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HOW TO CREATE A BETTER, MORE EFFICIENT APPROACH TO INFRASTRUCTURE

FEATURING KEYNOTE REMARKS BY
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Introduction:

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Keynote Presentation: Trump's New Infrastructure Initiative:

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Panel: Infrastructure Investment Execution:

Moderator:

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Closing Remarks:

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P R O C E E D I N G S

MR. KLEIN: Good morning. Welcome to Brookings for an exciting and topical conversation on how to create a better, more efficient approach to infrastructure. We're pleased to welcome Derek Kan, the under secretary of policy at the Department of Transportation, we'll be addressed by Congressman Brian Babin, and we have a distinguished panel. But before you hear from them, I want to set the stage briefly.

There's a broad consensus that America's infrastructure system, once a source of national pride and international competitive advantage, has decreased in quality and in certain areas fallen into a state of disrepair and disgrace. Look no further than today's front page of the *Wall Street Journal*, a pedestrian bridge collapsed resulting in fatalities. That's just unacceptable.

There are important debates regarding what to do about this, how much to spend, who should pay for it, what should be built, and who is responsible. American infrastructure's largely decentralized, with strong roles played by state and local governments, as well as the federal government and, increasingly, the private sector. These are a lot of tough questions, but let's put them aside for a second. Regardless of where you come out on these questions, there should be one position that's shared by everybody: Whatever amount of money is spent, infrastructure should be built more wisely. We should use our limited resources as efficiently and effectively as possible to produce the greatest returns on investment.

Transforming these economic platitudes into actual actionable outcomes is more challenging that economists often assume. We like to just assume a simple cost-benefit analysis and everybody plug in the numbers, but the reality is that designing cost-benefit analyses within and across infrastructure modes is not straightforward. Infrastructure projects are often idiosyncratic with unique challenges, constraints, and differing goals.

The purpose of today's event is to bring together a diverse cross-section of policymakers, thought leaders, and professionals to delve into details and try to think through concrete solutions to enable infrastructure investment to achieve more of its potential and avoid

wasteful mistakes. To lead us in that endeavor I am very pleased to introduce Derek Kan, under secretary of transportation for policy. In that role he coordinates the department's budget and policy, generates proposals regarding legislative and regulatory initiatives across all modes of transportation. He's really the thought leader at the department as well as the number three person in charge and, uniquely and importantly, in charge of all modes of transportation.

A leader in transportation prior to his appointment, Mr. Kan was general manager of Lyft and served on the board of directors of Amtrak. No stranger to Washington, Derek served as chief economist to the Senate Republican Policy Committee, on the staff of the White House Office of Management and Budget, and as a policy advisor to Senate Leader Mitch McConnell. Where Derek is really important, played a critical role in helping America address some of its major financial and economic and, at some level, political crises going into the financial crisis in 2008.

Derek is a graduate of the University of Southern California, the London School of Economics, and Stanford University's Graduate School of Business. Please join me in welcoming a friend, colleague, and a thought leader in transportation, one of the most important roles in government in Washington here, Derek Kan. (Applause)

MR. KAN: Thank you, Aaron. Thank you all for coming. It's great to see a lot of familiar faces. And looking at the panel that follows me, I'm looking forward to hearing folks like Tony talk about some of the great ideas that ASCE has and the grand challenge that they kicked off; Nick on some of the data analytics that Virginia's doing; and Cal on a lot of the things that the chemical industry is facing in terms of infrastructure. You're in for a great treat.

Tara Jeffries has promised on her Twitter she can make anything sound interesting. So I'm looking forward to seeing that. We're going to hold her to it.

Infrastructure's always hard to talk about, in large part because there's the ASCE. And the ASCE, as everybody here knows, grades everything, so I'm sure everybody's thinking is this panel, are these remarks going to be a D+, another D+, because that's all we've heard. So hopefully, we talk about a number of important issues.

I want to talk about three things today. First, I want to talk about the

administration's priorities and really Secretary Chao's priorities at the Department of Transportation. Number two, I want to talk about infrastructure and what are the core reasons to the inefficient allocation of capital and construction we have in infrastructure today. And third, on the administration's proposal.

The department is focused on three things. Secretary Chao laid out three key priorities for the department. One is safety. Safety must always come first in everything we do. Number two, rebuilding our nation's infrastructure. And number three, preparing for the future; that is deploying and testing innovative technologies that can potentially leapfrog us to have a more competitive infrastructure system globally.

Secretary Chao has a long history in the Department of Transportation and a deep understanding of these issues, and really how to balance innovation and safety. It's something we spend a lot of thinking about. And yesterday was just another sobering reminder that we need to balance safety with infrastructure innovation.

Now, today I want to really focus on two more things: the core reason for inefficient infrastructure and, two, the administration's proposal. Everyone knows our country's infrastructure is aging and that there are challenges everywhere. We've all seen and read ASCE's grade of a D+ and some statistics recently are further sobering.

From 1980 to 2008, VMT, vehicle miles traveled, in this country grew by about 95 percent, yet highway miles only great 7.5 percent. The result of all of this is increased congestion, increased delays. And cost estimates of these delays range anywhere from $160 billion annually to $300 billion annually. To put that in perspective, that's like an additional tax of $500 or $1,000 out of every single American in this country today.

The needs are even greater in rural America where 19 percent of our country lives, but 50 percent of highway fatalities occur. And so you have this major mishmash and an acute problem that we're trying to solve.

But if you think about it, these are all symptoms. And I want to spend some time talking about the core economic problem. Most public policy problems relate to market failures and most market failures relate to externalities. And this is really the core challenge in

infrastructure globally. The benefits are highly disbursed, but few will offer to pay.

For instance, if a bridge is built on the other side of town and you save 25 cents a day because of a slightly faster commute and packages come, you know, a nickel a day. That comes out to maybe 30 cents a day or $100 a year. Well, if you received $120 bill at the end of the year to build a bridge across the city, nobody would want to pay it. So you have this problem where there are slight marginal benefits to a very broad base of users.

And now we have a hard time figuring out how do you really allocate cost? And that's where the federal government has long played a role. If a program couldn't get funded because of this externalities issue, it would simply turn to the federal government. But today, we have somewhere between a 2- to $4 trillion gap in infrastructure spend over the next 10 years. And I think ASCE estimates that we have a $5.2 trillion gap by 2040 unless we change the trajectory. That's what Cal's talked about in some of his -- Tony's talked about in some of his remarks.

If you look at our nation's infrastructure the vast bulk of infrastructure spending and ownership in the United States is non-federal. So the administration has developed a long-term solution to our nation's infrastructure problem that rests on strong federal, state, local, and private partnerships. Providing more federal funding on its own is not the solution to our infrastructure challenges. As history has shown that when taxpayer dollars are sent to Washington, they're oftentimes inefficiently invested. And D.C. doesn't solve this externality problem much better than anybody else. And so the administration is proposing, offering these additional funds in a manner that will stretch the use and the benefit of taxpayer dollars.

So how do we solve this free-rider problem and build a more efficient infrastructure? President Trump's infrastructure plan is based upon a few core principles. Number one, stimulate infrastructure investment. Number two, invest in rural America. Number three, increase state and local authorities and push down decision-making to state and local leaders. Number four, eliminate regulatory barriers. And number five, streamline permitting.

Under stimulating infrastructure investment the President's proposal does four

things. First, a new incentives program is created. This would encourage state, local, and private investment by awarding project sponsors incentives for demonstrating innovative approaches that will generate independent revenue, reduce project costs and timelines, and improve performance. The incentives program would target a wide range of traditional government-owned assets, ranging from roads to airports to rails, ports, waterways, and many others. Sponsors would apply for incentives and they'd be evaluated on an objective criteria with new revenue being the largest driver for the award and things like updated procurement policies and innovative project delivery processes as other components of the criteria.

As I mentioned earlier, rural American has unique infrastructure challenges, particularly because of this free-rider externalities challenge. The President's plan would seek to rebuild and modernize bridges, roads, waste-to-wastewater assets, power gen assets, and broadband through the Rural Infrastructure Program. The bulk of these funds would be provided to governors with a formula to choose the investments that respond to their unique needs. States could then apply for the remaining funds, which would be distributed on a performance-based grant basis.

A third component of the infrastructure incentive is the Transformative Projects Program. The President's plan includes a focus on transformative projects that can reimagine the traditional approaches to infrastructure and unlock GDP growth. The Transformative Projects plan would spur competition around bold, innovative, and truly transformative projects that could dramatically improve future infrastructure, become self-sustaining without federal support, and have a significant impact on the nation, a region, state, or metropolitan area.

The plan would also expand existing financing programs to address a broad range of infrastructure needs, giving state and local leaders increased opportunity to finance large-scale projects. States like Virginia have used the TIFIA program, which is a loan program administered by the Department of Transportation. And the proposal we put forward does thing like expand TIFIA eligibility, increase funding for it, also increasing the funding for RRIF and broadening its eligibility, as well.

So at the end of the day, the President's proposal can be summarized as doing

two big things: creating more tools and incentives to help address this externalities problem and, two, returning decision-making back to the states.

Now, it's always fun to come to Brookings and have an idea, a proposal criticized, analyzed, and debated, so I want to spend some time talking about a paper that Aaron wrote three years ago and analyze, criticize, and debate his paper. Just kidding, Aaron. I'm not going to debate all of it.

His paper laid out seven ideas ranging from expanding TIFIA to creating better incentives, to encouraging better procurement, to leveraging new technologies really around user fee collection. And frankly, many of the principles and ideas in the President's package are similar to that Brookings paper around procurement, innovation, and finance. Put another way, there's a lot of agreement on some of the policy solutions, mostly notably increased funding and expanding the eligibility for TIFIA and, two, promoting more ways to collect revenue.

Also, Aaron's paper did a very good job of highlighting new technologies and its potential to address infrastructure issues. We believe new technologies are changing transportation. For centuries, literally centuries, the way we addressed transportation and congestion challenges is spending millions and billions to build longer, wider, and more roads and bridges. But today, technology is disrupting transportation in a different way and giving us a new tool to attack it.

Everyone in this room is carrying a GPS device. Everyone in this room is carrying probably two cameras in their pocket. Now, if you think about it, if this data was collected, was aggregated, and was mined, a policymaker could monitor and identify traffic choke points. This is actually something that's not idealistic gas or some futuristic idea. This is something that the state of Virginia is actually starting to do, using data to better predict and identify traffic choke points around the state.

Now, the data we have and the technology we have is truly unprecedented. And this administration also believes that technology has the potential to move us toward a more efficient system.

So let me conclude by saying the problem with infrastructure is an age-old problems. Externalities is the classic public policy problem. This administration believes strongly that creating more tools, incentivizing the right behavior, and pushing more decision rights to the states will move us toward having a better, more efficient transportation system.

Thank you very much for hosting, Aaron. And I'm happy to take any questions. (Applause)

MR. KLEIN: So, Derek, thank you for those wise remarks which really lay out a coherent narrative for the President's proposal, which, as you point out, shares a lot of common ground, and I think you guys deserve a lot of credit. There's much in that proposal I could imagine coming out in any administration. And, you know, people's perspectives differ, but I think on infrastructure it's one in which there's far more common ground than most other issues.

Let's move forward on the President's proposal and imagine a world in which the administration's proposal is enacted by Congress and you get to implement this. You talked about two different buckets of innovative projects, a first one and a third one that's transformative. Can you be a little bit more specific, what kind of innovative projects you imagine being the first to get these grants, to have the local match, and to begin to break ground?

MR. KAN: Three ideas come to mind and we're seeing technology disrupt all forms of transportation, which is so exciting. One where we're starting to see it internationally is the use of self-driving trucks for specific manufacturing and mining processes. In South America, one company is using self-driving mining trucks to move resources 24/7.

So one area where I could see, which states will need additional capital, is to create something like a self-driving, dedicated trucking lane. This not only allows us to de-risk self-driving trucks, but it also allows us to demonstrate technology. And by having a dedicated lane, you then allow for risk of less accidents because if a self-driving truck runs into a barrier, nobody is really injured. And so we have the ability now, the technology exists. You have states that want to do it.

So I could see an early project with some of the transformative money and some of the infrastructure incentives money going to a state that says we have a partner where we'd like to demonstrate a new technology such as self-driving trucking. We have an area that connects a manufacturing hub with a freight airport and we want to create a channel that allows a self-driving truck to move back and forth 24/7. That's one.

I think a second one, which a lot of folks have heard about, is Hyperloop. Hyperloop's now been around where it is a high-speed transmission of either people or goods underground, subterranean, and it could move hundreds of miles an hour. Hyperloop is ready to break ground. They're looking at getting more permits. And so we're already seeing these kinds of concepts being tested and deployed around the world. I think that could be a second area to get some of the first grants that have local match.

And the third, which is even a little further out there, is commercial space travel. This is probably 10 or 15 years down the road, but traveling from L.A. to New York, D.C. to L.A., is a beast. For many of us that have done it, it takes 5-1/2 to 6 hours and 2 hours in TSA. What if you can fly a space shuttle to take 30 minutes? To go to the launch pad and it would literally launch from Los Angeles and land at somewhere like New York or Washington, D.C. And so this is a third area where this is not science fiction anymore. There are companies that are testing technologies, that have raised funding, that are actually creating products that are taking research papers and actually commercializing it.

So these are three areas where I see very near-term application: dedicated trucking, Hyperloop, and commercial space.

MR. KLEIN: So let me delve on that. I think it's fascinating. One thing, you made a great point talking about centuries-old issues. I was doing a book review on infrastructure for foreign affairs, and it's not well-known that in the 1850s, '60s, '70s, when subway technology was a new technology, the competing technology was Hyperloop. It was actually dedicated, kind of airless tubes, kind of like the bank tubes that we see as being the ultimate outcome of that technology, and they built a 1-1/2 city block Hyperloop in New York City in 1870. It ultimately lost to the rail technology. This was around the time of the early

subways.

So it feels to me like we're a little bit on the verge of a tipping point where new technology threatens massive disruption. And when we're talking about investment I'm always reminded that canals were a great investment in 1820 and you could really go belly up building a canal in 1848, right before the railroads come through. Right?

The second question here is are ride-sharing companies reducing demand for public transit? Are drones and new delivery mechanisms going to disrupt trucking? You were part of the disruptive wave of thinking at Lyft before coming to the administration. How are you incorporating that thinking into DOT's infrastructure agenda?

MR. KAN: Well, a lot of exciting questions. It does feel like we're on the verge of a tipping point. There are so many new technologies, so many ideas. Your first question is could driverless cars remove the need for parking? If you think about it the fascinating thing about ride-sharing companies and autonomous is it actually begins to align resources. And think about it, it took us about 25 minutes to go 2-1/2 miles across town today. Now, I wish nobody else had to drive during this time, but I have no way of impacting those other people. It's an externalities issue.

All of us need to get somewhere and we create a slightly worse public good because we need to get somewhere. But those costs aren't really borne by all. And so what is a good way to share costs? Well, one way is to have business models that care a lot about this. And today, you actually have ride-sharing companies that care a lot about congestion. And so whereas getting off the freeway and taking a side road may help me, unclear if it helps others. And that dynamic actually exists now with companies like Uber that think through how do we deal with congestion and how do we map traffic and how do we route and dispatch correctly?

And so driverless cars, really the business model comes around utilization. And how do you utilize a car perpetually? If you are utilizing a car perpetually you do need less street parking. However, you may need more urban lanes and you may cause more congestion. But at the same time, you have a very positive feedback loop because ride-sharing

and self-driving will seek to avoid congestion. And so for the first time, frankly, in history we not only have the problem pretty well articulated, which is externality, public goods, free-rider problems, but you have technology that allows us to start collecting the data and actually making some significant change.

You talked about ride-sharing companies, what they're doing to other modes of transportation. It's interesting, we're seeing that new technologies such as ride-sharing actually have puts and takes. On the one hand, ride-sharing is a great first and last mile enabler, so people will take a ride-share to a local transit station and then jump on the Metro. But at the same time, as ride-sharing costs come down, in some ways it replaces it. So the jury is still mixed if it has a net improvement or harm in terms of demand for transit. What we do know is it is changing the passenger demographic of transit and the nature of transit.

Finally, you talked about the disruptive wave of thinking at Lyft. At the Department of Transportation we launched a new initiative about six months ago called the Safety Data Initiative. There is so much data in the world, we are awash in data. Frankly, there are so many recorders, video cameras, there's so much data, frankly, in this room right now that it'd blow your mind.

To put it in context, the phone that each of us carry in our pocket has more processing power than NASA had, than all of NASA had, when they launched the Apollo mission. Put another way, there is more data in your pocket than all of the movies produced in 1920. You have more storage space in your pocket than all movies produced in 1920.

And so what does this mean for us? As transportation professionals it gives us a great opportunity. And so we've begun with the Safety Data Initiative to do three things: one, bring visualization tools; number two, integrating existing databases; and three, preparing for artificial intelligence.

Now, if a city or a state could capture all the information around transportation, around accidents, congestion, visualize it in a more compelling, and begin to integrate data sources, think of the public good we could do. Think of how we could identify specific choke points, identify high-risk areas, and really change the number of fatal accidents that we have

every year in America.

MR. KLEIN: So to go back, we've gone in depth on the third bucket about transformative. Can we get back to the first bucket of projects? You discuss things that bring in new revenue, and I like how you frame the externalities issue. In the paper you referenced we talked a lot about thinking beyond user fees to beneficiary fees. There are lots of people who benefit from infrastructure who may never actually use it. Think of the landowner right next to the train station or highway stop. They may never have to get on that road or take that train, but their property value's shown a giant benefit.

You also mentioned innovative procurement. Ideas in that paper evolve pool procurement or dig once, coordinating infrastructure modes. Congressman Babin has an idea, who we'll hear from later, regarding open materials and better types of contracting that allow for more competition to reduce cost. How is the administration going to think through weighting these, incentivizing these, communicating with states and localities, sharing ideas so that -- you know, one of the things I noticed in some of the earlier administration ideas that had been implemented about competitive grants is even if you don't get the grant, if you see somebody do something smarter, you incorporate that into your own mode of thinking.

So walk through some of these ideas. Pick any and all and provide a little clarity about how you would think about implementing this proposal.

MR. KAN: There's a ton of very specific ideas we have in our infrastructure proposal. The infrastructure incentives title has six criteria, the biggest of which is leverage, sort of new revenue to the table. But a second important component is innovative procurement policies. And I know you've written on pool procurement, and that's a great example of using new ways to deliver projects more efficiently.

The President in August signed a memorandum directing agencies to start thinking about One Federal Decision. We have a pretty crazy, convoluted way in which we get permits and it really has to stop. We have agencies that oftentimes try to create a very similar document called a Record of Decision. And this Record of Decision is created by multiple agencies doing very slightly different things, but really with same intent.

And so one of the big core drivers between One Federal Decision is instead of having all of these different agencies sequentially pull information and process information, let's create a single record and let's have a single agency. And actually, let's do these things in parallel instead of sequentially.

Another area that you talked about is dig once, which is another great commonsense example. If a state decides to tear up a road to lay broadband and then they also separately, another agency, want to tear up a road to lay new transmission or duct and trench work for a transmission line, well, if they're digging up the same road at a pretty similar time in the same construction season, I have an idea. Why don't we dig once? That's a second example of just basic things that the federal government really hasn't driven and encouraged states to do.

At the same time, there's a lot of sort of informal cultural work that needs to get done, which is better sharing of best practices. I think there's been a long history of states and the federal government being sort of sheepish in acknowledging mistakes we've made in procurement and project delivery when a project is either late or cost overruns. Most folks don't really do a post mortem about what happened. And I think we need a cultural shift to say it's okay if projects are cost overruns or delayed, but let's try to figure out exactly why and let's create best practices and ways in which we can learn and create a more powerful feedback across cities and states.

MR. KLEIN: I think that's excellent. I turn to the audience and let's engage. You know, when I was in the administration I actually that we would put out not just a best practices list, but a worst practices, biggest mistakes. Now, I was in the first term of the administration, the prior administration, like you. And there was some reticence to call out states and localities that had made giant mistakes. I often wonder if that might have been different in the second term.

But I do think that particularly as states would acknowledge and localities acknowledge their mistakes, I live in Montgomery County, Maryland, and there was an unmitigated debacle in building a transit center. And, you know, the county needs to get

beyond that and acknowledge their giant mistake that cost taxpayers millions of dollars. But there is a reticence to do that.

I think Senator Coburn did a good job of calling us out on that, which is hard for me to swallow and say as a Marylander. But I do think that's a role, at some level, the federal government can play.

I see some folks in the audience. We have some mic runners. Who wants to raise their hand and kick us off? You guys didn't all come here -- here we go. I was going to say, everybody came here to talk infrastructure. It's usually not a shy crowd. Exciting is a different word, but we're not shy.

Sir, if you could just introduce yourself and this is *Jeopardy*, so please in the form of a question. (Laughter)

MR. TAMMIK: Sure. Hi, there. My name's Ott Tammik. I work at an infrastructure finance publication called Inspiratia. I was just wondering, I mean, from the federal funding side of what's been proposed in the administration's plan, I understand it's roughly around $20 billion a year for around 10 years. Could you kind of put that into context and how big that really is?

And I appreciate that, you know, you can leverage debt and so on, but you're not going to use that to leverage debt for all situations. You've also talked about state funding and so on, so thanks.

MR. KAN: Great. The question was around federal funding, contextualize 200 billion, and leverage doesn't -- would we really be able to lever that up? I very much agree that leverage concept applies most powerfully today, that with TIFIA every dollar the federal government appropriates to TIFIA results in roughly $40 more in infrastructure financing. And I completely agree with the premise of the question that this alone isn't enough.

To contextualize 1.5 trillion's pretty difficult, but one way to do that is looking at some of the macro estimates that the American Society of Civil Engineers have put out. They say that there's a 2- to $4 trillion backlog. I think the most recent numbers is a $2 trillion backlog, an infrastructure funding gap is what they call it, over the next decade. And while $1.5

trillion won't solve it all, it does help take a big bite out of the infrastructure financing gap.

Now, if you think about sort of the challenges of deployment of capital, oftentimes capital is deployed on the margin; that if you could get 9 percent return versus 7 percent return, you shift your portfolio. And this isn't sort of for a personal investment account. This is actually how mutual funds, endowments, insurance companies think about resources. And so the infrastructure incentives plan seeks to encourage and incentivize more funding from states, local, and private sector to bring that funding to the table.

Also, states oftentimes are very reticent to raise user fees. We see some cities taking a great approach, leading by having a very broad-based tax. For instance, measuring in Los Angeles, half a cent tax on all sales for all citizens in the county. Now, this results in billions of dollars.

Now what our plan does is if a state goes out and sets a broad-based infrastructure dedicated user fee and raises $10 billion a year, our plan would say in year 1 you qualify for a $2 billion check, provided you hit the other things. But you get 20 percent of all of the revenue you raise over the lifetime of that revenue. And so you not only create an incentive, but you also create a very powerful timing shift. So for a city that says is it really worth raising 10 billion over 10 years, where I get 1 billion a year for 10 years, we're saying yes, that all happens and you get 2 billion in year 1.

So a lot of numbers there, but, in short, what the incentives program does is it tries to increase incentives on the margin because that's where allocation decisions are made. And by encouraging states to enact laws, to review their existing assets, we hope that states and localities are able to bring more resources to the table.

One final note, New York a few years ago was asked to conduct an inventory of all their assets, New York City. They found that they had 1,100 assets in the city of New York. Now, if they wanted to sell some of those assets, we would then provide a 20 percent kicker to the revenue they raise from the divestiture of those assets or leasing it out, creating a long-term lease of those assets.

Now, these are pretty commonsense questions and pretty commonsense

solutions. Let's create policies that simply incentivize more financing and investing on the margin because you actually see pretty significant returns in that way.

MR. KLEIN: Yeah, it's amazing what infrastructure organizations at the state and local level have accumulated in assets over hundreds of years of their lifetime. If they were a family, they'd have a garage sale. (Laughter) You know, I've never met a family that's broke and has a bunch of valuable stuff in their attic. I think there was one family just now that found a $3 million baseball card that had been in their attic. You know, believe it or not, I would posit that out of all the state and local infrastructure, there's some of them sitting on real money while they're pointing out giant operating debts.

We have time for the fastest question there is in the room. Sir, you raised your hand quickly. Please speak very quickly and a very brief question because we've got to get you out of here and get up the panel.

MR. RYBECK: Rick Rybeck with Just Economics. Thank you for the presentation.

Aaron, you mentioned the importance of beneficiary fees and the fact that landowners get a huge benefit from infrastructure. Today, most of that benefit is a pure windfall and that's the fuel for land speculation, which is a parasitic activity which disrupts land use, makes infrastructure inefficient, forces sprawl.

I was very intrigued in the administration's infrastructure plan in the transit section you require transit projects to use land value capture financing as a condition for getting federal grants. And I'm wondering why only transit? Roads, water, and sewer, all infrastructure creates land value uplift. It creates efficiency, it ties infrastructure and land use. I was wondering if the administration would extend that requirement to other infrastructure projects.

MR. KAN: It's a very good question. Land value capture seems to make the most sense around transit because that's where most of the research has been done. There's been a lot of research that says what happens when you build a new Metro station or you have transit on demand development around a transit station, what happens to property values. So there is just a large body of literature around what happens to a specific community and

neighborhood when you invest in transit.

But we're not wedded to not having transit as part of it. And this is sort of the greatest thing about the infrastructure package is the ideas, at the end of the day, are pretty bipartisan and there's actually a lot of agreement. And so if folks believe that there should be value capture in a broad array of assets, that's something that we would be very open to hearing and talking more about. So it is not anything that we feel firmly that it should only apply to transit. But rather, there's an openness on a whole range of issues.

At the end of the day, the question is how do we increase infrastructure finance and investment? And that can come from any shape and size. And we are very much looking forward to having this discussion with the Hill.

MR. KLEIN: Great. Well, can everybody join me in thanking Under Secretary Kan for his time and his wise remarks? (Applause)

So in the interest of time I'm going to stay seated and call the panel to the stage. In the process I want to note my fellow panelists.

The Honorable Cal Dooley is president of the American Chemistry Council. The ACC provides generous support to economic studies, which helps make the work we do possible. I'd also like to reiterate Brookings' commitment to independence and underscore the views expressed today are solely those of the speakers.

As the panelists get set, allow me to turn the discussion over to Tara Jeffries. Tara covered infrastructure, technology and communications, two important elements of infrastructure, for Bloomberg Law. Prior to joining Bloomberg, Tara worked at Morning Consult, where many of you may have woken up to her daily reads on financial regulation and tax policy. Tara's a committed Tarheel having graduated from UNC Chapel Hill as a journalism major. Please join me in welcoming Tara to lead our discussion. (Applause)

MS. JEFFRIES: Thank you, Aaron. And with me we have Tony Bartolomeo, CEO of Pennoni. We have Cal Dooley, the former congressman and CEO of the American Chemistry Council; distinguished economist Aaron Klein, as you guys already know; and Nick Donohue, the deputy secretary of transportation of the state of Virginia. Please welcome our

distinguished panelists. (Applause)

Well, I can't promise I'll be as exciting as the Hyperloop or that we're going to spend the entire panel time on space travel, as exciting as that is. But I do want to open with the idea that infrastructure is one of the most exciting policy areas to me, especially covering the tech-oriented side of it. But it's also kind of the most everyday policy area. It's the most mundane details of everyone's day. It's your daily commute to and from work. It's parking. It's throwing trash away. It's all of that and more. And with that, there are obvious challenges.

And I want to ask you, Aaron, first how do we invest in infrastructure when everything is changing? How do you invest in a parking garage when self-driving cars could eliminate the need for it in a decade, let's say?

MR. KLEIN: So it's a really good question about incorporating future technology into current decision-making. You know, I would suspect if Nick had been at the Department of Transportation 20 years ago and they were doing a bond on future toll revenue, there would be no variable for what if there were these self-driving cars? But today we're at that moment of uncertainty.

To me, it makes you think that you have to be, A, a little more flexible in terms of the type of infrastructure you provide. Think about repurposing. Its amazing how long infrastructure lasts and different roads. How many people here have walked the High Line in New York? Okay. It's a pretty big number, right? That was for short-haul freight rail. That's why that park -- and then it sat vacant. Right? Today I think if they put a little charge on that, they could generate a lot of money. So I think you want to be very flexible when you're at these technological tipping points.

I do think there's also a role for government action because when you increase uncertainty, you decrease the private sector's appetite. Pricing and risk is something that's easy to do when there's well-established models. So I think that level of uncertainty can make it a little harder for the private sector and create one of those market inefficiencies that Derek talked about where it increases the need for government action.

MS. JEFFRIES: Excellent answer. I want to go next to Nick. And, you know, I

hear a lot about smart cities and smart infrastructure and how you shouldn't make a smart city a dumb smart city, for example. You've got a lot of data and inputs that you're working with, a lot of new technology making that data available and collecting it, but how to put it to the most efficient use is really a challenge.

Nick, tell me what Virginia is doing with data analytics and transportation.

MR. DONOHUE: Thanks, Tara, that's a really great question and I think it's something that states are actually struggling with now. So we have a ton of data at the states and we really actually don't know how to use it. We're really starting to deploy and try and use it to shape how we figure out how to make the right types of investments.

So for years, we used travel demand models. And these models if you're wondering how they were developed is we sent out survey questions to people whose license plates we wrote down. We hoped that some of them sent it back. And then of the 10 percent who sent it back, we hoped that Harry actually knew what he was doing on Friday four weeks ago at 5 p.m. I don't think Harry actually did.

So one of the things that Secretary Kan mentioned is we're actually partnering now with firms where we are taking cellphone data and GPS data to really start to understand where people are traveling and how they're using the systems. So a lot of the travel models what they would tell you is I-95 is congested between this interchange. But what they didn't tell you is where were the people who are congesting this section of I-95 coming from. Are they all coming from Maryland and driving to Richmond or do they get on on the most recent interchange and are they getting off at the interchange right after that? And finally being able to understand some of that information is really going to allow us as DOTs to make a lot smarter decisions, but it also means we're using more accurate information because your cellphone is not going to lie or misremember where you might have been, and it will always answer the question unlike the surveys that were never responded.

And so I think states still have a long way to go, but we're starting to make some real progress to leverage this data to make smarter decisions.

MS. JEFFRIES: Nick, I would just note that that's really interesting to me

because I, the other day, couldn't remember the exact address of somewhere that I had been months prior. So you know what I did? I looked at my Uber history and found the trip that I had taken there, and I actually figured it out that way. I'm not sure if that's just how my weird mind works, but it's interesting how we kind of have little maps of people's habits like that.

Tony, I want to go to you next and talk about this idea of data-driven decision-making, but from the engineering perspective. How do we design using data to guide decisions?

MR. BARTOLOMEO: Well, that's a good question and thank you, Tara. The notion of data-driven decision-making needs to be coupled with risk-based prioritization. And I think that the algorithms that are being created now and in place in the engineering community are driving right towards that sort of application and beneficial use of the data. So when you have the data, obviously, the value of it is when you can convert it to actionable knowledge.

So a lot of the push at ASCE right now, we've talked about the need for funding. Funding and financing are two different things, and we need to understand that in this arena because one is going to drive the other if there's enough return on an investment and private sector coming in.

However, in this grand challenge that was developed we took out the public policy issues that ASCE has not a lot of control over or the funding and financing, and we focused on this grand challenge to reduce the lifecycle cost of our nation's infrastructure. And the big, bold, hairy challenge was by 50 percent by 2025. Now, that will help optimize the spending or investments that are being made because if you look at a lifecycle cost analysis in your capital or O&M decision-making making you will get more for the revenue invested over the lifetime, not over a two-, four-, or six-year election cycle.

So four pillars that we put in play to drive home this objective is the application of innovative technology, resiliency being built into the decision-making process for your infrastructure, performance-based standards or criteria being considered when you're going out for an infrastructure project, and doing a lifecycle cost analysis and really using it in your decision-making process and not just cheapest-first cost. We've seen situations where

cheapest-first cost didn't consider that 80 percent or more of the lifecycle cost is subsequent to the initial capital investment. So by managing that more effectively we'll optimize the investments, and this is with data analytics, and be able to really get more for the resources being invested.

MS. JEFFRIES: Thanks, Tony. Cal, I want to go to you next. And I've been looking at smart cities and smart infrastructure and I keep seeing articles from the 1890s and I'm confused as to how this is happening, but a lot of the financing mechanisms in particular are very traditional, a lot of the infrastructure that is being built and considered is based on old systems. In the materials aspect of this are you seeing this kind of what's old is new again trend or are you starting from scratch in some ways?

MR. DOOLEY: Well, I think that one of the real challenges we have is, and it gets really to Aaron's opening comments, when you said, you know, you're kind of looking at infrastructure kind of like how do you invest more wisely? And I think that should unify all of us as parties to this. We have a vested interest in seeing more invested and we have a vested interest, also, in it being invested more wisely.

And you're going to be hearing from Congressman Babin a little bit later about his legislation that he introduced that we're very supportive of, which is the Municipal Infrastructure Savings and Transparency Act. And what this basically does is how do we create a better environment and the policies in place that ensure that decisions that are being made on infrastructure are embodying the four pillars that Tony just talked about, that foster a greater opportunity for all materials that meet a certain performance specification, that includes a lifecycle cost analysis, that they are allowed to be considered for an infrastructure project?

All too often, we currently see that there's regulatory and structural impediments because we have some municipalities that have codes in place which are material-specific. And if you want to create an environment that ensures that you almost see more investment in innovative, new products, you need to have this open marketplace and opportunity.

And when you also look at this in the context of taxpayers, you know, one of

the struggles, and I served in Congress, is how do you generate more popular support for investing in infrastructure? They need to have the confidence, your taxpayers, your constituents need to have the confidence that those investments are being made in the most cost-effective way. And that's where this concept that Congressman Babin is advancing, which is called open competition, is ensuring that that we can go beyond these -- you know, there's no material preferences here. It's all on what material's going to perform the best.

And the National Taxpayer Union looked at this concept as it's being deployed today and they determined that there would be $370 billion saved on the 1.3 trillion needed in water infrastructure projects if we just had this policy in place. So we think this is a critical component to ensure that you build more support from taxpayers for the funding, that you create a better environment for more innovation of all materials that are going into infrastructure that will deliver most cost-effective infrastructure throughout the country.

MS. JEFFRIES: Great. And let's talk for a minute more about financing mechanisms. And I want to start with kind of what I consider the most traditional infrastructure financing mechanism of all, which is the muni bond market.

Aaron, where are we now in terms of muni bond demand, specifically from corporate investors? And I think this is kind of an overlooked aspect of the whole picture of especially state and local infrastructure financing.

MR. KLEIN: Yes. So let me pick up on what Tony said because it's music to the ears of an economist to hear an engineer appreciate the distinction between funding and financing. Because I can tell you, this town is littered with transportation and infrastructure experts who use the terms interchangeably and they are wrong.

Funding is money. Financing is how you get money over time. Right? Food is food. When you choose to eat doesn't -- you can change when you choose to eat. That doesn't make food appear.

So when we're talking about funding, the federal government has historically funded infrastructure with very little financing. There's been some -- TIFIA, WIFIA, RRIF -- the under secretary mentioned and the administration seeks to grow, which is a good idea.

On the other hand -- the federal government's historical role has been funding -- states and local governments' historical role has been to finance future streams of funding, and they have been the ones who've done that. They've created a state and municipal debt market that is the envy of the world, trillions of dollars mostly going to infrastructure, all with a large hidden federal subsidy, which is that they are not subject to federal income tax.

I bring this up because the federal Tax Code has changed, as folks in the room are aware. The corporate tax rate was lowered from 35 to 21 percent in the top marginal rates for the wealthiest people, who, by the way, are the ones who buy debt. That's the ones who hold bonds. If we had 1,000 in the room, do you know how many of those 1,000 would own bonds outside of their retirement or pension account? Twelve. And those 12 are of the wealthiest 1,000.

What's happened is we've lowered the top marginal tax rates. Corporate investors, including banks and insurance companies, own a third of municipal debt; the other two-thirds are largely retail investors. Everybody's paying lower taxes now, particularly corporations, 14 percent. Because their tax rates are lower, the value of being tax-free decreases. In debt, when the value of debt decreases, your demand decreases, or put a different way what used to be worth, well, 6 percent taxable was equal to 4 percent tax-free if I paid a third of taxes, now if I only pay 20 percent of taxes it's closer to 5 percent equals 4 percent -- or 4 percent equals 5.

So the state of Virginia, instead of borrowing and financing at 4 percent, would have to borrow and finance at 5 percent. Well, 1 percent extra cost may not sound like much, but over 30 years that's real money out of a state and local budget. In this way, the Tax Code is going to make infrastructure more expensive again.

MS. JEFFRIES: The math there is something I would have to take a little longer on myself being not an economist. Reporters are notoriously bad at math. (Laughter) At least in my experience. But thanks for kind of laying that out, Aaron. I think that's kind of, as I said, an overlooked aspect of the entire picture of revenue, debt, all these other instruments.

I want to touch on another one, which is the idea of user fees or, as I heard it

earlier, beneficiary fees. Nick, how is Virginia using this type of method for its transportation? And I won't pick on you about 66 even though I did take it HOV to get here today. (Laughter)

MR. DONOHUE: Well, I'm glad you were able to benefit from the efficient transportation system we have in Virginia. (Laughter) So I used to work in D.C. and I've worked in the state level now for 12 or, I don't remember, more than 12 years. I can't add it up because I'm bad at math, too. And I what I would say is in D.C., the idea of user fees are really fun to talk about because it's not a tax and it should be so much easier and just something we're doing on the user and everyone should be fine with it because they're using it. That's now how it works when you're the one imposing the user fee. I would just respectfully say that as, you know, someone who has worked to implement user fees in multiple facilities in Virginia.

In Virginia, we do use tolling. It's a major part of how we finance our infrastructure. And to be clear, what we're doing is we are taking 30 years', 40 and 50 years' worth of toll revenue to build projects up front and, in some cases, getting small annuities to invest back in transit to further enhance the capacity of those facilities. But putting in place user fees is a very, very difficult task.

We have two projects in Virginia, and I will talk about them. It's I-66. There's two parts of Interstate 66. For those of you who live in Virginia you're probably familiar with this. There's 10 miles that's inside the Beltway, if you will, or from 495 basically to the stoplight in D.C. That is a four-lane road where we converted the entire facility in the peak direction in the morning and then outbound in the evening into an express lane where people who previously could not use the road were now given the option to do so for a variable toll that ensured a 50-mile-per-hour trip, you know, when they use that facility. It also sped up trips for carpoolers. It cut the travel times for transit buses down by 10 or 15 minutes, allowing additional headways with the same operating budget.

It has now been the focus of two statewide campaigns since this was announced. There have only been two statewide elections since this project was announced, so just to put that in perspective. We're batting 1,000 for it being a political issue during elections. The project right now, the road used to operate anywhere -- it would take you 15 to

25 minutes to drive those 10 miles. It now takes you 10 to 12.

The HOV usage has stayed the same. The parallel routes are moving at the same or faster travel speeds. And the only people paying a toll are those who have made a voluntary choice to do so. But I also spent the last 60 days in the General Assembly fighting I believe it was 9 or 10 bills that would essentially have micromanaged or prohibited the department's user fee regime on that facility.

So I think user fees are an extremely important tool for DOTs and other infrastructure builders, but I would also say I think the discussion that happens in D.C. kind of distorts the reality that those of us on the ground who have to implement those fees face. So when you guys, just remember, the next time you say, oh, it's just a user fee, it will be really easy. Come to Virginia and I'd be happy to sit down with you and talk about this longer.

MS. JEFFRIES: So just to be clear, nobody is mad about this. (Laughter)

MR. DONOHUE: Your words, not mine.

MS. JEFFRIES: Well, I want to go to --

MR. KLEIN: I'm mad. I mean, I'll stipulate, the vast majority of economists support this. The vast majority of economists believe in this point about voluntary amount that speeds it up and if you don't want to pay, maybe you benefit, maybe you don't.

There's an alternative, and I would stipulate minority perspective, that says that there's an opportunity cost to what they did as opposed to an alternative project to solve that. When you're talking about paying to ensure this fast travel time, it's not just how wealthy you are to be able to stomach these tolls, which can be really large -- I mean, you know, 40, 50 bucks -- it also has to deal with something called the elasticity of time. How important is it for you to get there? People who are time inelastic, I like to think of a single parent trying to make daycare pickup, are probably willing to pay a lot because the alternative cost of missing that, getting to a job where you can't be five minutes late. Right?

Typically time inelasticity is associated with lower income and lower sets of alternative tools. Right? Higher income folks can afford the toll and they can benefit from it, but they probably also -- the world doesn't come crashing down if they're 20 minutes late to

work one day.

So I think we've not as carefully articulated and thought through the differentiating concepts of this as it relates to income inequality. So anyways, it's an alternative view.

MR. DONOHUE: And I would just like to retort because I know there's some media in the room here, I think Aaron raises a very fair point if what you are talking about is taking the normal, general purpose lanes on, say, I-95 and just slapping a variable toll on them because then what you're doing is taking a resource and asset that was available to all at that time period and putting in place a variable fee that could have a disproportionate impact on certain individuals who have less time elasticity, as Aaron mentioned.

However, if you look at the approach we've taken in Virginia, that's not what we're doing. We're focused on facilities that are carpool lanes only, where previously that solo driver had no access to that facility. And so when I say it's a new choice, it's not that we took the road you previously could use and said now we'd like $5, thank you, and I hope you enjoyed your experience. It's you were on Route 50 before, I understand Route 50 is congested, if you would like to use I-66 now we are going to give you that opportunity. However, your desire to do so cannot be at the expense of the carpoolers or transit users on that facility. And so I do think there's difference there.

I'd also note that the way we've approached many of these projects in Virginia is we look for them to be truly self-financing. So in terms of opportunity cost, there were no state tax dollars invested in the implementation of that project. So I would say really the opportunity costs were zero besides my time and the time of others who had to deal with many of the constituents, reporters, and politicians who had questions about our project there. And then it's also creating about $15 million a year in new resources that are being reinvested in transit, carpooling and other upgrades to our transportation network, allowing us not to have to use some of our other tax resources for that, so, in effect, creating a positive opportunity cost overall within our transportation portfolio in this region.

MS. JEFFRIES: Thank you, guys, for the lively back-and-forth there. I think

Aaron makes a great point about money not being the only thing at play here and time being at play, as well.

Tony, give me the engineer's perspective here.

MR. BARTOLOMEO: Well, this is interesting because of the funding/financing issue. I was fortunate enough to be a participant a couple of years ago in a P3 Summit hosted by the Treasury Department and USDOT. And I was moderating one of the sessions with about 25 people in it and it was almost divided to investors, concessionaires, and attorneys, and on the others side were the government entities, including states and municipalities.

And there seemed to be a bit of distrust there because one question from the municipal side or government side was why should we pay you higher rates than we can get financing our own project? And the complaint on the right side to the other was you all bring projects to the table that are not even half-baked and we have to make decisions promptly. And if you don't know how to set up an assessment and evaluation of a P3 for us to look at, whether or not we go with the investment, is wasting our time.

So there was one issue that I put on the table based on the concern of paying higher interest than they can get on their own. I said, well, what is the -- how do you monetize the benefit of having a project done more expeditiously to your constituents, especially if you're treating, in this case, transportation as a service to your constituents?

And with no collaboration with the audience, one of the DOT secretaries said, you know, we had a project and I went to my colleagues and said we can do this project on our own and in 20 years we'll have it built because that's how long it would take for us to work it into our financing; or we can go with a P3 and in 6 years have it built. To the person they voted let's do the P3. And there's an example of what is it worth to have that infrastructure available to your citizens 14 years earlier than a typical lifecycle process of a municipal investment or a state investment? I think those notions have to be considered when you're looking at the cost-benefit of investing or financing projects.

MS. JEFFRIES: You make a great point, Tony. And I want to go to Cal next to talk more about the P3 issue, public-private partnership. I'm sure all of you knew that

abbreviation, but just to make sure.

You have the congressional perspective, a former member of Congress, and you now have the private sector perspective. What's missing when policymakers talk about P3s?

MR. DOOLEY: Well, I think that the encouraging thing is that policymakers are today talking about P3 much more than they were even a decade ago because I think this is a concept that is now being deployed in a greater degree, and it is resulting in more rapid investment and the construction of infrastructure projects. And so I think it's going to increasingly become a critical tool that will ensure that we're also, again, consistent with the "invest more wisely," that you're finding ways to bring in more private sector investment to complement a public sector investment that is going to benefit what is that shared objective on enhanced and expanded infrastructure.

Where I keep coming back to, though, is that that is an important component, but regardless of how you generate the financing or the funding for a project, is how are we ensuring that we have a regulatory environment that is resulting in the most cost-effective investments that will maximize the return of taxpayer dollars? And that's where we come back to ensuring that you have more open competition, which ensures that new products and new technologies are not impeded by regulatory barriers or even codes and standards that were developed 20, 30 years ago when there was a dominant material there.

Be material neutral. Don't show any preferences. Have the engineers have the complete autonomy and authority to make a determination based on performance.

MR. DONOHUE: Tara, I'd like to jump in on P3s just kind of quickly.

MS. JEFFRIES: Yeah.

MR. DONOHUE: So, you know, I think this is one of the topics du jour now because people are like, oh, a public-private partnership. The private sector is going to come and they're going to invest money in our infrastructure and they're doing it out of the kindness of their heart because they want to help this state get this facility online sooner because that's why they're here.

And I want to be very clear, in Virginia we are big believers in public-private partnerships. Over the last four years, under the McAuliffe administration, we closed three deals worth I think in excess of $5 billion with around $2 billion in private equity.

What I would just say to you all having seen the good, the bad, and the ugly in Virginia is a public-private partnership is a commitment for 50 years. It's kind of like marriage without divorce law. Once you enter this contract you're kind of stuck with each other. And there's no arbitrator you get to go sit with, like a judge, when you disagree about how you want to separate. You're there and you're there together. And so I really would encourage states to be thoughtful and deliberative as they consider entering into these 50-year contracts.

And one of the ways we've approached this concept in Virginia is we also have the ability to accelerate a project without partnering with the private sector. It's through the municipal debt that Aaron mentioned. And so now when we approach a public-private partnership for a toll facility with user fees, we first look at what do we want? What are the key terms that we're going to put in place? And I'm going to get to policy in a second and why that's so important. And then if we sold municipal debt, how much would it cost us? Because when you as a state sell debt, you don't sell debt when you take risk. So you really go for AAA credit ratings because you don't want to default and then have to reach back into the state's treasury. So you make very conservative revenue estimates.

We then offer the private sector the opportunity to take that revenue stream and take a risk. These folks are looking for 13 percent returns on an annual compound basis. For those returns they should be willing to take a risk. And that risk is they should, instead of us -- we look at 95 percent probability that this amount of toll revenue will be collected. If they're looking for a 13 percent return, they should be looking at some percent lower than that. Is that 80 percent? Is that 70 percent? I'm not here to tell them that because I'm not a part of an equity firm. That's a decision they need to make. But if they do that, they can almost always deliver that project for less to the public or for greater benefits moving forward.

And so really ask the private sector to beat what you as a state can do it for as you put this out for competition, but also tell them what you're not willing to do. And I say that

because we have a public-private partnership in the Hampton Roads region of Virginia. It's a very water-based region. There's lots of rivers, there's Chesapeake Bay. And we entered into a public-private partnership where somewhere in the final throes of the deal the concessionaire said we would like to have a provision that if you widen any other bridge or tunnel and we can prove that you've diverted traffic from our tunnels, you'll pay us dollar for dollar for those tolls for each and every year for the next 58 years. That provision was buried on page 200 or so of an 800-page contract.

The very next year, our General Assembly passed new regional taxes for the Hampton Roads region to widen the other bridges and tunnels down there. And it turned out that many members of the Assembly were unaware of that policy provision. And again, marriage without divorce law, we're in this for the next I think it's now 52 years moving forward. And we're currently developing projects with the tax revenue as directed by the Assembly to widen the other bridges and tunnels in that region. And at some point in the next three or four years, when those bridges open, we're going to have a discussion with that concessionaire as to what they think that's worth and whether they're going to seek monetary provisions from the Commonwealth.

My answer is you're getting nothing. We haven't done anything to you. You were able to pay back your debt and collect -- you make your internal returns. But they're going to take a very, very different stance and then we're going to have to go to court potentially if we end up in that position.

So be careful, be thoughtful, be deliberative. There are great benefits, but where there's great benefits, there's great pitfalls, as well, if you're not looking out for yourself.

MS. JEFFRIES: Nick, I appreciate you being willing to share the sort of lessons learned there. It's clear that P3 issues are not always the easiest to resolve.

I'm afraid we are going to have to be quick on the question and answers. But before I depart, since I am a little bit time inelastic myself today, I'm going to hand it over to Aaron for questions for the panelists. But I will call on somebody now if anybody has a question. In the blue there, sir.

MR. POLZER: Yeah. I'm Karl Polzer with the Center on Capital and Social Equity, which promotes financial inclusion. So to get back to Virginia, and Aaron asked my question, but a bit of a follow-up.

So you've got traffic moving faster, so there are fewer cars using it. Pooled use was held harmless. So presumably people with more money are buying greater access, but wouldn't it make sense to do a study of those who no longer use, what's accounting for the lesser use and where they're now going and whether that falls disproportionately on lower-income people with two jobs and may have to go to two places of work? And if so, what policies could help them?

MR. DONOHUE: No, I think that's a great question. And I do think as states when you make significant decisions that could impact the commuting habits of your residents and taxpayers, it is your responsibility back to the taxpayers who are your fiduciary to show them the impacts of these projects. And so I would say for all of you who are interested in this room, if you go to 66ExpressLanes.com, we publish monthly reports telling you the toll rate by six-minute increments. We give you the performance speed of I-66. We give you the performance speed of all the major parallel routes there. We also give you the carpooling percentages and other things of that nature.

I do think -- I want to disagree with part of the premise of your question that there were people who could legally use this road at the height of rush hour when you're seeing these higher tolls and now can't. At the height of rush hour, 8:00, 8:30, when you're seeing tolls well in excess of $20 sometimes, the road was HOV only. And so the people who are impacted by the imposition of this toll were those who were not complying with the law. And respectfully, my job is to not help scofflaws continue to do that which they wish to do and benefited from, but were not caught doing.

That being said, though, how can we do things to help people benefit from this new now more faster and reliable facility? And so what we're doing is we're actually partnering with a regional commission in this area. It's called the Northern Virginia Transportation Commission, where we are giving them the toll revenue and saying you guys are the local

governments, you actually talk to your employers, you talk to your local residents. We want you to invest this toll revenue. Look at where you should build Park-and-Ride lots to actually make it more feasible for people to carpool. We want you to actually give employers money so they can create carpool incentives to get people to try some of these new choices.

Because what we've seen is most people, just getting them to change their commuting habit is the hard part. They don't want to try the unknown and step off the cliff. But they'll try it for a month if you give them $40. And what we found is, you know, somewhere around 50 to 60 percent of those people once they try it will stick with it even after that monetary incentive has stopped. And so we're working to do that with employers in the region and we're also talking with the local transit agencies to understand where we can run new bus service in these areas.

But I would also say that there is slightly less traffic on I-66. But what we've seen is the parallel routes had the capacity to absorb increased traffic without reductions in performance. And oddly enough, some of them are moving faster.

MR. KLEIN: So let me collect a couple questions here for a speed round. We'll start from right there and then we'll move up one and then the panel will answer. Please ask a question quickly.

MS. SAUNDERS: I'll do a speed question. Mary Saunders from the American National Standards Institute. This is a question about codes and standards.

So I can tell you that the code organizations and the standards organizations do a very good job about bringing innovations into the latest editions of codes and standards. One of the issues is the lag in the adoption at the state and local level of the current version of building codes, plumbing codes, mechanical codes. Can you think of ways to incentivize states and localities to more rapidly adopt the newest version of codes and standards that would help with innovative materials?

SPEAKER: So my question is for Nick. I'm wondering where the Virginia government stands for foreign investment in infrastructure, for example, China's investment. Thank you.

MR. KLEIN: Why don't we start? Cal, do you want to take the first question on codes and standards. And Tony, you can feel free to chime in on that.

MR. DOOLEY: Yes. I mean, on that I think, and Congressman Babin can elaborate a little bit on that, too, is that that's one of the purposes of the legislation that he's introducing that we're very supportive on. And it really is -- you have, unfortunately, as we've worked in a lot of different states, that you have states that have procurement and put out Requests for Proposals for infrastructure projects that are material-specific quite often. And oftentimes those are predicated on old codes that they have in place.

So how do you create a policy and an incentive for them to have continuous updating of their codes that are based on performance metrics, including the four pillars that Tony talked about that came out of the engineers? That's what we're trying to achieve in a material-neutral way by creating a different environment that fosters greater innovation and adoption, that will show a greater return to taxpayers' investment over time in infrastructure projects.

MR. BARTOLOMEO: I'm good.

MR. DONOHUE: We're open to all investment in the Commonwealth, so right now I think we have investors from France, Australia, Spain, and other parts of the world. You know, as always we're going to go -- we require by law a competitive process. You need to prove and demonstrate that you can deliver for us a better benefit than we can provide for ourselves. And if so, we'd be happy to partner with anyone.

MR. KLEIN: So that sounds great. Join me in thanking the panel. (Applause)

In the interest of time I'm going to introduce the congressman from here, so if you could come to the podium.

I can't imagine a more apt person. Congressman Babin's experience in life is one of true public service. A lifelong resident of East Texas, he served in the Texas Army National Guard, the U.S. Army Reserve, the United States Air Force, and was also even a merchant seaman. He's combined his love of infrastructure and love of country to serve on the U.S. House of Representatives on the Committee of Transportation and Infrastructure and on

the Committee of Science, Space, and Technology. As the under secretary pointed out infrastructure's expanding into outer space, quite literally. The author of the brand-new Municipal Infrastructure Savings and Transparency Act.

It is my great honor and privilege to introduce Congressman Babin. Thank you for joining us today. (Applause)

CONGRESSMAN BABIN: Thank you, Aaron. Thank you very much. Thank you very much. Great to be here with you this morning and I appreciated the questions, so pertinent to what I'm getting ready to talk about and Cal alluded to it. But great to be here. Thank you for having me.

I was a dentist for 37 years, but now my job's to come up here and represent about 750,000 people in the district that I represent, 36. I believe that the legislation I'm here to talk to you about today, H.R. 5310, the Municipal Infrastructure Savings and Improvement Act, is a fulfillment of my duty and what I'm doing in Congress. I must say, though, as I wrap up here I'll have to head to the airport to go back to my district and I'd like to begin telling you a little bit about my district, if you don't mind.

I'm actually only the second person to represent the 36th District of Texas since it was one of four new congressional districts in Texas that were added after the last Census. And I found that it's a good way to explain to people in Washington just how fast our state of Texas is growing. It's truly a phenomenon.

The district has nine countries, stretching from the industrialized eastern edge of Houston, the Port of Houston, Johnson Space Center, all the way over to the Louisiana line where we have rice farming, and north up into the old timber -- Charlie Wilson country of timber-producing counties, where my wife, Roxanne, and I have lived for 40 years now raising our 5 children and now spend as much time as we can with our 14 grandchildren.

There are a lot of things in my district that you can't say about any other district. First, we now have the rather infamous record of the most rainfall, approximately 55 inches, from a single weather event ever as a result of Hurricane Harvey. Now we have a new continental record that we can point to our district and proudly say that we were inundated at

one time. And for those of you from cold-weather states, I want to kind of give you a picture of just how much rain this is. Picture that as 40 feet of snow piling up in your driveway.

This unprecedented storm caused widespread damage, much of it in areas that had never seen flooding before. There's been a massive recovery and rebuilding effort. It is well underway, driven by a disaster relief package that we passed in Congress of more than $90 billion.

Another aspect of my district that we're happier about is that we have more petrochemical refining facilities and manufacturing capacity than any district in the country. More than 150 facilities, employing thousands of my constituents. And these facilities build the plastic, the vinyl, and composite products that we use every day and ship all over the world out of places like the Port of Houston, as I said, that I represent, and along with three other ports that I represent.

Why do I mention these two things? On the first, there already are and will continue to be massive investments by the federal government and public works in infrastructure projects. And second, under current law, regulation, and precedent, these innovative products that are made there in my district are often completely shut out of being considered for use in many of these projects.

The Municipal Infrastructure Savings and Improvement Act that we have just dropped yesterday is only three pages long. It's not long. But I'm convinced that if we can pass it into law it would improve the way that our government spends billions of dollars every year and reinvigorate our public works projects with new, efficient, and innovative technology and materials.

The way that we do this is very, very simple. We allow the engineers, the architects, and other construction professionals who we trust to build like the roof over our heads in this room to make these decisions about what materials to use in federally funded projects. Right now, municipal authorities are very glad to accept federal taxpayer funds for projects in their cities, but with strings attached, their own strings.

These municipalities severely limit what supplies and materials can be used for

these construction projects, deciding beforehand what gets used and preventing innovative new products from even being considered. The Municipal Infrastructure Savings and Improvement Act does not dictate or direct any kind of product whatsoever. I've got the bill right here, so I held it up. There's not one mention of steel, iron, or PVC pipe. All it says is to let the project managers decide what is best and explicitly guarantees that these decisions are made by the professionals and not by politicians.

This bill is about transparency and a commitment to innovation. I'm willing to bet that most Americans are unaware that local politics are in a semblance crippling innovation, driving up the cost of infrastructure projects, and making those projects less efficient. This increases utility costs not only on government and business, but on the middle class and low-income families, as well. It makes no sense to spend limited federal infrastructure dollars and undermine the standard of living for all Americans without at least checking to see if there is a more cost-efficient alternative.

My very simple bill can bring transparency to this process, save money, and expand the use of these innovative technologies. And I strongly support President Trump's call for renewing and rebuilding our nation's infrastructure. This is one of the biggest things that we have on the plate as we go forward this year.

And on the Transportation Committee on which I serve it will be our responsibility to get these bills to the floor that accomplish that goal. The Municipal Infrastructure Savings and Improvement Act is exactly the type of legislation that I think we need to balance reasonable federal investment with reforms to get these projects built ahead of time and to last.

So I want to thank you again for having me here. And I'll take just a few moments, if you don't mind. I've got to scoot to get to the airport, but we will take a question or two, if that's okay. My schedule is sitting here right in front of me and she's going like that. (Laughter) So I'll take a question if anybody has any.

Wow, I covered the whole field. Right. Aaron?

MR. KLEIN: I'll jump in, Congressman. If your bill were enacted into law what

do you see as the major benefit of it and to whom will that benefit subscribe? Who's going to be the winner in here and who's going to be the loser?

CONGRESSMAN BABIN: The American taxpayer will be the winner. I don't see a loser here. I really don't. I think it's going to be a fairness and a competition issue and aspect to this thing that will let, as I said, the professionals decide the types of materials we're going to use. If it's a proven material, if it's a cheaper material, then I think that will be passed on to the taxpayers. Pure and simple.

We got one in the back.

SPEAKER: Congressman, great to see you.

CONGRESSMAN BABIN: Thank you.

SPEAKER: I wanted to ask you a question about the infrastructure bill and how it relates to the reform of the Tax Code. The infrastructure bill intends to devolve much of infrastructure funding to state and local governments. But obviously, the change in the Tax Code may have an impact on state and local governments' ability to raise funds given the reduction of the cap on state and local taxes from a personal income perspective. How do these issues of devolution of infrastructure spending and the Tax Code relate to each other?

CONGRESSMAN BABIN: That's a good question and I appreciate it. It won't hurt Texas at all because we don't have those kind of state and local tax issues. But I do know that there is a hurdle there for those states that are capped on allowing their citizens to deduct these.

I think in the long run, if you look at the grand scheme of everything, if we can pass along these tax savings to the citizens, I believe it's going to outweigh any limitation on what they're going to be able to deduct. I really do. Only time will tell.

I had actually a text back and forth with Chairman Brady this very morning. It had to do with a healthcare issue and aspect, but I think that we're going to see that this tax and jobs act are going to be a great benefit to almost every single American. And I think even those high-tax states, I don't know where you're from, but I assume you're from one of those states, that we'll see a benefit.

Time will tell. Okay?

All right. Thank you. We have to go to the airport so I can get back to my district. And I want to say how much I appreciate being here. I want to thank all of you in this room and interest and some of the help in the discussions that we've had with many of your folks in coming up with this bill that we think are going to be a great benefit to the American taxpayer. So God bless you. Thank you very much. (Applause) Thank you.

MR. KLEIN: Thank you very much, everybody. That concludes our program. Thank you.

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I, Carleton J. Anderson, III do hereby certify that the forgoing electronic file when originally transmitted was reduced to text at my direction; that said transcript is a true record of the proceedings therein referenced; that I am neither counsel for, related to, nor employed by any of the parties to the action in which these proceedings were taken; and, furthermore, that I am neither a relative or employee of any attorney or counsel employed by the parties hereto, nor financially or otherwise interested in the outcome of this action.

Carleton J. Anderson, III

(Signature and Seal on File)

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