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Transcript

CALIFORNIA'S PERFOMANCE-BASED POLICY MODEL FOR TRANSPORTATION, ENERGY AND CLIMATE: LESSONS LEARNED

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OPERATOR: You're listening to a podcast from the Carnegie Endowment for International Peace.

[00:00:05]

DAVID BURWELL: OK, folks, people are going to be wandering in, so let's get started.

(Off-side conversation.)

Good morning, thanks for coming. I'm David Burwell with the Carnegie Endowment for International Peace and, as you know, the subject of our conversation today is what to do about transportation and greenhouse gas emissions. And we have two very – we are very pleased to have two experts on this subject with us this morning. I'm just going to make a few opening remarks, and then turn this over to Dan Sperling and Emil Frankel.

So for us who've been in transportation policy and greenhouse gas issues for 30 years, it's largely been an exercise in futility as you probably, folks, know, but it's now coming to a head. Transportation carbon is kind of an outlier in terms of efforts to control greenhouse gases; it doesn't seem to pull its own weight. The goal is, we most all of us know, that to get below 2 degrees Centigrade by 2050 or stay under that, we're going to have to reduce greenhouse gases by about 80 to 85 percent globally. Even the most ambitious goals, however, targets for transportation is somewhere between 50 and 60 percent, which means that the other sectors of the economy are going to have to overperform in order to make up for the shortfall for transportation carbon.

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Since 1990, while the increase in emissions globally in the – or in the United States have increased about 16 percent, transportation carbon increased about 25 percent. In the – in the European Union, just to – by comparison, while carbon emissions totally decreased about 8 percent from 1990 to 2007, transportation carbon emissions increased about 23 percent. So, even though the European Union, with a trading program, was and has been very successful or relatively successful in reducing its greenhouse gas emissions, they have not really performed any better than the United States in terms of regulating their carbon emissions from transportation.

So why is that? And we're going to explore that subject today. We're very pleased to have with us here, as I said, Daniel Sperling first; I think it's a tribute – it's a happy coincidence that, on the day we have apparently reached 7 billion population, we have the author of "Two Billion Cars" with us today. So somehow I think those issues are related. Dan has a paper – a draft paper, which is available outside, describing the efforts in California to address transportation carbon from the three legs of the stool, as he calls them: vehicles, fuels and demand side. He'll discuss that.

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I also want to say we're very pleased to have Dan here at the Carnegie Endowment for the next six months as a visiting scholar. Dan – do we pass out – I don't know if we passed out bios, but I guess most everybody knows Dr. Dan Sperling. He's head of the E.C. Davis Institute for Transportation Studies and most recently won the Heinz Award for Environmental Scholarship two years ago, a very prestigious national award.

Emil Frankel is from the other – the left – well, the East Coast, not the Left Coast – (laughter) – or maybe the Right Coast. We have a joint – and is – also spent his life toiling on behalf of transportation policy. He was the secretary of transportation in Connecticut, he serves on many boards, he now works for the Bipartisan Policy Center, and he

was the chair of a new TRB report called, "Policy Options for Reducing Energy Use and Greenhouse Gas Emissions from U.S. Transportation," just out. And Tom Menzies from TRB is here who's authored that study on behalf of the panel.

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So we have two terrific speakers – we'll talk. Each of them will give a talk for about 15 or 20 minutes, but mainly we want to get into a discussion. So we'll be done here by 10:30. So why don't I turn it over to Dan.

DANIEL SPERLING: Thank you very much, David. It is a pleasure to be here and a pleasure to be in Washington, D.C. You know, my favorite topic here, climate policy, is not exactly front and center here, and I recognize that, but that's part of the motivation here.

And so coming from the Left Coast – (laughter) – we'll be talking about what California has been doing with climate policy, and it really is remarkable. But there's a piece of my bio that David didn't mention that's relevant to this topic, and it's the third item down there. So I'm a member of the California Air Resources Board, and we're the agency – the administering agency for most of the climate policies being designed and adopted in California. So I really am immersed in this, and I'm not just the ivory tower academic anymore. I've come to appreciate and learn more about the actual political and regulatory part of the process. So, as David said, I'll – I'm going to talk about the challenges for transportation and the leadership that California's doing.

And I want to make a point here that California is being a leader here in terms of the policy. We can argue a lot about the outcome of that policy and what – what's actually happening on the ground, but in terms of designing the policies for transforming transportation, California is truly showing great leadership. So that's what I'm going to be talking about. So I can't help but, of course, refer back to "Two Billion Cars," right here, in paperback – (chuckles) – discounted, Amazon.com – (laughter), $10.65, great bargain. I was actually – Debbie (sp) Gordon, my co-author – she's going to be showing up here in a few minutes, and so it will be – I haven't seen her in a while, so that'll be great.

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So anyway, here's the story. Here – this sets the story, and that is that, in the world, we are – we are well over a billion vehicles headed towards 2 billion within about 10 years or so, but what's really remarkable is the slope of that curve. So if we think we have a challenge now with oil imports, oil security, greenhouse gases, all the other challenges associated with cars, it's only going to get much worse unless we do something about it.

Just to kind of leave an image in your mind of the challenge and – you know, bring it back to climate change: It's – you know, as we know, there's not a lot action here in Washington. But it really is extraordinary that this is – this is the cover of Time magazine from 5 ½ years ago. And I would suggest that the science – if anything – suggests that the problems – the change is happening at a faster rate and a more severe rate than we had been anticipating a few years ago.

So that's – I'm going to move onto the policy side. So this – that's what this talk is about, is about policy.

So what we're talking about is essentially trying to greatly reduce the amount of oil used and greenhouse gases in the transportation sector. So, as David said, we can – you know, a simple way of thinking about it is think of the transportation system as having – being a three-legged stool: the vehicles, the fuels and the mobility (of the ?) users. And an observation – and this is based upon a lot of experience and a lot of research – is that into the foreseeable

future – let's say the next 20 years or so – 20, 30 years – the greatest reductions are going to come from making the vehicles more efficient and it's mostly conventional vehicles. Gradually we'll be moving into using more advanced vehicles, and I'll talk about that in a moment here. But this is where the opportunities are both in a technology sense and in a policy sense.

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The decarbonizing of fuels and moving to alternative fuels is extremely important, but there's less progress, both in a technology sense and a policy sense. And the reason why that – I show that third leg of the stool as being a little crooked and weak – you know, being vehicle use reduction, VMT, vehicle miles travelled – is because, while it's extremely important for many reasons to be managing transportation and land use better, including reducing vehicle use, the challenges are probably a far – are a far – quite a bit greater in terms of actually getting the behavioral changes, the policies in place. And this is thinking the next 20, 30 years.

So if we look at the vehicles, it really is an extraordinary story, what's happening in terms of reducing the carbon footprint of our vehicles, reducing the oil use. And you see there the curve – the dotted lines, where you see that for 20 years, cars didn't get any better at all. The fuel economy was basically static, constant, and then just a few years ago, you see the curve started moving up and the red line are rules that are in place through 2016 and the dotted lines are rules that are proposed for 2017 to 2025. So that is really an extraordinary story.

And one of the points here is when I talk about California, California played a very important role here. It's played an even more important role arguably – is with the fuels and the mobility in terms of policy innovation. But, here, California show – had a – showed a lot of leadership. It adopted – the legislature adopted a law back in 2002 to reduce greenhouse gases from vehicles at a time when, in federally – you know, in Washington – nothing was happening. And there were lawsuits and it was a messy process. But eventually when President Obama came in, one of the most important action(s) he's taken on climate or energy was that, first, he said, OK, California, not only can you go ahead with your standards for reducing greenhouse gases and energy use, but we're going to make it a national requirement. So that's that solid red line there from up to 2016 and then, just this past summer, there was an agreement between the auto industry, the federal government – DOT, EPA – and California for the dotted line standards.

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And so here it is. It – and this really is an extraordinary story where, you know, there's all the CEOs of all the car – major car companies, all there on the stage, with President Obama, agreeing – and listen to this – agreeing to change the vehicle standards from 35 miles per gallon for 2016, which is already set in law, to 54 miles per gallon in 2025. I mean, this is – it's extraordinary that it was – that the administration proposed it. It was even more extraordinary that the industry – most of the industry – agreed to it, and California's going to be taking the first (step ?), that we – my air resources board will be adopting those standards in January, and then the federal process will take longer and is expected to adopt the rules in the summertime.

So – now part of this story with the vehicles is, at least through 2025, this is going to happen most likely mostly with conventional technology. And when I say "conventional," I do include hybrids – now, some would differ with me on that – but not with electric vehicles. Electric vehicles are not essential – fuel-cell vehicles are not essential for meeting these very aggressive standards. So this is an analysis that was done between DOE – excuse me, EPA, DOT and the California Air Board, and what it shows is that in, you know, for 2025, to get that 54-mile-per-gallon standard, which represents of about 5 percent reduction per year – that's what the 5 percent number there – only need about 1 percent of the vehicles being plug-in vehicles – plug-in electric vehicles.

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Now, in practice, it'll probably be a much bigger number because companies like GM and Nissan and others are going to be bringing out more cars, but the point here is that there's a lot of innovation happening in the auto industry with automobile technology. It's really an extraordinary story. We used to think of the technologies being mature and the industry being mature, you know, two or three decades ago, and that's just not true.

So the other part of the vehicles are the advanced technologies, and here's where California has been, on a policy sense, really leading, and that's with the zero emission vehicle program, first adopted in 1990. It's – there's been all kinds of lawsuits and trials and tribulations, but it has had the effect of bringing electric vehicle technology and fuel-cell – fuel-cell vehicle technology to the forefront and making it really at the forefront of the thinking of the auto industry in terms of developing that technology. Now it's moved very slowly in fact, in terms of commercialization, but it has accelerated the investment and accelerated the attention for these technologies. So there's a lot of other policies associated with it. The Obama administration is supporting electric vehicles. There's a $7,500 per tax credit for anyone that buys an electric car. So there's other things happening, and we can come back to this if anyone has questions.

Motivating this from a California perspective, this is a scenario that was done by the California Air Board about how do we get an 80 percent reduction in greenhouse gases by 2050? That is the goal in California and in many countries around the world; the European Union also is getting an 80 percent reduction – 60 to 80 percent. So to get that, you can see that through 2025, almost all the vehicles could be internal combustion engine vehicles. But then, when you start moving beyond 2025, you see here that a very large proportion of the vehicles become fuel-cell vehicles, battery electric vehicles, plug-in hybrid vehicles. And that by 2050, 75 – in this scenario, 79 percent would be fuel-cell and battery electric and another 10 or 15 – another 10 percent would be plug-in hybrids. So that's kind of the future we're looking at, and so that's why the policies that are being designed are meant to accelerate this process, and as I said, that we are making big – this is the success story. This is an extraordinary success story, both in terms of the technology and the policy.

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And then we get to the fuel side which is not quite as encouraging and positive. Yeah, I like this quote from the oil minister of Saudi Arabia where he said, the Stone Age didn't end for lack of stone, and the oil age won't end before the world runs out of oil, and that's very true. And so the challenge is figuring out how to get from here to there.

How do you get from a world based on petroleum, for a transportation world, to a world based upon other lower carbon, renewable sources of energy? And the three sets of fuels that we're talking about are biofuels, hydrogen electricity, and no one knows how this is going to play out, and there's pros and cons for all of these options. And in fact, we've had this history of trying to transition to alternative fuels for many years, and it's not worked obviously. And so this is my little storyline of the – what I call the "fuel du jour" phenomenon, where we grab onto to a particular fuel option. We grab onto it – "we" being the media, the politicians – and we raise our expectations, we hype it, and guess what? We get disappointed and therefore the media interest disappears, the political interest disappears, and we go onto the next one.

So, we did syn (ph) fuels back in Jimmy Carter's day; these are what we now call unconventional oil. Then it was methanol in the '80s, and then we did have a big flurry of interest around 1990, early '90s, in electric vehicles. Then it was hydrogen. Remember George Bush saying this was, you know, six of his – the 16 children born in his administration were going to be driving fuel-cell cars when they got their license at 16; came and went. Ethanol –

so ethanol has come and has stayed, but it's now recognized as not a promising long-term option, and now we're back to electricity again, and the question's what's next?

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And what I would argue is that, without policy intervention, what we will do is go right back to the top and start all over again because that's what oil companies are good at. They're good at the – they're big engineering companies; they bring a lot of capital together. Left alone, what are they going to invest in? They're going to invest in, you know, Arctic oil and deep-water oil and oil sands and heavy oil. That's what they're good at. They're not good a biofuels, which is a very dispersed type of industry, different scale issues.

So that's where we are. And part of the point is, all of these options face big barriers. Everything is difficult, and it's not just transportation. Even solar energy, you know, many of the environmental groups even are – have problems with solar energy, which you'd think is the holy grail, but there's challenges for all kinds of reasons with all these options.

And so one of the – one of the things California has done that is very innovative and, I believe, is really – provides the framework for the transition from petroleum to these alternatives – is what we call the low-carbon fuel standard. It's not been – outside of California, it's been rechristened the clean fuel standard, because, you know, we can't call anything – we can't use the word carbon, apparently, in Washington, so it's called the clean fuel standard now.

So New England – so California adopted it. The New England states, the Northeast states, are seriously considering it; Oregon and Washington also. British Columbia has adopted it. The European Union has adopted it. And basically, it just tells all the oil companies, you have to reduce the carbon intensity of your fuels. We're not telling you how to do it. And, in fact, we're going to let you trade credits, so if you don't want to do it, you can buy credits from an electricity company that sells electricity for vehicles.

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So this is one of the real innovations. And I think it's going to be eventually merged with what's – the Renewable Fuel Standard, that's the federal legislation now that targets only biofuels. So the low-carbon fuel standard expands it to include all fuels. It gives more choice, more flexibility, makes it more market-based. So I'm certain that's the path we're on. I've given up predicting the timing of it, but I think that is where we're headed.

And it is a controversial rule for various reasons. But if you think about it, any policy that's aimed at transforming one of the biggest industries in the world – you don't think it's going to be a little controversial? It is. And so there are lots of questions about how to do it and how to do it right, and in the interest of moving into the discussion, let me just leave it there. And we can come back to that if there's any questions.

So then we get to the third leg, mobility. And the way of looking at – the way of looking at this is probably different, is different in California and the U.S. versus other countries. If you think about China, for instance, there, I would say, this third leg is by far the most important leg because they are on this very steep trajectory of motorization of car use.

And they're definitely going to have more vehicles. But the slope of that curve can be very steep, or it can be more shallow. And the difference between a steep curve – motorization curve – and a flatter one is extraordinary in terms of pollution, energy use, greenhouse gases. The United States is a little different because we built out our

cities and our infrastructure, and in many ways it's a greater challenge. But what we've learned in the carbon world, dealing with carbon, is that there are these other benefits.

It's not we – the political system – and I'll talk about it in California, in particular – as it's delved into this mobility side, it's come to appreciate that all of the – there's all these so-called co-benefits of reducing vehicle use that are huge, in terms of creating more livable cities, more healthy cities. Cities all over the country are starting to get much more engaged in managing land use better, pricing transportation.

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So being in Washington – this is my Washington, D.C. photo, because there seems to be this sense in Congress that Americans have this inalienable right to own a vehicle and use a vehicle. And I'd like to just suggest that there are some uses of the vehicle that we could, perhaps, reduce, that wouldn't have a huge cost to us – in fact, might even be better for us. Maybe a little exercise, for instance, might help that person in that car, instead of driving the dog.

So the other big innovation that's come out of California is what we've referred to as – the name of the law is SB 375, the Sustainable Communities Act of 2008. And what it does is it applies a target for greenhouse gas reduction to transportation in all the cities. So the Air Resources Board, we are the implementing agency. The legislature just told us, go figure out how to reduce sprawl and reduce greenhouse gases.

And so the way we've done it – we've developed a target. And you see it there. In 2020, all of the major cities in California have a target of reducing greenhouse gases from passenger travel – which means, mostly, vehicle use, vehicle miles traveled – seven to eight – each city is a little bit different, so 7 or 8 percent reduction for L.A., San Diego, Sacramento, the San Francisco Bay area. And that reduction goes to 13 to 16 percent in 2035.

Now, in Washington, D.C., this is probably pretty extraordinary, to even be talking about vehicle reduction – vehicle use reduction. But what we've found is that vehicle use is already – has already stabilized per capita. It's pretty much – certainly in the cities in California, where the forecasts show that even without any – this law or anything else – the vehicle use per capita will probably be about the same – would be about the same in 2020 as it is today.

And so what we're trying to do is provide a way of reducing that further. And so these are the targets. And, again, this is a law – this is a rule – it's performance-based. We tell the cities, this is your target. We're not telling you how to do it. We're not telling you what to do with land use. We're not telling you what to do with public transport or pricing. We're just saying, this is your target. You figure out how to do it.

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So it's a broad, performance-based approach, which I think is the direction we need to be going with policy, you know, more broadly. And so this is a good example of it. Now, the downside of this is we haven't figured out the carrots and sticks part of it. We're not going to do sticks. We've already figured out, cities don't have any money, so sticks don't work. But we can use carrots and incentives.

And so we're now in the process of trying to figure out how to provide incentives to the city to reward them for achieving those targets. And some of the big ideas for doing it – one is rejiggering the transportation-funding formulas. So now, if you have more vehicle use, you get rewarded with more money. And this great, revolutionary thought is, well, what if they get rewarded for less vehicle use? So that's one of the ideas that we're playing around with.

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Another one is to take the cap-and-trade revenues. So we – I'm going to talking about that in a second – we adopted a cap-and-trade program last month in California, which is going to generate a lot of money – to use some of that money, to divert it to reward the cities that reach their targets.

So this is the timeline, just to illustrate for California. It started back in – you know, for dealing with climate policy – it started back in 2002 with this law to reduce greenhouse gas emissions from vehicles. 2006 was the big, overarching law known as AB 32, the Global Warming Solutions Act of 2006 that said that the whole state had to reduce its emissions back to 1990 levels by 2020. And that's the overarching law that's being used for all of these regulatory and policy actions.

The SB 375, the vehicle – the sprawl law in 2008, the low-carbon fuel standard, and then the cap-and-trade – we actually adopted it in 2010 and then are just finalizing it right now. And this graph is just a table to summarize what I talked about. And in red are the most important policy actions.

So these are – California has played an extraordinary role in this. There are things happening at the federal level that are very important as well – the rebate, the tax credits for electric vehicles, the way that the vehicle standards are structured to make vehicles more efficient. But a lot of these innovations are coming out of California.

And I should point out that in California, we look at this not as us being an island, where we're just trying to transform California for the sake of transforming California. We think of this as being a model, a leader. So we're doing all of these – almost all of these rules and laws are being adopted with the expectation and desire that the federal government and other states will follow, as well as many other countries.

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So that is – and in fact, when we design these policies, we're doing them in a way that they are compatible with, and a model that can be easily extended, easily migrated to other – to the U.S. government and elsewhere. And this is – I put this slide up there not for you to have to read it, but to make one point.

And for those of you that are really earnest in understanding how the market system works or doesn't, this is a list of all of the market – I call them failures – in that, actually, that policy report that David just mentioned – this one – I served on that panel. We had some big debates about, is the problem that there are market failures or just market conditions? And many of the economists argued that it's market conditions. OK, I'm willing to go with market conditions.

But the story is that there are many problems with the market system that are inhibiting innovation, inhibiting change. And these are just examples of that. And so that's why – that's why we need strong policy for the vehicles, for the fuels, and for mobility. And I would point out, with the vehicles side, we say, well, why don't we just raise the, you know, price of gasoline a little bit? Well, of course, I know politically, we can't do that.

But even if we could, it wouldn't be nearly enough. Look at Europe. Europe has $8-a-gallon gasoline, and they're still adopting – putting in place very aggressive performance standards for vehicles to make them more efficient. So the point here is market instruments are important, but these regulatory actions are at least, if not more, important for accomplishing these changes over the next few decades. So carrots and sticks are needed.

And one last thought on California is that there really is strong support. So we had a – there was a ballot proposition to – well, literally, the words were to postpone the implementation of this Global Warming Solutions Act and all these things I was talking about. It was written as – that it should not be implemented until unemployment got down to 5.5 percent for four consecutive quarters, which, you know, might never happen again.

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And voters rejected that proposition by 23 percent, 61 to 38 percent. It got more votes than anything else on the ballot – more than the governor, lieutenant governor, and anyone running for any statewide office. It got more votes, more votes than any of the other propositions on the ballot. And this was at a time when unemployment was 12.4 percent. This was a year ago.

So there is – and I would point out that this has been the only time in the United States where there has been a major vote on climate policy. So I'm not saying, if we had a national vote on it, it would, you know, pass by 23 percent. But I suspect there's a lot more support out there than, you know, than you would think, listening to certain politicians in Washington.

So is California unique? In some ways it is, in some ways it isn't. You know, we had – we have some advantages. We don't have a coal industry. We have a strong clean tech industry that could make the arguments that there were benefits from going to clean technology. But in the end, it's not that different from other places, I would suggest.

And so my closing thought is – are we leading the way? Is California leading the way to the promised land, or going to be washed away? Only time will tell. Thank you. (Applause.)

MR. BURWELL: Thank you, Dan. That was a terrific presentation. Unless somebody has an absolutely compelling need to ask a question, I think we'll hold questions before – until after Emil's presentation.

So in Washington, we're – this is a terrific presentation, Dan. It's welcome. And we're a bunch of policymakers here in Washington, and a former boss of mine used to call us drugstore cowboys, you know – these folks who sit in a drugstore and they read cowboy magazines, but they never go out and ride a horse. We're very fortunate today to have Emil Frankel, who – I don't know if he's ridden a horse or if not, but he's actually –

EMIL FRANKEL: In California. (Laughter.)

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MR. BURWELL: You can stable horses in California, still, at your home. But Emil actually comes from the industry, has spent a life in the industry, has run a transportation agency, and he knows how difficult it is to impose any policy – carbon reduction or whatever – on travel behavior. So we're very fortunate to have Emil here, and he can give us his response, or anything else he wants to talk about relating to his report.

MR. FRANKEL: Thank you, David. I think I've now become, after four and a half years or so at the Bipartisan Policy Center, a wonk and not so much a practitioner. But I do very much want to thank you and the Carnegie Endowment for this opportunity to comment – and I do want to underline that, comment – on Dan's presentation.

I don't have a specific parallel presentation was make. Dan was nice enough, and David, to invite me to be a discussant or respondent, and that's what I intend on doing, although I do want to infuse my remarks a bit with

some references to the report, to which both Dan and David have made reference. That is TRB's policy report 307, Special Report 307, which was actually issued in June, Tom, right?

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And now it's in this snazzy hardcover – I didn't like the cover, but I was overruled. But I'll say that the substance of it, I'm very proud of. I ended up as the chair of this special committee of TRB, because Bob Skinner and Steve Godwin decided they wanted a non-expert to run meetings of all these experts like Dan Sperling. We had a very impressive group of people, names familiar to many or all the people in this room – George Eads, Vicki Arroyo, Henry Li, Brian Taylor, Jamie Winebrake, et cetera.

And it was a remarkable experience for me, I must say, and I'll talk about it a bit – how much I learned from these experts with different perspectives. Dan and I were just talking. He made reference to the economists and the, kind of, techies in the room, and there were some different perspectives.

And I'm sure it'll be referred to as a consensus document, as it is. But the consensus is really sitting in the back of the room, and that's Tom Menzies, who, through his writing, it was almost lawyerlike – and, you know, a lawyer's capacity to find words that everybody agrees to because they don't mean anything. (Laughter.) That's not quite true. But Tom was a really brilliant writer, and kept on, through his successive drafts, driving us towards a consensus document.

My role in this, as I said – being the non-expert in the room and just, kind of, keeping things going – reminds me of the reason my career – and actually, I've not spent a life in transportation. Chris knows that I had a career of 15 or 20 years doing real estate workouts and business reorganizations, a little bit of law practice.

And I became commissioner of transportation in Connecticut – and Joshua's heard me say this – because Lowell Weicker, newly elected governor after a long career in the United States Senate, had this big department, spent lots and lots of money. He knew he couldn't pay any attention to it because he had other pressing demands on the governor – on his role as governor. And he knew I wouldn't steal. So that was my – that was the launching of my career in transportation, which I now have spent almost 20 years.

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I also will, kind of, infuse my remarks a bit with the work that we've done. Particularly, Dan and I were chatting a couple of days ago about – he made reference to, really, the brilliance, I think, of SB 375, which is being performance-based, which has, as many of you know, permeated our work at the Bipartisan Policy Center.

My former colleague at BPC, who was the author of much of that work – Joshua Schank, now the CEO of the Eno Foundation, is here. And I would welcome his comments as we get into a little bit of discussion about performance – performance management and its application not only to this intersection of energy and climate and transportation, but more broadly in transportation policy.

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So let me give some comments – some reactions, actually – to Dan, to the paper, which he coauthored with the extraordinary chairman of the California Air Resources Board, Mary Nichols, which is, I think, available here – a Carnegie product.

I am, first of all, without regard to this substantive area that we're talking about – I mentioned this to Dan – that as a, kind of, amateur political scientist, or someone who's no spent a big chunk of his life in public policy, I find this whole body of legislation, regulation, and public policy in California in the area of energy and climate change extraordinary, unbelievable, particularly in the context of a – of a state – the state's – the nation's largest state, to which we are always making reference about its dysfunction, its inability to pass budgets in a timely or realistic manner.

And California, for many reasons, has become not only a symbol but actually a model of the way not to govern, and all – that's what all the articles have been about certainly in the last several years after, you know, the extraordinary period – rich period of California public policy in the years after the Second World War. That's not been the example.

And yet, in this area, I don't – I don't know. I mean, I think – and I'm not saying we get into this now, but totally without regard to the substantive policy issue, I would love to see study or studies of how California has managed to legislate and to – and to mold and lead public policy. And you know, the initiative which sought to – essentially to reverse A.B. 32, and the failure of this well-financed effort, which actually, I think, the funders on the other side pretty much began – sort of gave up on after a certain time –I mean, this is really quite extraordinary.

So we've seen more recently in the last decade, but it obviously goes back to – for a longer period of time, but certainly in the last decade in the climate change area, greenhouse gas emissions, energy, which are nonstarters here in Washington and look like they will be for a long, long time – maybe as we talk about energy, that's a different story, but certainly the phrasing that's in terms of climate change, greenhouse gas emissions is not the way to proceed. And yet, California, with A.B. 32, which was directly a climate change bill – and which Dan – the other legislation, which we'll talk about in a little bit more detail in a moment, which is S.B. 375, enacted by the California legislature and continuing, I'm sure, not without controversy of course – but nonetheless the extraordinary work of CARB, the Air Resources Board, in implementing those policies, developing – at least implementing so far in the sense of developing regulations.

[00:43:08]

I must say, I can't – in reading Dan's paper, it struck me again – and please forgive me for this, but I don't get too many chances to do this, but I am struck both at the national and state level by the reminders of the leadership of my party, the Republican party, in environment and air quality issues. EPA was established under Republican president, and the first Clean Air Act enacted under that same president, Richard Nixon. George H.W. Bush – remember the Clean Air amendments of 1990, which I'm not saying, you know, the administration led but the administration was very much part of the Clean Air Act amendments – and Bill Reilly, of course, the EPA administrator under Bush the senior.

And then in California, I actually – until I read Dan's paper, I either didn't know or I had forgotten that CARB was established under then-Governor Ronald Reagan. And of course, the extraordinary work and leadership of Governor Schwarzenegger in the climate change and these legislative initiatives, and the work in – I think probably – I would guess, you know, fairly consistent, strong support of CARB by Governor Schwarzenegger. So it's a – it's a proud record, and one I wish my national party was – and its presidential candidates right now were a little more ready to put their arms around. But that doesn't seem to be the case right now.

[00:44:44]

Dan noted that we can talk about market forces, which we certainly did a great deal in our work in this special committee, this TRB special committee, but the fact of the matter is that – and I happen to be a believer, not surprisingly, I suppose, in market forces, the use of pricing in order to bring change in terms of these issues we're talking about today – energy and greenhouse gas emissions.

But the fact of the matter is that politics don't seem to allow for, at least at the national level, for using fuel pricing, except for the basic price, which really is a market force, of course. But now I'm making reference – the gasoline tax, the federal gasoline tax has not increased since 1993. The last time, actually, it was increased specifically for the purposes of dealing with transportation as a revenue source. And otherwise – was actually in the mid-1980s because the '90 and '93 increases in the gasoline tax came as either in whole or in part to deal initially with budget deficits.

And it doesn't look like we're going to deal with – we're going to have a gas – federal gasoline tax increase anytime soon. There are some states where, you know, it is more possible to seemingly to deal with gasoline taxes. But that's an uneven record right now. And in any event – and Dan also points this out – Dan and Mary in their paper also point out that the relative inelasticities of gasoline pricing – the inelasticities of demand in response to price – we'd have to increase the price of gasoline by extraordinary amounts. We saw it, you know, when we hit $4.00, when we hit – as we will, you know, sometime soon, I'm sure again – 4.50 (dollars) or $5.00 a gallon, not because of taxes but for other reasons. That will begin to affect behavior, but not at the levels – not a three or five or even fifteen-cent increase in gasoline prices will not really affect things.

[00:47:05]

So we've largely relied at the federal level, as Dan has pointed out, on the CAFE or fuel-efficiency regime. And there we did nothing for actually almost 30 years. But I must say, in the last part of the administration of which I was a part, the Bush administration, we began for the first time to deal with fuel standards, fuel-efficiency standards for SUVs and light trucks – and of course, these remarkable initiatives under the Obama administration that Dan has described.

But as Dan has mentioned, fuel-efficiency standards alone are not likely to achieve the results we need. And that became quite clear in the TRB study of which he and I were a part. And what that committee concluded is that it's going to require a combination of measures to reduce oil consumption and greenhouse gas emissions in the transportation sector. And I think that really is the message – California's message. It's not just one thing; it's a mix of policy measures. And indeed, the very mix of those measures increases their effectiveness.

There's a synergistic effect. That's the primary thing I learned from my experience on this committee, from the experts around the room. So that the impact of a bundle or a package of measures or policies can increase their effectiveness – this is a situation in which two plus two can equal five, and that – you know, although it's not directly relevant to Dan's paper that fuel-efficiency regulations, for example, will have more impact when prices are rising, and higher prices are more sustainable in the context of fuel-efficiency standards.

We noted in this special report that in addition to fuel-efficiency standards and higher fuel prices, if they were obtainable, we should consider a range of other policies that can influence total demand for transportation and can stimulate less overall use of the transportation system and more efficiencies in how and when we use transportation networks and facilities. That's what California has done with S.B. 375.

But importantly, as Dan said, it's performance-based: While recognizing the nexus between land use and transportation, it does not require specific actions. Rather, it's performance-based, outcome-based – that is, it

prescribes results but not how the metropolitan regions, which have the responsibility to develop these programs – the MPOs – can achieve those results. Arguably, those results could come from land-use controls to enable denser development, or forms of road-pricing or – you know, the application of information technology, so-called ITS.

[00:49:55]

We've pointed out in our work, as many of you here know our work at BPC, that we've – think the federal government generally in transportation policy, not limited to this area, should be prescriptive in establishing goals but permissive in allowing states and metropolitan areas to develop comprehensive, strategic plans or packages of investments that accomplish those goals.

We should be interested only in whether the strategic program developed at a state or metropolitan level makes progress, or in the case of SB 375, achieves targets. We – our approach at BPC in our transportation policy project is really to focus on progress not on targets. But nonetheless, the key is that showing that you're – you've got a package of activities, which together achieve the results – the outcomes which we have in mind.

The application of the principles of performance management, of an emphasis on programs that are based on goals, outcomes and accountability, should, as Dan said, come to characterize our approach more broadly to transportation policy. And I think it's one of the most important contributions that SB 375 and the state of California and its legislature and governors will make to this emerging policy discussion, again not limited to transportation, energy, climate change, but more broadly in the transportation sector – and also, the fact that we need to align and coordinate policies.

But I want to pick up on the point that he ended up with. And that is, for this to be effective – for performance management to be effective, for there really to be accountability – which is at the heart, at the core of performance and this kind of – this kind of approach, outcome-oriented – there has to be accountability. And for there to be accountability there must be consequences. There have to be – if sticks are impossible politically, there have to be carrots.

I think he certainly recognizes that, as does CARB. That's the hard thing, but it is also is applicable here at the national level and the discussion. People are talking about performance management. If we ever see a bill – a surface transportation authorization bill – I'm sure there'll be a lot of language about performance measures. That's good.

[00:52:30]

Joshua (ph) reminds me that we have – we have, importantly, begun to change the terms of the discussion, but the substance – what's really meant by performance management – and really providing that there be consequences – that there at least be rewards for those states or metropolitan regions that achieve results – is critical if this is going to be effective. Thank you. (Applause.)

MR. BURWELL: Thank you, Emil. I want to thank the speakers. To be right on time we have about a half an hour for conversation. I've got plenty of questions, but first why don't I just open it up? We can start with Chris over here. Do we have a microphone?

[00:53:14]

Q: Great. Chris Leinberger with Brookings and Locus. Two questions, Dan, actually more for you. And this may fall under the same category of why did crime fall in the 1990s – basically a lot of people took a lot of credit for it, and there's not much research to back it up. But, why did VMT stabilize? What's the research and what's the feeling? And then a related question is, what about Jevons paradox as far as – you know, how does that apply here, as far as increased efficiency?

MR. BURWELL: Do you want to explain Jevons paradox or –

MR. : Go ahead.

MR. BURWELL: OK.

MR. SPERLING: Actually, I'll leave that to you to describe the Paradox. But the answer, I think, and – first of all, the point is it's VMT per capita. So, like, in California there is large population increases. And I think the – and as you suggest, the research is still pretty weak on explaining, partly because we don't have good data. This is kind of an extraordinary story, is we don't really know how much people are really traveling. And, you know, we imply it from a lot – you know, gasoline use and other data.

But in any case, I think what's happening is, one, the baby-boomer generation is getting older, and so it's partly demographics. And you have more older people and fewer in the prime driving age, with kids around and so on. We're also seeing with the younger generation that they're driving less. So some of the early data shows that young people are getting their driver's licenses a little bit later; they're driving a little bit less than previous generations.

And the explanation for that, I think, and this is definitely anecdotal – partly based on my daughter's experience – but, you know, the status of cars is not what it was when many of us grew up. And so car ownership is not the same. So now it's been replaced by iPhones and any number of other gadgets and technologies that, you know, and social networking.

[00:55:38]

And in fact, part of it is you can actually do – we talk about dynamic ride sharing and using information technology to organize ourselves better. But the teenagers and young people are already doing that just through cellphones and real time – we used to have to say, well, I'll meet you next Saturday at such-and-such a time and hope that everyone, you know, followed through – and if anything went wrong.

So there's a lot of the – it's partly the technology, it's partly the status, it's partly demographics, it's partly congestion – in some places, is kind of wearing – it's not necessarily getting worse, but I think it's having a wearing effect on a lot of people's driving and how much they drive. So tell me your paradox – I've only a vague understanding of it myself.

Q: Jevons paradox – a 19th-century economist who basically said that as we got more efficient with energy and that the price began to fall on a per-capita basis, that we just got a second refrigerator, and ended up using as much or more – but powering more appliances and finding more uses for that energy.

MR. SPERLING: Yeah. What we sometimes refer to as the rebound effect.

MR. : Right.

MR. SPERLING: And it's certainly true that there is something of a rebound effect. And the question is, how do people respond – whether it's vehicles getting more efficient – so one of the criticisms of vehicle standards is the vehicles get more efficient, so therefore it's cheaper to drive, and therefore people drive me. But it's – I think the evidence, at least in transportation, is that this rebound effect is relatively small.

[00:57:27]

And part of it is in driving. When you drive, you know, there's a related phenomenon called the travel-time budget. And that is that we find that all around the world, people devote 60 to 90 minutes of travel – to travel, whether you're in an African village or in New York City. And so we tend – with the congestion, people now are in their cars a lot, but they're not traveling as far because of congestion.

MR. FRANKEL: My dad, Chris – not an expert on this, obviously – but it does, I think, reinforce the idea, if you could do it, of how regulation and pricing would work together. That theoretically, if you – you know, more efficient cars, which we're achieving, could lead to more driving, although I think – the experience, my impression is – Dan's right, the rebound of – so-called rebound effect is not that considerable. But nonetheless, theoretically – that's why – though – but regulation, fuel-efficiency standards are more effective in the context – overall effective in the context of rising prices. So it's a way to kind of counteract that, even the theoretical potential for that.

MR. BURWELL: Yes, sir.

Q: Thank you very much for this presentation. My name is Andreas Kopp. I'm from the World Bank. And we will be launching a report on transport and climate change in the very near future. And we have been thinking for quite some time whether we can share your narrative, that what we need is regulation. And that would be regulation on a global scale. And we can believe that there will be technical progress in engine technologies forthcoming to solve the problem. And after thinking quite some time about it, our answer is no.

And the main reason, for us, is an infrastructure policy reason. If we go to the mayors and say: The future of emission-free transport will be one of individual car use, then they will ask us to accommodate the increase in individual car demand that will be imminent. And then, you have said – you have talked about how much increase in individual cars that would mean. And for us, this is a difficult conversation because we would have to check whether the partners you are working with really implement the regulation, or whether it is only law and not enforced.

[01:00:05]

And this is something that would be difficult and worth mentioning in the Carnegie Endowment for International Peace, I think. The problem is that if you have another implementation strategy – a fiscal implementation strategy – a narrow climate-change agenda does not get traction in transport. There's only one global scenario, done for the Department of Energy, looking at what would happen if a carbon price were implemented that brings the world to the stabilization of the below-2-degree Celsius objective.

And it still would increase emissions from transport by more than 40 percent – the story that you were talking about – that the other sectors have to reduce more to accommodate the increase in transport. And therefore, our proposal is to get away from a narrow climate-change agenda. The social costs – and there is a lot of market failure around transport – and the social costs of other externalities – road safety, local air pollution, congestion – they are far higher than the costs that climate change is associated with.

[01:01:27]

And if we consider this all together, then – and implement it in a fiscal way, this is not just a matter of fewer taxes – then it could lead to revenues that would help even fiscal reform. We could reduce taxation on goods by taxation of the bads of transport. And here I wonder whether there is not something that California would be grateful to learn – how to deal with their budget problems. Thank you.

MR. SPERLING: Well, I actually largely agree with what you said, Andreas – just a few quick points. One is, you know, all of the international agreements have almost nothing to do with transportation. So even if they did these international agreements, it still wouldn't have much effect on transportation itself. The other point is, you know, this idea of co-benefits or how to think about carbon. And I would fully agree with you that the other benefits are most of what we're doing here. The other, the non-carbon benefits, are greater than the carbon benefits.

What's interesting in California's case, though, we created a policy framework. It is motivated by carbon for various reasons. But the benefits, in many cases, go way beyond that. And the reason it works is – and that's where we come back to these performance-based approaches that are so important – is that the target of reducing – like, with SB 375 – reducing carbon in cities. The strategies to achieve that target are essentially the same targets you would pursue for any number of other goals in cities: livability, health, reduce infrastructure costs.

So it's really a question of how do you create a policy framework? And many of these performance standards lead to the same outcomes. And that's where we need the policy wonks to get a little more engaged figuring that out. And the one point on the policy is, I would say, policy is so crucial here. The example I give I China. Compare Shanghai with Beijing. These are two cities with about the same, you know, affluence, income level, same culture. And yet, one of them has only one-third as many vehicles per capita as the other one does – Shanghai.

[01:03:46]

And it's – has a lot to do with policy and land-use management and so on. So policy does matter. And that has a huge outcome. And, yes, revenue – there's lots of opportunities to generate revenue that can solve all kinds of challenges and problems.

MR. BURWELL: Just to – (inaudible) – on that, glad you're doing the study. Dan didn't mention it, but in California one area – the Sacramento region – did a study of just how infrastructure costs would be affected by density differences. And through an alternative scenario analysis they determined that the vision that they created – a more dense region with cluster development, reduced infrastructure costs by, I think, over 20 percent over 40 years. So you can reduce infrastructure. That's just density.

MR. SPERLING: That was a driving force, as I understand it, in the Utah experience as well, which was –

MR. BURWELL: Right, the –

MR. SPERLING: Not exactly a liberal state, but nonetheless came – practically led by, you know, the business community and a kind of fairly conservative Republican governor and the church – the Mormon Church, that they wanted to save on infrastructure and led – this led to much more rational land use and transportation infrastructure investment policy.

[01:05:09]

MR. BURWELL: Under a Republican governor called Jon Huntsman.

MR. SPERLING: Yeah. Huntsman and Levitt built – Mike Levitt actually was the –

MR. BURWELL: Right – (inaudible). So there's some – there's some cases (in that ?). Yes, sir.

Q: Kevin Finneran with the National Academy of Sciences, but not the Transportation Research Board part of it. I have a specific question with a general implication. There was recently a paper in the proceedings of the National Academy of Sciences by a group of people from Carnegie Mellon talking about the $7,500 tax benefit for the plug-in electrics, and saying that this was a misguided policy because they were – you'd get large – (inaudible) – battery packs in order to have – drive long distances, but in fact people using their cars for a lot of short trips, and then they were sacrificing efficiency because they were carting around this enormous battery pack. So I wanted to know if you felt that was a mistake to be subsidizing the pure electric vehicle technology.

And the larger question is, you – both you and Emil talked about the importance of setting goals, not specifying technologies. I wonder if there are areas – specific technologies at the federal level that you see as counterproductive because they're too technology-specific or too narrowly focused to achieve the goals that they're meant to achieve.

MR. SPERLING: You know, this electric vehicle issue is a real difficult one because it's hard to – so if you look at it as an analyst it's very easy to pan a lot of policies. You know, you say it's not cost effective in the near term and so on and so forth. But the challenge here is – it comes down to the vision and the belief in the future.

And if you think that we do need to have a major reduction in oil use and greenhouse gases, the quest ion is how to get there and what's the most effective way. So clearly I show – the analysis shows that making our conventional vehicles more efficient will give, by far, the largest reductions in greenhouse gases and oil use of any policy conceivable for the next 15 years or so.

And then the – so but then the questions – how important is it to then move to the next level of electric vehicles, where you really bring it even much further down? You reduce the greenhouse gases even more, oil use even much more. And how do you get there? And how important – and how – you know, what are the policies to do it? Even if you agree on that, what are the policies?

[01:07:56]

And so there is no easy answer to this. And I guess – and we never can put in – working on the air board, I've come to appreciate that we never adopt the most efficient, rational approach just because there's too many barriers and equity issues and so on – all through the whole system. So I hate to say this as an academic, that we don't have a good analytical framework to answer the question you posed about electric vehicles. But in the end, we need to kind of accelerate the development of the technology. And it takes time, takes industry – look at hybrid vehicles.

They were introduced in the U.S. 11 years ago. We are now at 3 percent – not even 3 percent market penetration for new vehicles. And there's lots of explanations for all this. But the – it's clearly – everyone says this is the route we're going on. We're definitely moving at electric drive technology, whether it's – you know, be hybrids and plug-in hybrids and fuel-cell electrics – that's where we're going. How to get there is not easy. So – it's not a very satisfying answer, and I don't know – I think – one little more piece on that I'll say.

[01:09:14]

OK. So yes, you know, a lot of the criticisms are appropriate. In fact, you could say, why are we giving so much money to the rich people who are buying these vehicles as well is another criticism of it. But it's – it is this challenge of how to – how to get this whole technology started and motivate innovation. And I can come up with some better ones, but I'm not sure they would be adopted in the policy process.

MR. FRANKEL: I mean, the difficult thing here – and everybody knows this – and it's been – was used for decades by the automobile industry as a rationalization for not doing anything – that this is not the Manhattan Project. I mean, the references (to ?) constantly the Manhattan Project – totally inapt because, you know, that was a government-driven, government project for a specific purpose. And this does depend on consumers, and ultimately, developing techniques. And that's why picking winners is so difficult and government doesn't do it very well. And they haven't done it very well in this area, and there's no reason to expect that they will.

I mean, basic research, probably, is the way to invest our money. But in a time of fiscal crisis, when budgets are all levels are going down – Dan talked about the lack of – we all know this – the lack of data, research. Good information on which to make intelligent policy decisions in the transportation sector is, I won't say nonexistent, but not what it should be.

[01:10:39]

And we're going to be – likely to be going in the other direction in terms of the investment of public funds into data, research, and so forth in this area, in transportation – in transportation and energy. That probably is the best way to invest, rather than trying to pick winners. And I think this emphasis now on electric cars is probably – one should be cautious about it, and we'll probably not spend our money as wisely as we should.

MR. SPERLING: I am a little more enthusiastic than Emil on that issue. (Chuckles.)

MR. BURWELL: Thanks. I'm going to – I want to introduce Debbie Gordon, who's joined us here in the front row. And she is Dan's co-author of "Two Billion Cars."

MR. SPERLING: And my former co-teacher for two years.

MR. BURWELL: Right. Debbie is a great friend. And she is also a nonresident senior associate, now, at Carnegie Endowment. So you know we're serious about transportation and carbon when both Dan and Debbie are associated with our organization. So it's great to have you here, Debbie. Joshua?

Q: Thanks. Joshua Schank from the Eno Transportation Foundation. So it sounded like, Dan, based on what you were saying, that our best hope is in more fuel-efficient conventional vehicles and we can't raise gas taxes – and you mentioned Europe, which has much higher gas taxes. Obviously, it has had some impact. They do have more fuel-efficient vehicles, right?

So there are – market mechanisms can play a role. But we have seen more of a willingness to implement pricing of the roadways, perhaps, than of gas taxes. I mean, New York, San Francisco, Miami, Minneapolis have all implemented some forms of road pricing, or have tried to implement some forms of road pricing. Chicago is now talking about a congestion tax. It's possible.

Do you think that that is – because of the greater plausibility of that – do you think that's a good place to focus our resources, given the potential benefits for climate and other transportation benefits from road pricing? Or do you think that we're better off still sticking with the gas tax, because of the direct impact on vehicle and carbon?

[01:12:58]

MR. SPERLING: Well, I certainly think that we need to bring much more pricing into the transportation sector. It's, you know, one of the last sectors of our society where we barely apply pricing principles, you know, with all of our roads being free – almost all of them.

And so just by itself, it's something that should be done to create a more rational investment and use of our very expensive facilities. And because we're expanding them, also, with more – in a lot of places, like California, there's a lot more people. So we are – there is a need to deal with that demand in some way or another. So yes, I am a very strong believer in it.

You know, if you take it far, you would come up with the idea of a VMT tax, which has been tested out in various places. And I'm not quite as – in principle, as an academic, I love it in principle. You know, I participated in another National Academy study that looked at the use of VMT versus gas tax. And it would be so much easier just to take the gas tax, convert it into a fuel tax, you know, for electricity and biofuels, and it would – it's simple. It's efficient, easy to administer.

The VMT tax, the more you get into it, the more complicated you find out it is. So it's not the panacea. So pricing is – we should push pricing however we can make it and implement it. But on all fronts, try to move – try to move forward on any front, actually, is probably a better way of putting it.

Q: Hi, my name's Katie Grassey (sp), and I'm with the Federal Transit Administration. And first, I just wanted to note a couple initiatives that we're doing with climate change at our agency.

The first one is that we're currently doing a climate change adaptation pilot project program. And that's with several transit agencies around the United States, in collaboration with universities, and looking at how they can design transit systems and conduct risk analyses for different climate change scenarios and extreme weather events.

[01:15:16]

Also, we have the TIGGER program, which is Transportation Investments Generating Greenhouse Gas Emissions Reductions. So we're looking at – we fund all types of new technologies, innovative technologies, especially – so converting ferries to CNG, LNG, using regenerative braking technologies. So if you want any more information about that, please let me know.

Also, getting back to the VMT reductions, so we were talking about baby boomers, and how most baby boomers, I think, prefer to live in the suburban sprawl environment. I think some of them, now, are still – are moving back to the urban environment, where they have easy access to transit and goods and services.

[01:16:01]

But the millennials make up 50 percent of the U.S. population. And research is increasingly showing that millennials prefer to live in urban areas, where they have the easy access to different goods and services, and transit.

So I'm just curious on what your opinion is on the role of transit in increasing greenhouse gas emissions. And what do you think the future is for that?

MR. SPERLING: Am I going to be controversial here?

MR. FRANKEL: Go for it.

MR. SPERLING: All right. The problem here is, public transportation accounts for about 2.5 percent of the travel in this country. 2.5 percent. It barely exists in most places, except for dense center cities. We need to do more than just tinkering, you know, at the margin with this service. We need transit to be thinking much more creatively, innovatively.

Transit operators are among the least innovative parts of the least innovative sector in our society. And, you know, that sounds pretty bad, doesn't it? (Laughter.) And we need to bring innovation to it. You know, there's this information technology revolution. You barely notice it in transportation generally, and especially in transit.

There's so many ideas out there about using demand-responsive transit, smart carpooling, and almost none of it is being implemented, for a whole variety of reasons. And just to make it even a sadder story – this is where I can get really controversial – the average greenhouse gases and the average energy use per passenger mile in transit is actually quite a bit worse than car use. So if we just had more buses, it would actually make the problem worse, not better.

[01:17:52]

We need to be thinking about transit in a more systems way, in a more innovative way, as a way to actually help transform our cities. And unfortunately, that's not what's happening in this country with transit. So bring that back to FTA. (Laughter.)

MR. FRANKEL: Yeah. Well, FTA is led by a very innovative, thoughtful person, so I think that – I'm sure he is – I don't know that he'd say publicly that, but he's certainly aware of that. I couldn't agree more.

But I would just add to it, again, you know, the approach of the SB 375 – certainly, the approach we've taken in our reports at the National Transportation Policy Project of the Bipartisan Policy Center – we have to think mode-neutrally, across modes. We've got to stop thinking about transit – transit's the answer versus something else. It's really how a variety of measures of transportation investments and actions work together in concert.

I mean, I know – my little state of Connecticut, particularly the southwestern portion of Connecticut, where I'm from – the best investment would be improving parking at railroad stations. We'd get a lot more people on trains, intra-state, in Connecticut if we had more parking. That is recognizing that people are going to drive to a railroad station and so forth, and that we tie that in with transit-oriented development and so forth.

We have to think that way. And we have to think that way, directed towards results and outcomes – that is, how we make – how we develop strategic, comprehensive plans at the state, local and metropolitan level – that together, actions together, across modes, tying in land use and other actions and pricing can achieve results, both in terms of better economic performance and growth and reducing petroleum use, which are the goals and the metrics that we advocated.

[01:19:52]

That's the way we need to think about it. And again, in an important way, SB 375 begins that process for a state – not something done more broadly yet.

MR. BURWELL: I'm going to take my moderator's prerogative to ask my question now, because I think it's responsive to this, which is: I'm not as – I'm more sanguine on transit than, maybe, Dan is, and I also think that statistic you mentioned about passenger miles – carbon per passenger mile – might just be a little bit dated, given the bus turnover technology, the cleaner buses and things like that.

But I was thinking, maybe there's a fourth leg of the stool – and maybe you can talk about it – which is operations. And we've kind of been around it, because you can see the cultural – the demographic. Young people are – I think the statistic now is that, whereas when I grew up, when "Leave it to Beaver," you know, generation, 95 percent of people who turned 16, you know, got a license within one year.

Now, 70 percent of – only 70 percent of 19-year-olds have a driver's license. And we are, kind of – this technology revolution – the apps you can now have put on, download, getting immediate information on where the next bus is coming, or the next rideshare is coming – I think it's catching on and might be an entirely fourth leg here.

You know, there was a description in the Washington Post of a kid who says, yeah, I got my own BMW – it's called bike, metro, walk. (Laughter.) So I think this might be something that there really is – we're on the tip of the iceberg here – that could have a very significant effect, and be a fourth leg of the stool.

MR. SPERLING: And that – yes, and I agree completely. I sometimes refer – you know, some of us refer to it as innovative mobility, new mobility. But it is this idea of bringing information technology and communication to the transportation sector, and creating new modes of travel, new mobility services, and embedding it better into our cities and land-use patterns, with bike share and car share.

[01:22:05]

There's a little bit of it happening, but it's really just barely. I tried to start a center on this back in 1998, and there was just no constituency for it. You know, there was no – couldn't get funding. And it's changing now. So I am – I think it's the biggest hope for transforming how we get along in reducing the carbon footprint of our vehicle use.

MR. FRANKEL: I agree, but we have a long way – a long way to go in terms of implementation. We're doing a much better job in terms of collecting information about what's happening in real time on our system, and the potential for integration. But the public sector, for a variety of reasons – the kind of conservatism, not only in the transit sector, but state transportation agencies.

And worst of all, their authorizing environments – governors, budget secretaries, legislatures don't understand this stuff at all. God forbid you spend any money on putting these things in place, where people really have access to information readily, on which they can make intelligent choices, and operators can make intelligent decisions about operational issues – and, I must say, capital investments.

[01:23:17]

So there's a huge gap between what the – what the technology offers, and even now, today, the collection of the information – largely by the private sector, sometimes under contract with – with the public sector – but how that information is used, and doing it in a way that really makes a difference.

MR. BURWELL: OK. Well, we have an IT leader here, Michael Replogle. Michael?

Q: Thanks. A very interesting discussion. I join you in trying to be controversial.

And I'm wondering, given that we're still an America spending $35-plus billion a year of federal transportation money, and several times that of state transportation and local transportation investment, and yet cutting back on public transportation virtually around the country – raising fares – and still putting a lot of that money into things that simply add capacity at the margins, that are very un-cost-effective investments in new highways or new rail projects that we know aren't getting us substantially (sic) transformations of how we're delivering transportation services, that aren't performance-oriented – how do we make a start in the near term?

SB 375 is lovely at getting metro areas thinking about what should be done in their long-range transportation plans. But in the short-term transportation improvement programs, we're moving backwards, still, in many metropolitan areas. Would we be better off having the continual morass of indecision in Washington that shrinks federal funding and strangles the dysfunctional, public sector-dominated transportation structures – and having a greater role for the private sector to innovate?

Or would we be – is it possible that we can get the fundamental, performance-based funding reforms through Congress, on which a wide array of stakeholders have agreed we need for multiple years, but which we seem incapable of delivering politically? Where do you see this going?

[01:25:41]

MR. FRANKEL: Thank you, Dan. Welcome to Washington. (Chuckles.) How can we – how can we force Congress to act? (Laughter.)

MR. : Intelligently.

MR. SPERLING: Oh, now.

MR. FRANKEL: That's the end of the question.

MR. SPERLING: Well, I would say it is unfortunate and sad about the amount of money going into transit. So despite all the things I said about transit, it does provide an important function for many people in many places. And we've gone beyond – below the threshold of, I think, what's appropriate or acceptable for a civilized society.

But I think the real answer – so the real question comes down to innovation. How do you get innovation? And I think the innovation – so I, you know, live near Silicon Valley. I have venture capitalists come to me, you know, fairly regularly and say, look, there's this huge sector out there, huge market. There's got to be a way we can make money in bringing innovation to it.

And they almost all give up, almost every single one of them. You know, we come, we have a few conversations. They go out. In a few cases, they actually try some things, and they give up. And I think the problem is more – so there's all kinds of reasons for it. Emil started talking about it, but I think, you know, on the one hand, you have transit operators that are resistant to innovation. You know, they've been starved for so long you can understand it.

[01:27:12]

They don't have capabilities anymore. They're just trying to get the buses to run on – you know, get enough buses out there. You have the – you have the taxi monopolies, on the other hand, you know, that are resisting any innovation and competition. And then you have this heavily – it's heavily subsidized for the transit you do have, so you try to introduce a new service and you're going against some of these heavily subsidized services.

You have insurance problems. You know, like, there was a company that tried to set up, kind of, a car-sharing kind of thing, but where you would make your car available for weekends, or when you're not using it, to others – peer-to-peer sharing. And they had to get a law passed in the legislature for insurance, just to be able to insure it.

And so I think what we need is a group to sit down – we did a paper on this 20 years ago, didn't we, Mike? (Chuckles.) And we need to sit down and just start thinking through, what are all these barriers to innovation? Because the money will flow if we can figure out a way for the private sector to actually participate in some of these services. I know an example – well, I know a lot of examples, so let me just leave it there.

MR. BURWELL: We've almost come to the end of our time, and I do want to leave on a happier note, though, or a more optimistic note. Because I think there is a possibility – I think, with all the folks in the room, and your expertise – that we are at a tipping point. Anybody who's read "The Tipping Point," Malcolm Gladwell – he talks about the Hush Puppy moment, you know?

And all of the sudden – nobody was wearing Hush Puppies, and then, all of the sudden, something happened, and everyone wanted to wear Hush Puppies, right? I think we might be at the same moment here, where all these different pieces – the engineers, the policymakers, the infrastructure folks, the IT folks – come together and find out, really, it is all one big system. And we have to think about the whole system, rather than thinking about a specific part of it.

[01:29:14]

And, you know, as Winston Churchill said, you can always count on the Americans to do the right thing after they've exhausted all alternatives. I think we just about have. (Laughter.) And now it's time to look at this thing as a system. And with that, thank you for coming. And there will be an audiotape, and Dan's presentation will be on our website. (Applause.)

(END)