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HIGH-SPEED TRAIN TECHNOLOGY: A NEW FRONTIER IN U.S.-JAPAN RELATIONS?

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P R O C E E D I N G S

MIREYA SOLIS: Good afternoon, everyone. My name is Mireya Solis. I'm senior fellow at The Center for East Asia Policy Studies, and it's a great pleasure to welcome all of you to this joint event that we have organized together with my colleague, Senior Fellow Robert Puentes from the Metropolitan Policy program.

We will focus today on the opportunities and challenges of introducing cutting edge, high-speed rail technology from Japan, known as magnetic levitation, or maglev, to the U.S. Northeast Corridor. The maglev line could have very important benefits, such as reducing travel time, alleviating traffic congestion and boosting economic growth.

Moreover, the Japanese government has strongly supported this initiative by offering, for example, to cover part of the financing of the construction costs of the project. However, there are important challenges, as well. Securing rights of way in a densely populated area is not easy, and certainly, coming up with all of the funding required to rejuvenate an aging transportation infrastructure is a challenge.

So, I think that we have a very rich set of issues to discuss today, and we actually see many layers to this conversation. There is certainly an international dimension, and we should ask ourselves if transportation technology can open a new chapter in U.S.-Japan relations.

There is certainly a regional dimension, because we are talking about trying to increase the connectivity in an economically important area of the United States, the Northeast Corridor. And certainly, there is a local dimension. This touches us very directly, because the first track of a proposed maglev would actually connect Washington, D.C. to Baltimore.

Now, to start the discussion today, we are honored to have Ambassador Sasae from the Embassy of Japan to deliver some introductory remarks. Ambassador Sasae has had a very distinguished career in the Ministry of Foreign Affairs. He was vice minister before his appointment as ambassador to the United States in November, 2012.

It is always a privilege to welcome Ambassador Sasae to Brookings, and for this occasion, we have asked him to offer his reflections on how transportation technology could deepen U.S.-Japan relations. Please, join me in welcoming Ambassador Sasae to the podium.

(Applause)

AMBASSADOR SASAE: Thank you, Mireya, Governor Rendell, Mr. Puentes and distinguished panelists, ladies and gentlemen. Thank you for inviting me to be a part of this center. And most of the time, when I give remarks, I talk about rather drag topics like TTP negotiations, finer points of the negotiations and so forth. But today, however, I get to talk something cool, floating trains. And as U.S. teenagers often say, how cool is that?

So, you may know Japan became the birthplace of high-speed railway. When our

first line opened back in 1964, that was 50 years ago. Our high-speed rail is safe, reliable, efficient now, carries over 300 million passengers a year. It has become part of Japanese life. Even after all of these years, we have not lost enthusiasm for these trains.

Very soon, the Central Japan Railway Corporation, which is a private company, will start contractions of the world's first floating super conducting magnetic levitation train that is called AC maglev. The train will start running by 2027.

So, the basic principle of this levitation and propulsion by super conducting magnets was actually invented by two American researchers in New York, which I didn't know. But I came to realize that that was an American invention. But Japanese researchers then applied this concept to railway technology. So, it was a collaboration that brought these trains into collaborations and reality.

Prime Minister Abe believed that bringing this technology back to the U.S. could be a great symbol of U.S.-Japan relationships, and kind of like a transportation version of cherry blossoms. You know? We brought cherry blossoms to the United States. Now people are enjoying. I hope that this could be our, you know, cherry blossom version of transportation.

So, when the prime minister met President Obama last month in Tokyo, he once again proposed deploying this maglev from Washington, D.C. to New York, hopefully, eventually to Boston, and the train would cruise at 311 miles per hour without friction and connect two cities in just one hour. It's great. I mean, imagine that. This will truly be, again as Americans say, a game changer, by creating a new flow of people, new opportunities for business and new jobs throughout the region.

One thing I would like to emphasize is important role of the private sector in leading such a product. This new maglev project in Japan will be financed entirely by private institutions, because everyone believes that it will be a profitable business. The point I want to make is that as one of the closest friends of the United States, Japan stands ready to extend all the necessary technical and even financial support the United States may need if it decides to proceed with this train.

So in closing, let me just thank Brookings for inviting me today, and for providing the leadership of this center. Thank you very much.

(Applause)

DR. SOLIS: Thank you very much, Ambassador Sasae. Our next speaker is Governor Rendell. He's no doubt known to many of you. Governor Rendell is the former governor of Pennsylvania and former mayor of Philadelphia, and he wears many hats. Among them is that of distinguished senior fellow with the Metropolitan Policy Program here at Brookings.

Today, he will be offering some framing remarks to help us understand what high-speed rail technology could mean for the infrastructure in the Northeast Corridor. We are

very grateful that the governor has agreed to share his insight from so many years of public service and his extensive ongoing work to improve America's infrastructure. Please, Governor Rendell.

(Applause)

GOVERNOR RENDELL: Good afternoon, everyone. It is a pleasure to be here. One of the problems is you're always being discussed in the past tense. You're a former this, former that, former. I am a former governor, former mayor, former Democratic National Chairman, former district attorney. It gets a little spooky listening to yourself described that way.

One day, between my service as mayor and governor, I was Democratic Party Chairman, and I didn't spend a lot of time in Philadelphia. I was away six days a week, and on Sunday, I came back one Sunday, and I had been out of the city for about nine months.

And I stopped to get gas and went into a service station, and a woman came over to me as I'm opening the door, and she put her hand on my arm and looked at me with the gravest concern on her face and said, "Didn't you used to be Ed Rendell?" And in my long career in public service, I had never been at a loss for words, but I couldn't figure out how to answer that question. But in any event, it's a pleasure to be here.

In my post elected official life, I have tried to do things that are consistent with the things that I have stood for as an elected official. And as some of you may know, and certainly, the Brookings people know, I have worked hard on the issue of infrastructure. As mayor of the city of Philadelphia, I was the chairman of a national organization called Rebuild America. As governor, myself, Mayor Bloomberg of New York and Governor Schwarzenegger of California, we founded an organization called Build America's Future, which still is working hard, works often on the same side of the issue as Rob Puentes and the great folks at Brookings.

And we have been trying to sensitize America, both at the local, state and federal level about the need to start investing again. Our infrastructure -- BAF released a report two years ago called "Falling Apart, Falling Behind," and that's exactly what's happening. Our infrastructure is falling apart, endangering our public safety, hurting our economic competitiveness, and we are falling behind countries of the world.

Twelve years ago, we ranked, according to the World Economic Forum, as the best infrastructure in the world, the most economically competitive. We now have slipped to 19th. Nineteenth. I would give you the list of countries we're behind and it would be shocking to you, absolutely shocking. And nowhere is that lag between us, supposedly the greatest nation in the world and our competitor nations -- nowhere is that more evident that in high-speed rail.

When my constituents, when I was governor, would go to Europe and ride their version of the bullet train, they'd come back and say, what's going on? Mayor Bloomberg told me the first time he flew into Shanghai, he expected to be limousined into the city from the airport, and he got onto this train, and in seven minutes he was down in downtown Shanghai. He

said it was unbelievable.

And we are losing an opportunity to do something, really as the ambassador said, that would be a game changer in so many ways. So in my private life, I've tried to hook up with institutions and corporations and non-profits that are pushing the same agenda that I've worked so hard for in my years as an elected official. So, I signed up to be on the advisory board of TNEM. It's a Northeast maglev, and it intends to help bring the Japanese maglev technology called SC maglev, super conducting maglev, to the United States.

And when you say that, it's almost ironic, cause as the ambassador noted, the technology was founded here in the United States. But of course, Japan has taken that technology and ran with it in unbelievable ways. And it will truly be a game changer. And do we need it? You bet we do.

The Northeast Corridor today would represent the fifth largest economy in the world. But the Northeast Corridor is choked already. We're choked with terrible bridges. Let me give you an example of my home city of Philadelphia. In Philadelphia, I-95 runs the length and breadth of the city, 18 miles long. It goes into the southern tip of the city and it goes out the northern tip.

It goes over 27 bridges in Philadelphia, just in Philadelphia. Most of those bridges are structurally deficient. According to the Deputy Mayor for Transportation, it would cost four and a half billion dollars to repair those bridges. The bridges are in such dangerous condition that in 2008, literally this happened, a PennDOT contractor -- that's the Pennsylvania Department of Transportation, was doing work on a non-governmental assignment in Philadelphia, and he remembered that there was a cheese steak -- Philadelphia is famous for its cheese steaks -- a cheese steak place under I-95 that he had eaten at when he was in Philadelphia the last time, and he decided he wanted to come over and eat there again.

So, he pulled up his car, and you can park underneath I-95. And this was underneath one of the bridges. He got out of his car and saw a crack in a pier -- a pier that holds up that bridge. The pier was about three times as wide as this podium. The crack was the breadth of the pier.

And I-95 was closed in Philadelphia for three days. A hundred and eighty thousand vehicles go over that bridge in a 24 hour day, and if the bridge collapsed, and it was close to collapsing, had he not fortuitously gone for a cheese steak, that bridge may have collapsed. It would have made what happened in Minneapolis and Washington -- it would have made them seem like minor incidents. Think about that.

You should have seen the picture on the front page of the *Philadelphia Inquirer* in broad daylight with the city skyline behind it. I-95 didn't have a car or a person on it. It looked like something from a science fiction movie. But we are headed in that direction.

And it's not just the public safety dangers, it's the quality of life. It's the economic competitiveness. The Northeast Corridor is scheduled to have 40 million additional

people by the year 2042. Think about that. Forty million additional people. How are they going to get around? Are they going to get around on I-95? Are they going to get around on the bridges?

No. There's got to be an alternate form of transportation, and it has to be rail. And ironically, the Northeast Corridor is the one area in the country where the success of passenger rail is clearly demonstrated. The Acela today as a standalone would be a profit making venture. There is no question in my mind. And what this does is truly transformative.

As the ambassador said, the technology is owned by J.R. Central, which is now a private company in Japan, and J.R. Central runs the Shinkansen, a bullet train which has the best safety record of any train system in the world, in the world. Then people are always asking me when I talk about maglev is, well, is it safe? And yes, it is safe, because one thing we all have to understand when we talk about high-speed rail, regardless of what technology we employ, we cannot employ it on existing tracks, because on existing tracks, there are freight trains. On existing tracks, there are other passenger trains. And on existing tracks, there are commuter rail trains.

In Philadelphia, the same trains that Amtrak uses to go north to New York or south to Washington are commuter trains coming in from the main line or from the Jenkintown-Abingdon area traverse on the same tracks. There's no way you can put a high-speed rail system on existing tracks. So, if right of way is an issue for maglev, it's an issue for any type of new technology. And frankly, maglev has a better chance to find sufficient right of way, because it isn't very wide.

You could run the maglev system, and I'm not suggesting this, and I know Wayne and Jeff would probably blanch upon hearing this, but you could run maglev right down the middle of I-95. Right down the middle of I-95. It runs in a tube. It's interesting. It has wheels. Because the first 90 seconds, as it builds up speed, they are rubber wheels, and it's like an airplane. It starts out on wheels. The wheels retract after it reaches a certain speed, and the train levitates six inches off the ground. And of course, the magnets in the tube are what propel it.

And it gets up to 311 miles an hour, the maximum speed. Although ambassador, when we were there, it said 314 miles an hour. It gets to 314 miles an hour in seven minutes. In seven minutes, you're at maximum speed. And how many of you have ridden the Acela? Everybody here has ridden the Acela.

And the Acela can reach 160 miles probably for about 20 miles of the route between Boston and Washington, because that's the only time the tracks are straight enough for it to reach its maximum speed. The Acela averages about 85 miles an hour. But when the Acela is close to 160 miles an hour, you better not have any loose teeth. You're going to lose your teeth.

If you try riding on the Acela at 150, 160 miles an hour, your pen is going to -- at 314 miles an hour, I was with Governor George Pataki, the former governor of New York. George Pataki is a big man, six foot six. He stood up. He took out a little notepad from his

breast pocket, took out his pen and he wrote a little note to Joe Boardman, the CEO of Amtrak who is a friend of all of ours.

He wrote out the note, and there wasn't a slip. He wrote it flawlessly. You can drink a cup of tea without spilling a drop at 314 miles an hour, because you are six inches above the ground. It's unbelievable. When we rode the train in November, I felt like I could have been on a rocket to the moon. That's how unbelievable it is.

And is it a game changer, like the ambassador said? You bet it is. Let's take my city of Philadelphia. You can reach New York from Philadelphia now on the Acela. The best Acela reaches New York in an hour and five minutes. The SC maglev would reach New York from Philadelphia in 24 minutes. In 24 minutes. So, if you live in New York -- are there New Yorkers here?

You can buy a house in Philadelphia -- an equal house in square footage for about 35 percent of the cost of New York. You can live in Philadelphia, and you can be downtown to downtown in 24 minutes, instead of commuting from Great Neck for an hour and a half. What this would do for Philadelphia.

And by the way, it's not just New York. Do you know how many minutes we are from Washington? Thirty-six. Thirty-six. And take New York to Washington. One hour on the nose. What would that do? It would end the shuttle. No one would take the shuttle anymore. Why would you? It takes getting into a cab, going out to LaGuardia, getting on the plane, waiting on the tarmac. You're an hour and a half just for that. No one would take the shuttle anymore.

And what would that do for air travel? It would do wonders. It would cut tarmac time at BWI, Newark, Philadelphia, LaGuardia. It would cut tarmac time by -- I think I saw a statistic, like 40 percent, because we would have no more north south, or very few north south flights to contend with. It is a game changer for the American economy.

And while we're doing all of these things to make us better, to make us more competitive, to open up new vistas, it's a great job creator. The Brookings Institute produced a report, because of course, this is Infrastructure Week. You all knew that. Right? It's Infrastructure Week? Yes.

They issued a report, "Beyond Shovel Ready: The Extended Impact of U.S. Infrastructure Jobs." And you know, the U.S. Department of Transportation always uses the figure that $1 billion of infrastructure spending creates 25,000 jobs. I think that's for transportation infrastructure, to be precise.

During stimulus, I was governor, and Pennsylvania received, just ironically, $1 billion for our roads and bridges and highways. So, I decided I was going to track, with the help of Donna Cooper, my secretary of policy, we were going to track the jobs that that billion dollars created.

And we not only counted the jobs on the site, on the highway, on the bridge, the men and women who were actually doing the work on the site, but we found every vendor -- let's assume the ABC Bridge had 48 jobs on the bridge, but it had five suppliers of material -- the aggregate, the steel, whatever -- concrete. We went back to the suppliers and asked them, how many jobs did you have to add to meet this order.

And we totaled it all up. The billion dollars was spent in less than two years. And it didn't produce 25,000 jobs. It produced 24,864 jobs. Twenty-five thousand jobs for a billion dollars. The impact of real infrastructure spending. And by the way, these are not minimum wage jobs. These are not 30 or $40,000 a year jobs. These are jobs that pay 50, 60, 70, $80,000, depending on where you are and the overtime that's encompasses. They're middle class jobs. They're the type of jobs that can rebuild the American economy.

So, this is an incredibly exciting concept. Why do I think it can get done in an era when everyone is afraid to do anything? I mean, we literally are afraid to do anything. I know that the Republican leadership denies this, but when the gas tax sunseted a few years ago, the leadership had to go see Grover Norquist to get his permission for its members to vote yes or reinstituting the gas tax at the same rate, to make sure that Grover wouldn't score it as voting for a tax increase.

Now, anybody here ever vote for Grover Norquist? I don't think so. Few of you have probably seen Grover Norquist. It's like the Wizard of Oz. You know, you're expecting this impressive, you know, dynamic person who's got everyone in Washington scared silly, and you pull back the curtain, and there's Grover. And I have nothing against Grover. He's made quite a living by being the thorn in the side of investment. And we've got to go back to investing in our growth.

This country became the greatest country in the world economically. This country became number one in infrastructure because we had leaders who had the courage to invest. Thomas Jefferson was faced with the issue of, should he invest a lot of money and give the go ahead for the Erie Canal? The engineers told him it was impossible to build, and the politicians told him it would be too expensive.

Jefferson said yes, and he opened up commerce to the Midwest of this country in a way that nothing else could have. Abraham Lincoln, fighting the Civil War with the nation ripped asunder still had the sense to invest in a transatlantic railroad system. The engineers told him you'll never get the tracks across the Rockies, and the politicians told him it was too expensive at a time of war. But he knew what it could for the country, and he pushed on and he got it done.

Dwight David Eisenhower built a highway system second to none in the world, because he knew what it would do for opening up areas of the country that never had economic growth or development. Cost a lot of money. It was difficult to do, but he did it. And you know, I grew up in the era when all young boys were in love with President Kennedy, JFK. And JFK said many wonderful things, poetic speeches.

But the speech that he said that I liked the best and has really informed my years in public service was the day after Sputnik was shot into the air by the Russians. And everyone in the nation panicked. And he had a press conference the next day and said, don't worry. We'll put a man on the moon before the decade of the 60s is over. Scientists told him, it's too fast. It can't be done, Mr. President. Politicians told him it cost too much money.

But JFK was intent on doing it, and he did it. He didn't live to see it, but he did it. But he said that day, "We do these things not because they're easy. We do them because they're hard." Will maglev be hard? In some ways, yes. But it's easier, and I think it has the ability to transform our political system because of the Japanese government.

Mr. Ambassador, we sat with President Abe, and we heard from his mouth the willingness for Japan to invest 50 percent of the capital cost of building the first leg from Washington to Baltimore. If you're keeping score, 15 minutes. From Washington to BWI, 7 ½ minutes, if you're keeping score. He said the Japanese government would do that.

I believe with all my heart and soul, if we build the first leg of this SC maglev and people ride on it, not only will it be built in the Northeast Corridor, our biggest problem will be other sections of the country will want it immediately as well. It's just that good. It's just that transformative.

So, thank you, Mr. Ambassador, for your presence here. Thank the J.R. Central for their commitment. And thank the president. What he is doing will not only help the Japanese economy, but it will transform America, and we'll get back, hopefully, to the day of doing big things; of doing big things and not worrying about the consequences; of investing in our own growth.

I'll close by asking you a rhetorical question. I will give two tickets to the next Redskins Super Bowl appearance -- oh ye of little faith -- to someone who can answer this question for me, and answer it correctly: What country in the world is spending the most money on infrastructure? That's an easy one. China. That's not the key question.

The key question is, can we find the courage to do what we need to do? Are we willing to make the investment that we need to make? Because the question is, what -- name me one company in the United States, one business that has grown successful without investing in its own growth, either from capital reserves or from prudent borrowing. Name me one company that didn't invest in a new product line, in research and development, in building new factories.

And most of the time, that investment was based on, hopefully, some good study and some faith; faith that that investment would yield big results. If we don't get back to doing that as a nation, we are sunk. This is a great opportunity to show yes we can, again. With the help of the Japanese government, we can do something very, very special.

Now, before I turn it over to the panel, I've been told I have got five minutes to answer questions. If you have no questions -- by the way, nobody got that answer right. And I was hoping that it would be a young person to give you time to hopefully, see the Redskins get

there. Anybody have a question they'd like to ask me? If not, we'll get right on to the panel discussion.

But let me leave you -- all the way in the back. Yes, sir.

MR. JONES: Yes, hi. Creighton Jones with 21st Century Science and Technology. I know you've been a big supporter of public private partnerships, but in terms of the kind of capital that have to be generated to do this on a grand national scale, it seems like we would need to go back to something like a national banking structure or a kind of capital budgeting instead of this -- trying to do this year to year annual budgeting which never seems to get us anywhere. What do you think about that?

GOVERNOR RENDELL: Well, I agree. There was a sportswriter in Philadelphia who once a month used to write a column, If I Were King of the World. It was about sports. But if I were king of the world, we would have a federal capital budget. We're the only government subdivision in the entire country that doesn't have a capital budget. And you can't have long-term investments compete with short-term needs like healthcare, like food stamps. I mean, it's not fair, and that's one of the reasons we don't ever invest sufficiently in our infrastructure. So, we need a capital budget.

But short of that, let's take the first leg, for example. And again, these are approximate figures. But we approximate that it will cost $15 billion to build Washington to Baltimore. Assume that the Japanese government was willing to invest $8 billion to see this happen. Let's say it's 16 billion. That would leave $8 billion.

Assume this can be done in six years. That would mean out of the transportation bill, we would have to isolate about $1.3 billion a year for the next six years. Anybody here think that that would break us, $1.3 billion a year? I don't think so. That's unfortunately, a rounding error for the federal budget. So that's number one.

And number two, in the long-term, once the Japanese government is no longer participating, well, this should be done the way a lot of TIGER grants were done. All of you know that TIGER was part of the stimulus program, I think the best part of the transportation money, because it was competitive. It was sort of like a mini infrastructure bank, because states and regions would compete.

Well, CSX and Norfolk Southern, the two biggest freight lines in the eastern half of the country, came to me, because they knew I was a pro-infrastructure governor. They had projects to dramatically increase freight in the eastern half of the country. One project went through six states, and the other project went through six states. The only common state was Pennsylvania.

They asked me to commit state dollars to it. I did. They asked me to go out and convince my fellow governors to commit state dollars to it. I did and they did. And then, we applied for federal TIGER money. And together with state money, federal money and corporate money, we were able to rebuild freight lines and freight rail, and the eastern half of the country is

in better shape than it's been ever, ever because of that. That's the funding mechanism that I would envision.

And by the way, private sector? I believe the private sector is ready to go to invest. I believe the economics make sense here. I believe that it would be a good return on the investment. But it would be my intention to go to all these fellows in New York who wear the fancy suits and get into the limousines at the end of the day, and say to them, okay, it's time you guys did something for your country. You may not make exactly the return you're looking for. You'll make a return, but it's time you did something for the country and invest significant dollars in something that will be, as the ambassador said, a huge game changer for the eastern part of this country. And by the way, it will make your lives a little easier, too.

So, I think this can be done. I think we can get private investment. I think we can persuade states to participate. I mean, for example, what this would do for Philadelphia and Pennsylvania -- is it worth Pennsylvania and the city of Philadelphia kicking in some money to make it happen? You bet it is.

Let me take one more question before I turn it over to the panel. Yes, sir? Hang on just a second. This young lady is bringing you a mic. Yeah, hang on just for a second. She's bringing you a mic. Here you go.

SPEAKER: Governor, the friends of mine that I've known for 25 years are Drs. Powell and Danby, who invented superconductor maglev. And they are proposing that they will cooperate with Japan in a competition to decide whether to go with the first generation maglev -- now we're for maglev, naturally. And superconductor maglev -- anyone who knows the physics of it, you don't go for anything else.

But the first generation will compete with the second generation. For us to decide as a nation, what would be the best infrastructure decision, with Japan being a partner in the whole thing. Because we all -- we understand that. In fact, we made this proposal to J.R. several years ago. I did, at least. I went there.

So, the new system, we believe is better. But it needs to be competed. I believe in competition. I know you do. You're a Democrat. And so we're for the competition. So, I would hope you would join me, because you're a heavy hitter -- in approaching President Obama and approaching the committee to say, let's compete these two systems. Or even if they want to throw in the steel rail, we'll do that. But we should compete the second generation with the first generation.

GOVERNOR RENDELL: Well, let me say -- I was thinking of a smartass answer. The smartass answer was, if you've got $8 billion to invest, we'll compete. But I'll refrain from the smartass --

SPEAKER: Well, we've got -- actually, we have $900 billion.

GOVERNOR RENDELL: Nine hundred million?

SPEAKER: Billion dollars.

GOVERNOR RENDELL: Million. Yeah.

SPEAKER: Billion dollars.

GOVERNOR RENDELL: Nine hundred billion dollars? See me afterwards. But look, I'm all for a competition. And we've talked to our friends at Amtrak, and this is a good question to end on. And we're not anti-Amtrak in the slightest. And there may be a role for this with Amtrak. But I don't envision this putting the Amtrak out of business, even if this came in as a standalone, because not everyone is going to take high-speed maglev, just like not everyone takes the Acela.

If you go to 30th Street Station or Union Station, the regionals have as big a line as the Acela has, because people don't want to pay the extra money. Or the regional stops in places that the Acela doesn't stop in. So, what I think would happen if maglev became a standalone or was operated eventually by Amtrak, is you'd have maglev, whatever the technology is, and the Acela would still exist.

The Acela would become the regional as the regional is today, and the regional would probably phase out, or maybe there would be fewer regionals. Look, the answer is, the market for rail travel is untapped in this country. When I was governor, Amtrak came to me and said, we have a train line that goes from Philadelphia to Harrisburg and Harrisburg to Philadelphia. It's called the Keystone.

They said the Keystone takes two hours to make that trip. We think if we can spend $150 million, we can improve -- we can make capital improvements. We'll cut the ride to 90 minutes. So, Amtrak was willing to put up 75 million, and they wanted me to put up 75 million. I did. They did.

We improved it. Ridership went in -- the second year of operation at the higher speed, ridership went from 898,000 rides a year to 1.3 million rides a year. If we build it, they'll use it. You can bet on it. Thank you.

(Applause)

DR. SOLIS: Thank you so much, Governor Rendell. So, before we move to the expert panel, we're going to show you a very short video depicting the technology. I think if you are like me, it's very hard in the abstract to understand what this technology is all about. So, we thought that a visual representation might be helpful. Thank you.

(Video played)

ROBERT PUENTES: (in progress) -- I mean, the president was talking about it today. I think the vice president was talking about it today. Secretary of Transportation. But we

really make sure that we're not just talking in the echo chamber here of Washington; that this conversation about infrastructure really has larger effects all across the country, because as was mentioned in the beginning, this isn't anything in the abstract. It actually is something that is tangible, it's real and it has direct impacts on cities and metros all across the country.

So, while Washington, you know, dithers and debates and there's a lot of handwringing over what's not going on in Washington, there are interesting and really complicated ideas like this that probably should get more of an airing, and probably a larger conversation, and probably be a larger part of the national policy discourse. So, we think the proposal from maglev is a big piece of that.

So, just let me recap just a little bit. So this came about to promote -- to promote the export of high-speed train technology throughout the world, Prime Minister Abe recently offered to loan the United States about half the project cost to get this thing going here in the United States; to build the Japanese style maglev train between Washington, D.C. and Baltimore, and then really kind of give to the United States this technology.

So, give a loan for it to get started, about half the cost, and then the technology to get it going. As was been said, it's going to operate about 300 miles an hour with the travel time between the two metros knocked down to about 15 to 20 minutes; something like that. And if anybody has ever driven that, you know, it's supposed to take an hour. I think it usually takes an hour and a half.

I think usually -- I think Sandy came out this morning. It's probably you know, closer to 90 minutes, given ubiquitous traffic congestion, things like that. The Acela does run between these two metros. It's about 37, I think, 40 minutes, something like that. And there's a commuter train that's probably about 50 minutes. So, this is a dramatic reduction in travel time between the two places.

While this technology has been studied and tested, literally for decades around the world, I think there's only about three of these that are in operation around the globe. There's a Japanese transit line near the city of Nagoya. I think it's slower. There's a super-fast German train that's in operation in Shanghai, as the governor was talking about, and a Korean system, I think is under way in Inchon near the airport. If it's not yet, it's going to be deployed soon.

But even though these are all maglev technology trains, even these are all different. I'm sure we're going to get at that in the panel. So no, we're not just talking about one thing. So, it's interesting and it's complicated, because not only is it part and parcel of the global discussion about U.S.-Japan trade relations, as Mireya pointed out at the beginning, but also because it's dealing with the tremendous transportation challenges we have here in the Northeast Corridor; as the governor mentioned, probably some of the most difficult transportation challenges here anywhere in the country.

It's dealing with the economic development of two metropolitan areas that really could use that conversation. It's dealing with how to fund and finance really complicated infrastructure investments like this. This is obviously not straightforward, but this complexity is

probably more representative of what's going to happen in the future than what happened in the past, and how to build really important projects in already built up areas.

This is not a project for the desert someplace or through a greenfield site out in the rural fringe. This is between two very built up areas, and as the governor said, nobody is saying that this is going to be easy. I don't think there's any question about that.

The challenges for getting this done are apparent. I think it doesn't take too much thinking to understand just how challenging this is going to be. You want to talk about some of this stuff. But we think that if we don't start to address these challenges, if we don't talk about them in an open and transparent kind of way, then nothing is going to get done.

I'm not a big ice hockey fan, but I think the quote is from Wayne Gretzky, who said, you miss one hundred percent of the shots that you don't take. And I don't really get hockey, but I think I know what that means. But I think that's part of the conversation that we have about infrastructure today, as the governor was kind of leading up to.

So, we have a great panel assembled to help us kind of take some of those good shots, so let me just introduce them briefly, and then we'll jump right into the conversation. So, starting here on my left, Sandy Apgar is a good friend of the Metropolitan Policy Program. He's had a distinguished career, which includes urban redevelopment in Baltimore.

He was a partner at McKinsey working on global infrastructure issues. He founded and led the Boston Consulting Group's infrastructure and real estate practice, and was appointed Assistant Secretary of the Army under President Clinton. So, a big, big, wide range of experience in this area.

Next to Sandy is Takayuki Sato, the senior representative here in Washington for the Japan Bank for International Cooperation. The JBIC started out as Japan's export/import bank, and now provides financial support for projects that are in line with that country's foreign economic priorities. It's a lot of infrastructure projects like transportation and energy.

Moving down the line, Connie Crawford is senior vice president at the Louis Berger Group in New Jersey. Connie has been around all of these kinds of infrastructure issues for years. She was formerly chief engineer of the MTA in New York. That's got to be a complicated job. And had a different stint as chief engineer for the city's Department of Transportation in New York. She's now responsible for rail and transit issues for Louis Berger worldwide.

And finally, we have Chuck Bean, the executive director of the Metropolitan Washington Council of Governments, which is an independent, non-profit association of leaders from the District of Columbia, from Maryland and from Northern Virginia that come together to work on major regional issues like transportation.

Chuck has been an executive director there since 2012, and was previously -- he served for a decade as president of the Non-Profit Roundtable of Greater Washington. So, a

wide range of experience to tackle I think, what is a wide range of challenges and opportunities.

So, let me just jump into it, and I'd like to start off with Connie, because I think that the video was great to walk us through kind of what this is. I admit that you know, until we start looking at these, it's really hard to know exactly what it is we're talking about. But I think we have a lot of generalists here in the audience and tuning in.

Can you describe for us, what is -- lay out the differences. I mean, describe maglev versus Acela versus high-speed rail. And the president was talking about this. I mean, give us a context for really what it is that we're talking about here and how it's all different across the line.

CONNIE CRAWFORD: Well, the biggest difference, of course, is maglev isn't on steel wheel on steel rail. So, rail systems -- the Acela, as the governor mentioned, is in a shared corridor running with other kinds of trains. So, the trains are hardened. That's the requirement of the federal government, so they're hardened to protect them against impact with another train or some other infrastructure or something on the tracks.

What we call true high-speed rail is in a protected corridor. It's not shared with other vehicles, and at least overseas, the vehicles are much lighter. The Japanese have really perfected the art of very lightweight, high-speed trains. As we saw with maglev, it starts out on rubber tires. The governor said he's ridden the line, as I have.

There's a test track of about 45 kilometers in Japan that is the starting of the route that goes between Tokyo and Osaka. And the train starts out on rubber tires, and then the magnets -- it's sort of this road bed. The magnets are on the side. The magnets on the side are a little higher than the magnets on the train, and as it gets up to about 100 kilometers an hour, I think the train just lifts up, and it coasts along.

MR. PUENTES: And is that just an example of the Japanese style? I mean, there are different styles. Are they all different, or --

MS. CRAWFORD: The Shanghai system is a monorail. And it's not the super cooled magnets, so it's different technology. But mainly, if you look at it, it looks very different, because the train wraps around the monorail, whereas the Japanese maglev, the train rides -- really, you saw the bed. It looks like a traffic lane. In fact, they do maintenance with rubber tired vehicles on it.

MR. PUENTES: And it always has to be dedicated right of way. Right?

MS. CRAWFORD: Absolutely. You can't --

MR. PUENTES: We can't use freight rail tracks with this.

MS. CRAWFORD: -- share a maglev corridor with a rail corridor. You can't have the rails in it. Yeah.

MR. PUENTES: And I think that's the one thing that folks mostly think of. So, a question for Takayuki. The big theme that we have during infrastructure week this week that just seems to come up over and over again are not these great ideas. We've gotten lots of great ideas around the U.S. and around the world. But it's how we're going to pay for all of this stuff.

How do we get these things done in an era of severe fiscal constraints? So, there has been a proposal from the government and from the JBIC to finance half of that. Can you describe how that would work? Is it a loan? Is it a grant? I mean, is it most of the money? You know, how would we fill in the rest of that gap? You know, how does the -- the funding and financing going to work in this?

TAKAYUKI SATO: Okay, thank you very much for the question. And first of all, I would like to say thank you to the Brookings and Robert and especially Mireya for inviting me and I'm very honored to be here today.

And actually, let me first give you an overview of our JBIC. We, JBIC -- it's a very unique governmental financial institution, very focusing on the activity of the overseas Japanese investment. And in line with the Japanese government's foreign economic policy, we have provided a long guarantee and equity for projects which are related to Japanese interests. And actually, that the last fiscal year that we provided around 40 billion U.S. dollars for projects all over the world, like natural resources development or infrastructure projects like this.

So, that is the JBIC activities right now. And on this project that we are closely coordinating and closely working with at the TNEM and related to the Japanese government, the Japanese companies -- and from the beginning point that we are engaged in this project, and we provide a fund, for example, feasibility studies, which are very focused on the ridership.

So, how can I say that the making of this project is bankable? We think that this is very important for JBIC, like the Japanese government or financial institutions to provide support as much as possible. So that's a big point, that we already committed to these projects, especially from the broad viewpoint.

But on the other hand, that these projects are still -- this project is a two phased project from let's say, to Baltimore and next to New York. And still, I should say that it is uncertain, the total cost of this project, for example, from D.C. to Baltimore. And also, how can I say that -- helping to implement what kind of schedule is still uncertain. So that's why that the -- it's very early stage, that we should say that -- how much amount we can provide for this project, and also, what kind of financial terms are we going to be able to provide it. But anyway, as I said, we are very engaged from the beginning stage. So that's why we are still very supportive of this project.

MR. PUENTES: And it's based -- so it's half of the amount -- is that what we're talking about? It's $6 billion? Is that about what we're…?

MR. SATO: Yeah. Actually, that is also the still -- how can I say that? That we

understand it. The project is now struggling to find out the exact figure. But you can see that this kind of huge infrastructure project, especially as I understand it, the maglev technology is already proven, even though that's new, but the Japanese company, the high profile company, J.R. Central, already developed it and already has a long experience of using the maglev test ride in Japan.

So, from the viewpoint of the technology, we have no concern. We have no worries about that. But this kind of project, these are spread, for example, in the United States at several states, including D.C. to New York. There are four states there. So, that's why that the -- we are very concerned about that the -- what is the key point is that one of the key points is that -- for making this project bankable is that the -- how to secure the successful civil work.

So from that viewpoint, that the right of way issues -- it's very important and very keen issues. And we would like to have and we would like to see that the federal government -- in addition to the federal government, that each state's government's commitment to support this project.

MR. PUENTES: And I think that is a big reason why we're talking about this thing, because there has been this -- again, we've talked a lot about infrastructure projects, but projects that have financing and funding at least associated with it tend to kind of move to the front burner a little bit.

And so to Sandy, I mean, this is a conversation we've been talking about literally, for decades. Right? I mean, and particularly -- and it's a good point that this is supposed to go from D.C., up to New York. But at least the first tranche through Baltimore.

This is something we've talked about for a very long time. What do we know about this so far? Do we know about the impacts? I mean, how can we make it much more tangible for folks on the ground?

SANDY APGAR: Well first, thank you, Rob, for the invitation. The caveat is I'm no expert on maglev, but I was captivated by bullet train technology during my first visit to Japan, nearly 40 years ago. And since then, I've been intrigued by the simple fact that this idea has not captivated the hearts, minds or any of the politics since the 1990s, when both Congressional and Transportation Department policies were emphasized.

So, my four observations from a two weeks quick survey on this -- maglev's promise hasn't had the national standing of the interstate highway system, the space program, as Governor Rendell emphasized. Why is that?

The second "P," the process. This project has endured multiple stops and starts between the mid-90s and mid-2000s demonstration funding, but not full capital or programmatic funding, intense competition with highways for resources and legitimacy, the excruciating environmental impact study procedures. All of these would kill any bold innovation. What can be done about those?

Third, the politics. I learned firsthand during my service in the Clinton administration, how important it is for any groundbreaking program to achieve and sustain strong bipartisan support from the start. Maglev is driven by both public purpose and private enterprise, and achieves significant public benefits, as well as profit. And it really is a bridge to somewhere. So what's not to like? And finally, the people. Maglev is fortunate that the late Senator Moynihan and current Senator Mikulski were early adopters, and we probably wouldn't be here today, had they not been such strong advocates.

But maglev hasn't enjoyed the Eisenhower or Kennedy touch. Is it time for our president to step up, use his bully pulpit and rhetorical skills and put this on the national agenda? Before suggesting some answers to these dilemmas, a few facts on the basic economics that came from the Northeast maglev team. And they have done the most complete analysis to date, at least that I've been able to find.

For Baltimore from Washingtonians' perspective, the stepchild in this region, but nonetheless, an important node in its own right. The construction phase alone produced 100,000 jobs, $15 billion in output. The ongoing activity, 8,000 jobs from visitor spending and stationery redevelopment. Six hundred billion dollars in annual spend.

Value creation -- 30 to 40 percent increase in property values around the Baltimore station alone. Tax benefits -- nearly $20 million for Baltimore City, which unlike Washington, is a truly impoverished metropolitan entity. And accessibility, 200 to 300 percent increase for business and residents.

These are extraordinary impacts in today's world. And they come not only from the technology, but from the fact that both time and distance are so compressed. And that's an issue I hope you'll pick up further, because it is one of the true game changers, as the governor pointed out, that -- transformative, as much as we use the term loosely sometimes -- this one really deserves it.

MR. PUENTES: So, then let's take it to the other end of the line, start with Baltimore and end in Washington, or I guess vice versa. It has to go both ways, I guess. There has been studies. We've seen the impacts in Baltimore. So Chuck, on Washington, what has been the conversation? I mean, there's been some reporting on this. There has been a little bit of a drumbeat.

I mean, are folks are excited about this? I mean, are you detecting that there is some interest, or is it just skepticism and just a bewilderment, I think?

CHUCK BEAN: Well, Rob, thank you. I'm really glad to be part of this panel. Thank you for inviting me. I'm fresh off of a consult government's board meeting, which we passed a resolution in support of Infrastructure Week. And Governor Rendell, each month we're taking on a focus on water, energy, roads, and roads and bridges. We are very interested.

So, what's the scuttlebutt? Is that what your question is, Rob? I think this is exciting, bordering on dazzling. But my staff includes engineers and planners, and my board are

elected officials. And probably at 311 miles per hour, we probably have 311 questions.

The right of way, the connection with Amtrak -- what's it going to mean to Union Station and others? But if an icon of infrastructure says we ought to look at this, like Governor Rendell, then we're going to look at it. You quoted Gretzky, and the other famous Gretzky quote is, don't skate to where the puck is. Skate to where the puck will be.

And so, could I just take a couple of minutes to paint the context of what this could mean? And I got a little acronym, and it would be PEACH. And PEACH stands for Population is the first letter. So, the district is about 640,000 people. And it's growing by about 1,000 people a month. The coveted 25 to 44 year old demographic is growing D.C.; probably going to grow it to its historical peak, 640,000.

But in this region, Fairfax, Montgomery, Prince Georges, all are at more than a million people. So the metro region is more than the district. The metro region is over 5 million people. Now, where the puck's going, we expect that 1.6 million additional people are going to be joining us by the year 2040; 1.6 million on top of the 5.2 in the consult government's footprint.

Why are they coming? That's the E, the employment. There's a lot of employment opportunities. So, 1.6 million people coming, about 1.3 million additional jobs to be created in this footprint. Well, that's not enough people for those jobs, so we're going to have to keep importing people. And by importing people, that means going further and further out in the commute shed, and that's going to have problems for transportation.

We need to be more dense. So that gets me to the A and the C, and that stand for activity centers. That's our big thrust of the council governments, is dense transportation or into development -- transit oriented development, mixed use, hopefully, mixed income. So, we've identified 141 places throughout the region, not just the district, Fairfax, Prince Georges, but also, broader out to Prince William Loudoun.

Half of those 1.6 billion people we think need to go into one of those 141 places; 9 percent of the land mass. That's what we call the activity center, and it leverages the existing transportation and transit infrastructure. You kind of see the picture I'm building? We need to go dense.

But the problem with dense also gets us to the H and P, and that's housing. So, housing is costly here. The median housing cost in this metro region is 383,000, but that includes condos and town homes. So, those of you who live in the district, a single family home, the median is about 943. In Arlington, it's 880, housing costs.

Like Governor Rendell talked about, the relationship between Philadelphia and New York -- an expanding relationship between Baltimore and D.C. The D.C. metro region -- you know, I've got to include Tyson's. Tyson's has as much office space as Atlanta and Miami. That's our region. But that would be a good meld. I'd be happy to talk about some other melds between Baltimore and Washington, but hopefully, that gives a little bit of picture where the

puck is going. But the key thing for us is, it would have to meld and mesh with the existing infrastructure.

Future Union Station. There's a $7 billion investment plan. That's in the works. MARC, that's the Maryland Commuter VRE -- they come to Union Station. Those all need to work better. And the big infrastructure in our region, metro. That's the key. We need to get metro. We need to get to eight car trains in order to really realize the vision. So, maglev would need to work within that context of the population employment, and then that transportation infrastructure.

MR. PUENTES: And is this part of the conversation? I mean, it was in the greater Washington -- the 20/40 plan, I think. Right? Hadn't this been discussed -- I mean, it's a technology for the future. But this isn't a brand new conversation here in Washington.

MR. BEAN: Our transportation brought -- director brought to me a decade old version of maglev around 1999 that had been looked at. What are the feasibility analyses that could be done in Maryland? I'm not sure whether or how it got bogged down in Maryland. But you know, we would want to be part of the conversation.

MR. PUENTES: Got it. And I want everybody here to be part of the conversation, too. I'm going to go to the audience in just a couple of minutes, but I want to stick on your compression point. I think it's a nice pivot from what Chuck was just talking about.

So, what does that mean, that the collapse of these two metros -- this is where you're going, right? So that they're closer together, and the connection between D.C. and Baltimore, 15 minutes, 20 minutes -- is that what you're trying to get at? What does that really mean? What would that mean for Baltimore to have that closer connection with Washington?

MR. APGAR: Well, take the two factors -- proximity and speed. These are actually approximate urban areas -- 35 miles -- not that extensive. And yet, culturally and in many other respects, they might as well be across the country. To bring them together by this extraordinary technology is a way of uniting what now is statistically a region, but operationally, is not.

MR. PUENTES: According to the census.

MR. APGAR: According to the census, at least, and most businesses who are in the market and actually see this as a market.

Just for those of you who may remember, at least on paper if not by experience, Concord. When Concord was operational between Washington and New York and London and Paris, there were many people, and it was usually full, who would have power breakfasts in Washington or New York, late lunches in London or Paris and be home in Long Island or Northern Virginia for dinner.

Now, that was the way large and complicated deals actually got done for a very

small number of people. The same analog, however, forward 40 years can work here between these two cities. And this combination of bringing proximity, which is a function of both time and physical space and speed -- the speed of being able to have breakfast in Washington, visit surgeons at Hopkins, have lunch with a venture capitalist in Baltimore, go to an Orioles game and be back for dinner.

MR. PUENTES: I think it's the Nationals. Partisan crowd here.

MR. APGAR: Yeah, well I know.

MR. PUENTES: But given -- so given the density, that makes a lot of sense. I mean, connecting these places and building off the economic activity that's happening here in Washington is going to help Baltimore. But it's a built up corridor. Right? It's a corridor with a lot of stuff between here and there.

And so Connie, so you're familiar with the project, and I guess it's between Tokyo and Nagoya, obviously also built up, probably more built up than this. How do they deal with the challenge there, and can those lessons be imported back here in the U.S.?

MS. CRAWFORD: Sure. Well, the bullet train, the Shinkansen actually follows the coast, and so that is a more curvy route, and it takes over two hours to make the trip. The maglev project takes a straight line, and that straight line takes it through the Japanese Alps. So, it's mostly going through mountains, and it's about 80 percent or perhaps higher in tunnel. And the Japanese are great tunnelers.

Interesting thing about maglev: The trains go so fast that they cannot push the air out in front of them in the tunnel. The tunnel has got to be big enough to compress the air to the side. So, you make the tunnel just a little bit bigger. Two trains can pass each other in the tunnel. So, these are tunnels that are about 45, 50 foot diameter running through the mountains.

It runs through a mountain for about four miles, comes out over a valley, appears 200 feet high and then boom, into the next mountain tunnel. Now, we don't have that geography here.

MR. PUENTES: That's why I thought -- I thought we were going to get to that. You were going to say, oh, they tunneled it there. We'll tunnel it here. But I guess we can't here. It's not like there's big mountains in the way. They'd have to do something else.

MS. CRAWFORD: You have to go straight. You can't wobble side to side. You can't go up and down, or your customers are going to be very uncomfortable. So, we're looking at alignment -- we've looked alignments going all the way up to New York that allow us to maintain a straight alignment. Now, some of it's going to have to be in tunnels. Certainly, in the dense urban areas, you're in a tunnel.

MR. PUENTES: So it has to be straight because of just the technology.

MS. CRAWFORD: It's got to be straight --

MR. PUENTES: If you're going 300 miles an hour, you've got to go straight. Okay.

MS. CRAWFORD: It's got to be straight for the customers.

MR. PUENTES: And you think it is possible, then, between here and Baltimore?

MS. CRAWFORD: Yeah.

MR. PUENTES: And that's required purchasing land from folks and --

MS. CRAWFORD: There would be some land acquisition. We're still playing with different alignment options, but we've found a couple of options that appear to work.

MR. PUENTES: It's just -- I think when we've talked to people, I think this is the thing that people seem to get right away, that there's stuff in the way. Then there's things that -- how are you going to --

MS. CRAWFORD: There's going to be a lot of tunneling.

MR. PUENTES: How are you going to get things between there?

MS. CRAWFORD: There will be a lot of tunneling.

MR. PUENTES: Yeah.

MS. CRAWFORD: It has to be. You can't go above ground at 311 miles an hour down Pennsylvania Avenue.

MR. PUENTES: And what does that do to the cost? The tunneling, obviously --

MS. CRAWFORD: You know, the cost to real estate is pretty high, too.

MR. PUENTES: Interesting. So then talking to -- I mean, I see the reasons for doing it in Washington. It's very visible. Because obviously, there's lots of reasons for doing it here that's -- I mean, the Acela is working quite well, as the governor was talking about in the Northeast Corridor. Are there other areas of the country that might be -- you think would be better for the Japanese to test out this technology?

I know we've talked about high-speed rail with the president's initiative in places like -- outside of -- between California and Nevada in the desert, which I guess is straight and flat and maybe it's a lot easier. They talked about high-speed rail in Florida. Again, in the median of the interstate there. What's the reason for trying to do it here in Washington? What's the magic here?

MR. SATO: Yeah, actually, you can see that of course in Japan, of course, you can see that the very crowded area in Japan in anywhere. But compared with such a situation -- anyway, from the viewpoint of the technology and from the viewpoint of the ridership and from the viewpoint of the cost, I mean, that this area from D.C. to New York is the most promising area.

MR. PUENTES: Because the market that's here.

MR. SATO: Yes, yes. From that viewpoint with -- I understand that your center and the different governments selected this area.

MR. PUENTES: Picked one of the hardest ones to get this going.

MS. CRAWFORD: Mm-hmm.

MR. SATO: Yeah, a very difficult decision. Anyway, we JBIC that the -- because we think that this project has several significant importance between -- from the relationship between the Japanese and the United States. And of course, the deploying of the Japanese technology to the United States is important. And also, from the United States' side, as the ambassador and the governor also said, that this could be the game changer to improve the way of life in the United States.

MR. PUENTES: Mm-hmm.

MR. SATO: For bringing the punctual and energy efficient mass transit system. So, that's why we are very, very excited to be involved in this. And also the other government or financial institutions -- because of our involvement and engagement in this project, it's a good signal for the private funds mobilization, too. So, that's why even though this is a very early stage.

Actually the usual financial institution, it's that to think about the financial viability, and whether they will provide the financing or not -- when enough information would be prepared. But now, that is still -- a very early stage, but we are involved in it. That means that we would like to -- how can I say, they will demonstrate our strong commitment for this project.

MR. PUENTES: And I know in Japan, in Tokyo, in particular, there is a tighter connection between the infrastructure investments that are made and the land costs and the land value that's generated. And there's a symbiotic relationship. They capture that value and invest it in the system.

MR. SATO: Yeah.

MR. PUENTES: Is that part of the conversation here? I know you talked about the real estate costs. Is there a way that we can capture some of that increase in property values

and support the system to kind of fill in that gap, you think? For anybody?

MR. SATO: Yeah, actually, that point is also very, very important, actually that in Japan that we have Shinkansen is that there -- not only the ridership, but also, how can I say, the development of the station area is very big, how can I say, profitable area for thinking about the total project cost and funding. So, that's why -- that kind of the thinking also should be about this Northwest corridor too.

MR. APGAR: And the best model we have anywhere in this country for that proposition, capturing value from the infrastructure horizontally in the vertical space is in Columbia, Maryland. The original structure of financing that land development privately over a long period of time by institutional investors, and then recapitalizing as the lots were sold is still the core model.

And in this case, because density is such a factor of the way this technology works, that same model should be applicable. I'm not sure anyone's done the analysis, but at least it's an approach.

MR. PUENTES: I want to go to questions in a second, but I have one more just for everybody. I'm violating my rule. I wanted everybody to participate. I'm doing all the talking. But the governor mentioned something that I thought was really interesting, that if we had this at the shuttle, the Delta shuttle, would be obliterated. And I agree with that. I think that it would be tough for it to compete.

In Japan, are there other examples of where there's a tight connection between the railway network and the aviation network, so they're not -- I don't know, they're not in competition with one another; that they're more cooperative, that we recognize that there are trips maybe the distance between Washington and New York that is probably better served on a rail versus other things that should be longer distance? Is there any connection that we can make with aviation?

MS. CRAWFORD: I can answer that. Around the world where high-speed rail lines, true high-speed rail has gone in, the airlines have dropped those flights pairing those routes, and they've been glad to do it, because they don't make money on the short flights. If you think about it, the ground time, the -- you know, at the gate, the passenger handling is the same cost, whether you're flying 200 miles or you know, 2,000 miles. So it's worked well.

MR. PUENTES: That's interesting.

MS. CRAWFORD: Yeah.

MR. PUENTES: That's another benefit we should maybe talk about.

MS. CRAWFORD: Mm-hmm.

MR. PUENTES: So let me turn it over to folks to see if you have any questions.

If you can identify yourself, say where you're from and try to keep it in the form of a question, as Strobe Talbot, the president of Brookings says, it has to end in a question mark. And direct it to anybody up here. Starting down here.

RICK RYBECK: Hi, my name is Rick Rybeck. I'm with Just Economics, and in a prior life, I worked with the D.C. government and was involved with the environmental impact statement on the prior maglev project.

And one of the things that we did was, we made sure that the maglev project, which was between Washington and Baltimore, did have a stop at the BWI airport. And thinking on toward the Northeast Corridor, it could stop at the Philadelphia airport, and also, at one of the New York airports, as well. So, just to put it in terms of a question, is there any reason why the maglev could not also, in addition to going center city to center city, couldn't also stop at some of the major airport hubs to facilitate that sort of intermodal connection?

MR. PUENTES: I guess the more stop you have, the harder it's going to be to go somewhere fast. But I know folks have --

MS. CRAWFORD: I can answer that. Yeah, the plan is to stop at the major airports along the corridor.

MR. PUENTES: Anybody else? Seems straightforward, I think to me. Let's go down here.

JACK UNDERHILL: I know two people on the panel, one of which will remember me. I knew Sandy 40 years ago.

MR. PUENTES: Your name and affiliation.

MR. UNDERHILL: Jack Underhill. I'm retired after 42 years of federal service. Two questions. One is, I understand the maglev has to be subsidized. It's not cheap. And secondly, what experience did we learn from the California experience and from the Vitesse in France?

MR. SATO: Okay, the first point, as you said, of course, this project required a huge capital cost. But also, as ambassador said, in Japan, we are, now that the J.R. Central, private company who would like to deploy this project by their own funds. So that means that there this is, of course, a possibility of the commercial viability of the project between the Washington to New York, too.

And as I said, we are now, how can I say, providing funds for the 50/50 study and the ridership and how to make this project commercially viable. We are native parties, how can I say, trying and struggling to do.

MR. PUENTES: Anybody else? How about the last -- the second question is the harder one, even harder than the financing. How about the politics? I think that's what's

happening in California. I mean, the whole high-speed rail conversation, which I think started off very promising, kind of got bogged down here in the U.S., and I think your comments are right, that we do need some leadership. We need somebody to talk about it in a more positive way. I mean, how can we do that in this case? Chuck, I mean, is there --

MR. BEAN: Well, I can speak more closely to the local politics, the region politics than the federal government. And I think some of my mayors and chairs would approach this with a little bit of a Maslow hierarchy of needs. And on the bottom would be metro, and getting metro to the next level.

It's got to work with the system for maglev to work. So if there were an infrastructure alliance of common needs, and the federal government were able to have a rounding error of a few billion to invest in metro -- you know, one third of commuter trips are by federal workers in this region. I think there would be a lot more excitement for maglev, and that might be the politics of the alliance.

MR. PUENTES: So, it's hard to think aspirationally when the day-to-day challenges are just so interactive. Is that the --

MR. BEAN: I think that would be the reality of the entity that compiles the 20/40 constrained long range transportation plan. Yes

MR. PUENTES: Well said. Any other questions? Right here.

MR. MCNICHOL: Hi, and thanks for the ability to ask the question. My name is Dan McNichol. I'm an author of books on mega projects, and I'm very curious. What happened between Shanghai and Hangzhou, and why wouldn't that be a problem here in the United States? If China can't build it, how can we build it?

MR. PUENTES: Referencing the existing line that's there?

MR. MCNICHOL: There was a maglev line out of Shanghai International Airport to Pudong, and it was supposed to go on down to Hangzhou, and they killed that, and they're replacing it with a high-speed rail -- traditional high-speed rail.

MR. PUENTES: Anybody? Connie, do you have --

MS. CRAWFORD: You know, it was a German technology for the system, and the Chinese used the German technology. And I think that there was some problem with the agreement to find a way to extend that technology, the use of it. I think the Chinese tried to, you know, backwards engineer it, so that's my understanding.

MR. PUENTES: See, maybe it was a technological -- one of the things I was trying to figure out how we're going to sum this up. It didn't strike me that there is a technological -- or engineering challenges that we have right now. Those are solvable, I think.

MS. CRAWFORD: Yeah.

MR. PUENTES: But do you think that's the case? I mean, do we still have technological and engineering hurdles we have to overcome here?

MS. CRAWFORD: The system has passed all the hurdles in Japan. And I mean one thing, if you go to Japan, there's a wonderful museum outside of Nagoya that's the railway museum that gives the history of the railway. And shortly after the Shinkansen, the bullet train went into operation, which is 50 years ago -- this is the 50th anniversary, they started developing the next generation technology. So, they've been working on this for decades.

MR. BEAN: Can I ask a question, Rob? In my materials, I wasn't sure of the business plan, how many hypothesized traveling from Baltimore to D.C. or vice versa in a day. Does someone have that? How many would commute in, does one think?

MR. PUENTES: Any ideas? Any of this come up in the --

MR. APGAR: Good question. I think the maglev team may have an answer. Nope. One other question there.

SPEAKER: (Off mic) The earlier EIS did a ridership study for this. (Inaudible).

MR. PUENTES: So I think we have numbers on it. Again, this has been studied. We think they thought about it for a long time. I guess --

MR. BEAN: One of my points on that, our data show that about 5,000 people from Baltimore City commute into D.C. on a daily basis, and about 45 percent of them take commuter rail. So, that's the beginning of a market, perhaps, and that's grown by about 2/3 in the last decade.

MR. PUENTES: Mm-hmm.

MR. BEAN: Now, there's 783,000 jobs in the district. That's going to grow by 2040 to 200,000. So, I offer those numbers and part of the business model, but who is going to be taking it? You know, as an equity issue, it probably ought to be part of the considerations.

Yes, we need the individuals who can afford a $250,000 home in Baltimore, working in D.C., but I think we also need a stronger venture capital infrastructure in D.C., and if that solves that problem for D.C., I think people would be more and more interested. Our gross regional product is about 40 percent related to the federal government, employee's procurement transfer payments.

That number is going to go down over the coming years, and we need to diversify our economy. If something like this infrastructure would help us do that, more and more people in this metro region would be interested.

MR. APGAR: If I might, and as these two cities come together -- Baltimore's venture capital industry, second strongest in the nation, and the fact that its housing is roughly 35 to 40 percent lower than the district's at every price point, make some of these factors -- argue for the fusion. And this is about fusion. It's about connectivity.

MR. PUENTES: But I never thought -- do you think it would be commuters that would be taking -- I mean, the Acela between here and there is $80, something like that roundtrip. I mean, it --

Mr. APGAR: But the MARK is only seven.

MR. PUENTES: Right.

MR. APGAR: And so that difference is fundamental. And if any of you are seniors, it's three.

MR. PUENTES: This would be a hundred -- I don't think any estimates --

MR. APGAR: These economics -- but won't the market stratify? I think that's the natural conclusion, just as it does today. There are people who will pay the $40 on the Acela, and they pay whatever it would take on maglev. But the majority will still come.

By the way, the numbers, Chuck, that Baltimore uses are roughly five times the numbers you quote for the rail commuter traffic. And it's largely driven, by their surveys, anyway --

MR. PUENTES: So you think 25,000 versus 5,000?

MR. APGAR: Yes. And largely driven by the difference in housing values, since Washington does have a certain ceiling on its income structure.

MR. BEAN: The variation might be where the person originates from to get on the station.

MR. APGAR: Yes.

MR. BEAN: It might be a tighter core. A larger core might have that 25,000. I think I was looking at a smaller number. Don't know. We'll have to talk later.

MS. CRAWFORD: But I wouldn't discount the reverse commute.

MR. APGAR: Yes.

MR. BEAN: Yes.

MR. PUENTES: The people living in Washington working in…?

MS. CRAWFORD: You know, there are more people who get on metro north trains leaving New York City every morning, going out to Stamford, than there are coming in.

MR. PUENTES: Wow. I did not know that.

MS. CRAWFORD: Yeah.

MR. PUENTES: That's a good fact. Let's go right here.

MR. HASKLE: Hugh Haskle from the Institute for Engineering and Environmental Research. Looking at a project like this that's going to cost a lot of money, we need to look at some of the long-term effects. And a couple have occurred to me. I guess the main one is that it looks like from recent reports, that we are locked into a significant sea level rise over the next 50 years.

How is that going to affect how we construct a line that runs along the coast, which is going to be specifically or particularly susceptible to what happens on sea level rise?

MR. PUENTES: So here in the Northeast -- I guess it would affect any kind of infrastructure.

MS. CRAWFORD: Yeah. I mean, you design for a hundred year storm, a hundred year rise. You have to design for it. I was actually in Japan when they had a typhoon, and the test train continued running through, I think winds over a hundred miles an hour. It shut down a lot of other infrastructure, but the maglev train kept running through it.

MR. PUENTES: Would this then -- maybe this would help our resiliency efforts in the broad term.

MS. CRAWFORD: Existing infrastructures, as Governor Rendell very clearly pointed out -- it's old. And sometimes, you really need to build new. It's so hard. As Chief Engineer of New York City Transit, just trying to renew this hundred year old infrastructure is really hard. Sometimes, you just have to build new.

MR. PUENTES: I can't imagine what that's like. Question here? Have a microphone.

MR. FLANAGAN: My name is Dan Flanagan. I had the privilege of representing Transrapid, Senator Moynihan, et cetera, all during the '90s up until the early 2000s. I was always chairman of the U.S. Infrastructure Investment Commission and TIFIA came out of that, et cetera.

But my point is, lessons learned. And there's dozens and dozens of them. But the Germans never built -- they had a test track at Loudon, and I flew over there a couple of times with the senators and took groups out, and it was fantastic. It was unbelievable. But they never

were able to build one for you know, domestic purposes. And that really hurt their effort globally.

They had a great project from Hamburg to Berlin. That's what they were going to build in the late '90s, and the socialist government was all set. But then the Greens, for interesting reasons, objected. They were part of the coalition, and they -- replacing the CDU. And the Greens thought that mobility -- they were bicyclists and so forth, and they were very opposed to this high-speed maglev, and they were a critical part of the government, and so it really slowed down.

But the point I wanted to make about Hamburg, Berlin is they really had a great project finance plan. And the government was creating a government corporation that was going to build out the infrastructure. And Deutscheman was being privatized, and they were going to be the operator, and they would pay a long-term lease over many, many years. And you'd see on the graph that actually, over the many, many years, they'd actually pay it off, so to speak. And then they would lease --

MR. PUENTES: Okay, do you have a question for us?

MR. FLANAGAN: And then Deutscheman would lease the equipment, et cetera, at depreciation, all those things. They really put together a -- you know, it was very well done. And I just want to mention that to you in terms of planning these kinds of things. That's what it takes.

And on Shanghai, the Chinese Premier was an engineer. And it was a big test, whether they were going to go high-speed rail or go maglev. Siemens was in both businesses. Transrapids was Siemens and Tessing. They had mixed feelings about this, because they wanted to sell a lot of steel on steel in China, as well. But as it turned out, they felt that maglev was too expensive, and that's why. That answers your question.

MR. PUENTES: So the question was -- so what lessons broadly -- do we know from overseas that we can import here for this project? And what have we learned internationally that's relevant here?

MS. CRAWFORD: Well, I'd say it's pretty impressive when you go overseas how they are willing to invest in infrastructure. And certainly, in Japan with this project, it's over $50 billion privately funded, and they've built 45 kilometers of it already, and you know, they're moving forward. And I travel elsewhere, and they're spending 10, 15, 20, $30 billion on new transportation systems. They're doing it.

MR. PUENTES: So let me end with a question then, for Takayuki on that. I mean, the Japanese government -- I mean, obviously are looking for this as an investment opportunity. And the U.S. is the emerging market right, in this case?

MR. SATO: Yeah.

MR. PUENTES: If we can't get this done, you know, if the doom and gloom and all the naysayers are right, are there other markets? I mean, is there other places where Japan would say -- well, looking -- well, Brazil is looking at this? Or India or some other places? I mean, are we in danger, then, of losing this opportunity here in the United States?

MR. SATO: Yeah, actually from the viewpoint of the maglev -- but I'm not sure which area that this is a potential area. But high-speed railway projects -- it's all over the world, because there are so many potential growth areas, and we are also involved in the high-speed railway project from Malaysia to Singapore. Some Japanese companies also have concerns over there. So, there are many opportunities still all over the world that we are building.

MR. PUENTES: I think there are certainly opportunities. So, I want to thank the panel. I want to just -- I think we had some -- this was a much more optimistic conversation than I thought it would going to be. I really thought that we were going to -- because the challenges I think are so -- maybe they're just so obvious, I think, to folks.

I mean, this is something that's very aspirational. It has a lot of benefits. The challenges of the right of way between here and another place, and the finance thing are very large. And I think that we need to deal with those. I think it's clear -- so the technology maybe is not the problem and the engineering is not the problem. We can get past these. And they're not an excuse for inaction, but we've got to figure out some of the financing. We've got to figure out how to make these broader connections and then take advantage of these new trading relationships between the United States and Japan.

So, before I turn it over to Mireya, I want to -- please thank the panel very much.

(Applause)

DR. SOLIS: Thank you so much. We've had a terrific discussion. I would like to thank everyone for joining this conversation. A special thanks to Ambassador Sasae and Governor Rendell and the distinguished panelists. And I would like to ask you to please remain in your seats just for a few moments so we can let the ambassador and the governor exit, and then everybody can exit the room. Thank you so much. Have a good day.

(Applause)

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