC implementation, we cannot forget about other factors affecting safety, such as investments in maintenance, experience of personnel, management policies, and organizational culture.

New Jersey Transit's problems run deeper than the failure to implement Positive Train Control on a timely basis. We had another NJ Transit derailment this weekend -- most likely caused by an equipment problem -- in which a passenger locomotive's front two wheels jumped off the track coming into Hoboken. Fortunately, the train was going only 5 miles an hour into the station and no one was injured. But it is a reminder of the maintenance issues that have plagued the system.

In addition, a New Jersey Transit bus went the wrong way on a Garden State Parkway exit recently. The driver has been suspended; yet

another reminder of the statistics showing a high level of human error in New Jersey Transit incidents.

We will also start hearing today from Transit experts and advocates -- in today's hearing -- and we will bring New Jersey Transit officials back, at a later point, to testify before the Governor unveils the agency's budget for the next fiscal year.

I should also say that our next hearing -- although it has not been scheduled and a place has not been determined, as of this point -- the next hearing will present an opportunity for commuters to provide their ideas for improving service at New Jersey Transit. We're hoping to schedule that meeting at a location that is convenient to the Pascack Valley Line, and we are sure we're going to get a lot of good suggestions from the customers of New Jersey Transit.

Much like our earlier hearings, I hope that today's exercise brings us a bit closer to achieving some solutions to the problems plaguing New Jersey Transit.

Thank you.

And I'd like to, at this point, turn to my partner, Chairman John McKeon.

**ASSEMBLYMAN JOHN F. McKEON (Chair):** Well, thank you.

And *partner* is a great way to put it. It is an honor and privilege, Co-Chairman, to serve with someone so cerebral and so prepared. (laughter) And I really do mean that; you're a great public servant.

And thank you to my Committee, Assemblyman Zwicker, Assemblyman Lagana, and Vice Chair Johnson. And special congratulations

to you (indicating Assemblyman Johnson); I know you're being honored early this evening by the ARC as Legislator of the Year, and we all congratulate you on that.

**ASSEMBLYMAN GORDON M. JOHNSON (Vice Chair):**

The whole year.

ASSEMBLYMAN McKEON: Oh, the whole year. I was Mr. February. (laughter)

ASSEMBLYMAN JOHNSON: Twelve months. (laughter)

Thank you; thank you, Chair.

ASSEMBLYMAN McKEON: Just a couple of thoughts, and we'll get to the presentations.

One is to, again, thank NJ Transit for their continued cooperation. As was reported, both with our initial request -- and, frankly, we're a little disappointed relative to the depth of some areas of that request. But with our being very specific as to the information that this Committee was looking for -- without, thus far, having to exercise our subpoena power -- we have, again, gotten a banker's box of information and documents from NJ Transit. Staff is working diligently, as are members, to go through all of that now. And certainly, Mr. Santoro will be back with his staff to get into details and answer many of the questions that this Committee will present. And as Co-Chair Gordon indicated, we're going to try to get that accomplished before such a time as the Governor comes forward with the NJ Transit budget.

I want to remind everybody of just the point and the commitment that we've all collectively made. Rightfully so, we're focusing on rail transport; but we haven't even touched what is the busing piece.

And I mentioned that when you talk about safety -- although it seems again, *publicity* is a relative term -- it seems that we hear a lot about the incidents that occur, and tragedies, and injuries upon our rail lines; we tend not to focus on when it occurs in bus accidents. And just this week, we read about \$115 million of settlements and suits coming out of an August NJ Transit accident. Just yesterday, I think, there was a report of an NJ Transit bus moving in the wrong direction in the middle of Woodbridge. And thankfully, a tragedy was avoided.

But this is no less something that this Committee needs to look into. And frankly, from the numbers of riders, there are more people on the bus than there are even on the rails.

The last point -- and again, the Co-Chairman pointed to it -- is we'll have a formal hearing out in the field at a time convenient for commuters to show up. But I can tell you that having spent some time around the train stations -- at least in my district -- commuters really want to talk. And the most recent thing that they noted was -- it's like water; you divert water from going one way, and it trickles a different way. So in order to try to prevent what occurred at Hoboken, one of the immediate fail-safes put into place is to have a conductor sitting with the engineer on the front of the train as it comes into a station. That's all well and good; except for that the trains are already understaffed with conductors. And what this has led to -- if you talk to commuters -- is that there's a huge queue coming out of the first and second cars now, because there's no one there to open all the doors.

So we really have to stop with temporary solutions. We have to deal with dealing with becoming better, going back to the great rail service this was, and reconciling to become better going forward.

So with all that in mind, we appreciate going forward with today's hearing, which will certainly be informative and a continuing process of this important mission.

So, Chairman.

SENATOR GORDON: Thank you.

Your comments were quite cerebral as well. (laughter)

As our first panel, I would like to call up George Hartman, who is apparently the expert on PTC at Amtrak. And I'd like to have him joined by our visitors from the American Public Transportation Association: Carolyn Hayward-Williams, who is Director of Engineering and Transit Technology; and Billy Terry, who is on the APTA staff as well.

If the three of you could join us up front.

MR. MAGYAR (Committee Aide): All the way up front; thanks.

SENATOR GORDON: Mr. Hartman, could you lead off for us, please?

**G E O R G E H A R T M A N:** Thank you, Mr. Chairman, members of the Committee; and thank you for allowing me to testify today.

Amtrak is in a unique position. We have three Positive Train Control systems we're installing on Amtrak on different parts and pieces. On the Northeast Corridor -- the most familiar to this particular panel and the constituents in New Jersey -- is the ACSES system, the Advanced Civil Speed Enforcement System. It's the only system in the country that is

certified by the FRA for 150-mile-an-hour operations. It came out of an Order of Particular Applicability from 1999. So we've been at this for a very long time.

We didn't start with the Railroad Safety Improvement Act mandate of 2008, where many of the other commuters and freight railroads were given a directive from Congress; and signed into law by President Bush, in 2008, in October following the Chatsworth accident in California.

Amtrak has spent a little over \$100 million to date on PTC. There are three aspects of it: There's a car borne part, the part that goes on the locomotives; there's a part that is on the wayside, along the tracks, that is interconnected with the signal system on the railroad; and then there's a back-office piece tied with the dispatchers and tied in with the communications side as well. All of those have to work in concert for that particular system to work. The ACSES system, although loosely based on a European system that uses track-mounted transponders -- there are some major differences due to regulations in the United States that are different from those in Europe.

We have the distinct, as it is, challenge to be interoperable with all of our neighbors -- New Jersey Transit as one, SEPTA as another, the Mass Bay commuter agency on the north end; and the Northeast Corridor, which runs from Washington all the way to Boston -- there are parts of it that Amtrak does not own. Most notably, about 99 miles of it in the state of Connecticut is owned by Metro-North, which is part of the MTA, Long Island Rail Road, and New York City Transit Authority. They're a state-funded agency as well, much like New Jersey Transit.

They had some challenges at the beginning for interoperability because we couldn't have a completely different system in the middle of the corridor and an Amtrak ACSES-type system on either side. That was discussed very, very early on -- 2008, 2009. And Metro-North has since established that they will be installing ACSES, just like Amtrak is on the Northeast Corridor, so we don't have that interruption of about 100 miles in the middle.

FRA was instrumental -- the Federal Railroad Administration was instrumental in talks with us and our neighbors. We have interoperability meetings with our partners, including New Jersey Transit. Our Engineering Department meets on a weekly, if not biweekly basis with the engineering departments from all our neighbors.

The ACSES system works in conjunction with the cab signal system, which is on the rails, which works in concert with the wayside signal system. So if you have a certain signal on the wayside -- on the colors or on the position of the lights on the wayside, there's a certain code associated with that that's actually put on the rails and that tells the train what the maximum speed is. The difficulty with that is, it does not allow for Civil Speed Restrictions, such as curves, bridges, those types of things -- station stops. Other than the maximum authorized speed, there was no way to -- using conventional cab signal system -- there was no way to ensure those minimum speeds would be met.

So one of the four core features of Positive Train Control was to prevent over-speed derailments. It prevents train-to-train collisions; over-speed derailments; movement of a train through a misaligned switch, which is not aligned for the proper route; and incursions into established work

zones. We don't want to be running over railroad employees who have established work zones. They may have a work train in there that they are working with; there may be men on or about the tracks. An established-type work zone with defined limits also has to be protected by the PTC system.

Those were the four core features that were relegated by the FRA under the mandate from Congress. It is a performance-based rule; it is not a prescriptive-based rule. And the reason being -- the major difference is a prescriptive-based rule says, "You will do thus and so, and this is how you will do it." Positive Train Control is performance-based. So basically the FRA gave Amtrak, and the commuters, and freight railroads a set of parameters and said, "Show us how you're going to meet those parameters. What type of system are you going to use, how is it going to work, where are you going to implement it? Then we will give you a type of approval for your system. Go out and learn how to drive it; work out all the bugs, work out all the V and V; and then we'll give you a system certification and you can run, and we'll ensure it doesn't add any more hazards or any potential hazards to the safety of the riding public."

So that's the difference between a prescriptive-based rule and a performance-based rule. So with prescriptive, it's, "You will do thus and so;" performance-based says, "Show us how you're going to do it."

Basically, the only other exceptions to that regulation -- there are certain exceptions that can be requested from the Federal Railroad Administration for limited operations or for passenger terminals -- passenger terminal exceptions. There are certain criteria that must be met that's an application that's filed with the Federal Railroad Administration. Their

Board will meet; they will review the exceptions requested. They may impose conditions; they may accept in part; they may deny it in part; or they may accept the entire presentation from the railroad. So there are conditions under the PTC rule -- specifically 236.1019, which is main track exclusions. But as I said, there are certain criteria that needs to be met. If there's not the exact criteria, then the railroad has to show just cause -- what other mitigations would be in place that would meet the requirements or the spirit of the requirements.

The other two systems that Amtrak uses besides the Northeast Corridor: We have the Incremental Train Control System in the state of Michigan, which has been authorized for 110-mile-an-hour service. And we are installing, in small parts, what the freights and the Class 1s are installing -- which is the Interoperable Electronic Train Management System, known as IETMS. That's a system that the freights are installing. Because Amtrak runs nationwide, and we're not captive to a state or to a specific corridor, we have 303 locomotives that can run anywhere in the country. With the exception of our electric fleet -- that runs from Washington to Boston and Philadelphia to Harrisburg -- everything else we run is diesel service. Those diesels can appear anywhere in the United States, so they have to be able to be interoperable without any implications to service, and seamlessly transcend another PTC system. So we are equipping all our diesel locomotives to be able to run with the freight IETMS system as well.

So 303 locomotives will be equipped for ACSES service and IETMS freight-type service; which adds to the cost and adds to the complexity. And if anybody has ever been on a locomotive, you start

running out of real estate. There's only so much room in a locomotive to put the equipment that's needed; to put screens that are needed.

The other study that Amtrak was heavily involved in with the FRA; the Volpe Center in Massachusetts; and TTCI, the Technical Training Center in Pueblo, Colorado -- was HMI studies -- Human Machine Interface. You can put all the screens you want in a locomotive, but every once in a while you have to remind the engineer his job is to look out the window and operate his train safely. So we don't want to give him information overload.

In the early stages of Positive Train Control, the FRA actually found engineers driving it like a video game. It was new, it was novel, it had a lot of lights, it had a lot of bells and whistles to it, there were things to watch. And the FRA wanted the engineers to, basically, get comfortable with it running in the background. Operate your train as normal, and you should never see the enforcement from the Positive Train Control system.

Some of the challenges that Amtrak has run into, and some of the other states, and commuter agencies have run into: In order to get a portion of the PTC system to work -- and one of those three components all have to talk to each other -- everybody's been talking about spectrum, which is the frequency that Positive Train Control systems operate on. Unfortunately, frequency spectrum -- which is governed by the Federal Communications Commission, the FCC -- is traded on the open market like stocks. You can't actually go and say, "I need a block of 219 spectrum to run my PTC system, so give me a 25 megahertz section, a small block, or 100 megahertz" -- whatever your density tells you that you need. It's traded like stock on the open market. So people early in the game knew

that this was going to be part of the PTC system. They went out and bought huge blocks of this, like people buy stock, never intending to trade it, never intending to sell it. "But we're going to hold on to it, until we can sell it to the highest bidder."

The other problem is -- when you buy a block of spectrum, which is a frequency, you also have to do a study to make sure that you're not overpowering a local TV station; or the local taxi company happens to be on that same frequency. Those studies all had to be done; that all has to be filed with FCC.

The Federal Communications Commission was accustomed to getting approximately 25 applications for spectrum acquisitions and the installation of communications towers per year. When the PTC system regulations hit, the first year they got 25,000. They have one man who processes all of those. So his desk went from having a short pile, to having a huge pile of applications.

Also tied into that -- and the State will have the same issue -- is if you're going to put up a communications tower for coverage, there are height requirements. Now you run into FAA regulations, if you're a close proximity to airports.

The other problem is, if you want to put up a tower and you're on historical or Indian preservation land -- that also has to be investigated. And it may not be on the surface; there may be an Indian burial ground, from 100 years ago, that's 10 feet under the surface. But you have to dig 25 feet to put a foundation in. You're now disturbing a historical or preservation Indian site. Those are not allowed. There are a lot of studies that have been done. And the Historical Preservation Society, as well as

Indian Affairs, comes to every one of those hearings. So if you look at coverage and you say, “Well, we just need to put a pole up,” or, “We need to put a tower up; it’s on railroad property.” It may be; but 15 feet down, 200 years ago, the Delaware Indians may have buried somebody; in which case, that sort of puts a monkey wrench into the works of where you want to put it, and now a new study has to be done. Those are some of the challenges.

Interoperability with our tenant railroads -- railroads that run on us are considered *tenants*; railroads we run on are considered *hosts*. We would be the tenant. Such as I said -- Amtrak runs all over the United States. We run over many, many different railroads that we don’t own. So they decide what system they’re going to put in; we have to be interoperable with them.

Fortunately, in the northeast, all the railroads are working together. There is the Association of American Railroad Committees that has members from all the railroads in the Northeast Corridor. They meet once a month so that we can iron out these types of things and not be competing with each other; or one railroad putting in something in their system that detrimentally or adversely affects another system in somebody else’s railroad.

As I said, we’ve spent over \$100 million, so funding is always an issue. When Congress came out with the mandate in 2008 -- it’s an unfunded mandate, so Amtrak had to get money the same way that the states have to get money, the same way the commuter agencies have to get money. All the way down to -- little mom and pop railroads that may fall under the umbrella of the requirements of Positive Train Control -- they’re

going to be looking for funding as well -- if they can partner with one of their hosts, or if they have to go out and seek their own funding.

We also run services for some of the states. So we have that intricacy of doing contracts with the states. Right now, there are 61 new locomotives that are being bought by the states in some of our state-supported services. Those have been added into the mechanical departments commissioning schedule of the original 303 locomotives; they've been adding 61. And it takes approximately, right now, four to six days to commission a locomotive. You can do multiples at the same time, if you can get connectivity. But on our locomotives we have Wi-Fi; we have a dual-cellular network from two different carriers; and we have an underlying PTC radio which, at the moment, operates anywhere from 217 to 222 megahertz of frequency. So we have to have all three systems on board; those all have to be commissioned. Everything on the locomotive, as far as software, has to be set up to talk to what will be Amtrak's back office server for our interoperability with host railroads with the IETMS system. So we're a lot more complex in that particular instance.

Any questions?

SENATOR GORDON: I certainly have a number of questions.

Before I get into them, I just would like to allow--

ASSEMBLYMAN McKEON: No; please, go ahead. You start.

SENATOR GORDON: Okay.

But one question that occurs to me -- Mr. Hartman, you referred to \$100 million expenditure for PTC on the Amtrak system. My understanding is that SEPTA spent \$250 million and New Jersey Transit spent a comparable amount. Can you explain what might account for that

kind of variance? I mean, do you have economies of scale, or some other factor, that allows you do it more economically?

MR. HARTMAN: We don't have the complexities that the Transit agencies have. The original access-- That's \$111 million; that's on the ACSES system; that's just the Washington-to-Boston and Philadelphia-to-Harrisburg piece. But that system was originally designed for *A-to-B* travel. It wasn't designed for intermediate station stops; it wasn't designed to leave the Corridor and come back on the Corridor; and it wasn't designed for train turnarounds -- where a commuter operation would be, such as here in Trenton. You have trains that come into Trenton; they may turn with a 20-minute headway, maybe a 10-minute headway, and go back out in the opposite direction. They also may come in on one side of the railroad, and the next train comes in on the opposite side of the railroad. One goes into one track; one goes into 7 track here in Trenton. When they leave, they're going out in the opposite direction; they traverse the entire railroad.

That system wasn't designed for that. That system was designed for high speed, *A-to-B*. So those types-- We don't have branch lines. So as far as the dollars -- I think you're comparing apples to oranges, and not quite apples to apples -- because the operation of a commuter agency is completely different than Amtrak's passenger operation.

SENATOR GORDON: Okay.

There was an accident, as you know, in Philadelphia, in 2015. Where was Amtrak, in terms of implementation of PTC, at that point?

MR. HARTMAN: Amtrak implemented-- Pardon me; you're talking about Amtrak 188--

SENATOR GORDON: Yes.

MR. HARTMAN: --which happened in early 2015.

SENATOR GORDON: Right.

MR. HARTMAN: Amtrak had Positive Train Control installed in portions of the Northeast Corridor -- with other portions still not installed -- heading for the December 31, 2015, date which was the original mandated date in the original RSIA of 2008. So there were gaps where it was not installed.

The system that was installed on the Frankford Junction curve, for 188, was out of an accident that happened years ago in Back Bay Station in Massachusetts. And a directive from the FRA said if you have a curve or a Civil Speed Restriction that meets this criteria, you need to have a way to augment that. In that particular instance, the criteria that was designated by the FRA, prior to Positive Train Control in 2008, only required it in one direction on that curve. The dynamics are different, the speeds are different, and the speeds entering the curves are different. Those came out of a mandate from FRA prior to PTC. Amtrak was installing PTC -- we installed it between New York and Boston first, because all that infrastructure was brand-new; that was all rebuilt; and that allowed us to get the higher speeds on the north end from New York to Boston.

Down on the south end -- between New York and Philadelphia, and Philadelphia and Washington -- the demographics of the railroad and the topography -- there were quite a few curves, there was not a lot of tangent track, except in the raceway out here, which they call the *raceway* between Trenton and New Brunswick because it's five miles of dead-straight railroad. That's about the straightest part of Amtrak you're going to find south of New York. So therefore, all those factors had to be installed into

the system to take care of all those Civil Speed Restrictions for all the curves.

So Amtrak had committed to having it on the Northeast Corridor from Boston to Washington, Philadelphia to Harrisburg, by -- December 31, 2015 being the mandated date. And the last President of the railroad, at Amtrak, Joseph Boardman, had made that statement that we were going to do that. So that's why we filled in all those gaps, with the exception of all portions around stations that we had filed for main track exclusion addendums, which were approved by the FRA. It is in service from Washington to Boston, Philadelphia to Harrisburg.

SENATOR GORDON: Do you think that PTC would have -- if it had been on both tracks in Philadelphia, do you think that would have averted the accident?

MR. HARTMAN: The accident causes that were given by the National Transportation Safety Board -- which were released in May of this year -- those causes would have been prevented by Positive Train Control's four-core feature requirements.

SENATOR GORDON: As you may know, U.S. Senator Richard Blumenthal of Connecticut has raised questions about these waivers that have been filed for, for stations. New Jersey Transit requested a waiver for the Hoboken Station so that it wouldn't -- didn't need to be installed there. Well, Senator Blumenthal is suggesting that we rethink that. Do you have any opinions on that? And I'd be interested in what Amtrak has done in requesting waivers for various stations.

MR. HARTMAN: Well, the waivers that we have filed with the FRA -- as I said, there are requirements in the PTC regulation, in

236.1019. We had to meet those requirements. Now, if FRA changes those requirements and requires us to refile to meet the new requirements, we would have to do that as well, because it would be part of the regulation. But because the regulation, as it's written, does allow it, the FRA did give exceptions for main track exclusions for passenger terminals.

Amtrak, at the moment, on platform tracks with bumping blocks -- which is similar to the Hoboken, which is what we refer to as *stub-ended station* -- you have to go-- Such as Grand Central Terminal -- even though it's not ours, in New York -- is the same type of station. Washington is not-- Half of Washington Union Station is; half of it is not. Our long-distance trains-- That's why if you ever go to Washington Station, they are always over on Tracks 21 through 29, because those are the through-tracks. The ones that the Acela comes into are stub-ended. On any tracks that have the ACSES system on it, that are equipped with bumping blocks, we're going to be installing a double set of the transponders, which is the basis for the ACSES system. The first set -- they are what's called *chain*. They know how far they are from the next set.

SENATOR GORDON: So is that a form of PTC?

MR. HARTMAN: Yes.

SENATOR GORDON: Okay.

MR. HARTMAN: It's augmenting the system we already have within its parameters. So when the train goes over the first set, it will say, "You have *X* amount of feet before you reach the next set; and past that set, you must be stopped." It will have that information in the first set of transponders.

When it reaches the second set of transponders, the second set says, "You will stop." Those are the systems we're putting in with our stub-ended stations.

SENATOR GORDON: So, in effect, are you endorsing Senator Blumenthal's suggestion that there be some kind of system in place within all stations?

MR. HARTMAN: The technology does exist, and it is possible. It would depend on the railroad, as to whether they can implement it or not. Each location is different; they all have to be taken on their own merit. And as I said, right at the moment, the regulatory body -- which is the Federal Railroad Administration -- does allow for it.

So without the regulations being changed, the railroads, even if they filed for an exclusion, are still within their rights under the regulation.

SENATOR GORDON: Okay.

You mentioned in your testimony that Amtrak works very closely with their partner transit systems. We had heard some testimony earlier from New Jersey Transit about some technological problems that they had been encountering in installing PTC. I wondered if you could tell us a little bit more about the interaction between Amtrak and NJ Transit, and what -- if you could characterize how well things are going at New Jersey Transit. If you don't want to editorialize, just tell us something about what NJ Transit's been experiencing in their effort, and the kind of challenges that they are facing. We'd like to get a better idea of the issues that our agency needs to deal with.

ASSEMBLYMAN McKEON: I would encourage you to editorialize. (laughter)

MR. HARTMAN: Well, as I said, I can't speak for the New Jersey Transit side, and I'm certainly not the fiduciary guy. When it comes to that, I know there are fiduciary challenges on both sides.

But I do know that from the engineering side, we work very closely with New Jersey Transit, SEPTA, Long Island Rail Road, Mass Bay, Metro-North, MARC on the south end. The engineering challenges -- the reason that they have these meetings -- the monthly meetings, which are chaired by the Association of American Railroads, and the individual engineering meetings that we have -- are so we can work through those difficulties. If they have issues with spectrum, for example, if they have issues with car borne. One of the problems that the commuter agencies have that Amtrak doesn't, is New Jersey Transit runs multiple-unit style cars, almost like the subway does, where Amtrak doesn't. We normally have a control car on one end, and a conventional locomotive on the other end.

Real estate spaces; interference from other things on the car that may be specific to the commuter agency -- those types of difficulties are brought up at these meetings so that everybody around the table can brainstorm, "Oh, we had that problem at Metro-North, and here's how we dealt with it;" and, "We had that problem at Long Island Rail Road." Those are similar type operations to New Jersey Transit; SEPTA is another big one. That way they can all share the information from the technical and the engineering standpoint.

SENATOR GORDON: Okay.

Let me defer to my colleagues at this point.

ASSEMBLYMAN McKEON: Just a-- And thank you, Chairman.

Just a -- I just want to follow up on that point.

When Director Santoro was here, he had talked to us about interoperability, and the systems being able to talk to one another -- for lack of a better technical term -- as the reason why Positive Train Control on New Jersey Transit was so delayed. Now, I appreciate what you just gave us on the diligence of getting together, whenever you do, and the various challenges that you have. But why-- And your equipment is your equipment, whether it's-- Amtrak is Amtrak.

MR. HARTMAN: Right.

ASSEMBLYMAN McKEON: You were saying you have some unique issues that you have to deal with. Why is it that the SEPTA system is fully operable, as it relates to Positive Train Control, and New Jersey Transit isn't? That doesn't make sense to me, as it relates to the interoperability issue, as raised by Santoro.

MR. HARTMAN: The interoperability piece falls to, basically, the communications side. And one of the largest problems that the commuter agencies faced, and some of the Transit agencies faced, is spectrum acquisition. SEPTA, from our engineering meetings, very, very early in the game, went out and said, "We need a lot of spectrum; we're going to go out and see where we need it, where we have gaps, where we have coverage, and buy what we need."

ASSEMBLYMAN McKEON: And I know you're not answering for them -- why is it that New Jersey Transit didn't do the same?

They didn't learn those lessons, didn't understand, didn't have the right people there, outside consultant?

MR. HARTMAN: Unfortunately, I can't answer for the New Jersey Transit side.

ASSEMBLYMAN McKEON: Okay.

Bob.

SENATOR GORDON: That's a good finding.

Anyone else on the Committee?

ASSEMBLYMAN McKEON: Yes, I'm sure that the--

One more thing; just one other area.

And first of all, thank you -- all of you -- for being here; and I know you're here not because you're getting paid to do it; but you're here out of the goodness of your community spirit, and we thank for that.

SENATOR GORDON: Yes.

ASSEMBLYMAN McKEON: But is it another thing that-- Again, I'm just being simple about it, and if you can't answer, you can't. But I hear from the Director and from NJ Transit that, as it relates to many of the delays to get into Penn Station, that it's all because of the fact that there are two tracks, and it's all because they're actually leased from Amtrak, and that Amtrak always takes the position that, "Hey, we go first."

And so, you know -- I know you didn't want to editorialize, but we get a lot of this toward Amtrak as far as it relates to delays. And we have to report back to our constituents. Can you comment on that? Is it your fault? (laughter)

MR. HARTMAN: Amtrak, years ago, spent quite a bit of money -- \$46 million, I believe -- for the high-density interlocking project,

which involved the Frank Lautenberg Rail Station as well, out in the Meadowlands. And the issue has always been -- we can put as many tracks as we want; we improved the signal system through the tunnel. And as a matter of fact, when you come out the other end on the Penn Station, the central tracks -- which the long distance trains normally come in on -- can come in at a faster speed. That was all done, engineering-wise, as part of the signal system.

So you have six tracks at Newark station; you've got three tracks when you go east of Hudson; and eventually-- And then you also have the connection that comes up at Swift. Eventually, all those only have two tunnels to go into the station to get into Penn. And normally one of those is always outbound. So now you're down to one way to get into Penn Station. Any track circuits out, any signal problems in the tunnel -- and that is the chokepoint for New York City.

ASSEMBLYMAN McKEON: And I think we all appreciate -- even for me, I could figure out just one tunnel makes it tough. And unfortunately, because of the decisions made, it will be another number of years before there will be more than one. But at the end of the day, how is it, why is it, that Amtrak -- just because they own it, I guess, or because they can? -- gets the priority as it relates to backing the New Jersey Transit trains up, sometimes for hours; certainly, 30-minute increments, as opposed to keeping them on their own lines, on time. Why--

MR. HARTMAN: Well, I know that the commuter agencies and Amtrak have an operational agreement, the particulars of which don't fall under my side of the house. However, I do know that when we go on other railroads where they're the host, we're the tenant -- our long-distance

trains -- if you look on the Amtrak schedule, you'll see quite a bit of delays due to freight service. The freight owns the railroad; they go first. We're number two.

ASSEMBLYMAN McKEON: Got it.

MR. HARTMAN: Sometimes we're number three.

ASSEMBLYMAN McKEON: So you're on the wrong end of that, depending on what station or line you're using. And it just happens to be New Jersey commuters are on the wrong end, to the extent that New Jersey people are not on Amtrak, as it relates to our commuters.

MR. HARTMAN: But that's part of an operations agreement; that's part of an operational agreement between New Jersey Transit and Amtrak.

ASSEMBLYMAN McKEON: It sounds like we need a new one.

MR. HARTMAN: Those are negotiated points in an operations agreement.

ASSEMBLYMAN McKEON: That will be something for us to look at, right, Chairman?

Vice Chair.

ASSEMBLYMAN JOHNSON: Thank you, Chairman; and thank you Mr. Hartman for being with us today

I have a couple of questions. And my first question is -- you had mentioned that it takes six days to commission a locomotive. What does that mean? Is it -- from starting it to getting it up and running? What does that mean?

MR. HARTMAN: In order to commission a locomotive for PTC operation-- Now, these aren't the Amtrak ACSES locomotives; these are the ones we're -- these are our diesels we're using for freight service. You have to have all the equipment onboard, which means you have to have a PTC radio; you have to have Wi-Fi on board; and you have to have dual cell modems. Dual cell modems require antennas; Wi-Fi requires an antenna. There's only so much space on the roof of a locomotive, and you can't have them within a certain proximity to each other.

ASSEMBLYMAN JOHNSON: Okay.

MR. HARTMAN: All that has to be engineered out. Then when you get all the hardware onboard, now it all has to be configured.

ASSEMBLYMAN JOHNSON: Okay.

MR. HARTMAN: When you bought your brand-new computer and needed to put Windows on it--

ASSEMBLYMAN JOHNSON: Yes; all right.

MR. HARTMAN: --you needed to configure it. That takes time as well--

ASSEMBLYMAN JOHNSON: You're talking about installation.

MR. HARTMAN: Yes; well, it's installation, then it's the software side--

ASSEMBLYMAN JOHNSON: Right.

MR. HARTMAN: --and then it's actually -- push the button, try to do a start-up, and make sure that everything comes up and runs.

ASSEMBLYMAN JOHNSON: Right; okay, got you.

Okay, the FCC said the spectrums and interoperability-- Have you selected a frequency yet for-- Is this up and running now, this communication system, between the railroad-- I think you said it was running. And what spectrum are you working on?

MR. HARTMAN: Amtrak's-- The spectrum allowable is between 217 and 221 or 221.5. You can go anywhere in between that. Amtrak is going to be down at the 217.5 end because we have freight carriers that we run alongside of -- CSX, Norfolk Southern -- on the Corridor. We need to have separation between the frequencies they're using for their IETMS freight system and the frequency we need for our data radio for ACSES. You can't have them too close to each other on frequencies; it's like having the old dial radio. You pick up one, and then you pick up two, until you get to the other one. You have the exact same problem. And if one is more power than the other one, it just completely saturates the radio.

ASSEMBLYMAN JOHNSON: Did you say *dial radio*; *dial radio*?

MR. HARTMAN: Old dial radio.

ASSEMBLYMAN JOHNSON: Hmmm; I have to look that up. Okay, go ahead. I understand.

So you can't have one frequency bleeding into another frequency.

MR. HARTMAN: Exactly; because then you interrupt the messages--

ASSEMBLYMAN JOHNSON: Interference; okay.

MR. HARTMAN: --and you don't get the correct information to whichever system needs it.

ASSEMBLYMAN JOHNSON: Okay.

The rail industry has stated that installing PTC at train terminals is impractical and cumbersome -- *at train terminals*. What does that mean? Does that mean, like, on the property of; or like, how far out is the approach? What does that mean?

MR. HARTMAN: The boundaries of the terminal are normally from wherever the approach stops, into the property -- the territory of the terminal. If you've gone into Hoboken, or you go into Penn Station down at track level -- Penn Station is a perfect example for the Amtrak side. When you come out of those two tunnels, it looks like Swiss cheese. You can go anywhere in the terminal; when you come out the other end, you can do the same thing going in the opposite direction, going toward Long Island, and going up toward Boston.

The problem is-- The reason for the complexity is there are so many possibilities of where you can send that train. Not only do you have to get the correct route, but you also have to prevent conflicting routes. And if you've ever been in Penn Station at rush hour, you can bring two in right alongside each other. And they're in very, very close proximity. So you have to have a way to say, "Okay, this is the route I want the train to go; I don't want any other conflicts from all those other switches. However, I can move this switch or this switch so that I can bring this train into this platform and run this one around them at the same time." Those types of equations -- I know on the entering-end of Penn Station, coming out of the two tunnels going into New York City -- going into Penn Station, there's

approximately between 90 and 100 different switch configurations. All those would have to be figured out as to which would be a conflicting, which would be a parallel.

ASSEMBLYMAN JOHNSON: Understood.

My next question: Amtrak and New Jersey Transit are, I guess, sharing the cost of the operating, through an operating agreement, and also through a capital agreement. You're giving New Jersey Transit about \$90 million on the operations side; does that make sense, what I'm saying there?

MR. HARTMAN: I'm not on the fiduciary, unfortunately.

ASSEMBLYMAN JOHNSON: Okay; you're not familiar with that, and the capital--

MR. HARTMAN: No.

ASSEMBLYMAN JOHNSON: Okay; then we'll move on.

MR. HARTMAN: Unfortunately, the money-- I don't get to play with the different colors of money; that's not my side of the house. (laughter)

ASSEMBLYMAN JOHNSON: Got you. That's probably a good thing. (laughter)

Could you tell us any comparison -- how much does-- The amount that New Jersey Transit pays Amtrak for use of their track? How does that compare to other systems throughout the area here? Is it higher, is it lower? Do you know, in comparison, where we stand with that?

MR. HARTMAN: I don't know. I would imagine it would be comparable to the others -- SEPTA, Long Island Rail Road, Metro-North. We have interoperability agreements and operating agreements with those.

I don't know what their parameters are; if it depends on how much track they use, how many trains per day -- I'm not privy to the operating side.

ASSEMBLYMAN JOHNSON: Okay.

Let's go back to PTC. How do we compare with other railroads in other countries, such as in Europe and Asia?

MR. HARTMAN: Well, the PTC in Europe -- which is the one that everybody compares the ACSES system to -- and very, very early on that was the large, major comparison. The European system is very much like the ACSES system. It is a-- What they call *balises*; what we call *transponders* in the United States. The major difference between ERTMS -- which is the system that's used in Europe -- and the ACSES system, and any other system in the United States, is this. (holds up a cell phone)

In Europe, there's a dedicated frequency specific to train control. It was agreed upon by all the countries in the European Union that that block of spectrum would be set aside specifically for train control. In the United States, because everybody has a cell phone on their hip -- everybody wants LTE 4, 5; we want the new Samsung, and we want the new Galaxy -- all that eats up your bandwidth and your frequencies.

ASSEMBLYMAN JOHNSON: Got you.

MR. HARTMAN: So the more they do coverage, the less there is available for other uses.

Europe had the vision and the foresight to say, "We need this; everybody has to be interoperable. We're going to set a portion of it aside." That's the major difference between the European system and the U.S. system.

ASSEMBLYMAN JOHNSON: Okay.

Chair, one last question?

ASSEMBLYMAN McKEON: Please.

ASSEMBLYMAN JOHNSON: An Amtrak question, sir?

(laughter)

When will we see high-speed rail between Boston and Washington; or I'll even take New York to Washington, or New York to Boston?

MR. HARTMAN: Between New York and Boston -- we have 135-mile-an-hour territory; and we have sections that are 150-mile-an-hour.

When you get up into the higher speeds -- I know we're working on a corridor up in the State of New Jersey for the higher speed; actually, right outside your doorstep. However, the-- When you get into the higher speeds -- such as was done between New York and Boston -- the overhead wires -- the catenary system -- is a completely different style of catenary system. It's what they call *constant tension*, because the faster you go with that pantograph on top of the locomotive that picks up the electricity, the more it pushes a belly in front of it. If you don't have something to counteract that to keep it tense, it will end up hopping out of the clips that holds it together, and now you have wires down, which everybody is familiar with on the Northeast Corridor.

The other problem that you have is topography. There are very, very few curves between New York -- once you get out of New Rochelle and head toward Boston; that's the old water level route. There's also talk now of going up to Springfield and coming in on what used to be called the *Old Boston Post Road*, another route into Massachusetts; also level and dead-straight.

When you get south of New York, it starts to look like a snake -- the Elizabeth curves, down to 60-miles-an-hour. There are two ways to deal with that: You either have to straighten out the railroad; or you have to get a particular train that can go at speed that would be able to compensate for those particular topographical issues -- such as a tilt-type train, which lends itself into its own issue. And is it cost-effective?

ASSEMBLYMAN JOHNSON: So they exist -- the tilt-type trains. They do exist?

MR. HARTMAN: Yes. The Acela is actually a tilt-type train.

ASSEMBLYMAN JOHNSON: Okay.

MR. HARTMAN: Yes. And the ones they use in France, the ones they use -- the TGV; and the one they use in Germany, the ICE; and the X2000, which is in Switzerland (*sic*), are all tilt-body types.

The other problem that you end up with -- if you have ever gone to Europe where they run their high-speeds -- TGV, 320 kilometers an hour; not miles an hour, by the way; it's kilometers an hour. It's 186 miles an hour. And the Shinkansen system in Japan -- their tracks are dead straight; they are perfectly tangent track. And they also do intensive maintenance. They take either one or the other track out of service every night, for maintenance between a certain point. They also have no stations on the main. The Shinkansen system, which runs up to -- they have experimental, now, to 500 kilometers an hour -- that railroad is dead-straight and all their station stops are on gauntlet tracks. They get off the main; they go into a gauntlet track; they make their station stop; they come back out on the main. It's perfectly tangent track. They have a maintenance facility at each end. That's their entire railroad.

ASSEMBLYMAN JOHNSON: Well, in some countries, they don't have a problem with imminent domain, like we have here in this country.

SENATOR GORDON: We have to keep the lawyers busy.  
(laughter)

MR. HARTMAN: No. The other problem that they have -- that we also have -- from talking with the Chinese delegation, is they hit approximately 10,000 people a year. However, their legislation is different than ours. If the train hits a trespasser, they sue the trespasser's family for lost revenue and lost time to the train. Their litigation is the exact opposite of ours.

ASSEMBLYMAN JOHNSON: So in China, they hit about 10,000 per year?

MR. HARTMAN: Yes; in their entire system, yes.

ASSEMBLYMAN JOHNSON: Hmmm. (laughter)

MR. MAGYAR: You asked good questions.

ASSEMBLYMAN JOHNSON: I have no response to that, Chair. (laughter)

ASSEMBLYMAN McKEON: That's like one, compared to the United States, when you look at it--

ASSEMBLYMAN JOHNSON: Okay; thank you, Chair.

Thank you, sir.

ASSEMBLYMAN McKEON: Yes; thank you for your good questioning, Vice Chair.

Assemblyman Lagana.

ASSEMBLYMAN LAGANA: Thank you, Chairman.

Assemblyman Johnson touched on an issue before, regarding the Passenger Rail Reform and Investment Act of 2015. Is there anyone here who would be able to testify, or give some information, about that topic? (no response)

MR. HARTMAN: No.

ASSEMBLYMAN LAGANA: No? Okay.

I guess I'll just give some commentary on that; and it is a budgetary process.

So the Passenger Rail Reform and Investment Act of 2015 -- it requires New Jersey to pay Amtrak money for the use of its rails, and to participate in, essentially, cost-sharing in the Northeast Corridor with our neighboring states.

And just for the purpose of the record, it is a -- it spans about 10 years, from 2017 to 2026. And we received some testimony from Mr. Santoro previously. And New Jersey's share, over 10 years, is about \$810 million. So it's a pretty substantial investment by the people of New Jersey. From 2017 to 2021, in that budget, it's about \$64 million per year; and it goes up to about \$98 million per year, from 2022 to 2026.

This involves operating costs, capital improvement costs, and something called *electric propulsion* costs. Can you testify, at all, on that aspect, being that it's technical?

MR. HARTMAN: The electric propulsion costs would be the cost of the electricity to run the train.

ASSEMBLYMAN LAGANA: Okay. New Jersey's share is about 33 percent, from New York to Washington. Do you know about how

much New York would spend on something like that? Is it comparable to what New Jersey would spend, or any of the other states in the Corridor?

MR. HARTMAN: Unfortunately, I don't have that information.

ASSEMBLYMAN LAGANA: Okay.

I'll move on, then, to the Gateway Tunnel project. The Gateway Tunnel project was-- In or around July 2014, the U.S. Transportation Secretary announced that the U.S. DOT would be moving on that Hudson Tunnel project and a Portal Bridge project. Could you explain the difference between the two -- exactly what they are?

MR. HARTMAN: The Portal Bridge -- which is owned by Amtrak -- is another one of the chokepoints in the Northeast Corridor. It's two tracks wide; it has limited speed over it, as opposed to the rest of the territory on both sides; and it's approximately 100 years old. So as far as infrastructure goes, it definitely needs to be replaced.

Amtrak has replaced most of their other bridges, all through Connecticut and into Massachusetts, on the rest of their line. Portal is another big chokepoint, as I said. Going into New York, you have major tracks going into it; you have to get across the bridge. So the talk for years was to either revamp -- build a new bridge, or build a flyover and do away with the bridge. The problem with building a flyover is, according to maritime law and the United States Coast Guard, if you're going to build a bridge over a navigable waterway that is not an opening bridge, such as Portal -- it is a swing-type bridge -- that surface has to be 100 feet above the water level at high tide.

ASSEMBLYMAN LAGANA: Okay.

MR. HARTMAN: And that's from the age of sailing ships -- is where they get that from. I know we had that problem with trying to commute (*sic*) logistics for flyovers, as to whether we would have the real estate to be able to do that. Because locomotives pulling passenger coaches are not very good at climbing stairs. So to get up to that height, and then to be able to get down to a height that they need, they need quite a bit of real estate in each direction.

That's one of the chokepoints; the other chokepoint, as we had previously mentioned, is the two tunnels going into New York, one of which is normally outbound. So therefore, to try to alleviate another chokepoint is where the Gateway project came from.

ASSEMBLYMAN LAGANA: The Portal Bridge -- do you know what the plan is for that? Is it going to be replacement, repair -- do you know exactly what it calls for?

MR. HARTMAN: The Portal Bridge?

ASSEMBLYMAN LAGANA: Yes.

MR. HARTMAN: The Portal Bridge is designed, at the moment, as a flyover. So it would completely eliminate the need for a movable bridge.

ASSEMBLYMAN LAGANA: Okay.

The Hudson Tunnel project -- do you know exactly what the plans are to do that project? Do you know--

MR. HARTMAN: Unfortunately, no, I do not.

ASSEMBLYMAN LAGANA: Okay.

SENATOR GORDON: Another hearing. (laughter)

ASSEMBLYMAN LAGANA: Again, I'm not sure if you have this information -- do you know how much Amtrak has invested into this project to date?

MR. HARTMAN: No, I do not.

ASSEMBLYMAN LAGANA: No? Nobody has that information? (no response)

No? Okay.

I don't have any further questions.

ASSEMBLYMAN McKEON: Before I turn it over to Andrew, one quick question as it relates to that maritime law. You say it goes back to the clipper ships; I mean, is it necessary now?

MR. HARTMAN: Well, unfortunately, it's done by the government. And anybody who has had any dealings with the Federal government knows they move at a glacial speed -- 1 inch every 100 years. (laughter) So to get that regulation changed, it would probably be less arduous to build a flyover. (laughter)

ASSEMBLYMAN McKEON: Gosh. You know, we're laughing, but that--

MR. HARTMAN: But that is where it gets--

ASSEMBLYMAN McKEON: There are certain areas, right, that we have-- The ships have gotten bigger, and if-- That's transportation, and important as much as anything else. I don't know that navigable waterway well enough to know if that's a necessity. Do you know?

MR. HARTMAN: I don't know. That would have to be a petition that would go to the United States Coast Guard. I do know -- and we've had this in the past -- if you have a bridge that's required to open,

and it's not able to be open for one reason for another -- a problem with the bridge, bad motor, whatever -- the United States Coast Guard gives you 24 hours. If you do not get that bridge to open, they will open it for you. I've watched that once; it is very ugly to see. (laughter)

They bring in a sea-going tug with about a 4-inch Hawser line on it, put it on the end of the bridge, and they will open it. That is your bridge.

ASSEMBLYMAN McKEON: That's interesting.

Assemblyman Zwicker is a physicist, so we're going to finally fight fair with you now.

You ready? (laughter)

ASSEMBLYMAN ZWICKER: Thank you, Mr. Chairman

MR. HARTMAN: I think that's a lopsided fight; I think he wins.

ASSEMBLYMAN ZWICKER: I could jump right into frequency domains; but I have other questions before we get there. (laughter) But we're headed there.

So the first one is -- and you may have said it, so I apologize if you said it -- but on the Northeast Corridor, for what Amtrak is responsible for, what percentage of your tracks have you completed the PTC work to date?

MR. HARTMAN: All except for about a mile-and-a-half outside of 30th Street, and approximately three miles outside of Washington terminal.

ASSEMBLYMAN ZWICKER: And so, percentagewise, 90--

MR. HARTMAN: About 97 to 98 percent.

ASSEMBLYMAN ZWICKER: Ninety-eight percent; okay.

MR. HARTMAN: Yes. And those little areas either have a main track exclusion addendum, or we're waiting for software from the manufacturer to be able to incorporate it into the PTC system, which will be done before the mandated date.

ASSEMBLYMAN ZWICKER: Okay. So for that 97, 98 percent completion, what was either the exact or approximate date that you consider work started? How long did it take you?

MR. HARTMAN: It was 2000.

ASSEMBLYMAN ZWICKER: It was 2000; okay.

MR. HARTMAN: An Order of Particular Applicability was filed with the FRA in 1999.

ASSEMBLYMAN ZWICKER: And how many miles of track, if that's the right metric to use, for that?

MR. HARTMAN: I'm sorry?

ASSEMBLYMAN ZWICKER: How many miles of track are we talking about?

MR. HARTMAN: Between Washington and New York?

ASSEMBLYMAN ZWICKER: Yes; that you're -- for this 97 percent, roughly.

MR. HARTMAN: I'd say somewhere in the neighborhood of 200 miles.

ASSEMBLYMAN ZWICKER: Okay.

So you talked in your introductory remarks that PTC serves two crucial pieces of safety: One has to do with speed control, and the other one has to do with train-to-train collisions. Is that--

MR. HARTMAN: That's two of the four, yes.

ASSEMBLYMAN ZWICKER: Two of the four. I'm sorry, and the other two, besides those, were--

MR. HARTMAN: It's train-to-train collisions; it's incursions into established work zones--

ASSEMBLYMAN ZWICKER: Okay.

MR. HARTMAN: --it is overspeed derailments; and it's progression of a train through a misaligned switch.

ASSEMBLYMAN ZWICKER: Got you.

So since 2000, for Amtrak, how often do you have -- and I'm not talking about what happened in Philadelphia; I'm talking about any little thing -- how often do these sorts of things happen? Either a derailment -- it can be a small one, whatever that might mean -- breaking a speed limit; obviously, a train-to-train collision is a big deal; entering into a safety zone at an unsafe speed. How often do these things happen?

MR. HARTMAN: Not so much at Amtrak. One of the advantages that Amtrak has is, Amtrak has a cab signal system. It started with a 4-aspect cab system, and morphed, with the ACSES, into a 9-aspect cab aspect, which actually broke down in between the fours. So you can cap maximum speed; what that doesn't do, and what the ACSES system gave us over that, was Civil Speed Restrictions. There have been instances of overspeed conditions -- such as, the Elizabeth curve was always a conundrum, with the 60-mile-an-hour curve in the middle of a 105-mile-an-hour railroad; those types of things.

And unfortunately, cab signals only enforce the upper end of a speed. So if you have a 60-mile-an-hour cab signal, but you have a 45-mile-

an-hour curve, and you don't have anything that corresponds to that 45 miles an hour-- In the old 4-cab system, it was 15, 30, 60 -- I'm sorry -- 15, 30, 45 at a maximum allowable speed. So once you left 30-mile-an-hour approach cabs, maximum authorized speed -- whatever it was in the territory -- that's what that locomotive was capped at. So if you had a 60-mile-an-hour territory, and that locomotive, somewhere in its travels, was capable of 105 miles an hour, she can run 105; it was all on the engineer. That's why PTC came about.

ASSEMBLYMAN ZWICKER: Sure.

MR. HARTMAN: One percent, I would say.

ASSEMBLYMAN ZWICKER: One percent.

MR. HARTMAN: The problem is, when they do, they make the front page of the *New York Times* and the *Washington Post*.

ASSEMBLYMAN ZWICKER: That I understand. (laughter)

So as you heard, I'm a physicist. So I spend my days working on making an artificial star, holding it in a magnetic container to, ideally, one day make an unlimited supply of clean, safe electricity. That's complicated. PTC, in my mind, doesn't sound very complicated. And even more importantly, has a tremendous, tremendous safety motivation, right? We're talking about people's lives -- whether it's passengers, your employees, whatever it might be.

So I struggle to understand some of the difficulties that you refer to. In the end we have to know where a train is; we have to know its speed -- we have real-time information that has to be known; and we have to transmit that back to a control, a computer, an algorithm -- you talked about some of that. You described some of the difficulties but, in the end,

technically, it doesn't sound particularly difficult. Google has a self-driving car which, in any moment in time has to understand its world around us. You have -- not *you*, personally, right -- but trains have a known amount of track; you have cars that you can know ahead of time what its maximum speed is as a function of curvature or anything else; you know where your work is occurring. It seems very straightforward. So I'm always perplexed by the cost.

So the specific question I have for you is, you mentioned that Amtrak has one system that is rated at 150 -- for trains up to speeds of 150 miles per hour, correct? My question is, why does that, technically now, make any difference at all? Why should it matter whether a train goes 150, 110, 50, 30? What is it about the fact that it could go fast that would have an-- I understand there are safety issues around that; but what I don't understand is, why does that make a difference technically? You just need to know what the maximum speed is, what the safe speed is, and where the train is. So what is it about that that's so unique?

MR. HARTMAN: Well, what makes that unique is, in the PTC regulation, there are different requirements for different speeds.

ASSEMBLYMAN ZWICKER: Okay.

MR. HARTMAN: Above 90 miles an hour and above 125 miles an hour, there are certain criteria that the Federal Railroad Administration requires of the railroad. So the more you go up in speed, the more requirements they put on the railroad, the more money, obviously, you have to spend in R and D.

ASSEMBLYMAN ZWICKER: Why? Isn't that just a control algorithm that says, "It takes  $X$  amount of seconds for a train of a certain number of cars to go--

MR. HARTMAN: Rate times Time equals distance; right.

ASSEMBLYMAN ZWICKER: Yes. We could talk-- I could crank it up a notch, if you want. But--

MR. HARTMAN: But unfortunately, that's the hand that we're dealt by the regulator.

ASSEMBLYMAN ZWICKER: I understand that. I'm asking you a technical question. Why does that slow you down? Rate times-- We can calculate momentum.

MR. HARTMAN: Right.

ASSEMBLYMAN ZWICKER: Mass times velocity, right? So that just goes into a control algorithm. So help me understand why -- not the-- You may have to do more paperwork; but why would that cost you more money, or cost you more technical time -- not paperwork time?

MR. HARTMAN: Well, several reasons. Cab signal has been around since the Pennsylvania Railroad in 1920; so they've been around for a hundred years. The Positive Train Control -- although there were some systems in the United States that tried very, very early on, there are only so many firms -- design firms, and there are only so many manufacturers. One of the difficulties, when the regulation was passed in 2008, was Congress was under the impression that the equipment -- not so much the technology -- but the actual equipment to make it work was readily available and off-the-shelf. And what many of the railroads are finding -- and Amtrak had the same growing pains -- we were designing it, we were testing it, and we

were implementing it at the same time. And anybody who has ever built anything knows that's the worst thing you can do. You never do your R and D after you have done your installation.

ASSEMBLYMAN ZWICKER: Sure. (laughter)

So, okay; keep on going.

The Chairman -- I guess I promised it. So you did hold up your cell phone, so I have a question.

You said that, for Amtrak, you are at 217.5 megahertz, right?

MR. HARTMAN: Point five for the Northeast Corridor, yes.

ASSEMBLYMAN ZWICKER: A million hertz. What's the frequency width of your signal, your bandwidth?

MR. HARTMAN: Twenty-five megs.

ASSEMBLYMAN ZWICKER: Twenty-five.

MR. HARTMAN: Yes.

ASSEMBLYMAN ZWICKER: So why did you hold this up (indicates cell phone), because these operate at 800, 1,500, 2,000 megahertz? So I think you're making a point, but I'm not so sure that this (indicates cell phone) is related to what you were talking about.

MR. HARTMAN: It doesn't operate on the same frequency--

ASSEMBLYMAN ZWICKER: Right; not even close.

MR. HARTMAN: Right. But the problem is, as they wanted more and more technology, it starts to encroach in that frequency range. One side of that frequency range--

ASSEMBLYMAN ZWICKER: These don't (indicates cell phone).

MR. HARTMAN: Well, one side of that frequency range is military. If you look at the frequency band from the FCC, one side of it is military, one side of it is commercial application, commercial aviation. But if they had-- My point with the cell phone was, if the United States had done what Europe had done, and dedicated a specific frequency -- instead of leaving it to be traded on the open market -- and said, "Fine, you guys can trade all these stocks you want. However, this one we're going to put aside because we need it," that would have gone a long way toward many of the Transit agencies and many of the commuter agencies that were later in the game -- we've been doing it since 1999--

ASSEMBLYMAN ZWICKER: Right.

MR. HARTMAN: --being able to acquire the amount of spectrum that they needed.

ASSEMBLYMAN ZWICKER: So 217 to 221.5 is Amtrak-specific. It's not--

MR. HARTMAN: No, that is PTC's.

ASSEMBLYMAN ZWICKER: That is PTC's.

MR. HARTMAN: Yes. There--

ASSEMBLYMAN ZWICKER: So who competes with you? If that's PTC's, why is this an issue?

MR. HARTMAN: Because it's for PTC; however, there are private owners who owns blocks of it for coverage of certain areas.

ASSEMBLYMAN ZWICKER: What does that mean?

MR. HARTMAN: Okay. The counties in New Jersey--

ASSEMBLYMAN ZWICKER: You said it.

MR. HARTMAN: Okay. The counties in New Jersey -- you may have a block of-- You need 219 megahertz.

ASSEMBLYMAN ZWICKER: I can't get it; it's for PTC, right?

MR. HARTMAN: Okay. But they were bought prior to.

ASSEMBLYMAN ZWICKER: Okay.

MR. HARTMAN: There's a major lawsuit with one of the companies, right now, that just filed for bankruptcy, to protect what they have. You may be able to get it on the south end, but somebody may own it on the north end counties. You may get it in Mercer and Middlesex, but the minute you cross over the border -- depending on what the FCC borders are for it -- it may belong to somebody else. John Q. Public may own it.

ASSEMBLYMAN ZWICKER: Okay.

Last question from me.

MR. HARTMAN: They haven't done the imminent domain when it comes to spectrum

ASSEMBLYMAN ZWICKER: Okay.

So several of my colleagues also talked about interoperability; this has been an issue raised by New Jersey Transit. You mentioned the fact that you don't want to do your R and D after you've done your installation. You also said that there aren't very many companies that make PTC systems, correct?

MR. HARTMAN: True.

ASSEMBLYMAN ZWICKER: Right? So there are only a few vendors that you would go to, that you have a contract with, that other -- whether it's you, or NJ Transit, or-- It sounds like what you're saying,

really -- anyone else in the country would go to, to install -- to design and install a reliable PTC system, correct?

MR. HARTMAN: Yes.

ASSEMBLYMAN ZWICKER: So what, then, is the issue around inter-- Why can't they talk to each other? You have a 5 megahertz communication band that everyone has to talk to; you have some differences, I suppose, between what you put on a train and what you put on a track. But in the end, I mean, what's stopping -- what is, in your opinion, stopping these few companies from talking so they would make it easy for each agency to talk to each other?

MR. HARTMAN: They're not interested in that.

ASSEMBLYMAN ZWICKER: Who's the *they*?

MR. HARTMAN: The suppliers are not interested in that. They're interested in selling their product.

The biggest example is between the ACSES system and the IETMS system. IETMS is what the freights are putting in; it works completely different from an ACSES system. We take an ACSES-- We'll take a diesel -- because you can't take it out from under the wire if it's an electric train -- and try to run it south of Washington on Norfolk Southern or CSX tracks, and you can't talk to that system because it's an ACSES locomotive, it's not equipped for IETMS. You come to a dead stop.

ASSEMBLYMAN ZWICKER: So from your perspective, would it not make sense to have government regulations that would mandate any system to be able to talk to any other system? Wouldn't that be in the best interest of, in the end, the train agencies, and the people who ride the trains?

MR. HARTMAN: That would be a prescriptive rule and not a performance-based one.

ASSEMBLYMAN ZWICKER: What's wrong with it?

MR. HARTMAN: It takes longer to write if you ask the FRA.

ASSEMBLYMAN ZWICKER: It takes longer to--

MR. HARTMAN: It takes longer to write it if you-- Because they have to do all the R and D.

ASSEMBLYMAN ZWICKER: I'm asking you, from your perspective, doesn't that make sense?

MR. HARTMAN: It does make sense.

Originally, one of the original ideas -- and I'm just going to use the big four freights for a minute -- freight number 1, freight number 2, freight number 3, and freight number 4. So freight number 1's locomotive runs on freight number 2's territory, when they leave their territory, on the west coast. What they wanted to do, to do interoperability, "We're going to stop at the border, and we're going to put freight number 2's locomotive on the head-end so we can run on their system. When we get to freight number 3's border, we're going to stop, we're going to cut off freight number 2's locomotive, we're going to put freight number 3's locomotive on the front of it, and keep going." Try that with a passenger locomotive, from Seattle to San Diego. You'll never get there.

ASSEMBLYMAN ZWICKER: Makes no sense. (laughter)

MR. HARTMAN: No. But that was one of the original, conceptual ideas.

ASSEMBLYMAN ZWICKER: As opposed to one system that just talks to each other.

MR. HARTMAN: Right.

ASSEMBLYMAN ZWICKER: Maybe different vendors, right?

MR. HARTMAN: Right. When the rule was originally written, in 2008, what Congress thought was -- their idea was -- you could technically -- and I realize physical infrastructure doesn't allow it, but you could run from New York to LA on one train, traverse multiple systems, and the train will never know the difference. That's the idea behind it.

ASSEMBLYMAN ZWICKER: As it should be, right?

Okay; thank you.

MR. HARTMAN: Certainly.

SENATOR GORDON: My judgement is that Zwicker and Hartman are at a draw right now. (laughter)

ASSEMBLYMAN ZWICKER: Round two is coming up. (laughter)

SENATOR GORDON: I think that concludes our questions for Mr. Hartman.

I would say, just listening here, as a lay person, that, in my opinion, the country and our riding public are very lucky to have someone with your level of expertise working in the public interest. And we want to thank you for being here with us today, sharing your expertise. I've learned more about trains than, I think, in my whole lifetime.

At this point, I'd like to turn to Ms. Carolyn Hayward-Williams, of APTA--

I'm sorry?

MR. MAGYAR: One more?

SENATOR GORDON: One more question?

ASSEMBLYMAN JOHNSON: (Indiscernible).

SENATOR GORDON: Assemblyman Johnson.

ASSEMBLYMAN JOHNSON: I can't let Assemblyman Zwicker like, you know, get ahead of me here. I have to ask a question.  
(laughter)

SENATOR GORDON: Okay, you're on. (laughter)

ASSEMBLYMAN JOHNSON: Thank you.

One quick question, sir.

When we took testimony from New Jersey Transit a while ago, they stated that they have a need, or will have a need for more trained individuals to work on the maintenance side of their system -- you know, mechanics, what have you. And Amtrak -- how does one apply for a job to work in your maintenance facility? What's the process to, possibly, get a job there in maintenance, and do you recruit from different schools and different cities throughout this country?

MR. HARTMAN: We do.

We recruit from different technical colleges, different schools throughout the country; the west coast, Chicago -- where our large maintenance facilities are -- Bear, Delaware.

The addition of Positive Train Control to the maintenance side of the house, as far as the locomotive, has added a new aspect that wasn't there before -- so those types of people. Unfortunately, it's a short supply and a big demand. All the railroads need those types of people. So the freights are competing with Amtrak; are competing with commuters for the same personnel.

ASSEMBLYMAN JOHNSON: Okay. So has the industry -- the railroad industry -- of course, I'm biased to New Jersey -- has Amtrak had a dialogue with the vo-techs and also community colleges in New Jersey to, I guess, either develop a curriculum that would be satisfactory to you or, at least, get a person started who may want to do a job in this -- may want a career in this industry?

MR. HARTMAN: I do know that they do go to the colleges. I'm not sure if they've worked toward putting a program together. I do know, on the-- I'm on the signal side, okay?

ASSEMBLYMAN JOHNSON: Yes, yes.

MR. HARTMAN: And one of the things that I did is -- I'm also a certified trainer for Amtrak.

ASSEMBLYMAN JOHNSON: Okay.

MR. HARTMAN: So what we did is we brought people in to the railroad; we put them in a four-year training program before we cut them loose on their own.

ASSEMBLYMAN JOHNSON: Right, right; okay, all right.

I'll be in touch with you offline--

MR. HARTMAN: Certainly.

ASSEMBLYMAN JOHNSON: --regarding who to contact, how to get a dialogue going between Amtrak, and the vo-techs of New Jersey, and also the community colleges in the state -- if a young person wants a career in this. But it sounds like if a young person does want a career with Amtrak, they go into the Midwest to get trained.

MR. HARTMAN: Well, one of the issues that we have found with the new generation -- and I don't want to label any of them, because I

have a couple of them myself -- is the railroad industry is 24/7/365. And it's very, very hard to recruit somebody out of college or out of a technical, now, and tell them that they're going to be working last shift for the next seven to eight years, with Tuesday and Wednesday off. They don't understand that; they don't understand a 24/7/365 operation. Those are the types of things that make it hard to recruit as well.

ASSEMBLYMAN JOHNSON: Understood.

Okay, thank you for your response.

Thank you, Chair.

MR. HARTMAN: You're welcome.

SENATOR GORDON: Again, Mr. Hartman, thank you very much for your excellent testimony.

At this point, let's turn to Ms. Hayward-Williams.

Ms. Williams, if you would proceed.

**CAROLYN HAYWARD - WILLIAMS:** Good morning.

My name is Carolyn Hayward Williams; I'm the Director of Engineering and Transit Technology for the American Public Transportation Association. And I know it was noted before, but APTA is an international nonprofit association with over 1,500 public and private organizations. And we work in all modes of transportation -- bus, paratransit, light rail, subway, as well as the commuter railroads. And our members include both the public sector; the 26 commuter rail agencies; as well as private manufacturers of -- you know, in this case, the relevance would be signaling and train control systems -- but also rolling stock suppliers, research institutes, and state departments of transportation.

So I thank you very much, Chairman Gordon, Chairman McKeon, and all of the members here today of the Senate Legislative Oversight and Assembly Judiciary Committee -- that's a mouthful -- for the opportunity to testify.

My background, as I noted, is transportation technology; and I have worked in the signaling area for quite a long time.

This morning I'd like to just provide you a brief overview of how the commuter rail industry is progressing towards meeting the Federal mandate for Positive Train Control; and elaborate a little bit more -- and I think the colleague from Amtrak has covered a lot of the issues -- but I'd like to elaborate a little bit more on what the consensus of the commuter rail agencies are and what they're facing in terms of implementing Positive Train Control.

To put this in context, there is a massive amount of planning, and coordination, and activity required to implement PTC, as Amtrak has done over the last 16 years. Many of the 26 commuter rail agencies have also commenced that, based on the 2008 mandate.

Delivering PTC is highly complex; and there has been some research and development associated with it, especially around the positioning systems. But it also requires the development of safety-critical software, which also is a time-consuming process.

In terms of implementation across the United States, we are looking at 3,150 track miles that are to be installed with Positive Train Control. And that includes over 1,000 radio towers. And I think, elaborated on this, some of the challenges of implementing the towers has been a challenge for the industry.

We're also looking at installing equipment on 3,400 locomotives, as well as training more than 13,000 employees. And all of this is being implemented while all of the commuter railroad agencies are operating and providing services to their customers.

Now, this is certainly a very significant effort for the industry. And I can very confidently state that the commuter railroad industry has made significant progress in PTC, and is on schedule to meet the deadlines. The progress -- I'd like to highlight a little bit of percentages for you: 22 percent as of, I guess it would be, August, September of this year -- 22 percent of the route miles -- the 3,150 route miles are either in service or have Positive Train Control in testing and demonstration, awaiting the Federal Railroad Administration's approval; 27 percent of the 3,400 locomotives and cab cars have been installed with PTC hardware; over 50 percent of the 1,000 radio towers have been erected; and over 22 percent of the 13,000 employees have been trained in PTC.

I think -- we also noted the back office systems that are required to operate. Forty percent of the 35 back offices are ready for operation, and over 70 percent of the spectrum has been fully acquired. And I know we spoke quite a bit about radio spectrum, but I think we're well ahead of the curve there.

And in terms of the 26 commuter rail agencies, 19 percent will be fully PTC-equipped by the end of this year. Several are in operation, and several are just about to enter operation.

And to represent the Acting President and CEO of APTA, Mr. Richard White, he stated that, "The commuter rail industry has made great strides in implementing Positive Train Control. This progress, on this

complex, safety-critical technology, demonstrates our ongoing commitment to the number one safety priority for the commuter railroads.”

Now I'd like to just take a brief moment to go through some of the challenges, and then would be very happy to take any questions.

We have done a recent survey with our members, and a set of challenges was a very common theme throughout the responses that we received. Number one, of course, I would say, is funding. A consistent funding source is very critical to Positive Train Control. And overall, the industry is looking -- the cost for implementing PTC across the commuter railroad industry -- not the full industry -- is \$3.5 billion, of which about \$16 million is associated with spectrum acquisition of those 26 agencies. And then in addition to the \$3.5 billion, we will be looking at an additional annual maintenance cost, and this is in addition to existing maintenance costs of over \$100 million.

And as of October 2016, we have estimated that the commuter railroads have spent about \$1.5 billion on Positive Train Control.

So how did many of these agencies fund this? Many of the commuter rail agencies have had to defer state of good repair investment and some expansion projects, as well as delaying upgrades and replacement of track, bridges, rolling stock, and facilities in order to fund PTC.

Some other challenges -- which I know we've also talked about -- are some of the staffing constraints. The design, installation, and commissioning of PTC, being a safety-critical technology, requires qualified signaling engineers and installation engineers. With so many agencies implementing this program at the same time, the industry has had significant constraints in terms of these scarce resources. And even as

Amtrak noted -- four years to train a maintenance engineer. Unfortunately, the industry has had a lot of challenges in getting folks up to speed and qualified to both design and implement these programs.

Some other constraints: manufacturing. Similar to the scarce resources of signaling engineers, the demand on the manufacturing and testing facilities to produce the equipment to the standards required has also been a significant challenge for the industry. And a lot of this, again, is because all of the 26 agencies are implementing in a similar timeframe.

A fourth challenge for many of the commuter railroads is access to track for testing. All of these agencies continue to run their services; and to enable them to do the testing required for the new equipment that is installed on the locomotives, as well as the wayside, requires test time that is not in revenue service. Many of the agencies have had to reduce services in order to have the time to do this type of testing.

And then I'll bring up another topic that's already been discussed: interoperability. One of the big challenges of PTC -- because it is a performance-based requirement -- is how everybody talks to each other. Not just in the spectrum, but also the interfaces and the messaging that goes between the trains, the wayside, and the back office systems; and then also to back office systems that have to hand off trains across borders. All of that type of interoperability requires a significant amount of effort among not only the agencies in the Northeast Corridor, but also with the freights and the other commuter railroads. So that has been a real challenge in implementing PTC.

But despite these challenges, the industry continues to make progress in PTC across the country. And as a State legislative body, APTA

would urge you to make resources available to New Jersey commuter agencies for PTC implementation; and to also use your authority and influence to encourage coordination and cooperation among the entities involved in New Jersey's PTC projects.

And I'd like to thank you for your time, and I'd be very happy to take any questions at this point.

SENATOR GORDON: Ms. Hayward-Williams, thank you very much for that excellent testimony.

We were particularly pleased that you came here, because I think it's important to get the national perspective.

And one question I have is -- you referred to, I think, 26 commuter rail systems out there in the country. Can you -- how would you rank New Jersey Transit among that group, in terms of its progress towards full implementation of PTC? Are they at the lead, the middle, bringing up the rear? Can you comment on that?

MS. HAYWARD-WILLIAMS: I think the one thing I can comment on is there are several agencies that have or are implementing within the 2016 timeframe. A majority of the agencies -- and I think we quoted in our most recent press release -- 90 percent of the agencies, or 90 percent of the track, will be in operation in 2018. And New Jersey Transit is committed to the 2018 deadline. And then there are several agencies that are moving towards a 2020 final completion. So if I use that as the calibration, New Jersey is in amongst most of the commuter railroads in their implementation of PTC.

SENATOR GORDON: Okay.

We have heard testimony from the Executive Director of New Jersey Transit that the agency hasn't gotten the resources that it needs; that there have been -- there are a significant number of vacancies among the technical staff. And you had mentioned these resources and people as being critical to the implementation of this. Is it fair to say that had this agency been funded properly over the last 10 years that we might see greater progress than we have seen up to now? I know there are a lot of *ifs* there, but--

MS. HAYWARD-WILLIAMS: Yes, there are a lot of ifs; I mean, that's a hard question, a crystal ball question.

But having 26 agencies implementing all at the same time when, in signaling, you usually see, maybe, one or two resignaling initiatives, you know, in a five-year timeframe. Having so many agencies implementing at the same time -- they are in competition for the expertise. And there's not a lot of expertise to go around. So, you know, there is certainly challenge.

Whether funding was a reason for that, I have no insight, unfortunately, and can't comment on that.

SENATOR GORDON: You know, of the commuter rail agencies that you deal with, are there any that you can point to as agencies that are showing best practices in this area? Are there agencies that you would point to as models for New Jersey Transit and others to emulate?

MS. HAYWARD-WILLIAMS: I may not pick an individual agency, but quite a bit of the feedback, and in our discussions with the commuter railroads is they are pulling together communities in terms of the operation and the technology. Just as was described by Amtrak, in terms of

the Northeast Corridor coordination, there are similar coordinating groups with the IETMS, as well as some of the other technologies.

So they are, amongst themselves, certainly coordinating, and talking, and trying to have lessons learned. But you know, many of the agencies have individual technical challenges -- different layouts of track, different coverages in terms of radio spectrum, in which -- in many cases they're dealing with unique challenges.

**BILLY TERRY:** Mr. Chairman, if I may.

**SENATOR GORDON:** Yes, Mr. Terry.

**MR. TERRY:** I have no formal testimony; I was here to support my colleague here.

My name is Billy Terry; I'm the Senior Legislative Representative at the American Public Transportation Association.

And I just wanted to underscore what Carolyn says. Part of the challenge for us, as it relates to ranking, and denoting best practices, and what have you amongst those 26 commuter agencies that are members -- we're very rarely dealing with identical circumstances, as she mentioned. Whether it be density in service; whether it be our good friends in Nashville, for example, who simply run their commuter track -- who may not have the presence of freight; our friends in Dallas, who may have the presence of freight, but only under certain times (indiscernible) revenue.

So part of our challenge, in terms of ranking, is it becomes very difficult when you don't have apples to apples. You know, in some instances, it's cherries to watermelons, if you will. So that -- I just wanted to put it in context; that it's not reluctance, but it's difficult for us to say, "This commuter agency, that commuter agency." Even though they may

have similar unlinked passenger trips, they may have very, very different topography. They may have other circumstances that make them unique.

SENATOR GORDON: I realize that we're dealing with a produce stand here (laughter), and these comparisons are difficult. But, I mean, there are -- there is Federal data out there on accidents and so on. Are there particular agencies that are known for having the fewest number of accidents, the best safety record -- recognizing that we are dealing with different situations?

MR. TERRY: I'm not prepared to say. We've done an analysis of information that APTA has; NTD -- the National Transit Database information; and sort of did our own ranking or analysis. So no, I don't-- Again, Mr. Chairman, I don't have any ranking or any comparison of performance operations.

SENATOR GORDON: Okay.

You mentioned the need for financing and the constraint that imposes. We noted that, in 2015, the MTA system in New York obtained a \$1 billion low-interest Federal loan for the installation of PTC on the MTA and Metro-North. Were those loans available to other systems, or was that something specific to the MTA and Metro-North?

MR. TERRY: The \$967 million loan that Metro-North received was through the RRIF program, which is a loan program managed and operated by FRA.

As it relates to its availability, I would say yes; that is a financing option that would be available to many commuter rail agencies. But I would, again, put it in context that the process to have an approved RRIF loan -- to go through that process requires a level of resources,

requires a level of assets, requires revenue streams. So while it may be available to certain -- to all agencies, do they exist in a financial scenario such that they would be -- could get an approved loan?

So yes, it's available; but *b*) is it a reasonable tool for some smaller agencies or other agencies that don't have revenue streams, I think is the question.

SENATOR GORDON: So I don't want to put words in your mouth -- so it's possible that, given the fact that New Jersey Transit has been constrained for resources, it may not have been eligible for the low-interest loan program under RRIF?

MR. TERRY: I can't speak on eligibility; I could merely say that it's a loan program where FRA makes a determination based on assets, revenue streams, and a whole number of financial circumstances -- whether they approve a loan or not.

SENATOR GORDON: Okay.

We note that SEPTA was able to meet the 2015 deadline for PTC. Can you talk about what you think was key to SEPTA's success -- anything particular that they did, or a combination of things?

MS. HAYWARD-WILLIAMS: Well, as we know, SEPTA has implemented a system that is consistent with the Northeast Corridor, and has moved forward with that and progressed forward with their program.

They were able to secure funding and support throughout their program, and made some decisions along the way. And if you look in some of their summary information available on their websites and in public, they have implemented some work-arounds, some great separation between

freight and the passenger rail, such that they were able to implement in certain ways.

So, you know -- so SEPTA has been very active in the program; have been very active working with Amtrak, as well as the other agencies up the Northeast Corridor. It's hard to compare SEPTA to other agencies because they have a different system and a different layout.

SENATOR GORDON: They are also a smaller system, aren't they?

MS. HAYWARD-WILLIAMS: They are a smaller system; I wouldn't say half the size of New Jersey, but certainly a bit of a smaller system. They also have a lot of different routes; which can be complex, but also offer opportunity from a testing and delivery standpoint.

So why, exactly, are they about to go into full operation come the end of this year or early next year, versus others? I'm sure there are many, many different reasons; but certainly, based on what we've talked about earlier, all the agencies have been fully committed to delivering, and each have their own individual challenges. And sometimes you're able to work around them a little bit more quickly than others.

SENATOR GORDON: Okay; I have just one more question, then I'll defer to my colleagues.

We had talked about how a number of stations have a sort of waiver from PTC, Hoboken included. Can you comment at all about other safety technologies that can be used in stations, in lieu of PTC, that you see around the country?

MS. HAYWARD-WILLIAMS: I think, maybe-- From a pure technology standpoint, you know, if you make a comparison to metro

systems -- noncommuter systems -- they do implement and operate train control in complex junction areas. But that's a very controlled environment.

For commuter railroads, there is the possibility of implementing some technology, that Amtrak had noted, into the terminal areas. But you have to make some tradeoffs -- calling them *tradeoffs* maybe isn't an elegant word -- but between limiting capacity into your terminal station -- which usually is limited by signaling and train control -- versus relying on driver-based safety to move those trains through. And it is a tradeoff: Crowding on stations is also a safety concern for many agencies.

So these agencies are trying to implement a very safe system. And there are some technologies out there but, as noted by my colleague from Amtrak, each layout of each terminal needs to be evaluated in terms of the ability to implement that and not limit the number of trains that you can run in and out, and thus not cause other safety concerns for passengers and commuters.

SENATOR GORDON: Okay.

Let me defer to my colleagues.

ASSEMBLYMAN McKEON: Sure; thank you, Senator.

I had just a couple questions.

Thank you, again, both, for being here.

A little -- not afield, but relevant. We're on CNN -- the two of you -- and I'm Chris Cuomo. So tell me: What's the crystal ball say as far as transportation--

SENATOR GORDON: Let me tell you about your brother.  
(laughter)

ASSEMBLYMAN McKEON: He's a lot better looking than I am, that's for sure, on top of it.

What's the future, do you predict, as it relates to transportation funding, with the new Administration? (laughter)

MS. HAYWARD-WILLIAMS: I'm passing the ball.

MR. TERRY: We were grateful, as an industry, as we moved through the Presidential election to see the two major candidates have a robust discussion about infrastructure and about plans to fund infrastructure in this country. More importantly, not just funding it, but what it yields -- the economic vitality.

Now that we see President-elect Trump moving forward into assuming his Administration, he's made several statements; even put out a white paper regarding financing infrastructure in its broadest sense.

How that translates into a Federal infrastructure program and how that infrastructure program is funded, I think is a tremendous question mark. I will say that APTA, as an industry -- we're putting together a set of principles that we will forward to the new Administration, of priorities or principles we would like to see in an infrastructure package.

But I apologize; I'm from Pittsburgh. We have no crystal balls there. Sorry, my friend.

ASSEMBLYMAN McKEON: As opposed to the talking heads who make believe they know what they're saying -- you're good enough to say, "I have no idea."

And I should have said Michael Arons as opposed to Christopher Cuomo, but I-- (laughter)

ASSEMBLYMAN JOHNSON: That's it; that's right.

ASSEMBLYMAN McKEON: You know--

MR. TERRY: I will say, Mr. Chairman, that one of the things, as an industry, that we will, and continue, to say loudly is that financing is a tool; it is a tool. And as we spoke about the RRIF loan and Metro-North receiving financing for Positive Train Control -- that is a tool, and that is a tool that does not always avail itself to transit agencies. Financing for a bus garage in Topeka, Kansas -- it's difficult to finance that, right? Particularly if you're talking about tax credits, investors, and things of that nature.

So as an industry, while we welcome additional tools to finance infrastructure, we are, first and foremost and continually speaking of the Federal government's investment into transportation.

ASSEMBLYMAN McKEON: Yes. I guess-- One more question, and it's maybe as much as comment. And then I'm going to defer to my learned colleagues.

I wouldn't expect that either of you would be here and be in a position to be critical of any transport system that's a member, no more than the League of Municipalities would come here and be critical of a community. But if I was to ask you a hypothetical, (laughter) about an agency, in the last seven years, that has had historic increases at the fare box; has had a safety record and an on-time record that has not been commensurate with the other regional services; has had capital expenditures that have been deferred to operating costs -- and by the way, they didn't get PTC done yet-- Where are they? Are they in a good stead? What do we need to do?

MR. TERRY: Well, I guess I'll answer the last part of your question first, hypothetically. (laughter)

Many transit agencies -- particularly including those that operate commuter services -- are moving towards implementing PTC. So to use your phrase, *yet*, they are operating to -- moving towards meeting that Federal deadline. So I think the *yet* is -- there's a level prematurity; they're moving towards that.

As it relates to the financing challenges that many public transit agencies are dealing with, there's again a very limited set of remedies as it relates to capital expenditures, particularly operating. Many municipalities that fund the operations of transit agencies are falling on hard times. It's becoming increasingly more expensive to operate public transportation while we're simultaneously seeing an increased demand.

So when you look at all of those factors -- some 10.5 billion unlinked passenger trips in public transportation last year -- public transportation is not a money maker. It requires resources to operate it safely and effectively. And so I guess that would be my response to the challenges that any public transit agency is facing.

ASSEMBLYMAN McKEON: Good answer. I guess everybody is equally in bad shape; is that it?

MR. TERRY: Well, I would say that when you begin to look at the different parts of the country -- the Southwest, the Southeast, the Mid-Atlantic states, municipalities that are growing that are augmenting their tax base -- and you look at those systems, and those systems growing; as compared to other parts of the country where you see, maybe, a shrinking tax base, I think there's a link there; there's a link there.

ASSEMBLYMAN McKEON: Thank you very much.

Vice Chair.

ASSEMBLYMAN JOHNSON: Yes; thank you, Chair.

Is it fair or is it accurate to say that only -- and you may have said this before; I may have missed it -- only 23 percent of the passenger rail system nationwide has PTC; only about 23 percent.

MS. HAYWARD-WILLIAMS: It's 19 percent of the agencies are very near to implementing PTC, at this point in time, 2016.

ASSEMBLYMAN JOHNSON: They're very close to completing it, or-- I am reading something from the National Association of Railroad Passengers.

MS. HAYWARD-WILLIAMS: Yes.

ASSEMBLYMAN JOHNSON: And they say that nationwide it's -- for the passenger rail, about 23 percent complete; the West Coast is ahead of the East Coast. Is that a fair statement; does that sound accurate, or--

MS. HAYWARD-WILLIAMS: No, and I think those percentages are from the FRA in their most recent quarterly report.

ASSEMBLYMAN JOHNSON: Correct, yes. They reference the FRA.

MS. HAYWARD-WILLIAMS: Which are somewhat consistent, I think.

One of the things that APTA has tried to do is to provide a little bit more granularity in what's happening. Because some of the percentages presented by the FRA are -- you're either fully complete, or you're not. So you get a 0 for being at 80 percent, so--

ASSEMBLYMAN JOHNSON: I see; okay. I see. It kind of skews that number.

MS. HAYWARD-WILLIAMS: Yes. So we broke it down a little bit differently.

ASSEMBLYMAN JOHNSON: Okay.

MS. HAYWARD-WILLIAMS: And 22 percent of the route miles are installed and commissioned.

ASSEMBLYMAN JOHNSON: Okay.

MS. HAYWARD-WILLIAMS: Which is a significant amount; as well as from the rolling stock.

But I've done a little bit of math, and I believe that there is a common comparison between what the FRA has represented, and what we have. We use very similar data sets, although we were provided a little bit more detail from our members.

ASSEMBLYMAN JOHNSON: Okay; thank you.

To close out, I'm going back to Amtrak again, because they're here. And congratulations, Amtrak, on your station in Niagara Falls. I think it opens tomorrow; so congratulations.

You know, we talk about transportation as we try to -- as an important part of a regional development when it comes to people living in cities and locations where they want to be able to get to work, or get home, or get downtown without using their vehicle. They want to use rail, light rail, passenger, or commuter rail, if it's available to them. And we have to ensure that response to that. We elected officials have to prioritize our budgets to ensure that we meet those demands, those goals.

So of course, speaking of safety -- the PTC is part of that, but understanding that if you want to grow a region, you have to have a

transportation infrastructure, which is usually going to be rail. You want to get people off the roads and onto rail. So I'll close by saying that.

And thank you for coming today.

MR. TERRY: Thank you.

ASSEMBLYMAN McKEON: Thank you, Vice Chairman.

Councilman-- Councilman; I'm losing my -- I forgot-- I was Mayor again. (laughter)

SENATOR GORDON: He was a Councilman.

ASSEMBLYMAN McKEON: I'm going backwards. (laughter)

ASSEMBLYMAN LAGANA: Yes, your honor. (laughter)

Thank you, Chairman

I have more commentary than questions, because I think a lot has been answered, kind of, the best that it could.

And I want to thank you for coming -- for giving us this testimony.

But as legislators, we're here, of course, with this Committee to try to get questions (*sic*) so that we can answer the questions of our constituents, who ask us, "What's going on with our rails?" As Chairman McKeon stated earlier, it's costing us more money to use the rails; accidents happen and keep happening; we have delays that keep getting worse; we're seeing our neighboring states that possibly have better systems than we do.

What are we doing wrong here, in New Jersey, specifically? And having these hearings is extremely important because, what we've heard-- And outside of your testimony, what it seems like-- It's really a combination of several factors -- whether it's lack of funding, whether it's lack of effort, ineptitude, an inability to get people trained quickly and

efficiently to get them out there to implement the system that's been around. How long has PTC been around?

MR. HARTMAN: Nineteen-ninety-nine is our original system.

ASSEMBLYMAN LAGANA: Since 1999. And in Europe?

MR. HARTMAN: About the same.

MS. HAYWARD-WILLIAMS: About the same.

ASSEMBLYMAN LAGANA: Around the same. So 1999; it's going to be 2017 in a month.

And I jokingly said to my colleagues that 1969 -- Neil Armstrong, Buzz Aldrin, and the third guy walked on the moon. (laughter)

ASSEMBLYMAN McKEON: Michael Armstrong (*sic*), for the record. (laughter)

ASSEMBLYMAN LAGANA: Yes; him. You know, they played golf, they drove a car around, they put an American flag. And here we are, in 2017, and we can't seem to wrap our heads around something that can save lives. And, you know, this is real; not too long ago -- and it was possibly the impetus to this hearing -- we had a train in Hoboken slam into the station. And there was loss of life; miraculously, more people weren't killed, and it's just really-- To know that this type of technology exists, and has existed for quite a while; and for all the reasons that have been conveyed to the Committee, it just hasn't -- we haven't been able to get it done and get it done at a quick rate.

You know, my personal opinion is that I think our Federal government needs to do more when it comes to our rails. I think that this is infrastructure that needs to be kept up to the date. I think that it is -- it should be a priority. Many times, it is difficult for states to fund these

types of projects because of the amount of money it costs. And it's just-- You're talking about \$100 million here, \$100 million there, a billion dollars here, over a period of time. And we're still running into these problems.

So my hope is that, in the near future, that we're able to implement these programs, potentially new technology that could save lives, and really get up to speed to where we should be, as a country, as a state.

So thank you again for being here, for your testimony.

MS. HAYWARD-WILLIAMS: Thank you.

ASSEMBLYMAN McKEON: Assemblyman.

ASSEMBLYMAN ZWICKER: Thank you, Mr. Chairman.

Just a couple of questions.

So we heard from Mr. Hartman that it was approximately 17 years, roughly-- He said 2000 you started, roughly -- to today; and 97, 98 percent, for Amtrak, is complete, as you're finishing it off.

So my question for the two of you is, for the 26 agencies that come under your sphere-- And I understand clearly that comparisons are difficult; that you said apples-- No; you said -- I don't remember now -- apples to giraffes, is what we're doing at this point.

MR. TERRY: Cherries to watermelons. (laughter)

ASSEMBLYMAN ZWICKER: Regardless -- cherries to watermelons -- as you think about agencies that are in different places -- whatever that may be -- how long do they typically take from starting a PTC implementation to finishing: one year, five years, seventeen years. What's a rough sense of time for these very different agencies?

MR. TERRY: Well, I guess I would certainly defer to my colleagues. But we have no precedent.

ASSEMBLYMAN ZWICKER: I'm sorry?

MR. TERRY: We have no precedent. We have no mandated PTC implementation in 1960 to benchmark that against. So we--

ASSEMBLYMAN ZWICKER: No, I'm asking you what other agencies have started, right? Have your other agencies started PTC implementation?

MR. TERRY: All 26 agencies immediately responded to the 2008 mandate; yes.

ASSEMBLYMAN ZWICKER: Okay, all right. So in 2008, let's say, they've all started, correct? And they're at diff-- Or many have started?

MR. TERRY: Yes; I mean, started--

ASSEMBLYMAN ZWICKER: None have started?

MR. TERRY: Yes; well, started-- Again, *started* is amassing funding, *started* is planning, *started* is-- I don't know what you deem as *started*. But, yes--

ASSEMBLYMAN ZWICKER: Okay. I'll be -- let me try to be more specific.

MR. TERRY: --they responded to the--

ASSEMBLYMAN ZWICKER: Are there other agencies of the 26 that have actually put technology into cars, onto track? Yes or no?

MS. HAYWARD-WILLIAMS: Yes.

MR. TERRY: Yes.

ASSEMBLYMAN ZWICKER: I don't think it's a hard question. I'm trying to be specific.

Okay. So for those that you're thinking of, right now, are they 5 percent done; 20 percent done; 97 percent done?

MS. HAYWARD-WILLIAMS: Each of the agencies use a little bit of a different philosophy and approach to implementing. Some look to install the hardware as quick as possible. Get started; find something commercially off the shelf -- not-quite stuff; and start to install; and then will do the system design in parallel. There are some risks to that. And some of the agencies have taken that approach; they get ahead, in terms of hardware, and then take a long time -- sometimes a long time, in terms of the integration approach.

Others have hired system integrators to come in and design the whole thing for them. In which case there's maybe a little bit of a different approach in terms of the installation.

But if I would kind of step back and maybe answer your initial question. Signaling implementation has a basic life-cycle, usually. You know, the safety-critical software takes time to implement and develop; in many cases, you're implementing unique hardware for each different vehicle type. So if you reflect on the signaling industry as a whole -- which includes metros, as well as commuter rails -- you're looking at a five- to six-year life-cycle to implement.

ASSEMBLYMAN ZWICKER: Okay.

MS. HAYWARD-WILLIAMS: And that's post-procurement; post finding the funding. That's when you hit "go."

ASSEMBLYMAN ZWICKER: All right.

MS. HAYWARD-WILLIAMS: So many of these agencies, you know, had a different time scale to do procurement, to find their funding;

and then they can hit “go.” And each one of them has hit “go” at a different time.

ASSEMBLYMAN ZWICKER: Right.

MS. HAYWARD-WILLIAMS: And in some cases, there’s more complexity with interoperability, which might elongate it to an eight-year cycle. In some cases it’s, “Give me what that freight guy has, because I don’t have complexities in my system.” And that may mean he’s more in the four- and five-year cycle.

ASSEMBLYMAN ZWICKER: Right.

MS. HAYWARD-WILLIAMS: And so I am talking in generalities, and not in-- But from being a signaling engineer in the industry for a while, that’s usually what you’re seeing.

ASSEMBLYMAN ZWICKER: Okay; got it. And I understand this is *in general*, right? And the deadline, at this moment in time, is the end of Calendar Year 2018, correct?

MS. HAYWARD-WILLIAMS: Yes.

ASSEMBLYMAN ZWICKER: So basically, two years from today, with a few weeks.

MR. TERRY: Well, the deadline is for spectrum acquisition and installation by Calendar Year 2018.

ASSEMBLYMAN ZWICKER: Okay.

MR. TERRY: And so there is a permissibility, if it was planned that way, for the actual--

MS. HAYWARD-WILLIAMS: Final--

MR. TERRY: --final safety in 2019 or 2020.

ASSEMBLYMAN ZWICKER: So in other words, the hardware--

SENATOR GORDON: There would be a testing period afterwards, and also--

MR. TERRY: Correct.

SENATOR GORDON: Okay.

MR. TERRY: So if you have acquired your spectrum and installation by the end of 2018, you would still be within-- Again, if that was the plan that you have submitted. Actual operations -- flip the switch, so to speak, potentially in 2019 or 2020.

ASSEMBLYMAN ZWICKER: Okay. So the installation of the hardware, and then you go through the testing phase. So it may not be fully operational by the end of 2018.

MR. TERRY: Correct.

ASSEMBLYMAN ZWICKER: But the pieces would be in place.

MS. HAYWARD-WILLIAMS: Absolutely.

ASSEMBLYMAN ZWICKER: Okay.

So the *gotcha* question, then, becomes that New Jersey Transit has been here testifying that they have not started any installation. So if I put all those pieces together --multiple years to install, we heard; per train in days, etc. -- it sounds like it is very difficult to be confident that they will be able to complete that, given what you've seen nationally. Is that a statement you agree with or disagree with?

MR. TERRY: I don't want to offer my confidence level with what New Jersey Transit's able to do. I won't do that.

ASSEMBLYMAN ZWICKER: Okay; and so that's your opinion. But am I correct that it's a multiple-year installation process that you're observing in other agencies?

MR. TERRY: Absolutely.

ASSEMBLYMAN ZWICKER: Okay.

MR. TERRY: Multiple-year, multiple-tiered, if you will. So if you build a house, you put the pipes in, then you put the cabinets in. In some instances, you don't put the floor in. So I would say, it's multiple-year, multiple-tiered; yes.

ASSEMBLYMAN ZWICKER: So by the end of 2018, the cabinets have to be in. I don't know what that means, but-- (laughter)

MR. TERRY: Well, it means -- and again, I'll defer to them -- is that-- Carolyn talked about the sequencing of doing things. So you may be 20 percent; but then in a shorter period of time, that 80 percent may go. Or you may be 80 percent, but it may take a long time for that last 20 percent.

ASSEMBLYMAN ZWICKER: Sure. The devil's in the details, but you have to get it done.

MR. TERRY: Absolutely.

ASSEMBLYMAN ZWICKER: Okay.

MS. HAYWARD-WILLIAMS: And we have found, I would just add-- We have found, just working with our members, the differences in approach. Some agencies have -- they may have 10, 15, 20 train types. It takes a long time to do that design.

ASSEMBLYMAN ZWICKER: Sure.

MS. HAYWARD-WILLIAMS: That may all be completed; and they're procuring all the equipment, and are going to, just, go for it and do the installations.

ASSEMBLYMAN ZWICKER: Right.

MS. HAYWARD-WILLIAMS: Other agencies have just designed for the majority of their fleet, and then picked up the stragglers later.

And the FRA website, that I think was quoted from earlier, only gives you credit when you get 100 percent. Everything's in there. Maybe you're waiting for your radio, but everything else is in.

So it is hard to make that kind of comparison. It is a lot of work.

ASSEMBLYMAN ZWICKER: Sure, sure; no, no. I was asking that because we heard testimony from New Jersey Transit that talked about acquiring spectrum; talked about procurements -- unclear, at least to me, was that 100 percent of the procurements necessary; 10 percent -- but procurements had started, but no work had started on actual installation. So that's why I was asking the questions I was asking.

MS. HAYWARD-WILLIAMS: Okay.

ASSEMBLYMAN ZWICKER: Okay.

MR. HARTMAN: One of the other caveats that goes with that -- just to add to that -- one of the other caveats is as you're doing all this, there's paperwork that must be filed with the Federal Railroad Administration. They have the last word on your system's certification. So if you send them-- You've done all your installation, you've done all your testing; you validated and verified everything, you put it all together in a

package and you sent it to the FRA; and it takes them approximately 120 to 180 days to turn it around with their own internal staff. And they send you back 200 comments.

ASSEMBLYMAN ZWICKER: Yes.

MR. HARTMAN: Now that just added to the timeline.

Original implementation plans that were filed by the railroad, that were required to be filed in triplicate -- the first one that the FRA received was in five file boxes. It was--

ASSEMBLYMAN ZWICKER: I'm not asking about--

MR. HARTMAN: --10,000 pages.

ASSEMBLYMAN ZWICKER: No, I'm not asking about bureaucratic--

MR. HARTMAN: So that--

ASSEMBLYMAN ZWICKER: --administrative--

MR. HARTMAN: But that ties into your timeline.

ASSEMBLYMAN ZWICKER: Understood. I was really asking about hardware implementation.

I understand; thank you.

MR. HARTMAN: Sure.

ASSEMBLYMAN ZWICKER: Thank you, Mr. Chairman.

ASSEMBLYMAN McKEON: Thank you for your questioning.

Mr. Chairman, do you have anything further?

SENATOR GORDON: Only to offer our profound thanks to these national experts who have given us a much broader perspective on these issues. I certainly understand PTC a lot better than I did, and I was a Liberal Arts major. (laughter)

I want to just thank you for investing your time and effort in coming here and helping this Committee do what I think is important work -- improving the safety of our major Transit agency.

Thank you, again, and we appreciate you being here.

MR. TERRY: Thank you.

ASSEMBLYMAN McKEON: I add to those comments. Thank you.

SENATOR GORDON: We are going to call, as our next witnesses, two persons who have been long-time observers -- close observers of New Jersey Transit. We'd like Janna Chernetz, who is a Senior Policy Analyst for New Jersey Operations from the Tri-State Transportation Campaign; and Doug O'Malley, Director of Environment New Jersey.

I know that Ms. Chernetz has a PowerPoint presentation for us as well, and we look forward to seeing that.

ASSEMBLYMAN McKEON: Just as you're setting up -- I note to Mr. Gee and Ms. Kanapka that you're next, okay? I know you've been here since 9:30. (laughter)

**JANNA CHERNETZ, Esq.:** All right; great.

Thank you. My name is Janna Chernetz; I'm the Director of New Jersey Policy for Tri-State Transportation Campaign.

I'd like to thank both Chairmen and the members of the Committee for holding this series of hearings on New Jersey Transit. I absolutely applaud you all for rolling up your sleeves and really digging into the problems that are plaguing New Jersey Transit. For the 11 percent of New Jersey residents that rely on public transportation, this is critical.

Transit in New Jersey is not just a means of getting to work; but a means of getting to school, getting to doctor's appointments, getting groceries, and sometimes the only form of transportation for individuals and for families. This is extremely crucial. Not to mention the important role that public transportation plays in New Jersey's economy, both for residents -- to provide salaries and jobs; but also for the economy -- for businesses to grow in the state.

I've been before a number of Committees in the Legislature, talking about New Jersey Transit funding -- the New Jersey Department of Transportation funding for about six years now. One of the things that I have been very vocal about is calling for dedicated revenues for New Jersey Transit's operating budget, and I will continue to push for that. This is something that Tri-State has been pushing for -- not just in the six years that I've been with Tri-State -- but for many years prior to that.

What I hope to show you today is a little bit of what other transit agencies are doing. I think that as we're going to explore what New Jersey should do, moving forward, I think it's important that we understand what other agencies are doing.

And as the speakers before me were talking -- not all transit agencies are the same. So it's difficult to find an exact replica of transit; we're not going to do that. But we need to find transit agencies that are at least similarly situated so we can take a look and see what they are doing to keep the lights on and the wheels turning.

So I put together a series of slides. And it's difficult to become a transit expert for one agency, let alone four. So as I had dug into the research on these other transit agencies, there are still a lot of questions and

a lot of information that needs to be out there and things to learn. So I hope that this is really just the beginning of a more in-depth discussion as to how we can move forward. And I do look forward to the question and answer period after my presentation.

So with that, I'll begin.

I've looked at four other agencies. I'll tell you right now, they are SEPTA, which you can see right now; CTA, which is the Chicago Transit Authority; LA Metro, the Los Angeles County Metropolitan Transportation Authority; and MBTA, the Massachusetts Bay Transit Authority. Those had similar -- VOMs that are greater than 2,000 -- and VOMs being the vehicles operated during peak months, days, and weeks of the season. So they were comparable -- having a number of vehicles out during peak times.

So as you can see, there is extreme diversity in the revenue for their operating -- passenger income, investment income -- and coming in the forms of revenue and operating subsidies, both from the state and Federal level.

Multiple sources -- I'd be happy to go in-depth as to what each and every one of them is and how they are set up; but I don't know if you'd like me to take that time during this presentation to do that. I think we just really need to see the diversity in the funding sources.

ASSEMBLYMAN McKEON: We do, and thank you. We all have--

MS. CHERNETZ: Okay, great. So you all have this?

ASSEMBLYMAN McKEON: Some of us old people back here could hardly see; but we all do have these that we'll--

SENATOR GORDON: Yes.

ASSEMBLYMAN McKEON: If you summarize, that'd be fine.

MS. CHERNETZ: Okay, that's great.

So for SEPTA: What you'll notice about SEPTA is that their passenger revenue makes up about 34 percent of their budget. So I want you to keep this in mind as we go through the slides.

CTA: Again, a number of sources for operating revenue; some investment income and passenger fares, obviously. But operating subsidy -- you'll notice, again, a great diversity in the sources of their operating subsidy. Sales tax, public transportation funds, more sales tax, real estate transfer, and other programs that make up their budget. Their passengers provide about 38 percent of their overall operating budget.

LA Metro: Again, multiple sources of income for their operating budget; Federal and state grants and local subsidies. You'll notice a lot of them are propositions, which were various voter-supported taxes -- mostly from sales tax -- for specific projects for public transportation. Again, I'd be happy to go over the specific ones with you, whether now or offline, on this. But coming mostly from sales tax for their operating revenue, as well as leases, auto registration fees, transit court fees, other investment income, as well as passenger income. Their passenger fares make up about 22 percent of their operating budget.

MBTA: Now, they have a substantial amount coming from dedicated -- from the sales tax; you'll see about \$1 billion -- almost half of the budget coming from dedicated sales tax. Passenger revenue is about 34 percent of the budget. And again, this is dedicated money that this agency can rely upon, year after year, for funding their operations.

And what is New Jersey Transit doing? New Jersey Transit brings in about \$1 billion just in fares. That's 52 percent of their operating budget. Over half of their operating budget is funded by their riders. That's substantially more than the other similar agencies.

There is no dedicated operating revenue. You have State operating systems at \$140 million which, granted, is an increase over last year; capital-to-operating transfers, \$400 million; raids from the Clean Energy Fund, 82 percent -- and I say *raids* because that's not what the intended purpose of that funding was for; and money from the New Jersey Turnpike Authority.

You look at the sources of the operating budget. The red and blue represent dedicated funding for operating. The green represents discretionary funding. As you can see, New Jersey Transit's operating budget, for all intents and purposes, is 100 percent discretionary. That means every year it's up to the budgetary process to decide how much Transit is getting.

ASSEMBLYMAN McKEON: Is there anyone else like that? I know you're just using these five, but--

MS. CHERNETZ: I could do some further research and, through the Chair, provide the answer to that question. We looked at similar agencies just to kind of get a general idea of what we were doing. But I'd be happy to do additional research and provide that.

The percent of operating funds from dedicated taxes: As you can see the four agencies -- ranging from 47 percent for SEPTA, 51 percent for Chicago, 57 percent for LA Metro, and 62 percent for MBTA -- all come

from dedicated revenue sources. New Jersey Transit has a paltry 1.3 percent that they can count on every year to come in.

So this is what's going on at New Jersey Transit. This is part of the reason as to why we see \$7 billion in capital-to-operating transfers since that kind of program started in 1990. That is why we are seeing the agency unable to expand their system with needed projects, like the Hudson-Bergen Light Rail, which hopefully will get funded now, going forward, with the TTF solution; the Camden-Glassboro line. This is why we see transportation deserts in part of the state -- that New Jersey Transit doesn't know how much money they're getting each year.

One of the things that a couple of the other agencies do -- SEPTA does it, LA Metro does it, CTA does it -- when they're looking at subsidies from the state, there's a funding formula. And that funding formula takes into consideration ridership growth. I don't believe New Jersey does anything like that. They don't see how the agency is growing -- the ridership demand -- and fund it based on need. Perhaps that's something that New Jersey needs to look at doing; perhaps that's part of immediate Transit funding formula that we need to come up with in order to figure out how much is going to go to the agency. But this is something that New Jersey Transit needs to rely upon as the system is growing.

And I want to go back to that \$400 million in capital-to-operating transfers. We -- New Jersey for Transit, which was a coalition that Doug O'Malley, and I, and Jon Whiten from NJPP were part of -- well, we headed -- when the fare hikes -- the last round of fare hikes-- And we did a *Stuck at the Station* report that looked at these capital-to-operating transfers. And again, I said it started in 1990, and a mere \$90 million.

That has grown every year; and that has now become something that New Jersey Transit relies upon to fund their operating budget. They have a significant deficit with what is given to them based on what you see here -- the passenger revenue, commercial revenue, State operating assistance. After that, they have to figure out, every year, how they're going to fill that gap; and it's a significant gap. That's the Clean Energy rate, the New Jersey Turnpike Authority money, and the capital-to-operating transfers.

In the past 15 years, they have transferred \$5.5 billion. When we did our *Stuck at the Station* report, that number was \$5.1 billion; but New Jersey Transit's now transferred another \$40 million. So that brings that number to \$5.5 billion. That's close to \$7 billion since they started doing that in 1990; \$7 billion transferred out to meet operating needs.

There was some discussion as to why that's being done, and whether or not this is normal. This question was raised to Former Commissioner Simpson during the Assembly Budget hearings; to which Simpson responded that it went to preventative maintenance.

The question, again, was directed towards Executive Director Santoro in a hearing before this Committee. And his response was "Yes, there's capital operating transfers; it makes up about 23 percent" of their operating budget. "And that's okay; that's normal. Other agencies do it, and it's for preventative maintenance."

So I went and I took a look at these four agencies to see if they were doing the same thing. And they are, to an extent.

CTA: In 2010, CTA acknowledged that they did capital-to-operating transfers. But what they also acknowledged was that it needed to

end. It was something that Executive Director Santoro did not say to this Committee, and I think that that would be a very important thing for the agency to acknowledge.

And I'll use the direct quote, "CTA," -- this comes from the President's Budget. "CTA must also address its growing reliance on using capital funds for operating expenses. Since Fiscal Year 2006, the system has transferred capital funds to its operating funds, including the Fiscal Year 2010 transfer that will include, over a five-year period, \$343.6 million." So CTA transferred \$343.6 million over five years, and they were concerned. This is something that New Jersey Transit does in one year, and they don't blink an eye at it.

That's alarming to me. You have one agency, on one hand, saying, "We have to stop these capital-to-operating transfers," and then New Jersey Transit saying, "This is standard operating procedure."

So I looked a little bit more into it -- and how much money were they actually transferring.

CTA, in 2011, transferred \$90 million. Starting in 2012, they no longer had a need for the transfers, and they were pretty proud of this. In 2014, CTA said, for the third year -- for the third straight year, their annual budget plan, "reflects ongoing management reforms, including more prudent management of spending. And for the third straight year, our Administration will not resort to transferring capital funds, which pay for construction, preventative maintenance, to help balance CTA's operating budget."

If CTA can do it, New Jersey Transit can do it. If CTA acknowledges that this is not a proper funding mechanism, New Jersey

Transit should also acknowledge that this is not a proper funding mechanism.

Most importantly, why do they need to stop this? Well, CTA put it -- I couldn't put it any better. "This practice, while providing for continued transit operations, has a negative impact on the long-term ability to upgrade the infrastructure." I think that's exactly what's going on at New Jersey Transit. They transferred \$7 billion out of their capital budget; and what did that do over the past two decades, three decades? It had a negative impact on the ability to grow the system; it's had a negative impact on the ability to upgrade the infrastructure. You just heard testimony, for a couple of hours, on the inability to implement PTC. And it's stifling the agency.

SEPTA, as well, did resort to this practice. And after some funding changes, they were able to stop it. In 2017, they transferred \$26.8 million; again a small amount of what New Jersey Transit is transferring. And again, acknowledging that this is a problem is crucial to fixing it, which is something that New Jersey Transit has not done.

SEPTA acknowledged it; and I'll quote, "Using capital funds to supplement its operating budget has not come without cost. We have been borrowing from Peter to pay Paul." And this is from SEPTA spokesman Richard Maloney. "We deferred a lot of capital projects." And even as they've improved their funding sources, it's going to take a while to rebound. So the longer that we put this off in New Jersey, the longer it's going to take for New Jersey Transit to rebound and to get the projects out the door that they need to get out the door.

And in all fairness, I did look at LA Metro and MBTA for these kinds of things. I wasn't able to uncover anything about capital operating transfers on LA Metro. MBTA does engage in capital-to-operating transfers. They use about \$48 million from capital to pay for employees' salaries. But their budgeting process is slightly different, as they don't really have a separate operating and capital budget.

So my point of my presentation is really just to show you New Jersey Transit is an outlier. It's an outlier in how they fund -- how we fund operating in New Jersey. The other states do different things; they use different taxes. But it's dedicated, and that's what's really important here. It's dedicated money. They don't have to go through the political process, year in and year out, and hope they get enough money.

I planned on updating our *Stuck at the Station* report; I do have a couple of slides. I will leave that discussion to Doug, to talk about some of the other statistics that we looked at in the *Stuck at the Station* report.

But I just want to leave you with a visual about this problem that we have with the capital-to-operating; and I keep coming back to that. When you look at this slide here -- this is New Jersey's TTF contribution to New Jersey Transit. As you can see, since 2005, the capital fund transfers have pretty much eaten up every dollar that goes into the TTF -- that goes into the capital budget from the TTF. This is unsustainable; this is not going to allow New Jersey Transit to be reliable, which is what its customer want; safe -- what its customers want; and affordable.

We've seen five fare hikes since 2000. And when you have an agency that relies on customers to pay for over 50 percent of its operating

budget, we're going to see future fare hikes. That's not something that New Jersey Transit riders can afford.

So what price do we all pay for this? As I said, you know, this really comes down to the inadequate funding of New Jersey Transit's operating; the transfers; five fare hikes since 2000; using one-shot, unreliable gimmicks; fines for safety violations more so than any other agency; deferred capital projects; a higher crash rate than the rest of the 10 largest railroad operators in the country; high staff turnover; and difficulty filling key positions. This is a significant price to pay for underfunding a very important agency.

So that I hope that what I presented here today is the beginning of a conversation on how we can better fund New Jersey Transit.

Thank you.

SENATOR GORDON: Thank you, Ms. Chernetz.

I have just a couple of comments.

The chart that I find really remarkable is this one (indicates), which compares ridership to -- the trends in New Jersey Transit ridership and capital investment. So we've got ridership up nearly 23 percent between 2002 and 2015; and capital investment going in the wrong direction. Capital investments, during that -- between 2002 and 2017 down 16.3 percent. So the demands on the system are going up -- correct me if I'm wrong--

MS. CHERNETZ: Yes.

SENATOR GORDON: --and investment in maintenance, safety, and basic infrastructure has been going down. This is a prescription

for lousy service and crappy commutes. And it creates serious safety issues, and breakdowns, and it accounts for the statistics that you just cited.

I know we're not supposed to be in a blame-game here; we want to fix the problems, regardless of who is responsible. But clearly there were policy decisions made about how the system was going to be funded, where the money was going to come from. Can you talk about when those bad decisions were made?

MS. CHERNETZ: Well, I think what we really should be looking to is, how can we change this? I mean, the decisions were made; the decisions were made. What we need to do is move forward. And I think a horrible missed opportunity was when we were looking at the TTF. I think, at that point in time, we were looking to raise the gas tax and to make sure that New Jersey had enough money for capital programs. That would have been an optimal time to also take a look at how to adequately fund New Jersey Transit's operating budget as one complete package. I think that was a missed opportunity.

But I think moving forward -- I think that these discussions here are going to be crucial to looking at Transit operating reform in the state, so that we can figure out how to get New Jersey Transit back on the right track to make sure that they are living up to their mission statement.

So I think when we look at the past few years-- Doug, was it 2008 when we were close to \$300 million in a direct subsidy from the State; was it 2008?

**D O U G L A S O ' M A L L E Y:** In Fiscal Year 2009, \$348 million came from the State of New Jersey to fund New Jersey Transit.

MS. CHERNETZ: Right. And last year, that number was \$33 million.

MR. O'MALLEY: In the Fiscal Year 2016 budget--

MS. CHERNETZ: Yes.

MR. O'MALLEY: --\$33 million. The State subsidy increased to \$140 million for Fiscal Year 2017.

MS. CHERNETZ: Right. So, again, this is the discretionary funding -- the political budget process, year in and year out. And I think that what the State should be focusing on is a dedicated funding source, so that New Jersey Transit can rely on it.

And you do point out that, as ridership is going up, our capital investment is going down. Again, that's because they're transferring \$400 million to \$500 million out of that capital budget to meet their operating needs, so they can't expand the system. So I think that's part of the problem.

And SEPTA's operating budget, via the PPTF -- the Pennsylvania Public Transportation Fund -- is 4.4 percent state sales tax and proceeds from the turnpike commission. But there's also an allocation formula comprising of ridership, senior citizen ridership, revenue vehicle hours, and other vehicle revenue miles. I think this is something the State needs to look at -- take a look at how New Jersey Transit is operating and figuring how much the State needs to fund it.

SENATOR GORDON: You know, as everyone in this room knows, the State is tapped out. Clearly, other states have made a decision to dedicate funds to their mass transit systems. It seems to me that we don't have a whole lot of options. But having looked at these other

systems, and the approaches taken by other states, do you have any specific thoughts about where the required money might come so that we could link ridership and demands on the system to a budget number?

MS. CHERNETZ: I'm still working on trying to figure out what possibly could New Jersey do. I think this is what we need to start with, so we can figure out what is available for New Jersey. We look at-- One agency that I didn't put up here, which is MTA -- their budget is substantially bigger than New Jersey's. They have a dozen dedicated revenue sources, one of them being a payroll mobility tax. So the businesses that benefit from public transportation do pay into it. And a number of the other agencies do that as well; the counties that are served will pay into it. So if you're benefiting from it, there is a give-back.

But I think what we need to do is take a look and kind of do some information gathering at this point to see what is out there. And as you can see, all four agencies are funded four different ways. It doesn't mean that's how it's going to work in New Jersey. But we need to get an idea of what's out there and to be creative with the funding. These are conversations that need to be had with New Jersey Transit's CFO, with the Treasurer, having key people in this room to put our heads together and figure out how to do this.

But I think it starts with New Jersey Transit acknowledging that this (indiscernible), this capital-to-operating cannot continue to go on. You know, that is a huge chunk of money that needs to go back into capital, and we need to find that somewhere. And I think that we all need to put our heads together and start to work towards that.

SENATOR GORDON: You know, I couldn't agree more. I mean, our constituents are -- they tell us every day -- are being nicked-and-dimed to death. We just can't impose more taxes and greater burdens on them. We've had a 34 percent increase in fares in recent years.

I think, as you say, what we need to do is find a way of using existing resources in a better way. One thought that just occurs me -- and is certainly an idea that requires a lot of analysis -- is we've got these different transportation agencies in the State: We have DOT, and we have New Jersey Transit, South Jersey Transportation Authority. The thought that perhaps we need to reorganize the way we deliver transportation in this state. There may be a way to achieve economies and use those savings to reinvest in our transit systems. You know, just -- we need ideas like that, I think, rather than finding new money. We need to use the existing resources more efficiently.

This has been a very thought-provoking and important presentation.

Doug, do you have some comments to make?

MR. O'MALLEY: Sure.

So for those of you who aren't familiar with Environment New Jersey, we represent 20,000 citizen-members across the state. And as Janna mentioned, I'm a proud Co-Chair of the New Jersey for Transit Coalition, which includes members New Jersey Citizen Action, the Ironbound Community Corporation, Working Families, as well as other Transit organizations.

And I wanted to-- Obviously, Janna's presentation does an excellent job of showing the crisis we're still in. The New Jersey for Transit

report we released in March said *Stuck in the Station* -- and news flash: we're *still* stuck in the station. And New Jersey Transit has this dysfunctional relationship with its ridership, as we can see through this graph right here (indicates). The more riders use the system, the less New Jersey Transit and the State is investing in the system, and is charging them more to use our rails and buses.

And just as a little bit of context: You know, this hearing process has been a real wake-up call for New Jersey Transit. Because, quite frankly, New Jersey Transit is in a crisis right now, and Governor Christie's Administration has been AWOL. And what we're seeing, of course, is a generation of neglect in investment in New Jersey Transit that's finally coming home to roost.

And Transit riders, obviously, can't ignore that generation of disinvestment because they're actually stuck on the trains and buses when they break down. New Jersey Transit had breakdowns 12 times higher than the national average; it was twice as high as the Long Island Rail Road and the MTA combined.

And so, you know, quite frankly, we see a system where commuters are paying for less. And I think every Legislator on this Committee has reflected on that. I think one of the important parts of this issue is that it is bipartisan. We heard comments, obviously, from Senator Kean and Senator Kyrillos during the October hearings; and obviously, the Legislators in Bergen County -- Assemblyman Lagana; yourself, Senator Gordon; as well as Assemblyman Johnson -- you know the Bergen County residents depend on Transit getting to the City. You're fighting tooth and nail against New York on the Port Authority Bus Terminal, and the crisis is

that you can't say, "Instead of taking the bus, you're going to take the rail," because you're going from the frying pan right into the fire

And every part of the state is impacted by Transit and by not only the fare hikes that we've seen through the Christie Administration, but also the service cuts. Assemblyman Zwicker, you spoke very eloquently about how PTC is not that complicated and we should be moving forward with it. One of the areas that the Princeton area has gotten hit, is the 419 bus is no more. That bus used to take commuters from Princeton to the Princeton Hospital.

And the hearings that we heard, over the course of last year, were a reminder of how much Transit affects people's lives and their economic stability. And you had commuters who were paying as much \$500 a month to get into New York, saying they couldn't get to their jobs on time and their bosses were getting on them -- to tell them, "Look, you can't be late to work." And we also heard the same thing from some of -- some citizens who were on the other end of the economic pay grade, who are struggling to make ends meet; struggling to be able to get to their jobs and keep their jobs even if they're low wage; and how fare hikes were hurting them as well on New Jersey Transit's bus system. So this crisis obviously affects us all.

And just as a reminder, this clearly has a tremendous environmental hook, because the majority of New Jersey's counties are out of compliance with ozone. And obviously, the more cars that are on the road not only means more congestion and more breakdown of our roads, it also means more air pollution -- which is obviously something we need to avoid.

And then finally, on the economic angle. Back when we were investing in Transit, in the 1980s and 1990s, we saw a tremendous economic benefit from expanding Transit. If you look at the property values around Hamilton -- which obviously affects all of Mercer County as well -- the property values in Hamilton increased once the Hamilton Station opened up. The property values in North Jersey, with the Montclair-Boonton direct service in 1996 -- that had a huge value for property values in areas close to those Transit stations.

So we're talking about, really, a multi-faceted crisis that's impacting us in every which way.

I also just wanted to come back to some of the testimony we heard earlier in this process. And I think it's remarkable that we're not just holding one hearing; we're having multiple hearings. And obviously, the next one we'll hear from actual commuters. But there was a comment made by the Department of Transportation Commissioner Richard Hammer; and he, under questioning by this Committee, he again and again said the New Jersey Transit had enough funding to be able to do its job. And yet, at the very next hearing, we had Director Santoro -- who, quite frankly, is a breath of fresh air because the Director knows that there's a crisis and he's working to fix it; and obviously, the Legislature and, ultimately, this Governor, and the next Administration, need to do everything they can to help him. But Director Santoro said, quite frankly, that even with all the raids that we saw, there was an unreported \$22.5 million deficit last year. Where's that deficit get caught up? It gets caught up in deferred maintenance, and that's obviously a bill that we keep on paying.

The other area where the lack of investment impacts us -- we've heard extensive testimony, obviously, on PTC this morning. But we obviously haven't talked as much on the job vacancies that are open at New Jersey Transit right now. And Assemblyman McKeon, you questioned Commissioner Hammer very directly about the patronage positions that were available. We're quite familiar with, perhaps, the most infamous position/appointment of Michael Drewniak. But quite frankly, whether it's 1 individual or 10, there are more than 300 jobs left vacant related to safety; 20 related to PTC. You know, so, again, that's the cost of not investing in Transit. You have jobs that are not being filled; you're not meeting deadlines; and as Assemblyman Lagana and Assemblywoman Annette Chaparro spoke in October, this has a real human cost -- with the mother who lost her life earlier this fall, as well as scores of commuters who were injured.

I want to talk also, a little bit, on the unsustainable budget process that exists. In Fiscal Year 2017, there is \$82 million coming from the Clean Energy Fund. That's paid by ratepayers for energy efficiency dollars. And as important as New Jersey Transit is, we should not be raiding the Clean Energy Fund to pay New Jersey Transit's bills. And that's, obviously -- this is a longer-term issue.

But the initial way that the Christie Administration kind of put together New Jersey Transit's budget's holes was, again, year after year, raiding money that should have gone to the ARC Tunnel. And obviously, members of this Committee have talked about that. Having the tunnels to the Hudson -- having the tunnel shut down will be a catastrophic impact on the state. Obviously, members of the Committee realize that. But we

should acknowledge that we had funding, and that funding has been raided. And obviously, we can't keep going back to that well, because that well is empty.

I wanted to reference some of the findings from the *Stuck at the Station* report, because we've already talked about the dysfunctional relationship between ridership and investment -- and capital investment in New Jersey Transit. But I wanted to specifically look at some of the findings from March.

And that's -- the capital investment tranche has dwindled. Now, it's been a 20 percent decline from 2002, from \$1.5 billion to \$1.3 billion; but really we should be looking at what we were investing in 2004, at \$1.7 billion -- that's close to a 26 percent decline since 2004.

And obviously, this capital investment in Transit should be going to the projects that we all know are important, whether it be Gateway, or it be Glassboro, or it be Bergen, which should be -- or Hudson, which should be the Bergen Light Rail.

SENATOR GORDON: Thank you.

MR. O'MALLEY: As well as bus rapid transit which can be used in the Route 1 corridor, as well as in Bergen County where 60 percent of commutes are local.

Obviously, TTF has the potential to fix this issue; but we need to ensure that the investment is going to where it should be. And this is what I-- I was referencing this earlier, and I want to just talk about this legacy. Because really, over the last decade, we've seen passenger revenue increase by close to 45 percent. And just to put this in context: In 2010, there was a 47 percent increase from off-peak. Remember off-peak fares?

They're gone. So it's a 47 percent increase just in 2010. So you put that on top of the 9 percent increase that we saw last year, on top of the service cuts we're seeing. So we're charging more for less. And where is that money coming from? Janna talked about this earlier, but I just want to reiterate this; and Senator Gordon, you talked about this. Where do we find money to fund it? Well, historically, we funded Transit through the State budget. You know, it was a \$340 million investment in Fiscal Year 2009; it dipped to \$33 million in Fiscal Year 2016; up to \$140 million in Fiscal Year 2017. And we still had a deficit. So it's critical to know that as we're trying to come up with a funding plan for New Jersey Transit and getting a dedicated source, at the very least we need to have funding back to where it was prior to the Christie Administration. And clearly, the funding raids are also a historical issue; we've seen those increase by close to 50 percent.

So the bill, obviously, is coming due. And what we've seen is the capital transfers continue to be pretty level over the course of the last decade.

And the last-- It's not up there right now, but I guess the last slide I wanted to reference is just -- and I don't think it was part of the presentation, but -- the fact that the funding for maintenance has really hobbled our system. And just to kind of put a number on it: It takes 700,000 miles on the Long Island Rail Road to go from one breakdown to another. It takes only 118,000 for New Jersey Transit. Again, if you're a commuter -- and clearly, commuters are more than happy to tell you about the impact on their lives -- but if you are a commuter stuck on a train, your boss, maybe, gives you a pass one time or two times. But three, four, or five

times -- they say, you know, "No more." And really, I think that's what this Legislative Committee needs to be telling our colleagues, and this Administration, and the next Administration -- that this process of funding for New Jersey Transit is dysfunctional and cannot be sustained without New Jersey losing our Transit riders, and having more traffic on our roads, or even losing residents. And that's also something we've heard at the hearings -- of people saying, "Look, if I can't get around New Jersey, I might not be able to live here."

Thank you so much.

SENATOR GORDON: Thank you, Mr. O'Malley.

You know, you're raising a subject that I've mentioned *ad nauseum* -- that for those of us concerned about New Jersey's competitiveness as a viable place to live, it's more than just the high property taxes that put New Jersey at a disadvantage. It's also our commuting time and the quality of our commutes. And I just said this the other day at a press conference we had on our current battle over a new Port Authority Bus Terminal. If commuting becomes too much of a hassle, if it takes too long, if it has such an onerous impact on a commuter's quality of life, not only will the companies that are considering new locations decide on someplace else other than New Jersey, the people who are commuting are just going to say, "I've had it; I just can't do this anymore. I'm going to move to Connecticut, I'm going to move to West Chester, where I have a direct shot right into Grand Central Station." And they're going to take their tax revenue with them; they're going to take their spending with them; and New Jersey will be condemned to decades of economic distress.

And we have to -- there's no other way to say it -- we have to turn this around. This is, I think, to me, one of the most critical policy issues we have as a state.

And I greatly appreciate the clarity of the data that you've presented; the benchmarking that you've done. It really makes it crystal clear where we've been, and where we are today, and the need to turn things around.

And with that speech, let me turn it over to my--

ASSEMBLYMAN McKEON: No, no; no speech or questions. I thought both of your testimonies were incredibly thoughtful and well-prepared. I would expect no less, knowing the both of you, and having seen you many times in the past.

So keep the fight going. Maybe you feel a little bit, as you should, that you're having some people listen for a change.

And thank you.

MR. O'MALLEY: Thank you, Assemblyman.

ASSEMBLYMAN JOHNSON: I'm good.

ASSEMBLYMAN McKEON: Members? (no response)

We're good?

SENATOR GORDON: Well, thank you both very much.

You know, this has been -- for someone who revels in data, it doesn't get any better than this. (laughter)

MS. CHERNETZ: I just wanted to leave you with this thought.

I mean, this slide, to me, is probably the most powerful, and really illustrates the dysfunction of the funding for New Jersey Transit --

relying so much on passengers, relying so much on stealing from other-- And then the State is hiding down below. I think this is really illustrative of the path to destruction that New Jersey Transit's on if something is not done.

SENATOR GORDON: I, for one, would actually like to see the spreadsheet data behind this, I think, very powerful information.

ASSEMBLYMAN ZWICKER: May I just second that? Because that really tells a story; while the one before it hides it, because of the raiding and other things. So at first I said, "Oh, it's just a couple hundred million. What's the big deal?" That's what you should be highlighting the meeting with, because that is the story. You're right.

MS. CHERNETZ: Thank you.

SENATOR GORDON: Okay; thank you both very much.

The last group we're going to hear from -- and they get major points for their patience -- are two individuals representing Residents Against Giant Electric; I believe they are from Monmouth County. They have some bones to pick with New Jersey Transit, I believe. We're going to hear from Rachael Kanapka and Kin Gee.

Thank you both for being here.

**K I N K. G E E:** Thank you, Chairman, members of the Committee.

That's a tough act to follow, but we'll try.

Can everybody hear me?

ASSEMBLYMAN McKEON: Yes.

ASSEMBLYMAN ZWICKER: Yes.

MR. GEE: Okay.

So obviously, we've been waiting a long time. I just want to say, before we start, that I commend the Committee. You guys are still going strong; and it's a pretty shining example how hard -- just an example of how New Jersey's Legislature works on our behalf. So thank you very much. It's amazing to see the hard work that you guys are doing.

So we'll try to make this very quick; it's been a long day.

My name is Kin Gee; and with me is Rachel Kanapka. We are both with a citizens group called *Residents Against Giant Electric*. This is a citizen's group that started back in May; we'll talk a little bit more about that. Rachael is the President of our group; and a lot of what we have accomplished is due to her credit. I am the Co-Leader for what we call our Neighborhood Outreach efforts. And as a resident of the Township of Holmdel, I also serve as the Coordinator working with our Township Mayor and the Committee.

With that-- (starts PowerPoint presentation)

So obviously, this Committee has been holding hearings and taking testimony on a number of issues as it applies to New Jersey Transit, including operations, budget; but in particular, on safety. And so what we want to do -- our goal here is to bring awareness to a particular project that JCP&L has requested -- and it's before the New Jersey Transit -- regarding the construction of a 230,000-volt transmission line directly on the railroad corridor of the North Jersey Coast Line. We'll talk a little bit more about that. That is unprecedented in the United States.

And we have some serious concerns that we are going to share with you on the risk to New Jersey Transit, and some policy implications. Now, we recognize and understand that New Jersey Transit is required to

evaluate and review every request. However, we hope, especially in light of all the testimony that you've been hearing, that for whatever reason -- financial or otherwise -- they're not going to be forced into a position where they have to accept certain requests, for financial reasons, despite the potential safety concerns and risks that it may have.

New Jersey Transit called this project *Monmouth County Reliability Project*. The details are: 10 miles of new transmission lines going to Red Bank from Aberdeen. Now, this is for a third transmission line; they currently already have a main and a backup. So this is redundant. And this is based on a response from JCP&L: They tell us in the last 20 years -- 20 years -- there has been less than an aggregate of 10 hours of failure by the current main and backup transmission lines. So if you do the math, that's better than 99.99 percent reliable. I'm sure that you'd love to see that on-time reliability for New Jersey Transit.

The project is going to entail over 100, what they call, *monopoles*. These monopoles range from a minimum of 110 feet to 210 feet, with most of them being 140 to 165 feet; where the base is 5 to 10 feet, and most of them are 10 feet wide. They will carry 230,000 volts of electricity. And what we fear is that it also has the capacity and the potential to increase load in the future. What that means is, the indication is not just for Monmouth County but, in fact, there is great potential to expand south and expand north.

This project hasn't started, and yet the projected costs have already skyrocketed. It started at \$22 million, back in the conception and planning stage by the regional grid operator PJM. However, when it was announced earlier this year, in May, it already went from \$22 million to

\$75 million; and by the time it was formally filed -- the petition -- with the New Jersey BPU, the Board of Public Utilities, it had already jumped up to \$111 million. Again, the project hasn't even started.

We should note that -- I don't know if you can see on the bottom, there -- this project essentially is very similar to something back in 1989, 1990. They basically took the plans, dusted them off, and refiled. An interesting note is Rachael's mother was actually involved with the original RAGE effort to stop them. And because of public outcry, elected officials support, and so on, JCP&L did withdraw the petition to go ahead with that proposal.

However, because it was never officially denied -- it was just withdrawn -- they were able to come back; 25 years now. We hope that in the next 25 years, your children and my children won't be back here fighting this again.

So I know we mentioned the poles are a minimum of 110 to 210 feet, with most of them being 140 to 165 feet. But look at the picture on the left. I don't know if you can see it on the bottom there; that's an SUV, and that's actually a Honda Pilot. And for those of you who don't know, that's not a small SUV. It pales at the base there.

In the middle, we tried to put this in perspective with a scale. On the very left of that middle picture, that's a person. Next to that is a house. Next to that is New Jersey's catenary system; that's 30 feet high. Next to that is a mature oak tree; that's 60 to 70 feet tall. Next to that is the height of most of the poles, 140 feet. Next to that is the Statue of Liberty, which people don't realize is 151 feet. And then finally, the last pole is the highest pole that will be used, 210 feet.

So when we see and we say 140 to 165 feet, imagine just hundreds of the Statute of Liberty along New Jersey Transit's railroad.  
(laughter)

Finally, the last picture is how it looks like for one or two projects that have been completed.

The proposed route is from Aberdeen, going to Hazlet, Holmdel, Middletown, and Red Bank; a 10-mile path through densely populated residential areas, and within 1,000 feet of four elementary schools, two senior living centers -- and these living centers are age 55 and above, so they're not assisted homes or anything like that -- two senior living centers, a historic area, neighborhood parks, playgrounds, etc.

In Holmdel Township alone, since 2000, we added three new communities that are right next to New Jersey Transit, including the two aforementioned senior living communities.

This is a Google Earth of the view. It might be difficult to make out, but the point here is that there are no industrial complexes. These are all residential or Green Acreage.

I'm sure you know this better than we do, but this is the mission statement, and it's on the website for New Jersey Transit. The key here is that their mission is to provide "safe, reliable, convenient, and cost-effective transit service." Let me repeat that: safe, reliable, and convenient. We'll come back to that.

The next slide says -- again, the same webpage by New Jersey Transit -- "New Jersey Transit was established to acquire, operate, and contract for transportation service in the public interest" -- we emphasize *in the public interest*.

I told you earlier that the proposal was unprecedented. Since this was announced back in May, we spent -- and lots of people have spent hundreds of hours researching this. We did not find any other example -- not one -- for the construction of a new transmission line in such a densely populated area as ours, or in such a narrow corridor -- again, we'll go into more detail about that -- for such a long distance, running directly above an active major metropolitan commuter rail line.

This is JCP&L's own internal report. They reported that the average distance for their 230,000-volt transmission lines to customer properties is 900 feet; this is their data. However, for this project, these monopoles will be placed an average of 10 to 12.5 feet from customer property. There are over 4,000 homes that are within 1,500 feet of the tracks along this stretch, housing approximately 13,000 people.

We mentioned the narrow corridor for installation. The minimum recommended right-of-way width for a 230,000 kilovolt transmission line is 150 feet, with the transmission line being placed in the middle of that corridor. And the reasons are, you can see: minimalizes risks from the falling wires or structure; allows clearance for the wire swing in high winds; and provides for a buffer zone from EMF.

This is the recommended right-of-way by the Tennessee Valley Authority; by the American Electric Power in Ohio; by PPL in Connecticut; and so on. So this is not one source; this is fairly standard.

New Jersey's right-of-way is only 100 feet wide. Oh, by the way, there's a railroad that runs through it -- their tracks -- and then there is a mandatory safety setback of 26 feet from the tracks. So if you go through

the math, essentially there's only 15 feet of a narrow strip to install these 10-foot-wide monopoles.

New Jersey Transit's right-of-way was designed back in 1875, under the General Railroad Act; not for a railroad plus a high-voltage transmission line.

This is the art work for Rachael -- by Rachael. (laughter)

You can see the railroads are in the middle, going up and down. The sort of red lines you see are the catenary lines. At 26 feet of setback -- mandatory safety zone -- no structure can be in there. That's why you see, on the two edges, a narrow strip of 15 feet. That's the only area where JCP&L can build their monopoles. And you see on both sides, on the edges of the right-of-way, we have drawn treetops. And you are going to say, "That's pretty close to the right-of-way there. That's a little bit of an exaggeration." Hold that thought.

This is a picture of the Hazlet Train Station; it's one of the areas affected. This is on the northbound side of the tracks there. You can see there's a fence -- at least, I think you can see -- that is a residential property line. That's a one-way road going into the parking space for access for the commuters. Where would those posts go? Now, if you look on the left -- that's the same picture on a smaller scale; and on the right, we simulated what a 140-foot-pole would look like 26 feet away from the railroad track. Now, we didn't do anything else; but clearly, those trees are going to have to be cut in order to install this. But that's how it would look.

These are photos of actual properties on the route that is being proposed. And we were able to take these pictures with New Jersey

Transit's trains coming through the back, so you can see how close they are to the property lines, with very narrow strips of land that could be used to install the monopoles.

Earlier we talked about the mission statement: to provide safe, reliable, and convenient service. So look at reliability and convenience. Construction for this project is expected to be two years; the potential for severe and frequent impacts on rail schedules is enormous. Complications from overnight construction could cause crippling delays to the morning commuter rush. The construction near train stations -- in particular, for example, in Middletown -- the poles are going to be installed between the platform and the parking lot. Talk about convenience; that will significantly affect the parking for customers.

Heavy machinery will be used for the installations. We're talking about cranes, backhoes, cement trucks, helicopters; and they have the potential to damage New Jersey Transit tracks or equipment.

Finally, even after they're installed, any ongoing or emergency maintenance could impact delays and disruptions to train schedules.

This is an example of a live transmission line construction down in Neptune, also in Monmouth County. You can see -- that's part of the base of the monopoles that's being lifted; that is the size.

Here are more pictures. The one on the left, with a lot of sand -- you may not be able to see it clearly -- that's a giant auger drilling a big hole into the ground. They are going to be doing this very close to the tracks.

The next picture is a repeat of the earlier one, but you see the cranes being used here.

Finally, some of these stretches have very limited or no access. They are going to have to use helicopters, and we already have catenary lines 30 feet high; you have trees on the side; and they're going to try to squeeze this through 15 to 20 feet of narrow space.

We talked about convenience; now we're going to talk about safety. These monopoles need to be secured to the ground, but they're going to be right next to the railroad tracks, with constant vibrations from heavy trains coming through. Over time, is that an issue that could weaken the stability of the poles?

The high-voltage lines and the monopoles, in fact, could affect the safe and proper functioning of signaling systems. We talked a lot about, earlier, the Positive Train Control -- the radio spectrum. Could the inductive voltage from these 230,000-volt transmission lines interfere, and disrupt, and damage the signal systems, causing failure in track signals, road crossing warning devices, and so on -- including, possibly, PTC? Some of you who don't drive around with your satellite radio -- do you remember when we used to have radios on, and we would drive through, not high-powered voltage lines, but power lines, and we would get the static? There is interference from these power lines, and this is a 230,000-volt transmission line.

In the event of train derailment, the monopoles -- because of the height -- could be struck and possibly fall onto the tracks or onto neighboring homes. Above-ground poles and wires are very vulnerable to natural disasters -- wind, ice, flying debris, terrorist attacks. Finally, fallen electrical lines could energize the tracks and provide for a fire risk.

Some of you may remember, earlier this summer in Sayreville there was a fallen wire that caused a brush fire that forced the evacuation of a whole neighborhood. That could happen here.

The upper-right picture -- that's a live wire sparking, also causing fire. The lower picture -- a monopole base that has been destabilized and is now falling.

Just two days ago, in East Toledo, Ohio, there was a train derailment and it plowed into a high-power transmission line. And you may notice this, but this was actually a freight train; so by nature, it tends to be not going at a very high speed. Had this been a regular commuter train going at a much-higher speed, think of that transmission line. Instead of being just leaning over, what damages and disruption that could have caused.

Health risks. I know they don't talk a lot about this, but the World Health Organization has classified that the low-frequency magnetic fields -- which is the same one that will be coming through with 230,000-volt transmission lines -- could potentially be very harmful to the human body. It's been shown to link to Alzheimer's, dementia, childhood leukemia, promotion of cancer, and so on.

Now, some of the studies are not 100 percent certain; they are also not 100 percent certain that they are safe. Outside of the United States -- the United States does not have any Federal regulations regarding some of the safety and exposure to EMF. But outside of the United States, there are regulations promulgated because they go on two other similar principles: prudent avoidance and precautionary principle. If there is reasonable doubt or plausible risk, they believe that there is a social

responsibility, for public safety, to prevent that. That is being done in other countries outside the United States.

I don't need to talk a lot about the next slide, the reputational risk. Okay, so you know New Jersey Transit has some funding issues. So potentially, could that be a consideration? We don't know yet. But opposition to this project has been very strong at every level. We'll talk a little bit more about that.

If New Jersey Transit permits JCP&L to use this, there is potential for damaging PR and media coverage; further loss of ridership, perhaps; loss of revenue; on top of assuming safety, reliability, and health risks for these power lines. New Jersey Transit could be viewed as choosing to jeopardize the health and safety of their riders and their workers.

Finally, they could be partially blamed, even though JCP&L may be the one doing the construction. But there are a lot of negatives for this, including property value destruction, and New Jersey Transit could be partially blamed for this.

We mentioned about public policy. In 2008, the Government Accountability Office, the GAO, had a report that indicated that collocation of a rail line with a high voltage transmission lines could increase the likelihood of safety and security incidents. And by *security*, we're talking about terrorist acts.

In 2014, the U.S. Bureau of Land Management issued a directive to field offices requiring that railroad rights-of-way only serve railroad operations; in other words, no transmission lines.

Earlier this year, the Ohio Port Authority actually denied an easement along the railroad tracks for transmission line construction.

Again, also earlier this year, Georgia's Department of Transportation issued an update on their Utility Accommodation Policy and Standards manual that specified, and I quote, "Longitudinal installations of utilities will not be permitted along railroad right-of-way." *Longitudinal* means parallel; this is exactly the project that what JCP&L is asking for.

So what is the need? According to JCP&L -- and this is from their website announcing this project -- "Demand for electricity has increased, both due to growth in our communities and our increasing reliance on devices powered by electricity." Sounds reasonable, right? However, when you actually drill down into this -- this is data from the United States Energy Information Administration; they have a lot of detailed data by state, split by residential, commercial, and industrial.

This is for New Jersey: From 2005 to 2014, the use of electricity has actually gone down. As you know, New Jersey has the Energy Star program; we've gone from filament, to fluorescent, to LEDs; we've seen lots of solar panels on rooftops; and so on. And that is all -- what's declining the actual usage of electricity.

JCP&L talks about population growth. Here's the last 15 years of census data. And we know we go through a 10-year, detailed census; but the U.S. Census Bureau actually goes through it year-by-year. This is a 2 percent increase, over 15 years -- not annually -- 2 percent over 15 years, or less than 0.2 percent per annum.

For the sake of time, I won't read through this list. But this is the list of all the organizations that have opposed this project.

Local public officials have supported the opposition of this. All the towns, including -- that are affected. But surprisingly, the Bayshore

Conference of Mayors, which are not directly impacted, all have opposed; the Monmouth County Board of Chosen Freeholders as well. The Boards of Education, for a number of the towns, have all -- have written statements or resolutions against this.

It is gratifying to see the State and U.S. public officials who are opposing this. I know Senator Kyrillos is not here, but he's been very helpful, and we would be remiss if we didn't publicly recognize him and thank him for his efforts here.

In the New Jersey Legislature, Senators Joe Kyrillos and Jennifer Beck have sponsored Resolution SR-75, opposing this project. This is pending before the Economic Growth Committee. I believe that that's going to come to the floor in January.

Assemblywoman Amy Handlin introduced a very similar Resolution, AR-164; and that is pending before the Telecommunications and Utilities Committee. Assemblywoman Handlin also sponsored Assembly Bill 4032 to ban the overhead electric transmission lines within 100 feet of any building in New Jersey.

So when you look at this, it seems like this project only benefits JCP&L. They expect to make approximately \$4.9 million in year one; they will continue in year two, and later, with a slight drop due to depreciation.

Payments to New Jersey Transit may not be substantial. We don't know the final number, because there's no proposal that we've seen. But no payment is worth the risks in safety to New Jersey Transit. You cannot put a price tag on the safety of riders and employees.

Finally, you heard earlier that whenever there's an opening of a station or a line for New Jersey Transit, it increases property value. That is

also true, by the way, for Monmouth County. However, this project will have an immediate impact of property value destruction of \$100 million or more for the homeowners who are nearby to that New Jersey Transit line.

So in summary, there are some really serious safety issues and risks to New Jersey Transit. The case has not been made by JCP&L for the need for this transmission line. There's been increasing public policies against the collocation of railroad and high power transmission lines. And there is a loud public outcry and strong opposition from all levels of public officials.

We urge you to tell JCP&L (*sic*) to take all this into consideration and say "no" to JCP&L.

Thank you for the opportunity. Both Rachael and I are prepared to answer any questions you may have.

SENATOR GORDON: Thank you very much, Mr. Gee.

One question I have-- First of all, I was kind of shocked at just the magnitude of these structures. I didn't appreciate that we're talking about structures larger than the Statute of Liberty for the--

MR. GEE: Or higher.

SENATOR GORDON: --for so many miles.

Question: Has your group gone before the Board of Public Utilities? I don't recall your saying that.

**RACHAEL IANNUCCI KANAPKA:** So JCP&L filed for this project with the Board of Public Utilities in August.

I think-- I want to make one thing very clear, just so everybody understands. This is JCP&L's project; it's not a co-project with New Jersey Transit. But JCP&L approached New Jersey Transit to say, "Hey, we want

to use your right-of-way to install this giant line of monopoles.” And New Jersey Transit has the opportunity -- and is, actually, I think, compelled by their charter -- to review any third-party requests from other State agencies and public utilities to use their right-of-way.

So New Jersey Transit has to make a decision. “Are we going to permit JCP&L to use our right-of-way” -- that’s one, kind of, avenue of what’s going on. The other is that JCP&L had to file a petition to the BPU to get permission to construct the project in the first place. So there’s permission for the project, and then there’s permission for the route; they’re kind of both happening in parallel.

So JCP&L did file with the BPU in August; the BPU, within 24 hours, transferred the petition to the Office of Administrative Law, recognizing that it was a contested project because they had already begun to hear the opposition from residents and from public officials.

So right now, the case is in active legal proceedings within the Office of Administrative Law. And in parallel, New Jersey Transit is evaluating if they’re going to permit JCP&L to use their right-of-way.

The reason we are here today -- kind of the tangents that it draws to what you guys are doing -- is the safety element. We, obviously, as residents, are very concerned about the impact that these lines will have on us. But we’re also concerned, as New Jersey Transit customers, because this has never happened before in the U.S. We’ve been researching it for months. There has never been another example where 10 miles of high-voltage power lines have been installed on a narrow, narrow railroad corridor that is directly bordered by residential areas. And the construction could weaken the rail bed, leading to potential derailment. That’s how this

all ties in to what you guys are looking into with Positive Train Control. We're concerned that the electrical interference could interfere with Positive Train Control, and also the current safety mechanisms that are in place: railroad crossings, radio communications.

There's also, like Kin mentioned, a real concern that lining up 100 monopoles directly over not only just an active commuter rail line, but an active commuter rail line into the busiest city in the United States, could become a real terrorist target.

These are all safety concerns. And this project, like I said, is a JCP&L project. This has nothing to do with New Jersey Transit's ability to run their rail service. They don't need this. This is one third-party asking another to use a public right-of-way. New Jersey Transit doesn't need to do this. They need to implement Positive Train Control; they don't need to enable a transmission line.

So our perspective on all of this is, we want New Jersey Transit to focus on the things they have to do to improve safety. Ironically, one of the projects in front of them right now actually could go against their mission; and is something not only that they don't have to do, but could actually hurt what they're supposed to be doing.

And I think one of the things that has come up repeatedly over the testimony this morning is lack of funding. I think it's no secret that New Jersey Transit has been starved financially in recent years, and is in a position where its hands are tied. There are expectations of safety and reliability by all of you and by us as customers; but they don't have the means and the resources to follow through on that.

And I think we have to be -- we have to recognize that one of the reasons that JCP&L is even considering -- I'm sorry; I apologize -- New Jersey Transit is even considering this proposal by JCP&L is because there's money involved. They are looking to alternative revenue sources to be able to bring money because they realize they are a strapped organization. And there's a sad irony there -- that they are looking to, potentially, increased danger and risk to their customers in order to bring in revenue to the organization. And it's for a project that's not even core to their mission. They don't need this in order to move forward.

SENATOR GORDON: The purpose of my question was to understand where you, as citizens, can have the greatest impact. From what you're saying, BPU is no longer the decision point; it's the Office of Administrative Law?

MS. KANAPKA: It's all related, so--

SENATOR GORDON: And New Jersey Transit?

MS. KANAPKA: Yes. So there's-- Again, the two paths. So legally, where we are right now is, it's with the Office of Administrative Law. And our organization has actually come together and hired a private attorney, as a group of residents, to represent the towns, the county; there are a number of parties opposing JCP&L in that forum.

The Administrative Law Judge, after going through all of the proceedings, will make a recommendation to the BPU. So the BPU, kind of, handed it over to the OAL; and the OAL is going to hand back a judgement that then the commissioners have to evaluate and decide are they going to accept it, reject it, or modify it. So the BPU still does have ultimate decision, as far as: is the project needed and should it be pursued.

New Jersey Transit's piece, in this whole puzzle, has to do with the route, specifically. So New Jersey Transit can say, "I'm not giving you permission to use my right-of-way, because I think the cost to New Jersey Transit is too tremendous for us to take on." There is no amount of money, I would argue, that JCP&L could pay New Jersey Transit that makes it acceptable for them to introduce this immense, new element of safety risk to their riders and to their employees.

SENATOR GORDON: Well, I am trying to understand where the decision points are so that -- certainly I would encourage you to continue conveying your concerns to the BPU if the decision is going to go back there, as well to New Jersey Transit.

I, for one, certainly want to support the efforts of Senator Kyrillos, and Assemblywoman Handlin, and others who are engaged in this.

Mr. Chairman, any comments or questions?

ASSEMBLYMAN McKEON: No questions. Maybe one.

You mentioned that JCP&L was going to make a lot of money off of this, in some way. I know that they're regulated by the BPU. I'm assuming that-- Make no mistake about it, I'm not saying it should be in your backyard -- I wouldn't want it there for a million reasons either, regardless of the issue that might impact on New Jersey Transit. But I think they're probably doing it so they can efficiently provide electric service to their customers.

MS. KANAPKA: Well--

ASSEMBLYMAN McKEON: I know a lot of customers of JCP&L, who include my district, who are very upset with their ability to deal with blackouts, for reliable service. So I'm just kind of saying for all of

us -- and I am, number one, fighting against Pilgrim Pipeline and other things that, for a lot of reasons, I don't want to see encroach on rights-of-way and in people's backyards. But in the big picture, we all like to use our blow dryers, and we should just keep that in mind.

MS. KANAPKA: No, I do. And actually, if I had just a minute to speak to that -- I think it's a common misconception that transmission lines will affect power outages. The reality is that the power outages that we experience regularly, and specifically the ones we experienced--

ASSEMBLYMAN McKEON: I don't want to cut you off but, I mean, are they doing it just for that reason, or are they doing it because they have increased demand? I'm just--

MS. KANAPKA: It's not increased demand. We've seen population is going down and consumption is actually going down in the State of New Jersey.

Outages -- it's not going to affect our outages, because our outages are caused by distribution line issues. Between the substations and our homes are the distribution lines, and they have been neglected. There are actually a lot -- there are a lot of layers of this onion, when you look at the energy industry and the economics behind it. But the FERC actually provides financial incentives for utility companies to have transmission lines put into place. Because it's a guaranteed ROI, essentially, for utilities to get transmission lines put into place. There's no guaranteed ROI for distribution projects.

JCP&L is owned by FirstEnergy; they are a public company. Their primary objective is to please their shareholders, not necessarily their customers. So they see these new transmission projects as, kind of,

guaranteed gateways to profit to help their bottom line; whereas distribution projects are not.

These transmission--

ASSEMBLYMAN McKEON: I'm going to stop you, only because-- And it's late, as well.

I would love, with the incredible research that you've done on the topic -- I'd like to see that. Because I am really troubled, more than anything else, by what you just said. If they're using what happens to be systemic funding sources to do something that's not in everybody's best interest, let alone the particular interest that you're here representing, I'd really like to know about that.

MS. KANAPKA: Oh, definitely, we can follow up with that.

ASSEMBLYMAN McKEON: Thank you.

MS. KANAPKA: Thank you.

SENATOR GORDON: Thank you both for some very compelling testimony.

We will continue looking at this.

Assemblyman Zwicker, some comments or questions?

ASSEMBLYMAN ZWICKER: Thank you. That was an outstanding presentation. It was clear, it was concise; I think your argument against this is incredibly strong from all aspects.

So there is one thing that was bothering me that I would be remiss if I don't bring up. If you could go back to the slide on health risks -- the one that has the World Health Organization.

MR. GEE: Is that the one?

ASSEMBLYMAN ZWICKER: Yes.

So if you were here at the beginning, you know that I am a physicist.

MS. KANAPKA: Yes.

ASSEMBLYMAN ZWICKER: So I think you nailed it when it comes to safety; you nailed it when it comes to having a 230-kilovolt transmission line above a commuter rail; you nailed it when it comes to property values; economics; and everything else.

In my opinion as a scientist, you don't need this slide; and this is a very controversial slide. Because what you're saying here is that science cannot prove a negative and, therefore, we should do something about it. And science's role is not to prove a negative -- potentially carcinogenic to the human body. You are so well studied on this. You know that study after study which have looked at both people and looked at animals shows no link -- direct link between EMF -- its magnetic fields -- and cancer; study, after study, after study. And I know what you're saying about other counties; I know what other people are doing.

So I mean, at 100 feet high -- if you study these things you know that a 230-kilovolt transmission line, 100 feet up -- and you said it could be 100, it could be more -- by the time you get to the ground, the magnetic field is less than what's emitted from our refrigerators, right?

So you have to be very careful. This is, in my opinion, pseudoscience, when everything else that you've presented was factual, was clear, and was concise. So I think this does a disservice to your presentation, and I just can't, as a scientist -- while I completely support everything you said and what you're trying to do -- I cannot not say something.

MS. KANAPKA: No, I appreciate your opinion. And we have heard this before.

I think there is a perception-as-reality piece where I understand that, from your perspective, you don't feel that there is a connection. I think, as a parent and as a consumer, there is an element of prudent avoidance that I would like to see regulatorily implemented, like has been done in other states in America and also overseas -- where again, I can appreciate that there's not been a definite link proven to causality. But there has been some correlative analysis done that says there might be a chance of an increased cancer cluster tied to leukemia, etc. Another piece just-- Typically, these lines are run in the middle of no man's land, in the middle of an empty corridor. This is such a unique manifestation where they're trying to put it, not only close to homes, but almost more alarmingly, directly above the traveling public. And I think the center line of the line, where the EMF would be the highest, would actually be within the right-of-way and directly where folks would be on a daily basis.

So I do -- I completely appreciate-- And believe me, we've heard it. I think it's enough of a concern, though, by the residents and the public based on the studies that they have read, that it's a gray area. And I don't think, as a parent, as a human -- I wouldn't want to see anybody put in a gray area when it comes to their health.

ASSEMBLYMAN ZWICKER: And I don't want to make more of a deal than -- and people said it's late -- it's not my feeling, right? Science doesn't care about what my feelings are. I'm a parent as well, so I understand that. I feel there's a strong obligation, for you as advocates, to use science where it's appropriate. And this is a gray area; and when it

moves out into the public, it becomes more than just a gray area, it becomes more than just what we're talking about right here.

So this is something that's deeply personal and professional to me, which is why I'm harping on it. And I think you have to look at this very, very carefully. I understand the fears of parents, as a parent. I'm not trying, in any way, to downplay that in any way, shape, or form. But we could -- I'm trying to come up with something: We could be afraid of a meteor striking Earth; we could be afraid of whatever it might be. Climate change is an issue every day because of misunderstanding of science; vaccines and autism is another one. And science really does not care; there's a link or there's not a link. And I understand caution. But I'm not saying that. I'm simply saying your argument is so powerful and so strong without this.

MS. KANAPKA: Okay.

ASSEMBLYMAN ZWICKER: That's my main point.

MS. KANAPKA: I appreciate the feedback. Thank you.

MR. GEE: Thank you.

ASSEMBLYMAN McKEON: The Assemblyman has, probably, the last question. But we have a nickel bet as to whether or not you're an attorney.

MS. KANAPKA: Me? I'm a PTA mom.

ASSEMBLYMAN McKEON: Well--

MS. KANAPKA: I'm a stay-at-home mother; yes.

ASSEMBLYMAN McKEON: You need to go back to law school. (laughter)

ASSEMBLYMAN JOHNSON: Thank you, Chairman.

Thank you for your presentation.

One quick question that I have -- we're talking about transmission lines. Why are we using Monmouth County and their population as a sample here? Transmission lines go through Monmouth County; they don't -- do they stop in Monmouth County or something?

MS. KANAPKA: No; I apologize.

So this is in regards to a new project that has been proposed by JCP&L to add a new transmission line -- to construct a new transmission line specifically between the Aberdeen Train Station and the Red Bank Train Station, directly above the New Jersey Transit train tracks.

ASSEMBLYMAN JOHNSON: So these transmission lines aren't for the people of Monmouth County, then.

MS. KANAPKA: They are. There are already two transmission lines in place that serve our area; there's a main and a backup. And that main and backup has had an up time, over the past 20 years, of 99.99 percent.

ASSEMBLYMAN JOHNSON: Okay.

MS. KANAPKA: What JCP&L is arguing is that they want to put in a third redundant transmission line.

ASSEMBLYMAN JOHNSON: Okay.

MS. KANAPKA: And we believe that they are incentivized by the FERC benefits; the *FERC candy* as it's called; the guaranteed ROI of getting a new transmission line in place.

We, as consumers, as residents, don't believe we need this because, again, our outages that we're experiencing are not because of transmission line failures; they are because of distribution line failures.

Irene and Sandy -- the two weeks of power we didn't have after those storms -- were because our distribution lines had failed. Our transmission lines were fine.

ASSEMBLYMAN JOHNSON: Okay. And you don't see an increased demand in our manufacturing sector in the state for energy?

MS. KANAPKA: No. Overall, that consumption figure was an aggregate. One of the reason, actually, that we have found is that many of the new, bigger complexes -- that are being developed for manufacturing, even for new housing developments, commercial developments -- are relying on microgrided solar-type technology. So they're maintaining it in-house, which is kind of the future of where the energy industry is going.

FirstEnergy and JCP&L are very backward looking in how they are choosing to go about their investments in their infrastructure.

ASSEMBLYMAN JOHNSON: And you feel the future of energy will be microgrids?

MS. KANAPKA: I think as one element of it, yes; I think more localized generation and distribution. I think, obviously, there is a need for transmission lines; we're not arguing that, universally. But for our specific case in Monmouth County, we have two already; implementing a third would bring us very little benefit, as residents and as customers, and very much cost in terms of property values. It's immense -- the damage that they would do to us.

So it's one of those lopsided things where this project is very much in favor of JCP&L, very little in favor of the residents. And the kind of -- the kick in the gut at the end of the day is if this project goes through, our rates go up and we pay for it. So we're doing everything we can to

bring it to everybody's attention that we want this stopped. Specifically, New Jersey Transit has a very unique position in this puzzle because, unlike most other routes that have been through different public rights-of-way, this is a New Jersey Transit railroad right-of-way. So they are an extra element that isn't typically a part of a transmission project approval. But given the circumstances and the safety risks that we feel this transmission line would introduce for Transit, we think it was imperative to be in front of you all today and make you aware of our concerns.

Again, coming back to why you're all here today -- you want New Jersey Transit to increase safety for their riders. This project is not necessary for them to continue their rail operations; and it actually could inhibit their ability to provide service to their customers.

ASSEMBLYMAN JOHNSON: Well said.

MS. KANAPKA: Thank you.

ASSEMBLYMAN JOHNSON: And I've learned a lot here today. So thank you for your presentation, again; and thank you, Chair, for allowing me to ask a few questions.

SENATOR GORDON: Any other questions for these witnesses? (no response)

Seeing none, I want to thank you, Mr. Gee and Ms. Kanapka--

MS. KANAPKA: Thank you.

SENATOR GORDON: --for your presentation today.

This is going to conclude our hearing -- unless, Chairman, do you have any final remarks?

ASSEMBLYMAN McKEON: Just as I know you would say, our staffs -- whether they are our personal ones, partisan staff, nonpartisan staff -- are all amazing, and we thank them, collectively, for their hard work.

And Happy Hanukah, Merry Christmas, all the respective holiday greetings to all. (laughter)

SENATOR GORDON: The meeting is adjourned.

**(MEETING CONCLUDED)**