

THE BROOKINGS INSTITUTION

WEBINAR

REBUILDING AMERICAN INFRASTRUCTURE
FOR THE 21st CENTURY

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PARTICIPANTS:

Welcome and Presentation:

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Keynote Remarks:

THE HONORABLE TOM CARPER
Chair, Committee on Environment and Public Works
U.S. Senator (D-Del.)

Panel Discussion:

JOSEPH W. KANE, Moderator
Senior Research Associate and Associate Fellow, Metropolitan Policy Program
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CHRIS CASTRO
Director, Office of Sustainability and Resilience
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DEBRA KNOPMAN
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Chief Executive Officer, Husco
Board Member and Infrastructure Vision 2050
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Closing Keynote Remarks:

THE HONORABLE MARIA CANTWELL
U.S. Senator (D-Wash.)
Chair - U.S. Senate Committee on Commerce, Science, and Transportation

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P R O C E E D I N G S

MR. TOMER: Good afternoon and good morning to everyone. My name is Adie Tomer, and I'm a fellow at the Brookings Institution Metropolitan Policy Program. We know how busy schedules are, so thank you for making space to join us today.

Of course, we should all thank President Biden and the team at the White House, because they did something that's quite difficult. They got the whole country talking about infrastructure. And they did it in an overly productive way. For two weeks now newspapers across the country put infrastructure above the fold. And their stories focused not on any kind of destruction, but on a forward-looking debate. That's exactly what the country needed; an honest, healthy debate about why and how to physically rebuild our country. We couldn't be more excited for the coming months to watch how that debate unfolds.

Today, we're going to do our best part to keep pushing it forward. Our program includes two of the most important actors in federal Washington. After I finish opening remarks and a brief presentation, Senator Tom Carper, the chairman of the Environment and Public Works Committee, will share his vision for the country. Senator Maria Cantwell, the first chairwoman of the Committee on Commerce, Science, and Transportation, will close the program with her vision. We're delighted that they're able to join us.

In between, we will have a rich panel discussion, featuring Chris Castro, the director of the Office of Sustainability and Resilience, at the city of Orlando, Florida; Debra Knopman, a principal researcher at the esteemed RAND Corporation; Austin Ramirez, CEO of Husco and the vice-chair of AEM's Infrastructure Vision 2050 Task Force; and moderated by my brilliant colleague, Joe Kane.

Throughout the next 75 minutes, we'll be monitoring the conversation online as best we can. Please tweet your questions and comments to our Twitter account, @BrookingsMetro, or simply hashtag your thoughts with #AmericanInfrastructure.

If you're interested in the build environment, you've come to the right place. Of course, the energy of the last two weeks didn't come out of thin air. We've known for years if not decades that American infrastructure needs a rebirth. For me, that's apparent not through the tenor of our debates or how long it's been since we passed a major spending package. You simply need to look around to see

what we're building and what and what we're not.

This is the Katy Freeway in suburban Houston. It's an absolute marvel of modern highway engineering, connecting a once sleepy community 30 miles east to the urban court. As a decade's long economic (inaudible) to replace, the Houston region and the state wanted to expand their highways to accommodate more people and ostensibly to reduce congestion. In the case of the Katy Freeway, that meant eight lanes turned into 23. Now, this was never going to be a cheap project. And it wasn't. The expansion cost the federalist system \$2.8 billion to complete.

Yet, while the Katy Freeway may be an engineering marvel, it technically didn't solve the problem it sought to address. Congestion actually ended up worse than before the expansion took place. Now, it's not like that Texas couldn't have used the money elsewhere. Just months ago, the great people of Texas and surrounding states were hit by a bitter cold snap, a genuine extreme weather event. The devastation was visceral and heartbreaking, with 57 people dying, millions left without power for days. An estimated damage around \$130 billion.

But here's the worst part. Many of the worst impacts could've been avoided for \$400 million. Less than 15% of the cost of the Katy expansion. The state and its energy partners could've weatherized critical facilities, protecting people and the economy. The warnings from a cold spell 10 years prior went unheeded. Show us your infrastructure and you'll show us your priorities.

The Texas examples are an essential symbol of where we stand as a country. What are our long-term goals? Where do we want to be in the coming decade? And how can infrastructure help us get there? Those are the core questions at the heart of a new paper Joe Kane, Caroline George, and I published just this week, building on years of work.

We've spent the last few months talking to experts, running the numbers, and building an argument that goes like this: American infrastructure to build a better future, we just need to prioritize the right outcomes. But how do we do that? We believe it's a mistake to start with specific sectors or specific projects. Instead, let's talk about cost-cutting forces that we all face together. If we can coordinate our policies to address these four structural forces head-on: climate resilience, digitalization, workforce development, and fiscal health, then we can design solutions that punch above their weight, delivering lasting value at scale.

The Texas freeze was just our most recent example of a startling rise in extreme weather. These acute climate shocks are expensive and deadly. They're also a reminder that science is more powerful than politics. But these acute shocks don't solely define our climate crisis.

We cannot forget the chronic impacts that touch many of us every day. Regular flooding, like in my home state of Florida. Droughts in a fast-growing (inaudible) west and southeast. Persistent air pollution and heat-island effects within metropolitan areas, with rates especially high in historically disadvantaged neighborhoods.

Responding to these existential needs is morally just, but it also will make our economy more competitive. The crisis is also an opportunity. At the same time, our climate has changed, so has the platform for daily life. The digitalization of everything has transformed broadband from a luxury to a necessity, connecting people to their jobs, their schools, in a dynamic consumer experience.

But 16 million households and many businesses are still left digitally disconnected, from large swaths of rural America to the neighborhoods of metropolitan areas, like here, in St. Louis. We can't prosper as a society if people can't connect to the modern economy. Yet, the opportunities for digital growth are inspiring. Once broadband adoption is ubiquitous, we can use sensors and software to remake our world, creating safer streets, saving water, and redefining our energy systems. Along the way, though, we need to protect the security of our physical systems, the privacy of its users, and the fairness of our markets.

Now, climate and technology will touch how our infrastructure systems perform. But they also call into question our capacity to manage and respond to a changing world. You see this intuitive connection in our politics. Infrastructure bills are often couched as job creators. Yet, that narrative isn't quite right. Construction jobs are sizeable. But over 17 million people fill infrastructure related occupations, covering a sweeping set of knowledges and skills far beyond just those who wear hardhats.

Even better, they pay above average wages while often not requiring advanced degrees. When we bet big on infrastructure, it also means we're betting big on people. That's all the more reason that we must address the inequities built into our infrastructure and labor market. The workforce is aging and needs a youth infusion. We need to pay more attention to recruiting and retaining people of color. And most egregious, we're simply not employing enough women across this super-sector. Let's rebuild

America by bringing everyone along.

Finally, we need to keep pushing our infrastructure system to become a shared platform for prosperity. Infrastructure prices keep growing faster than other goods and services, crowding out household budgets. A similar development is underway within project delivery, where construction costs keep rising faster than other costs borne by state and local governments and their private sector peers.

And because of decades of uneven growth, we know these budgetary and fiscal challenges can lead to genuine physical harm and impacts on public health. Draconian cuts in essential infrastructure services and project backlogs. Now, with COVID-19 creating deeper uncertainty around future demand, our states and local governments are seeking a new kind of federal partnership to craft long-term solutions.

Put it all together and we are truly at an exciting moment in our history. The potent combination of structural change and public support creates a genuine opportunity to rethink our infrastructure systems, and the policies that help govern them. This is a generational moment. Capturing it though, will require a new approach. And that should start at the federal level.

The federal government has the scale and the resources to lead a grand revisioning and reinvestment in the country's built environment. And instead of stubbornly attempting to spend more within traditional programs and expecting different results, we suggest that congressional leaders, and their executive branch partners should design policies to solve 21st century challenges.

And we have some ideas on how to do just that. Our research through this project led us to over 90 recommendations, bounded under a three-part frame. First, the federal government should update how agencies measure infrastructure needs and connect that information to broader shared goals. Our infrastructure is worth at least \$14 trillion, yet this new century calls for new approaches to planning how those systems function. Measurement is a vital first step to better managing social, environmental, and business needs. And to protect our sensitive data moving through our systems.

Second, the federal government should use the outputs from retool measurement systems to modernize physical assets and better serve user needs. That means direct capital investment in our transportation, water, energy, and telecommunications systems. But it also means new equity programs to make infrastructure more affordable. Or new flexible funding to adjust based on local

circumstances.

Finally, the federal government should commit more resources to experiment with physical technologies, fiscal practices, training systems, and applies management practices. The federal government is uniquely positioned to take risks in the infrastructure space, whether that is related to the ethics of Artificial Intelligence, or new tunneling technology to protect critical networks. Let's not be scared to fail to make sure that we can succeed more.

Of course, these are just one group's ideas. As I mentioned at the top, the national debate taking shape should continue to bring new ideas into the public civic space. Our democratic society is made for these kinds of moments, where respectful, bipartisan conversations can help build consensus and comradery. We know that public interest is spiking in infrastructure. People are ready for new ideas and a grand vision.

Which takes us to today. We've got a great program for you, starting right now with one of the lead architects of the Federal Response to this moment.

Senator Tom Carper is the Senior Senator from the great state of Delaware and is now serving his 20th year in the Senate. For many of us who follow infrastructure conversations, Senator Carper consistently pushes us all to think about the built environment in new ways.

Now, I know that Senator Carper is on his way, so what I think we want to do is take a pause, because we have had a chance to hear -- to get tons of questions from different folks online. And we are going to have an opportunity for the panel to answer many of them later. But we want to take some of them right now.

So, I had the chance to review some of these questions in advance and one of the most exciting ones for me, was the idea of how can we make sure that the future infrastructure vision actually is able to touch every community across the country? This is one of the major critiques of where we have been over the past few decades, and many of the ideas that were put forth in the prior four years as we talked about places like Flint, Michigan. Which is in fact, where this question came from. Other slow-growth communities like the broadband elements that we featured out of Saint Louis.

We know that every community across the country has very different economic, social, and environmental needs. We need to make sure that policies can apply to any of those markets. So, I

want to -- I want to thank the folks who have submitted questions for us. We are obviously listening. And again, our amazing team over at Brookings Metro, and the entire Brookings Institution's communications team is genuinely monitoring them. So, make sure that you continue to send them in.

So, without further ado, if I have the timing right, I'd love to hand it over to Senator Carper who has now -- who has now joined us.

And as always, in the digital age, give us one second as we get -- as we get the technical elements put together.

SPEAKER: Hi, this is Ashley with Senator Carper's Office. Senator Carper will be on in just a moment.

MR. TOMER: Great. Thank you, Ashley. I am going to monitor the questions a little bit more which again, kind of keep coming in, and a big thanks to my colleague, Karen, who is feeding them to me. Some of the most exciting ones which -- which I know so many folks have going through their minds are what are the chances that we are going to see a big infrastructure package move through? You know, we kind of publicly write about this so we are always willing to speak our minds. And I think the transparent position that we are taking as you could kind of hear in both the optimism of my comments today, and the affirmative vision we put forward in the infrastructure paper, too, is that we are really (inaudible) on the potential here.

Again, you know, when infrastructure gets above the fold, and it actually is a positive conversation, not a commentary about the failure of a critical system. That is a positive sign that a real debate is happening, and that people are ready for real change. What we've also seen is an assembly of a huge set of ideas. Not just a relaxed four-plus years, but really for decades where people are starving for real change. And we know that many of these policies have massive bipartisan support. Whether it is expanding broadband connectivity and affordability programming to every corner of the country. Modernizing water plants which are not a partisan issue, as well as making sure that energy systems can stand up to some of these really tough moments in terms of environmental pressure.

So, there is such unanimous support for the need to move forward, so I think we are more safe to make big bets, it's on the American system coming together to be able to -- to deliver real change for folks who want it.

Okay, let me go to one more question, which is what's the role of financing in this -- in the infrastructure package? And what we've seen is that there is a tremendous amount of interest here, too, on different financing interests on each side of the aisle. And of course, financing has a real role to play. But what's also exciting about this conversation is the commitment at the federal level for significant increases in public finding. What we have seen at the state and local level for well over a decade now, is everything from increases in gas taxes, in both red and blue states. Ballot measures passing at over 75% clip in local areas, also in metropolitan areas that are red, and blue states.

You know, state and local voters have been really, really clear on their commitment to spend more on infrastructure. When those constituents, and those voters understand what they are getting for their investment, and what their vote is going to lead towards. That should be a signal that the federal government can take on, which is the idea that if we can really sell a clear vision, folks will support more direct funding for projects. So, I expect financing instruments to be a key part of -- of any package moving forward. And I think we will see that be a rich part of the debate. But let's not mince kind of the largest part here which is the federal government can really do more on finding as well.

One final question that we might be able to squeeze in here is the idea of -- which really just came up in the last kind of 24 hours here which is what's the role of general funds versus user fees? And I think one of the elements that we know is that user fees have a role in infrastructure, and they have really for decades, upon decades, and of course helped build the U.S. interstate and highway system. But user fees have limits, and of course at the federal level, we don't have a fully robust user fee architecture if you will, across all of these capital areas of infrastructure.

So, we are going to need to think bigger than that, and ideally, I think that's where the conversation is leading towards getting major funding through our typical major revenue sources to make some generational investments.

So, with that, I can see that Senator Carper has been able to join us. And once again, Senator Carper is really inspiring for the creativity he constantly brings to these conversations. So, we greatly appreciate, Senator, for you making the time to be with us here, today. And the floor is yours.

SENATOR CARPER: Adie, how are you doing?

MR. TOMER: I'm doing great. Thanks, for joining us today.

SENATOR CARPER: I think I have an idea of what, just what question should I be answering? I think I have a pretty good idea, but I want to hear you say it.

MR. TOMER: What I think we really want to hear is this incredible opportunity for the country, but also for you, too. To be at the -- one of the major points here on Capitol Hill, to push a vision forward. You know, what's your vision for the infrastructure system for the country? How can we tackle some of these generational challenges, and generational opportunities that are facing the country?

SENATOR CARPER: When Joe Biden was running for president against Donald Trump, Joe is fond of saying that when Donald Trump thinks of climate change, the word that comes to mind for him is hoax. When Joe Biden thinks of the term global warming-climate change, the word that comes to mind for him is jobs. And one of the things that I've -- I'm a recovering governor, I was governor of Delaware for eight years, chairman of the National Governors Association. More jobs were created in Delaware in those eight years that I was governor, than in any eight-year period in the history of the state of Delaware before, or since.

I did not create one of them. But we focused on very -- every day, going to work every day on how do we create a more nurturing environment for job creation, job preservation? I strongly -- one of the things that gives me the greatest joy in my life is helping people. And one of the best ways you can help people is help make sure that they have a job, and that they can support themselves, and their families.

And I am also a guy who believes that we have a moral obligation to protect this planet. Now, these are God's creations, and we are among them and we have to look out for other people but also, all the creatures that inhabit this planet. So, that's sort of like the spirit and the feeling that I bring into my work.

For me, the perfect, I almost want to call it the Holy Grail, is how do we intersect in a place where we create economic opportunity? How do we do that in a way that does good things for our environment promotes public health? How can we increase mobility? The ability to move not just people, but goods and services and have a stronger economy as a result of all of that. And just by dumb luck, I end up as the chairman of the Committee that has jurisdiction over not all of that, but a fair amount of that, and our dance partner over in the White House is a guy that I've known for 45 years.

I met him outside of a Naval flight house in Southeast Asia, first of three tours in 1972, my last tour. I remember reading one after one of our long flights off of the coast of Vietnam and Cambodia, I came back to our barracks and I am reading my Time and Newsweek magazines and this is November '72, right after the election. And among those elections was open in Delaware where 29-year-old Joe Biden was elected in the U.S. Senate. And two years later, I am out of the Navy, and I'm in business school in Delaware of all places, I'm in his living room, literally. In his living room and I am 27 years old.

And I got to know him, and I ended being trying to fundraise for a congressional campaign. Joe Biden who was very helpful to us, he had just been elected to the U.S. Senate. And we have -- and now we have been friends forever, and now we get to work together. And he is passionate about this stuff, I am passionate about this stuff. And fortunately, we ended up -- I ended up on a committee on environmental pipe (phonetic) work.

And my ranking member, the senior Republican on the Committee, is from West Virginia. I was born in West Virginia. If I am not mistaken, her family used to shop for groceries at the little supermarket where my grandfather was the butcher. I mean, it is incestuous. And we have this opportunity to work together. West Virginia is just in very dire straits in terms of the economy and all of the challenges that they face. And we have an opportunity to help her state, my native state, do great things to get the economy moving, fix our roads, highways, and bridges, and do it in a way that is actually helpful for this planet.

I mean, it's like dying and going to heaven, although we didn't have to die. So, what Shelley, and I have been doing is reaching out as -- actually, we have been looking back a little bit, about a year-and-a-half ago we reported unanimously out of our Committee, our service transportation reauthorization. I think that the number or cost over five years, around five years, about I want to say about \$290 billion.

And but there is also a climate title, for the first time ever, a climate title in our bill. And the idea was in part to create these corridors of charging stations and fueling stations. You hear Joe talk about 500,000 charging stations, and not many people talk about hydrogen fueling stations, but for trucks, larger trucks and so forth, hydrogen could be really good. We could green up hydrogen, do fuel cells, and

we will do a lot of battery stuff for cars, truck, and vans. But for the big trucks, hydrogen has I think a whole lot of promise. And we are going to build these corridors and fueling stations -- filling stations. We also built dome hydrogen in there as well.

And there is a lot of -- tax policy figures into this as well, and I am on the Finance Committee. And I am working on investment tax credits that actually help bring -- buy down the cost of these charging stations and fueling stations.

And it is a shared responsibility, and I will state this, and I'll stop. But it is a shared responsibility. It is not just the federal government. It's not just state governments. It's not just utilities. It's not just convenience stores. It's not just like auto companies. It's all of us together. And part of what we want to do is federal dollars and leverage some of the investments that we need from the rest of the country. That are some of them that I just mentioned.

So, here's what -- what we are doing. We are going to report out of -- we report out a committee by a five-year reauthorization deals on water. We have two state revolving ones that deal with water. One of those is called Clean Water. It's really sanitation, it really like sewage, but what do we with it? And the other is called Our Drinking Water. So, we have two state revolving funds, and the idea is to for the federal government to help replenish those funds and direct them a little bit more than we've done -- do in the past to communities in need. Communities in dire straits where they don't frankly have a lot, but the kids have a lot of bad water to drink. And so we have a special focus on them.

We have now reported that bill out of committee. It is going to come up on the Senate floor we believe next week. It has strong bipartisan support, unanimous support from the Committee, and we are encouraged that we will do well on the floor. And we will join up without Joint Forces, with the House and we are off to the races. Meanwhile, we are doing all of this just to show that we can walk and chew gum at the same time, Shelley, and I ask all of the 98 other senators to talk to their governors, talk to their DOTs and figure out what their priorities are in this states. And share that with us, so that Shelley's staff, my staff, Republican staff, Democrat staff, can write a bill; can write a service transportation bill.

And we have had several prevailing hearings. Yesterday, we had a great hearing in how to pay for this stuff, and this vehicle must travel. That's the future. I think that's the future. I think gas and

diesel user fees are only part of the -- part of the future but they will be a dwindling part of the future, but eventually, the future is -- I think vehicle must travel. So, if you are using gasoline or diesel, or you are hydrogen powered, and you are battery powered, or electric powered, electric wired, you are going to have to pay whatever for you know, the cost of maintaining and building an upgrade on our roads.

So, you know, I love to quote Albert Einstein. A lot of people remember Einstein for saying insanity, what does it mean? Insanity is doing the same thing over, and over again and expecting a different result. I prefer, my favorite Einstein quote though is the -- is in adversity lies opportunity. I love that. In adversity lies opportunity. Henry Ford said it a little bit differently. He said if you think you can, or you think you can't, you're right. And I think we can.

I have always enjoyed looking at adversity and saying how do we find opportunity, how do we create jobs, do good things for our planet? And our you know, how can we do that? And it is set up. We can blow it, but I sure as hell hope we don't. And I think we are going to get this done. I am encouraged.

MR. TOMER: First of all, that's incredibly uplifting. And on a really personal note, both Einstein and my ancestors are buried in the same graveyard in Germany, so kind of on a personal note.

SENATOR CARPER: Oh, you're kidding.

MR. TOMER: Nope, no kidding.

SENATOR CARPER: Well, you will never find my name in any capacity in the same sentence with Einstein.

MR. TOMER: (Laughter). I think I just tried to engineer that, which is probably deeply unfair to the Einstein family.

You know, look, we've got two minutes left, Senator. I want to you know, I want to ask you the question because your optimism and confidence is infectious, right? Do you think that can carry the day here? And really help make sure that we you know, adopt a really big vision for the country, you know? It's not about exact numbers, or even timing. I am not actually as concerned about that. It's like, do you think we can build these bridges here that overcome a lot of the problems in our cultural politics, right? And show that we can do really big things out of federal Washington.

SENATOR CARPER: Oh, I absolutely, completely do. Yeah, leadership is the key to

success of any organization that I have ever been a part of, always the key. And leaders are humble, not haughty. Leaders in their heart is to serve, their job is to serve, not be served. Leaders are uniters, not dividers. They build bridges, not walls. And they treat other people the way they want to be treated.

And I you know, I have mentioned I have known Joe Biden for a while, and I think he is the right leader for our time. And I think the idea is it is may be serendipity that Shelley Capito, and Tom Carper, a couple of West Virginia natives end up on the leading -- the Committee that has jurisdiction over a lot of the infrastructure that we have. And we trust each other, we like each other. Our staffs, we meet just about every week to either to gather or virtually, and just to go over what is before us so there won't be any surprises.

And we are leading by example, and hopefully we can report out a good bill. Not just water bill, but a good -- by Memorial Day, a good service transportation bill, and it will serve as an inspiration to Banking Committee to do their work on transit, for the Commerce Committee to do their work on rail and safety, the Finance Committee, on which I serve to help us figure out how to pay for this stuff.

And I just say I think I will say in terms of paying for it, things that are worth having are worth paying for. I think those who use roads, highways, bridges have an obligation to help pay for them. We can differ about the policies to do that, but the principles should be sound. Things that are worth having -- and we need to do work on these areas, we know we need to work in these areas, and the -- there is a shared responsibility here, that those that use roads, highways, bridges, should help pay for them.

The last thing I'll say, we had the Commissioner of the IRS before our Finance Committee this week and I said to him, help us figure out a way, where -- and see there, it may not be possible but think about this Commissioner. And I said if for people that are lower-income, you know, where you know, gas and diesel tax are regarded as regressive taxes, and is there a way to use our tax code so somehow it would rebate people a modest amount of money that would reflect sale of people living at, or below the poverty level, they would get back in their taxes? A rebate that would enable them to offset whatever they are paying in gas and diesel taxes. The question about whether or not people who are making three or four hundred thousand a year should they be paying toward the cost of driving

on our roads, highways, bridges? I think it's pretty hard to argue that they shouldn't have some responsibility. So, we will see where this is going to lead.

But I think the principle, those who use roads, highways, bridges have an obligation to help pay for them. But we also have to treat other people the way we want to be treated.

MR. TOMER: Yeah. Well, it sounds like the policy ideas are moving in the right direction. And as you pointed out, more importantly, the relationships are establishing, and the leadership is going to kind of help us -- take is there.

SENATOR CARPER: One, one other thing.

MR. TOMER: So, thank you for making the time today.

SENATOR CARPER: One of my favorite quotes I think from Joe Biden is all politics is personal, all diplomacy is personal. He was right then, and he is still right.

MR. TOMER: (Laughter). That's a great way to leave us. You know, Senator, you are very busy, so thank you, for taking the time to talk with us today.

SENATOR CARPER: I think I will take my nap. Already I am tired after this. (Laughter).

MR. TOMER: I am going to need a nap, too.

SENATOR CARPER: See you, pal. Thanks again.

MR. TOMER: Thank you.

SENATOR CARPER: Bye-bye.

MR. TOMER: All right, great. Well again, to everyone, that was fantastic that we had the opportunity to have Senator Carper here with us. You know, it's -- and we are right on schedule, too, which is amazing, right? That we can actually keep the whole train running, I guess, right? All metaphors and cliches are mostly infrastructure related. So, let me hand it over to you to drive us home with the panel conversation.

MR. KANE: Thank you, Adie. And thank you, for those remarks, Senator Carper. As you both raised, you know, we are at a crucial time to just talk about infrastructure but to do something about it. The administration has signaled its major priorities, and we know Congress is doing the same and really setting the stage, I think for a very busy but -- but very exciting next few months.

My name is Joe Kane, and I am a senior research associate at the Brookings Institution

Metropolitan Policy Program. My work covers a variety of infrastructure issues from water to transportation, to energy. But also, issues around governance, investment and workforce development, so I am very interested in all the cross-cutting challenges and opportunities that we have been framing and talking about today. We need to discuss infrastructure in more integrated future looking ways, not in narrow, disconnect silos.

And so our panel discussion will aim to do just that, which I will be moderating for the next 30-minutes or so, before we hear from Senator Maria Cantwell, to close out the session. As my colleague Adie framed at the top of today's event, our research and many of our conversations with leaders all across the country have centered on defining a 21st century infrastructure vision from a more extreme climate to rapid technological change, we know we are facing a very different reality than where we stood even a few decades ago.

There are heightened risks and costs all across our infrastructure systems and communities, but also missed opportunities in boosting economic growth, and opportunity. And so you know, as we think of our federal, state, and local capacity to act, especially our infrastructure workforce, and our fiscal resources, you know, these can be limited. And so we may struggle to simply keep up with our needs, let alone stay ahead of them. So, we are at a moment of reckoning in many ways, where yes, there are questions of how much to spend and where funding will come from. But even more significantly, what are our priorities? What should the federal government be aiming to achieve? And how can our current legislative moment, the policy window opened up by the Biden administration, and Congress, allow us to take short- and long-term action?

Infrastructure is the foundation for our economy, our environment, and all types of people and places that requires generational investments, and planning. And so with that, I am excited to introduce our three panelists, if they want to join me here, who represent who represent many different backgrounds on these issues, and I think will generate an excellent conversation.

So, first, we have Chris Castro, who is the director of Sustainability and Resilience for the city of Orlando. In his role shapes Green Works Orlando, established in 2007, which transformed the city into one of the most environmentally friendly, socially inclusive, and economically vibrant communities in the nation. Chris, your experience in climate issues and your local perspective I think will help ground the

conversation. Thank you, for being here.

MR. CASTRO: Yes.

MR. KANE: Next, we have Debra Knopman, who is a principle researcher at the RAND Corporation, and a professor at the Pardee RAND Graduate School. Debra has vast experience and expertise in hydrology environmental and natural resources policy, systems analysis, and public administrative. And similar to Brookings, she has written extensively on infrastructure, so she has many excellent insights to share. Debra, thanks. Thanks, for joining.

Finally, we have Austin Ramirez, who is CEO of Husco International, which is a leading manufacturer that specializes in hydrologic and electromechanical control systems. Under his leadership, the company was designated a Global Growth Company by the World Economic Forum and recognized as a Wisconsin Manufacturer of the Year. Among his other roles and experiences, Austin is also a board member on Infrastructure Vision 2050, task force vice chair for the Association of Equipment Manufacturers. I know his private and public sector experience will further amplify how businesses and other groups nationally are thinking about infrastructure needs. It's great to have you here, too, Austin.

So, to kick things off, I wanted to start with a fairly broad question that I think touches on both the future of infrastructure, and the here and now. We know that there has been a lot of talk in Washington, and all across the country on infrastructure. Many of these conversations have been going on for some time but are now getting greater visibility. As we think of specific policy priorities, and actions to take in coming years. Not just the administration, but in Congress, and elsewhere.

So, in a couple minutes each, what do you see as the major future looking federal infrastructure priorities? And are these reflected in the Biden plan? Or are there elements that you would remove from the plan?

I might start with you first, Debra, since I know you have covered some of these prevailing issues in your research.

MS. KNOPMAN: Sure. Let me just start by maybe the framing. I think an important step toward consensus building at this particular moment in time, is to properly characterize the nature and scale of the problem with existing physical infrastructure. It's the measurement problem that you, Joe, and Adie, and your colleagues have been calling it.

Really the public narrative has framed for far too long around what's crumbling or otherwise broken, it's reenforced by the failing grades from the American Society of Civil Engineers report card. Even the Biden plan alludes to the failing grades. But that narrative does not speak to future needs and priorities. And it doesn't jive also, with the facts on the ground, at least according to our research. Because you know, our -- as we say in our 2017 report on infrastructure, water, and transportation infrastructure, not everything is broken. And our 2020 report on airport Infrastructure confirms this, the same point.

Most states and localities are actually doing a pretty good job taking care of their assets and paying for them through tolls, and user fees, taxes, utility rates, general revenues. There are of course, important exceptions, and there are serious needs. Many of those exceptions are due to local economic -- declining local economic conditions, dysfunction of local government, or governance, or simply, you know, the nature of diffused benefits that some infrastructure provides, making it really hard to tag users with the bill.

So, the false narrative I think has diverted out attention from what the debate ought to be about, the priorities just as you all have said for building the infrastructure we need to thrive in the future, and fiscally sustainable ways to address the pressing needs we do have with our existing asset base.

So, let me just quickly single out a few items from the Biden plan that I think rise -- really rise to the moment. Sizable chunk of the plan is rightly built around the coming transition to a low carbon economy with modernizing the grid, spurring development of power storage and other technologies. Building out the infrastructure needed to support electrification of vehicles. The plan also addresses need for communities to invest in resilient infrastructure. And I hope will induce better land use planning to reduce losses, particularly repetitive losses from natural disasters. Another positive feature is the Plan's focus on needs for rural and underserved communities, for improved drinking water and deployment of broadband. And as for the existing infrastructure, I was very pleased to see that the Biden plan recognizes the need for priority setting for fixing the most critical roads, and bridges -- bridge infrastructure that is in the worst shape. And for tackling the lead pipe problems still plaguing many of the older communities.

So, bottom line, I think many of the critical pieces are there in the Biden plan. I think

more attention is going to need to be paid to the technical, and financial capacities of local governments to sustain investments and maintenance over the long haul. And just as Senator Carper was talking about a more accessible portfolio of sustainable funding and financing mechanisms will be needed at the local level. Because that's where the action is going to be in the coming years.

MR. KANE: I can't think of a better way, Debra, to frame it. I wanted to ask Chris his perspective next, on this of the local level, right? That yes, a lot of this is having in federal Washington in terms of conversations but so much of the real work, you know, and the challenges are on the ground, in particular places.

And so, Chris, you know, curious given your experience in the city of Orlando, but obviously what you've seen in -- in other places, too. How do you see this playing out there, and what do you see as some of the major priorities moving forward?

MR. CASTRO: Well, first of all, ultimately, I think there is a lot of alignment and it sounds like the Biden and Harris administration are really listening to state and local government advice in terms of what we actually need. As an example, you might not be aware, but you know, Orlando and the Central Florida area welcomes about 1,000 people per week moving here, to live, work, and learn. And that's not considering the tourism population that does come to play.

That growth has not stopped during the COVID pandemic, in fact it just continued. And so for cities like ours that are witnessing this rapid urbanization, the population growth is great because it creates unique opportunities to expand jobs, spark industrial innovation, build more inclusive places. But at the same time, as a city, it's our responsibility to plan for and sustain that growth by investing in our infrastructure. And that is why this is such a critical conversation. And you know, ultimately, we can't just build more. We need to build smarter, we need to improve residents' quality of life, and we have to really focus on reducing our environmental impact and addressing the climate crisis.

As was mentioned in your introduction to me, Joe, you know, since 2007, Orlando has been using Green Works Orlando, our initiative to serve as this kind of central platform that works to enhance the city's long-term sustainability and resilience. It has a very comprehensive focus that touches on many topics that are outlined in this infrastructure plan. And some of them I wanted to call out that have direct alignment.

First of all, as Debra mentioned, our you know, focus on building energy retrofits and accelerating energy efficiency improvements, and building, and homes is cornerstone to our addressing the climate crisis. When we look at our greenhouse gas emissions inventory, over 70% of that carbon footprint is coming from buildings using energy. And of course a lot of that is coming from the emissions factor of the electricity that those buildings are purchasing. So, in addition to energy efficiency, we are working closely with our utility on how to decarbonize that electric grid, and advance more sustainable energy sources like solar, and battery storage which were also mentioned. And then I would say you know, the third big pillar of our climate strategy is around electrification of transportation; vehicles and buses and expanding that infrastructure. And it was encouraging to see that those were imbedded in the prospective plan.

In terms of other opportunities though, I did want to mention you know, a few that we feel are critical, especially in Florida, we have a lot of water quality issues from runoff, and other challenges like septic tanks. And so a big focus here around the septic-to-sewer conversions and expanding reclaimed water infrastructure is critical to minimize our water supply. You know, water supply intake and to maximize essentially, how much reclaimed water we are using.

This concept of zero waste infrastructure, broadband connectivity, affordable housing, these are really top-of-the-line issues for communities to date. And you know, most importantly underscoring the president's focus on underserved communities, and Debra mentioned this as well, we've started to prioritize how our investments in these infrastructures don't leave anyone behind.

Earlier this year, Mayor Dyer appointed our first Chief Equity Officer Merchon Green, and is really charged with using the equity lens as we move forward with investments, with policy making, and the distribution of services, and resources.

And the last thing I'll leave you all with, at least for now is the fact that you know, we are also looking at the frame -- the unifying framework of the Sustainable Development Goals, or the SDGs, including that SDG-9 that looks at innovation and infrastructure, but also how infrastructure cuts across many of these global goals. And we are super fortunate to be a part of Brookings' SDG Leadership Cities Network, led by Tony Pipa, and Max Bouchet, and I'll say that those participations have helped us to better understand how to take advantage of the upcoming infrastructure bills that are hopefully coming

down the pike.

With that, I'll turn it back to you, Joe.

MR. KANE: That's great, Chris. And it's terrific to hear the work that you are leading, and obviously many other places across the country have been leading for years. You know, certainly as much as the infrastructure conversation increases in volume in Washington, it's always you know, been a priority certainly for many places across the country. And for many businesses, too.

And so, Austin, I wanted to turn to you, you know, obviously given your role in the business community, in the private sector, you know, what are some of the priorities you are seeing moving forward? And to what extent do you think the Biden plan begins to address some of those? Or does it?

MR. RAMIREZ: Yeah, thanks, Joe. You know, first of all, I'd say I am just thrilled we are here having a serious discussion about infrastructure. Because it seems like it has been years, or maybe decades that infrastructure has been a running joke in Washington D.C. and finally, now we have got an opportunity to do something real. And you know, I think there is no better way to stimulate the U.S. economy, put Americans to work, and bolster American manufacturing then, than through infrastructure investment. So, that's just a great place to start.

Now, when it comes to the Biden-Harris plan, what I love about it is the expansive and ambitious perspective they take on infrastructure, right? Clearly infrastructure is more than just roads and bridges. We need to tackle our energy systems, our water systems, our telecommunications systems, and for too long, we've thought about infrastructure with too small of an aperture. And I love that Biden-Harris plan is more ambitious.

Now, on the flip-side, I think this plan as presented so far, is way too big, it's way too partisan, and it's not funded appropriately. To put all this infrastructure on the back of a corporate tax increase is a bad strategy. I was thrilled to hear Senator Carper talk more about VNT and user fees. Because ultimately, infrastructure needs to be paid by the people who are using it, and there is lots of different ways that we can think about user fees, but that in my view, needs to be a significant part of the strategy of how we pay for all of this infrastructure.

The other thing that we haven't brought up today that I would love to see in terms of a

funding mechanism would be carbon tax. I think this is the right moment, and the right mechanism to think about if there is going to be a more general tax that is levied to pay for this infrastructure, doing it in a way that helps offset some of the impact of greenhouse gas emissions.

MR. KANE: That's helpful, Austin, and I love you know, there is different opinions on all of this, right? And nothing is perfect. I mean, these are big issues, they are generational issues, they vary so much, all over the place, among many different communities, and certain infrastructure users. And so hearing that nuance is I think -- is important.

I am going to skip ahead to another question I had because I think it is just so well timed here, building off of what you were just talking about, Austin. That yes, our infrastructure has many challenges, but again, it represents this foundation for opportunities. And our research as Adie was describing, you know, we highlight three main strategies around measurement, modernization, and experimentation, right? Sort of these catch all categories to help get more projects done, help more places, and help more people.

But you know, what opportunities do you see for infrastructure over the next few years, and the next few decades? And how can federal leaders actually seize this moment? Seize this opportunity? Austin, I know you have talked about a commonsense approach here. You know, the refreshing you know, conversation that we are even having here today, of let's just get down to brass tacks, what can we do in this legislative window? What are some of your thoughts here, in terms of how can federal leaders seize this moment?

MR. RAMIREZ: Well, one of the things we haven't talked about today that you just brought up is this notion of experimentation. And I think that is so important. You know, we often think about resilience in terms of resilience to climate change, and that is important, but we also need to think about resilience in terms of the robustness of our infrastructure in light of technological change.

And there is so much change happening in the -- in so many different ways that will affect our infrastructure going forward. And I think having a portion of this bill that is really dedicated to thinking about experimentation across different infrastructure systems with different technologies, to make sure what we are building is relevant, not just for the next 5 years, or 10 years, but for the next 50 years.

MR. CASTRO: Yeah, and building on that real quick, Joe, I think a good example of

experimentation, but also pragmatism, is what we are doing here to test our new energy storage technologies in Orlando. We've started to obviously look at lithium ion batteries, but then other technologies like vanadium reflux flow batteries, and even green hydrogen. Right now, we are testing this new application for floatable tanks, or floating solar on our retention ponds. Orlando is almost like an Atlantis in reverse. It's almost funny, when you fly into the city, there are so many water bodies, most of those are manmade holes. And now we are starting to land floating solar close to the loads and using essentially, that floating solar to create green hydrogen that can later be used for transportation sector fuel, or to help us true up some of the intermittencies of renewable.

So, that's a good example of how this Infrastructure Bill can really help to continue that research development and deployment of the experimental technologies that 10 years from now will be mainstream, commercialized, and imperative for us to fully make this transition to a low carbon economy.

MR. KANE: Right. And I was going to quickly add you know, the scaling of these efforts, too, right? It's not just an ad hoc effort or project in one place. But how can they be scaled across the country? That is of course, a big question here, and as you were pointing out, Chris, as it relates to the SDGs, and other -- other collaborations that are happening. New frameworks are emerging here.

MR. CASTRO: Mm-hmm.

MR. KANE: This isn't just fantasy, I mean, it's reality of places trying to test out these new things. So, they just need the capacity and the flexibility to sometimes try out some of these new things. And, Debra, I wanted to turn to you quickly on -- and you know, I always go back to the RAND report. I am sure many of our viewers do as well of you know, not everything is broken, right? And there are things that we are you know, doing well. And there are opportunities for -- for trying out new ideas, and new innovations. To what extent have you seen, or covered this in your work? Or do you see the possibilities here moving forward?

MS. KNOPMAN: Well, there are lots of different angles on this. I concur with both Austin, and Chris on the examples they cited. I'd like to take a different cut on this which we do talk about in the Not Everything is Broken report. And that is looking at financing. I mean, municipal financing and -- and looking for new approaches, innovations there. You know, tax exempt municipal bonds for the way that we do most of our financing for infrastructure. They are the single largest capital -- source of capital

raising we have right now on the U.S.

And you know, I think the public support for this kind of infrastructure initiative is really going to depend on the public believing that money is going -- is being allocated efficiently and fairly. And you know, that's going to be a critical element. But the conversation should not just be about direct federal spending on infrastructure, as pressing as there are needs there. And there are cases where other capital isn't available. It should also include tax policy. And for my angle, we should be looking for ways to expand the base of investors interested in buying into a municipal infrastructure.

States and local governments you know, they are in the bond market in a big way. Now they have been through you know, for decades now, and it's a very healthy market when they need to finance roads, airports, water systems, hospitals, schools, housing, everything. But there is also value, you know, in bringing in more private investment in conjunction with that public investment through private activity bonds.

But the one thing about municipal bonds where I think there is really an opportunity to do something interesting has to do with broadening the types of investors that are putting their money into bonds. Because they are tax exempt, big institutional investors, pension funds, don't invest in U.S. infrastructure. They'll go to Australia and put their money there, or in other parts of the world. It doesn't make any sense at all. So, we need to find a way to ring their money into the capital markets for municipal projects, here in the U.S. Build America Bonds was sort of an unintended experiment that was run in 2009-2021. I'd like to see that idea brought back, possibly with some modifications to really start making sure that the flow of capital is unimpeded. And we get the projects that the market is telling us are good projects to build.

MR. KANE: Yeah so, Debra, you've -- Debra, Chris, and Austin, you've all touched on obviously a bunch of different ideas here of the role of technology, new funding in financing approaches, just new innovations in general. That there is you know, not just proof of concept, but actually we can get this stuff done. There's, you know, not just proof of concept but actually we can get this stuff done. And I do want to get to some of the questions. Fortunately, Adie got to some of them at the beginning. I want to do one last question, or ask you all one last question, sort of a lightning round question.

You know, if you had one minute, you know, to sit down with President Biden, will the

leadership. We just had Senator Carper here. We're going to have Senator Cantwell here in a few minutes. You know, what would you tell them? I mean what do you see as, you know, where federal infrastructure is going in the next few months or even the next few years. What are the one to two elements that you would like to see prioritized here. This is your chance of kind of your wish list, right, of what should we be doing. And I kind of open it up to all of you of what would you propose in like a minute, you know, to Hill leadership or to the president?

MR. CASTRO: You know, I personally think one of the greatest economic and job creation opportunities of the 21st century is this transition towards a low carbon economy and making huge strides towards moving towards zero emission vehicles. And accelerating the grid's transition and modernization towards cleaner sources of technology.

When you start looking at the job numbers in the renewable energy space versus even current fossil fuel, you begin seeing that there's a huge opportunity. I think there's over 250,000 solar jobs in the country and it's still in the low, single digit percentages of powering the entire United States. When you compare that to just coal mining jobs, it's less than 50,000 currently and dwindling.

And so, that just gives us an idea of the opportunity ahead of us if we really start to focus our attention and our infrastructure in terms of transitioning our mobility and our energy sources among other infrastructure opportunities.

MR. RAMIREZ: Yeah, I'd say two things. One is this needs to be a bipartisan bill. If this bill is bipartisan, it will be a better bill, it will be a more sustainable bill and it's just so important. We've got plenty of policy consensus on what we need to do. There's no reason for this to be a single party bill. So that would be point one.

And point two, picking up on something Deborah said is I think I would frame the question to our federal policy makers around thinking about spending federal dollars to incentivize and leverage local dollars not to replace them. I think we have too much of a perspective of just parachuting in with federal dollars instead of thinking about these dollars as a tool to magnify other private local spending that can happen to build our infrastructure.

MS. KNOPMAN: So my two points are first, tackle the grand challenges that the federal government can best lead and that are really urgent to improve our economic competitiveness and meet

the challenges of climate change and all its dimensions. And I think one way to do this would be to hold a national competition to identify and construct what I've called big 10 nationally significant infrastructure projects. I think a well-run competition would incentivize development of the best ideas from the public and private sector. But this is, we should be thinking of big national scale priorities.

Second point, is to make a big play for building the technical capacity within the most economically and socially vulnerable communities, particularly, those prone to natural disasters. And funding and modernizing the infrastructure that these communities can actually sustainably operate and maintain going forward. Those are two big things to do from the top down and the bottom up but I think they're really critical and they, I believe, have bipartisan support.

MR. KANE: Yeah, well I'm convinced. But I guess, you know, we'll have to see if our congressional leaders and the administration would be agreeing with us. I do want to get to at least one of our audience Q&A questions. I'm happy that Adie was happy to take some at the top because have a couple minutes here before Senator Cantwell will be talking.

Related to, you know, we're talking about a lot of these generational issues, opportunities for testing and experimentation. Reality though is the legislative calendar is very packed, it's very tight. We do know that there is a standalone surface transportation bill coming in the fall. So regardless of whether this infrastructure bill actually crosses the finish line or pieces of it crosses the finish line, we do know there is this surface transportation bill that does need to get reauthorized in the fall.

Do you expect, you know, the Senate to vote on a standalone surface bill or should we expect other infrastructure items to be added to it before it hits the floor? I mean, how bullish are you that we get this done, right, or that pieces of this get done in the next few months?

MS. KNOPMAN: Yes, speaking as a former member of the Senate environment and Public Works Committee staff, who sometimes saw years go by without any authorization bills actually making it over the finish line. You know, I think, you know, we should expect a big, a bundle package. Well, we'll know soon enough whether that will be possible. If that's not possible, then it will come out in increments and in which case the surface transportation bill, you know, would be a key element.

So I think we'll know within the next, you know, month or two about what the shape, how things might shape up around a large package and then, you know, they'll maybe get to it. But this is a

big debate, it's been a long time coming so there's much to work out and some of the muscles are a little bit creaky, I would say, within Congress. And even knowing how to work on something that cuts across multiple committees, this is a big challenge for them.

MR. KANE: Yeah, Chris and Austin, do you have like 30 seconds each or any thoughts on this of yes, no, well what do you think?

MR. CASTRO: I mean ultimately, I think we're probably going to see more of a more comprehensive approach that's trying to move forward. But in that process, we may see it piecemeal. And so, ultimately, I think that the best effort is for us to try to get as much as we can in a single infrastructure bill. But knowing the reality of things, we may have to, you know, leverage that reauthorization and other piecemealed approaches to get critical points of this bill passed through and helping Americans move forward in modernizing our infrastructure.

MR. RAMIREZ: Yeah, I hate to say something cynical right before the Senator joins but it sure is hard to bet on Congress having a productive and pragmatic debate and actually passing something these days. But my hope is that we do and the good news is that as we've kind of highlighted today, there's plenty of common ground to be had if only we can find it and execute on it.

MR. KANE: Right. And look, I think there's certainly room for cynicism but there's room for optimism here too. I think that's one of the big takeaways I've left with from the conversation so far today. Look, we've covered a lot of ground in a short amount of time. We could keep talking about this for probably hours and keep answering more questions. I wish we could, I guess we could do it offline.

You know, I think the key is we can't look at infrastructure just in terms of dollar signs and the politics per se as much as that's obviously where a lot of the interest is at the moment. But really, you know, how can it be that durable foundation for growth and opportunity for many decades to come.

And we certainly don't have all the answers on how to do that but I think we've raised several of the major questions facing policy makers and highlighted potential avenues for action. So Chris, Debra, Austin, thank you again for your time and insights, really appreciated it.

MS. KNOPMAN: Thank you.

MR. CASTRO: Thank you.

MR. RAMIREZ: Pleasure.

MR. KANE: Now to conclude today's event, we'll be joined by Senator Maria Cantwell. Senator Cantwell has been serving the state of Washington in Congress for more than 20 years following her time in the House and multiple other positions. She is currently the chair of the Senate Committee on Commerce, Science and Transportation among other committee assignments covering energy, natural resources and finance.

So she brings a wealth of knowledge, experience and leadership on the infrastructure issues we've been talking about. I'd also add that she was part of the bipartisan group of Senators who met with President Biden earlier this week on the White House's infrastructure proposal. So Senator, I don't know if you're here yet hopefully. I'm waiting for confirmation from, here we go, I think she's joining. In a second maybe, I can stall for a couple minutes. There we are Senator.

SENATOR CANTWELL: Sorry.

MR. KANE: Senator, thank you for being here, especially with your busy schedule. You know, the mic is yours.

SENATOR CANTWELL: Thank you so much and it's great to be with everybody this afternoon and we've been really looking forward to this today. You can hear me okay and see me okay so I'm just going to proceed.

So thank you to the Brookings Institute for inviting me today. We obviously have a lot to talk about when it comes to infrastructure and I think where we are today represents a serious generational challenge to try to meet what many people are already describing as a once in a generation investment that would put America on a better steadfast path to compete in a global economy.

More than a decade ago, I visited a port outside of Shanghai and I saw for the first time, how the constant motion of giant cranes loading and unloading world class containerships, moving Chinese goods and services to a global market. How a port with six lanes and a highway and the longest sea bridge. I mean, it was just amazing to see outside Shanghai. How big of an investment the Asian, China in particular, was making in infrastructure.

Well, I know that this was an important moment for me. When I think about everything that is being produced and built around the globe whether we're talking about new energy markets of wind turbines or whether we're talking about goods imported from China, there are thousands of containers.

So for the state of Washington, we're a very trade dependent state and moving product is a very key part of our economy. Not just with our ports but obviously with aviation and with rail as well. So the competition for moving goods and making sure we're competitive is a very important issue for us. Whether you look at the intermodal connections in investments that the Canadians are making in Prince Rupert or how in Rotterdam in the Netherlands they've made improvements. You see countries are continuing to compete to move those same products to markets just as effectively.

So our economic competitors are everybody from China to India to Europe who spent millions and billions of dollars moving products through a transportation system, and energy system, a water system, everything that it takes to compete in today's economy.

The Organization for Economic Cooperation and Development and the World Bank have argued that physical infrastructure and digital infrastructure are key to economic growth and competitiveness. So infrastructure that helps make it easier to get products to market, makes the cost less expensive, increases productivity, all of those things were key components.

And Brookings yourself, you have done fabulous work on what I think is really a very big economic indicator of how we should look at our own economy and how we should look at the world economy. And that is when Brookings found that more than half of the world's population now reached the middle class, just about 4 billion people.

So these are new customers for goods and services and they represent a huge market. Middle class markets in China and India alone are expected to be worth \$14 trillion and \$12 trillion by 2030. So what are we going to make and ship into those markets and how are our transportation systems going to fair?

About 95% of the world's customers live outside the United States. Before the COVID-19 pandemic, over 86% of real GDP was outside of our country. So if we want to grow the U.S. economy, it is going to be by reaching those huge, huge market opportunities. This is something in the Pacific Northwest we were talking about at least, you know, in the '80s. How can more of our businesses become exporters to reach these big global market opportunities.

And while the pandemic may have temporarily set us back, it won't be long before these markets will be roaring back. The International Monetary Fund predicted that the world economy is on

track to expand by about 6%. And as a result of the volume of world trade, it's expected to increase by 8% this year according to the WTO organization.

So what are we seeing in response to this opportunity? As I mentioned earlier, China, Europe, Japan, are all using infrastructure investment two-fold. One, to reach those markets and two, to prepare for the aftermath of COVID and economic recovery.

So where are we? Where are we in the United States? Well, our seaports, our airports, our waterways, roadways, highways were built in the 19th and 20th century. Our power grid, as we know, is vulnerable to dangerous outages and extreme weather and cyber-attacks and we know we have a lot of work to do on broadband.

But just on infrastructure, we know that we lag behind on our roads and bridges and highways and we need to do more. Why do we need to do more? Well, it doesn't take much if you go even past the Washington State economy. When you think about the much of the Midwest, American corn, soybeans and wheat from the Midwest all rely on inland waterways and rail to reach U.S. ports to keep their goods and access to the foreign markets open.

Ranchers in places like Montana and Texas rely on refrigerated trucks on our highways to get perishable chilled and frozen meat products to west coast ports and then onto Asian markets. So any delay in these transportation infrastructures costs all of us. They cost the manufacturers, they cost the growers, the cost consumers, delays cost money.

So American automakers rely on the U.S. infrastructure to export U.S. built vehicles to customers all over the world. We're one of the largest Jeep sites in the state of Washington importing so much of those to Asia. So they rely on the same infrastructure to deliver those parts and those trucks and everybody relies on that to keep commerce moving.

So our infrastructure needs to have a vital investment. Before the pandemic, Amtrak provided about 32 million trips across 46 states, the District of Columbia and the Canadian provinces. But Amtrak's 15 long-distance routes are of particularly important to our country providing over \$4.7 billion in economic benefits to communities. Many of which are rural and don't have access to other transportation options.

So the metropolitan areas that the northeast corridor served had a combined GDP of

\$3.6 trillion and a very significant portion of U.S. GDP. So expanding our rail and passenger infrastructure is also going to be a big priority in the future in making sure that we have reliable rail services.

So I agree with President Biden that he says let's go big. Let's have a big significant infrastructure investment and the workforce that it takes to deliver on that. And if we are going to compete in the future, the investment can't be small but has to meet the time and the generational opportunity.

So what is clear to me as we work on commerce legislation to address surface transportation issues. First, I believe that Congress must join with the president and invest in mega projects. They are important to our nation and they are important to regional economies. Oftentimes, because these projects are underfunded or unfunded, literally because they are just so big, they essentially go without need for years and years and years and yet it is truly a competitive issue.

For example, in my state, you can look at the I-5 bridge replacement in Vancouver, Washington or the north south corridor in Spokane. Are all key corridors and projects of regional significance and national significance that affect the goods and movement of trade that come through the United States of America.

Only the federal government can make the kind of commitment investment to get these mega projects completed. And that is why as we look to marking up a surface transportation authorization, we need to include mega project infrastructure investment.

Now me personally I believe that mega projects also should include waterways. I believe our waterways also have to compete. We're giving ourselves a tough time on these projects and I don't think I could find a colleague who doesn't think we need to be putting more investment into our waterway projects.

So I hope that people will think broadly about mega projects and make sure that things that are moving freight and moving good product on waterways also get a significant opportunity to get major funds on projects that are just so important to us as a nation.

As we continue to make investments in infrastructure, I do also hope that we will take care of the environment around that to meet critical habitat issues around salmon. Things of the Pacific

Northwest that I'm sure in other Southern states there are other environmental impacts that also come along with this.

So what is the next thing that we need to do? Second, we also need to put more money into the INFRA program or the freight economy. The freight economy are so many regional projects that need to be done. They are literally moving the products that are key to that region's economy. In my state, it might be the huge backup that our apple and fruit producers see in Wenatchee, Washington.

It can be in another state just being able to get to rail capacity. It's many, many things. So we know with the freight program or INFRA as it is now called that it literally could be doubled and still not meet all the projects that people have requested funds for.

But America's competitiveness can be summed up in one way. Freight can't wait. If freight can't get to a market in a timely fashion or you're stuck in Chicago and can't get product across the United States of America, shelf space in Asia is not going to wait. They will get product from other places. They will get it from South America, they'll get it from Canada. They will impact the competitiveness of the United States.

And finally, we need to do more to help in very, very basic ways at at-grade crossings. At-grade crossings play the movement of freight across the United States in practically every state in the United States. That is because freight has increased already significantly in the last several years and is supposed to increase by 40% by the year 2035.

So that huge increase in freight, again, is to this point that Brookings pointed out, you know, I think a couple years ago in 2018 that the growing middle class, actually now the largest population, has reached a new level. And that 95% of those consumers outside of the United States are the target market for future economic growth. But we still have to compete with other countries who are also trying to get product there.

So it means many small towns and communities like Marysville, Washington or even outside of Spokane and the city of Spokane valley. All of them are now facing the improvements that that increase, huge increase in the movement of freight now has to compete with.

And as we know through the last several years, if there are shippers and growers are people who are part of this conversation, we also know the competition for our freight movement at least on rails has

driven up the price and really cost a lot of our small businesses. We need to do better than that. We need to make sure that we have competitive pricing so that our small businesses can continue to move product in a cost effective way.

So we think that the At-grade crossing program as part of Chrissy or standalone, we think is an important tool for us to keep moving product and to help small communities deal with their very, very specific infrastructure requests that will help products move safely through their communities.

So we have a lot to do in the United States of America to make this investment. I know for us in my hometown of Edmonds, Washington, our waterfront can sometimes be backed up for hours a day. We had an unfortunate situation where someone literally had to crawl through a rail car to get to a woman on the other side who basically had come across the sound by ferry and was about to give birth. Literally, our transportation system failed to get people where they needed to go.

So it's time to retool, it's time to rebuild, it's time to move our country forward. And so, we really do look at this as a bipartisan issue. I hope our colleagues will continue to work with us in the future on how to get an authorization because I'm pretty sure we can all agree that this investment needs to be made.

We can continue to have the debate about how we pay for it and how we move ahead in a bipartisan fashion, but no one, no one seems to disagree that the investment needs to be made and it needs to be made now. So thank you all very much for giving me this opportunity. Thank you for everyone who has joined the conversation. Please let's work diligently to make sure that America's competitiveness and the needs of infrastructure investment are made while we continue to chase those market opportunities around the globe. Thank you.

MR. TOMER: Thank you, Senator, that was fantastic. And multiple times I actually stood up from my chair ready to run through a wall but I might like infrastructure more than most. But I think you've captured the bipartisan need here. So thank you for taking the time, we know, in your busy schedule.

And thanks to everyone who listened in today. To Joe for moderating the conversation with Debra, Chris and Austin, to Senator Carper for taking the time. This conversation isn't going anywhere and that's a good thing for the future of the country. So again, thanks to everyone and we look forward to seeing

you next time at the next Brookings event. Thank you.

SENATOR CANTWELL: Thank you.

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CERTIFICATE OF NOTARY PUBLIC

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.

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