

U.S. DEPARTMENT OF TRANSPORTATION

ITS PROGRAM ADVISORY COMMITTEE MEETING

FEBRUARY 4 & 5, 2015

The Committee met in the Arlington Ballroom-Salon 5, Crystal Gateway Marriott, 1700 Jefferson Davis Highway, Arlington, Virginia, at 8:24 a.m., Steve Kenner, Chair, presiding.

MEMBERS PRESENT

Mr. Steve Kenner, Global Director of Automotive Safety, Ford Motor Company, Committee Chairman
Ms. Sheryl Wilkerson, Vice President, Federal Government Affairs, Michelin North America
Mr. Scott Belcher, Chief Executive Officer, Telecommunications Industry Association
Mr. Roger Berg, Vice President, North America R&D, DENSO International America, Inc.
Mr. Joseph Calabrese, CEO, Greater Cleveland Regional Transit Authority
Mr. John Capp, Director, Electric and Control Systems Research and Active Safety Strategic Lead, General Motors Corporation
Mr. Bob Denaro, Consultant, Intelligent Transportation
Ms. Debra Johnson, Deputy Chief Executive Officer, Long Beach Transit
Mr. Scott McCormick, President, Connected Vehicle Trade Association
Mr. Joe McKinney, Executive Director, National Association of Development Associations
Ms. Tina Quigley, General Manager, Regional Transportation Commission of Southern Nevada
Mr. Brian Schromsky, Director, Federal Government and Public Safety, Verizon Wireless
Mr. Kirk Steudle, Director, Michigan Department of Transportation
Mr. George Webb, County Engineer, Palm Beach County, Florida

U.S. DOT STAFF PRESENT

Mr. Gregory Winfree, Assistant Secretary for Research and Technology

Mr. Ken Leonard, Director, ITS Joint Program Office, Office of the Assistant Secretary for Research Technology

Mr. Nat Beuse, Associate Administrator, Vehicle Safety Research, National Highway Traffic Safety Administration

Mr. Brian Cronin, Acting Director, Office of Transportation Management, Federal Highway Administration

Mr. Walt Fehr, Systems Engineering Program Manager, ITS Joint Program Office, Office of the Assistant Secretary for Research Technology

Mr. Stephen Glasscock, Program Coordinator, ITS Joint Program Office, Office of the Assistant Secretary for Research Technology, Committee Designated Federal Official

Mr. Tim Klein, Acting Director, Technology Policy and Outreach, Office of the Assistant Secretary for Research and Technology

Mr. Bob Kreeb, National Highway Traffic Safety Administration,

Mr. Jeff Lindley, Associate Administrator, Office of Operations, Federal Highway Administration

Mr. Shingo Mawatari, Japan Fellow, ITS Joint Program Office, Office of the Assistant Secretary for Research Technology

Mr. Daniel Morgan, Chief Data Officer, Office of the Chief Information Officer

Mr. Jeff Onizuk, Acting Managing Director, ITS Joint Program Office, Office of the Assistant Secretary for Research Technology

Mr. Bob Sheehan, Multimodal, ITS Research and Deployment Program Manager, ITS Joint Program Office, Office of the Assistant Secretary for Research Technology

Mr. Jeff Spencer, ITS Program Manager, Federal Transit Administration

Mr. Dale Thompson, Knowledge Transfer and Policy Team Leader, ITS Joint Program Office, Office of the Assistant Secretary for Research Technology

Mr. Jonathan Walker, Office of Operations, Federal Highway Administration

ALSO PRESENT

Ms. Sheila Andrews, Auto Care Association

Ms. Jennifer Carter, ITS America

Mr. Steve Gehring, General Motors

Mr. Bill Gouse, SIT Colombia

Mr. Jack Hall, Contra Costa Transportation Authority
Mr. Brian Hoeft, Rural Transportation Commission of Southern
Nevada
Mr. Aron Lowe, Auto Care Association
Mr. Chris Stanley, Citizant, Inc.
Mr. Michael Stelts, Panasonic
Mr. Carlos R. Vélez, Jr., Citizant, Inc.

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PROCEEDINGS

February 4, 8:25 a.m.

Welcome Remarks – Mr. Glasscock

MR. GLASSCOCK: All right, good morning, everyone. For those from the public or non-members, I'm Stephen Glasscock, the designated federal official. And I welcome everyone here. Look forward to a very productive and engaging two-day meeting.

Some minor housekeeping, the restrooms are all the way to, if you go out the door, all the way to the left past the escalators. And should there be emergency evacuation for any reason, there are two double doors directly across. And there're two double doors directly across from here that lead to the street.

So we do have several people from the public and speakers. So I'm going to ask those around the front of the room if you could introduce yourselves, please.

MR. HOEFT: I'm Brian Hoeft from the Regional Transportation Commission in Southern Nevada, Las Vegas. My general manager, Tina Quigley, will be down shortly. She'll be sitting over here.

MR. STELTS: Mike Stelts from Panasonic.

MR. CRONIN: Brian Cronin. I'm acting director of the

Office of Transportation Management for our highway.

MR. GOUSE: Bill Gouse, with SAE International.

MR. SHEEHAN: I'm Bob Sheehan, with ITS Joint Program Office, multimodal research manager.

MR. THOMPSON: Good morning. Dale Thompson with the ITS Joint Program Office. I'm the team leader for policy and knowledge transfer.

MR. MORGAN: I'm Dan Morgan. I'm the chief data officer of the U.S. Department of Transportation.

MR. GLASSCOCK: All right. I'm going to turn it over, oh, I'm sorry, you're --

MS. ANDREWS: Sheila Andrews with Auto Care Association.

MR. GLASSCOCK: Thank you. So I'm going to hand it over to Ken. And then he will hand it to Steve and Sheryl to get the meeting started.

Welcome Remarks – Mr. Leonard

MR. LEONARD: Okay. Well, I'm going to give some very quick, brief remarks. I mentioned on our last telecon that John Augustine had been promoted into the senior executive service.

And he is now in the Office of OSD policy working on tire brand issues.

We miss him, but we have backfilled behind him with a

detailee out of OSTR's legislative affairs group. Jeff, just want to give a brief background introduction of yourself?

MR. ORIZUK: Yes, thanks, Ken. Good morning, everybody. I've been with the Office of the Assistant Secretary for Research and Technology, formerly RITA, for close to seven years.

And obviously, through that proximity, have served not only the ITS JPO but other organizations within OSTR. So while my nearly seven years of experience have gained me a lot of valuable insight into the activities of the ITS JPO, I'm very excited at the opportunity to be onboard in an active capacity, to see it up close during this exciting time for the program. So thank you.

MR. LEONARD: So that's not the only staff change. You heard Brian introduce himself with a new title. Brian is also on the detail outside the ITS Joint Program Office in a senior executive vacancy up in federal highways operations, a great opportunity for Brian. A great opportunity for the ITS JPO to build that continuing relationship with our operations colleagues. So Brian will be away from the office for about four months, is about what we anticipate.

We've also had some promotions inside the office. Dale

is out of the data and weather group and is now heading the policy group replacing Valerie Briggs. And Kate Hartman, who is not here, replaced James Pol as our program management office team leader.

So things continue to change and be fairly dynamic in the Joint Program Office. And I've got to mention probably the most exciting thing that happened this week which was the submission of the President's budget.

And we have talked about how it's been a personal goal of mine to see this program office increase the funding levels that it's been receiving. It's been getting the same funding for 20 years.

And we just got what we're calling a 68 percent budget increase from the amount we ended up with in '15, this current year, after all of the take downs are done in the budget process, to what the President is asking for in Fiscal Year '16.

That's a dramatic improvement. I think it's a reflection of the great progress that the ITS community of DOT has made and some measure of confidence in the organization to do good things. And so it's something that we're pretty happy about.

We've got to get it through Congress, of course. It's not real until Congress passes it. But optimistically,

Congress has to take action on transportation and infrastructure and important issues by May of this year. So let's keep a good thought for seeing an increase in the intelligent transportation system's budget as the President's proposed.

Greg was going to join us, and I believe he will, you know. But his schedule sometimes pulls him back into the building when he least expects it. So I do expect Greg will join us shortly. So with that, I'm going to turn it over to Steve.

MR. GLASSCOCK: Great. Members know this but for the public everything that's mentioned here is recorded. And there'll be a full transcript online in minutes. So if you do speak, please introduce yourself. It makes it a lot easier for the court reporter. So thank you.

Opening Remarks – Mr. Kenner

CHAIR KENNER: All right. Thanks so much. Well thanks, everyone, for coming. I know, you know, some of the weather challenges some of us have had, I'm glad we were all able to make it. And some of us from Michigan are going to miss some weather challenges that are occurring as we speak. So I'm looking forward to having that behind us before we head back.

So one of the things I wanted to just, you know, frame for the next couple of days is we had a lot of discussions when

we met in person, and then we had the, you know, the conference call.

And when we first met in person, we had some concerns about wanting to make sure that we got the right background information to be able to decide, you know, the areas that we wanted to focus on.

And so we took that to heart and we spent some time the last time trying to be more specific. And so we created the agenda for the next two days specifically around that. So we have some guest speakers here. And we really appreciate them making time to come and present to the committee.

And it's really important that, as we go through the next several days, that we're able to hone in on the specific areas of focus and, in part, maybe enabled by the presentations and dialogue of the guest speakers that we brought in for the next few days.

So at the end of our time together tomorrow, I wanted to be in a position where we can say, you know, here's the areas of focus and then here's who wants to spend time, you know, developing recommendations in those specific areas of focus.

So I think it's really good. When we first met, maybe I was rushing it along where I was ready to say, hey, where

do we want folks to go. And so now we've kind of set this up to maybe give everyone, you know, the background and perspective to be able to then choose, you know, how we want to spend, you know, our time together.

So I just wanted to kind of go through that, sort of frame expectations for, you know, what we end up with at the meeting tomorrow. And then I'll let Sheryl say few words.

Opening Remarks – Ms. Wilkerson

VICE CHAIR WILKERSON: Well, thank you all for being here. I'm really delighted. And I'd like to thank Mssrs. Glasscock and Leonard and the team for helping to facilitate this meeting. I know there were some last minute changes in the location, so we really appreciate all the hard work you've done to keep us in line.

I'd like to make just a couple of brief notes that yesterday Assistant Secretary Greg Winfree's budget conference call was pretty spectacular. And we commend him on the additional budget for the highlights for the major research and technology initiatives, including ITS regional transportation centers.

And for those of you who haven't had an opportunity, I encourage you to look at the blue paper that Secretary Foxx released, as well as the Beyond Traffic 2045 which I know the

staff included. There're some really phenomenal charts, and new statistics and trends I think will bode well for our discussions in our committees.

And then we'd be remiss if we did not have our two introductions. Joe McKinney, I think this is your first meeting here in person. And then Tina Quigley. So maybe if we could have you say a few words about yourself.

MEMBER MCKINNEY: Sure. Joe McKinney, I'm the executive director of the National Association of Development Organizations. And we're a trade association that represents primarily small metro and rural, regional development and regional planning organizations across the nation.

We've been heavily involved in primarily rural transportation and planning for the last 15 years. And we're glad to be a part of the group.

VICE CHAIR WILKERSON: Welcome.

MEMBER QUIGLEY: Tina Quigley, I'm the general manager of the Regional Transportation Commission of Southern Nevada, so basically Las Vegas.

I'm here as the MPO representative to the committee. But we also are the agency that is the ITS agency. And we're also the agency that is the transit operator as well. So we've got

all MPO, transit and ITS all under one umbrella.

And with me is Brian Hoeft, who is the director of our ITS group. And we are both here because we think that there's a lot for us to learn from this group. And we also think we've got a bit to contribute.

And specifically, one of the reasons that we are so interested in following ITS advancements and discussions right now is because we're undergoing a very -- for Las Vegas, this is a big deal -- we are undergoing a vision effort for how we are going to continue to grow our travel and tourism visitorship significantly and, at the same time, still provide them a travel experience that is not terrible.

And right now we're at that crux where we realize if we're going to continue to grow -- and we have a very aggressive marketing effort to continue to grow our destination, we've got to fix the infrastructure as well.

We're not going to be able to do it with just roads alone.

Part of the answer is going to have to be technology and part of the answer is going to have to be mass transit which, again, for Las Vegas, is a very, very big game-changing discussion.

We have, on our committee, presidents of the resorts, the taxicabs, the monorail, the convention authority, our police

department, our airport. We are all sitting at the table right now trying to figure out what the blueprint is for transit and transportation which is why this is so -- and part of the discussion we keep coming to is what's going on with technology.

If we're doing our 20 and 50 year plans right now, we have to be understanding what's coming up. So to that extent, when you have ideas that -- hey, let's have a design competition right here, right now, for what you would do with the Las Vegas corridor, the strip, if you could, in terms of introducing technologies. Thanks.

CHAIR KENNER: Great. Thank you. All right. So I think -- how are we doing on time? Good. So with that, I think we can move on to the next part of the agenda.

MEMBER MCCORMICK: Excuse me, Steve?

CHAIR KENNER: Yes?

MEMBER MCCORMICK: For the benefit of the two new people, it might be worthwhile just to do a real quick introduction of who we are.

CHAIR KENNER: Oh, sure. Great suggestion. Why don't we, we'll start with you.

MEMBER MCCORMICK: My name's Scott McCormick. I'm the president of the Connected Vehicle Trade Association.

VICE CHAIR WILKERSON: Oh, okay. Thanks, Scott.

MEMBER JOHNSON: Good morning. I'm Debra Johnson. I'm the deputy chief executive officer with Long Beach Transit. So I'm in public transportation, have been for about 23 years.

MEMBER CAPP: I'm John Capp with General Motors.

MR. BERG: I'm Roger Berg with DENSO Corporation. We're a Tier 1 supplier for the automotive industry.

MR. HALL: I'm Jack Hall with the Contra Costa Transportation Authority. I'm a guest speaker today.

VICE CHAIR WILKERSON: I'm Sheryl Wilkerson, I chair Michelin.

CHAIR KENNER: Steve Kenner. I'm the Director of Safety of Ford Motor Company.

MR. LEONARD: Ken Leonard, Director of the ITS Joint Program Office.

MR. ONIZUK: Jeff Onizuk, Acting Managing Director of the ITS Joint Program Office.

MEMBER CALABRESE: Joe Calabrese, Greater Cleveland Regional Transportation Authority.

MEMBER DENARO: Bob Denaro, ITS consultant and board member of Motus Ventures.

CHAIR KENNER: And Kirk?

MEMBER STEUDLE: Kirk Steudle, Michigan DOT.

CHAIR KENNER: George?

MEMBER WEBB: And I'm George Webb, county engineer for Palm Beach County, Florida.

CHAIR KENNER: All right, great. Thanks, great suggestion. All right.

U.S. DOT's 30-Year Framework for the Future

MR. KLEIN: And I'm Tim Klein. I'm the senior policy advisor to Greg Winfree, the Assistant Secretary of Research Technology at the U.S. Department of Transportation.

Thanks for the opportunity to come back again to speak to this committee about one of the many policy related topics and such that we have to deal with.

In addition to being Greg's policy person, I also oversee international activities for the office. So I have a lot of play in that for ITS. And at the moment, I'm also the acting director of Public Affairs and Congressional Affairs. So I've been talking about a lot of things.

I wanted to thank you, Sheryl, for your encouragement in this and your budget policies. As the guy who organized the budget call, thanks for calling in. We had a lot of interest, and I appreciate that.

And I'll take your encouragement about the charts and stuff on the 30 year back to the graphic artists and the writers working weekends to get that thing done. And I appreciate the encouragement --

VICE CHAIR WILKERSON: They did a great job.

MR. KLEIN: Appreciate that. Anyway, I want to talk about the Secretary's Beyond Traffic 2045 on the 30 year framework for the future.

Now, I've been with this since the inception over a year ago. I just want to be clear. This is a framework. It's not a plan, it's not an advisory document, it's not anything. So a plan, of course, well it could mean state transportation plans, step plan, transit -- it's not a plan. You're not going to see designs, you're not going to projects.

What this is intended to be is intellectual reset of how we think about transportation going forward. Technology and data will be part of it, but there's lots of other elements, as you might imagine.

Just to give you quick background of where we came from.

As a tier of the annual meeting of the Transportation Research Board, the annual meeting for those who aren't TRBites, like I have been for many years, a year ago the Secretary stood up

at the biggest event, called the Chairman's luncheon, and said we're going to do this 30 year -- at that time, he was still calling it a plan-- we're going to do this 30 year look at how we need to approach all modes of transportation going forward.

Well, this year at TRB, not quite a month ago, he had a session explaining some of what had been going on. We have spent this year -- when I say we I mean lots of experts inside of the department, lots of folks bringing us advice, doing background work to get solid information on trends, research results, issues.

We built a big resource library. We have had a number of expert teams involved. We had a number of outreach activities. We had Webinars. And I know at the last, one of these meetings the charts from the Webinars were delivered to this committee. I don't know if it was, there was a presentation with that, I believe.

And this has gone through multiple revisions. The Secretary rolled this out on Monday night -- well, Monday night East Coast time. Monday afternoon West Coast time, everybody is home. For those of you who don't know the event, he rode up in a new automated car with Eric Schmidt. And then we spent an hour on a Google town hall talking with Eric about his intent

for this.

So it's still a draft document. So let me emphasize that. Indeed, the blue book, the blue paper that was mentioned says very clearly we're still seeking comments.

Although we're hoping we get to the point where we're seeking the big -- are there any big trends we're missing or not understanding? Are there any major issues we've just whiffed on?

There are probably are misplaced commas, but we don't care about those so much. I think we can catch those later. The darn document is over 300 pages, so, you know, I'm sure there're a few things like that. But the point is, this is still a draft document.

The Secretary sincerely wants to hear from people. He made this very clear Monday night again that, to address our transportation issues, it's not just a federal role. It's clearly a state and local role.

I'm thrilled to have county engineers here. Because I've found, in my experience in doing research, and technology and deployment over a lot of years, that the local delivery just is the part that's the hardest to connect to. I'm glad to see you're here.

So that was rolled out, what we're calling the draft framework, on Monday. So here it is Wednesday. Just for the record, we put this new strategy forward. This is the first public presentation on the framework that the Secretary personally did. So I think we're highly privileged.

Okay, here's his goals. The big context, no surprise, the infrastructure deficit, looking at where are all these trends that we're looking at, economic trends, and congestion trends and environmental trends will take us if we don't address them.

And specific to this group he, he the Secretary, is very big on what are the potential impacts of technologies we know about, that we think are coming, in addressing all of these issues.

He wanted to draw up a combination of facts to support discussions with all commerce. Of course, this includes the rest of the executive branch, the legislative branch of government, city governments and throughout the private sector.

It does not advocate specific policy solutions.

In fairness, there're some pretty strong hints, in some places. And very few of you know what the Secretary thinks we should be doing, but the goal is to set forth his decision

points to make this a framework for talking as we go forward with the legislative, and budget activities, and as you go forward with planning and a lot of things like that.

So it's called Beyond Traffic 2045. That's now our official logo. This is a multimodal document. Don't let the road pull you. It's not just a road document. But it was kind of hard to try and jam a ship, and an airplane and a pipeline on the chart.

So it is called Beyond Traffic, because the Secretary's view of traffic is multimodal. I mean, if you listen to it or go back, pick up the YouTube of what he said, he was talking about ship traffic, and air traffic and freight traffic, generally.

So there's the web link. Please bring us your comments.

There are two ways this is being approached at this point in the process. One is, as I said, what additional trends are we missing? What policy options have we not officially considered? And are there other ideas we just didn't pick up on? And that's important to us.

And the other one is on section-specific comments that -- as with any huge document, it's broken into sections. And if you have a comment on specific sections where you're putting

that in, so you might write to us and say, hey, in this piece, you need to look at this, that, or here's some competing data, or maybe even conflicting data. Have you considered, well, what about this trend? So there we go.

The way this has been phrased, the way it's been approached all the way along, is five key questions the Secretary gave us. The first is how do we move? Now, we in this case means people. This is personal movability. How do we move?

(Off microphone discussion)

MR. KLEIN: Okay. How will we move? Although I will stop moving. The growing population, we've had estimates of high, 70 million more people by 2045 that we have to move.

The growth within the regions, population shifts to the south, the west, changes in transportation choices by generations, I think we've seen some of this. And there's been a lot of discussion about the trends in moving away from personal vehicles, shared market, et cetera, et cetera, and the fact that we have a significant move towards a more heavily senior population by percentage. And how are we going to meet those mobility needs?

This is not an exhaustive list. This is roughly his highlights, shall we say. The next part of the discussion,

how do we move things, how do we move freight? We know there are freight choke points. How do we reduce those?

We're projecting a 45 percent increase in total freight volume across the system by 2045. So there're some really scary maps in the document about where these choke points are going to be and how bad they're going to be.

How does online shopping and then the growth of the small package business, over delivery, change us? Big concerned about where we're going in the airline industry, changing international trade balances.

We've got some folks telling us that manufacturers are returning and we're going to be doing more exports. Certainly with the change in the energy systems, we're doing more exports. But that dynamic's really hard to get a handle on.

Then how do we move better? And you may recognize that graphic up there, or at least a version of that graphic, little colors in the circles. You've seen this before.

How do we knock down barriers to technologies. And this cuts across the board. And this is a place where I think advice is needed certainly.

There are, as we said, policies. How, as we implement regulatory structures, how, as we implement perhaps cost or

price incentives to bring safety up, what are the changes we're going to see in vehicles and infrastructure, obviously, as we're gathering amazing amounts of travel data. How is that going to be applied to travel and management investment decisions and then specific call outs, automation and robotics?

And I appreciated that as we went through this exercise, even though, obviously, there's so much excitement about connecting it to automated vehicles and the potential there that the impact to infrastructure in the use of robotics and automation in operations, maintenance and such was called out very strongly. And that's a trend that we need to make sure that we have the structures to support and implement.

How do we adapt? This deals directly with climate change and resilience in the transportation system. And I don't think there's much more to say about it.

How do we make our infrastructure more resilient? A big issue, technology's a piece of that. And then obviously a big question, finance and governance, how do we align what dollars we have with the decisions we need to make?

I think everyone knows all the situations and the need for financing across the board, public/private partnerships.

The President's again proposed a national infrastructure bank.

What are the ways you want to go with that?

So that's how we frame this. Now, I'm not going to go through all 300 and some pages of the report. Okay. This how the report's structured.

If you read through it, you'll see first the major trends we assessed. Second, there is a whole section on modal impacts where experts in specific modes assessed those trends' impacts on their mode. And then, third, a description of the future baseline scenario on policy options that the Secretary wants to discuss and continue to discuss.

The scenario that was selected for definition in our assessment has been entitled Drifting Towards Gridlock. Now, I realize there are those who would argue that drifting might be the wrong verb tense, that maybe we've already drifted. Or perhaps it's a word that accelerates drifting.

But gridlock certainly, in many ways, is a trend. What the Secretary had us do was run out those trends, economic trends, and mobility trends and environmental trends that we're looking at.

So if we continue to not get policy decisions, continue not to get implementation decisions, continue not to get the funding, continue not to have a national leadership structure

on transportation, what do we get?

For example, in freight and trucking, by 2040 projection to 30,000 miles of the national highway system is clogged daily, which is a big chunk of the system.

So, and this is a very quick summary, and then we can have all the discussion you want, what the Secretary's called the better path, what he believes is a better path for the policy options. And these are, again, highlights.

Let me just say before I walk through the highlights, every one of these options has a significant technology and data component.

Our organization led that whole technology and data section of the report. It's interwoven throughout, not just ITS applications. There are lot of other things involved here. So if you don't see the word technology in every line, you can assume it's in there somewhere.

But clearly, what do we need to do? Increase infrastructure capacity, reduce congestion, promote public transit and bike-ped access, improve our freight planning, target policies, and encourage innovative strategies, not just technologies but strategies to approach freight. Again, how we move better.

Again, a very strong call out for addressing regulatory better. It's something we've heard very strongly as we did the outreach in the various forums. And just to be clear, not just the Webinars, we had a number of focus groups of industry leaders and such come in in small groups and meet with the Secretary or the Under-Secretary to discuss these things.

Addressing regulatory balance to form new technologies, how do we get ahead of the game on those things? How do we collect our data stream? How do we collect and manage that data while protecting privacy? Obviously, a big issue.

Supporting research and deployments, plural, not just deployment, you know, test deployments which is a very huge success for the ITS program, but how do we support broader scale deployments of our test technologies and other technologies?

Then how do we adapt? Again, that goes to the whole climate change environment discussion. There's a lot of work going on there, certainly in emissions, building resilient infrastructure.

And again, how do we incentivize as folks are building and repairing infrastructure. How do we incentivize resilience to be built into those projects, be they new projects, retrofits, whatever the approach might be.

And if you can solve the first one and show adequate revenues, you will get a stash from somewhere. I can guarantee that. But how do we make the best use of what we can get to prioritize the investments?

And also that last point is really important. And part of this is a priority discussion, part of it's investment discussion. How do we best -- I'm sorry, I'm wandering again -- how do we best align or define the roles of the public and private sectors?

Because obviously, everyone's got a piece to play across all levels of government, across many pieces of the private sector including groups that traditionally transportation either doesn't or doesn't like to talk to.

So we've got to get those roles nailed down. And part of that falls on the federal government, because we've not been real good at working across other regulatory investment agencies on these things or down to the state governments, where we're down working on the same types of things.

Wow, that was a real quick walkthrough of a year's worth of work and analysis. But I just wanted to give you truly the outline of the report. And let's go at it. Or not, I'll sit down real fast. Do you all have anything to say?

MEMBER STEUDLE: Tim, where can everybody get copies of the report?

MR. KLEIN: Well, it's online. Come on, slide, here it is, Slide 11. It's literally dot.gov/beyondtraffic. We have the report, the blue paper. There's other background materials there. But that's where the report is and also the comment sheets. It's an online comment system. So that's all right there.

MEMBER QUIGLEY: Well, out of all the discussions that you've had, where are you feeling the most enthusiasm, like, the most, you know, aggressive attitude towards moving forward on it?

MR. KLEIN: Okay. The question, it wasn't picked up by the mic, the most aggressive attitude towards moving forward, where are we hearing that from all of the conversations?

MEMBER QUIGLEY: Yeah, where's the enthusiasm, what's --

MR. KLEIN: The enthusiasm, I would say, is in two major areas. One is enthusiasm for figuring out how to do public/private partnerships for projects that aren't obviously public/private partnership kind of, they aren't rebuilds and old roads.

But are there other ways that we can bring the private

sector in on major infrastructure projects or even smaller projects that make sense? And how do we, as a federal government, how do state governments get to a point where we've got a harmonized system that supports that?

Because certainly we found, and I'm looking to correct this, human beings, they got -- but, no, we've had these conversations. You know, every state's laws on these things have been different.

And so a big emphasis from the finance and legal community would say we need to address this. But this is such a huge, important piece of how we resolve several needs. But of course, that's got to consider:

What are your MPO goals? What are your transit agency goals for contracting for how money flows, and how far and fast you can make a loan and at what percentage of value and return on investment.

All those things are different at every level and across all the agencies. That's where we're hearing a lot of buzz and support largely, I would say, from the infrastructure/finance sector. Construction sector and state DOTs are probably the ones pushing that discussion the most.

MEMBER QUIGLEY: State DOTs are pushing for a federal

discussion -- is that what you're saying?

MR. KLEIN: Yeah. Because of recognition that --

(Simultaneous speaking)

MR. KLEIN: Oh, you mean, like, from --

MEMBER QUIGLEY: You -- of public/private --

MR. KLEIN: The BMT taxes, no.

MEMBER QUIGLEY: Okay.

MR. KLEIN: No, that's not been the discussion. Because I know there were folks who were experimenting with that origin, because notably there're others. That was not very much talked about, bringing private capital, private equity into the system.

MEMBER QUIGLEY: Okay.

MR. KLEIN: Through the various means that the federal government has or some states have, others don't. But the idea of having common or at least commonly understood rules of the road would have to do that.

That shouldn't be different in Nevada, in Ohio, and Michigan and elsewhere for a company to come and say, you know, I can do that work. But here I have to put up eight percent up front, here I might put up 20 percent and can bond this much, and here I have to give a warranty.

And there's not consistency. And I know that Ashton in

the states has been addressing that. But we all need to address it together. And that was one very big buzz.

Second buzz is around technology, not just ITS, although certainly, I mean, if you listened to the Secretary on Monday and go back and listen that YouTube, I don't know how many times he said the word technology and automation. I don't, because I stopped counting. I was doing the slash marks, and I just said forget it. Plus, I had to get up and go to the event.

That's not just his view though. There are a number of technology firms outside the traditional transportation space as well as folks in the traditional space -- especially construction firms and increasingly equipment manufacturing firms -- that are really pushing on us -- when I say us, I'll put that in the context of the government agencies who build, operate and maintain infrastructure -- to get out of the way.

Now, that's a very common complaint against the federal government; I understand that. But getting out of the way in this context, what we're hearing is, again, first of all, consistency of guidance across the national infrastructure system. And that's something only the national government can convene, I mean, and to not be relevant.

Again, state DOTs have done some work. There are state

mail agencies who have done this work. There're airports' authorities who've banded together to do some work, but to get that together in a way that supports interoperability of whatever it is you're deploying across multi-modal systems. Please?

MEMBER JOHNSON: I have a question as it relates to the overall plan. Because while I know we need to reinvest in infrastructure and the like, what we do have access is a long-term service transportation bill.

MR. KLEIN: Yes.

MEMBER JOHNSON: And we've had constant continuance. And with MAC 21 expiring, at the end of the day, where does that fall? Because the genesis of all this rests upon the monies that we need to invest in infrastructure so with the actions of it, offer support, maybe this, that and the other, it's all good. What does that really mean in essence for public/private partnerships?

MR. KLEIN: That's the question. I was just going to say, the third layer of buzz is legislation, okay. It's one of these grievings. Everybody knows we need a long-term surplus authorization, except maybe about 535 people --

(Laughter)

MR. KLEIN: But that's everybody else. Tons of people know, regardless. I'm guessing it's only, in part because it's -- thank you, Chris Steudle. I will present you the microphone. He said it was true.

MEMBER STEUDLE: He's always saying it, because it's true.

MR. KLEIN: It's true, yes. And it's true in part because there are people influencing in other directions. Not everyone thinks transportation's the most important thing in the world.

But where this falls in, the 30 year framework versus authorization legislation and budgets, is, in the Secretary's mind, the way he set us out to do this is, this has got to carry forward beyond.

His idea is you've got to set something out that we can use in a discussion, because even if we get a six-year bill one time and all these other things, this conversation's got to continue. And we've got to keep this refreshed a little bit.

So the charge on us for this exercise was very specifically to say this is not a budget document. You won't find a single budget number in it. This is not the GROW AMERICA Act, because of two reasons. One, knowing full well that tying this to the GROW AMERICA Act proposal would sink this immediately, and he

would like to continue.

But the other piece is -- but the first one is that not everything that's in here is in the GROW AMERICA Act either.

I mean, he very much is trying to push beyond the realm of what has currently proved to be politically possible and what is in the legislation that the administration has proposed. So we have to look beyond all this. And that's the goal of this exercise.

Now, to answer your question of what does it really mean? What it really means is we're all out there pushing for a six-year bill. I mean, every one of us who does this for a living, this is what we're pushing for, is the administration bill. Will we get there? I don't know. Will we get the budget levels? I doubt it.

I think it's incredibly important that, in the budget that was just released on Monday, that there's this big plus-up for research. There's also a big plus-up for next gen.

Across the board, research and technology in the Department got a boost-up of 43 percent. So you're seeing at least a push in that direction to try and get something going. That's the best I can tell you. I have no idea.

I mean, anyone, again, I'll give the statute and then we

can predict what's going to happen on this. May is coming, end of May. And we all have a lot of nervousness. I mean, and yesterday the President signed the FY '16 sequestration order. Because that's still the law of the land.

This document means that, basically, we've got to look at what the real issues are beyond the federal realities in this case and talk about the, I mean, having sat through so many of these, I'm literally stating everything but what I've heard come out of the Secretary's mouth and give you a best synopsis.

And I think it's this. We all know things are tough, and we don't know what's going to happen. But that does not relieve us of the responsibility of looking forward and saying what needs to be done. Because that's another way of influencing the conversation that needs to be had in the legislative branch and state houses. That's how to take that. Sir?

MEMBER MCCORMICK: Yeah. Just as a small edit, there's only one forward slash after gov. And Beyond Traffic, it's capitol B and capitol T. I just pulled it up.

MR. KLEIN: You know, that probably changed overnight. These things are fluid, and I made these slides up over the weekend. So thank you, I'll catch that. And we'll fix that.

Can you write that down, Steve?

(Laughter)

MR. KLEIN: Thanks, sir.

MEMBER WEBB: And I'm greatly outnumbered on my panel here, but I've got to raise -- I'm looking at the report, and I happened to catch the Secretary on Google where they had an interesting discussion.

And one of the questions was how can the federal government influence state laws so that I can get around on my motorized skateboard. And, you know, we've got everything. So it was really getting down to it.

But the question I was going to ask directly is local governments, at least my counterparts and peers, are in a constant fight of just trying to get enough money to maintain the striping, maintain the bridges and maintain the surface on our roads.

We are constantly, at least in my part of the world, fighting for dollars with our transit entities. You know, everybody says, oh, we should be expanding our transit system.

Paratransit in our county is the biggest expansion of dollars in our transportation world, so providing those door-to-door services and so forth.

So it's really interesting. And I'm just wondering if the report, in some fashion, could just put out there that the annual cost of operating a bus in my county is somewhere around \$200,000 to \$225,000.

MR. KLEIN: Right.

MEMBER WEBB: And our farebox recovery is 15 to 20 percent of that. So every bus that we put out is a direct subsidy, and those dollars are the same dollars that I compete for about how about giving me some more money so that I can resurface a higher percentage of my streets.

MR. KLEIN: Right.

MEMBER WEBB: So that discussion of the pull of the new multimodal focus and so forth is an interesting one, you know.

But the nitty-gritty for us in the counties right now, I think, the number was either 43 or 45 percent of the road system in the country is maintained by counties.

MR. KLEIN: Right.

MR. WEBB: So it is a major issue. You're right. Funding, funding, funding.

MR. KLEIN: It's a huge issue. And you saw the Hangout. The Secretary again, being a former mayor, several times said, I mean, being from a local --

MR. WEBB: Yes.

MR. KLEIN: -- the local scene. But it's that bad. Okay, we can say we need more revenue, rising tide small chips, whatever. We need a smart way to invest to make big decisions.

What's the deal? You know, a lot of this discussion, at least in the Secretary's mind, is coming down to we've got to understand how we use it to make rational decisions.

I think everyone looks at everyone else's piece of the transportation pie and says that's not a rational decision. A rational decision when you're talking about roads is not to throw another bus out. We all face that.

But the importance of local governments, local service delivery cannot be underestimated. As you get into the details in this report, I'm sure you saw a lot things about Rideshare and other essentially new, or as sharing common ways of delivering local services.

It doesn't solve your problem, maybe a small piece of it. And ultimately, we're trying to just gather all the pieces, provide many options.

We do not, I mean, I think the Secretary said, well, we're not, as the federal government, making decisions to say we will do Paratransit over roads. We can't make those local decisions.

I mean, he doesn't intend that. But he also doesn't want it all to be shoved under the carpet as a program. He was very frustrated, because we get into these conversations and all the folks around the table who, most of us are feds of leadership of long standing, take a national policy view. And he's really trying to push us away from that.

It doesn't matter ultimately whether the federal government, if we have a policy issue. What matters is do we have a system in place that allows you to use your data and finances to make a decision and have a system that works for what you deliver.

And that's really what we're after, ultimately, whether it be the guy with the electric skateboard -- by the way, how many of you know electric skateboards are illegal in California?

That was a weird fact. I mean, that came out weird to me. Okay, that's a new one to me.

But that was one of the questions at the Google Hangout there. And I asked the Secretary why we can't fix that at the national level. Well, because hey, California will fix it in California law. Go ahead.

MEMBER MCKINNEY: You mentioned a couple of cases of appellate policy being an obstacle to kind of private sector

technological advances. Can you give us some examples? And I can see drone and the delivery of materials and such. But other examples where the private sector feels that the public policy --

MR. KLEIN: Sure. Question about where is the private sector seeing us, seeing public policy not supporting technology deployment. You mentioned drones. That comes up a lot and what control you have to have so you're not interfering with commercial aircraft, freight aircraft and on, and on, and on and why other countries can do it and we can't, et cetera.

Okay, that's one. That's a very big one. But an example. In the maritime sector, we have continually reduced crew of major vessels that are not allowed under current regulation to dock and unload automatically, which has a big impact on their efficiency in delivering to the dockside.

It has nothing to do to the trade, you know. It may have rail and truck has got to pick up things. So that's a big deal.

We have a technology. There are major shipping firms to employ the technology. And then when they get to 12 miles off our coast, you have to turn it all off and sit there, and lose time, and lose money in the process and lengthen the supply chain. That's a different thing.

MEMBER CAPP: You said that it was safety reasons, or job reasons or --

MR. KLEIN: Yes. There are safety rules, because some of these systems have not proven reliability to the point that the Coast Guard and the International Maritime Organization think it's sufficient.

And some of it is jobs, some of it is labor union issues at ports. It's both. And that's another angle we didn't really talk about here today. But there is that.

In the general role about technology in vehicles, as you well know, it is very hard, you know, we've got to prove things to the 59s to get into something.

And we don't have a good system. When I say we, I'm speaking for the Department of this Board. We don't have a good system for doing legal on-road, on-track demonstrations of new technologies. It is painfully hard, very long and tedious from a process point of view and very expensive for a technology company -- many of which, Duggal of course is excepted, many of which are fairly small and on a shoestring -- to put something out in a real world test to prove it out.

We are very bad at that. Now, it's in this name of safety, but this is something the Secretary has charged us with looking

at. How do we do that better with the myriad laws that we are under, some of which are department-specific, some of which are government-wide? There have got to be other ways.

Rather than constantly giving the we will take absolutely no risk view which is, of course, the government as a whole view of everything. No is the easiest answer. That is a very good point across the private sector.

And then the other side of the private sector has spoken for the rules of the road on investment.

And actually a very big one we heard from a number of firms who do infrastructure investment in other nations, that governance that grows with the United States, but especially state governments it seems, changed their rules on these things in the middle of the game.

And that level of uncertainty certainly puts a damper on investment possibilities if you don't know what the rules are, especially if you're investing in something that's got to have a 50 year run out. Now, that is less of a federal issue than it is a state issue. But if we can help bring that together, there's a lot of money waiting to go into our budgets. Kirk?

MEMBER STEUDLE: So I've heard this a lot. There's a lot of money waiting. I've heard this for ten years. Every time

I've gone to that conversation, it's, well, how do I get this money back?

So, I mean, it's nice to say there's a lot of money. But they all want a return on investment. And who in this room doesn't, right? You know, put your money in savings account, you want money back. My experience has been that means there's some form of revenue stream which is likely a toll or an availability payment.

MR. KLEIN: Right.

MEMBER STEUDLE: So there's five pilots in SAFETEA-LU or Map-21, whichever one had it, to convert existing interstates to toll roads. Five states have them.

None have been able to do it, largely because, and I've been in the middle of these conversations, because the general public says no way. I'm not paying for that. That's a free road. In fact, a lot of us said you call it a freeway; why are you going to make me pay a toll?

(Laughter)

MR. KLEIN: Yeah.

MEMBER STEUDLE: So that's not really the reason that we call them freeways.

(Off microphone discussion)

MEMBER STEUDLE: But my point is the infrastructure companies, that sounds great. I mean, and I've heard them, and heard them and heard them. But there's nobody offering free money.

And at the end of the day this has, I mean, I'm glad you have the revenue piece in there, because that's the reality.

That's what we're coming back to. I think the vision is right on. I think it's, frankly, what we need is a national vision. But the reality comes back to the revenue.

MR. KLEIN: Yes.

MEMBER STEUDLE: And for all of the private companies to say -- they're private companies that make money, they're not just foundations -- for all of them to say, well, states just need to give us, you know, more leeway, well, okay, how would you like that? How would you like --

MR. KLEIN: Right.

MEMBER STEUDLE: And then what's your revenue? We'll give you that, but we want you to pay me. Well, I don't want to do that. Well, what are you --

MR. KLEIN: Again, it still comes back to is it general tax revenue, is this a dedicated sales tax? They're obviously asking some revenue support. That's part of the conversation.

I don't think anyone, I mean, in the conversations we've had, certainly, the folks in the room recognize what you're saying but also recognize that we've got to find a way to crack the nut. I guess that's what I'm saying.

MEMBER STEUDLE: Actually, I agree with that. But to crack the nut means you've got to find the revenue which means there has to be a greater acceptance of tolling, or it's going to go nowhere.

MR. KLEIN: Tolling or some other form, some other alternative revenue stream, absolutely. And we did not go in --

MEMBER STEUDLE: You could sell advertising rates and put billboards every 50 feet. I mean, I had a legislator that was trying to suggest we should do that.

MR. KLEIN: Yeah. I'll restripe the road if I can paint my logo on it. Have you gotten that one?

MEMBER STEUDLE: Yeah, exactly.

MR. KLEIN: No, we got that here in Northern Virginia. We've got a town that sold the rights to their streets and they're painting advertising logo in exchange for paving. Okay.

MEMBER STEUDLE: How does that mess up automated vehicles?

(Simultaneous speaking)

MR. KLEIN: If you're not paving, I don't know. I need to think about that. And that's a good question. I'll take that one back. But yeah, it comes down to revenue, doesn't it, and energy miles?

MEMBER DENARO: Yeah, right. In addition to what you're saying, you know, my concern is when you focus on something like 2045, you know, consider where technology is going to be.

I don't think there's a person in this room who would room say they know what it's going to look in 2045 with respect to technology. It's just so far away. And I see this widening gap between the evolution of technology and the evolution of public policy.

Now, we're all reading that technology evolution is accelerating, and part of that is when you look at some of the companies that we all like to talk about, like a Google, or Uber or something, they challenge rules. They challenge rules big time.

In the case of Google, technology, in the case of Uber, probably a business model that they challenge. And they don't care, because they're betting on the public acceptance of where they're going and that those rules will change to accommodate what they're doing.

So somehow, and I kind of heard this earlier, but somehow we need that approach with respect to public policy that we've got to challenge all those rules, no matter how hard and how burned in they are. We've got to challenge those rules, or by 2045 the gap is going to be so enormous that it almost makes government irrelevant if public policy gets behind some of the developments that are going here.

And I think one of the keys is in one of your bullets there. We all gave some good words to the appropriate roles between public and private sector. And I don't think we've really even scratched the surface of what's possible there.

And when you talk about it right now, it's nice to say ensure adequate revenues. And we just had that discussion. But come on, that's just not going to change that much. You're not going to tax people more.

But there's a huge amount of money out there in the private sector. If somehow that were synergistic between the government and private industry, I suspect that there's a lot more revenue and money out there than we think. We've just got to challenge all those rules and find a way.

MR. KLEIN: Yep. I couldn't agree with you more.

VICE CHAIR WILKERSON: And I know last September I remember

Terry Little and Foxx met about the infrastructure finance group that President Obama asked them to get together to talk about, I guess, the economic policy discussion on the roads and information infrastructure and the deficit we're having.

Is there expected to be another report coming from her?

Or do you have any update on that infrastructure working group that might weigh into this discussion?

MR. KLEIN: Yeah, sure. I know John Augustine was hired on to head up the infrastructure financing office --

VICE CHAIR WILKERSON: Oh, okay.

MR. KLEIN: -- in the office of the Secretary for Policy. So you have a friend there. They're all working with Treasury and to help the other financing on to the government industry fund within the current files.

What flexibility do we have? How we can best deploy it? How do we change leveraging mechanisms and to provide advice to all the people who come to us for reverse loans, the Tapia loans, the garden funds, and all the current structures that make things work much more efficiently.

That's our part of it. And transportation actually has the lead on that. It's a multi-agency office that John is now in charge of.

There's supposed to be a follow-on report coming through Treasury on this this summer. I've heard nothing more than there's supposed to be a follow-on report coming through Treasury. I didn't see anything on it lately. I think we could find out about that. I'll see what we can find and get back to you all.

MEMBER MCCORMICK: You know, when we look out to 2045, there's something I think that somebody ought to think about addressing, even though it's no one's charter. And that's that, you know, the Department of Energy has estimated with the current consumption worldwide, that the petroleum reserves are going to be depleted by 2054. And you can only, you know, if you start a car in the United States made of electric it would consume 800 percent of our electrical output.

MR. KLEIN: Right.

MEMBER MCCORMICK: So, you know, barring that there's going to be, you know, advances in oil shale, or solar paint or whatever, I think there's an issue about looking at how societally we might address evolving our transportation needs.

We do it automatically when there's an economic downturn. There was plenty of parking spaces at the airport. There was very little congestion on the roads. People stopped buying

Hummers and started buying more efficient vehicles.

But they tend to be very short-sighted in terms of when all of a sudden gas is cheap again. Then they're back to buying SUVs and pickups.

There're a number of other ways that those societal changes have been addressed in the past, most by the government, primarily in terms of making people aware.

MR. KLEIN: Yeah.

MEMBER MCCORMICK: And, I mean, carbon emissions is a perfect, CO2 levels, you know. Ten years ago people, if you talked to them about it, their eyes would kind of blink, because the ozone was dissipating. Now they're starting to understand it a little better. They're starting to understand carbon credits a little better.

Just figuring out how we're going to find money to keep doing the same thing we've always done, I don't think is a very robust solution. It's actually the definition of insanity, keep doing things over that get the same result.

MR. KLEIN: Well, that's certainly true. And as you dig through, you probably see that you can get some of these things. But can we take a deeper look, especially in the energy field? Yeah, we could. I mean, over the issue, obviously maybe not

as deep, we focus very much on what we know best which is transportation.

But the whole critical infrastructure interdependence -- is we hint at it in the climate change presented section, but there's a lot more there on energy, certainly, water. I mean, all the major interrelated critical infrastructures have to play into this.

We were not ready, and that's one of the calls, you know, that we would have to undertake. The other place we did plan -- I'll just say this. In part of the Assistant Secretary's office you may not know, is we're responsible also for uses of GPS position, navigation and pattern systems. That's in the report, there's more to it. Officially, not up on the board but might as well be.

So again, things we own, things we influence, serve us that much longer. I agree. That's an important comment. I mean, we did take a quick look at energy. Do we need to take a deeper dive? Quite possibly. This has got to keep rolling. So I'll take that back. Thanks.

CHAIR KENNER: I had a question regarding the method of seeing the climate change section. But to what extent is the DOT working with the EPA to make sure that they have, you know,

common goals, right? Because clearly, if we have a reduction in, you know, accidents, you have less congestion and so on.

But there are some places where, in the interest of encouraging people to make sure their emission systems are working properly, they might mandate that the vehicles do things that maybe NHTSA would consider to be unsafe, right.

But it seems like those two worlds are really converging, especially in that time frame, right, you know, that there's common goals. And so I just wanted to get some insight in terms of how they're working together. Or is that an area of opportunity?

MR. KLEIN: Well, both. We are working together and that's another area we need to do better. In the report, we certainly cite our common work in CAFE standards and a couple of other things with EPA.

But it's interesting. The question of conflicts in regulations, we have several key conflicts with EPA in areas of regulation. Mostly to do with infrastructure, not vehicles, but that are a great frustration to system operators and maintainers.

That's an area of opportunity, because it drives up operations and maintenance costs for the transportation side.

And depending on who you listen to, it may or may not do anything positive for the environment. You know, so yes, that's an area we need to address better. As far as --

CHAIR KENNER: I'm sorry.

MR. KLEIN: And as far as common goals, you know, the CAFE standards is one. We have common goals through the White House Office of Science, Technology and Policy, where we bring all these things together federal-wise.

There are some common goals for emission reduction, Co2 reduction, that apply across sectors. There is one being developed having to do with electrical vehicles. I'm sorry, let me get the right term. Innovative things and Smart Cities are the two Presidential initiatives.

ITS is tied into those, at least a little bit, to have a common framework for how we play together. So opportunities, yes. Do we need to drive them harder? Yes. Go ahead.

MEMBER MCCORMICK: You know, ultimately you tend address things differently. I travel a lot internationally. And a year ago, between a year ago and last December, all of the petroleum powered scooters in Shanghai disappeared. They're all electric.

And when I asked a counterpart about it, I said how did

you incentivize everybody to do that? Because that's a major expense for most people, transportation. And, of course, under Marxism it's a little bit different, because they said we're just going fine you if you don't.

But they were forestalling the pollution effects. I mean, it's been so bad. Ten times the maximum world health, you know, permissible limit for pollution in Shanghai and Beijing. And they addressed this by saying this is something we have to do.

But I think underlying that, there is an energy equation that they could probably share with others that said here is what we saw in terms of our pollution levels and our -- because, you know, in the United States we tend to do things anecdotally, you know, rather than by -- because the numbers and the statistics can all be manipulated to whatever answer you want to collect, depending on who's doing it.

But it's back to that awareness. If we had the awareness of what the impact is we're having, a good percentage of the population care.

MR. KLEIN: Right. And one thing we did not address, contrary to the report, are those cultural BB you know, we don't want to come off to consumers as here's how we want to influence you, Mr. and Ms. Consumer, to do the following idea. That's

not something we want to do.

But that obviously has to be part of how we go forward when you're considering all these things. Public acceptance of, be it the revenue stream, a change in your vehicle, whatever it might be, is crucial.

Again, I love listening to the Google Hangout, because we've got some -- in addition to the electric scooter question, like your skateboard question, there were several questions asked by Googlers, people who work at Google. Employees who are all either from Europe or from Asian nations that were very much, why can't the national government mandate X?

And the Secretary had them say federalism. He didn't use that word. But that's the right answer and something we didn't begin to scratch. As the population culturally changes, I have no idea what I -- I mean, as much as you don't know about technology, what are people going to be like? I have no clue. But that is -- go ahead.

MEMBER STEUDLE: I would challenge that European person to say, well, tell me the rules that are the same between Spain, France and Germany?

MR. KLEIN: Don't even go there. I do a DC group all the time.

MEMBER STEUDLE: That's like Nebraska, Kansas and North and South Dakota.

MR. KLEIN: Only worse, because they didn't have wars -- well, now Kansas did. So I'll not even go there.

MEMBER STEUDLE: You didn't say Michigan and Ohio, we did.

MR. KLEIN: Oh, they did too. That's right. The Battle of Toledo was it?

MEMBER STEUDLE: They won, and they got to keep Toledo.

MR. KLEIN: Is that the consolation prize? I'm sorry, I'm being mean. I'm sorry.

Sir?

MR. WEBB: Yes, Tim. That was the comment I was to be making, was that it was very interesting because there were at least a couple questions directed to the Secretary about land use and the policies tying land use and transportation, and why couldn't the federal government push the requirements onto the states and the locals as far as land usage.

And obviously, his experience as the mayor, he had some sense of that. But he was very good as far as saying that, you know, it's out there, we're going to find it. I think the report at least identifies multiple locations about the linkage between the two. But it stays definitely away from federal government

trying to get into that as far as imposition.

MR. KLEIN: Absolutely. And actually, this goes back in part to your question about EPA and the other federal land management and resource agencies protecting resources versus other uses of land such as for transportation, utilities, et cetera.

Boy, that's a tough dance. And the Secretary did note that land use is not a federal responsibility except where it is. Like, Nevada, with how many points of percent.

I mean, there are places where you can't have that influence through the federal highway, federal lands program, through the state planning processes, through the NGOs. You know, there have been, as those processes have evolved over the years, a creeping inclusion of land use topics, you know, in an advisory kind of capacity yet we can't mandate it.

Simultaneously, there's a growing movement in many localities to make land use a priority. The properties of land -- however you want to say a topic -- or the recovery of those unspoiled lands, important. And how does that play to transportation?

I'll tell you one I just -- you may or may not know another one of our programs, the University Transportation Centers

program, we actually to have a lot fun work at the university. And you know BB oh, he's not here.

But on the land use side. Our friends at Rutgers, remember, there are places in New Jersey that aren't really good to live in. And I'm done, I'm not going to insult Camden, it's in southern New Jersey. But they went out and figured out a way to recover ground fields for transit ordering and housing for one of the north Jersey cities.

You know, and that, it's not on a federal project, except we give 50 percent of the money to the project, but I'll use it as an example. So there's a lot there that we can roll together and know that if we get all those details of this. But the land use is more than a mention as you go through and why we're here today.

CHAIR KENNER: So to another question, you certainly touched on some examples from other countries where they're introducing things that we're not easily able to do.

But what about in the reverse of that, right? Are there examples of other countries that are doing things that we would think are more progressive in terms of, you know, ITS that we could actually, you know, learn from that might be within the realm of feasibility to implement here?

MR. KLEIN: Absolutely. I mean, Ken's group has a piece of that, highways has a piece of that, federal transit. And then, you know, we get things coming up from the districts. Absolutely.

There're multiple levels of international exchange in the government. Certainly at the ITS program office where we handle our agreements with the EU, Japan, and now Korea, Canada, where that kind of exchange is going on.

I personally get very excited about the program work through Japan. They found research we're doing here, and they're bringing that forward and using that for traffic planning. And that's something we could adopt easily.

Can I say easily, Dale, since you're in charge of that. Is easily the right word? Easily, we've gotten to the point of easily. Okay, I don't want to have Dale have to deal with that. But they are missing when we try to gather those. Certainly, we don't cast the whole net.

Now, at the next level, the State Department has a whole series of science and technology agreements where they're drawing information from other nations.

In the next two weeks, I've got one with Sweden, I've got one with Germany. They're talking about ITS, and vehicle

information exchange, and data flows that they are doing and ways they're approaching it.

So we're engaged with that. The challenge was how do we float that out into the community? Like anything else, that's the big challenge. But the conversations are there. In fact, there're a lot more conversations than we can possibly be involved in.

Then on the other side, we're exploring things too. We have a lot of activities, not through Ken's office but through the department, through the State Department to promote what we are learning in vehicle infrastructure, automation and technologies, the apex of organization. So there's a lot that goes on.

CHAIR KENNER: If you dare say which BB relative to the vision, which country do you think is the one that is, let's say, the benchmark relative to not only having the vision, but consistent execution of the plan to achieve it?

MEMBER MCCORMICK: I'd say Japan.

MR. KLEIN: I was going to go with Japan. Dale, do you want to comment on Japan?

MR. THOMPSON: Certainly. I'm Dale Thompson with the Joint Program Office, the new policy tech transfer, team leader.

But --

CHAIR KENNER: Can you come to the table.

MR. THOMPSON: Oh, I'm sorry.

CHAIR KENNER: Come over here and introduce yourself?

MR. THOMPSON: Sorry. Good morning, I'm Dale Thompson.

I'm with the ITS Joint Program Office. I've coordinated all the international work with a big team of people. And I facilitate the Japan collaboration. We had proved data work. We're focusing on evaluation and automation is on it as well.

Japan is a strong leader in establishing a national policy on automation. It's one of their innovative plans. And so I think that partnership for them has strong fruit in a global context.

In addition, they're working on a probe data area which I think they're leading vehicle to infrastructure investments and communication speculative investments. So they're already using those type of systems and I think we can we can work with that as well.

MR. KLEIN: Yes. What I would say about Japan, at least when I was going over to Japan, from the government's point of view, is what Dale is describing, is not just in the Ministry of Transport.

It cuts across all the other supportive infrastructure groups that he spoke about, across their government, and is managed at the Prime Minister's level. As a matter of fact, Greg Winfree went over and spoke at a workshop, a two-day workshop that was held over in Tokyo -- when was that, it was last --

MALE PARTICIPANT: November.

MR. KLEIN: -- November -- boy, time flies. I think I'm back in summer sometimes -- November. And that was sponsored by the Prime Minister's office, at that level. And that's something that is hard for our government to execute. So that's why I would say Japan. And that, I would say, is the advantage of having an active tech industry and not a real large mass.

MR. LEONARD: It's a difficult question. And in a particular aspect of the transportation system, I was actually going to suggest Singapore.

MR. KLEIN: Yes.

MR. LEONARD: Because, as a very small island nation as opposed to a large island nation, it's much easier for them to make a decision and implement it across a population of four million people.

And so they have a very state of the art, intelligent

transportation system. Not everything, but it's very easy for them to have a very short cycle from this is a good idea, we're going to implement it, and people actually having it.

And when you think about our system and how long it takes us to create ideas and then work through 50 states to get a national implementation, or Europe's problem in terms of trying to implement one system in Spain, Italy, Greece, you know, Germany, France -- it goes on, you know, 27 countries. We have similar challenges that we face, not the least of which is deciding on the technology.

MR. KLEIN: Yes.

MEMBER MCCORMICK: The other thing that is important, and this really is a good example, because we frequently look at China, right?

MR. KLEIN: Right.

MEMBER MCCORMICK: They have mechanisms for handling their road conditions just the way Thailand does for the exact opposite.

And in isolation, in part we know it has a great program, not in Japan, not in the US, but anyone in terms of its implementation. But there are best practices.

How they deal in Singapore with the monsoon season is

certainly useful to Florida and the Gulf Coast in terms of how they deal with their weather problems as well as how Sweden might be able to share what they do with Michigan, Montana, Minnesota and Wisconsin, et cetera, with their issues.

But I don't think if you look for a whole solution you're going to find it anywhere. Because both the cultural and the governmental processes and the areas of importance of where and how they fund things around the world, there is no common denominator.

MR. KLEIN: Agreed. But ask the question, I'll answer everything. But you're right. And the other thing is -- and you said weather, you know, geotechnics of every nation in the world.

I teach classes as a side vocation, and my favorite catch phrase from middle-schoolers is geography is destiny. You know, why are things where they are? Well, that's where the river was, that's where the mountain that we couldn't get over was, whatever.

And it continues, and it goes down below the surface and up above into the clouds and that drafts a lot of decision making and a lot of, you know, it drives a lot of what we do.

MEMBER QUIGLEY: What'd you say? Geography is what?

MR. KLEIN: Geography is destiny.

MEMBER QUIGLEY: Destiny. I thought you said dusty.

(Simultaneous speaking)

MR. KLEIN: But one of the things I do with my kids, I have a lot of kids. One of the things I'll do is we'll go to the map and say why is this town here?

If you can answer that question, you probably can understand a lot about that community's economy and culture, if you can tell me. Why is that town there in the first place?

MEMBER QUIGLEY: Geography.

MR. KLEIN: And it's true, that's true all over.

MEMBER CALABRESE: And technology.

MR. KLEIN: And technology, right.

(Simultaneous speaking)

MR. KLEIN: Pardon me?

(Simultaneous speaking)

MEMBER CALABRESE: Air conditioners would not --

MR. KLEIN: There you go.

MEMBER QUIGLEY: Well, it did, sir.

MEMBER CALABRESE: Air conditioning technology, and Cleveland's air conditioners were pathetic.

MR. KLEIN: I once heard someone say that air conditioning

made Oklahoma possible. So if it's true or false, I don't know.

But you're right. You're absolutely right, the technologies that are developed to meet the local conditions. Totally true.

While is Japan more interested in probe data, Europe is more interested in -- Japan's more interested in environment.

Europe's interested in mobility issues. And we believe in safety. Those are world conditions that raise conditions culturally, economically, that are driving those areas.

MR. LEONARD: If you look at the Washington Post today, it has an article, it has a map of the 600,000 bridges in the United States. And it's available online right now.

And you really understand the impact of geography on the transportation system because of where you have the rivers. Where you have canyons, you have to have the bridges, of course. It also leads to infrastructure repair bills that go with bridges. But it's an interesting article on that perspective.

MR. KLEIN: Where are we, Mr. Chairman?

CHAIR KENNER: Any other questions or comments?

MR. WEBB: I just have, just basically staying in this report, there were six counties in Florida put on infrastructure sales tax votes in November. All went down, small counties, medium counties, large counties, they couldn't be convinced.

So even at the local level, trying to convince your residents, yes, put more money in even though we can argue in Florida that sometimes up to 20 or 25 percent of the sales taxes are paid by visitors outside coming into our counties and so forth like that, if they were unable to get the funding necessary to support some of the visions for transportation in those counties.

CHAIR KENNER: All right. Anything else?

All right. Well, Tim, thank you so much. We really appreciate it. And thanks for coming in and presenting it. And I think it was just really helpful and also your, you know, answers to all of our questions. We really appreciate that.

MR. KLEIN: Thanks for having me.

MR. LEONARD: Steve, I'll just add that if you look at your binders under Tab C, we have some additional information on the Secretary's 30 year activity.

And I do highly recommend -- I watched it live online. I really recommend going to YouTube and listening to the Secretary and the chairman of Google. It's a wide-ranging discussion. I hear the ITS program in it, but they talk about aviation, they talk about everything. And it really is a good way to think about looking forward and into the future of

transportation. So I recommend it to everyone.

VICE CHAIR WILKERSON: Yes. Particularly Pages 24 through 32, the new statistics. Those were my favorites.

MR. KLEIN: Thanks.

CHAIR KENNER: Well, so we were going to have, you know, a break at 10:00. So certainly one of the things -- the way we've, you know, structured the two days is we have a presentation, then the dialogue like we just had that then will culminate in, you know, trying to say what are the specific areas from this that we want to investigate further.

So before we -- I do think it would be good to take a break, even if we do it a couple minutes early. But any thoughts on -- you know, from this, from the committee members in terms of, you know, areas of interest that we would want to make sure we note here for the discussion of setting up committees to pursue specific areas further? Kirk?

MEMBER STEUDLE: I think we'd want to hear BB and you mentioned it was an increase in research funding in the budget.

And I think that, paired with Beyond Traffic, how does it line up? How does the research money line up for implementing or answering some of the questions that's posed?

I think it would be real interesting to just dive in and

understand. Maybe there's increased funding there. I think most of us in the room have pushed and said, yes, we need the increased funding. And how does it fit? How does it fit with the vision that the Secretary just laid out?

VICE CHAIR WILKERSON: We have that in -- some the discussion of that at 3:00 today.

MEMBER MCCORMICK: One thing we hadn't talked about in our last call was about -- I mean, he was doing this scenario planning. And I think maybe it might be useful to break it up and say what is it 10, 20 and 30 years out.

Because we used to do scenario planning in general, you know, it could be lead to the wild west really quickly if you go too far out. If you break it down and say, okay, what is it in 2025? What are the assumptions we're making now that, if they're wrong, to then what is it in 2035, in 2045?

And that'll allow us to focus more on the local issues or the near term issues that we can probably define them, the mid-term issues that get a little more fuzzy, and then the long-term issues that, you know, get us closer to running out of fuel and all the other things. But it would break up the scenario planning into kind of digestible bites.

CHAIR KENNER: Okay.

VICE CHAIR WILKERSON: That 30 year trend?

CHAIR KENNER: Yes. Okay. Other thoughts or comments relative to what we just heard?

MEMBER DENARO: Well, we always asked to talk about BB in fact one of the three elements in our charter for this committee is to discuss the relative roles of the private and public sector. And that's really screaming for it here.

I hesitate because I don't know how we would say something different than we haven't said before or something that has nothing to contribute. But I think it's worth discussing, anyway, to see if we can come up with something else.

And especially when you're doing it in the context of looking 30 years in the future. Maybe that frees you up to saying some things you wouldn't talk about if you had to implement that in the next five years. So anyway, just kind of --

CHAIR KENNER: Yes. Clearly, that was even what we started with, right. You know, it was some of the first things you said. That was the Number 1, you know, buzz item and a lot of talk that, you know, we hadn't really scratched the surface yet.

And yet with the reality that Kirk mentioned about, you

know, those private funding entities want a return on that investment or, you know, some sort of value creation that would come back to them, right, which makes sense.

But given this group, because we have, you know, sort of all the above, it makes a lot of sense.

Okay. All right, any other comments? All right. So let's see, what time is it? So it's like quarter to. So would it, well, why don't we just say right at ten. And so we'll take 15 minutes now. Okay? Great.

MEMBER QUIGLEY: I just have to make a comment. So it said geography is destiny. And he just pulled up that map that he saw this morning of the bridges and the overpasses on it. And it's incredibly dark and dense on the east side of the United States and then completely sparse right after the mountain range?

MEMBER MCCORMICK: I emailed everybody --

MEMBER QUIGLEY: Yes.

MEMBER MCCORMICK: You can't really blow it up though. Because it gets real fuzzy. And it's not.

MEMBER QUIGLEY: But it's like black and white.

MR. LEONARD: -- are over the Mississippi part.

MEMBER QUIGLEY: Yes. Is that what it is, the

Mississippi? That's what's --

MEMBER MCCORMICK: It also must include the overpasses. Because there's only one bridge in Las Vegas, and it shows a whole series of dots.

(Simultaneous speaking)

MEMBER MCCORMICK: -- it's over the aqueduct. It'd be the --

MR. LEONARD: It's any span over 20 feet.

(Off microphone discussion)

CHAIR KENNER: Okay, great. All right, thanks.

(Whereupon, the above-entitled matter went off the record at 9:48 a.m. and resumed at 10:11 a.m.)

CHAIR KENNER: Okay, so if we could get started. I know, who is it, Bryan just came. So we kind of went around and said, you know, sort of where we're from.

MEMBER QUIGLEY: But we sang it, in song.

(Simultaneous speaking)

MEMBER SCHROMSKY: So I apologize. My wife unfortunately had to see an oncologist this morning so I was doing that. And I just have to mention I had oral surgery, too.

(Off microphone comments)

MEMBER SCHROMSKY: So I apologize for being tardy, I've

really been looking forward to this. So I'm really excited, being a University of Kentucky Alumni that we're still undefeated.

So very excited about the game last night for anything from the great state of Georgia. So thank you for, I apologize for my tardiness but I'm looking forward to talking about that.

FEMALE PARTICIPANT: Thank you for being here.

CHAIR KENNER: Okay. Well with that, why don't we bring up Dan. So Dan, thanks so much for being here. You know, certainly those of us that participated in the last discussion, right, the data topic was one with a lot of energy and passion.

Those of you that follow the auto industry might have seen that a few weeks ago at Ford Motor Company, we actually hired Paul Ballew to be our chief data and analytics officer at Ford Motor Company.

So it's a position that didn't exist. It's a position that's independent of the IT function. And so he's working on, you know, both the data side of it and analytics, right, because those things, they're different.

But you know, it's hard to do analytics if you don't have the data. And if you just gather a bunch of data and don't analyze it, that could be problematic. So certainly there's

a lot of activity.

And I really appreciate you coming to spend a little time with us. And with that, I'll turn it over to you.

U.S. DOT Data Policy

MR. MORGAN: Good morning. Thank you for having me. I've heard that I was talked about earlier, first time ever.

I've been Chief Data Officer since, like, the beginning of August. So it's as new as it is a bunch of different places.

And we've been really sort of trying to figure out exactly what being a chief data officer is for the US Department of Transportation. And we're still learning.

ITS is definitely one of those areas. Before I jump into that, I put some slides together. We can take this conversation wherever you guys think is most important. But is there anything that you guys are really hoping that I hit on while I'm at this conversation? Or can we just go in Q&A? Okay.

CHAIR KENNER: We can do Q&A. We could go around, I am sure people already have several questions they'd like to ask.

But why don't we go through your stuff first. We don't have a lot of time, you know, available for questions.

MR. MORGAN: Yes. So how did the chief data officer thing come about at the department? Over the last couple of years,

and those are all pictures of the flurry of executive orders, memoranda, various things that the administration has been pressing for as it relates to data and information, sharing with the public, creating economic opportunity, advancing research, and generally just making America better.

Right, so the stories are classical in terms of the weather data's out there, the Weather Channel is created. Right? We have a bunch of climate and agricultural information. And Climate Corp built a giant business model around more on demand crop insurance.

So more frequent risk, you know, risk based purchases of crop insurance, which is really, really cool. And they have acquired for some obscene amount of money by Monsanto.

We've had a long history of recognizing the value of Government information for informing the public and for creating economic opportunities. Right? We've had to hear our transportation statisticians doing all their statistical sharing.

Everybody in transportation lives and breathes census data. Right? Right? It's kind of essential to what we do. And so we understood how this stuff was working.

But sometimes we take this approach to sharing our data.

You know, we get a mad rush to put it all up on the internet and we never really revisited the way we share that data, right, and the way we put that data to work.

And it was really time for a 21st Century approach to understanding how we manage and share our data. And so the question was who in the Department is paying attention to this?

The Chief Information Officer is getting all these questions. They had nobody on staff who was, like, paying attention to data. And so he said we need somebody like that.

And I managed to get that opportunity, so I'm excited about that.

All of the policies recognize that data is an asset, right?

But we all call it things from work an asset, that's top what you have from work is an asset. That BlackBerry you got from work is an asset.

And all assets have life cycles. Right? And they all have to be managed and measured. Right? So the biggest thing here is that we have not necessarily figured out how to measure the use and utility of our data, right, and measure how it's being put to work.

Data wants to move around the organization. Everybody wants to do some analysis and everybody's afraid to do it because

everybody knows it's not of the quality they want it to be.

And we punish people for poor quality, rather than helping them identify and prioritize their resources. And some of the things that we want to do is change the culture around how we encourage the sharing of data, putting it to work, seeing its flaws helps us go ahead and allocate resources to our highest priority and analytical needs.

So some of the things that I'm trying to do are help the organization share data across our various silos. Right? You guys, you know, if you look at what beyond traffic has, my big take-away was all of that technology and automation depends on data sharing across all of our various disciplines, operations, planning, whatever that case may be.

You cannot facilitate choice by your system users if you're not in the business of providing and sharing information and data to help them make better choices and mobility decisions.

That's the bottom line, right? And so we have to move away from just considering ourselves as infrastructure builders and operators and see ourselves in the business of providing information to all of our users, to our executive leaderships, to all of our executive leadership, to all of our partners because it's essential to be successful in the 21st Century

transportation system.

That means putting the data to work with the private sector, too. One of the things that we work on, Department of Transportation is the lead for the safety data initiative, which seeks to take all of the publically available data around public safety and share it through a Safety.Data.Gov.

There's some really cool opportunities about seeing ourselves in the context of a whole enforcement regime, right?

We have a mine. The Energy Information Administration has a bunch of information on that mine, the Mine Safety and Health Administration has a bunch of information about the workplace in addition to that mine, and that rail spur between the main rail and that mine.

General Railroad Administration has information about all the workers around that mine and all of the safety incidents.

The Federal Motor Carrier Safety Administration has all of the information about the trucking violations in the vicinity of that mine.

We don't think about our data in the context of that spot on the map. We are a bunch of silos. And part of my job is to be able to help the Department see across those silos and find new analytical methods and relationships amongst our data

so we can be more successful in doing our job in allocating our resources.

MEMBER SCHROMSKY: Question on that because you mentioned the CIO's Office which is usually looking inside the four walls of an agency, right? So are you, you already mentioned, you're looking at data that your researcher, scientist, whatever name, collect, right?

MR. MORGAN: Right.

MEMBER SCHROMSKY: So that's one piece of data. But are you also looking at the data that's generated by how many tens of thousand DOT employees and how they do their job every day as well?

MR. MORGAN: Yes.

MEMBER SCHROMSKY: Okay.

MR. MORGAN: It's all the data.

MEMBER SCHROMSKY: Okay.

MR. MORGAN: And this is sort of --

MEMBER MCCORMICK: It's almost like a box of all these experimental databases?

MR. MORGAN: Oh, we are.

MEMBER MCCORMICK: You are? Okay.

MR. MORGAN: We absolutely have to. And sometimes I think

we don't really know what that box is. I mean, when I first got on board, I went around and met with every one of the component agencies, operating administrations inside DOT.

And everyone that had an enterprise this or that information management thing and a corporate information yadda yadda, if each one of my operating administrations, or an office inside of those thinks they're an enterprise, there's no wonder why none of our stuff works together.

So we have to break down those walls and we need to see across the Government how we go ahead and build those bridges.

I know that CIO some sort of -- depending on the agencies. And sometimes in the states this happens a lot, too. They tend to be seen as the IT directors.

But for a long time in the federal government, CIOs would have sort of that IT responsibility and forgot about that information management responsibility.

So a lot of those memos are a reminder that we actually had an information management responsibility. And they tell us to eat our vegetables that somebody needs to be in charge.

It's not just happening at the federal government level. The satellite foundation is tracking 50 state and local open data policies since 2009. In the last two years, 25 of those

have popped up.

The state level, examples of success have been New York State, Maryland, and Utah. Transportation tends to be conspicuously missing from state and local open data efforts.

And I think it's because sort of the civil society advocacy has really been focused on where's my bus. And they don't know what the scope and breadth of transportation is and can be.

So some of this is helping civil society partners, corporations, start ups, whatever, really understand the space that we have seen as essential to transportation and data sharing for a long time.

We've called it things like real time information, right, 511. We've called it intelligent transportation and dynamic mobility applications. We've got vocabulary for this, it's just not hip and cool to these civil society people.

It's all about if my job is, like, helping them see the efforts and see how they can connect to the work that we're doing to treat data and information as essential to the transformation of the transportation system and not just focus on where are the bike racks and where are the busses.

Totally important things, but we can do better and we need to think bigger, and we need to engage those technologists on

our transit problems.

So part of my job is to go out to meet-ups and hackathons and challenges and competitions like the data information challenge that we held last year. And our friends from Nevada were --

(Simultaneous speaking)

MR. MORGAN: But leading that conversation and connecting to those other kinds of things. Remember, the Secretary is going to Google. He needs to be able to connect what we've been talking about for a long time to that Silicon Valley model so they can start to see their opportunities and not just be like you're always in the way.

Right, we're not always in the way. And actually, we've had them operating for a long time. So making sure that we do this effectively is super important.

I think the other thing is open data sometimes gets tracked as sort of a transparency and accountability thing. And it certainly is valuable for that.

But open data is also an incentive to eat your vegetables, do good information management, make sure you're sharing that kind of stuff, right, because you're being responsive to demands and rules from your partners.

So being able to hear from people and build those connections with actual data consumers helps us figure out where we can best allocate our resources for improvements, for new kinds of services, for web services, APIs, all those kinds of things.

MEMBER MCCORMICK: As you go forward with this, are you seeing a change in how you're going to have to deal with FOIA responses?

MR. MORGAN: I don't think so.

MEMBER MCCORMICK: Okay.

MR. MORGAN: I think, our department is really lucky. Transportation compared to some of the other agencies that I talked to quite a bit, we're really transparent.

And I think that's kind of cool. Our point of volume is not super huge. It tends to be more about documents and particularly sometimes individual events or incidents for more information than was done or collected during an investigation.

MEMBER MCCORMICK: Okay.

MR. MORGAN: On a particular event, some FOIA requests are for FAA data about UFOs. You know, we get a wide range of stuff. But we frequently tell people that data's already available, go get it.

So I think that's actually a good thing. Other agencies, they have much more difficult problems, if they've got a law enforcement function, if they do a lot of PII, if they do a lot of health information.

We don't have a lot of that today at the U.S. DOT. Depending on the state, right, some states have their DMV inside their DOT, some states have it separate. And it's on its own thing or it's part of the Justice Department.

So there's no, like, uniform profile for how the DOT works with all the various specific information essential to transportation.

I have three examples in this deck about things that I think are cool and worth talking about in the context of what you might be considering about sharing data related to intelligent transportation.

So the first cool one, it used to be called Asthmapolis and now it's called Propeller Health. And this was an idea that started, I want to say, like, four or five years ago to put a GPS chip on a rescue inhaler and give patients the information to better manage their asthma by tracking when and where they use their rescue inhalers.

It's, like, a \$30 add on for this rescue inhaler. This

data goes into the cloud, as all magical things do. And patients can get reports back, they can take their cell phone and their iPad to their doctor's office and show them how they're using their rescue inhaler.

And the doctor can see things to help them either better manage their asthma, change their dosages, change their meds.

They could actually share their data itself with their primary care provider if they so choose.

They can choose to take that giant database of asthma and use it for medical reasons and share that out with clinical researchers, be part of clinical trials, be part of a research community because they choose, they elect to share all of that data.

This company is not, the GPS chip inhaler guy, right? They're an information broker trying to advance the study of asthma in context of when, where, and how effective these things are.

They have a big job in terms of stewarding their users' information. And they make a big deal out of disclosing exactly what they do with that information and what information that people can, what people can do with their own information.

They can get it out. They could share it. They could

do a lot of different things. Now what's important to know is that business model's around some individual benefit, but also a broader application.

MEMBER QUIGLEY: I'm thinking that cities can now market themselves as the destination with reduced asthma incidences.

(Simultaneous speaking)

MEMBER QUIGLEY: Tell me Las Vegas because our asthma --

(Simultaneous speaking)

MR. MORGAN: Right? But wouldn't you want to know, right? Wouldn't you want to know where there seemed to be some sort of asthma risk, right, as part of being a smarter and healthier city?

And people are participating in sharing data, they have this ability to give this information to you. And there's somebody whose business model is built on that data which I think is what's really cool.

MEMBER SCHROMSKY: I would also assume though, not assume, this could have been done ten years ago. It was a manual process. Somebody had to keep a log and, you know, how many times and what's your pain level, whatever it may be.

So in terms of facilities and the day-to-day work, I mean, what do you see in terms of data collection? Is it still a

manual process? I mean, I'm sure a lot of this stuff is done by paper in a lot of aspects.

And you know, getting the data in a timely manner, digitizing the data, storing it, and then also creating open access to the data is still a consumer challenge.

MR. MORGAN: I think some if it, it really depends on where you are in the process, right? So the beautiful thing here is the Government is not in this business at all, right? Right, this is clearly for an individual and this company to work out, the company recognizes the value to the broader research and Government communities.

Inside the Government, depends on where you're at. There's a lot of technology enablement out in the field, lots of cool stuff happening in construction, there's a lot of really cool things happening in terms of trying to help law enforcement get better information, trying to upgrade public safety requests, all those cool things.

I think eventually one day we will get past some of the paper-based information collection, but more a part of it is sending electronic monitoring which is important. And I guess we can dig into any area we want.

MEMBER SCHROMSKY: I mean, because we know the problems

that we're seeing, where I've seen, you mentioned law enforcement, right? So obviously with the recent events. So buy them more cameras, you know, cameras I'm assuming DOT cameras, right?

A lot of data is streaming 24 hours, 365. Right, so now the question comes in how long do I store it, you know, chain of custody, whatever it may be. So I think it's reasonable to ask, say hey paper's easy. I have facilities I can store paper.

We have to digitize it, store it, where do I get the money, how do I do it. I mean, those are I think some big challenges, especially the state and local side.

MR. MORGAN: Finding database software.

MEMBER SCHROMSKY: Yes.

MR. MORGAN: Right?

(Simultaneous speaking)

MR. MORGAN: And it could cost more per square foot of paper than it does for, you know, the amount of electronic storage. Processes haven't caught up to how technology can do these things. Not a technology problem or a data problem.

There are some law enforcement agencies I've heard of that absolutely refuse to fill out the electronic police accident

report. Just not going to do it. I'll write it down on the paper and you're going to deal with it. You know, it's how law enforcement goes.

Eventually, that police chief will retire and maybe they'll jump on the bus or maybe get off. But small agencies have a whole bunch of other technology problems that they're dealing with. And that may not be the thing that they want to focus on.

MEMBER SCHROMSKY: I think to your point, right, the processes seems to be so are you sharing. I guess what your goal is is to find the best process and share them with the agency, and then filter down to --

MR. MORGAN: Yes. I mean, part of my job is to just raise good examples of good management in the digital age. So hearing about them, sharing them out, you know, building these stories.

We have these events, data-jams, data-palooza, these are fun terms. But using them as vehicles to celebrate success is a real important piece of it to raise the level.

The other thing that we need to see is a lot of donate my data or data that the public find at fault that we're trying to exploit. The most recent example that I had a problem with transportation related was the Audi Urban Future Award.

And the team at Mexico City came up with a way to get drivers to anonymously donate data about location. That data gets shared, becomes information to help people make better choices and then archive it for use for transportation private use.

What they found, at least in Mexico, is that people are willing to disclose sensitive data when they can get a benefit.

Not everybody in America's like this. But we know that there's a market incentive, right?

Some people don't even know they're disclosing sensitive data a number of places, you know, that shopper loyalty card, a bunch of sensitive data, right? And it's important to know that people don't really understand how much they're giving away.

And as Government agencies, we're going to foster the creation of these kinds of softwares, we need to be thinking about the fact of disclosure, making sure the people know what they're giving away.

And that's okay. But there's that balance. We talk a lot about technology adoption and technology acceptance and those kinds of things. But there's people who are afraid anyway, and they need to be assured that the actors in the system have roles around this brokerage that protect their interest.

You'll find that when you give them a choice and you're transparent about what's happening, people are more able to accept the sharing of that information.

We find it, you know, in the asthma stuff, we find it with this donate my data stuff. There's lots of this is happening in the healthcare sphere for patients like me where you get to donate DNA data and get to find other people who have similar conditions and symptoms and try to help build a community around it.

There's really interesting kinds of stuff. People are willing to share when there is a clear value exchange.

MEMBER WEBB: Just to comment on that a bit, our local sheriff come out against the ways, locate your local police officer as you're driving down the street or whatever. Again, the transparency. What you're looking at in providing that information.

MR. MORGAN: Certainly, law enforcement wants to make sure that their operations are somewhat protected so they can do their job. I don't know, there's a, like, interesting policy questions and implications around that kind of stuff. I don't have the answers for that is.

But this was designed to be one thing, right, and then

the user community turned it into another. Right? And you know, are the people who built that thing understanding their responsibility in this space.

We can talk a little bit more about that when we talk about this new, sort of, hot new technology people jumping into transportation and parking and all those kinds of things. And they're really information brokers.

But you're seeing a lot more of we'll let you play as long as you share your data with us, right, as the regulatory answer at the local level. And I think that's a good and smart thing.

You'll see more and more of that happening as we try to find out new and different ways to effect mobility and those kinds of things.

But we have lots of process questions about how our models and our approaches to understanding trip generation and mobility options and how the infrastructure's actually used.

Are we capable of analyzing all of these sources? Has our practice in terms of planning operations caught up to being able to chop all those kinds of data sources. And I'm not sure that we have that.

MEMBER MCCORMICK: The fundamental problem I have when we look at this, and we've talked about this before, is that

it shouldn't be device specific. It should be how we manage to the use of data should be device agnostic.

We give up an awful lot of privacy because we use this.

And for the most part, other than a few apps which nobody reads what they're giving up, that the phone company actually has a lot more information that it's harvesting out of that.

So whether it's my car or marine radio or the transponder on an aircraft or in my car should be irrelevant.

MR. MORGAN: A couple of things. One, you know, and I know Walt is working on stuff around getting the tower of Babel to talk a little bit more. If you want to talk a little bit about what's happening and plug this?

MR. FEHR: Well, I guess the point I was trying to make was that we need to understand that data needs to move and data needs to move uniformly and be available ubiquitously, at least fundamentally in a system like this.

So that's why or how we're building out our reference implementation that we're working on in the Michigan area right now. And the idea is very familiar to those of us that have been in transportation for a while.

We've been providing ubiquitous streaming uniform data to users at roadway networks for the last 50 years. That red

octagon stop sign that you see at the intersection is extremely useful data as you try to figure out how to maneuver your way safely through that intersection.

Those three colored lights above the lane that control an intersection is data. We're trying to come up with the electronic equivalent of the red octagon stop sign that is ubiquitously used, everybody understands the use.

It has to be that level of fundamental data available for a system like this. You can't have a different stop sign in every municipality you go to or let the local or the state choose the color of the traffic lights.

That doesn't work well for safe and efficient operation. We need to have something equivalent to that in this communication intensive, data intensive world we're trying to work on.

So that's one of the fundamentals where they come into our idea. Once you have the ability to move that fundamental data, make it available to any user, allow any competent provider to provide it, you also then have the ability to do all of the other value added things you'd like to on top of that, all of the maintenance management, enforcement and commercial use because you've got the infrastructure in place. Everybody has

access to it, everybody knows the rules.

MEMBER MCCORMICK: I was fine with everything you said except for the word enforcement.

MR. FEHR: Again --

MEMBER MCCORMICK: So depending on how you mean enforcement.

MR. FEHR: Enforcement is nothing more than the data transaction by vehicle. You exchange data between an individual or vehicle and enforcement entity. Coming up with a uniform practice for doing that so that privacy is protected, sensitive data is protected, all the rest of those kinds of things, has to be made into an overall scheme that we're working on.

MEMBER MCCORMICK: Okay. So not enforcement in terms of ticketing.

MR. FEHR: No.

MEMBER MCCORMICK: Okay.

MR. FEHR: Coming up with a uniform policy. So that is just another data transaction that fits well within the scheme.

MEMBER MCCORMICK: Okay, thank you.

MR. MORGAN: You know, to your point too, I don't know that the data needs to be the same. Right? I fight this

standards thing a lot. Right? There's certain things where we should at least define things the same way.

You know, but the type of information that you're getting from your transponder, from your cell phone, all those kinds of things. What's changing is the breadth or frequency, dimensionality of that thing.

Not necessarily BB and I think it would be really, really hard to call that the same when you're talking about radio spectrum versus GPS tracking on your cell phone and the digital exhaust. You would be super hard pressed to call that same, and you wouldn't treat it the same.

MEMBER MCCORMICK: Well, it wouldn't have to be the same. It's a question of whether or not it's personal protocol.

MR. MORGAN: That's fair.

MEMBER MCCORMICK: I mean, this fellow has a really good GPS on, a really good three dimensional accelerometer. It knows that if I'm 20 miles an hour, I'm not on a bike or running.

It can tell where my location is and my purposed vector, the direction I'm going and the regularity of that and the road that I'm on. You know, that information doesn't have to be captured off of the vehicle. It can be captured right here, and there's nothing that governs anyone's use of this other

than tort and liability law.

MR. MORGAN: The last one that I'll talk a little bit about is something that we have been trying to broker. You guys know about research data exchange for the intelligent transportation systems program.

We've also been trying to incentivize interesting ways to archive and understand how the results of travel surveys.

So states and locals and MPOs, right, they do travel surveys to try to understand --

MEMBER QUIGLEY: And they do them really bad a lot of times, too. Just really bad.

MR. MORGAN: Sometimes you don't even know what other people are recommending. Like, so even just seeing instruments and approaches is probably a useful thing.

So bringing transparency to the results of this thing, we built this thing called the Transportation Secure Data Center. Federal Highways funded it with the National Renewable Energy Lab.

And depending on how people are doing their travel surveys, they can deposit their data into this secure environment and it contains the GPS tracked and all the survey demographics.

And NREL does some processing to provide public use enabled

files, without the tracks and the survey demographics, they generalize and those kinds of things and pull up their statistical disclosure limitation work.

And if you are a qualified user, and they've worked out a set of things that make you a qualified user, you can get access to the detailed and spatially enabled files.

The idea is that it's an enclave, right, much like we do with much of the census data. If you want census micro data, you've got to access an enclave or they're working on virtual enclaves to make it a little bit easier for the remote access folks to get to it.

But the idea is this is extremely valuable information that otherwise we would normally be spending a bunch of federal money to go ahead and do a derived travel survey. Can we derive travel patterns and habits from all of these individual surveys?

It's a completely different analytical approach. Right?

It's not the classical statistical approach of a nationally representative sample with basic information about, you know, the confidence intervals and all those kinds of things, which costs a ton of money and is really hard to do.

But we're already collecting similar kinds of information as part of the rules and regulations that we put around

transportation planning and individual local vision.

What can we do to derive value from those data sets to build new and different nationally represented data sets?

MEMBER QUIGLEY: Well, and then the collection of the data's got to be a lot easier as well. We still do it very archaically. They will do some online stuff, but a lot of it's just these surveys that are sent in the mail, which is just absolutely ridiculous in this day --

MR. MORGAN: At least you're not calling people on their landlines that they don't have.

MEMBER QUIGLEY: Oh, I'm sure we probably do.

MR. MORGAN: So that ends my slides. Just my interesting thought was in terms of brokering the access that I really like.

Each of them has something to learn or consider as you guys think about what ITS data use policy can look like and what responsible actors need to look like in this space from a policy perspective.

So I'm done Mr. Chairman, but I guess I am open for questions at this point.

MEMBER MCCORMICK: As the Chief Data Officer, what are your goals in the next few years?

MR. MORGAN: I haven't even thought a couple years out

yet.

MEMBER MCCORMICK: Okay.

MR. MORGAN: That flurry of memos kind of tells me what my job is today, for better or for worse. We have had to do a comprehensive inventory of the data sets inside the department. By the end of this month, we will be able to call that, like, 99 percent complete which I think is really cool.

That inventory of data sets, whether or not they are made publically available, the list of what we have is made publically available and will be put available on our Website at dot.gov/data.

When I think about the job, I've tracked it out into govern, engage, and enable. And govern is all about ad hoc, eat your vegetables, good information management practices, lifecycle, treatment of the data asset.

A reminder of all of the various laws, policies, and regulations that govern the data lifecycle, and putting together what we think DOT's approach for that should be for various kinds of information because not every bit of data inside the department should be treated the same way.

Statistical information has different kinds of standards. The data that we collect and share to the states has particular

uses for performance reporting among other things. But the administrative data that we collect as part of our grant making processes, our human resources processes, our financial management processes.

Congress is super interested in that, too. They passed the law called the DATA Act, which updates a lot of the created USAspending, and now requires us to do a better job of publically disclosing the lifecycle of a federal dollar from appropriation throughout.

Super hard to do. But means a whole lifecycle approach. And connections amongst our systems and processes that we never really built. So all of that comes down to the governing ad hoc, data sharing kind of stuff that, you know, we need to do.

Engage really is about putting the data that we have to work as much as possible. So if you've heard of transportation data-palooza or safety data-palooza, where we try to get people who are doing new and innovative things for collecting or using data to talk about what they're doing and see how we can celebrate those successes.

Doing those kinds of events, doing what we're calling data jams which are sort of smaller cycles. Maybe our data isn't sufficient to solve the problem, but it is sufficient for safe,

you know, to frame the problem.

And maybe we can incentivize private sector action around them. We did a little data jam with the Department of Justice on law enforcement officer safety. And what NHTSA brought to the table was fully half of the law enforcement officer fatalities were vehicle related, speeding related. Right?

And the question was how do we give law enforcement officers the ability to manage their fatigue, understand those kinds of things, and not get them in trouble with their leadership.

We had one of the folks at the table who is a leading sleep and fatigue researcher from the University of Washington and he had been working on some stuff in his lab. And he finally through that round table was inspired to put enough resources in his lab to do some tech transfer around the technology that he was working and build a commercially viable product called the Be Sharp Band.

And some law enforcement agencies that he talked to volunteered to test it out. And this is how we start to build innovations on the problems that don't involve necessarily regulatory action. Right?

We use our data to frame it, get the private sector to pay attention to it, and take action. That's part of what my

goals are. Enable really is around building an organization's capacity for data management and new and innovative ways to approach analytics.

I guess a micro panel on analytics is going to end up somewhere in my office. I don't really want it because I'm not an advanced analytics guy. But at least in the short term, it's going to have to be part of the portfolio.

And really thinking about new and different ways to build models and put our data to work and get inferences rather than representative statistics. You know, helping the organization, making it okay to experiment with new technologies, open source technologies and find and discover new things is definitely part of what my job is as well.

VICE CHAIR WILKERSON: What was the example that you just gave? I didn't understand. You mentioned the name of the new company or --

MALE PARTICIPANT: Fatigue --

MR. MORGAN: It's the Be Sharp Band. Yes?

MEMBER DENARO: Whenever I've heard discussions about state and local agencies sharing data, I hear some sensitivity about liability. Can you shed some light on that? What is that all about?

MR. MORGAN: I don't have a whole lot of information on this. But I can tell you what I've heard and I think it's a worthwhile discussion.

Different states have different liability laws and so they can be sued for a bunch of different things that other states cannot. And when that data or information might indicate some sort of negligence on the part of the information provider that had something to do with say a crash or a loss of life or property, the agency is vulnerable to law suit.

They don't want to be in the business of sharing data if they're that vulnerable just by a policy perspective. And I think it kills their willingness to share detailed data. And it might even just stop a conversation.

I think there is at least some value in changing that conversation as much as possible. My favorite slogan -- so all the federal agencies are like open by default which freaks people out because it implies that there's no analysis.

It really means presumption of openness. I really like what the Archivist of the United States said: AReleasing all we can, protecting what we must.@ Because all is maximal, right, so we're going to do as much as possible in the way that makes us -- you know, that manages our risk.

You know, so we want to help our citizens get their mobility options, and we want to manage our agency risk. So we need to release all we can at the lowest level of granularity. We have to protect what we must including our own agency financial and, you know, statutory interests.

That said, just like Tim talked about earlier and you guys talked a little bit about how a patchwork of state laws could be difficult. I think it's a worthwhile research question to look at how state and liability laws and data sharing interact.

MEMBER MCKINNEY: You were talking about the agency example, and the voluntary concept of sharing data and incentives. And we talk about loyalty cards, obviously paying lower prices for food is --

MR. MORGAN: That's a good incentive, right?

(Simultaneous speaking)

MEMBER MCKINNEY: -- the incentive there to do that. And what other incentives and I guess other shared data?

MR. MORGAN: I don't really think I know. But I mean, anybody from the JPO have any thoughts on data sharing incentives? Have you explored anything in the policy program on that?

MR. LEONARD: Data sharing incentives? I mean, we talk

about one in a sense that -- yeah, well, I think one area where we are doing a little bit of research in data sharing incentives is in some of Marsha Pincus' work on gamification in transit where commuters get some rewards for sharing data.

I think that may be -- when I think about incentives that's the number one thing. But Walter or Dale --

MR. FEHR: What I was going to say, this implementation that we're working on coming up with these uniform data access.

We know that if data is going to move in a system like that, people that add value need to have a mechanism to recover that value.

That's fundamental in any commodity- based industry that you can think of. If you can't recover a value you add to a commodity as it moves, there's no point in participating.

So one of the things that we're building into the process for moving this data is being able to count the units of data that have moved. We're not going to come up with a value scheme or create a marketplace, but we're going to at least put in the rudiments of the accounting practice that would be needed if someone were to do that.

So as we're building this thing, we know that we need to account for the movement of data. So sometime in the future,

people would have the opportunity to recover the value they add. That will become the incentive.

MR. SHEEHAN: So related to that, the direct incentives from a mobility standpoint, not the back end processing or exchange of that data through the kind of general shared use mobility to where we're building on demand, so just measures from FTA, that's really a cool part of it.

And I kind of think you pointed towards it and that's kind of what we're looking into whether it's the transit data and the implementors of electronic payment sort of data. It's not just the data of comparing payment, it's the data of mobility of the users. Right.

So that's a core element of shifting mobility up higher I guess. But mobility and service. So that's around shared use. I assume Shaheen's not here today. I don't see her. But you know, that's a key area of hers and that's something we're working with.

COURT REPORTER: Could you identify yourself?

MR. SHEEHAN: Bob Sheehan, JPO.

MR. THOMPSON: There's those of us in the room from JPO who are lining up to give you some feedback, so we appreciate the opportunity to do that. On the policy side, we've done

some work in the past in 2011-2012 on business models and marketing models on how all this data that we've got together from different sources and use it.

And, like, they're all the same in an operational setting trying to establish the value chain of that and who gets what ownership rights balancing open data with private objections.

And customers opting in or incentive to share their data, I think, is an incredible opportunity for us to do that.

But we do have one solution. I think on the research side of our program we've been exploring how to use the data, how to store it kind of like you were saying here. Also how to protect the data.

Balancing open data policies with securing PIR, but actually using that data for re-use so that we can develop applications re-using those research data like connect the vehicle safety pattern data for example.

And then taking some of that governments and privacy protection policies that were used in the research and see how they apply to an operational setting.

So that's the other part of our data program is looking at how an operational model, either in a metropolitan area or a broader regional area like Las Vegas for example, they

currently have management centers with operational models of current data integration.

Private companies may be involved in that, how to take the vehicle data and play it in an operational environment. And then what's the value chain in marketing and business model of how that's going to comply.

Incentivization is one approach. I think we're going to see hybrids of this being developed through our research programs through Connected Vehicle Pilots and looking towards you all to help us figure out ways and mechanisms to make that happen.

MR. MORGAN: Yeah, I think there are ways to -- I think maybe one of your research questions, I'll throw it out to the group is just me sort of thinking out loud. Is it --

MR. LEONARD: Well, I didn't want to stop you from thinking out loud, but I just wanted to close the loop on the question about the incentives. We have, for example, in the Safety Pilot specifically used incentives to get research participants.

MR. MORGAN: Right.

MR. LEONARD: So that's a good example where we used the monitor, incentive, donations to school communities and schools. And it helped us get the right kind of interactions

between vehicles. So in that context also we have used --

MEMBER QUIGLEY: Oh, I actually hadn't heard about that before. So do that for me one more time. In terms of incentives, you offered --

MR. LEONARD: So in Ann Arbor, where we have 3,000 vehicles, these were not 3,000 paid drivers. These were people with their vehicles that we put our equipment into.

MEMBER QUIGLEY: Right.

MR. LEONARD: And so to incentivize them to participate in a year-long activity where their movements were being shared with the research community, we kept that information private.

We made \$100 donation for every person who participated to their school. And this was actually a fairly clever strategy because by getting people who were clustered around schools, we got people who, vehicles who were having a lot of interactions because people would go pick up their kids at the same time, they all lived in the same communities, they would go grocery shopping.

Occasionally we got interactions hundreds of miles away between two vehicles from Ann Arbor and Lansing for example.

But we would get a lot of interaction --

(Simultaneous speaking)

MEMBER QUIGLEY: That's also really clever from a human perspective as well. So I bring this book that says that you're more motivated by a charitable action than you are by -- you'll decide yourself. So I don't need that \$100, but if you know that you're doing it for something else, then you're more apt to --

MR. LEONARD: You know, this is especially not knowing the areas where people are relinquishing their data without that thought is the occasion.

MR. MORGAN: I agree with that. I think there's some things to learn from other disciplines, I guess, is really the way I feel, right? So a lot of the cool data sharing models and brokerage models that I have seen are in the health states.

And I think there are places to learn how those incentive models are set up and what the value exchange looks like. So I know there are some people who do marketing as a business here.

Okay, and I keep thinking about what those marketing models need to look like and what the incentive models need to look like would be a worthy sort of area of exploration. Right?

I also think there might be some interesting questions about connecting technology acceptance with those terms and

transparency, and the ability to control your data.

So understanding more of that lifecycle motivation as we address the technology acceptance questions and how executives can help us break into a current acceptance but then also help us maintain all that we need to do around making sure that folks understand where everything's going and demonstrate some control over it.

VICE CHAIR WILKERSON: There are still some really good examples in Japan and other areas where they can get data from vehicles because the vehicles that are being used in certain perimeters in the city, you might get a free use of a vehicle while you're driving within Toyota city so that you don't have to have your vehicle come into that congested area.

While you're in that city, you can take a car that might be free as long as you plug it back up. And so there are ways that you can actually provide incentives from an environmental standpoint that reduce congestion but also enable you to get data, reduce congestion.

The other thing I would add is we should also learn from -- take some lessons learned from things that did not work from data such as issues we have with people and their credit reports, right?

So people are concerned in that all their data is in Equifax somewhere, right, and they have very little control of it. But people make money from it.

So when there are violations, they have to be reactive. And so if we can empower consumers to be able to manage that data on the front, they might be doctors, which will enable the technology to come out to market much faster.

MR. MORGAN: Right, I agree. Yes?

MEMBER WEBB: You gave one example about the --

(Simultaneous speaking)

MEMBER WEBB: But have you either had somebody come to you or heard anecdotally what those silo managers because of looking into that data saying wow, this has helped us do this.

MR. MORGAN: In terms of, like, connecting --

MEMBER WEBB: Exactly.

MR. MORGAN: -- data sets? No. That is something I would want to explore. Right? Talk about the model and all the various interactions.

I'm really interested in whether there are spacial-temporal relationships between workplace violations, transportation accidents, and other environmental factors. Right? We're not set up to do that kind of analysis today.

We have programs inside DOT, but we try to approach driver safety. So we quickly understand these kind of relationships to help law enforcement reallocate resources more effectively and to address the dual problems of crime and traffic safety. Right? From a home and safety perspective.

So this is where we get it. We need to do more getting. All right? We need to build a culture of building these connections and not just have one-off policy initiatives. It needs to be embedded in the way we do business.

So part of my job is to really identify those kinds of places. Other places where I think there's opportunity for technology to help is with commercial motor vehicle operators and managing their health.

They're not taking 10,000 steps, right? And they have particular kinds of work related injuries or conditions that they manage with prescription and non-prescription drugs.

Okay, without having the regulator come in, what are the tools that we can give to that community to help them better manage their fitness, their fatigue, their conditions because they're not in a place where they're going to access healthcare necessarily, or they're not going to get the kinds of workout that we think the general population is going to need.

I think this is that connection between health and safety, right? So when you start drawing connections between us and NIOSH and OSHA, you know, together we can look at that broad spectrum of data and help the technology community see the opportunity to invest in this healthcare.

MEMBER MCCORMICK: What is the capability, and I don't know how you measure this, but how capable are the state and federal entities in terms of, assuming they have data from someone, how you can talk about harvesting it or managing the data itself.

But how capable are they of extracting useful knowledge out of it, the type of analytic tools they have. Are they various levels of sophistication or are they very linear in terms of what they're seeking to find?

MR. MORGAN: There are varying levels of sophistication now, all right? I don't have the model in front of me, so it would not be practical for me to say that right now.

I think there are really cool examples of places where people are trying to do new things. So at the Federal Reserve, our Reserve Board, their job is to feed Congress the data so they can figure out what's happening and form monetary policy that has become more prevalent for people in our Congress, and

the Federal Reserve Board's statements, I recognize that.

So part of their job is to wrangle data. But you know, they're looking at other federal agencies' data and it's a lot of data, right? The Bureau of Federal Statistics is not granular enough. A monthly number is not the same as a daily number.

So then we're looking at acquiring completely different data sources, like LinkedIn connections and job searches as a way to proxy what's actually happening in the economy. They call it the Now Connect.

In the financial services world, like, they train people to do this, right, they call them quants. And their whole job is to look at all of this really detailed, highly dimensional data and extract some sort of knowledge on it so they can come up with an investment strategy or see what's happening in the economy or figure out where to place a hedge fund manager. They train these people like that.

We kind of train some people in transportation to chomp on data and draw conclusions. Right? I think the place where we do it the best is with our transportation planning.

But I think there are some basic work force issues that we need to work on to help people have those kinds of parallel

skills. Mr. Schromsky?

MEMBER SCHROMSKY: So you mentioned on the financial because obviously there's always exploitation one way or another, right, profit/loss. Just curious when we gather all this data, is there equal access to the data? You mentioned financial, right, sensing it's in a great location. So we have data from the telephone company, certified solutions we're putting certain offices and getting it in milliseconds or fractions of time.

I guess I could correlate it to statistics, whatever it may be from the Fed, if I get it faster than he does, I might be able to make a bet maybe or a hedge or something like that. So you mentioned that. Can you --

(Simultaneous speaking)

MEMBER SCHROMSKY: So when you sponsor, I'm just thinking from FAR and procurement. So when you sponsor data-palooza, you mentioned NHTSA was involved and DOJ and this company, or this individual can say hey, I got a product. Are they barred from selling say for instance backing to DOJ or, you know, how does that work when you start getting --

MR. MORGAN: I don't think I understand the issues. But maybe we should talk about --

MEMBER SCHROMSKY: Yes, I'm just curious if when you're doing --

MR. MORGAN: We don't sponsor any of it.

MEMBER SCHROMSKY: Okay.

MR. MORGAN: We convene the meetings. This dude, this guy doesn't do a thing. So there's no real, like, procurement method issues.

MEMBER SCHROMSKY: Okay.

MEMBER QUIGLEY: The founders, they originally did an event, and then --

MEMBER SCHROMSKY: Correct. It just gets, you could see the exploitation of data in getting information as quick as possible. Right? So it's --

(Simultaneous speaking)

MEMBER SCHROMSKY: -- how do you not give people access to the data at all at any given time. So if you gather something, right, whatever company has big data, right? They're doing big data because they can make money off of that data.

So if I can get the information quicker and faster than the next individual, the government collects this information, government secures stuff and release stuff, right?

I mean, it's done correctly you only allow certain

bandwidth out to get to them so everybody, you know, if there a farmer who has a very good idea, she has a good idea compared to say cultural business, I want to have the same access to the same data at the same rate compared to somebody else who may have resources. So I'm just curious to see if it's like that at that level. We can talk about it off line.

(Simultaneous speaking)

MR. MORGAN: I think I need to know more about where you're at because there are a lot of different things going there. But data sharing strategies generally, you know, certainly I want my data.

If I have a car and I have my own idea about that kind of stuff and I want to make my car better, there's nothing that prevents that kind of preference. And if that farmer could find a way to share that in a way that makes, they want to start a business or they want to help their community, there should be pathways to share.

And I don't know that we necessarily have the right incentives or thought processes around ways to share. You know, and it's very individual, right?

I mean, there's really a national conversation about how we help broker these kinds of sharing we talk about or sharing

of personal or private sector information for public purpose is very one-off.

And I think if we want to be successful in the 21st Century, we need to find the policy issues around that and build incentives to break down those barriers. And we should do that together. So I think about it --

MR. SPENCER: This kind of touches on the area that we're just getting into. The rights to data versus the rights of data and the IP rights that surround it. You know, there's qualitative. You know, do you have access to the data or do you have a right to the data?

And who has IP rights? I mean, you can take the data and evolve something, does that constitute IP? So there's a lot of untested waters that we're just starting to delve into, especially in the mobile transit area.

MR. MORGAN: Interesting point. And one of the various memos talks about properly licensing government data. And of course, the U.S. government, and by extension the domestic copyright under 17 USC 105 -- It's sad that I can quote this to you, but I've been living it for a couple of weeks working on policy.

I hope we never actually explicitly mark our data sets,

or tell you we mark the sets. Then we get into the transit and state and local world. Sometimes those Governments decided to reserve copyright or require citation. And they don't know. They're not subject to Title 17 U.S. Code.

But they don't necessarily say that they're doing that either on a data set by data set basis. So all those transit agencies are publishing logs and schedules and bus locations, and there are no clear terms about what you are allowed to do with that data.

Is it copyrighted? Do you have the opportunity to remix it and make a derivative product? Nobody knows because we're not actually telling you what the rules are. And we have to be better at telling you what the rules are. And we're going to try to start doing that at the federal level.

But now that we have more and more of this going on, like, telling people what their intellectual property rights are is important. And pursuing intellectual property rights, we've had this discussion in research for a long time, right?

But pursuing intellectual property statements that foster the kind of innovation that we want in this space will be very interesting. And it's only going to get more important as we get more control.

MEMBER MCCORMICK: If I can just throw out, deriving the models from publically available data is something that you can claim copyright intellectual property, too. The question comes in where you're deriving knowledge from data that's not publically available.

MR. MORGAN: This is true. And I think, yes.

MEMBER MCCORMICK: And it's actually that also is very culturally-defined because, you know, Alibaba is putting aftermarket devices in cars in China, harvesting all kinds of useful information about where they travel and comparing that with their sales database so that if you typically shop for shoes or something and you travel a route that has a store on it, they'll create a relationship with that store and then email you a coupon or something.

And since it's perceived as adding value to it even though culturally you couldn't necessarily do that here. It works over there.

MR. MORGAN: Right.

CHAIR KENNER: So I had a question similar to what you may have heard me ask the last speaker relative to working with other government agencies.

So as an example, and if you look at the NHTSA database

for safety and safety compliance recalls, right, it's an open database and probably, you know, something that is the benchmark for the planet Earth and no one else has anything like it.

But if you were trying to look up, for example, an emissions compliance recall from the EPA, you know, that data may or may not be -- well it's certainly not up to date. Maybe it's six to twelve months out of date and may not be accurate, versus the NHTSA database which is, you know, incredibly accurate.

So the question about, you know, that relationship. And then a second one involving that kind of discussion is back in the days of the Toyota, pun intended, acceleration issue, NHTSA was asked to work with NSA and NASA to improve their analytics capability.

And it's clear that that's ongoing and improving. However, let's just say that they developed the best analytics tool ever, some of the sources of data, it's just the complaints coming to NHTSA maybe isn't as rich as data as if, you know, every auto maker had that same tool and then could integrate in their own warranty data, social media, you know, customer call center information, and so forth.

So part of it is, you know, what's the cooperation with other agencies and the DOT, and then what thoughts are there

that if the DOT develops a great tool that it would actually go the other way and share it with others if it meant that we would, you know, be better at detecting potential safety issues.

MR. MORGAN: You know, my hopes and dreams were -- I will share my hopes and dreams. We do try to coordinate recall information as much as possible across the government.

Back when Aneesh Chopra was Chief Technology Officer of the United States, he was big on getting recall and safety data aggregated to the various recall speeds from all across his people.

And at the first safety data-palooza, we featured various companies that were chomping on recall data from all of the agencies to try and add value to it to help keep consumers safe, folks like We Make It Safer, Safety Book, SAP Recalls Plus.

Certain online merchants use our data too, but we'll never disclose that because that's their private sector prerogative, but we know it happens. So yes, we're trying to coordinate on those kinds of consumer protection issues through things like the Safety Data Initiative.

And if we're missing stuff you should email me and tell me what we're missing. Sometimes the speed of the information that goes to one of those agencies is dictated by their

regulatory authority.

And it is not a technology problem, it's a policy problem.

And this gets into how we define 21st Century regulation, which is a place that I would love to spend a bajillion hours on, but there's something blocking that we need to do that they're really in hopes and dreams world.

We talk a lot about improving our capabilities. And a lot of the technologies around text analytics, and all the tools that go around for text processing and those kinds of things, tend to be open source tools.

And we have not as a department made a clear commitment to developing these in open source and disclosing that open source to where it makes sense. We should because software is data too. Right?

And we do need to get to a place government-wide where we start to think about that. There are movements afoot, through efforts like the U.S. Digital Service which is also in the President's Budget and you guys should totally check out, and the 18F group that has been built at GSA that is a totally open source shop and developing in the open.

Similar on the website kind of thing, but they're a good example. They seem to start figuring out some of those

technology and policy questions in the way agencies operate.

Building those bridges for what makes sense for private sector sharing or regulated entity data sharing -- my brain isn't even around it so I go nuts. I love to learn. But at the very least, the software tools.

I think a lot about what, you know, if we're going to get to a place where algorithms are going to start regulating things, what algorithmic transparency needs to look like.

And that really does mean disclosing sources, disclosing source code and methods to be, you know, because somebody's going to FOIA your algorithm one day, I guarantee it. And what are you going to do? And I don't know that we're in a position to figure that out yet.

Some of these technologies are black boxes and they become matrixes or results. How do you know what you're getting in that proprietary algorithm that you just bought?

CHAIR KENNER: So this is a follow on question. So given that this group is chartered to look at the, you know, the research parties and funding, you had mentioned a couple things about hey, this would be an interesting thing to research.

What do you think are some biggest gaps in, you know, the research funding that you have to continue to progress your

activities?

MR. MORGAN: I don't have any research funding. That's sort of like data cheerleader sometimes. My only funding is my salary, and you're not getting a penny of that. So I don't think I have enough information to answer your question to be honest.

I think that's part of this discussion, and I don't know if you want to say anything about it?

MR. LEONARD: Well, we're not after your salary.

MR. MORGAN: What?

MR. LEONARD: We're not after your salary. But we are after your brain. So we fund a lot of activities across the department. And we are, if you recall from our five year plan, enterprise data is our number three priority in the list of priorities after connected and automated vehicles.

So this is an important area for us. And we're just at the start of that five year plan, so I think that's one of the reasons that this is on the agenda. We have a lot of questions.

They're not all just related to connected vehicles and automated vehicles, which are both going to generate and acquire a lot of data. But this gets into some things we've talked about in terms of the Internet of Things and where the Department

of Transportation fits into the Internet of Things.

And it gets into issues such as, you know, the fact that the Department of Transportation and Greg's organization in particular has BTS, which is one of 13 statistical agencies in the US government.

And what is our relationship with that data and data elsewhere in the federal and the private sector and how do we bring it together not just to advance connected and automated vehicles but things like mobility, energy efficiency, and our governmental interest.

And you had asked the question earlier about energy in EPA. We have far more work going on and collaboration going on with energy right now that we do with EPA.

But we're hoping to expand across the government in terms of those issues that are slated for transportation because I think at the big picture, the Secretary's message was it's a lot more complicated than just roads or bridges or trains or buses.

It's a complex system and data is an integral part of that, and we're trying to figure out how all that relates to intelligent transportation system, which is really the introduction of information technology into the system. So

it's all about data. And I think this is a space we're just starting to explore.

MR. MORGAN: Yes. I mean, transportation is one of those interesting research fields, right? It requires a lot of background research that goes into it, there have been, I think as we've come up with different policy options to do things like travel management and those kinds of things, we start to see where transportation and behavioral economics intersect. Right?

And those kinds of micro-incentives as policy options that would be enabled by the new amount of detail and granularity in our data as we move toward an intelligent transportation system.

I think we have the opportunity to design much more micro-incentives than macro-incentives. Dynamic road pricing is neat, but it's for everybody. What about you? What are you willing to pay?

Are you willing to pay micro-payments rather than those tolls? What does that mean for revenue models for transportation operators? I think these are economics questions, not engineering questions. But I think they are useful for informing policy options that aren't data use.

MR. LEONARD: Dan, I've got a question for you. In the world, and you're more connected to the data world, do you see on the horizon what is a current discussion about legislation, regulation, litigation over data ownership, data privacy, and security violation issues related to data disclosures? Do you see on the horizon that could have an impact on transportation, and specifically on the ITS portfolio?

MR. MORGAN: I think we need to be paying attention to what the FTC is doing there, because I think that's where it's going to happen. The White House's Office of Science and Technology Policy put up their data privacy and cyber security report, which is a good -- it's a very expensive synopsis of all of those kinds of questions, and I think it's a worthy report for folks to read.

If you haven't seen it, we can make sure that everybody gets a copy. I feel like it's a lot of energy outside of transportation on this that we do need to pay attention to.

But I think, you know, the data privacy rules or regulations are going to come out of the FTC eventually in their big, broad consumer protection sort of way. And we need to make sure that transportation issues are represented with varying support from those kinds of organizations.

CHAIR KENNER: What's your thoughts regarding right now a lot of the data that's collected in the DOT is data that's all historical data. Somebody puts in a complaint, you know, using the term VOQ, right, into NHTSA to say yesterday or a year ago I had an issue that I think is safety-related.

And even in auto makers, right, we use warranty reports. So someone experiences, you know, some issue that they don't like, they go to the dealership. The dealership provides a remedy, and then they come back to the auto makers for payment.

And then we become, you know, aware of the issue. Right? Or if you use the databases for accidents, injuries, and fatalities, again that is at this point second to none and the model hopefully that other countries that are developing such things, like China, would use.

But they're all, you know, they're history books, right, to look at. And then --

MR. MORGAN: They are all slow batch data.

CHAIR KENNER: Yes, exactly. What's your thoughts about then, you know, going into whatever your term is for the alternative to that kind of data?

MR. MORGAN: So I think a couple of things. One is we have for a long time collected slow batch data and used it to

form an eventual policy. Right? So it's really dimensional, kind of --

(Simultaneous speaking)

MR. MORGAN: -- big data. You guys like big data are like ah. We have this data that sit in giant databases. Putting it in Excel is not big data. Stop. Right? But -- Operational kinds of stuff. Detailed, and everybody has the idea about big data of our day.

I think charts are a lot more relatable to our detailed dimensionality, right, that's what we're talking about. Clients sent really lots of information built into the timestamp.

All right, so that's what big data is to me. Sometimes it's because we haven't asked for the data faster. We have like a rule, thou shalt submit some things to us. Right? We tell you give it to us, please. We don't ask for your data. Right?

There's a regulator, right, we need a regulatory individual for these things. You get slow batch data. And I think sometimes we're afraid to ask, like, would you be willing to share this faster, would you be willing to open this on your own.

Different statement, different approaches to sharing. You

can get full data sheets off their Website. I think they're the only state that I know of that has their full black box, similar to ours, as open, free downloadable data, no hassle or arrangement or nothing. Virginia put a password on theirs for verification.

You know, we should have a general conversation. And NHTSA has, like, a bunch of states sharing data with them. But we've extended confidentiality to those states because of their liability laws.

People like to prevent data infrastructure, right? That becomes, we need to sell us from the other policy problems if we're going to get that data faster.

CHAIR KENNER: Okay.

MR. MORGAN: Right? Are we willing to have a conversation about hey if you want to share it, we'll be glad to take it faster, right, so that we can do these other different kinds of analyses that you're talking about.

But we said to be sort of in that sort of risk-based ideology. You can't be risk based and agile if you're working on annual data. We have to think differently about resources.

MR. LEONARD: So we have slow, fat data and we have real-time, fast, nimble data, when do we get ahead of real-time

data? And by that I mean using both slow data and current, real-time data to be able to project, you know, make forecasts that can be acted on in real-time?

And I think about this in the context of automated vehicles, traffic management where you really have to combine, for example, weather prediction with a special event and routine traffic congestion to make recommendations that vehicles and people may have to respond to in order to avoid the traffic jam in the making or congestion in the making.

MEMBER MCCORMICK: If I could weigh in on that? I just authored a paper on event stream processing with the institute because we're looking at you have data that you mention, like, you know, kind of data of information we know.

But you're going to have to characterize by weather, time of day, year, traffic load, everything else in order to get an apples-to-apples comparison.

And we then have the ability to stream data off of a moving vehicle. There's two things that you can do with it. You can process it immediately which is what, if you can see the safety signal from the VSRC, that's what it's doing.

Or you can stream it to the Cloud, have that extract the data and use that with predictive analytic tools in order to

get ahead of the situation so that these three people's cars might have the ability to communicate and receive information, but these three people don't.

So you push that off, you do the event stream processing.

You're not going to help the person that's right behind the person that just hit black ice, but a half mile away, he gets it through the LTE or 4G on his phone that gives him a warning that says this is what's going on.

And that allows then when you're seeing who's reacting to what information at what radio ranges away from the actual point is now where you have the ability to say now we can do predictive, that we know that Kirk Steudle's, you know, mixing bowl at 275 and 696, that it ices on certain roads at certain times and we have a sign there that says be careful of ice.

And you may even have a live signage that sits there. But now you're able to say yes, it's actually occurring and it's occurring not just at this specific GPS location, but it's migrating in different directions. That could be because of wind, it could be because of some momentary, you know, fog that they had whenever that is.

So it's kind of a multi-step process. You can't -- from the good doctor I worked with on the paper -- you can't go

directly from streaming the data off to predictive.

You have to have time of getting that information and determining its validity and robustness before you can then say yes now we can give proper warnings, or eventually real-time control because it's able to handle that information.

MR. MORGAN: So let me expand on that, and I'll just share an analogy. Everybody know how website ads work? Yes?

CHAIR KENNER: Why don't you give us the -- just to make sure.

MR. MORGAN: Sure. So there are all of these brokers that think that they have the best algorithm to tell you which ad to show somebody on a website. Right? So Facebook had all this cookie information and profile information about you.

And to get all math about it, they have a vector. This ad broker has a whirlpool of ads. And they have a bunch of matrices that you can multiply that vector against and tell you this is the ad we'd like to show someone.

This happens in milliseconds all the time everybody does something on Facebook. And there is money changing hands. This stuff's got to be right. Right? Because they're bidding on what ad to show first on that site.

That kind of modeling approach, right, is not relating

to transportation. Okay, there is sort of a way to change operation of these processes and models that aren't going to be able to do what we are saying.

And the time frames of the decisions are around target communicating versus on that day maybe changing the way I go through clouds versus in the future what I want to tell people about parking options, carpooling options, and that kind of stuff.

And setting prices at the HOV lanes so that I try and move traffic over there because people are going to be traveling together, so on and so forth.

I am going to need to do an analysis on my decision making to build those kinds of models and getting those to have straight data, right, of all of that events run through our decision matrices to come up with a series of policy options as different ways to go.

MR. LEONARD: But I guess this, you know, I think in order to do some of the things we're talking about over the next 30 years, particularly around automated vehicles, we can't have a system that merely identifies the first vehicle to encounter the black ice.

We have to have a system that does what we would do as

an informed driver saying gosh, you know, yes bridges do freeze before roadways, and I know it's 26 degrees out, and I haven't seen a plow in ten minutes so the road ahead might be slippery.

I better slowdown 20 miles an hour so that we don't have that first encounter.

Or when we have that first encounter, we don't have that first collision, we don't have that vehicle spinning out of control. And so it's if we're going to have machines making some of these decisions, than we're going to need to have real-time, predictive analytics that are going to make the right decisions. Or we'll simply have great analysis of why the collisions happened.

MALE PARTICIPANT: Well, just like you drive this particular route so you know where it ices up the fastest. Your system knowledge has to gain that over time, as well.

MR. MORGAN: Right. I think this is applying to machines, right, because every time that exchange might happen, right, and it gets filtered up, that adds to the quality of the experience, make it better information.

We need to be able to build that and, you know, and we need more updates to the cars to do a better job of data. You know, but the Transportation Agency has particular things that

they would like to share as information to the decision policy pertaining to the cars that, you know, how does the car pick up?

How do we update our car models that we provide with that kind of risk-based model to the car. I can see it evolving, but this is real things that we should think of.

MEMBER DENARO: You know, this is another candidate for the discussion of this public and private responsibilities because innovation can happen again. So to your point going from analysis of what happened to getting to prediction is a tough problem.

There's a lot of very smart people out there who would like to work on that problem and are working on that problem.

It just so happens I had a conversation from my venture part of my life with a start-up company who's working on that very problem of being able to predict when that road's going to freeze and what it actually will effect tire adhesion and that sort of thing.

They've got some technology to get at that problem as opposed to the kind of data we've got today. So I guess my point is that some of these needs that we have right there are good examples of where we want to share data so that we get

the community working on these problems.

It's, you know, I mean, private industry, if there's a revenue opportunity and profit opportunity, we're going to find some interesting solutions to that as opposed to nothing.

So again, there are things that we desperately need the government to do and to know whether they are things that would benefit from the private sector really providing innovation and a lot of the work on the problem.

And what David brought up, by the way, is a great example of that. It's just, we had this discussion with this committee for six years now about making the data open because there's people that, you know, are out there who want to innovate and do things with it. So this is one of those areas where I think we have to get it right.

MR. MORGAN: And as the agency that wants the results of that because --

(Simultaneous speaking)

MR. MORGAN: -- the system that you operate at state, right? What are the policies that need to be in place? I think there's a lot to learn from as we figure out these other sort of mobility actors, jump on the scene and we're forcing data sharing to happen as part of the regulatory.

Something's got to come back to us to help us. Right? Not going to destroy your business model, but the condition of operating here, for doing this cool thing is some feedback loop. Okay, that's a smart purpose for regulation.

MEMBER SCHROMSKY: Quick question. I mean, for example, there's a monetary reason, there's revenue to generate. So that's why it's happening in milliseconds. Right? So whereas you go to the public domain, revenue is not necessarily a huge -- it is a motivating factor, but it's not as much.

So even if I had that data, whose responsibility is to push out to the citizens in a timely manner and do you have the resources to do so if we have a weather-related, whatever it may be?

Like, who's going to own that, who's going to be liable for holding it in a timely manner because obviously there's some liability issues, you know, more is it better?

MEMBER QUIGLEY: Insurance companies.

MEMBER SCHROMSKY: Insurance companies.

(Simultaneous speaking)

MEMBER SCHROMSKY: -- private institutions that would take that data would have a better use or incentive to do it rather than a, say, public institution. I get all this data, right,

who's going to make the lab, who's going to push it out? Who's going to do all that stuff, right, because it's coming out of AccuWeather.

MR. MORGAN: We could have a long discussion. I'm going to put it back on, all right, because this isn't about public versus private versus other actors. The 21st Century thing makes completely different business models for the way we approach funding for this information.

And we have to think differently about whether or not the agency has the resources I don't think is the problem. Right? You know, you're going to be in the business of data and information. Accept it, right?

And you're going to have to go out and figure out how to move that data and information your way that gets the information to all of the sensors and vehicles that are out there on the road.

These are the 21st Century public/private partners that are going to be involved. It's not about building a wall and setting a crisis interval; it's about getting the data that makes the roads safe and get those operators the information they need to be safe on the road. It's a completely different vision to be modeled.

MEMBER SCHROMSKY: But the idea --

MEMBER QUIGLEY: I think he's saying -- yeah, I think

--

FEMALE PARTICIPANT: Can you speak up?

MEMBER QUIGLEY: I mean, you know, I'm trying to think of goals. Now somewhere along the way, I'm sure DOT from state or county actually --

(Simultaneous speaking)

MEMBER SCHROMSKY: -- we work with certain agencies that they remember whether they're done. When we see it just most recently with the National Weather Service, right, when you have huge problem out there because they got the prediction wrong.

And people were mad, right? Hey, we were supposed to get 12 inches of snow when we get a dusting or six inches, which is still a lot, but -- I don't know what's going on with this.

Obviously with this, there is an incentive that someone should do something.

I don't need people to be mad; I don't need the tons of staff because not only is there very different information. I guess, I believe in this. I just really worried if it's a county or city, how do they get their information out there,

do they have the resources --

MEMBER QUIGLEY: What's their motive for getting it out there?

MEMBER SCHROMSKY: Exactly. That depends -- maybe that's not the best way. So maybe that's an algorithm for fiber optics.

(Simultaneous speaking)

MR. MORGAN: And this is the problem. People think about the weather websites and not how transportation relates. We have to, like, change the way we think about this stuff. Right?

This is about different bytes going over transport layers, and that's what it really comes down to.

So you know, government agencies have not totally figured that out. I mean, we have some idea, but they are not. You're going to build a form on top of your data and anybody can get at your data, right?

Like, this is, we've been talking about services, architectures, and decoupling the interface from the data for years and it's still super hard for some reason, and we need to overcome it. Right, bottom line.

The strategies for doing this are getting easier and easier but we need to think about how we liberate that data from the interface.

So we've been trying to push this through the Open Data Policy and those kinds of things to get states and localities to understand that decoupling is central to not having to be in the business of building another app, another website, another portal.

Nobody likes your portal. They want your data wherever they can get it. So it's all about APIs.

MR. SPENCER: Just for those who, I didn't get to introduce myself, I'm Jess Spencer, I'm with the FTA. And Rob had mentioned the mobility on demand discussion. So I'm going to address your question here.

What we're working on, what we mean by mobility on demand is really situational mobility. You know, we think of ourselves as vendors of mobility, and especially in transit space.

So I'm going to paint a picture for you. I'll go to Home Depot, and I took the bus to get there because it was right on the fixed line.

But I bought a couple of 2x4's, I'm not going to ride that bus. So with the rise of mobility managers and shared use mobility and things like that, now what I can do is pull out my phone and it's going to give me my range of options. The costs, the time of commute, range.

So obviously if I've got a couple of 2x4's, I need someone with a pick-up or a table. So I can go through that menu and pick what I need and, you know, address the cost electronically all through the back office.

Now think of the data that's on the backlog -- you're going to get terrestrial, temporal data and all these things on OD and demand for more. And that's how the future opiners are going to be able to design and look at that, the mobility options and the infrastructure.

So that's what I'm trying to, you know, just talk a little bit about how we're referring to such this afternoon on what transits do in discussions.

CHAIR KENNER: All right. Well I think this is a good time. Dan, thanks so much.

MR. MORGAN: Thank you.

CHAIR KENNER: As we anticipate. It's a lot of interest in the topic and we could take the whole day doing nothing but talk about data and the future of data. So thank you very much.

All right, with that, committee members, lunch is outside.

(Whereupon, the above-entitled matter went off the record at 11:50 a.m. and resumed at 12:51 p.m.)

VICE CHAIR WILKERSON: We're going to go ahead and get

started. Steve has a call, so I will go ahead and just start off this session. We have Jack Hall here, from Contra Costa Transportation Authority, who had agreed to stand in for Randy Iwasaki. So we're really delighted to have you.

This is section is, you know, we're starting to get a little bit of the meat of the discussion. When we had the last meeting, we came up with a list of topics that we specifically wanted to discuss as possible topics for breakouts for different subcommittees. And so we're starting this part of the conversation.

So, Jack, we really appreciate you being here. We hope that there will be some really good exchange among the ITS PAC committee on these key issues that we want in the discussion including public transportation, the shared use mobility and freight industry work, topics that we thought should be part of our discussion and potential topics for subcommittee breakouts for later today. So it's all yours. Thank you so much.

Multimodal Transportation

MR. HALL: All right. Thank you. Good afternoon. I am the ITS/CV program manager for Contra Costa Transportation Authority. And our executive director, Randy Iwasaki, wishes

he could be here. But he has to go back to our agency for four weeks. And we thank you for allowing me to present our ITS multimodal projects and programs to you.

First, a little bit of real background of who we are, CCTA. We're a public agency. We're located in the San Francisco Bay area. One of our goals is, as a congestion and management agency responsible for planning, funding and delivering transportation projects and programs that connect communities, foster strong economy, increase sustainability safely and efficiency in Contra Costa.

We are also a self-help county. In 1988, the voters of Contra Costa approved a one half cent sales tax for transportation which we manage.

This slide shows what we do. That includes a focus on safe routes to school, transportation for local communities, local street repair and carpool/Rideshare programs.

One program of particular interest is the school bus pass program that we run in West Contra Costa. We provide free bus passes to lower income school kids so they can get to school safely.

The program is funded through the Transportation Fund for Clean Air. The fund generates approximately \$22 million per

year by collecting a four dollar surcharge on motor vehicles registered in the Bay Area.

The TFCA program funds a wide range of projects including the purchase or lease of clean air vehicles, shuttle and feeder buses to train stations, ride sharing programs that encourage carpool or transport, bicycle facility improvements such as bike lanes, bicycle racks, lockers and arterial management improvement to speed traffic flow on major arterials, smart growth projects and transit information projects.

I heard in Florida they had some issues with passing the sales tax measures. But in California, we're called a self-help county. There are 20 self-help counties in California, and there's a total of 58 counties all together.

This record indicates that citizens of that county voted to tax themselves to fund transportation projects and programs. Our voters approved the one half-cent sales tax in 1988.

And when doing this, they voted on a transportation expenditure plan that provided funding for a BART extension, freeway improvements and better bus service. This is just to name a few. The program generated an estimated \$1 billion.

So in 2004, before that first tax measure expired, it was due to expire in 2009, we asked the voters to approve a

continuation of the half-cent sales tax. And this goes until 2034.

The voters were pleased. They saw where their tax dollars were going, and so therefore they wanted to approve the continuation. And they approved it by 71 percent of the vote.

The voters knew that they could actually see the transportation improvements. The measure is estimated to generate \$2.7 billion over the 25-year life.

Here is an example of one of the projects that was in our transportation expenditure plan that was constructed. This is the Pacheco Transit Hub.

And it was funded using multiple fund sources. So not only did we use tax dollars for the projects, we leveraged those tax dollars at three to one. So a lot of times we used the sales tax dollars to complete the environmental and design phases. And then we used state or federal dollars for construction.

So this transit facility is state of the art, with electric vehicle charging stations, video surveillance and smart-parking. So the smart-parking was provided by Streetline. And it uses their Parker application. The application can be downloaded onto a smartphone device, and

it shows how many parking spaces are available at any moment.

This slide shows a monthly report that the City of Martinez uses. In Martinez is the agency that actually owns and maintains or operates the transit hub.

So this report can be customized. And this particular one shows average occupancy, average duration and peak parking information. So we're working with Caltrans to provide parking availability information on the variable message signs along the freeways at I-680 and State Route 4, so drivers can see if there's any space available and then get off the freeway and park at the transport facility.

MEMBER QUIGLEY: I have a question.

MR. HALL: Yes.

MEMBER QUIGLEY: How long is that Amtrak lane in Martinez for those that are going to, like, San Joaquin Valley and so forth?

MR. HALL: Right. So this is our initial pilot. And we want to take this throughout the county. And then hopefully it will grow nationwide. So right now, the big catch is trying to work with Caltrans to get this information out to the freeway.

So our director at CCTA used to be the director of Caltrans.

MEMBER QUIGLEY: CalTran, right.

MR. HALL: So that helps a lot --

MEMBER QUIGLEY: Yeah, he doesn't know this.

VICE CHAIR WILKERSON: So that's a third party --

MR. HALL: Correct. Streetline is a similar company.

I think Zia --

MEMBER SCHROMSKY: Yeah, he is. So you're talking a Rideshare program?

MR. HALL: Excuse me?

MEMBER SCHROMSKY: A Rideshare?

MR. HALL: No, no. We actually paid for this to install it. We're trying to get technology out into the hub. So, yeah, we won't have any ride sharing at all.

Now, potentially, it could really help the city. They don't actually charge for parking at this facility. But you could. We want to expand this to the City of Walnut Creek, especially also to Lafayette. There's differences and common issues.

MEMBER JOHNSON: And if you expand to those other cities, I'm sorry, that would help with the overflow parking with BART? I'm thinking when you were talking about the week and so forth.

MR. HALL: Right. We're working with BART actually, we wanted to get these out within BART and the parking. They have

a system now where we come in and they just have an estimate of how many spaces.

MEMBER JOHNSON: How many parking spaces, right?

MR. HALL: But we want to actually, and you could actually reserve spaces with this system. I mean, I think LA has been a part of this.

MEMBER JOHNSON: Right.

MR. HALL: So parking is a big deal to us, because people are driving around looking for parking spaces. And we feel this could really help. And again, this is just a step to what we see the future being.

So we are also participating in a very wide car sharing program. CCTA, our part of this program is providing a fleet of approximately 14 vehicles -- they're a mix of hybrid and electric vehicles -- located near a BART station.

And the goal of this program is to reduce car usage, improve the environment and enhance quality of life for those participants in the program. And reservations, again, will be made through smartphone and other applications. It shows that it should be globally reaching, but that's not Contra Costa.

(Laughter)

MEMBER QUIGLEY: So it's not, I'm sorry, it's not yet --

MR. HALL: This is an active program in the Bay Area. And we are just rolling it out in Contra Costa right now. And it's going to be in the Richmond area in their BART system.

MEMBER WEBB: And how did you find the parking area for this? Are they renting it for a certain number of hours or --

MR. HALL: Exactly; exactly. It's a subscription. And you sign up.

This slide shows the Carma Carpooling project that started as a pilot project between CCTA, NAPA and Solano Counties. It was initially funded through CMAQP, which is the Congestion Management Air Quality Program.

It now has become a permanent component of our MPO, which is the Metropolitan Transportation Commission 511 Rideshare program. As part our I-80 project, Carma will test technologies to count riders waiting at the park and ride lots and notify single occupant vehicle drivers during commute times.

When a connection is made, a rider is picked up and now the carpool vehicle will be able to use the less congested carpool lanes on I-80. Carma is operating as a public/private partnership. There are no additional infrastructure costs. And service is fundable with most transportation formula grants.

Some other technology that Carma is testing is GPS-verified vehicle occupancy. Carma knows who is in the car using the passenger technology to track phones and devices.

They are also testing application program interfaces that allow Carma to integrate with connected vehicles, popular smartphone apps and smart infrastructure.

And it's interesting to note that we had a recent BART strike about a year ago. And the congestion was horrible. And Carma really had big expansion in sign-ups for their service.

MEMBER JOHNSON: Do you know see this for a, you know how those capital Carma carpooling are? Is that sort of targeting that market so they'll be better informed when --

MR. HALL: Exactly.

MEMBER JOHNSON: -- they make decisions? Okay.

MR. HALL: So then we talked about how the, you know, there are -- they don't run into problems such as Uber and Lyft.

MEMBER JOHNSON: Oh, okay.

MEMBER WEBB: And there's no charge, right? I mean, I just ask for a ride, and I'm standing there and a car comes up.

MR. HALL: There is a charge.

MEMBER WEBB: Oh, there is a charge.

MR. HALL: Everybody has on their phone, they have a Carma app. And then it all works out on the phone.

MEMBER WEBB: Amazing.

MR. HALL: So there is that option. We're looking at the California Partners for Advanced Technology or Transportation Technology, PATH, a research development program at UC Berkeley for Caltrans, an integrated, dynamic transit operation system for Tri Delta Transit. That's a local bus agency.

This system will include dynamic dispatch, connection protection and dynamic ride sharing. And we feel that the advances, you know, in connected vehicles and smartphone technology will actually make this system successful.

And so an example would be someone calling a bus at a transit hub so late-arrivers can make their connection or providing the last mile ride to transit riders with Rideshare. So we are working in the San Francisco Bay Area.

And I previously mentioned car sharing, carpooling and ride sharing programs will help riders get their ferry information. The original ferry terminal was part of expansion plan. This project will provide ferry service from Richmond, and Contra Costa and San Francisco. WETA is the San Francisco Bay Area Water Emergency Transportation Authority, and they

run the data in various cities.

MEMBER MCCORMICK: I'm sorry, on the previous slide, what do you mean by connection protection?

MR. HALL: So we want to make sure that they're going to get their connection, that they won't be left stranded.

MEMBER MCCORMICK: So how does it work?

MR. HALL: So you have your phone and the buses are connected. And everybody's talking and you get your connection. I mean, this is what Cal-Berkeley is working on this project for us, Wei-Bin -- he is the researcher, he works for Tom West. And we're rolling it out. You know, my understanding is that these programs have been going for a while.

And we just feel like the smartphone technology is really going to make it work, along with --

MR. SHEEHAN: Do you want me to elaborate on that at all?

MR. HALL: Yes, sure.

MR. SHEEHAN: So, connection detection. We were talking about it before, it can apply to any kind of application, whether it's just transit, tracks or freight. It's all about the impact of the delays at a port. And that delay will cascade through the system.

And so the transit application is being evaluated within

the Connected Vehicle program at IDTO, and transit operations looks at the general connection routine modes in the case of two transit services.

Say, by example, one bus is late to the stop, and another transfer is waiting for that particular bus and all the passengers. In this case, in the application, the first bus could report that we are one or two minutes late. I think the application has proven, or its feedback is one to two minutes is kind of acceptable, but five minutes is not acceptable. They report the delay to the next vehicle. The next vehicle has then the ability to wait before they depart on their on-time schedule of, you know, leaving at 8:08, and maybe delaying until 8:10. And then that's offered an opportunity with other ITS technologies to get back on schedule. Because that's the core transit objective, is to stay on schedule.

MEMBER JOHNSON: May I ask a question? Here you said five minutes is deemed late in the transit industry, and Joe could probably attest to this, generally when you talk about on-time performance, it's minus one plus five minutes for that scheduled time point. So when you said five minutes, it's really geared upon the transit entity in which it's trying to connect and they set those parameters perhaps?

MR. SHEEHAN: Yes. And you can also consider, and Jeff may be more appropriate to step in for this part, but those are elements of conditional service.

MEMBER JOHNSON: Right, okay.

MR. SHEEHAN: The number of passengers that are being effected. You know, based on data, you understand that there's a bus, you know, 30 percent of the travelers are going to connect to Bus 5A.

MEMBER JOHNSON: Right.

MR. HALL: That's a considerable number of passengers that are being affected.

MEMBER JOHNSON: And I'm sure it's time of day, too, peak flow and things like that during commute hours, standard hours.

(Simultaneous speaking)

MR. SPENCER: There are a lot of mathematical things that can go into it -- what's the critical mass. But essentially, if you're flying on an airline and your plane was delayed, they'll hold the next plane if they know there's ten passengers that need to make that connection.

Well, why we can't transit do that. And we need to make many more connections between not just bus to bus, or bus to train, bus to carrier and things like that. So we're trying

to make the connection protected for the customer and make it more attractive to those who use transit.

MEMBER JOHNSON: Okay, thanks.

MR. HALL: This is a testament to Randy Iwasaki. We've got a lot going on in our agency.

Okay, back to the ferry terminal. We also, in our comprehensive transportation plan, we have other proposed ferry terminals for the cities of Hercules, Martinez and Antioch. However, those aren't funded. But we do have some various services.

The I-80 SMART Corridor Project represents one of the most comprehensive intelligent transportation systems in the state.

As many as 270,000 vehicles per day use this corridor, one of the busiest in the Bay Area.

The project has implemented a network of integrated electronic signs, ramp meters and other state of the art monitors between the Carquinez Bridge and the Bay Bridge to enhance motorist safety, improve travel time reliability, reduce accidents and associated congestion and allow drivers to make informed decisions in the available --

Project activation is scheduled for this spring, allowing ramp meters and real-time message signs along the corridor to

optimize roadway operations and improve safety. Information will be integrated with and managed with the traffic management center at CalTrans Bay Area headquarters in Oakland.

Additional improvements include adaptive ramp metering on 44 on-ramps to reduce merging conflicts and manage traffic volume on I-80. As mentioned earlier, Carma is working on using information to optimize carpooling opportunities. In one of our upcoming pilot projects, we want to have this real-time information sent directly to connected cars.

MEMBER WEBB: Did I hear you say that, seeing the speed limit signs up there, they can change, guys are thinking about --

MR. HALL: That is not enforceable. But that is a big issue, speed harmonization.

MEMBER WEBB: Right.

MR. HALL: But we've worked with the Highway Patrol and we cannot enforce that. And we will be going live next month on a Connected Signals project in the city of Walnut Creek. We're working with Matt Ginsburg at Connected Signals and the City of Walnut Creek to provide the signal phase and timing or SPaT information to smartphones with the EnLighten application.

The goals of this project are to increase safety at intersections, improve fuel economy, reduce stress of driving and enhance convenience.

And this is a first step to using the infrastructure to communicate with traffic controllers and vehicles. Our goal is to be ready to provide SPaT information to connected vehicles as this technology becomes more common.

So, at CCTA, we feel technology will provide for the future economic vitality of Contra Costa. It is clear, in the 21st century, we cannot build our way out of this congestion. We must provide an efficient transportation system by utilizing emerging technology, such as connected vehicles and autonomous vehicles, and leverage partnerships with the public and private sectors to advance these programs.

So we have met with the automobile manufacturers and Google, and we feel autonomous vehicles will be a reality. We also feel these cars will be connected. Vehicles that sense their surroundings through radar, lidar, global positioning systems and computer vision, will use these systems to interpret sensory information to identify appropriate navigation paths, obstacles and relevant signage.

So at CCTA we fully support the U.S. DOT's Connected Vehicle

Program, with the goals of improving safety, mobility and reducing energy use and emissions through technological solutions. So we are investing now in creating partnerships to help move this technology forward.

So, CCTA's CV/AV Program is centered around the GoMentum station, located in the city of Concord. This is where we will lead and facilitate collaborative partnerships to accelerate the next generation of transportation technologies, connected vehicles and autonomous vehicles.

Partners include automobile manufacturers, OEMs and Tier 1 suppliers, communication companies, technology companies, insurance companies, analytics, researchers, academia and public agencies, the City of Concord, Contra Costa Economic Partnership, other affiliated test beds and the US Navy.

So our vision is to build a CV/AV center at GoMentum station where convergence, innovation and commercialization of CV applications and AV technologies take place in the largest test bed --

The spark that got this program going was Contra Costa's state assembly member, Susan Bonilla, asking our executive director, Randy Iwasaki, to bring jobs to the Concord Naval Weapons Station. The weapons station or base is decommissioned

and is currently going through the process of becoming part of the City of Concord. So, making a long story short, Randy toured the base and right away thought of a test bed for CV/AV technology, and hopefully some AV and CV companies would locate in the area.

Congestion is also very bad in our area. So we are using technology to create efficient mobility, a healthier environment and enhanced safety for our citizens.

So this is the actual site. And that's all secured by the military. And the site has over 5,000 acres and currently we have a license to test on 2,100 acres.

There are over 20 miles of paved roadways, including a seven-mile-long spine road for higher speed testing. There are two 1,400 foot tunnels that run under State Route 4 that are ideal for testing guidance sensors and communication technologies.

When we take some of the automobile manufacturers out to the site, they get pretty excited when they go through these tunnels. They're all metal, and I think they would reflect a lot of the sensor beams.

MEMBER CAPP: So are these the existing roads, or area -- was it built --

MR. HALL: Yes. So the base is on the top, and at the bottom State Route 4 bisects it in those tunnels. You can see this road. They goes underneath the freeway at that point. They were existing. They would cost a lot of money to build.

MEMBER CAPP: This is all reused military base?

MR. HALL: Exactly. And then here we go under an overpass road, so that's a public road going over the top. There are underpasses, bridges, signing and striping -- roadway geometrics.

You know, I did some discussion about signs, stop signs. Some of the signs here are faded stop signs. You can't even see them. But again, the automobile manufacturers like that, because these are all signs that are important. You see them out in the real world. They're not going to be perfect. So we're going to put some good signs out here. But also some bad signs --

(Laughter)

MEMBER MCCORMICK: Some valid signs? Does it have any wireless infrastructure?

MR. HALL: No. We are talking. Those companies want in bad. And they want to test things other than just automated vehicle technology. And so what they're -- they're going to

actually just install the stuff for free. And then we want to grow the system out throughout the county.

There are also significant elevation changes on the road through the hills, the slopes and varying road surfaces. You can see this, the pavement's cracked here. The base closed in 2007. And again, the automobile manufacturers, they don't want a perfect road, but they, you know, we will have to -- some of this.

So this base was used to store and load ammunition on ships. This started with World War II and lasted through the Gulf War. And the base was closed in 2007. There is a lot of rail on the site. So this is how they moved the munitions between the bunkers and the ships.

There are several parking lots that can be used as a skid path and by multiple users, also for, you know, self-parking and different tests we could do.

MEMBER MCCORMICK: What kind of physical infrastructure, like buildings, exist?

MR. HALL: So these buildings are -- I'm going change this -- one of the buildings is called the auto shop. It's just an old base.

MEMBER MCCORMICK: Are they occupied?

MR. HALL: I was in the military. There's a gym, and a barracks, there's headquarters.

MEMBER MCCORMICK: But they're all not occupied?

MR. HALL: They're all -- yes, all gone. And in fact, the Navy will not let us use these facilities, because some of them would be perfect for car companies to run their tests, come back, make adjustments. But I think there's asbestos in these buildings. And so they do not want us getting near it. But the whole goal of the Navy is to give this base to the City of Concord.

(Off microphone discussion)

MR. HALL: So what we -- yes, the manufacturing -- to have it go off the base, open up a shop in the City of Concord, which would help their economic development, make their adjustments and then come back and run the tests on the base.

So this slide shows our integrated CV/AV program. The middle circle is GoMentum Station on the base. And that's where we do our beta testing. And then the outer circle is outside of the base where we have other projects such as truck tracking, transit tracking, bike to transit, pedestrian to the vehicle, express lane projects and integrated portal management projects.

VICE CHAIR WILKERSON: Can I ask a question? One of the overarching goals you mentioned in one of the earlier slides was economic growth and job creation --

MR. HALL: Yes.

VICE CHAIR WILKERSON: -- and then healthier environment. Where would they fit on this wheel?

MR. HALL: So in any viable project, I think car sharing projects, actually the next slide we're going to talk about that also. So the base will be developed in the future -- I was telling them -- a 20 year time frame. And a term discussed a lot today is City 3.0. However, our executive director, Randy Iwasaki, he likes Hawaii Five-0. So we're calling it City 5.0.

(Laughter)

MR. HALL: The basis of that claim -- that you saw. And so we're working with the City to make this area the most technologically advanced area we can. So, you know, we see maybe a subscription car service, take the BART station -- Bay Area Rapid Transit. That's where the initial development's going to occur. We just want to see everything we do as small as possible.

We are going to see maybe sometime before March 31st to unveil the GoMentum Station program. The day before we're

partnering with the telecommunications industry, thank you, Scott, to deal up how communications are shaping the future of AV and CV.

I would personally like to invite you all to attend that. And that concludes the presentation.

VICE CHAIR WILKERSON: Thank you. Questions?

MEMBER SCHROMSKY: Did you have any stories of distracted driving as well?

MR. HALL: Right, so the connected signal project that we have, it's going to be rolling out in Walnut Creek. It's going to be on your cell phone. You know, there could be some issues there.

MEMBER SCHROMSKY: But I saw, I know this when we, like, commute back and forth on 95, we have the digital signage I've seen that DOT runs. It seems that every time traffic slows up everybody slows down, trying to read the signs -- I'm just curious to see -- you put this great stuff, and everybody's like what's this, and then it causes more harm than good, so I'm curious if you're looking at that aspect --

(Simultaneous speaking)

MR. HALL: Well. Yeah, exactly. What we're trying to do though is to get that information piped directly to the car.

So we're just trying to get these connections and bring it out. And then you'll be -- because there are obstacles, institutional obstacles, to get into the city's control room.

So we're making those partnerships now, so when the technology advances -- I mean, it's going to advance to where the car is making the decision for you.

MEMBER WEBB: Sure.

MR. HALL: This is just baby steps.

MEMBER JOHNSON: Question, following up on what he just said. Where would the transportation management center be? Then for this area, since it's so multifaceted, multi-jurisdictional. So would it be something that CalTran's going to oversee, since you have Interstate-680, Highway 4? But then you have the local municipal streets and those arterials. So how does that come into play?

MR. HALL: Right, so we're still -- I mean this project was actually just started probably about -- Randy and I met with Audi in April of last year. And that was just, you know, like an initial meet and greet. So the project's still evolving. And the transportation center has not been --

MEMBER JOHNSON: Okay.

MR. HALL: Yes?

VICE CHAIR WILKERSON: One of the -- early on you were talking about how you were able implement, or adopt Measures C and J. Given the political climate across the country in various cities and counties, the political winds don't go in the direction.

So do you have any lessons learned for cities or local counties that are resistant to adopting a penny tax or half penny tax or any kind of other assessment to promote these? You raised, what, \$1 billion for Measure C and I forget, \$2.7 billion, I think, for Measure J?

MEMBER CALABRESE: Well, we're at 70 percent of the transit tax for the last three years past.

VICE CHAIR WILKERSON: I'm sorry?

MEMBER CALABRESE: We were 70 percent of the taxes on -- for transit tax, 32 percent. So it's a pretty good percentage, much better than a lot of --

VICE CHAIR WILKERSON: I'm so happy that some other states --

(Simultaneous speaking)

VICE CHAIR WILKERSON: Yes. I mean, that's unique. But there are some, well, I worry because in some cases, if there is not funding, that we're going to have the have and have nots

of the world just be bypassing some of these major interstates.

So I'm just trying to see if there're any lessons learned and whether you are -- the National Association of Counties, National Council of State Legislatures or others talking about those benefits that have emerged in your communities for doing such.

MR. HALL: Okay. So that's a great question. We're going out there, actually, another app sent -- in 2016. So we need to develop a transportation expenditure plan that the voters actually vote on, and it lists the projects.

And once you build a reputation that you deliver what you said you were going to, the voters actually buy into that. And then you realize what the tax dollars earn. But then also we need to shape that transportation expansion plan to cover all areas of transportation.

In California, it takes two-thirds vote to approve this.

So, I mean, if you have someone on the bicycle committee that does not like your program, then you are not going to pass. So you have to meet a lot of needs. And you have to meet every constituency. So there's a lot of implementation.

MEMBER JOHNSON: I have a question for you. Considering that you're trying to look to expand, and to Sheryl's point,

if I'm not mistaken -- Alameda County, it was over -- they didn't pass in November.

MR. HALL: I think -- they did pass.

MEMBER JOHNSON: They did pass barely, okay.

MR. HALL: It didn't pass. But at the time before by like

--

MEMBER JOHNSON: That's what it was

MR. HALL: -- ten votes --

MEMBER JOHNSON: -- by ten votes, that's why I broached it --

(Simultaneous speaking)

MEMBER JOHNSON: -- because considering your neighbors and you're looking at the entire Bay Area for Alameda County not to be at the table, and considering the BART system is part of Alameda, Contra Costa, San Francisco, and San Mateo -- I was wondering if in fact you don't leverage those lessons learned in your dealing with the political aspects, how it could hinder a vast transportation project such as this going forward. So to your point, it's like doing a collaboration and work amongst your policy makers, to educate them fully on the benefits.

MR. HALL: Exactly.

MEMBER JOHNSON: Have you all partnered, like, with Alameda

County and say, you know, San Francisco County TA, and I would imagine you have, but maybe you could expound upon those examples.

MR. HALL: Sure. Every year there's a conference called the Focus on the Future, which is all the self-help counties get together and we share the lessons learned. It was in San Jose this last year. And they had -- meetings to start this where they discussed various -- like say a county didn't pass. They'd have their director up there talking about what they need to do better next time. So it was about that.

VICE CHAIR WILKERSON: What defines a self-help? Is that something that you've adopted or is there a real definition for --

MR. HALL: It is a California term.

VICE CHAIR WILKERSON: Okay, that's all right. I just --

MR. HALL: It just means that they voted for the tax.

MEMBER JOHNSON: Yes, you tax yourself to pay for the initiative.

(Off microphone discussion)

MEMBER DENARO: I don't understand.

(Simultaneous talking)

MEMBER DENARO: So is this is an attempt to provide facilities, because these people come in and test -- to maybe accelerate the technology. The whole purpose of having a facility around it.

MR. HALL: Right. So the initial goal was to bring jobs to this -- That was the initial goal. And so --

MEMBER DENARO: But it's a test facility. How would that make jobs?

MR. HALL: Well first, Randy, that's what he said. Because, hey, I'm a transportation director, I'm not economic development. So he went out and looked at it, and he says, hey, it's a perfect test track.

What we hoped is that some of the -- we met with quite a few people. They say they will come out and do tests, there're going to have satellite offices or maybe an office with some trucking industries in the City of Concord. So that's how it started.

But we also want to see technology grow. I've been out to the MTC in Michigan, and met with John Maddox. And, you know, we're not competing with anyone, but we want to collaborate. And we've got an agreement that we're trying to get before the public without really breaking it down where

we collaborate on technology moving forward.

MEMBER DENARO: And we have a -- facility now too, right?

MR. HALL: Right. There is. And we have insurance companies. I think they're focusing on insurance. We have quite a few insurance companies that are working to join our group.

MEMBER DENARO: Does a user of the facility pay you to use the facility?

MR. HALL: It depends. So I would say on the actual pavement, you saw where it's cracked? So it might be for the whole program. So, I mean, we -- right now, our transportation expenditure plan that the voters approved did not have a sentence --

This just kind of occurred. So we need people to contribute to, like, just pay for the fixing of the pavement, maybe putting up some new signs, some signals. But we can't dig in the dirt again because of environmental reasons. And maybe because they don't want us digging. So we're going to put the signals on skids.

You know, I heard one mention about the three heads, signal heads. We're probably going to test a single head signal, there's some technology in that -- I think it's going to China

--

MEMBER DENARO: What I'm hearing is -- regeneration is not one of the goals of this facility.

MR. HALL: Correct. It's moving technology.

MEMBER MCCORMICK: To weigh on in your first question about the jobs, I think the OTC was estimated that their 300 manned facility there, when it's all done, it's going to generate somewhere around 3 to 4,000 jobs. Is that -- does somebody remember correctly? And those aren't all related to that job because of the growth that occurs in the area. It's collateral employment.

MR. HALL: Right. That's exactly right.

MR. FEHR: I was just going to point that Contra Costa County is a member of our affiliated test beds. So they do have direct access to the underlying technology concepts we're developing, this open competition.

MR. HALL: Okay. Thanks a lot.

MR. LEONARD: You said revenue generation was not a priority but is cost recovery?

MR. HALL: Cost recovery is required -- we're actually funded by the taxpayers of Contra Costa, in '80, did not vote on this tax, or cost recovery -- is all -- we have to have --

MEMBER BELCHER: But just let me reiterate the Telecommunications Industry Association is supposed to be meeting on March 30th, the day before, in conjunction with Contra Costa to introduce connected and autonomous vehicles to come into use in the Valley that are not right now part of the ecosystem.

So there will be a panel that will have Contra Costa, Michigan and Texas represented. It's all three of those test beds. And those three test beds are completely different. So that'll be kind of interesting.

And then a panel about connecting vehicles connected to the cloud and then autonomous vehicles. So for many of you it'll be old hat, but again, the idea is to try to grow the ecosystem and to get a number of the technology companies that aren't currently invested to understand what the business opportunities are that they may be missing.

VICE CHAIR WILKERSON: Any more questions? Well, thank you so much.

MR. HALL: Thanks.

VICE CHAIR WILKERSON: I guess, before we transition -- one of the things we have on our agenda was to talk about some

of the issues that tie into what we've just heard, public transportation, shared usability and freight industry.

So this is a really great time to talk about those things.

On our last call, we had, I think it was Susan, was it Susan who gave the presentation on the shared services issue, which was a really phenomenal presentation. And hopefully everyone's had an opportunity to look at that.

She could not be here today but has expressed a strong interest in aiding the committee on not only the scenario planning activities that we may possibly discuss. So I just want to open the floor for that.

She also says she would be interested in aiding further discussion around just mobility and the sharing economy and, two, the scenario planning activities. So we've got those three topics to talk about for the next 40 minutes. So we'll open the floor.

MEMBER MCCORMICK: Well, again, did the -- Council on Government LA Port program -- did they get involved in affiliated test bed? For those who don't know, it's a ten year, \$2 billion program to help freight coordinate with the ships so that they know when they'll be able to coordinate, when they can pick up their goods so they don't have two or three day waits, and

losing, et cetera, et cetera.

MR. FEHR: We have at least six or eight different parties who are interested, extremely interested in that topic that are part of the affiliated test beds. And we are trying to come up with some fundamental data exchange commonality as a starting point for that topic and trying to contact them and get them involved.

MEMBER MCCORMICK: Try to cover objectives --

MR. FEHR: So if you can steer them towards it, I'd like them to be involved in it. That is one of the topics that's very active in our test beds right now. .

MEMBER MCCORMICK: Plus it's -- as part of that, you know, it's not just land transportation, it's coordinating with airports, coordinating with the ship freight, et cetera.

CHAIR KENNER: So the real question is, if we look at the subset of multimodal transportation and look at either the public transportation element, shared use or freight, are any of those things areas that we want to, you know, have the subcommittee concentrate on going forward?

MEMBER MCCORMICK: Can we go over what the committees -- the topics we kind of agreed on at the last meeting, I mean at the last teleconference --

VICE CHAIR WILKERSON: And these are the areas we discussed, public transportation, shared use, mobility, freight industry, funding and administrative issues, deployment incentives.

CHAIR KENNER: Yes, so we said the way we structured the agenda for today was really around, you know, I would say the broad categories but not that we had to do them all, right? You know, we could do any sort of subset of those as an area of focus.

So that's why we kind of structured this the way we did, so that we could get some background and perspective on that area and then, you know, decide whether it's something we feel we can provide, you know, value in relative to what we need to do as a committee.

And again, remember, you know, part of what we're expected to do is to provide input into their strategic plan at the U.S. DOT and make sure that the areas of research that they're funding or considering funding are things that we think will, in fact, advance the ITS, you know, state of the art and whether they are likely to be deployed. And if not, what are the barriers to implementation.

So if we look at, you know, some of the work that was done,

maybe that's why we wanted to look at the 30 year plan to say, you know, what is the division and do any of us recognize gaps?

Or even if we don't recognize gaps, if we think, you know, like, public/private partnership is an untapped area that, or an area that was recognized has got a lot of potential, but we haven't realized the potential, then maybe we want to, you know, focus on that.

So that same question, you know, applies here. And we'll be able to spend more time later on to be able to say, from what we heard today, what are then, you know, based on the observations everyone made, these are the ones we want to do and, you know, and then agree on who would participate in which ones, right?

MR. BELCHER: -- the question of what we want to do in the public transit space, or whether we want to do something in the public transit space?

VICE CHAIR WILKERSON: Yes. We should have, we have these three topics which kind of relate to Contra Costa. So part of it was getting an example and having someone come and sort of provide some examples for that. And then discussing as a group whether that should be as an appropriate topic.

MR. BELCHER: So was Jeff Spencer, were you going to

present --

MR. SPENCER: I wasn't called to present, but I'm only, you know -- I'm kind of feeling the love here.

(Laughter)

MR. SPENCER: But I certainly could address anything or make, I didn't prepare a slideshow, etcetera, but I wasn't -- You know, but I can certainly address anything you want and give you a primer if you want --

MR. BELCHER: So what would be helpful is for you to talk about what you're doing in FTA and what's happening in ITS JPO around the shared use and mobility space, and transit and how those things meet together.

Because there may be things that we can find or suggest to overcome some of the challenges in deployment there. So it'd be useful for me to hear a little bit more about what JPO and FTA are doing in this space to know if we can help.

MR. LEONARD: Can I just ask that, in addition to that, you may touch on, and I'm sure, mobility on demand.

MR. SPENCER: Yes.

MR. LEONARD: And to some extent the ATRI special needs community.

MR. SHEEHAN: Let me say something, and I'm going to hand

it off to you, hopefully it's a good picture of you -- you're an exceptional speaker on my own. I don't want to step on your toes here, but hopefully I can kind of shine a light on you.

You've spent the last year really diving into the next steps of research for mobility which really turned into mobility on demand. It's really the core that mobility serves. And it gets even further is to be --

(Simultaneous speaking)

MR. SHEEHAN: -- it gets even further in that -- Jeff will articulate this. It's recognized, it's not public, we say public transportation. It is mobility services. We're going beyond the general public funding or public provision of the service.

And that's where you get shared use. You get the public and private type of approaches.

And so this C- the discussion over the last year was based on input from past programs. We talked -- you saw the presentation that included IZM, includes some of the, within certain programs, active demand management, that Office of Operations is leading, ways to provide demand services or adjust the supply and demand for our transportation system.

In addition, an effort over the last few years, mobility services for all Americans, which is the core for providing

more efficient service for power transit for those who are mobility challenged and how that can turn into a true mobility service for all Americans, not just for those who have specific challenges for mobility.

And that's where ATTRI -- Accessible Transportation Technology Research Initiative. Getting to the core challenges of different core opportunities for the different challenges of mobility, whether it's cognitive, vision or hearing impaired as well maybe other physical impairment.

MEMBER MCCORMICK: Could it be location, like rural? Would it have to be mobility impaired, it doesn't have to be a handicap -- can't it just be just situationally --

MR. SHEEHAN: Good question. Essentially, yes. I mean, that's a mobility challenge. And that's where -- I mean, you've heard, that's a good question. And that gets to the core of it. It's not just the challenge of people who have some type of disability.

But it's everyone has a mobility challenge. And I think that's the core. And, Jeff, I think, will articulate very well, is building off of that. And he says it all the time. It's all Americans which is an outstanding way to put it.

MR. LEONARD: Scott, specifically, in Camden, New Jersey,

which was one of our MSA pilot sites, one of the constituencies we were serving was people who lived in Camden, but the jobs were in Atlantic City.

And they did not have the resources or the transportation systems so that they could get people who wanted the jobs in Atlantic City from the area. We had it high on the point.

And so it was, you know, it wasn't just serving seniors, and veterans and people with disabilities, but people who couldn't get to where the jobs were. And that's pretty consistent with the Secretary's ladders of opportunity approach. Transportation and jobs are related.

VICE CHAIR WILKERSON: Yes. And if I could speak to that, I have had meetings, this is an issue for Michelin and other companies. For instance, I was out in Oklahoma where people, it's starting to become a North Dallas. So there are companies that are actually transporting their employees from North Dallas to work on the oil rigs.

Or they're finding that they can't retain or recruit individuals given the trends with the millennials, the people who have a one car family and others in order to recruit and get people to retain the jobs.

I mean, you have companies where 30 to 40 percent of their

workforce is going to be changed because of retirements, what have you. There's a huge impact on the investment range for companies that have been here 20, 30 years in the community.

And so many of the state governors are working to try to develop workforce issues where they have matching programs to match employees with those jobs.

But states like Oklahoma are starting to look at different communities and say what kind of housing do we build that will meet the needs of these companies that are coming here. So there's a real exchange and a dialogue, because they see them as going hand-in-hand.

Another thing is the chambers of commerce are also looking at that as one of their number one issues. Workforce is huge. And it all ties back to transportation.

MR. SHEEHAN: Well, it is a complex problem with a lot of relationships, that certain communities have tackled in the past and in integrated ways. And you can use old terminology, smart growth, transit oriented planning, those type of things, there was a city in the US, yes, Boulder, Colorado. They're similar to Lund, Sweden.

Well, they attempted and succeeded in flatlining BMT.

But to maintain that economic growth, the increased PMT. They've embraced transit service and got, someone was talking about getting a transit fare card in everyone's hand in the schools, in the public sector, in the hospitals.

No matter who was in the community, they expected them to have a pass. And that community accepted it. They were very progressive. But it was very -- it was an approach, and essentially it works. I mean, I haven't seen the data in a few years, but it was very innovative.

MEMBER CALABRESE: I mean it's great to have this philosophical conversation, but let's bring it down to reality.

You know, the Feds had a Welfare-to-Work program. And it was called the Job Assets Program.

And just last week, I sent out 40 to 50 letters to people we surveyed by that service and telling them that the FTA did not cut out the program, they cut out funding for the program.

So we just cut out our -- we're cutting out our program effective April 1st which got people to work and made them employable. These were people who couldn't get to and from work on our normal public transportation services.

So again, it sounds great. But again, it's great when the FTA didn't cut out the program, but they cut out the funding

for the program. In fact, they cut out the program.

Again, we ought to stretch that money out another 18 months beyond when the program funding stopped. So, I mean, there's a lot needs out there. And when it gets right down to it, you know, location, talk about zoning before.

I spend a lot of my time encouraging employers, if you want, you know, where you locate your company or your business is going to be very instrumental in how you draw people, and draw your labor force.

Key Bank's located in Cleveland, a lot of great millennials living in the Cleveland area. You know, one of our friends at Key Bank a few weeks ago was trying to transfer some of their young, smart, intelligent people to out in the suburbs. They said, hell no, we won't go. We need to have a car to get there.

You know, so how can you provide more service to that location? Well, we provide little service to that suburban location, because everyone who lives there drives, because you have 1,500 free parking spaces.

So again, I don't compete well with free. So, I mean, the whole thing works as a system. It's policy, it's zoning, it's planning, it's what incentives or disincentives are there to use in public transit.

And providing free parking is a major disincentive to using public transit. And another thing I'd love to hear about, I'd love to listen about all this great GPS stuff.

But, you know, it's great to listen to the auto manufacturers and, I think, the high tech people here who have a new product coming out every year or maybe every six months.

One of the problems we have in the public transit business is we buy a bus that the feds say you must keep for at least 12 years, okay. And we buy a train. They say, well, you must keep it for at least 30 years.

So introducing new technology into a car that has a life, like, in a very difficult retrofit model, I mean, I think, based on the 2045 plan, based on the increase in population, I think public transit has to play a bigger and bigger role in moving Americans.

But how do you do that given these restrictions? And again, I hate to say it, it gets -- there's some policies that maybe don't make a whole lot of sense too.

It's tough to get technology when you buy a fare box that lasts 15 years and a communication system that's expected to last 20 years. How do you stay on top of technology when you have these long lead-time items? And by the time we RFP, and

procure, and install and accept, you're four generations old already.

MR. BELCHER: So one of the things though that, I think, maybe this group can talk a bit about is one of things you're seeing in the automotive space, is a movement towards, you know, plug and play where you can upgrade software easily, and you can replace processors, and you can replace storage capacity.

So if you do have a car that lasts 18 years, that car can stay current with technology.

And so maybe, you know, one of the comments or the suggestions would be to help, where be to have FTA help the transit organizations figure out how to procure to make sure that when they procure they can take advantage of the changing technology. And that might --

(Simultaneous speaking)

MR. SPENCER: That is actually a good discussion right there

--

-- you guys are doing this presentation for me --

(Simultaneous speaking)

MR. SPENCER: Joe, you're talking about some very esoteric things, really, that is a focus at FTA and do can we get out of our own way? There are policies that need to be changed,

and we acknowledge that. And so we're trying to address that.

For instance, let's just take a simple technology as a mobile data terminal. A lot of the companies are simply buying tablets because it's so cheap. But given the rules, they don't last seven years. The technology is old within six months, and truly, they'd only last a couple years.

So what we have to do is adjust to the marketplace. And what Scott's talking about are those standards. That's something transit has never been good at. They don't want to accept standards. They don't want to do it my way or do it your way. Because I'm buying it for me.

Well, at some level, we have to begin to talk to each other. There has to be that plug and play ability. And that, I mean, if you -- we did that to computers, you could buy a laptop still for \$3,000 and, oh, by the way, you can buy my printer which is another \$3,000.

I mean, that's just not our marketplace. We have to adjust. And I use this phrase a lot at the FTA. It's adapt or die. And there's a lot of these mobility options that are going to have to adapt or die. So let me ask here, how many of you know what the bus of the future, say 30 years out, looks like?

VICE CHAIR WILKERSON: A what?

MR. SPENCER: A bus in 30 years. What will it look like?

VICE CHAIR WILKERSON: Maybe there won't be one.

MR. SPENCER: You're right. There probably won't be.

We're in the business of moving people, not moving cars or vehicles, I should say. But that's really the focus at what we're trying to address. What is that future? How do we make sure that we're on that cutting edge?

So we've done a lot of research in the past. We did urban partnership agreements, Mobility Services for all Americans. We did the Veterans Transportation Life initiatives.

And all these were technology based things that helped, and they actually produced some good products. But we're trying to converge those products now. And that's where we came up with MOD, Mobility on Demand.

And as I said earlier this morning, it's more situational mobility. What do you need now, and at what cost and at what time do you need it? Are you willing to accept the 30 minute ride or do you need to get there in 10 minutes? So all of that has to be on the fly.

So we're lucky, we're looking at big data. What is big data? How do we share big data? So those are some of the

priorities that we're trying to figure out at this point. And we've got people who are working on those various aspects.

We're working on technologies in partnership with FHWA on the Advanced Transportation Technologies Research Initiative. And it's cutting across not just the DOT, but we have partners from DOB, the Department of Energy, Department of Labor, you know, Health and Human Services.

All of these people are coming together, because we're what we're trying to do is reduce repetition and redundancy and say let's really address this problem.

And so the problem of mobility for the disabled, for the elderly, et cetera, actually extends to everyone. And we all have problems with mobility. If you're stuck in traffic, it's a problem, isn't it?

So we have to understand the balances therefore. And so what we're trying to do is look at what are the things that we can do to address that. We're never going to cure congestion.

Congestion is a relation to economic activity. But we can do things that make it better.

So that's what we're trying to look at as part of our strategic areas, so big data, the data, privacy, all those type of issues. But one of the things that enables us to do mobility

is also payments. So we're trying to work on open payment technologies.

-- we had 12 years ago, and it's been on the strategic plans for many years, a national travel card, one form of payment across all modes. I don't know if you have it already. It's called Visa and MasterCard.

(Laughter)

MR. SPENCER: I mean I can buy a plane ticket, a train ticket, a -- taxi -- the only thing I can't do, as far as transit. So we have to really think dynamically about what is it that's available to us? How do we address the problems?

So ITS is a method to get there. And ITS isn't just, in itself, technology. Because we're trying to be technology agnostic. But we have to also think about the nexus to all the other problems.

How is the built environment, what is the wireless environment? What is mobility, livability, you know, emissions? All of that really comes into the same framework when you talk about transportation technologies.

So in a way, we're really just trying to be a futurist in predicting what is it that meets the needs of mobility? And transit, we think, is one of those ways.

And transit may not be just the 44 foot diesel bus running down the road every 12 minutes, you know. What about dynamic operations, on demand? Only making stops where you know passengers are waiting, because electronically you could find out where they are and go meet your customer.

The true dynamic is changing the paradigm that we're not in public transportation, but we're a vendor of mobility. And how -- as a vendor, are we meeting the needs of our customer?

So with that, I'll take any questions or open it for further discussion.

MR. LEONARD: Can you give us any view of the international, what's happening? I know Finland, for example, is already trying to move toward some of this --

MR. SPENCER: Right. I mean, we are looking at the mobility on demand concept that we have. We're looking at CityMobil2. There's Finland, there's Singapore. There's a lot of people doing a lot of things in the automation area.

You know, there's just so many different ways of people are thinking outside of the box. And so we're collaborating internationally. We do have a seat at the ISO, you know, looking at the standards internationally. We also work with APEC, the Asian Pacific Environmental Council.

(Off microphone comment)

MR. SPENCER: So there's a lot of collaboration across internationally of what they are doing. But also, what are the opportunities for American companies to boost our economic positions as well?

VICE CHAIR WILKERSON: So are you looking at the, obviously, you're looking at good examples and best practices or model cities that have good examples.

Is it worthwhile for us to look at what barriers are inhibiting us from being able to follow suit, given what Joe mentioned? Or is that something that's not being explored that we should take our look at, given the expertise around the room from --

MEMBER CALABRESE: And look at cost structure. I move someone for \$2 to ride on my trains, \$4 to ride on my bus, but \$32 to ride on paratransit.

MR. SPENCER: Right.

MEMBER CALABRESE: Paratransit's the more on demand model. So how do I get -- afford enough to support people for \$2 a ride? How do I explore it to give everyone what really is like a personal taxicab service?

MR. SPENCER: Let me give you a little more description

on the MSAA that is working right now. We're using coordinated transportation centers. And basically there's about 82, if I remember, at last count, different types of services that are available to the variety of people who have disabilities or what have you.

You have Easter Seals, you have Health and Human Services. I mean, these are transit agencies. There are so many. And they are not efficient. They are operating with their customer and their dispatch center. And they are crossing the town all over the place. It looks like the flight of the bumblebee.

So if you coordinate those in one call, one click center, the passenger who needs a ride now can call in. The response time has been reduced to 24 hour advance notice down to as little as an hour. Think of the quality of life difference that makes for that person.

It also reduces the cost for the agency. Because now instead of saying, Joe, your bus is on the south side of the city but your customer is over on the northwest side, you've got to get him in the next 20 minutes.

Just look at it. What's on the GPS map? Who's located there now? And let them dispatch and take that ride to wherever they need to go, no matter who's providing the service.

And all these settlements are done in the back office. The institutional agreements are always the biggest hurdle. It's a matter of bringing the partners together and agreeing to share. Because you're going to cut your operating costs greatly.

That's a big savings in itself. And it's translated into better service for the customer. So again, how do we send that beyond just the disabled rider to everybody? You know, what is the demand model that we need to look at?

MEMBER JOHNSON: So if you were to look at that demand model using paratransit, more or less, for the guide here. What kind of vehicles would we be talking about? Because I'm thinking about cost per revenue -- you know, revenue cost per hour of and things of the like, because it can be very expensive, as Joe pointed out. With, you know, on demand it's upwards in some areas, like, \$36 an hour or what have you. Or \$36 per ride, I should say.

MR. SPENCER: And that's a part -- the cost is, you know, knowing what the customer needs. Does that customer need a full size van or will he be able to ride in a private taxi? So maybe you dispatch the taxi instead, or, you know, keep matching it, and it's all about sharing the data. What is the

customer profile? What are the requirements? And what do you have available as the resource in that respect?

So you're not going reduce the cost for everybody. But you will, across the board, reduce the cost quite greatly.

Some of the things, too, in automation. I was talking to Joe a little earlier. He finally is finishing a vehicle system automation project which is in Eugene, Oregon, with their BRT system has automated docking and precision lane guidance.

What does that translate? It means no more collisions with the curb, no more tire -- no more alignments. Because they're not hitting things. And it brings it to within one inch on a level or platform. Quick lighting and boarding. Your disabled doesn't have -- special access ramp or anything. It's all there.

If you have bilateral doors, you can do either side. Curbside, or center of the road with a platform.

So your basic maintenance and operation costs are going to go way down. And you can keep your headways more straight, because you don't have to buy another vehicle to meet demand.

Because you're just really able to move people. And that's what it's about, is moving people.

MR. SHEEHAN: So the question about cost. One thing I

want to make sure to note is this is where the opportunity is engaged to the shared use, the private sector, because the travel and the coordination center is presenting options.

And those options could include existing paratransit type service, or a taxi or a shared use. I could present you, for example, with one ride. Uber's going to show up. Or you may have Lyft or someone else shows up and say, hey, you've got a reduced fare if you share a ride. But now you're engaging the local users as part of a system not just being --

MEMBER JOHNSON: And then there's competition as well. So the end result is the better bang for the buck, I would think.

MR. SHEEHAN: So, yes. That's --

(Simultaneous speaking)

MR. SPENCER: And that's addressing more of the first mile/last mile. If you're able to take that person to the main transit line. You're making better efficient operations overall. The automation, when you look at lane guidance, now instead of a twelve foot lane, you can narrow it down to a nine foot lane, and you have three extra feet for a bike lane, or what have you, you know, so there's -- that reduces your real estate or your right-of-way costs.

So there's a lot of options that -- again, we're looking

at technology as how are they really solving the solution. It's not just how we deploy technology. That's really not what it's about. ITS should be about what is the problem you are addressing. And that's the focus that I'm trying to do right now.

MEMBER BERG: -- could you in some way be talking about freight in the same manner?

MR. SPENCER: You can.

MEMBER BERG: -- what about freight? It sounds the same to me.

MR. SPENCER: With the docking technology, we, you know, that's applied to freight. When I was with CalTrans -- I've only been with FTA five years. But before that, I was at CalTrans, I did a lot of the research there as well.

And we did a project which was called Frequent Transit. It was a new revenue model for transit. And what we did was basically took the seats out of one of the parked cars and in the Bay Area, on the peninsula, we took all -- collected all the packages for FedEx. And it dropped them off at the airport, because it's co-located. So think about the impact of that.

You now don't have all the little trucks that pick up packages and now have to run to the airport. They reduced fuel costs,

emissions, and toll costs. It was wonderful. I don't know why it didn't stay on. That's a model that we have to start looking at. Shared mobility again.

(Simultaneous speaking)

MR. SPENCER: It's not just people, it's freight, it's everything.

MEMBER BERG: That's great that you mentioned that -- there was a Google thing the other day about -- on the e-commerce you can order a box of steaks delivered to your house instead of you going to the store and getting steaks and eggs and milks and baby food and diapers.

MR. SPENCER: Yes.

MEMBER BERG: So maybe it actually, in the e-commerce world, actually increased congestion on the roadways by just delivery.

MR. SPENCER: Think if you're a standard city, okay. You've got typically three lanes in the inner city. You've got parking down the road. You've got a UPS truck taking your number 1 order -- your Number 3 lane, I should say. Your bus now has to -- is impacted, because they're backed up in the traffic.

I mean, this is a constant problem. Why don't we put the freight on the bus and just have electronically your package,

will be delivered at Bus Stop 1152 at 10 a.m. And again, you're taking more traffic off the road and addressing the traffic problem, while giving another revenue option to the transit.

MEMBER SCHROMSKY: And that's one the main reasons why it was harder to deal with USPS, because they're already going to routes already, and you have excess baggage, if you will, on the vehicle. The question I have, going back to Joe's point earlier on standardization in terms of the I would stay outside light vehicles. Right, because I look at the -- industry -- the OBD-II port.

MR. SPENCER: Right.

MEMBER SCHROMSKY: Right? Standard? You've got insurance companies using that. You've got emissions using that. You have obviously car manufacturers, diagnostic. You have fleet management. And you get everybody who has a Mac looking to get an OBD-II sensor.

So if you're pushing certain standards, I know we talked about DSRC, are you're pushing -- you've got something that was mandated, enacted in law that's had this huge genesis, because everybody kind of goes back to that. You know, maybe from 1996 I believe.

MR. SPENCER: '98 --

MEMBER SCHROMSKY: So are you talking about twenty year old --

MR. SPENCER: Well, the things that --

MEMBER SCHROMSKY: Is there something else that you're trying to go off that you could build off in future --

MR. SPENCER: You know, the way they run it, it's actually pretty good. It's used the established standards. The standards are there. And then as the technologies come out, the standards are established.

You could be an IEEE standard, SAE standard, could be TCIP, which we developed. It could be any of those. So it's an accepted standard and a way to interface. And that's really what it's about.

We want to move away from proprietary systems with one-off solutions that are very expensive. We need to move more towards the standardized base, being able to talk to each other, I want, you know, the clipper card to talk to the GFI box now.

You know, how does that translate our work? I don't want to have to go to some integrator and pay, you know, \$10,000 for them to write simple, a couple of lines of code. It's really simple.

I mean, one of the charges that I'd like to see is let's

have a -- make it more like a CPU, one plug and play unit module that you can plug anything into, and is able to take all that data and process it and either put it out via a cell packet, a wifi signal or download it when you come into the yard off of J1939.

Those were all established standards rating. Why can't we do this? And there's a lot of companies who will stand in the way, because it's part of their business model to sell proprietary information.

Well, guess what, folks, we're in a digital economy. And we have to move forward. So any way that you guys can look at that and direct us to do research that enhances and moves us into that next phase, moves transit into the 21st Century, I welcome it.

MEMBER CALABRESE: One of the big challenges, you mentioned the -- major challenge in this business. To get to the smart card people to talk to the fare collection people, and -- I'd love to go to a universal credit card, Visa, MasterCard, and just again, how do we validate that?

We really need to push this industry forward. A great way to do that is with technology on the fly. Because those that are doing it today, there's no way to have that go back

to the bank, get all this money actually in that account --

MR. SPENCER: Well, there is. I mean, number one, we have -- available to us --

(Simultaneous speaking)

MR. SPENCER: We have the cards that are account-based, that's key, the move to account-based. Because what you're validating is that that is the person, and everything that's handled in the back office.

I mean, we worry about shrinkage in business, basically. Well, what is that risk for a \$2 ride on a bus? Everything's going to be handled in the back office. It's just the same thing as a toll. A toll's done back office. It's not registered at the thing right there, unless you pay in cash.

But your drive-through toll systems, you know, basically, they're just validating that that toll tag means it's you, and it goes back and it draws it out of your bank. That's what we need to move to. Because that's really what it's all about.

Back off the systems, I'll backhaul. Let's do the instant transfer so that they can continue to move. And settle it back there. Anyone else?

MEMBER WEBB: Just a question on assumption, particularly as far as transit ridership and so forth. Is a portion of the

potential user base not going to have, five years from now, SmartPhones, seven years from now? So when we're talking about data driven, and so forth, there's always going to be a segment of the population that we're going to assume --

MR. SPENCER: So you're going to talk about underbanked or the underbanks today?

MEMBER WEBB: Right.

MR. SPENCER: Let me use another option on that. How much does a SmartPhone cost? Real cost?

MEMBER WEBB: Depends on if you have a SmartPhone that could be four years old. And you could get for --

MR. SPENCER: Okay. How much does a ticket vending machine cost? For \$60,000, you can get a vending machine at one station. That's a lot of folks I can buy. And I just hand them out to the people. I mean, I don't have my PIV card with me -- You know, my ID card has a smart chip. I can enable that through my transit benefits.

All of these multiple services could be handled the same way. We're not applying the correct solutions to the problems.

We're basically taking technology and trying to find the problem solved. Let's look at the problem. And then there's a menu of solutions.

MEMBER QUIGLEY: Your assumption is that there's private sector efforts that are interested in stepping up to solve those problems as well. There isn't always the ROI in the transit industry that there is in other industries.

MR. SPENCER: Right, true. I mean, and transit itself is very risk averse.

MEMBER QUIGLEY: Yes. For a long time I called it the industry that technology forgot. I mean, we just stood still --

MR. SPENCER: There are agencies out there that would still be pushing the buggy with a horse --

MEMBER SCHROMSKY: But I think to your point, there is one very big mode of transportation that's privatized is commercial air, right, that does, you know, Southwest Airlines, -- one it they have a mobile app, they have a mobile bar code scanner. The do outsource excess space to cargo and freight, right. If I'm -- they'll take postal service, they'll take FedEx, UPS, and --

(Simultaneous speaking)

MEMBER QUIGLEY: -- to operate where you know there's demand. We have to operate --

(Simultaneous speaking)

MEMBER QUIGLEY: We're not set up to be sustainable, whereas, I mean, we're regulated to the point we can't be sustainable. Whereas their industry --

MEMBER MCCORMICK: Unless you knew there was no ridership there --

MEMBER QUIGLEY: Unless what?

MEMBER MCCORMICK: Unless you knew in real-time there was no ridership there.

MEMBER QUIGLEY: Once I establish a route in certain neighborhoods, we can never take that route back, regardless of what --

MR. SPENCER: There are policies that may need to change to get out of our own way. But there are also practices in the field that if we have to start looking more collectively instead of being, this is my agency and I own that customer. Let's get over that. Because it's not the way it is in today's economy.

We have to look at, you know, how do we -- are we a vendor of mobility to that customer? And how do we provide that service? You know, again -- be a local bridge -- there's the uberization of transit that's coming. Adapt or die. And we have to know what is it that we're going to do to make sure

we can adapt.

MEMBER QUIGLEY: I can only speak to myself -- I mean, I think that, our adage is that we embrace it. And the adapt or die, we get that. But the fact is, you know, I'm tax payer too.

MR. SPENCER: Sure.

MEMBER QUIGLEY: And I certainly feel a complete obligation to make sure I'm operating a system as efficiently as possible. I can't always do that because of the regulatory environment. And it's really hard to rectify.

MR. SPENCER: So maybe that's part of the direction we get from you. What regulations do we need address?

MEMBER QUIGLEY: Help us, yes. Help me be a better steward of tax payer dollars to make sure I'm operating as efficiently as possible. Yes, I'd love that.

MEMBER JOHNSON: But some of these regulations, I mean, they compound the various issues. Like, in the State of California, in most everywhere, at least 14 other states, we have, under the vehicle code, this axle weight issue whereby we can't exceed on any one axle 20,500 pounds.

But all buses, because of Clear Air Acts, because of ADA and other regulations, buses quite naturally weigh more than

that to the point that Joe raised. We have to keep a bus for 12 years.

So bus manufacturers are using more durable materials and so -- in some cases, and composites and so forth. That's if we withstand all of that. And then we have the mandate for vehicle testing utilizing federal dollars.

So when you compound these various issues, yet still in the State of California there's just been legislation that's been enacted whereby before we go out with a bus procurement, we have to have a hearing on bus axle weight.

We have to confer with the Public Works Department, because there is this whole issue about the degradation of pavement and so forth. And so what I'm saying is the right hand's not to hold the left hand. I'm sorry I'm getting a little personal about this, because, you know --

(Simultaneous speaking)

MEMBER JOHNSON: -- agency. And it's like, you know, this was enacted in 1976. And let's just be honest, people are heavier than they were in '76. So not only do we have bigger people, you have mobility devices that weigh 800 pounds. You have somebody who weighs 400 pounds on said mobility device, so how can you adhere to the regulations?

(Simultaneous speaking)

MR. SPENCER: But see, but now you need to really boil that down to what is it that needs to be happening to address that issue. And that is may be what the direction is. Maybe we need to take a more internal look instead of just an external look.

One of the issues -- just for instance, we're addressing in the automated or connected vehicles case, what is the federal role? You know, we can't have 50 sets of rules out there. We have to standardize at some point to allow things to kind of -- you know, your bus manufacturing is what, 5,000 buses a year? That's a pretty small market. You know, and we have to keep a bus for 12 years. You know, how do we make that work?

So you know, maybe standardize it, so that the same process is done across the board. And make it available more to, you know, other agencies. We have to fix the issues.

And that's what we need to do, is identify some of them, especially the internal ones. I'd be more than welcome to listen to what you're unhappy with in the industry up there, what we need to help address that. You know, I'm trying to push the policy envelope. Technology -- five and seven year technology rules don't work.

MEMBER JOHNSON: All right. I'm going to get with you then because here's another one.

So, you know, we host a lot of major conventions in town. And we've actually got some of our more major conventions are saying, please, RTC, can we partner with you for the use of your vehicles, you're -- vehicles that you got, spares, during this major rush hours when there's not enough taxicab capacity and there's not enough buses in the area?

And we're willing to invest in, you know, very aggressive technology for fares and for fare collection. This is our contribution to your system, but we can't do that because of this charter law regulation where we can't compete with private sector.

MR. SPENCER: I'll tell you this. ICUs BB integrating former management is a management tool to look forward. So what is the problem and look at where your capacity is.

You don't have the capacity on the roadway, but you have transit. So now you guys are able to shift that. You don't have to worry about the charter rule, because now you're doing it as a mobility option. Using it through your TDM, your mobility options.

MEMBER QUIGLEY: All right. Well, I need to --

MR. SPENCER: So dig into that one. It's one of the technologies that is going to break. Yes?

MEMBER DENARO: An example of this disruptive technology in the freight area, one of the companies that my venture firm is financing right now is applying an Uber model to last mile delivery for packages.

And so the premise is that you're not home -- if you live in a big city, you don't want that package coming when you're not home BB you're only there in the evening. So they're guaranteeing, like, one hour delivery all the way up to midnight.

So they're actually not delivering when people were home during the day, or who aren't home during the day, they're using their capacity in the roadway say between 6:00 p.m. and midnight, and the people are happier because they're getting their packages now as opposed to having them stolen or rained on or whatever.

And it's been very surprising to me to see the demand that they're getting of people opting out of FedEx and UPS and going with this because it meets their needs better.

MR. SPENCER: It's essentially the payer pass. I mean, I was here for almost a month in the Oakland area for CalTrans when we implemented their pass. You know, you're going to pay

a fee if you come during peak hours but if you come off-peak, you might even get more credits, depending on your balance.

Yes?

MEMBER SCHROMSKY: One thing I would think that we would all acknowledge, I'm sure that your department's looked into, is cyber security. Because I think that's a big challenge.

And I see it locally and obviously from a national -- not from an economic standpoint, but as you know -- for instance, North Korea, what they've done to a simple movie production company. But, I mean, it is a big issue. It's been one of the big issues for all the utility companies for many years, is looking at cyber security that could take down a grid.

Just imagine, if I could shut off every bus, every train going into a major city. So I'm curious to see what your partner agencies, right, and through other agencies --

MR. SPENCER: I've heard that's really a concern vis a vis cyber security certifications. And it really is, it is vulnerable. You can't just do it for cars. You've got to do it for everybody.

MR. FEHR: Yes. I was going to say that part of this is coming up with an overall concept for how you're going to address ensuring trust, protecting confidentiality and all of the other

kinds of things you want to do, underlying the communication technology.

It can't be done piecemeal, or you can't rely on things that may not be there, their depth overall.

MR. SPENCER: So, yes. I come from the FDA, you know. We do. We work with all levels. We work with MARAD, the Maritime Administration. And we pay attention to catching the ferries model because ferries are typically one hour or better headways, you know.

Working with freight, you know, the chassis on a bus is much like a truck. So, I mean, the MPO looks at a lot of that.

We're not working in a vacuum. We have our missions, but we're not working in a vacuum.

But we would love to hear what your experience in the field, what we need to change in the direction we have, would be great because we need to write the policies that enable us to move forward.

Anyone else? Well, I hope that explains it well. And if you have any questions, please just see me. I'll be glad to answer them right here. Thank you.

CHAIR KENNER: Well, great. Well, thanks so much. And thanks for the impromptu presentation. I think it was really

helpful in response to the questions. So I think right now we're just sort of on time for a break, 15 minute break. So I'm going to do that.

(Whereupon, the above-entitled matter went off the record at 2:16 p.m. and resumed at 2:36 p.m.)

VICE CHAIR WILKERSON: Okay, so we'll get started. In our December conference call there was a general consensus that institutional issues are areas where we got committees' collaborative expertise and experience to provide value to the U.S. DOT. And it was recommended that we have someone make a presentation for the committee, and Brian Cronin is here from the FHWA, and I think just Walt is going to be part of this discussion as well.

Institutional Issues – Operations and the Connected Vehicle

MR. CRONIN: So I have two presentations that somewhat go together and bounce off each other. And so I'll start BB and I've spent approximately one week in my acting role and I can't describe everything the Office of Operations does, but I'll highlight a few things, and then Jeff Lindley is here and Jonathan Walker, who has primarily worked on the guidance is also here and will be able to answer some questions.

But we also have sort of a long history of Federal Highway

and ITS Joint Programs office working together on the implementation of ITS and operation solutions.

And so when we talk about operations, it's really about looking at how we address travel demand, how we look at responding to events, providing reliable transportation, looking at how we move freight. And so the office has sort of set aside structures on freight movement, on work zones and weather and special events -- sort of event management and its operations in terms of real time management and activities.

So when we look at why, I mean obviously we want to look at the reliable movement of people and goods. Not just people, not just goods, but how we move folks and goods through the system. We have of course talked a lot this morning about funding, and so the funding's not there to build a lot more new road infrastructure. And so we have to look at how we have that asset apply technology, apply system strategies to then make the system more reliable and then look at sort of safety and of course looking at how we reduce or manage congestion.

So one of the big things is looking at how we proactively do this. One would say that for the last ten years it was really about putting technologies in place, to understand the situation, to react, and in the shift over the last five years

and certainly into the future is really proactively managing.

Getting data and information and having the tools in place to actually be ready to anticipate.

We talked a little bit about this this morning and about if you have the data and you have the model, you know, the analysis tools, how can you anticipate the system has the strategies in place and make operational decisions to move people and goods more effectively?

So we have several different theme and program areas I wanted to kind of talk through. The first one is really about building that foundation for operations. So having that technology base and having that workforce of looking at how you can do performance management, understand how the system is operating so that you can address situations and look into corrective management. Looking at the tools and looking how you start and can actually plan for operations.

So it's not something that you're just going to do in the future, but as you're making investments you're planning for how you're going to use those tools and how you're going to implement those strategies.

The next one is looking at reliability. And so it's been a major issue about understanding how the system operates and

how you have a reliable trip. And so if your trip takes 15 minutes one day and 30 minutes another day, an hour the next, it's not reliable. And so looking at how we can measure that while moving people and moving goods. And so a big part of the office is looking at how we can get data and how we could use strategies like active demand management and pricing and incident management and work zone safety to sort of use these tools to make the system more reliable.

How do we then efficiently move freight? So the same sort of situation as how do we have the data about where the truckers are, where the empty containers are, where the system needs to move the goods from one location to another and how is the traffic BB or the roads system able to handle that goods movement at any particular time? So looking at the technology, looking at size and weight and data issues, looking at the whole national freight network.

And so lastly BB and this will build into sort of the biggest connection for the discussion of the advisory committee, is looking at connected vehicle. And so looking at taking all the technology that the Joint Program Office has been focused on and how do you bring that into the highway system to operate and manage the highway system, the arterial system and the

connections into transit and freight more effectively.

So a major part of the office is looking at the mobility applications and freight applications and some of the safety applications to implement the connected vehicle technology.

But we're also talking about integrated corridor management, we have active traffic management, signal systems, work zones and various other information about other parts of the program.

So now I'm going to delve a little bit more into connected vehicles and the role of the Office of Operations and Federal Highway in general. It's really about providing national leadership in terms of how the industry moves to implement connected vehicle technology on the roadway infrastructure and the systems that can manage that, facilitate a smooth and effective deployment of that technology in the systems and the information that it will bring.

So Federal Highway, in the course of writing guidance, to help state and local agencies make decisions about whether to implement. The guidance is not a regulation. NHTSA will talk to you tomorrow about the regulation environment on vehicles, but it is an optional guidance that is a local decision on how we want to implement connected vehicle technology and

solutions and applications.

And so the goal of the Federal Highway is trying to say how I help someone make that decision, and if they've made that decision, how to do it right? What -- a plan for it, how to analyze what applications make sense for that location, how to budget for it, and then how to implement different types of things we can do.

So we started last year writing and looking at how to prepare a guidance for the industry to implement the technology.

Worked a lot with AASHTO, other state and local agencies to get input on this guidance. During the summer, like internal coordination as NHTSA was getting ready to put out their advanced notice of proposal making.

Kind of coordination of what is this guidance compared to this NHTSA decision, this NHTSA regulation and how are they linked? If NHTSA makes a regulation what does that mean on the guidance. So a lot of internal coordination.

And then ultimately in the fall we released the guidance for public comment, and we received a significant amount of comments. But the good news was none of them were show stopping.

None of them came back and said we missed something, we're doing something wrong, we're on the wrong track. So all of

the comments that came in were very helpful.

Jonathan and Jeff came in, a whole group of folks across the department looking at how to address all of them. But the good news is that the community is on board with the direction Federal Highway's moving, likes the intents of the guidance and the course we've set forth.

So what is in the guidance? And so the guidance document as a whole is sort of an iterate process of initial set of guidance that will come out this summer, followed with some updates as we learn more information on the pilots and other things. But in addition to sort of the high level guidance document, there will be a suite of tools to help state and local agencies make decisions and analyze things more effectively.

So these tools look at system engineering, look at the planning process, look at the licensing. Whether FCC has rules related to the licensing of when you go to install DSRC equipment on the roadside, so there's a whole guide on that. Looking at the messages that might be sent between a vehicle and the infrastructure BB or between the infrastructure to the vehicle, how do you describe some of those messages?

Cost estimating, cyber security, transitioning from near

term vehicle infrastructure to a longer term -- 20 years from now, what do you need to be thinking about in terms of what applications might work when you have a little bit of connected vehicle infrastructure and what applications might work when you have a lot of connected vehicle infrastructure, or a lot more vehicles.

Looking at communication selection. So we talk a lot about dedicated short range communication and that's critical for the V2V and it's critical for safety applications, but it's not the only technology that can be used to implement connected vehicle type work.

So cellular -- for instance, satellite. There's a bunch of different communications technologies that can be brought to bear to enable these different kinds of applications. So we want to put something together to help state and local agencies decide how much DSRC infrastructure or where they need to be looking at other types of communications.

And then, lastly, vet the cost analysis tools to really help understand and analyze the different situations.

And so we'll be, in the spring, running through sort of the last set of hurdles between the U.S. Department of Transportation, Office of Management and Budget, to clear the

guidance and basically issue of first release which will be intended to be out in the summer.

And then we'll look to update that in 2017 after we have better information from the first round of pilots, in terms of implementation issues and just sort other information on the benefits of all the different applications that the pilots choose to implement.

And with that, I can answer some questions or we can transition into Walt's presentation and get a little bit more detail into some of the technologies we use.

VICE CHAIR WILKERSON: Questions?

MEMBER DENARO: I have a question. So it sounds like -- although I think this is part of helping state and local implement the technology, how does that work?

Is your office going to have specific, individual, unique space for working on implementing that? Or is it something that covers something and you hope that in applies? How does that work?

MR. CRONIN: Okay. So there's several different structures in terms of -- there's, from a Federal Highways perspectives, there's people in the Office of Operations that provide assistance on different technologies and systems and

research, then there's a resource center.

And so there's four of those across the country and those are really, really detailed technical experts on certain issues.

There's the traffic signal expert, there's architectural experts, various different planning experts, and so they're that aspect. And then in each state there are an operations person.

Now --

(Simultaneous speaking)

MR. CRONIN: Yes, Federal Highway. Now what I would say is, sort of, what's going on in government right now that may not be their entire job. I know when I worked in the FTA there's an ITS person and that's about ten percent of their job, you know, it's not a hundred percent of their job. And so there is -- there'll be a suite of federal folks that can help.

MR. LEONARD: But it's safe to say that in each Highway's division office, there is somebody who has ITS as a part of their portfolio if it's not a full time portfolio. Federal Highways resource has ITS as a part of their programming in each division

MR. CRONIN: Now they've BB I mean there's another part of something that's sort of being established which would be

a partnership -- with AASHTO, ITS America, LTE and probably others will come in, are putting together a deployment coalition. And so the goal of this coalition is to really help folks, help with education, help with information on deployment of connected vehicles.

So that's just starting. And I'm not sure if there's anyone that had more to talk about the deployment coalition about, you know, I think it's still trying to establish itself in its roles.

MR. SHEEHAN: That's essentially correct, and it would include general tasks to promote the information exchange between the community and the DOT. Whether we have questions that we need answers or we're getting good feedback about what's needed from the community based on some of the stuff that's been developed.

So that's the core. Fundamentally information exchange, but -- and Jennifer can make them, may be able to talk about this from ITS America. It's designed to include a large group of the state highway -- state agencies. Also the associations covering the different stakeholder groups and that's really important, is a broad group inside the coalition. So we're making sure we're hitting the federal agencies, the freight

providers, the highways' agencies, the local agencies.

MEMBER MCCORMICK: Are you going to keep a repository of all of the lessons learned, similar to what the affiliated test bed does and keep that as a live living document going forward, or set of documents?

MR. CRONIN: Yes. And so, I mean that's sort of glances over, I think, into what Walt will talk about is sort of, you know, part of the last five years is sort of building -- the JPO was operating a test bed and providing through this technical resource to the industry.

And so what's happening now is we're trying to transition all that knowledge from Walt's data and the few of the consultants that have been helping him into the industry at large.

And so BB I mean if I had to summarize the affiliated test bed, it is with that mechanism to sort of lift up the experience of anyone that wants to be involved in the real technical and institutional issues about implementing connected vehicles.

And so Walt's sort of establishing one repository of detailed stuff, and then Federal Highways are going to pull together on the connected vehicle pilot site. On the JPO Website has all the information about the architecture, all

the applications everyone's been building, and so there's this wealth of the repository on the JPO site.

And then the Federal Highways site and how this is linked together and will come about, all the guidance type material that will come together.

MEMBER MCCORMICK: Okay good.

MR. CRONIN: So let's hand it over to Walt.

MR. FEHR: Okay, as Brian mentioned and his work there at Federal Highways are starting to put together a much broader, longer term vision for how this particular activity has been supported in the future. I am in, I guess, in the Joint Program Office working on a much shorter and much more focused time and place context.

My stuff is important to me now in the middle of this year where people might be starting up these pilot projects, and we want them to all start up and be able to give us the maximum amount of beneficial experience that we possibly can.

So we've taken a lot of the material that we've encountered over the last couple of years as we've gone into a series of projects leading up to where we are in this kind of deployment time line, and are getting ourselves ready to support those particular pilot activities and that's my focus.

We're sitting here with all of the experience that we need during our proof of concept exercise in the late aughts, the safety pilot model deployment in the early 'teens and now we're ready for the next big round. So it's been my job to try to glean all of the understanding from that, get it into shape so that people can then have that benefit to start with as they do this next big round of pilots.

One of the things we want to do is provide people with a complete concept for what needs to be behind all of the activities we'd like to accomplish in these pilots. We no longer want people to treat these as one-off isolated research activities, we want them to start thinking about them as part of a continent-wide potential deployment.

So we had to come up with a complete idea of how we would do an overall communications security practice that established trust and protected confidentiality while preserving privacy by design, if there's such a thing.

We knew that data flow and evolution was an extremely important underlying facility that needs to be in place and wanted to accomplish any one of the application concentrations that people are interested in.

We knew that there were going to be a tremendous number

of communication media that could be melded together to accomplish these activities, and we knew that we needed to provide practitioners with some practical ready-to-use tools to help them right out of the box so that they could get their pilot projects up and running.

The idea is that they should spend 20 percent of their time getting their project running and 80 percent of their time actually running it. Projects in the past have typically been the other way around, where they've spent 80 percent of their time just getting something to work and 20 percent of their time actually running the project. We're trying to flip that.

And the whole idea is that we want to get these projects up and running and operating at a particularly high level so that they do foreshadow parts of a complete deployment of this technology.

And one of the huge underlying themes that we have is that anybody that's operating in installations or whatever have to have that kind of opportunity for a common experience that you would expect to have in any kind of transportation setting that's part of our nationwide deployment.

So we know that we need to bring all sorts of communication resources to bear on this, and over the last couple of years

we've been engaging with people who are adept at all sorts of different radio service level media and inviting them to figure out how to bring their resources to contribute to this.

So we now have resources that have everything from a continent-wide reach to very, very short range reach, and people are working to figure out how they can all be blended together in order to accomplish the movement of the data underlying these kinds of things.

And I mentioned already in some of the earlier remarks about this understanding that there are two types of data in a system like this. There's a fundamental data that everyone should have access to, you know, equivalent to the red octagon stop sign, a constant; and then the other kind of data that supports all of the value-added kind of activities that people would want to do.

So we've come up with a complete understanding of what the architecture of a system like this could look like. We've come up with tools for helping people express their particular project version of it.

And in the margin on this particular slide I'm providing you with a couple of links so that you can go back and get some access to some of these resources and make them available to

your people or review them or provide us with that kind of feedback on our overall concept.

Particularly, we have spent quite a bit of time analyzing the kind of architecture that would need to be in place to be in a complete connected intelligent transportation system based on a lot of the work that we and others in the department have been doing over the last few years.

We've amalgamated all of that and put it together into this reference implementation architecture. We now have the tools to help people create, you know, their versions of this kind of material so that they can effectively communicate with each other.

And a lot of that is what we've done in order to make people who are putting together pilot concepts able to work at a very high level very quickly in this kind of an area.

Another thing that has been mentioned already but again we wanted to reiterate was that we've been collaborating with a tremendous number of all sorts of different potential participants in an activity like this through this rather creative affiliation of test beds.

I mentioned that Contra Costa County is member of it. We have research universities, one-person startup companies

that are participating in this, big name companies are participating in this and they've all helped us to make sure that we've kept on the right track as we've put this fundamental understanding together.

They've had an opportunity to critique the material as it's been developed and at least be exposed to that so that, again, if they want to participate in our next round of activities they've had that leg up and they've had access to see it work and know how to contact the people who are, you know, working on it with us and all the rest of that.

So that's been a very valuable thing we've been doing, and more and more people are joining that as people get more and more serious about participating in our activities.

MEMBER QUIGLEY: What is the Seattle Monorail Institute?

MR. FEHR: Pardon?

MEMBER QUIGLEY: What is the Seattle Monorail Institute?

MR. FEHR: Seattle Monorail --

MEMBER QUIGLEY: Isn't that what it says? Oh.

MR. FEHR: Which column?

MEMBER QUIGLEY: Oh, I know. That's in the first column about ten from the bottom. Does that say monorail or memorial?

MALE PARTICIPANT: Memorial Institute.

MR. FEHR: Oh, this is Battelle.

MEMBER QUIGLEY: Oh Battelle. Oh, okay. Sorry.

MR. FEHR: I know there's a monorail in Seattle.

MEMBER QUIGLEY: Oh that's right. I didn't know there was a whole institute for it.

MR. FEHR: Although if they want to join they're welcome to. That is the transportation mode of the future.

Anyway that's been a very useful engagement, and that comes before us because it's a lot of people who are on the outside actually seeing how things are developing on the inside, and those who have been particularly interested have had an opportunity to come guide or formulate some of the things that we have been working on.

MEMBER WEBB: Walt, how big has that list grown in the past year? I mean were you at 50 last year, were you at 25 a year ago?

MR. FEHR: We were probably about 25 a year ago. This list now has 62 on it. Carnegie Mellon was the last ones that we put on the list. Since this list was created four more have come on, and I think I have one more that's in my inbox back at the office.

MR. LEONARD: I was going to say I think I signed three

last week that aren't on this list.

MR. FEHR: Right. Right. So we update it every month but it's always a few behind. We're also, you know, trying to do some more active engagements.

Another thing, we want to make sure that people have an opportunity to get up to speed, so we've created a cadence of active engagements. Every Wednesday I have ducked out right before lunch because they were starting up this week's plugfest style activity.

We normally have a short tutorial period at the beginning of it where we tell people about whatever the latest thing is that we've been doing, and then my staff are online. We have cars driving around. We have traffic signals operating. We have data flowing. People can watch stuff in real time and, you know, go back and forth with my support staff during that particular thing.

We're also trying to do a couple of showcase events highlighting the data movement capability of this system, and we're planning to do the first one of those showcase events at South by Southwest in Austin in March.

It's not a typical transportation venue, but it's a place where a tremendous number of the people who have the capability

of doing the data analytics on one side of the system or the data presentation things on the other side of the system happen to congregate.

So we're going to showcase, you know, this thing working and kinds of availability that we have, try to interest those people in participating in this. Again, they're nontraditional transportation kinds of people. We're going to step back into a more traditional transportation oriented thing by having the next one of those engagements at SAE World Congress in April, and then we'll have the third set of those kind of engagements in the summertime, trying to identify a venue to do that.

But again, we're trying to break out of the traditional transportation area and bring in people who could make a very valuable contribution to this kind of activity.

Again we want to make sure that you have a fresh copy of the links to our pilot site, and the frequently asked questions section there is being updated regularly now. The procurement activity is out so we encourage everybody to watch that. And that's the end of my material.

I just wanted to leave people with this particular thought. We have to come up with something that has a plausible capability of being deployed by at least continent-wide scale,

and that's what we want to make sure people keep in the back of their mind.

This is not a transit thing. This is not a highway thing.

This is the connected intelligent transportation system thing and it's not a particular company's thing, it's The Thing. And we want to make sure that we don't make the same mistake that Alfred Sloan chastised himself about, about not thinking big enough.

MEMBER WEBB: Walt, and I'm not sure you're the right person to ask this, but I'll ask it because of the test beds.

The next round of the pilots scheduled for that is --

MR. FEHR: The procurement activity was announced last Friday, was it? And the proposal is due on March the 15th, the Ides of March, and that's about what I know right now. I have to refer everybody back to the broad agency announcement for the details of it, and if you have particular questions that you'd like answered --

(Simultaneous speaking)

MR. LEONARD: Here is the language that Walt wants on the record. There is an open solicitation on the street. If you have any questions, visit our website for information or speak to the contracting officer.

(Simultaneous speaking)

MR. LEONARD: From the email we sent out to everybody.

MR. FEHR: And we're excited about it. We're extremely excited about it.

MEMBER CALABRESE: The connected vehicle demonstration that just took place up in Michigan a couple years ago, note, public transit aspect of that is slated to go down to Orlando and they passed on it. Whatever happened to that?

MR. FEHR: I don't know.

MR. SPENCER: What was that Joe?

MEMBER CALABRESE: The connected vehicle demo was slated for that to go to the Orlando system to continue that test. They ultimately passed on that. There was some solicitation to find an alternate location about a year ago, and whatever happened with that?

MR. SPENCER: We were talking with -- we had Zimride and we had the university there and that's actually, that's the mobility application you're talking about. The safety applications were tested in Hanover, Michigan along with the full safety pilot.

We actually are publishing, I think it's coming out this week it'll be published, the results of that. It's called the

Transit Retrofit Package or TRP.

But for the mobility, that's ongoing. Orlando didn't work out. I guess some of the partners couldn't pull the pieces together in time because they really wanted to test it with the Flex bus, which is also a new concept, which is demand responsive transit, but that didn't get deployed in time enough for that so that's why it didn't happen in Orlando.

But there was a test that's going on in Cleveland, or no, Columbus. I'm sorry.

(Simultaneous speaking)

MR. SPENCER: Ohio, yes. But it was in Columbus, I'm sorry, with the university. So that's still ongoing. We expect to wrap up that I think in March.

MEMBER BELCHER: Walt, if you need a third location, we are having a meeting in June, instead of Verizon at AT&T at the AT&T suppliers conference there. So it'll be at --

MR. FEHR: That is actually a tremendously good idea because that is outside of the transportation domain we're looking for. And yes, we realize that, you know, transportation is one thing, but it is part of, you know, a much larger thing. And we need to make those kinds of decisions.

And you mentioned an event that we were going to be doing,

I think, before the event in Contra Costa County. If there is one thing, one theme that I would like to come across there is that in this next round of activity we're very much focused on getting people that build these things and the people that use these things that opportunity for common experience.

That's a huge step forward in the level of quality and the level of uniformity of these kinds of installations that is going to happen in there if they ever are going to be part of a nationwide deployment.

So that's going to be one of our motivators or underlying factors in these pilot projects. It's how well they present the users of the system that opportunity for the common experience. Is it the same in Peoria as it is in Phoenix?

MEMBER DENARO: Walt, can you give us a specific example of something that's happened at a plugfest?

MR. FEHR: Just today, there's a small developer who was working on back office, I don't know, data analytics related to figuring out things that are happening based on this highly granular program that we're making available.

So during the event we were driving our few of the cars around in particular patterns so that they could capture some sets of data that, you know, so they could try to find expected

patterns. It's that kind of thing.

There was other people on the line who were trying to figure out how do I actually connect up to establishing subscription with our data warehouse. It's that kind of nuts and bolts kind of -- people need to get through in order to get something up and running.

MEMBER DENARO: Well, what kind of visibility do you have on what they're doing?

MR. FEHR: There's tremendous feedback on the utility of what we're doing. You know, if the stuff that we're doing doesn't provide any value for the people on the other sides, then we're not doing the right thing.

MEMBER DENARO: But how do you get the feedback?

MR. FEHR: It's the give and take that happens during those kind of --

MEMBER DENARO: So they just choose to share what they're doing? Is that what you're saying?

MR. FEHR: Yes. Yes. We're all sitting at these common data interfaces that have to be openly defined. Everybody has to understand how the interface works. And so we're not inside of somebody's black box, we're at the place where the black box is connected.

And yes, we understood that, you know, establishing these kinds of subscriptions and the kind of high volume data center implemented things our original concept was to use, you know, old school transport mechanisms. And we're finding that the newer websites' approaches are more functional. You know, it's that kind of learning that we're all going through and they're providing this kind of real on-time feedback to us.

So the whole idea, we want to have this developed to a point where people can spend 20 percent of their time getting their site up and running, 80 percent of their time running it. We'll get the integration things worked out before then.

CHAIR KENNER: Other questions, comments? Ginger Goodin who is from the Texas Transportation Institute couldn't be here but she had written a note back to Sheryl and I. And, you know, she was basically mentioning some of the same discussions with, you know, in particular about funding, you know, how's that going to work, what's the vision for it, what's the reduction in revenues, realities of existing funds and all that.

So that was an area that I think that she was interested in working on and was curious about it. And I just thought I'd mention it because she couldn't be here. For the people who said they couldn't be here we said, hey, tell us, you know,

what you're interested in and what area you're interested in.

So she was certainly interested in institutional issues.

This is the broad category that we are talking about now, and then the funding, and I think she was viewing the funding as a barrier to implementation.

MR. FEHR: Well, that's one particular thing that we would like to see some critique of. We know that, you know, if people are going to move data in a system like this they have to have the opportunity to recover the value they add. So we're putting in that accounting practice even in this in reference implementation that we're putting together. And we're going to count contributions and count uses.

We're going to see how well a concept like that could work even in this particular stage of what we're doing, because we know that if this is ever going to be realized that has to be in place. And so if anybody wants to observe what we're doing and comment on it and critique it, because again if there's an ability for people to recover the value they add they will do it.

If there is no ability to cover the value they add, like creating fundamental data or creating a refined product or delivering minutes of data, whatever the role in the overall

architecture is, if they can't recover the value they've added they aren't going to do it.

MEMBER DENARO: What's the status of the system with respect to combining what's called government data and private data? So the common example would be you could provide, from the back end, you could provide traffic information over DSRC service.

On the other hand there would be any number of private companies who might want to do that. I don't know if they would do it through the back end or whether they would be a separate service over cellular. So what's the status of how that would be put together?

MR. FEHR: Well, like I said, we're putting together a trial of that kind of concept, particularly actionable data that you want delivered from somebody in a back office that's discovered something useful and wants to push it out towards the vehicle.

What we're doing is defining the data interfaces that could accomplish that and then separating the content providers from the delivery mechanisms from the data users.

So an example of that might be, we know there's a number of people out there, I think your friends in one of your other

circles are working on this problem of protecting workers.

And we now have created a data unit definition that would give the actionable information to the appropriate people who might be encountering that. Your back office organization would push that to the distribution system, and that distribution system would then know the assets that are available in order to deliver that data unit to the ultimate users. And it could go out and spot broadcast, to see if we could put out DSRC.

It could be available in bundles that could be retrieved using internet protocol transport media like cellular, you know, as the vehicle moves into a new territory it would be getting bundles of these data units, or we could put it on a playlist and it could be delivered by this continent-wide delivery mechanism.

Our friends at Sirius XM are really investigating to be able to do that. So use the data unit creator knowing that push for data units replace where it will be delivered. The delivery mechanisms know the assets that are available to do the delivery.

The people that build the equipment that should be either in a vehicle or a gadget that you put in the vehicle can make

choices about what kind of delivery media they will make available and we provide that whole series of steps.

MEMBER DENARO: But then what are the business models indications of that?

MR. FEHR: Well, your people would be, you know, they're pauses would be counted. Likewise, all of the people that are delivered that data unit would have a record that they would see of that data unit. We have it at that level.

So somewhere in the middle if someone could figure out the value of that data unit and content creators would be compensated by content, users in some other way.

MEMBER DENARO: Well, okay. So there is a mechanism where there could be subscriptions services that way. Is that what you're saying?

MR. FEHR: Yes. It all depends on how people decide to institutionalize and implement the various steps in there. The whole point is that there needs to be a mechanism there.

MEMBER DENARO: Yes. But your platform can handle a variety of those unit models then?

MR. FEHR: Yes. All we know is that that's, you know, one data unit that was created. There's several different delivery mechanisms that could deliver it. The people that

build the equipment that is used by the ultimate user can decide which delivery mechanism they want to make available to their user, and the whole system can be built in a building block fashion.

MEMBER DENARO: And you can differentiate at any one of those points?

MR. FEHR: Yes.

MEMBER DENARO: What's being offered is people, when they want it --

MR. FEHR: Right. So the whole idea is this making that fundamental data unit available because that's the kind of data that everyone should have access to. Not somebody who drives a particular brand of car or somebody that pays a particular subscription, but the location of an icy patch on the road is something that everyone should have access to. They can decide, you know, what level of access, how that would happen, all those kinds of things can be built in.

MR. CRONIN: I think one of the things I can add sort of to that plus the discussion this morning about data gaps and so forth is so you'll hear tomorrow from NHTSA about sort of the status of the ANPRM and the V2V and sort of the basic safety message and have sort of that key, one of those key foundational

data uses.

NHTSA, with their regulation process now is that they're going to require vehicles that have DSRC put out that basic safety message, but they'll let the market come in and say which applications to do.

And so if you were to ask me sort of what data you need or how you will get communications and, so Walt is working on sort of those foundational technical pieces that have to be there.

What we're really sort of saying, the market and the industry is going to come in and the Verizons and the Sprints and others are going to come in and say, you know, we all understand that if we have our phones we can send data forward, and we have different applications that can send existing data.

So we don't want to stifle that but we want to encourage the use of that and encourage the market to step in. So we are not in the business of defining the market-based solution but enabling ways for those to come out.

And so as sort of some of those what is that foundational core piece of technology or architecture and where we regulate and where we have guidance to sort of encourage ways to do things we do that. I don't know if that helps anything, but, you know,

we're sort of really relying on the market to come in and innovate and drive some of the solutions.

MR. FEHR: That was one of the biggest lessons from the safety pilot model plan. Having that extremely unified definition of that data interface and getting everyone to build to that one interface definition. Regardless of makes and models and brands and all that other kind of stuff, they all follow the same data interface definition.

That was probably the biggest lesson we learned -- how to actually accomplish that in the world where, you know, it's all competitors that are doing it and that they all meet off that common data interface. We're trying to expand that kind of idea to other parts of the connected intelligent transportation system. Where are those points where you need that common interface?

MEMBER DENARO: Right. So, Brian, I didn't completely understand what you said because the most -- well, I think it's a question for Nat more, but the place where the most booming occurs will designate and it's got all these standards and everything else, but vehicles going to have to broadcast the basic safety message. Vehicles are also going to have receive a basic safety message. Is it then open as to what they choose

to do with that when they receive it?

MR. FEHR: Yes.

MEMBER DENARO: Can they choose to do nothing with it?

MEMBER MCCORMICK: Yes, they can choose to do nothing. That actually occurs right now. We know that 20 percent of the people that receive an idiot light on their car do nothing. You know, oil light come on, they do nothing. They keep driving, whatever. Twenty percent of the people literally, you can choose to do nothing with the system.

MEMBER DENARO: Huh. I didn't know that. Okay.

MEMBER MCCORMICK: And it probably is something that you can ask Nat about, but I mean I think the general thinking that they went down that path is to try to not complicate the rulemaking process more than absolutely necessary.

So they chose to go down a path in saying we're going to regulate that you have to have a radio in your car and then hope that the rest of the stuff happens. Well, then it's more about simplicity than it is the intention that people aren't going to hook up their radios.

MEMBER DENARO: Oh no, I understand that. I understand that. And hopefully we're all going to hope that the industry's

going to get together and create kind of standard things that one sees in a car so you don't have to, you know, get more and different ways into a car so, I mean, you know, we have --

MEMBER MCCORMICK: That's a little different topic, but yes.

(Simultaneous speaking)

MEMBER DENARO: So okay, but so for the most description, you know, you can choose -- the system can choose different ways to deliver whatever it sends, but this means that also a vehicle might have a completely independent channel with stuff coming in for, let's say, roadside assistance.

Let's say a vehicle either is connected to systems in the vehicle or whether it's inside of a transreceiver embedded in the vehicle that can also be another independent path of entering the vehicle that way.

MR. FEHR: Yes, there's the two kinds of data. There's the fundamental data that everyone should have access to and every competent provider should be able to provide, then there's everything else. All the value added maintenance, management, enforcement and commercial kinds of things.

MEMBER DENARO: But some of that stuff might come through your platform, some of it might come through other independent

means, and I guess the point is you don't care.

MR. FEHR: You don't care.

MEMBER DENARO: Okay.

MR. FEHR: As long as that fundamental data is uniformly defined so that it is ubiquitous and available, the rest of it we don't care.

MEMBER DENARO: Yes. Okay.

CHAIR KENNER: So to just add on to really what John said. So we've already developed jointly through CAMP, the Crash Avoidance Metrics Partnership, a number of applications. I can't remember the exact number, like nine or something like that.

So we've already developed applications that we all thought, you know, would provide, you know, value, and now there still is the issue of, you know, does everyone get the exact same, you know, audible warning, whatever? The current answer to that is no, we don't.

But the agency is also including research on, you know, warning strategies for active citizens --

MEMBER DENARO: CAMP is doing that?

CHAIR KENNER: Oh, I'm sorry. So NHTSA is doing that independently from CAMP. They're getting information from all

of us to say why did we choose to do what we did and --

(Simultaneous speaking)

MEMBER MCCORMICK: It's somewhat independent on whether you use connected technology to drive the need for --

(Simultaneous speaking)

MEMBER MCCORMICK: A warning feature's a warning feature.

CHAIR KENNER: Yes. So you look at the ability to communicate. That's in there. Then you would say applications, good news, even though it's not in the proposal for rulemaking we've already developed, you know, on quite a number of applications jointly that will work.

And then this is, you know, doing research with data and research information from us on, you know, why do we warn the way we warn, and, you know, the idea is do you want to be able, if you're warning somebody you're warning them and you expect them to react in the system that's causes them to do the correct reaction in the shortest amount of time is the right answer, right.

So all that stuff is ongoing, right. So the reality of it is between now and, you know, five years from now, some of this stuff, you know, will all align on where this application maybe does provide a lot of value and we're going to all do

it no matter what.

And then also, you know, if any of us, if someone showed an automaker there was a more effective way to warn customers with data, we would, you know, be compelled to look into that.

So there would be a lot more learning in consolidation, I think, in the direction that will provide methods that we all can connect.

MEMBER MCCORMICK: Yes, that was one of the things that the integrated vehicle based safety system studied was to determine how much, and the initial reaction was that the drivers of those vehicles were getting all of these different messages and systems, and I think the number was something like they had 30 times the number of traffic incidences as the normal person.

You know, and the guys at Navtech and company had all studied the individual voice technology and found out that you can only give about 20 percent of the instructions in voice before the cognitive load.

And so if your car uses a beeper and yours uses a signal, it's really unlikely that the government can come back and say, well, you all have to give the signal this way. Because it's defined around your specific environments of how you've

developed that in-vehicle experience for your drivers.

MEMBER DENARO: And just to make sure I'm clear on this too, so when Shirley or somebody launches their car in the U.S., delivers it to the Port of LA, any vehicle operating on the roads in the U.S. is going to have to have this capability. Is that correct?

CHAIR KENNER: Any new vehicle.

(Simultaneous speaking)

CHAIR KENNER: So let's say the rule is official; it would be required to comply with that regulation before you could distribute it for sale.

MEMBER DENARO: And how are they --

MEMBER MCCORMICK: Well, let me ask a question. They were supposed to start last fall looking at the interstate commercial vehicles having the safety message sets. Do we have a schedule for when that -- heavy trucks, yes.

MR. LEONARD: That's a perfect question to ask Nat --

MEMBER MCCORMICK: Okay. We'll do that tomorrow.

MR. LEONARD: On this topic of the human factors for different approaches to warning the vehicle, this is also the question to talk to him about the JPO funds, some research at NHTSA, some performs, and I believe it's gone public.

I know there's some graphs that were developed this summer and fall. I think some of the preliminary work may now be done, so may be available at --

(Simultaneous speaking)

CHAIR KENNER: Yes, we're eagerly anticipating the arrival of that.

(Simultaneous speaking)

MR. LEONARD: It may be circulating around building and not published yet.

(Simultaneous speaking)

MR. LEONARD: But when it does become available we certainly will have a person who'll come in and talk to people about that body of research. And, you know, if it's really about just making sure if you are going to have warnings that they warn appropriately and catch people's attention. You know, if it's going to be audible, people have to be able to hear it, and understanding how people react to it.

It's really just solid communication that we then share with the community and expect the community to take it into consideration when they need assistance. But whether you use, what sounds you're using, and so that we expect the private sector to do a lot innovation in that.

MEMBER CAPP: And there's lots of ways to get someone's attention, right --

(Simultaneous speaking)

MEMBER CAPP: -- correct reaction so you don't want to be too prescriptive.

(Simultaneous speaking)

CHAIR KENNER: But the reality of it is the regulations are basically going to say you need the equipment with the capability to send and receive messages. That's it.

And then they're expecting, you know, the rest to come and not to be overly constraining, you know, how we go about it. Because today to say, what would be a better application meaning how would you do it in 2020, we're going to learn a lot between now and then, and so I think there's a lot of wisdom in the approach.

We can't do anything if we don't the capability to communicate. Once we have the capability to communicate, you know, I would suggest then that we'll all be more in thinking of things way beyond what we would right now today.

MR. FEHR: That's one of the motivating factors defining these very uniform data units and putting together the delivery messages. So it doesn't matter if somebody creates an

actionable piece of safety related data like the location of an icy spot on a roadway, they have a mechanism for creating that data unit. They have a mechanism for delivering that data unit.

And the people that are building the unit were ultimately, is going to be presented as the operator of a vehicle having the ability to meld that into their overall vehicle information concepts of that it performs well.

You don't have a whole box of chiclets or little tiles on a screen in order to accomplish that. You have a very well thought out human interface that works well at 70 miles an hour where you're expecting people to make instantaneous reactions.

MEMBER DENARO: And what's the status of aftermarket devices? Is that looking like a reality, potentially?

VICE CHAIR WILKERSON: Yes.

MEMBER DENARO: I know it was discussed before --

MR. FEHR: We know a lot of people who are extremely interested in that and are introducing that as part of the concepts.

MEMBER DENARO: Okay good.

VICE CHAIR WILKERSON: We have someone from the aftermarket auto care council if you'd like to --

(Simultaneous speaking)

VICE CHAIR WILKERSON: Can you please restate your name?

MS. ANDREWS: Sure. Sheila Andrews of the Auto Care Association. Our membership -- the whole supply chain and vehicle maintenance repair in aftermarket industries. But yes, there are several of our members that are looking at aftermarket technologies. Aftermarket technologies were included in the Ann Arbor pilot project.

So most of those, there were some true aftermarket, but then also ITS said they were demonstrating not just true aftermarket, but also vehicle retrofit technology as well, so those do exist.

One of the reasons I come to these meetings and sit in a room is a lot of these, the very important questions about how the contract will be set from an OE and then into a aftermarket context.

If there are just standards created over how messages are to be distributed or received by the user, what does that then mean for an aftermarket either retrofit or a standalone device, and how can those be built as well.

But I mean I think Roger from DENSO can probably talk pretty knowledgeably about what's happening in the aftermarket as well.

DENSO is a member of ours, but we interact with DENSO's aftermarket cyber business.

And many companies have done so, not alone but, you know, Delphi and others, put pretty big firewalls between their OE and their aftermarket sites. So there is crossover innovation, but you're also dealing with a different engineers at the same time.

MR. CRONIN: So there's some stated concern about sort of the performance of the aftermarket equipment. And so one of the big things NHTSA is doing is over at CAMP, but they're also independently working to set a suite of performance measures related to the messaging and related to the functioning of the equipment.

And so it's not just that it has to send a message, but it has to send it according to its performance metrics. And then Walt is setting up certifications entities that would go to verify that. And maybe Walt can say something.

MR. FEHR: The ITS Joint Program Office email blast just sent out the announcement about two hours ago. Those of you that subscribe to that got it in your inbox.

We have engaged with three potential certification entities to help us do the next round of equipment qualifications

leading up to these pilots. And we're trying a different approach this time around.

We didn't just hire somebody to do it. We're trying to actually give the people that have the potential for creating an ongoing business a leg-up, and we're using people from the industry who have that kind of capability. And again we're using this as an opportunity to build up the capability and they would then make it available as a commercial service.

So the three entities are Omniair Certification Services, which is a spinoff of the OmniAir organization. The next one is Danlaw. Those of you from the auto industry might be familiar with their testing services they provide to the automotive electronics industry. And the third one that's working with us is a company called 7Layers who come from the telecom industry, the wireless telecom and IT area, and are bringing that kind of a perspective to the whole certification topic.

So we're in the initial stage of that where we're collectively defining the scope of the project and ultimately the test procedures and equipment lists so that someone can set up a shop to accomplish these kinds of qualification activities. And we hope to have that all in place so that people can buy any equipment that meets the total expectation --

MEMBER DENARO: So that's going to be regulated that you're not allowed to claim the device has this capability unless it's certified?

MR. FEHR: Ultimately someone will make that assertion, I don't know if I would use the word "regulate," but we don't know exactly what the form of that is. Some of that was out of the work that the lawyers are doing and other stakeholder entities.

I don't know if it will be regulated. But someone will have to make that assertion that equipment is good enough that it can participate in particular roles within the system.

MEMBER MCCORMICK: Isn't that the OEM's responsibility? I mean wouldn't you either validate or --

CHAIR KENNER: Not for aftermarket --

(Simultaneous speaking)

MEMBER MCCORMICK: I mean I'm just talking about the in-vehicle stuff. So they're not going to be validating the in-vehicle stuff, there's not an external requirement to do that.

MR. FEHR: There's going to be a requirement that somebody asserts that the equipment meets the level of expectation, whether --

MEMBER MCCORMICK: To whom?

MR. FEHR: To the rest of the world.

CHAIR KENNER: So if we look at the FMVSS requirements in the United States it's self-certification. And so all automakers make sure that we do all of the testing and have documentation to approve that in good faith that we actually comply with all of the FMVSS requirements.

In some cases the agency is very specific in terms of, you know, what the test procedures would be that they would use in order to audit any automaker against meeting those requirements, and in any given year they'll do random audits of certain FMVSS requirements on certain vehicles for every single automaker.

And so this will be no different from that and, you know, so it's just --

MEMBER MCCORMICK: So then the aftermarket would have to comply with as well.

CHAIR KENNER: Yes.

MEMBER MCCORMICK: Okay.

(Simultaneous speaking)

MEMBER MCCORMICK: Yes, and they'd have to do the recordkeeping in order to accomplish that. Yes.

MR. FEHR: However they can make an assertion that their equipment meets its appropriate role in the system. It's up to them. Because they're the ones that will make that assertion.

MEMBER CAPP: Yes, the advance notice that came out that will lead to the ANPRM, I've talked quite a bit about, you know, the authority issues and how they thought that would fly, likely very similar.

(Simultaneous speaking)

MEMBER CAPP: So then we can count on, you know, the system to send the right messages, et cetera.

MEMBER BELCHER: Well, one of the things, there's at least one of the chip manufacturer that's included to DSRC that is producing DSRC chip components now, so it's becoming a logical aftermarket.

MR. SPENCER: Just as a note for, when you're talking aftermarket, now that's why Transit called it a retrofit package. It isn't fit and finish like you'd find in the OEMs.

And that marketplace is anticipating the heavy vehicle decision. You know, all transit buses are different. There are different ways of hanging out on the bus when you have peripherals it's always afterthought.

And so same thing with the trucks out there. I mean 20 percent of the trucks that are operating are fleet trucks, but 80 percent are individual operators. So you're going to have a really big marketplace for aftermarket and retrofit packages.

MR. CRONIN: So we've talked a lot about the vehicle side and equipment and I just, you know, let me wrap it back around because I don't know how clear it was, really, with the guidance.

So on the infrastructure side, so Kirk and Joe and Tina and George and, you know, they're going to have to make decisions. Do I want to implement DSRC based equipment on the roadside or non-DSRC? But let's just say DSRC based equipment.

So they make that decision. And so they've got to think of why, you know, like am I going to use, am I going to send a message from every traffic signal would enable buses to do transit signal priority?

And there's already technology that can do that but they can do this. They could send it so GM and Ford can implement applications that do environmental based applications so that the vehicles maybe will slowdown when they're approaching a red light.

Somebody had, Jack had the thing with Enlighten. And so they're doing that same sort of thing with a cell phone. And

-- or there would be other messages on sharp curves or different things like that.

Well, a lot of the work has gone into what is the roadside equipment needed and specifically with the active intersection to enable sending the signal time of day, so with the phasing of traffic signal so that information could go out. There's also the message Walt talked a lot about for the traveler information messages that can come out.

And so the difference is NHTSA's requiring all vehicles to have it. The Federal Highway saying the locals who make the choice, but did you do it, here's the spec. Here's really what we recommend you do.

And go do whatever you want, but we're going to give you the spec. We're going to give you all the same kind of information that's NHTSA's going to do in a rule in terms of what to do, but you're going to have to make that choice.

MEMBER SCHROMSKY: So if I heard correctly, it seems like the automakers have agreed upon nine safety protocol or --

CHAIR KENNER: Well, the way I would say it is we've collaborated together in a pre-competitive situation which is the CAMP arrangement to develop nine applications. The applications originally were defined as like work products that

CAMP was expected to deliver.

I think over time we'll be able to understand, you know, the relative expected benefits of those applications, you know, based on the actual, you know, accident scenarios that those applications address.

MR. CRONIN: And so I guess JPO has provided money to NHTSA who's provided that money to CAMP whose 50/50 cost-share to develop a suite of different applications.

MEMBER CAPP: The actual messages, you know, those are established through standards. So the applications are, you know, we would design jointly, put it on the shelf, the messages exist. So pretty easy for us now, once we know what the common hardware's going to be, i.e., the NHTSA regulation, to go ahead and connect these pieces together and get this thing rolling. But that's the thinking.

MEMBER SCHROMSKY: I would just say from an auto manufacturer, I would say it's, I wouldn't say a small community, but a smaller community when you start talking about infrastructure. Many different manufacturers. Many different integrators, different pieces.

But if it's becoming common, like you said, if they were able to then broadcast something from the traffic light, is

it just using a state of protocol that they have to accept or --

MR. FEHR: I think that very thing's gotten to be a lot more common than what is done -- well, I shouldn't say that.

It has to be done as commonly as it is today with invisible light.

If he is going to be transmitting something that conveys the state of the signal lights at a particular intersection, it has to be done the same way in his installation as it is in her installation. So that your equipment in the vehicle has the same opportunity for that common experience you as being the driver have. It's a simple idea, a harder --

(Simultaneous speaking)

MR. FEHR: Using the same three colors and they're going to be stacked this way. You know, those kind of fundamental interpretations of standards have to be done uniformly everywhere so that our machines now have that same opportunity for a common experience that human drivers have.

MEMBER DENARO: Has there been reasonable amount of research done on the mixed vehicle situation until we get the full, you know, high penetration of connected vehicles? Or what I'm specifically thinking about is I've got a vehicle with a blind spot going -- so I become complacent about looking

because I'm being warned, yet so many cars out there don't have the message that's being broadcast.

Has there been a good amount of research on that? I know people are wringing their hands about it but has there been some research done?

MR. CRONIN: So I'm pretty certain NHTSA is about to, or in the middle of doing research related to that.

MEMBER DENARO: Okay.

MR. CRONIN: So looking as for the existing systems that are on the market now. And, you know, how have people adapted to those different messages. So that would be another question for Nat tomorrow.

MEMBER BELCHER: Just another comment on that. I mean I think that's part of the reason for the pilot sites and for -- is to create pockets of opportunity. I mean look at what Michigan's doing, for example. They have a concentration of 30,000 vehicles. You know, you're going to get penetration in those pockets of opportunity.

(Simultaneous speaking)

VICE CHAIR WILKERSON: Same for motorcycles. Same issues.

MEMBER DENARO: Good point.

MR. FEHR: There's probably an important point in thinking about pilot projects is that you're expecting that -- is it really doing what we think it's going to be, should be doing?

MEMBER DENARO: And then tell you the consequences.

MEMBER CAPP: And that's also independent of whether we're talking about an ITS type of technology or any other signal feature in the world. You've got to check back and say is it doing what you thought it was going to do or improve the design.

MEMBER DENARO: Absolutely.

MR. FEHR: Wrapping back around, that's why more people can spend 80 percent of their time and resources operating their project rather than just getting their project to work.

MEMBER BELCHER: So Brian, you talked about the desire to have state and local governments often on the infrastructure side. What about an infrastructure that will be necessary for the security system? Is that something that you're going to expect people to opt into or is it something that is going to be mandated?

MR. CRONIN: Not 100 percent certain I'm following, but, so the core piece of connected vehicles having trusted communication. So GM and Ford and Toyota and the infrastructure from all different kinds of supplier and operator have to trust

the messages, because we're providing the safety of life decisions based on that information.

And so there's the security system in the back that provides credentials that says I can trust the message I receive from somebody else. And so we have a small scale pilot of that in the safety pilot. We've been sort of in negotiations and getting very close to final decision with CAMP about sort of the next round of what that system can do, and the intent is to go have that for the pilots.

And then NHTSA also put out a request for information to get the industry's input on security and how that would work.

And so I'm going to -- Walt's over here. He's dying to talk so --

(Simultaneous speaking)

MR. FEHR: I think the answer to the question that you're getting at is that you don't have to have a specific set of installations in a particular place in order for that to work.

The whole interaction between the back office that manages and maintains those cryptographic artifacts is done using the internet protocol transport. So you need internet protocol transport in order to accomplish that type of maintenance and management.

So if you've got wifi in the car, cellular data radio, whatever, internet protocol transport capable medium, you can accomplish that. So you don't have to have specific equipment installed in a specific place in order to do that.

MEMBER MCCORMICK: I don't think that's really the issue. Scott and I have talked about this at the last PAC. When you've encrypted the transmission and sent it to the next vehicle and it's decrypted there and it determines that you're a good actor and not a bad actor for whatever reason, it processes that connection. It has to operate with a security management system because there is no server side security.

And on 99.9 percent of all the junk, all the bad stuff on the internet is taken out by server side security. You only get a little bit through of it on your PC and very little of it on your phones because that's where it's managed.

Once you start communicating to the infrastructure side the question isn't whether or not John's car sent Debra's car a valid message, it's whether I can spoof that message to give wrong information. There's ice here, there's no traffic signal, there's an ambulance stopped up ahead.

So there's a security in terms of one aspect is am I going to have a problem because of bad coding not because of something

malicious, am I going to have a problem because of something malicious, am I going to have a problem because in reality I never know if I'm safe? I only know if I get a message where I may not be safe. Okay.

So there always has to be an awareness that goes on, and there always has to be a trust that's presumed until it fails.

And once it fails, then the question is, is did it fail because of a failure from the protocol, from the transmission source, from the receiving source, or was it some spurious or bad signal?

MR. FEHR: Well, what I can say in the short here is that we're doing exactly the same thing that's being done to ensure trust in the vehicle to vehicle communication.

Vehicle to vehicle communication is nothing more than communications using internet protocol transport concepts.

We're using cryptographic artifacts to assure trust that in stuff that's shared among vehicles the exact same process works whether you're talking between a vehicle and the back office or between a vehicle and a vehicle.

So that's one of the things we're experimenting with in this next round of activities that we're doing is extending that exact same practice that's being used to establish trust among the vehicles to establish trust among all of the

communications that are part of this activity.

So regardless of whether that data even comes from another vehicle or that data even comes from, is from the back office it'll have the same cryptographic process to establish trust.

Facts are facts.

MEMBER MCCORMICK: Yes, but it does establish that trust by the fact that you've been issued and are using a serialized number. If I'm assuming that for my information on my laptop through the wireless access to get on to his network to transmit it down the road --

MR. FEHR: If that application was running on your laptop and you could get him the right cryptographic credentials to actually sign those things as being a legitimate part of the system, it doesn't matter how it gets from your laptop to his car.

MEMBER MCCORMICK: So you're saying that the security credentialing management system is eventually going to manage all of those accesses as well?

MR. FEHR: Yes.

MEMBER MCCORMICK: Okay.

MR. FEHR: Now the quantity of that is so small compared to the quantity that's needed in the vehicle stuff it's hardly

even noticeable.

MEMBER MCCORMICK: Okay. Thank you.

MR. FEHR: So that's the idea. We have this tremendous cryptographic process that's being put in place to support establishing trust and protecting confidentiality in the vehicle to vehicle environment is to extend that and these other things because it's very small.

MEMBER DENARO: Just another question. Has there been any discussion of liability concerning what a OEM chooses to do with the data in your vehicle?

So an example of that would be if GM and Ford and KIA and BMW all implement a blind spot warning, but Bob Denaro Motors decides not to implement blind spot warning, is my liability now increased, or is this just something that's going to have to be tested in the courts?

MR. FEHR: I think I will defer to my --

MEMBER CAPP: My guess is the latter, Bob, but I don't know.

MEMBER DENARO: I mean there's no explicit treatment of that.

MEMBER CAPP: They may want to sue you and say what the hell, how come you didn't give me the feature that these guys

gave? I can tell you that happens all the time.

MEMBER DENARO: Got it. All right.

Well, and part of my rationale for asking that is because that's kind of cool. Because there's an incentive for this thing to go like rapid fire to get all those applications in there, because if I don't I could be exposed.

MEMBER CAPP: Yes, I mean I don't have any numbers or anything, but it's fairly common in the auto industry for OEMs to be sued if, you know, they have a vehicle that doesn't have state-of-the-art, you know, safety whatever compared to other vehicles and then they have an injury or death or something associated with it. So yes, you know, I guess you just keep the customers happy.

MEMBER DENARO: This one layers it up a notch though, because they've been mandated to put the radio in the car and then they choose not to do something so it's --

MEMBER CAPP: Well, most of us have been kind of, you know, and Nat can tell you this, but kind of standing behind and rooting them on and saying, we want this technology, but it doesn't do us or anybody else any good if only three quarters of the cars put it out, right? We have to be in a path to get to 100 percent. A mandate's the only real way to do that. So that's

why you're not seeing any of us get in the way. In fact it's been, you know, pretty supportive. Pretty supportive, yes. It's all about safety.

MEMBER DENARO: I understand. Okay.

MEMBER MCCORMICK: And the other issue is that we only replace 6.7, seven percent of the cars every year.

MEMBER DENARO: I know.

MEMBER MCCORMICK: It's going to take awhile, right.

MEMBER DENARO: Well that's why I asked my question about aftermarket though see, you know, at least there's a path for that to be a little better.

MEMBER CAPP: To speed it up some.

MEMBER MCCORMICK: Yes, it's like the whole thing they explored with you've got DSRC and you've got DSRC, but everyone else might be able to connect to the cellular network.

I don't need to know, I don't have the ability to know that it's right in front of me, but I might be able to be told through my phone or through the car's cell chip that it's a mile ahead or a half mile ahead and have most of the same benefit.

Subcommittee Organization

CHAIR KENNER: All right. Well, good. Well, why don't we now try and move into the next part? So thanks so much for

coming in, and obviously you guys have done such a great job we can talk about this for a long time as well. And of course we'll get some more feedback from Nat tomorrow, so I'm really looking forward to that.

So what we want to talk about now is to see if we can come up, let's say, a list of what subcommittees we think we should do, you know, based on the discussions we've had today. Don't necessarily have to say what one we want to be on yet, we can do that tomorrow at 10:15, something like that.

We could even come up with a list and say, you know, sleep on it and then we'll reconfirm at 10:15, you know, something like that. But, you know, I think it would be good if we could do that and get your feedback on what we think we should do.

MEMBER MCCORMICK: Was that scenario planning under the implementation issues or was it for all four?

VICE CHAIR WILKERSON: I think it was for --

CHAIR KENNER: Yes. And so I viewed the scenario planning when we were kind of looking at the very first thing when, you know, we had the 30-year plan, and the scenario planning was, gee, you know, should we do it for ten years?

And then that scenario planning, so the su--team would do the scenario planning and from that develop some specific

recommendations that say, yes, I understand, you know, what you're looking at in terms of 30 years from now, but ten years from now here's some key things that we think are, you know, a little easier to define and maybe use the word "plan" instead of, you know --

MEMBER MCCORMICK: But my question is, is that a separate item or is it under each one of those four --

CHAIR KENNER: No, we could do it as a separate item and just say that, you know, we want to look at a planning horizon of ten years out and what that would mean, right. And it wouldn't be restricted necessarily, but I'm open-minded.

MEMBER DENARO: Yes. We could do that and I see the value of that like I've been through a fair amount of training and scenario planning and one of the aspects of it is you pick a distant point out there, you go ahead and develop those scenarios with respect to the two axis and all that kind of stuff, and then from that you derive what are the early implications along the way.

So in a sense the scenario we're planning to set up such that the end state is agreed to be unrealistic or a long way off or whatever. The value comes in, on one of the early implications leading up to that. So I'm suggesting that it might

not be necessary to do three of these which are at different points in time.

VICE CHAIR WILKERSON: The other issue was, I believe at the meeting there was an agreement, let's say, on the scenario planning, but there was no consensus on whether or not the committee could add value to the ITS program in the data policy area. We had a pretty lengthy discussion on the conference call about that.

So I know the issue came up again today a couple of times, so I just want to get, once again I want to get confirmation or consensus that is still the case as we move forward.

Any open discussion about potential subcommittees? Are these topics? Are these discussion topics we have?

MEMBER MCKINNEY: I think --

(Simultaneous speaking)

VICE CHAIR WILKERSON: I'd say the same for shared use. I know that was one that Susan strongly -- I know that she could be a really good leader on that discussion.

CHAIR KENNER: Those would be two separate ones?

MEMBER DENARO: You mean the transit shared vehicle that whole subject?

CHAIR KENNER: Right.

VICE CHAIR WILKERSON: There may be some overlap as the subcommittees --

MEMBER JOHNSON: But you're saying right now --

(Simultaneous speaking)

VICE CHAIR WILKERSON: I would say funding has come up. Ginger raised it, Debra's raised it. I think a number of people have raised it. It may come under public transportation but --

MEMBER MCCORMICK: And you're saying you got 68 percent more funding in the new budget?

(Simultaneous speaking)

VICE CHAIR WILKERSON: I think the topic though was, that Ginger had raised had to do with the state and local concerns.

MEMBER MCCORMICK: Right. I was just teasing you.

VICE CHAIR WILKERSON: Right.

CHAIR KENNER: So what about, we mentioned public-private partnerships. Is that a committee?

(Simultaneous speaking)

MR. SPENCER: I think there's a PPP role in deployment that has to do with the infrastructure.

MEMBER MCCORMICK: Yes. I didn't know whether that fit under deployment or under implementation or under administrative or if it's just a separate topic. I mean I can

see it --

MEMBER JOHNSON: Well, yes, because it encompasses everything right?

MEMBER MCCORMICK: Right. It's kind of overarching for all of it, so it probably ought to be a separate item.

VICE CHAIR WILKERSON: Can you clarify that? So public-private would be separate or would it fall under --

MEMBER MCCORMICK: PPP, public-private partnerships.

MEMBER BERG: So what kind of advice do you expect to give?

MEMBER MCCORMICK: I expect that instead of having --

(Simultaneous speaking)

MEMBER MCCORMICK: I would suggest that instead of having the traditional contractor/contractee relationship we actually try to understand what a viable PPP relationship could be.

MEMBER BERG: So that's your advice to him?

MEMBER MCCORMICK: That's it. I'm done with my committee

--

(Simultaneous speaking)

MEMBER MCCORMICK: I mean that's fundamentally where we're at. I think everyone has the good idea that says, hey, if we're a public-private partnership we could get more done, we could bring in more resources, et cetera, et cetera. But there have

been very few that have actually ended up working that way because there's issues of favoritism, there's issues of --

MEMBER BERG: I understand. So what's his research calendar? What do you advise to do different?

MEMBER MCCORMICK: I wasn't going to be on the committee.

MR. SPENCER: I would say that the advice is to dive into that more, and not have people just throw that around as a solution. That I think that the advice is dive into this and see if there really is a component that can help. Because right now there's too many people who just throw it around and say that's --

MEMBER BERG: And why has it not been done and why is that not so successful if it's so viable?

VICE CHAIR WILKERSON: The other issue that I had raised was the looking at any future reports that secretaries of Transportation and Treasury are planning to come up at the working group that we talked about, whether there is the additional information that may come up from those discussions.

So we may need to have a dialogue about, you know, what's coming and what if anything we can have a role in it. If this working group is on the way. I don't know if that makes sense but --

MEMBER MCCORMICK: And again our role isn't to solve how to have a public-private partnership. But we can certainly table what both the private industry see as the hurdles or the opportunity, and the same thing on the public side.

CHAIR KENNER: But certainly, you know, if we look at other topics, and clearly there's examples that have been tried. Why aren't they working? What if any of them did work what did they do well?

And I think having, you know, people spend some time to really understand that well would be good. Because it's obvious, you know, what our charter is what are the barriers, right? So we need to say, you know, really, really study those examples and try to understand the reasons why.

MEMBER BERG: Why would we need to study them?

CHAIR KENNER: No. So yes, so we would be formulating recommendations based on, you know, a set of recommendations, right. So this team says, you know, here's areas that haven't been researched or fully vetted.

And so if we said, you know, it's a comprehensive study of public-private partnerships to try to understand what has and has not worked and develop detailed recommendations for, you know, how to formulate or think about those in the future,

because if we don't, we're going to end up having this same discussion over and over again.

MEMBER MCCORMICK: Well, we have one good example and that's the affiliated test bed.

CHAIR KENNER: So anyway so that kind of answers the question.

Okay, so what else? So let me just make sure. So, so far I've written down public transportation, shared use, scenario planning on a shorter time horizon and maybe picking just the one, funding and then public-private partnership. Or there's funding separate, then public-private partnership?

MEMBER DENARO: So what's the funding about, I mean?

MEMBER MCCORMICK: The funding is about how the states and local, from our last discussion, how the state and local entities would actually facilitate the implementation of this going forward.

VICE CHAIR WILKERSON: Right. We saw in Contra Costa the example. We saw others who said there's no, they can't get --

MEMBER CAPP: Is funding, isn't it all within scope of the advice we can give to Ken's office? Funding and things like that.

MEMBER DENARO: Yes, that's where I was going with that.

VICE CHAIR WILKERSON: We can have people here talk about that.

MEMBER CAPP: Have a bake sale or something.

(Laughter)

VICE CHAIR WILKERSON: One of the other issues that I would encourage, if you haven't already, to peruse the 332-page report tonight because there is some pretty good information in there that goes to intermodal transportation and the freight industry.

So that was a topic we talked about and I think they've covered those topics very well in terms of the workforce issues and --

MEMBER MCCORMICK: To close out the funding question though I think you're right, it belongs under the PPP side then.

MEMBER BERG: Or vice versa.

MEMBER MCCORMICK: Right. One way or the other. I think those two fit together. Because we're not doing funding with regard to federal budget, we're talking how do we, or maybe it goes under deployment issues, one of the two.

VICE CHAIR WILKERSON: Yes, I think it might be great. Well, that subcommittee could maybe --

MEMBER MCCORMICK: I just don't know that it's a separate subcommittee.

CHAIR KENNER: Well, how about on the category of data,

right, because I had captured a couple of comments where it was suggested by Dan maybe that, you know, how the state liability laws and sharing of data, you know, interact. It was one thing he had mentioned and I wrote it down because I thought that was compelling.

He also mentioned that as the chief data officer that he really doesn't have any research funding that if he directs it -- so one possibility too would be sort of, you know, how that role interacts with the application of funding related to the data.

But those were just a couple interesting things I captured from the --

MEMBER DENARO: I think data's a huge area and will be even bigger. We don't even know its importance that's going to arrive later when that data becomes available someplace. So I think it's important then for us to, again, you're probably asking --

(Simultaneous speaking)

CHAIR KENNER: And on the other hand it seemed like there was pretty compelling, you know, things in his presentation.

So will you guys agree then that data would be then once again, well, maybe with a different idea than how we would have defined

data a year ago before the last committee?

MEMBER MCCORMICK: What is it that we're talking about when you talk about data? Are you talking about ownership, you talking about use? You're just talking about data as a giant nebulous cloud? I mean when we say data what aspect of it are we going to address?

CHAIR KENNER: Well, so I guess if it is an area that we want to focus on, right, and so if there's some reason that I'm going to work on data, they could do, for example, what I just said is that they could talk about liability laws in their states. They could talk about the value chain and how to create incentives.

MEMBER MCCORMICK: So let the subcommittee figure it out.

CHAIR KENNER: Yes.

(Simultaneous speaking)

CHAIR KENNER: We captured in our minutes that we didn't want to follow up on data necessarily, but after today's discussion I'm re-asking the question.

Do we think now based on what we heard today that there's some areas that we should weigh in on relative to data? In other words should we form a committee that then would --

MEMBER DENARO: What were the reasons that we decided not

to previously?

MEMBER MCCORMICK: Well, that was a tirade I launched into.

CHAIR KENNER: It was what?

MEMBER MCCORMICK: That was a tirade I launched into.

The United States has no personal data privacy law, never will have. It did a laissez-faire form of economics. But with 24 regulations they're all industry specific, financial records, health. They're all non-mandatory and they all recommend industry oversight.

CHAIR KENNER: Yes, so what I don't want to do is go back into that discussion, because the question is do we think we should have a subcommittee on data or not? And then let that team, you know --

VICE CHAIR WILKERSON: And there's also, better privacy was the main issue that we agreed we'd achieve consensus on said we would not be able to add --

MEMBER MCCORMICK: Right. But I mean talking about the states and their use of data, we didn't explore that. We were talking about federal level the last time. So maybe if the group thinks that there's value that they can add there that that might be an enriching discussion.

CHAIR KENNER: Well, and they also suggested that maybe

in the world of transportation we haven't studied the existing, you know, use of data in, you know, the health arena. In some cases, you know, like cybersecurity and other things, you know, the health arena has already dealt with stuff that, you know, we automakers are just starting to say, hey that seems like a problem, and we looked to other industries and go, oh some people have already been addressing this for some time.

Maybe it doesn't completely apply, but we really should understand it, and that was another thing they said that also made me think wow, you know, it's a great idea. I mean I don't know how many people have done that.

In cybersecurity discussions at NHTSA we certainly have, but to have cybersecurity is not necessarily, you know, how you handle data and those kinds of things.

MEMBER DENARO: Well, I asked Dan earlier about the problem of liability concerns impeding potentially the flow of data, and so there's an area where maybe some work needs to be done to figure out how to get it on then. I mean we've got to knock these barriers down.

CHAIR KENNER: I think that's what caused him to say, you know, how the state liability laws, you know, interact with data sharing.

MEMBER DENARO: Yes. But I think it's also possible that, you know, one of our subcommittees could come back and say, you know, as we batted this around there's really not recommendations we can make here. And that's an okay result.

CHAIR KENNER: It is. It is.

MEMBER DENARO: So for that reason I would suggest keeping data on the table.

MEMBER MCCORMICK: Or it could be just to come back and say there's so much variability in the state-to-state definition of it, but that's something that you ought to have an issue to look at to determine what the capacity requirements would be.

CHAIR KENNER: Absolutely. So okay. So, so far I think we've listed two, three, four, five. So if we use --

VICE CHAIR WILKERSON: And freight intermodal.

CHAIR KENNER: Yes. So what about freight?

VICE CHAIR WILKERSON: And intermodal.

CHAIR KENNER: And intermodal.

MEMBER MCCORMICK: Well, let me ask the overarching question. How many freight and intermodal people do we have in this committee?

VICE CHAIR WILKERSON: Well, that was one of the reasons

why I suggested we look at that report. There's, I don't know, about 30 pages where it overlaps with shared use. It overlaps with the environment. It overlaps with funding deployment incentives. There are a ton of issues in the report.

MEMBER MCCORMICK: But the question always boils down to is to where is it that this body can provide value? Something I know some of you deal with multimodal issues here in freight, how many are there of that do that? I know Kirk does. Do you?

VICE CHAIR WILKERSON: We have freight issues from a federal standpoint, but I mean that's not why we're here to talk about that necessarily. But there are issues when the infrastructure of the highways relate to how freight is transported across the country.

So that's why I say it may not be a topic we decide on today, but I would encourage people to look at it because it overlaps with all these issues when you look at the infrastructure. They have huge maps about projection from freight, what's going to happen with the ports, distribution, the impact on distribution centers for businesses, issues with respect to workforce.

MEMBER MCCORMICK: Okay, I guess you're in charge of that committee.

VICE CHAIR WILKERSON: No, I'm saying it was a topic we had raised and they fully address some of those challenges and issues in the report.

MEMBER JOHNSON: I think that's a good point. Because coming from Long Beach, California, which is one of the biggest ports, of course we're impacted and we're looking that over within my area working with the airport and the port as well as the transit, and we've come up with the concept being better together and how we can go forward and bring forth this issue as it relates to infrastructure as a whole.

So I clearly see that there is a need to look at that because it touches upon all different aspects of transportation as a whole. So if it happens I'll be more than willing to work on that one.

CHAIR KENNER: Okay. Any other committees? So right now by my count it could be as many as six. How many did you have in the last advisory committee?

MEMBER DENARO: I don't remember. I think four.

VICE CHAIR WILKERSON: Four.

CHAIR KENNER: Just because there's only so many of us.

(Simultaneous speaking)

MEMBER DENARO: A team of this size doesn't --

(Simultaneous speaking)

CHAIR KENNER: So why don't we do this, if you guys don't mind. Because I do have to apologize. I got a call and some of our government affairs guys want me to go up on the Hill to talk to a committee once they found out I was here. It's not the first time but --

MEMBER CAPP: Better put your tie on.

CHAIR KENNER: Yeah, you know, that could be a problem.

(Simultaneous speaking)

CHAIR KENNER: So, well why don't we do this? Everyone, I think, can write down the following six committees, and what I'd like to do is have you rank the top four, with also the recommendation on which one, but at most two, that you'd like to serve on, okay. So let's write them down. So the first one, number one is data.

VICE CHAIR WILKERSON: Serve but not lead.

CHAIR KENNER: Right. The second one is funding/public-private partnership. That's number two. Number three is the scenario planning with, let's say, the ten-year time horizon. Number four is public transportation. Number five is shared use and number six is freight/multimodal. And so with an understanding of what we'll do is we'll

roster up, you know, of how many people, you know, listed which four and we'll just go with the top four. Because I didn't know how many for sure, because in my mind I was thinking that if we try to do more than four we'll be too, you know, divvied up, right, so, and then which one or two that you'd like to participate in.

MEMBER DENARO: I thought public transportation and shared vehicle were together.

MEMBER MCCORMICK: I'm sorry, I didn't hear that.

VICE CHAIR WILKERSON: We said we would look at them separately, but it's possible that some of the issues as the subcommittee evolves might overlap.

CHAIR KENNER: Yes. But in the beginning of this, you know, we kind of said we'd keep them separate.

MR. SPENCER: Can I, just for definition purposes, multimodal versus intermodal.

CHAIR KENNER: Oh, I'm sorry. I meant intermodal.

MR. SPENCER: We have to make sure we're on the right page.

(Simultaneous speaking)

CHAIR KENNER: You know, I had actually wrote down multi-intermodal, MIM.

(Laughter)

CHAIR KENNER: So why don't we do that? So after Nat talks to us we'll kind of go through and we'll, on the chart we'll kind of list which one, set it up and then we'll go with the top four, and then that would also be solicitations for who will be on which ones, and then we would like after that then break out into those groups.

MEMBER CAPP: Question. Speaking of Nat, I heard a lot of, hey, let's ask Nat. I see you've got him for 30 minutes tomorrow. Do we know if he's available any longer than that?

MR. GLASSCOCK: I think we're going to have him for an hour, but I'm not sure.

VICE CHAIR WILKERSON: He's worked on two issues. I don't what other issues, I know I had two questions.

(Simultaneous speaking)

VICE CHAIR WILKERSON: So the top four and then --

CHAIR KENNER: Yes, the top four and then which one or two you'd like to serve on.

MR. LEONARD: Write your names on a piece of paper.

CHAIR KENNER: Yes. Okay.

(Simultaneous speaking)

VICE CHAIR WILKERSON: I was going to ask a question from the outside of the reports if they had any. Is there anyone

outside the table that had questions or recommendations? Nope, okay. Great. Any housekeeping matters?

CHAIR KENNER: No.

(Simultaneous speaking)

VICE CHAIR WILKERSON: Okay, we're adjourned.

(Whereupon, the above-entitled matter went off the record at 4:21 p.m.)

February 5, 8:25 a.m.

Connected Vehicle / NHTSA Update

CHAIR KENNER: Well good morning everyone. We want to reconvene. We're missing a couple of folks. We're trying to figure out how we lost a couple.

We want to get started so we can maintain the schedule for today. As you saw on the agenda we're starting out with Nat Beuse from NHTSA.

He's been a frequent contributor to this committee. Nat, we appreciate you taking the time to come and talk with us and we're hoping that you stay so that we can have some interactions and Q & A.

The other speakers we had yesterday we had quite a bit of that following the presentation and I think that really helped

the committee to understand and presentation and the content better as we're trying to zone in on the areas of focus for the committee.

MR. BEUSE: Well I didn't do any prepared remarks so mostly relying on the Q & A to make sure people can have the chance to ask me some questions rather than getting up here and talking for an hour or something.

Maybe it's best to start out with what's going on V2V Light Vehicle. So where we are right now, maybe to start out with the rule making action.

We put out the ANPRM last year as everybody know or at least I hope everybody knows. We got close to a thousand comments and just to give you some perspective on what that means.

I can remember the last time a safety rule got that many comments. The two closest actions I can remember that generated comments to that magnitude were the event data recorder ruled out we were going to just mandate the rest of the vehicle fleet have those devices and then the CAFÉ rule makings. It's pretty rare to get that much.

If you were to look at them musters a lot of concerns about privacy. Probably not a surprise to anyone. A lot of comments

from individuals about privacy.

I would say the only weird or surprising things that came up was a couple comments dealing with the health effects of V2V. That sort came out of I want to say left field but it certainly wasn't something that was a huge things for us to consider as went forward.

We're going to have to go back. There's been research done on this already so it's not like we have to start from scratch, but we have to go back and summarize all that when we go put out the proposal in 2016.

The other comments, we're working through them, some technical, some policy. What we're really hoping though is that manufacturers, suppliers, especially those folks that have already made announcements about things that they're doing with V2V will come in and talk to us now rather than later because the team will start things getting things getting ready to issue that proposal in 2016 as promised by the Secretary.

The other thing going on with V2V is everyone remember there were several research gaps that were in the report and we are marshaling through those.

There's been some that's taken longer than others that maybe more difficult than others. I could point out probably

misbehavior detection is one of those.

How do you detect misbehaving devices and then what do you do about them once you detect them and then how do you broadcast that across to the vehicles that are in the know?

And then the screen management system, so maybe we'll start with screen management system. So I would see in order to have trusted communication we need the screen management system up and running.

We had followed up the ANPRM with a request for proposal. It was actually a request for information from folks who were just interested in becoming the security credential manager. The entity or persons that would run the SCMS day to day we say we weren't going to be the ones doing that.

We'd enter into some contract. A lot of people seem to mix that up. Contract doesn't mean that NHTSA goes off into a corner and its entity is free to do whatever it wants. There was comments that seem to suggest that's what we said, that's not what we said.

We would be very much engaged with this entity. We would have to be in order to make it run correctly number one, but also in terms of setting up the policy to make sure that there's no hanky panky let's say going on within the SCMS.

So we put out this request, you know, it was this drop it out there and see what happens because we hadn't heard a lot of chatter about wanting to do this. Folks had talk to us in our ear but no one was really saying anything publicly.

We were quite pleased when we got about 13 respondents that said yes we're interested. What we're doing right now, I would say trying to figure out which one of those are serious and which one of those are trolling I guess. They saw an opportunity and throwing up whatever and seeing what NHTSA does with it.

There's been some meetings that we had that it was very clear that people were just trolling and there's other meetings that we're having where it's like yes these folks might know what the heck they're talking out.

We're going through that process now. Those meetings are going on, looking at their confidential business information, so I can't really share anything other than that with you.

Well follow that up more than likely with a real request for a proposal. The timing on that isn't exactly clear right now but we'll do that at some point.

The other research project, misbehavior, has been a bit of a challenge. It's really difficult if you think about it,

what we're trying to do with that but the CAMP group is making good progress on that and we hope to have at least something that we site when it comes time for the ANPRM.

We've also been going back and forth with CAMP but now I'm building the operating and software for the security management system itself.

All those entities, you might remember that big spaghetti diagram. All those entities have to talk to each other and so right now they're prototype and nothing on the scale of what we need for millions of vehicles.

With Ken's support from the JPO initially we were going to do something that was pretty small scale but we decided with some discussion with ourselves and manufacturers and everyone inside the building that we really wanted to build something that could support 17 million vehicles day one and the vehicle to be expanded after that.

In order to do that, that changed the scope of the project a little and we've also had some discussion about the electrical property of all that and so that had to go on.

We're very, very close I would say to getting that project finally awarded and off the ground and then people will be off to the races to try to get that all completed.

The other thing that we're obviously trying to do is make sure the underlying standards are the. There's a couple of SAE and police standards that we need to at least get available in the public domain.

So we continue to encourage those entities to kind of keep that work and keep in going and then we have a whole bunch of work going on, test procedure development and performance criteria for the actual DSRC radio.

Maybe I'll stop there on that. With respect to heavy vehicles we continue to make project on that a little bit, slower than I would like. One of the challenges we still face is what to do about articulation.

The other challenge that we face is, it's not really a shift in policy but maybe a more direct look at what's going on with single unit trucks. If you look at historically it's a rule making.

We tend to at times maybe focus only on Class A and motorcoaches and as some of us describe the donut hole in the middle keeps getting bigger while the outside keeps getting thinner.

We made a conscious effort to go back and look at single unit trucks and figure out what to do there given the tremendous

service that they're in. From a DSRC radio standpoint it's probably not that big a deal, but it depends on how many things we layer out on top of that.

One of the things that I find kind of interesting with the whole heavy vehicle side of things is some folks would argue it's where we should go first, easy to pull in.

All that kind of stuff and I can tell you that if you actually really look at the comments that we got from that industry they're not actually running around waving the flag saying it's a good thing to do.

We're going to embark on an effort, probably here in March or so trying to educate. What I call educating folks like OOIDA, folks like ATA and folks like EMA because unlike light vehicles where I can go with maybe Capp and Kenner and go about my merry way in heavy duty world it's much, much, much different, and it's a business to business transaction which actually complicates things a little bit more.

Then you have philosophical difference where folks like OOIDA will tell you right up front they don't really believe in technology. They think it's all driver train.

So any new technology, even discussion, they have a very adverse reaction to it. In fact we had a public meeting, it's

probably a year and half, two years ago now where we were talking about V2V as something that we were looking at and they shot it out of the water without knowing anything about it.

Different groups have different issues. ATA's issue has to do more with they've already invested a lot, in telematics type services.

And they want to figure how we could get the SEM up out of that and that's a logical question to ask from their standpoint.

Then there's EMA that's trying to figure, hey, we got all these regulations coming at us and now you guy want to throw another one on us. Who's looking at the ledger on the right side that has the cost kind of thing?

Plus many of the members haven't been involved in all the research up to date so it's also from that standpoint. Like I said it's more going to be kind of an education, emissary mission that myself and my team will go on within the next couple of months to figure out where the ground truth is on all this kind of stuff with respect to heavy vehicle.

But with respect to a decision and the technical work we're still on target to make that decision. I think the challenge will be how to announce it.

That was essentially what happened the last time. We had made the decision but then we had to go through some steps to actually announce it.

We're trying to figure out yet even still whether or not we're going to have some big report like we had with light vehicles or whether we just don't need that right now and so those are all things that were kind of factoring in but we remain focused on it to try and get that done this year. What else?

CHAIR KENNER: A couple of questions Nat that came up yesterday. We sort of spoke on your behalf but it'd be good to clarify. Let's see if he agrees with our answers.

MR. BEUSE: Yes, sure. Whatever he says.

CHAIR KENNER: So one of them was in the rule making you're actually at this point focused on the equipment to be in the vehicles and for that equipment to be able to send and receive messages but not including any sort of specific applications.

Is that still accurate?

MR. BEUSE: That is still accurate. One of the things we will continue to do with the support of the JPO is continue to fund development of application with the test procedures that need to go along with those but right now the thinking is still very much a mandate on radio only and let the market

incentivize around what applications do.

Obviously we will keep an eye on that. If everyone starts doing mobility and environment applications and then no one does kind of move and assist or something like that, then we might say something about that but right now it's really right now trying to get what is kind of the guts of it. Right?

We can't get the radios to communicate with each other and we don't have everyone playing on the same playing field the application is kind of meaningless.

So we have to get that right and so trying to tackle the application issues and how you test those and all that kind of stuff. That we would have a huge discussions about in addition to how you actually test to make sure you have communication. We just thought that it was too big of a thing to take on.

MEMBER MCCORMICK: Does this require the ability to transceive messages? You're not specifying which messages will be transceived. Send or received then that replies with all the

OEMs would have to understand it.

If you're sending left turn signal and you're sending slippery ice condition or whatever they would all have to know

what messages are being sent and received by the other OEMs.

MR. BEUSE: Part of what we do specify what is that basic safety message that needs to be transmitted. Right? I think what we still have to figure out is beyond that, what everyone calls the optional message content, how much that needs to be in the rule or not, right?

It's particularly important when it comes to heavy vehicles so we're looking at that. It wouldn't be a situation where you people transmitting different VSMS. Everybody would be transmitting the same VSM.

Every manufacturer would know what's in the minimum set. Now whether they go above and beyond that I'm sure they're smart enough to figure out how to handle that.

MEMBER MCCORMICK: Absolutely.

(Simultaneous speaking)

CHAIR KENNER: Yes, so I think there's agreement on what the content of the message is. What the thing that isn't in the rule is then what do you do with the information in your vehicle and how do you translate the receipt of a safety message from another vehicle into some sort of interaction with your customer? Right?

So someone who was asking the question so you're saying

that if you put the radio in there and send stuff out receive stuff but don't do anything with it you would comply?

Yes you would but I mention it in CAMP we worked on quite a number of applications together pre-competitively that are already being demonstrated all over, right.

So there already is a lot of work there but, you know, and John had mentioned the complication of adding applications in there and all that and getting the foundation so I think we probably did a reasonable job of answering that question.

MR. BEUSE: And maybe just to put a finer point on it, remember it's just a proposal. This is not the final rule, so they'll be plenty of opportunity for folks to revisit even if they want us to do application let's say.

The other thing I would say is the reason why I say we're still trying to figure how much that VSM to require is because we also want to be cognizant of the environmental mobility factors that are also prevalent with V2V. Right?

We wouldn't want to set it up where we mandate such a narrow message set that the full benefits of V2V aren't realized because people choose not to do the other set. We're looking at that as we go forward.

MEMBER MCCORMICK: And is having this capability going

to at some point be considered for whether or not you can achieve a certain star rating similar to Secretary Foxx just announced that if you don't have automatic braking you're not going to get five stars?

MR. BEUSE: Sure. Certainly you can imagine a scenario where applications get credit in an NCAP system. You can imagine certain other scenarios where it's an app equip type standard where it's not an NCAP but it's not a requirement but if you're going to put it on you must do it this way.

There all sorts of permutations that you could from where we are right now.

MEMBER MCCORMICK: That would be the incentive to not just have the equipment in there but actually have capability that's useful.

MR. BEUSE: Right, but the other piece is to make sure it's robust. If we wanted do an app equip standard let's say we wouldn't want people putting intersection move and assist applications that don't work.

So maybe we might say if you're going to put an intersection move and assist application it must have these performance criteria.

Again those decisions aren't made. Those are kind of

what-ifs and scenarios right now. The focus is get the radios to communicate with each other, what should be in that message set and what do you do about the SCMS because we have to worry about communication in the vehicles the SCMS too.

CHAIR KENNER: The second question people were asking about and I'll give it to you in two parts. One is the in vehicle system versus the after market systems. Are we going to specify some sort of performance standard relative to the quality of message sending and receiving?

MR. BEUSE: We're still looking at that. I think some of the comments suggested that aftermarket wasn't ready. We sort of look at it as someone has to be ready because you have to help with deployment.

So I think that we're still trying to figure out that nugget, you know, whether it's equipment standard. It gets into details you know about but for everyone else, there's all sorts of different ways you can do this.

You could do vehicle standard, you can do an equipment standard. So basically if it's an equipment standard it doesn't matter if it's factory installed or aftermarket it has to meet those certain performance criteria. Think tires. Tires is a good example of that.

Buy your tires at new car even they have different specs for those tires than what you get at let's say tire rack or something but they have to meet minimum performance standards versus vehicle standard is just new vehicle is manufactured out the door.

CHAIR KENNER: When I mentioned that let's say for in vehicle the FMVSS regulatory framework is one of self-certification so we certainly would as auto makers do the testing generally if the enforcement side of NHTSA was going to do, let's say, FMVSS comprised audits, they would have a test procedure.

We would know it and then we would be able to provide other places that we, in fact, complied to it. So it's not really new, different and unique.

The aftermarket part does present some options, but certainly for in vehicle it's the same framework like we've used and nothing unusual or special in that.

MR. BEUSE: Just a little bit more complicated.

CHAIR KENNER: The third question that came up yesterday and this one is sort of on the tangent of V2V was related to how customers are warned?

Some folks were saying well, of course, everyone would

warn customers in the exact same way and so we mentioned that right now even in the demo cars we don't do that.

The auto makers have it differently. However, I said as an independent project, your team like Chris Monk and so forth are looking at the active safety warnings, because we all a vested interest in when we warn we want the customer to do the right response to the warning and we want them to do it in the fastest possible time.

I had mentioned that we at Ford have supplied rationale and research basis for why we warn and on it and so forth and that's ongoing, but it's not necessarily directly tied to V2V but it is an initiative. Talk about that a little bit because I'm interested in that as well

MR. BEUSE: So maybe we could talk about framework that we're laying out. If you look at how we treat crash warning systems now what we've only done is just encourage through NCAP when those warnings should be given. Meaning time the collision with some vehicle, give the warning.

We've had several, several meetings over the past couple years with the manufacturers on what about this idea.

I'll use the ugly word standardizing, the way those warning are presented to the driver and of course as Steve pointed out

they present a lot data. GM presented the data. You'd be shocked to learn it's not the same data.

CHAIR KENNER: And it doesn't necessarily lead you to the same conclusion.

MR. BEUSE: That's correct, and so let's say I count off 17 manufacturers or whatever it is. I've had 17 different answers as to what is the best way to warn a driver just in a motor collision warning scenario.

We recognize that that's what's going on, that everybody is running different experiments and gone on two tracks. One is to come up with a methodology for if you're going to run experiments these are some of the things you should look at. That's what we're wrapping up right now.

The other thing we've been looking at is kind of the interaction of the warnings. Meaning is a chime better than a light or do you combine those and you get different effectiveness, and what about this thing called a seatbelt vibration or seatbelt tug and all those kinds of things.

We're looking at all those different parameters to really try to figure out is there really a best way to do it. My hunch is we can run a bazillion experiments and never be able to say that with any certainty.

I think what we will be able to come out say is that if you're going to give let's say a light signal it's got to have a certain luminance.

It can't be like dim or if you give a chime it should probably be within this range because our studies show that that action generates a reaction.

It's always been vehicles where you listen to the chime, it's like what the hell kind of chime was that.

That's what we think we will end up in the end is sort of a framework versus saying if you're going to a FCW warning you have to give a warning that looks like this kind of light and has this kind of chime and have to interact with each other this way and that way because by the time we figure all that out we might have automated vehicles by then.

At the end of the day it really does solicit a response in the driver. So that's sort of where we are. There's a lot of stuff that's going to come out this year, in fact a couple of study talk about how we're thinking about you would run these experiments so that you get repeatable results because that's a big.

Maybe the easiest way to think about it is if he and I are running an experiment, same pool of people, same age range

and all that but he decides that he's going to pay his participants and I decide that I'm not. Does that make a difference? So we looked at it. Right? It doesn't, but that's one of the findings that doesn't make a difference.

I think that's some of the things we're going to come out with because it has been all over the place with the way people are running their experiments. We think even that will add some value.

I suspect we'll get lots of interesting questions from the manufacturers when we do put that out and then this next phase is really looking at if you're going to give a light, or if you're going to give a chime, what should those parameters be?

Right now when going through a process of getting what we call principles, peer review within the agency and outside the agency by experts that would look at what is that design framework for warning system.

There's also a separate project that's going on that's looking at kind of how you prioritize those things.

If someone is going to be at an intersection collision it's probably a bad time to send them a message about traffic jam kind of five cars up kind of thing. There's part of that

work that's also ongoing in there. Hopefully that helps clarify.

CHAIR KENNER: I think so. Really what I just did is I tried to capture some of the questions because there was a number of times you say Nat's coming tomorrow.

We'll ask him about that. I may have missed some, but with that I can go open it up to everyone. I just wanted to do the ones we already documented.

MR. BEUSE: Please. Ask away.

MEMBER DENARO: You talked in the past about the difficulty with this decision because typically you'll have systems on the road and you'll have a body of experience and data and so forth.

This one is a little tougher because you're trying to be declare because you have the safety pilot, but I assume then the safety pilot is being extended.

I assume that you'll continue to collect and analyze data and therefore the majority of decisions that you might make on some things may be subject to revision based on more data being available later on.

MR. BEUSE: Yes, maybe if I could say it a different way Bob. So I think what the difficulty was and has been with this

particular technology and what we're doing is two fold.

One, does technology work when two radios talk to each other? That's what really the safety pilot was all about. It was really trying to answer that question, demonstrate yes you can deploy on the American public kind of thing.

We are trying to figure out if you can you really wean from that how effective the applications were. We're doing that work now to look at safety pilot to see if there were enough interactions to really figure out if vehicles with or without the warning systems are better.

That's kind of the benefits type thing. At the heart of it we're really trying to figure out does it work.

Of course we're always looking at inputting data. I would hope that any of the deployments that are planned, even with the things that Ken are doing of course we're going to learn from that.

My guess is though we might learn on the human factors side of that equation than we will on maybe on the technology working field but certainly we're open to that. Right?

Something we learn in these pilots that say we got some parameter wrong or whatever. Certainly we'll look at that, maybe one that might come to mind is something like congestion.

You find out that oh yes we have a congestion problem. We got to do something about that. The idea would be that we think we're in a space where with respect to the technology talking to each other that we're got that pretty well understood and locked down. And new data comes in that leads us to reconsider that we can do both.

MEMBER DENARO: So do you entirely yet, have you planned to have, I guess I'll call it a research plan of here's additional questions that we don't know the answers yet, and as you get more data this is what we're going to be looking for?

MR. BEUSE: Not exactly. I would say 90 percent of my and Bob's here you can correct me on that number if I'm wrong is fully deployed on getting NPRM out the door.

We can a quarter or a tenth of a person working on things like V2M and V2P and V2X and whatever else comes after that but we really have shifted our focus to getting NPRM out the door. That has got to be focus number one.

With respect to future application work, I almost say we kind of deferred that but we're not kind of piling on with that right now. The work will go on.

We got people that are monitoring those projects but we really haven't sat down and said oh yes this is kind of some

longer term research that needs to be figured out with V2V.

I think we have identified kind of what are those big gaps. That's what the research part was all about.

MEMBER DENARO: Gaps in knowledge.

MR. BEUSE: Yes. So like here we attach the keys and all those kind of things. Those are all going to be completed here within the next year to 18 months to however long it takes.

Some of those to be quite clear, there's some of those that are absolutely necessary for the NPRM and then there's those that are necessary for the final rule.

We really didn't draw that distinction in the research report for a lot of reasons, but we might find ourselves here having to supplement the rule making record later on with as the project comes to completion. Maybe we learn something else.

MEMBER DENARO: Because you ask the question, what we've learned certainly with technology is the whole subject of unintended consequences.

MR. BEUSE: Absolutely.

MEMBER DENARO: By definition it's almost impossible to identify those up front or they wouldn't be unintended because you know that, So that's not a matter that you observe over time and likely.

MR. BEUSE: Yes, and I think we would also say that we want to make sure that we're not overregulating.

MEMBER DENARO: Sure.

MR. BEUSE: We want to make sure that we're not so descriptive that we end up having a standard that we have to change every two years because something else has changed in space. There's a lot of discussions that are actually going on right now with the team about that very issue.

MEMBER DENARO: Thank you.

MR. LEONARD: Nat, if I could just jump in a little bit though?

MR. BEUSE: Yes.

MR. LEONARD: We have met regularly at the JPO, Federal Highways, and NHTSA meet regularly at the administrator and assistant secretary level and a lot of working groups.

And, even a year ago, as we were coming to the decision and identifying research gaps that what we could identify as gaps has informed the JPO's research portfolio, and we're working with people at NHTSA to make sure, well Nat's team is very appropriately getting this rule written.

There is ongoing work that we believe is going to have an impact on the future of connected vehicles. I don't want

to put words in your mouth, this rule will come out over time.

I imagine connected vehicle rules and standards will evolve shortly. It's a natural progression. Steve, you talked about the possibility of manufacturers could put the radios in but not put any applications in.

I think we would view that as a market failure to some extent. Increased cost --

(Simultaneous speaking)

MR. LEONARD: Again it's probably not uncommon that, Nat is much more familiar with this than I am. When you get your regulation, sometimes it's the regulation cleaning up the last 20 percent of the industry that hasn't gotten on board with new technology rather than getting the first 20 percent started.

This a new technology. A lot of things changed in seatbelts over 40 or 50 years and air bags and safety technologies. I imagine that we are going to see changes in connected vehicles.

What we view as groundbreaking today is going to become old hat ten years from now, and we'll be talking about how we are requiring more information to get automation into vehicles and things like that. So that's some of the research we trying

to lay the groundwork for.

CHAIR KENNER: Yes, absolutely.

MEMBER MCCORMICK: Question. Also, Scott Belcher and I, you spoke with both the Senate and the House Transportation Committees last year on the issue of the pressure on the 5.9 spectrum from unlicensed devices.

The head of the FCC was at the House one and he agreed that, because my statement was that you've only tested collisions in laboratory, and having a few devices determine that you can recognize a licensed device and relinquish the spectrum.

It's fine when you're talking two or three devices but if you've got a couple of hundred at an intersection it essentially because a denial of service attack.

So they agreed to do more testing on that to protect the spectrum as a statement, not necessarily as a rule. Are you guys following what the FCC is doing with regard to that?

MR. BEUSE: We are. There's two big activities going on. One is a government to government interaction.

So basically Ken, myself, Greg, and a few other will go meet with FCC, NTIA and we all sit around and talk about just what's going on. That's a big piece of communication.

What the heck is going on? Don't want people to read about in the paper. That's one things that's going on.

On the sub text of that is also what testing could you do if any and how would you do it and all that kind of stuff.

I think from a regulatory perspective we're looking at it from the standpoint of assuming nothing changes.

We have to write the rule as if the current state of play is right now, which is no interference, dedicated, et cetera.

Should that change, then obviously we will have to go back and look at how that's done, but the rule making and the research needed all just kind of factors that one will do as a part of being good government.

We're not trying to inter-tangle the two to kind of say what if this, what if that because then you're writing a rule that's like 7,000 pages.

It's more like current state of play as is, no interference, et cetera, how does V2V work in that environment and that's what we'll write.

Obviously, clearly we have to pay attention to what's going on with any sort of sharing of proposals and all that kind of stuff and the testing.

We would make sure, for example, for any testing that was

being done or contemplated is actually being done in a way that actually would give you an answer to help inform a decision about how it impacts safety.

So the point he raised maybe a laboratory is not good enough. Maybe you need a real world kind of environment where you put a bunch a devices at an intersection, and some in the car, and all sort of permutations of that to see what would really happen.

Maybe that would be maybe part of a plan. So yes we're obviously paying very close attention to that. Ken, anything else?

MR. LEONARD: Well I think you summarized it fairly well.

The Department's position is we are open. We are participating to the discussion on the feasibility of sharing the spectrum.

To date we have no devices to test from industry that claim to be able to share the spectrum. We believe the assertion that it's theoretically possible.

And we're open that scientific advancement if it happens and as Nat pointed out if it does we'll test it in the lab and we'll model it and then we'll have to do field testing because this is a safety of life system.

It is critical that we don't proliferate systems then say

after the fact while we just eliminated the chance to prevent 30,000 fatalities a year because we changed something.

MEMBER MCCORMICK: Remember the call during the end of the first six month in the safety pilot they collected like 500, 600 terabytes of data.

I don't know if they ever read what the use of the spectrum was in terms of percentage that it was using. I don't know if I've ever seen anything on that whether or not, 2,700 of those cars was just putting out a here I am signal.

They were actually transmitting no data, so I'm not real clear how much from that 327 page report how much of that 600 terabyte was real data versus the load data if I can put it that way.

MR. BEUSE: Bob may know the answer to that.

MR. KREEB: The general question maybe recently status sort of about spectrum utilization. How much of the spectrum is really needed? So there's some ongoing work to try an answer that.

Some folks have been engaged to try and pull together a lot of fundamental applications that can use the spectrum and answer that question more formally through some modeling.

Certainly the V2V is going to be one customer of the

spectrum but there's all the V2 mobility, environmental types of applications. Nat mentioned V2P.

In an instant, if cell phones are starting to broadcast on this 75 megahertz, that could double or triple the need and then there's automation and platooning.

That could be a big customer of that spectrum as well. So we're trying to do a systematic identification of sort of the active uses of the spectrum, how often are they going to communicate and how big are those messages and just see where we land.

MEMBER MCCORMICK: The pedestrian and the bicyclist, the only thing they're really transmitting is here AI am@. And they're not transmitting the load of messages that you've got from --

MR. KREEB: Every message, not to get too much into detail, but every message has to have a payload and the security and the headers.

MR. FEHR: That is the only information that is transmitted supporting the safety applications. There is no charter message. Basic safety message is the only thing.

MEMBER MCCORMICK: That's not the end game. If all we're telling you that here you are. There's a variety of proximity

sensors that you can hard wire into the car that will do that more effectively even, possibly.

CHAIR KENNER: Okay. Joe you've been patiently waiting there because you only lost about maybe half a second.

MEMBER CALABRESE: We talked about trucks and cars but not buses and trains, so where's the --

MR. BEUSE: As in product in vehicle decision.

MEMBER CALABRESE: Okay.

MR. BEUSE: So that would be trains, buses, motor coaches, shuttle buses, all those guys.

MEMBER CALABRESE: Motorcycles?

MR. BEUSE: Not motorcycles. No. Was there a particular question?

MR. FEHR: So I was just wondering, was it going to be in the regular stage, the delivered stage, or developed stage?

MR. BEUSE: They would be part of this heavy vehicle decision, that undertaking this year about how would we do that.

I think that one thing that gets a little bit confusing for some folks not in depth in the NHTSA ruling as I am, is we don't actually have a category of bus or what we would call a shuttle bus or what you might call a transit bus.

We have raw categories to make it as plain as everything

10,000 pounds gets this kind of treatment. Everything over 26,000 gets this kind of treatment. That's kind of the way our regs are setup.

MEMBER CALABRESE: Do we need more categorization if it's a train with 3,000 people on it versus a --

MR. BEUSE: People have talked about that. The problem is from a regulatory standpoint how do you that? How do you write something that you don't create loopholes?

If you control everything by axles and the weights and it's a little cleaner than trying to get very creative with okay that's going to be a cement mixer one day, and tomorrow it might be a box van.

That is a real scenario, right? Those are the things that would probably run on the same chassis. We wouldn't want to create a situation where you say the cement mixer gets the technology but the box van doesn't because we messed up something in the definition.

And there are examples of that even today so whether there are different considerations with deployment I think is what you're getting at, then obviously yes, we would definitely look at that but that goes to the application level, too.

So again that's where some of this outreach that I'll be

doing and my guys will be doing this spring and early summer is to sort of ferret all of that out.

We had lots of good information from the vehicle manufacturers about applications they were thinking about. We would like to have that same conversation with transit.

MEMBER CALABRESE: And the point, it might be more difficult to extrapolate for decision making for many years.

MR. LEONARD: Joe, you asked specifically about trains and as you can imagine that's in the news. A topic in the news yesterday and today exactly, as some of you know I was responding to yesterday and we actually have had for several years an impactful program on DSRC equipped rail crossing.

We're active with FRA on that and so sharing that research with people. Unfortunately it's not deployed yet, and we don't have connected vehicles out there, but it is one of the things we'll think about because vehicle collisions whether it's a light vehicle or heavy vehicle, they're catastrophic and they can be catastrophic to both vehicles.

It is something we have taken into consideration in terms of DSRC connected vehicle deployment.

CHAIR KENNER: I wanted to just make a quick comment, and Scott you mentioned about the Secretary's announcement. Just

to put into context the possible scenarios that this could follow relative to acts, you can have something that is in fact into the formula that used to calculate the star rating for an NCAP.

The automated braking actually is not the calculation for a five star, it's one of the key technologies that are listed there. Rear view camera was added a little bit ago right?

So some of the choices that the agency could make are to put that technology on there, and if you get a check that says you have the technology it means that it actually meets performance requirement that was specific right?

So that's kind of a tidy way of saying if you have rear view camera, not all rear view cameras are the same. So if you get the check it means that it meets a certain performance requirements, and the same will be true for the automated braking.

In the case of the rear cameras it moved them into regulation so then they went and said, Hey we're going to do this for now and we're going to regulate.

It could've been that it would have been in an NCAP rating.

It could have been where you can't get a five star unless you have a rear camera for example.

So it's a number of options of is it a key technology?

Is it actually included in the assessment, or are you going to move into regulatory when it comes to the applications?

It's a long time between now and then. We're going to learn what's effective. We're going to get a lot more information about a lot of the active technologies that a lot of us are rolling out in our vehicles today that are still in terms of whole fleet of vehicles in the United States still a relatively small number.

There's a lot to be learned from that, that we're going to know as we approach this time frame.

I just wanted to mention that because sometimes it is a little confusing if you're not into space, but it makes a lot sense when you think of the progression of options that exist.

MR. BEUSE: One thing that Administrator Rosekind indicated was that we're going to take a comprehensive look at NCAP under his watch, so what Steve described as the current state of play is on the table now with respect to how we cast avoidance into the star rating, how many are in there and all those kind of things, how V2V fits in with all of that.

There's actually work underway right now to look at all those things. It's not like things stay static with NCAP. It's a very dynamic program.

MEMBER DENARO: Well, it's kind of confusing, but the term basic safety message seems to imply that we'll have an enhanced safety message, and then I think you were kind of going there.

So do we envision that the system will eventually have some additional information coming from the vehicle being broadcast?

MR. BEUSE: I mean, that's what we're trying to figure out now. What are we trying to figure now is in this first wave. How much information should be required?

So maybe we shouldn't use the term basic safety measures.

Everybody is kind of familiar with that because that has certain meaning in terms of predefined parameters.

I mentioned heavy vehicles. One of the things we have to look in the light vehicle rule is, is there something unique for heavy vehicles that would have to be transmitted?

So if you're going to have one radio accounting for everybody, then basic safety messages that these guys think of in light vehicles might need to have a few more parameters in it to be able to accommodate heavy vehicles. That's the decision making we're kind of going through right now.

MEMBER DENARO: Is it safe to assume that basic safety message, whatever it is, will be the only thing new to V2V, other message sets maybe more of a V2I modeling type application?

Is that distinction there or did I drive it too far?

MR. BEUSE: Yes, that's essentially it. There's a message set that is absolutely needed for safety, a minimum safety set. Then there's other things you can on that would be V2I or I won't say V2I the mobility or the environment.

We're also looking at those as I mentioned because we want to make sure that we're not being so focus or so narrow minded that we leave other benefits on the table on the table.

So certainly with our other mobile partners, highways and others, we're looking at all of that in its entirety to figure out how much of that message set needs to be required.

Certainly there's always, always, always the option for manufacturers to provide content above and beyond that. The challenge there is if they all don't do it, then you got kind of mixed message sets and you couldn't do anything with it anyway.

MEMBER DENARO: Okay, so that was just then where I was going to go with that also. I assume then that you as in terms of regulation and the government are going to, in particular, come and specify the format, protocol, and everything else for the basic safety message but other stuff you might not and leave that up to the industry forum perhaps to establish standards.

Is that correct?

MR. BEUSE: Correct, correct.

MEMBER BERG: I think you have to be careful with that because if your message is too long, then there's too many cars, then you won't get the safety.

MR. BEUSE: I think that's an issue.

MR. FEHR: I want to make sure people don't convolve a message with a medium or a purpose because they're all separate things.

We've created this basic safety message that is exchanged in a broadcast mode medium in this part of this swarm intelligence implementation of these crash avoidance things.

That's one thing. It's a very tightly defined collection of data elements that support that particular purpose.

Once you have the ability to create those data elements you can then create a different message in a different medium.

That's exactly what we're doing as part of our installation because there's quite often a desire to transfer those data elements plus extra data elements off the vehicle to somewhere in the back office where data analytics can be done.

That's exactly the approach that we're taking in this reference implementation that we're working on. We've created

that other medium means of moving those data elements with extra things, and we've created collections of interesting extra data elements.

There's one set related to weather, one set related to electric vehicles, one set related to environmental group.

It's up to the individual creating that payload of those data elements that decide which one they are going to contribute.

They all go back off of the vehicle through Internet protocol transport media to somewhere where people can do data analytics.

So the basic safety message is an extremely tightly defined, very efficient collection of data elements for crash avoidance. Those same elements can then be packaged in different collections, moved using different media for those other purpose.

MEMBER DENARO: When you say media, what do you mean by media?

MR. FEHR: Anything that will support Internet protocol transport.

MR. LEONARD: Also just to clarify one thing. You talk about V2V messages versus V2I messages and I think what Walt is saying is that's not a real distinction.

The message that the vehicle is communicating was a signal

that roadside equipment has transmitted. It's going to be the same basic safety message. Obviously the traffic signal is not moving, but it says AHere I am@ and has conditioned information about that.

MEMBER DENARO: The reason I made that distinction was really the application, so V2V is going to be highly specified and regulated.

And to your point, Roger, you're going to say, AYou can do whatever else you want to do, but you better not interfere getting out 10 hertz or whatever.@

My whole point was stuff that's added there could have V2V applications, a lot of V2I stuff. It's just that we're going to really narrow down and protect that basic safety message, then go V2V.

MR. FEHR: All of these things are, these messages are collections of data elements. That one message, the basic safety message is extremely tightly defined. It's a very specific collection of data.

You can package those data elements into different messages and move them using different means for other purposes but they're the same data elements.

MR. LEONARD: So for example, yesterday we talked about

an icy spot on the street, whether or not that is information to share, that information is in the basic safety message, in that your decisions about the basic safety message content determine what applications you can run.

But clearly speed, direction, those fundamentals we're all in agreement on. You have to have that content. That's the fundamental building blocks.

MEMBER DENARO: So the collection of whatever sensors or data you choose to use to determine the slippery road or whatever, that could potentially be subject to an enhanced message, that the industry has got to figure out.

What we certainly want is we're going to implement something there. We want to standardize whatever you're going to put out because then something would come out the same day.

I mean you can develop different apps, but let's get the message standardized.

VICE CHAIR WILKERSON: And the verifications. Is the timing going to be an issue if you're on a rural road? Right?

You don't want that data staying there relaying information that not relevant or standard.

MR. FEHR: I would invite people to go to our shared site and see the first pass at those definitions. That's what we're

going to be using building up towards these pilots. We have taken a crack at that.

VICE CHAIR WILKERSON: I have one question. Is there anything new you can share with us in respect to motorcycles?

I think that's an area where the aftermarket play a really good role in promoting safety.

MR. BEUSE: Yes, certainly motorcycle is a big area in terms of fatality not going in the right direction there. Helmet use is a big thing there that saves a lot a people just right there, advanced braking systems.

I mean with respect to V2M though, like I said, we're sort of evaluating our current resources inside my shop and kind of said we love it, love to support it.

But right now we've got to stay focused. The goal of 2016 is a near and dear kind of thing. Once we get over that hump, then yes, I think we'll be talking to Ken about what we can do on --

VICE CHAIR WILKERSON: I am an avid motorcyclist, and I hear this dialogue constantly. And the international motorcycle groups that I'm in are sort of skeptical because they feel like we're getting a little left behind and partly because -- well, let me tell you. I know. I rep the people

who are members of your base, so I understand your perspective there.

But I think part of the issue is the given the diversity in the states about helmets. So if there is a mandate for helmets, you already have people who won't have an added safety benefit, of having a device that can be added on a motorcycle that will provide hearing a message.

I think the other concern that I've been hearing is that once you start having autonomous vehicles or devices that say there's a vehicle coming up on the side of you, and you can't get over with your signal that people will no longer look over their shoulder.

They will be conditioned not to look for that motorcycle, and we don't want those left turn fatalities to increase simply because people no longer follow those guidelines for driving simply because they're relying on the vehicle to tell them particularly when that motorcycle will have no means of communicating.

So I'd love to make sure those fatalities don't go up long-term.

MR. BEUSE: Ditto, ditto. They're kind of a drag on our progress.

VICE CHAIR WILKERSON: Thank you.

CHAIR KENNER: No mention yet of I think I understood the message use in the vehicle. What about the issue of delivery to the driver and driver distraction or whatever? Where is that in your guys' view as far as this whole process?

MR. BEUSE: Yes, so maybe if you think about let's say four crash warning. Let's say that's one of the applications that manufacturers decide to do.

I can't imagine that they're going to have a separate four crash warning for something that's delivered by DSRC and then a separate that gets delivered by their camera radar system because they're going to be angry.

So I think that question that you may be asking is what about the other applications that might come along?

There is a framework and I talk about how you wouldn't want someone to get a message about some sort of traffic when they're getting ready to into an intersection collision, the priority for all that, and then how that information is displayed to the drivers.

One of the things we're looking at in the connected vehicle manufacturer's piece is, whether you don't want non-critical warnings like coming in your face all the time, right, so maybe

where that should be.

I think the work that we have coming up this year will help clarify it a little bit more. It's obviously a concern in terms of too much information.

I was at CES and it's like everybody's going back to things on the windscreen and isn't that fantastic, and it's like why would you put that up on the windscreen?

It's because you can. I get that but do you really want to, and so there obviously needs to be some further dialogue there with where manufacturers think these are going.

But most of that stuff I would say 90 percent of that stuff would actually covered by our current distraction guidelines for phase 1, how much information in vision manipulation, and so, to the extent that manufacturers are following those guidelines, then we think we've arrived at a place where it would not increase distraction.

It would be no worse than turning the radio but it's obviously still something we'll keep an eye out.

The truck situation is a little bit different. The inside of a cab of a tractor trailer is completely different than let's say the inside of an automobile.

That industry might be more apt to coalescing around a

comparable way to do things just from different drivers jumping into different vehicles at whatever the loading facility is.

It's a little bit different with the rest of us who don't drive trucks. Does that help?

MEMBER WEBB: Yes, thanks.

CHAIR KENNER: And so certainly we're all going to keep the suite of sensors we have in our vehicles today, and vehicle to vehicle is really another sensor really that helps you to send some things that the current technologies with radars and cameras and all that can't do, right.

But inside the vehicle we're going to have both, right. We're going to have say okay, so V2V, DSRC say there's a problem, but the radar there's not. What should we do?

This is clearly a scenario where you wouldn't expect the radar to do it. You get warned. You might get something the other way around where the radar is saying it but this isn't.

Why is that? We will have to come up and then we do that already in different systems, so it's not an unusual thing.

Then the next frontier will be something like automated braking. Would we then integrate and do automated braking based on the DSCR input alone?

As we evolve the technology and get increased comfort with

the reliability of it and the functional safety aspects of it, I think at some point in the future, the answer will most likely be yes. Those are the kinds of things that we have to work on as we get more experience with pilots and so forth going forward.

MEMBER CAPP: That's all application work. NHTSA had described on behalf of what Nat said earlier to try to define what the industry will look like for the next 100 years is really hard to do.

What's the basis of radar with the radio going to behave like and what bits and bytes it's going to send out and receive as a set isn't clear and other data weather, sunshine, whatever, to features.

CHAIR KENNER: And Nat mentioned forward collision warning. There's a reason why the Secretary made the announcement he did. It's because if you look at the real world data to say what are the kinds of accidents people get into and if you want to go after the most common ones you would go after that.

Clearly when auto makers who we've already collaborated on with whatever the number is, nine V2V apps that we've demoed and everything, and some of those are very consistent with the

most common accident scenarios. A lot of it is in fact data driven.

If you want to reduce the number of accidents, injuries and fatalities, go after the ones that occur most frequently, and that's a rationale you would see applied by industry and NHTSA as we attack these kinds of issues.

MEMBER WEBB: My question is not as much directed towards the new vehicles but the aftermarket and delivery of the manufacturer deciding to, I'm going to warn this way and make it big and loud, and whatever as far as what I'm doing with my equipment in the vehicle, but you're telling me that they're going to be regulations that are going to be in place to guide that.

MR. BEUSE: Yes. Right now guidelines, I would say versus regulations.

MEMBER DENARO: I have two different points, and really one have to wait until I vote. What's the status of Europe, Japan and China on V2V?

MR. BEUSE: Certainly I would say the U.S. is leading as far safety.

MEMBER DENARO: I mean, are we following the frequency?

MR. BEUSE: Yes. So in fact there's a meeting going on

right now having to do with TTIP or Transatlantic Trade Investment Partnership. One of the topics not directly on that agenda is making sure we don't have disharmonious standard just for the sake of having them.

I think we continue to talk about that, and that's one of the things we remind folks at the FCC in general that AHey, we kind of have an unusual situation here historically where you kind of have similar technology platforms but now the U.S. does something different that will drive change and you need to be aware of that.@

Japan is a little bit different because they have already split the spectrum, but I think Walt and Bob would say that it's close enough that you can still get by with the same kind of hardware.

It's good right now. I have not heard any of my European counterparts or Japanese counterparts talking about a mandate just yet.

They seem to be more focused on let's say Japan more of a demonstration style just yet and Europe it's more on focusing on mobility and environment applications and not safety. Kind of a very gray little government role right now in terms of how to manage the security system and all that kind of stuff.

MEMBER DENARO: Well they can't figure out eCall yet, so

--

MR. BEUSE: No comment there. I think that's how I would characterize the situation.

VICE CHAIR WILKERSON: I would say that they've made some significance progress though on autonomous vehicles.

MR. BEUSE: That's only in the eye of the beholder.

VICE CHAIR WILKERSON: Well in some of the presentations in Frankfurt with the automotive telemanagement providers, the standard is they showed off the standardization of how they're going to engage the consumer or the driver from what does the steering do.

Does it fold up? How do you engage? They have really, had some really phenomenal, in my perspective, some really phenomenal discussions about how you start to engage which is sort of way out there compared to where we are on these issues.

But they are looking at some of the standardizations from some point.

MR. BEUSE: Some of that is driven by the regulatory framework. In Europe these guys can't put things on the road without the little stamp. In the U.S. we don't have that.

These guys can innovate all over the place. Google can

put a car on the road tomorrow. There's a certain luxury that comes along with that. The flip side is oh my God they're so far ahead.

I can tell you part of TTIP thing, one of the things that the European government wants to talk to us about is man you guys are doing a lot of great work on automation. We want to see if we can partner with you guys.

Yes people like to say that's mean. I say yes if you say so but I can tell you that the really hard nuggets about safety, how to make sure they're safe, what kind of testing you need to do. You can fold up a steering wheel. How fast are you to do that? What's the time required --

(Simultaneous speaking)

MR. BEUSE: They don't have the answers to those questions yet, so there's a lot of discussion right now about doing kind of some joint research projects.

I don't know how far it's going to go, but we continue to push on our outreach plan, which we think outlines kind of some of the very critical things to do.

I imagine automation will happen at some point. It may be a couple years or more, and so I think safety has got to be in front of everybody's mind. It really does because if

we're not careful, we'll lose the opportunity for many, many years to come.

CHAIR KENNER: In CAMP -- CAMP is actually working at the request of NHTSA to help define the levels of automation and, because there's various levels of automation that involve various levels of interaction of the customer to the vehicle.

And so it's more likely that the most levels of automation will come and then before something is fully automated in any road or weather condition whatsoever, that would come further.

At the government industry meeting, I saw a presentation I thought was excellent. I can't remember which manufacturer said it, but if you look at data on accidents, there's been several studies that even in different countries, they said that over 90 percent of all the accidents are caused by driver error.

So if you look at some of the lower levels of automation, they directly speak to the things that drivers do incorrectly or the mistakes that they make.

But when you go to full automation, you're actually automating things that drivers do perfectly well millions of times every five minutes. And so it's one thing to automate the things they make mistakes on.

It's quite another to automate things that the human machine does incredibly well and efficiently. We don't even think about it, and then the error states that could be introduced in trying to do that.

So that's just something I'll mention to the team because a lot of times people just go hey, automation. We're not going to have any issues or whatever.

The reality of it is what Nat said, focus on the safety aspects of it and what are the things that we just take for granted today that we all execute every time we drive without any issues.

So I just thought I'd throw that out there because I thought it was really well presented in that forum, because usually people just drivers make mistakes. Take them out. Everything's good. And that's not necessarily true.

MEMBER DENARO: Ralph Erwich made that point last summer at the automatic vehicles symposium saying the mean distance between an accident on motor ways was like 5 million kilometers or whatever.

He said my gosh. We think we can really help with those accidents that do occur, but how in the world are we going to be able to keep that record with the 5 million kilometers in

between. That's a really good point. I never thought of that.

CHAIR KENNER: So it's coming. We're working on it, you know, certainly NHTSA provided some guidance to states. They're doing a lot of research and the research, planning to share with everyone.

So it's a real exciting time, right? But it's going to be sort of a series. It's going to be a journey that's going to come in various steps and increments.

Other questions or comments for Nat? So let me ask just one other quick one. One of the things, Bob and I were talking last night, and we were talking about the evolution of this committee over time.

And if you go back six, eight years ago, there was not as much let's say international cooperation, globalization. And so when you look at the various speakers we've talked to, yesterday and then you today, certainly you have a -- well the DOT has a clear research plan, priorities.

And we're expected to kind of have a look at that and say here's the areas of focus that you need. And in the past, the opportunity to identify the gaps was maybe easier.

And that's why we're trying confirm all the time trying to get the latest from everybody because everyone we talk to

is very thoughtful, thorough, can go layers deep in things.

It's like we would say oh, that was an obvious issue here that we need to follow up on. But in your perspective, from your perspective, are there some things that you would look for from this committee, some questions or areas that you would want us to look at?

I'm just asking you that as a question for then consideration by the committee.

MR. BEUSE: Yes, I mean maybe a couple things to mind. One is just in terms of public understanding of the technology and the intersection of that with privacy.

I think everybody has a role to play in that. I think that's a role of trying to ensure the public that we're not invading people's privacy.

I have better things to do with my time than peer into a vehicle and all those kinds of things that people think we're going to do. How to crack that nut is one that would be very interesting.

I mean the automakers that went out and did a privacy thing.

I think states need to kind of look at it, right? States need to be able to explain to the public that they're not going to be sitting on the side of the roads collecting people's BSM

and handing out tickets.

The whole thing falls apart if that happens, I can almost assure you of that. So I think that's something that this committee could take a look at.

MEMBER DENARO: The reality and perception, too, are both at work.

MR. BEUSE: That's right, but I think trying to figure out the communication path or maybe it's that everybody should have policies in place like the automakers have done.

That's what it is. Put it out front right now that this is how this system is going to be used and how to live up to that. I think that's a big one for the success of DOT.

VICE CHAIR WILKERSON: I think another issue that hasn't really been addressed sort of when we're rolling out these issues. There used to be a real grassroots coalition effort being able to get consumers to be one, good stewards of the technology, but also to be able to be early adopters.

So where the technology is most likely to be deployed first is an area -- are there audiences that we should be targeting, whether it's for positive vehicles.

It might just be airports. It might be rental cars. It might be senior citizens' communities, amusement parks. Those

audiences are potentially the first adopters of this kind.

So if we can step back and look at how this technology, who are those people who actually have the most accidents at 40 miles an hour. What are the demographics of those groups, and who will benefit most from that?

I think we could do a greater service to helping support the deployment of these technologies and get people to actually use it.

MR. BEUSE: I would say maybe something else, and Ken, we haven't talked about this, so you're going to find this as a bit of a surprise maybe. But --

MR. LEONARD: I learn something new every day.

MR. BEUSE: He knows within the Department we found out this thing about GPS in the country and what to do about that.

Well, GPS is a critical component of V2V, and not necessarily trying to figure out how to, or maybe it is.

How do we equip those devices? How do we please those devices? That is probably more of a kind of a Congressional push maybe or something like that.

But I think this committee may be thinking about that a little bit. You've got expertise on here from the state level and also from the manufacturer levels who know kind of the

challenges that they'll face with what happens when the GPS signal goes out, whether it's malicious or on purpose.

And I was thinking kind of, or malicious or on accident.

I was thinking kind of two fronts, the malicious front might need some different approaches than maybe what we've been doing to date.

And then the non-malicious, the sort of the accidental, sometimes that happens as a result of infrastructure, and sometimes it doesn't.

Are there certain things, that again, people should be talking about and putting those kind of issues on the table so that we don't find ourselves in the year 2020 going, well damn it, why couldn't we solve that a couple years ago when we knew it was going to be a problem, right.

I think we all know GPS is going to be a problem. If you can go on the Internet and buy something on Alibaba that says it's going to hide you from your manager, that has certain ramifications depending on how broad that signal is.

With respect to automation, I can't say enough to underscore the issue of safety. And Steve said it best. It's one of the things I've been kind of trumpeting around is we've all been very good at developing test scenarios and tests when

things go bad.

We're not so good yet at developing every day driving test conditions and scenarios. And maybe there's opportunity for this committee to kind of take a crack at that.

I mean one of the things is people keep talking about is it a simulation. Is it test track? Is it a gazillion miles driving around the country?

It's probably all of that and then something else and what that something else is, I can't tell you right now, but it's something I think my team is thinking about in terms of we'll do this CAMP work.

And we'll come up with scenarios, and we'll come up with different categories to put things in. But how do we really assure ourselves that some automated parking system isn't going to run over a kid as soon as it leaves your eyesight?

What kind of failsafes, let's say, should be on there? You guys don't talk a lot about infrastructure, but I know these guys always talk about infrastructure and the need for the roads to kind of be passable.

And passable meaning not clear of debris let's say, but proper lane markings and all that kind of stuff is important for the sensors, to be successful in terms of full blown

automation that people all envision in terms of full self-driving, even partial self-driving.

I mean we have some traffic jams --

(Simultaneous speaking)

MR. BEUSE: GPS will insist we reroute. We used to have certain input from the infrastructure, and for whatever reason, that input is not there.

What happens when it sort of it doesn't achieve its full benefit, and you get consumers complaining about its success?

So those are maybe some of the things that are just off the top of my head and obviously this committee, I think you guys might be able to add value on.

MEMBER DENARO: You know, GPS is kind of a personal hot button of mine.

MR. BEUSE: I think I knew that.

MEMBER DENARO: But in my current work, I have seen some companies out there working on methods to increase the reliability of GPS. Some of them are very expensive, some not, to get it to safety of life ability and so forth.

So that's probably something that needs a little more focus. I mean these splinter efforts are going on. It may be with the dependence more now, and I'll generalize and say

GMS.

But maybe it's time to start looking at what is possible out there, and to your point, if we start now, maybe by the time we've got reasonable penetration of connected vehicles and more dependence on GPS when it's automated in the vehicles, maybe we can bring all these other solutions and we all can better about that situation.

CHAIR KENNER: All right, anything else?

MEMBER WEBB: Just a follow up on the first comment about the education. I'll be coming back up here in a couple weeks talking to my NACo county commissioners or whatever about where we are and so forth like that.

And every time I do, privacy, privacy, privacy is the big issue. And I keep trying to explain. Is there anything that's been developed?

And I'm looking at Ken now, like a little video or something like that to demonstrate how this thing is intended to work?

So you can say, this is on YouTube and watch a minute and a half video about how this process, you might feel better about what this is intended to do. Has anybody developed or thought about having anything like that?

MR. LEONARD: So we actually have a seven minute animation

on the connected vehicle capabilities. It does not focus though on the privacy aspects.

MEMBER WEBB: Right.

MR. LEONARD: We're in the process of developing another animation that's geared towards explaining the potential problem of interference on DSRC.

But again, we haven't done a specific video for outreach around the privacy issue other than we keep reminding people that we built privacy in from the start.

This is an anonymous system. We don't care who you are driving down the road. We care that you're going 43 miles an hour and about to blow through a red light.

That's what we care about. We don't care what make or model it is. We care about the weight maybe. We care about the speed. We care about the direction.

And so maybe if you get to the consumer acceptance point, and as we get closer to roll out, we may have to do some gauging --

(Simultaneous speaking)

MR. LEONARD: And I want to talk about, there's a great discussion, and Nat touched on a whole bunch of topics. You didn't really mention at all that NHTSA has this whole other

side of driver behavior and driver statistics and in response to Sheryl's comments about education.

NHTSA has an important role to play there. And so, again, I'm always looking for opportunities to bring information into this committee so that you can be more informed about various topics so that you can give us better recommendations and the Secretary better recommendations.

And so it's conceivable that we might want to get some of those folks in from NHTSA to talk to this committee at a future meeting.

MEMBER QUIGLEY: Ken, what is the name of the -- how we access the seven minute video that you referenced?

MR. LEONARD: I'll send you a link -- I'll send it out to distribution so that everybody can have that. On GPS, one of Greg Winfree's responsibilities in the Department -- and Department of Transportation has -- is transportation is the lead on civilian applications of GPS.

And so there's a very small office in Greg's office, a position in navigation of timing. I'll get Karen Van Dyke in here and James Arnold to talk about GPS and in particular the spoofing issue and our reliance on GPS as a system.

One of the challenges we're going to face, both the

connected vehicles and automated vehicles, is the more we move towards automation, the more we're going to become reliant on critical infrastructure that we know can be spoofed and can be jammed.

And that creates vulnerabilities. That is an issue we're aware of, and we're going to have to pay a lot of attention to it. We have had discussions with DHS, which has responsibility for detecting compromises in GPS.

And I know they have a system to do that. Some discussion we've had in the research community is the potential for a connected vehicle network to actually be a sensor network that if you have a group of vehicles driving past Newark Airport, and all of a sudden the control tower is getting interference, and in that cohort of 150 vehicles, there's a GPS jammer.

Somebody didn't want their supervisor to track their movements in the truck, you may be able to identify that jamming is moving down the highway at 63 miles an hour.

It took months, and I'm describing a real incident in Newark. It took months to identify the vehicle and the perpetrator of that, and they got the maximum fine the FCC could issue.

But it's probably not nearly enough, right?

MR. BEUSE: That's right.

MR. LEONARD: There may be legislative fixes or legislative deterrents.

(Simultaneous speaking)

MR. LEONARD: But there may also be technical fixes. I think, if connected vehicles makes it possible to identify someone who is conducting, it's not illegal to own a GPS jammer. It is illegal to use a GPS jammer.

VICE CHAIR WILKERSON: Or to sell, and certain countries have different rules on selling.

MR. LEONARD: I've seen some technologies that can detect and isolate and locate the location of a jammer also; these are the kind of -- (Simultaneous speaking)

MR. LEONARD: But that's a topic we'll have some discussion on.

MEMBER MCCORMICK: Interestingly, back in 2005 right after we incorporated the VII consortium, I got a call from this young man who was 19 and wanted to know when DSRC spectrum would be out.

And I was kind of curious. Are you a student or what have you? And he was real frank. He said no. He said we believe there's a subset of the population that aren't going to want

to broadcast their messages.

And so we're going to work on a way to mask it for their car. That was ten years ago, and they were working off just an announcement that the OEMs informed, you know, that we had the new VII consortium. So there's all kinds of risks out there.

VICE CHAIR WILKERSON: Well, I think we can learn from some of the other government agencies that have dealt with some of these kind of enforcement issues like the FCC or FTC and others.

I know when I was at the FCC, I mean jamming was not a -- I mean you dealt with it. So then you would be at an airport or a toll booth trying to jam singles.

And they would find the person, and they'd be arrested. And it's so different from cell towers with airplanes and airports with all these kinds of issues.

So I think part of it is if we can get that fear factor at a place where we can get safety to be an emphasis first rather than the paranoia that comes from that, we'll be doing consumers and the industry a service in getting these technologies deployed.

We could spend all day talking about scenarios about what can and --

MR. LEONARD: I was going to mention Terry Shelton has a shop that does analysis of collisions. So your point to where are the acts, the collisions occurring, which have graphics, so I'm sure NHTSA has great data on that.

On the international front, we have actually very active cooperation with both Europe and Japan. He was here yesterday, Shingo, and he's here today.

We, for 20 years in the ITS global office, we have had a Japanese fellowship program. And Shingo is our, I can't remember which number, how many --

(Off microphone discussion)

MR. LEONARD: And we continue to keep that program going. The Director General of DG MOVE was over from Europe last week, and he went through a number of talking with the international team, talking about a number of issues where there's some tension between the Department and Europe.

And the last item on the agenda was the ITS, and his statement was we just want to say what a great cooperation we have with the Department and ITS.

And that's just because there have been years of research cooperation. And Europe's ahead of us on some things; Japan's ahead of us on some things.

We're ahead of them on some things. So we're trying to leverage each other's investments and research. So we could talk about the international program if you want to know more about that.

And, in fact, UMTRI did an interesting step, so we could get them.

(Simultaneous speaking)

MR. LEONARD: They're a lot of topics that we covered here, but there's more information on it.

CHAIR KENNER: All right, well Nat, thanks so much, appreciate the time and your excellent answers to all of the questions and everything. It's just really helpful, and we appreciate your time.

MR. BEUSE: You're welcome, anytime. My pleasure.

CHAIR KENNER: So now we're going to take a break until 10:15.

(Whereupon, the above-entitled matter went off the record at 9:51 a.m. and resumed at 10:23 a.m.)

Subcommittee Meetings

CHAIR KENNER: Sheryl had worked on collecting everyone's response. I think Chris put together like the matrix, although we should see if we want that, based on Nat's discussion, if

there's anything we want to do differently.

VICE CHAIR WILKERSON: Okay. So yesterday, we asked everyone to come up with their top four, five subcommittees. We came up with a list of subcommittees.

Then we asked you to rank them in the top four of your interest and then to prioritize the top two that they would be willing to serve on.

And this chart is not scientific. It just basically shows those subcommittees. It also shows everyone's four subcommittees that they are interested in as well as the top two that they prefer.

The bottom just shows the level of interest. It doesn't denote the priority. So, for instance, right now we have -- for instance if you look at the column that says Public Transport, there's 12 people who are interested in that.

But some of those people, it's ranked number four on their list, right, so you can't necessarily say that that's a higher priority.

But then there are others where, for instance, the subcommittee on the Private Partnerships where there are a lot of ones, that should definitely probably be prioritized a little higher. So --

MEMBER MCCORMICK: Can we move ourselves now because I mean I don't know --

VICE CHAIR WILKERSON: So right now we just want to show everyone, and trust, and we can talk about it and sort of assess what we think those -- whether we still want to formulate these subcommittees and prioritize which four or five we'd like to focus on.

So, for instance, the Freight Intermobility column on the end, there aren't any ones in that category, but there's a lot of interest.

So we'll have to weight them based on the dialogue around them, the discussion around the room. Is that helpful? And then we also have several people who are not here today, which could certainly weight some of those subcommittees.

But we can maybe make some preliminary assessments so that we can continue to move the dialogue along and break out in subcommittees if that's what we'd like to do, so.

MEMBER MCCORMICK: One of, this is an ask, Debra just mentioned it, that wasn't her choices.

VICE CHAIR WILKERSON: Oh.

MEMBER MCCORMICK: So it might have got transposed incorrectly.

VICE CHAIR WILKERSON: I don't know. Did you give them to Chris?

MEMBER JOHNSON: Oh yes, I did. In the interest of full disclosure, we don't really talk about that -- I made the explanation into something.

VICE CHAIR WILKERSON: So we can --

(Simultaneous speaking)

CHAIR KENNER: So why don't we go ahead and we --

(Simultaneous speaking)

MEMBER JOHNSON: Yes, I believe I had Public Transportation as number one. I understand there's a lot of interest there, Shared Use, and I did have Data and then --

VICE CHAIR WILKERSON: What order?

MEMBER JOHNSON: Well, one was Public Transportation. Shared Use was two, and then it says Data. Well, I think that was four.

CHAIR KENNER: So Public is one, Shared Use two --

MEMBER JOHNSON: Yes, Shared Use was two.

VICE CHAIR WILKERSON: Okay.

MEMBER JOHNSON: And then I think Vending was three and then Data was four.

MEMBER MCCORMICK: That's what I really was talking about,

if I could switch my two and three.

VICE CHAIR WILKERSON: And that four should be zero.

MEMBER DENARO: Steve, you asked how they met last time, Security, Market Driven Adoption Strategy, Outreach and Administration, Organization and --

(Simultaneous speaking)

VICE CHAIR WILKERSON: Yes, please take Debra's fourth out. Yes, that would be great. Are there any other changes?

MEMBER MCCORMICK: And how many people are not here and

--

(Simultaneous speaking)

VICE CHAIR WILKERSON: So Stengel's not here, Scott Belcher. We have Raj, and I think that's it.

CHAIR KENNER: And Peter.

VICE CHAIR WILKERSON: Yes, Peter. So those are the four. I did send emails out to everyone last night asking if they could. Susan and Ginger did respond, so their information --

(Simultaneous speaking)

CHAIR KENNER: Sheryl sent it out, and some people were able to respond right away.

VICE CHAIR WILKERSON: So, is there any discussion? I mean you can --

CHAIR KENNER: Yes, so one of the questions, but could you say again the committees from last time?

MEMBER DENARO: Security was one, Market Driven Adoption Strategy, Outreach and Communications/Promotion Plan, Standards Optimization and Technology Review.

MEMBER BERG: Are we really specific enough?

MEMBER DENARO: One thing I mentioned yesterday was what about B well, overall scenario planning. We had some discussion. Is that potentially a separate break down. Are we going to handle that or it's a tool to be used in any or all of the other break downs.

MEMBER MCCORMICK: I think that's what I'd like to offer is that if it's an appropriate tool for each one of those committees to use, they can decide to do that. But I think there's real value in doing a standalone sierra plan.

VICE CHAIR WILKERSON: Any others?

MEMBER DENARO: And second question I have is do we want to consider combining Shared Use and Public Transport, and just have the subcommittee address both of those issues?

VICE CHAIR WILKERSON: Well right now we have six scenarios up there. Is there one that stands out that we do not want to do? I'm trying to go do the opposite of what you're proposing

because it might answer your question.

Say for instance, data has two ones in that group. Are there people who would want to leave that? But then you've got Freight where it has, there are no, there's no one standing out who might want to lead that right now. Those are the two that I think stand out from one another. Thoughts?

CHAIR KENNER: So the other question is after Nat's discussion, is there anything that people would want to modify in terms of the subcommittee structure we proposed?

The one thing I noticed when we talked to David he mentioned, still on the, what I think Bob referred to as outreach or communication, which is what Nat mentioned about the public lack of understanding of the technology, and in particular, the intersection with privacy.

And then the second part he talked about was the GPS stuff that if you purposefully jam it or accidentally lose it. And then --

VICE CHAIR WILKERSON: That could fall under David.

CHAIR KENNER: It could. And then he mentioned about the infrastructure as well, and the infrastructure could be a subset in some of these things, but --

VICE CHAIR WILKERSON: I thought we talked about state

and local infrastructure. Was that under funding and PPP?

Yes, so that fits under that category.

MEMBER BERG: At the risk of sounding like a broken record, what are these subcommittees supposed to do? What's the objective?

MR. GLASSCOCK: If you keep in mind that the more you're spread out, the fewer you have B

(Simultaneous speaking)

MR. GLASSCOCK: -- when you're trying to deliver algorithms. And so I know it's a been a challenge. We've been so busy since the beginning. We got three people on a subcommittee --

(Simultaneous speaking)

MEMBER MCCORMICK: I have a similar question. I guess I'd like to ask Bob and Steve and John this. Is there some data, like can you give me an idea of what you think we would be exploring there or considering in terms of a recommendation?

MEMBER CAPP: It's a good question. It applies to all the topics of interest, but how do we narrow those topics to stuff that relates back to Kenneth's program that we think we would actually make some suggestions on.

VICE CHAIR WILKERSON: Well, we kind of got to this point

by talking about all those different subsections, so if you remember, the very first meeting that we had, we had a very open dialogue about, I think we came up with maybe 40 or 50 topics.

We then combined all of those topics that each of you raised, which we could possibly go back. We'd suggest you look in the minutes and say who raised this topic under privacy.

Who raised this project under state and local or shared use or call it transportation? All of those issues that we talked about, it's my perspective, all those issues that we raised and we brought to the table, we've kind of summed up into these subtopics.

So going back and looking at all those issues that each of us raised under those categories are worthy of being discussed at a very more detailed level at the subcommittee level, so.

CHAIR KENNER: If you're going to go further, so if we look at, and I'll make a couple points. One is that this is intelligent transportation.

CHAIR KENNER: Right. So it's broad, and it can be as brought as we want, right. It's in any level of intelligent transportation, and if you look at MAP-21 and some of the things they're talking about now, it's way broader than just vehicle

to vehicle.

It's just vehicle to vehicle can be something that we would speak to specifically if we had an area to focus.

Then when you look at the categories, right, if you go back to what our duties are is we have to look at is the research and the work that the DOT is doing today likely to advance the state of the practice or state of the art relative to intelligent transportation in its broadest context.

And are these likely to be deployed by users? And if not, what are the barriers to deployment? And then it also says here, and I think Bobby mentioned this yesterday, the appropriate roles for government and the private sector in investing in the research and technology being considered, right.

And very particularly we talked about one of those overtly. So then to get into what Roger said is what does the subcommittee do. And this is certainly open for discussion in terms of how we want to do it as a group.

But in the last committee, I was on the Regulatory Harmonization, right, and so we met as a team. And I was on the subcommittee, and I think Scott Belcher might have been the leader for it.

We had a dialogue, and then we as a subcommittee crafted specific recommendations, right, so and I ended up sort of being the scribe.

I sort of wrote a whole bunch of things based on the subcommittee meetings, like what we would want to do this afternoon and then send it because we talked about a lot.

And then I said I'm going to pass it off, and I'm going to send it out. And then I had a whole host of people edit it, so as a subcommittee we worked through just email.

And people would take my proposed recommendations, right, and then we had one big discussion about the wording and content and all that stuff.

And then ultimately, it became in the letter, right. That section was, in essence, what the subcommittee had said, right, so --

MEMBER DENARO: You brought those --

(Simultaneous speaking)

CHAIR KENNER: Yes, so when the draft, what happened. So let's say we had four subcommittees, and the ideal state would be that the subcommittee would meet, develop a draft of recommended language that includes the recommendations from that subcommittee.

We would then put that together, and let's say we had four subcommittees. There would be four sections, and each subcommittee section would be in there.

We'd aggregate that into a total document, and then we as a committee would then once again go through and review it in total to make sure that we're all comfortable with the content of that.

I think that's kind of a really simplified version of how you ran it last time.

MEMBER DENARO: Yes, I mean it's really two parts to this concerning subcommittees.

VICE CHAIR WILKERSON: We don't have to.

MEMBER DENARO: We don't have to do that.

CHAIR KENNER: Right.

MEMBER DENARO: The two reasons are A, this may be easier to generate ideas and consensus with a smaller group of people than to try to do it with this whole room with everybody going through everything trying to do something.

So the subcommittee, there's more people who have the interest in the topic. Maybe you have a lot better chance of getting some meaningful recommendations.

Second reason being, frankly, that enables us to steal

more of your time because we only have the committee meetings a couple times a year.

By having subcommittees that are asked to go work this offline, by the next meeting, we got extra time and effort put into these topics, frankly, unless the subcommittee meeting is needed because it tough to have so many meetings and come back and not just have the same meeting all over again.

So that's the reason for going to subcommittees and the process that you outline is exactly how we do it.

(Simultaneous speaking)

MEMBER DENARO: Maybe the kind of topics we have will be talking with all of us. I don't know.

MEMBER MCCORMICK: We also have an interim report left, and we had sort of the something where we had gone to the floor October time frame, so at some point I just want to go over what the status is.

VICE CHAIR WILKERSON: We have that on the list.

MR. GLASSCOCK: Okay. Chris, can you pull up that deck?

CHAIR KENNER: It's worth taking a look at because then that would be another sort of reinforcement of how we want to approach it.

MEMBER DENARO: We also had some specific events that are

occurring within the NPRM like the FCC pushing that we weigh in on the committee. So there's extra stuff to do in the last round.

(Simultaneous speaking)

VICE CHAIR WILKERSON: The other thing is in your charter, there's references to the subcommittee in Section Number 13. So if you could look at both Section 3, 4, and 13 in your charter.

MEMBER MCCORMICK: So I'm curious to look at that. Final advice due in June of 2016, but it doesn't get submitted until February 2017. There's a eight month period there --

MR. GLASSCOCK: That's because of --

(Simultaneous speaking)

MR. GLASSCOCK: -- you guys but not for us.

(Simultaneous speaking)

MR. GLASSCOCK: -- and June 16th.

MEMBER MCCORMICK: Okay. All right.

MR. GLASSCOCK: That's the only reason.

MEMBER MCCORMICK: Okay.

MR. GLASSCOCK: I will say this. So I had hopes that the 2015 report to Congress will be on time. They've had it for months, so September lets us know. If you gave me something in September, the chances of it being on time --

(Simultaneous speaking)

MR. LEONARD: Steve, just a clarifying, it has nothing to do with the committee. I mean it was a unanimous report, but it's just sometimes difficult to get people through the system.

MR. GLASSCOCK: Not only does it go through the building, the send it out to OPM or to OMB, and so it is not a fast process.

MR. LEONARD: So a little extra time then. Deliver it to us a little earlier, and give us a little bit more time to respond because the more substance there is in the report, the longer it will take us to craft a response and work with the Secretary's office to get it over to Congress.

MR. GLASSCOCK: So again, it's just an idea. It's on you.

MEMBER DENARO: Well, most of the struggle last time when they all began in that part, we hadn't done the regulations. So we kind of calm down and then the first of year say you realize the conditions, you just kind of stop thinking about it.

And then we had final recommendations two years following. That might be the chance to B

(Simultaneous speaking)

MR. GLASSCOCK: Yes, Steve, Sheryl and I worked with the

first report. It's pending the Secretary's signature. It was one page.

(Simultaneous speaking)

CHAIR KENNER: And I'd like you to, right, substance in it.

MR. GLASSCOCK: But it was consistent with what we all said we were going to do, right.

VICE CHAIR WILKERSON: Right.

MEMBER DENARO: We were just given a heads up.

MEMBER MCCORMICK: Which we also got a late start. It was April when we did the first one.

CHAIR KENNER: So in this case, to answer the question, if you're really looking at, the first two bullet points are the ones that the, let's call them, historical, right, because we did that one-pager, and now it's going through the process.

And so now we're really at the point of preparing for the third bullet point, and so again, in an ideal state this is the beginning of February.

It would be desirable to then have an agreement of how we're going to approach the work and then begin to develop them.

And I'm certainly okay if everyone else says hey, we want to say here's the kinds of things we were thinking about without

as much detail.

Or if we said, you know what we've been some cases we do have maybe very concrete ideas of what we want to say.

And we'll say we're solid on this, and here's some other things we're considering in our continued deliberations. So it's really flexible.

VICE CHAIR WILKERSON: And it might be also helpful to start putting some sub time lines, some time lines before that September given then the holidays, vacation schedules in July and August.

The committees might not have enough people to actually --

MEMBER MCCORMICK: All right, we happen to have it a little bit differently. We've got seven months now ahead of us. And B

VICE CHAIR WILKERSON: Five good working months.

MEMBER MCCORMICK: Five, yes. And we also have a fairly clear definition. That took us two meetings to get to the last copy. So we might be able to have some more initial advice, maybe not in all the topic areas. We did write some of them.

CHAIR KENNER: I think if we capture some of the comments from the people we had speak to us yesterday and today, and

you saw that, I can ask like Matt and some others what do you think.

What are some areas you want us for? And they answered those questions, so I think that's really helpful as well because we want to be able to provide some value.

And those that are living in it saying here's areas, I just think it's a benefit to us.

MEMBER DENARO: But back to, well you understand. A lot of the things you're doing a great job.

So that is a challenge. But my answer to you guys would be that's what the subcommittees are tasked to do. Any general topics can go right into there and see if there's somewhere we think there's some gaps.

CHAIR KENNER: And so the direct answer to your question is the subcommittee develops a work product, and then we can add all four of them together. So that constitutes the content of our report.

CHAIR KENNER: Okay. That make sense?

MEMBER BERG: An advisory report.

CHAIR KENNER: Yes.

MEMBER BERG: Makes sense.

CHAIR KENNER: Okay. So this is really helpful to go

through the time line because it was something we had to reacquaint ourselves with.

So let's go back to the spreadsheet. So based on this, it certainly seems like although Transportation is one that is the one that had let's say the most total interest.

So it seems like that's one that there's an alignment around.

MEMBER QUIGLEY: What did X's mean?

VICE CHAIR WILKERSON: People did not prioritize.

MEMBER QUIGLEY: But they wanted them?

VICE CHAIR WILKERSON: It was in their top four.

CHAIR KENNER: Yes, so especially, I think what I did yesterday, I didn't necessarily say one, two, three, four, but I did just say one, two I think. So I gave, call it vague and ambiguous --

(Simultaneous speaking)

CHAIR KENNER: -- that resulted in some of the X's. Although Bob, certainly if you want to add numbers, we would be glad to --

MEMBER DENARO: It was vague because you weren't listening to me.

MEMBER MCCORMICK: Let me ask a question. Is six topics

too many?

CHAIR KENNER: Well, given that we did five last time, probably yes.

MEMBER DENARO: Well, there were 20 people. Well, so if it's 20 people let's, we need to add other people. Well, no, these are the people from the others, too.

(Simultaneous speaking)

MEMBER DENARO: We've got four people on the subcommittees because B

(Simultaneous speaking)

CHAIR KENNER: Yes, but at this point it's really 19 people. And so we could have maybe four or five depending on how many people are in Room 1.

It sounds like we're in agreement, so I guess one of the questions is if you look at Joe, Rob and Tina. The three of you have indicated as the most interesting, so between the three of you is there one of you that would say yes, I'll run the subcommittee.

For Public Transportation. The engineer in me that says Number 13 is the widest number of any --

(Simultaneous speaking)

CHAIR KENNER: All right, you guys okay?

MEMBER QUIGLEY: I second the motion. So the three of us that chose one, we all are directly involved with public transit, which is good because we, but it would be nice if we also had somebody on there who is maybe an infrastructure person.

(Simultaneous speaking)

MEMBER QUIGLEY: I second the motion.

CHAIR KENNER: So what we'll do, let me make sure we --

MEMBER QUIGLEY: Can you color code those on there maybe?

CHAIR KENNER: So first of all, put Mike in asterisk or something next to Joe to say that --

(Simultaneous speaking)

MEMBER QUIGLEY: So the committee folks would be --

CHAIR KENNER: Yes, and then let's also then, we should indicate in some way, maybe you could just --

MEMBER QUIGLEY: Put an asterisk.

CHAIR KENNER: Put the boundaries on the box, right. That would probably help. Yes, so asterisk for the chairman and then boundaries on the box for people who are on that. So if you could just do the borders.

Okay, so and then you put Debra and Tina and George, you as well. All right.

MEMBER MCCORMICK: Where's Sheryl?

VICE CHAIR WILKERSON: I'm holding out.

CHAIR KENNER: I did.

VICE CHAIR WILKERSON: I'm on the bottom. I've got an issue that I wanted to raise after it's all done.

CHAIR KENNER: Okay. All right, so for now is everyone comfortable if we say there's the subcommittee. And at this point, Joe is leading it and here are the four people on it. Okay. So then I'm open for alternative suggestions but --

VICE CHAIR WILKERSON: Is Funding necessary?

CHAIR KENNER: Well just because of the --

(Simultaneous speaking)

CHAIR KENNER: I would go to the one that's eleven because that's the second highest one.

VICE CHAIR WILKERSON: But it has the least amount of interest other than Susan. So Susan would actually probably like to lead that. That's my assumption given what her interest and my dialogue.

I did have a couple of a follow up conversations with her after she made her presentation, so that's --

MEMBER CALABRESE: We have to vote for her in absentia.

VICE CHAIR WILKERSON: Yes, that's one I would recommend if she --

CHAIR KENNER: For which one now, for the --

VICE CHAIR WILKERSON: Shared Use, if you wanted to look at that one.

CHAIR KENNER: Let me just ask a question because she also was talking about the Scenario Planning, right?

VICE CHAIR WILKERSON: Which she put as two.

CHAIR KENNER: Yes, so --

VICE CHAIR WILKERSON: She could serve on both. I think she was interested in serving on those two.

CHAIR KENNER: Okay. So you think that's okay? All right.

VICE CHAIR WILKERSON: I mean we could leave it as a caveat. If there's no one else in Shared Use that's recommended it as a priority for a one, unless she changes her mind we go back to those twos and maybe find someone who might be interested in chairing.

CHAIR KENNER: All right, so certainly, and the other thing is to look for areas of say non-overlap with the committee that we already set up. So certainly Susan, Brian --

VICE CHAIR WILKERSON: Maybe not Joe on this one. Joe, since you're chairing that or what do you think?

MEMBER CALABRESE: I'll be on it.

CHAIR KENNER: Okay. So and then would we ask Susan to be the chair of that one based on --

VICE CHAIR WILKERSON: We could propose it and see how she responds.

CHAIR KENNER: My sense, to be honest with you, is she's pretty eager and really disappointed that she had a conflict.

(Simultaneous speaking)

CHAIR KENNER: Passionate and B

VICE CHAIR WILKERSON: Talented.

(Simultaneous speaking)

CHAIR KENNER: So let's make sure, we'll put her on there, put the asterisk next to her as well.

MEMBER DENARO: What does that mean?

CHAIR KENNER: That means the chair, which would be for this afternoon it'll be a different chair because she is physically not here.

VICE CHAIR WILKERSON: Yes, but I will communicate with her.

CHAIR KENNER: All right, and then Brian number two and then who else.

VICE CHAIR WILKERSON: Anyone else?

MR. LEONARD: Joe?

VICE CHAIR WILKERSON: Tina or --

CHAIR KENNER: Yes, McKinney is not here today. See if he might --

All right, and then so at least now we can put a box around Joe McKinney at least to see. And then Joe, did you want to also be on this one given that it's your number two, but not be chair?

MEMBER CALABRESE: I think.

CHAIR KENNER: Yes, great. So why don't we do that. So for, okay. Debra, would you want to be this one as well?

MEMBER JOHNSON: I do have an interest because there's just a clear cut nexus between the two.

CHAIR KENNER: Yes. Tina, same question for you?

MEMBER QUIGLEY: Yes, I'll think about it.

(Simultaneous speaking)

VICE CHAIR WILKERSON: You might want to serve.

(Simultaneous speaking)

MEMBER QUIGLEY: Yes, TRB has got a committee as well that I'm participating on. I think Susan's on it as well. Yes.

CHAIR KENNER: And if you say just be on public one, that's good.

MEMBER QUIGLEY: Is it? Okay.

CHAIR KENNER: Yes, that's okay.

MEMBER QUIGLEY: Yes, just because of time.

CHAIR KENNER: Okay. All right, fair enough. So now the next two, if we did say we wanted to do four committees and there's two of us that have a tentative there.

So the first question is before we go there is to make sure if people, are people comfortable with the number of four committees meaning that we wouldn't do Freight or Data? Are you guys okay with that?

MEMBER DENARO: I'm not going to both.

VICE CHAIR WILKERSON: It could be that we could start a dialogue on it and then see if it's worthy of moving further on. I still think it's good that --

(Simultaneous speaking)

MEMBER DENARO: If you took out the two areas, then it's really not hard to have six --

VICE CHAIR WILKERSON: I agree.

MEMBER DENARO: -- because you want to say, have four people. It's nothing I can do here.

CHAIR KENNER: No, I think one of the other principles is we're probably don't want any individual on more than two because I think that's reached too far, certainly for me at

least.

Okay. So which one of the next ones do you guys want to talk about?

MEMBER MCCORMICK: Scenario Planning.

CHAIR KENNER: Scenario Planning, okay. So let's talk about Scenario Planning. So there's a lot of ones there. So first of all, so if you look at Roger, John, Scott, the three of you listed it as well. Is one of you willing to be the chair? I can tell there's a lot of passion here.

MEMBER CAPP: Part of it's, and it may shed into some of the questions. We're already kind of high level. Partly, the topics are intriguing, which is why we're in the business and why we're part of it. We're here to figure out --

(Simultaneous speaking)

MEMBER MCCORMICK: -- and try to decide where we're going.

CHAIR KENNER: Okay, deal. And then so at this point we put an asterisk next to Scott, and then you put around Roger and John boxes. And then for --

MEMBER MCCORMICK: I would say --

CHAIR KENNER: Susan likes that one. That was her second.

(Simultaneous speaking)

MEMBER MCCORMICK: I would like to solicit Kirk on that

one so we've got a public voice.

CHAIR KENNER: Okay. That works, so we'll put a box around Kirk as well.

MEMBER MCCORMICK: Because he's done that by the way for the state.

CHAIR KENNER: Yes.

VICE CHAIR WILKERSON: Can you put me as a two on that one, for Scenario Planning, because I think my Freight interests are going to be interested in the PPP.

CHAIR KENNER: And then I'll put a box around it. Okay. All right, and then so then let's talk about the Funding one.

MEMBER WEBB: Steve, just try to look at Ginger. She had a two, and we just kind of put her on for number one only.

VICE CHAIR WILKERSON: I think that was her interest in both, so we can put a square around her on that.

MEMBER MCCORMICK: I think what we should do is once we've identified who's on the full committee and then peel back the layers and say you're requested to be on this subcommittee and see if they're up for it.

VICE CHAIR WILKERSON: I'm checking with her, too, on that one.

CHAIR KENNER: Okay. All right, so then we move on over

to the Funding and Public/Private Partnership one. Let's see, there's Sheryl, George, Kirk, Joe, me.

MEMBER MCCORMICK: The number ones look like an excellent committee in terms of interest area and breadth of various topics.

VICE CHAIR WILKERSON: Is there anyone outside the agenda who really wants to chair, who would be interested in chairing that, that's on there?

MEMBER MCCORMICK: The funding?

VICE CHAIR WILKERSON: Yes.

MEMBER WEBB: I was going to nominate her.

(Simultaneous speaking)

VICE CHAIR WILKERSON: -- asked her, too, only because she's --

(Simultaneous speaking)

CHAIR KENNER: She was interested.

VICE CHAIR WILKERSON: She's very interested. What about --

CHAIR KENNER: I think that if Ginger was the chair and Kirk participated and we only have room for two, I think that would be still good.

VICE CHAIR WILKERSON: Okay.

CHAIR KENNER: We'll ask her, right. And then put for now, we'll put an asterisk next to Ginger and then for the other ones, let's make sure we don't leave anyone that would be a one or a two.

No, I think if you put a box around the other ones, I think that would be okay. All right, so now we have four. It sounded like when we talked about are you okay with four no objected about Freight because they thought Freight might be covered inside some of the others.

Rob, you were concerned about the data side and not doing the data one.

MEMBER DENARO: Yes.

(Simultaneous speaking)

VICE CHAIR WILKERSON: Can you put a question mark next to Roger on that? Maybe we can box him in at the top.

(Simultaneous speaking)

VICE CHAIR WILKERSON: Okay.

(Simultaneous speaking)

CHAIR KENNER: We've got your comments, and I was going to solicit you to have an asterisk next to your name for that.

MEMBER DENARO: Yes, that's fine.

CHAIR KENNER: Okay.

(Simultaneous speaking)

MEMBER DENARO: I do know that Schromsky was very, very interested in being in that category, too.

CHAIR KENNER: You said Bryan?

MEMBER DENARO: Bryan Schromsky.

CHAIR KENNER: Okay.

MEMBER DENARO: Well, Bryan said the sentiment.

CHAIR KENNER: Okay. So Bryan's there. We'll put a box around Scott, me and then also we'll let the, where's Raj?

MEMBER DENARO: And John.

VICE CHAIR WILKERSON: And John.

CHAIR KENNER: That's really --

VICE CHAIR WILKERSON: Okay, John?

(Simultaneous speaking)

VICE CHAIR WILKERSON: Fantastic.

CHAIR KENNER: There's already, that's plenty. That's six people already. All right.

VICE CHAIR WILKERSON: Who has not, so is there anyone that's not on a one or two, that their one or two did not get selected? So, for instance, Tina you have a one but no two. Is there anything else?

MEMBER QUIGLEY: You can put me.

VICE CHAIR WILKERSON: We don't have to. We haven't done Freight or any other, so.

(Simultaneous speaking)

VICE CHAIR WILKERSON: Great, so maybe we'll highlight those rows, and we'll --

MEMBER DENARO: And I know Scott had interest in some of the Public/Private Partnerships.

VICE CHAIR WILKERSON: And that way we'll know that --

(Simultaneous speaking)

VICE CHAIR WILKERSON: I'll call them during the breaks to see if I can, I'm planning to call the folks who aren't represented here during the break and see what we can nail down.

MEMBER MCCORMICK: And you're just going to delete the Freight Intermodal column?

VICE CHAIR WILKERSON: Yes. Is that where we are?

CHAIR KENNER: Yes.

VICE CHAIR WILKERSON: Okay.

CHAIR KENNER: There's nothing --

VICE CHAIR WILKERSON: So everybody has a one or a two right now except for Bob. I didn't know if, Bob, was there anything else that you were --

(Simultaneous speaking)

VICE CHAIR WILKERSON: Okay, great.

MEMBER DENARO: No, remove that.

CHAIR KENNER: And then --

VICE CHAIR WILKERSON: One suggestion. If we eliminate Freight Intermodal, I would possibly suggest that the Scenario Planning Committee maybe think about that. It could be that there's --

MEMBER MCCORMICK: I sort of agree with Scenario Planning because we sort of overlap all the areas.

VICE CHAIR WILKERSON: Right. I'm trying to think that we could include something there. Okay.

CHAIR KENNER: So we basically have then five subcommittees. Let's think about, when we go put them on the list. So Bob, you're here right now.

But for the second one, for the Public/Private Partnership, Ginger's not here today. Kirk is not here today. So who would lead that just today? Let's see. So Scott, you're here.

VICE CHAIR WILKERSON: George.

CHAIR KENNER: So for two of them, for the Funding and Shared Use, we need somebody to help today.

(Off the record comments)

CHAIR KENNER: So let's see.

MEMBER MCCORMICK: Right now we're soliciting Sheryl. We're soliciting Susan. We're soliciting Kirk.

CHAIR KENNER: No, I guess what I'm saying is, we're going to solicit Ginger and then Kirk as a second alternative in terms of actually running the subcommittee.

I'm just talking about discussions we have today, who's going to lead the discussions today. So it's a super short day to run. It's really February 5th.

MEMBER MCCORMICK: I think Sheryl and George would be the right ones to do that.

MEMBER WEBB: Given there's only three of us BB when you look at it.

VICE CHAIR WILKERSON: Yes.

CHAIR KENNER: Well, at least it's not --

MR. LEONARD: Given that people are on two committees, I don't know that we would be able to hold all six committee meetings today.

VICE CHAIR WILKERSON: We could do -- we've got three breakout sessions for that today. So we could split them up a little. Do you think that's possible?

CHAIR KENNER: We could. How would it go?

(Simultaneous speaking)

MEMBER DENARO: What would we do in the subcommittees today?

VICE CHAIR WILKERSON: Brainstorm.

CHAIR KENNER: Well, there's a couple things. One is certainly capture the information that you got yesterday and this morning while it's fresh in your head.

And I'd say when I was doing it last time, it was a tremendous value in me documenting my thoughts right while I was in this dedicated space, because as soon as you go out you forget and you have other constraints on your time.

So that's one, and then the second one is what is the plan for the meeting and organization of --

MEMBER DENARO: And logistics too?

CHAIR KENNER: Yes. Then once that committee plans from a logistical and cadence standpoint. Who is going to call the meetings, how often you're going to meet and all that and then that's the second part to the team meetings.

MEMBER DENARO: I would add a third point to that. That is given that we're focusing on one of these subcommittees, what additional information is needed for briefings next week.

And maybe that's something we can do all together here, as opposed to breaking out.

VICE CHAIR WILKERSON: So we have -- the schedule is 12 o'clock. So we have another BB what 45 minutes to talk about this. And then we have lunch. And then we have two breakout sessions today.

Is it possible to do three subcommittees at a time, and then --

MEMBER MCCORMICK: Are we going to do it in this room?

VICE CHAIR WILKERSON: We've got facilities. So we're wondering if it's possible to do three and then break up to do the next three.

MEMBER QUIGLEY: Well, there's only two people here for Shared Use, Joe Calabrese and Debra.

VICE CHAIR WILKERSON: Yes. I mean, we could at least do as much as we can. We've got a lot of time.

So maybe 45 minutes for each. Is that too much?

CHAIR KENNER: So let's think about how, if we have a total of five committees that we're trying to meet. So in the Data one, how many people are physically here?

MEMBER DENARO: Everybody.

CHAIR KENNER: Right, so there's four people on the Data. How many people are here for the Funding?

MEMBER WEBB: Three.

CHAIR KENNER: And then for Scenario Planning?

MEMBER WEBB: We have a lot.

VICE CHAIR WILKERSON: Maybe do that the second half.

CHAIR KENNER: And then Public?

MEMBER QUIGLEY: All of us.

CHAIR KENNER: And then Shared Use?

MEMBER QUIGLEY: Two.

MEMBER MCCORMICK: Help me understand, is Shared Use an extension of Public Transport? Or is it a completely separate topic?

VICE CHAIR WILKERSON: We had it separate.

MEMBER MCCORMICK: I knew that, but I --

VICE CHAIR WILKERSON: Maybe after the committees talk

--

MEMBER QUIGLEY: It's because shared use is actually a really big conversation in the public transit industry right now. So it may end up being --

(Simultaneous speaking)

MEMBER QUIGLEY: Yes, it could be the same.

CHAIR KENNER: So does it make sense if the Public Transport and Shared Use -- because I think it's the same people that are physically here?

MEMBER QUIGLEY: The same physical people BB two conversations, but they're the same physical group with the same interests.

CHAIR KENNER: Yes. And then for the Scenario Planning, because there is a lot --

MEMBER MCCORMICK: I have a suggestion. We have three sessions identified for the committee meeting. So basically we've got two after that. If we use the Scenario Planning as the second time slot, it could allow us more people.

The first one for the other because the Shared Use and Public Transport can tag team one after the other, realizing it's two afternoon sessions.

And then the Funding and the Data can meet in the first afternoon session, and then most all of those are about -- with the exception of one person.

CHAIR KENNER: Right.

MEMBER MCCORMICK: Are on the Scenario Planning and can meet in the second session.

CHAIR KENNER: So let me make sure I captured it. So you're saying we should have Data, Funding and then -- let's say Public Transport, meet in the first session.

MEMBER MCCORMICK: Right.

CHAIR KENNER: Okay. And then it sounds like in the second one we would have then Scenario Planning and Shared Use meet even though the reality of it is that the Public Transport and Shared Use people BB okay, I can live with that.

Go ahead.

VICE CHAIR WILKERSON: The other issue is we have 45 additional minutes to talk about -- subcommittee meetings on the schedule currently.

MEMBER MCCORMICK: Or we do that now.

VICE CHAIR WILKERSON: That's why I'm saying we have 45 minutes to kind of advance the dialogue if we need to. So that everyone can get their break, just a thought.

CHAIR KENNER: So are you saying -- I don't understand the proposal.

VICE CHAIR WILKERSON: Well, once we are at a stage where now we have some clarity on where the subcommittees are, we could take advantage of the next 30 to 40 minutes before lunch for our group to meet or to have an open dialogue about some of these where there might be duplicity.

I'm just saying how to make best use of the time because I have no -- I'm not recommending anything.

MEMBER MCCORMICK: Do we have a calendar of when we're

next supposed to physically meet?

VICE CHAIR WILKERSON: We can do some of that logistics.

MEMBER MCCORMICK: And those targets and what level of effort we have between now and our next meeting in order to accomplish what we need.

VICE CHAIR WILKERSON: Right. We have that at 3:30, but we could talk about that now.

MEMBER MCCORMICK: To me that's a shorter -- that's a 30 minute conversation.

VICE CHAIR WILKERSON: Okay. You want to do that now? Okay, great.

Okay. That would be great. That's a good point. People do have to leave early.

CHAIR KENNER: So who has to leave early?

Okay. Well, then you're right.

VICE CHAIR WILKERSON: Instead of 3:30 to 4:00, we can do this right now.

CHAIR KENNER: What time do you have to leave?

MEMBER BERG: 3:15.

CHAIR KENNER: Okay, so we can probably maybe try to finish at that point.

VICE CHAIR WILKERSON: Which means we can talk about these

at the next meeting.

CHAIR KENNER: So the next meeting --

MEMBER MCCORMICK: How do you get to Dulles from here?

CHAIR KENNER: To Dulles?

(Simultaneous speaking)

CHAIR KENNER: So we talked about the schedule in September, right, wanting to have a report in September.

So the question for you, Bob, is if we did that, how would it work in terms of when you physically met? Did you meet in September to try and then bring the committee back to then finalize the submission for that time, or is that not okay, and you had to meet sooner?

VICE CHAIR WILKERSON: In August, like did you just review and cleanup in August so that you could have something set to agree upon?

MEMBER DENARO: I think we -- the fact that we had a physical meeting, it could be by phone or email. That works.

I think having the meeting closer to the morning is also a good idea. I don't think it matters too much in your brain.

MEMBER MCCORMICK: We had some group vetting, as I recall. We already had the statements ready to be published, and we were then BB from the subcommittees, and then we were bringing

them to the committee to have those explained and vetted to see if anyone had any objection or wordsmithing, which they did.

MEMBER DENARO: It is good to have that meeting for vetting and wordsmithing and so forth, but it's good to be together.

MEMBER MCCORMICK: It is. MR. GLASSCOCK: Anything that comes down to subcommittees must be discussed, voted, whatever.

(Simultaneous speaking)

MEMBER WEBB: We met the second week of August in 2013.

VICE CHAIR WILKERSON: That would be great. That's good.

Did you get a good turnout then?

MR. GLASSCOCK: You know planning in advance helps a lot.

VICE CHAIR WILKERSON: We can put something in weeks or something in here. Second week or third week.

CHAIR KENNER: So if we can -- and let's just say that we'd try to mirror that, the second week in August. Is that something --

MEMBER MCCORMICK: We ought to probably involve --

(Simultaneous speaking)

VICE CHAIR WILKERSON: It's okay.

CHAIR KENNER: Right. So is June or September better? I'm worried about -- again, September?

MR. GLASSCOCK: If we do it August, we can a lot of work in advance. You could have it almost ready, so to get a better attendance you might want to wait.

Again, it's all of you, but I'm not sure how much work is getting done between August and September.

VICE CHAIR WILKERSON: That's what -- I agree. Yes.

MEMBER DENARO: So it was September 13? Is that what it was?

MR. GLASSCOCK: And again that's because --

VICE CHAIR WILKERSON: Before Labor Day.

MEMBER DENARO: Because Labor Day is the 7th.

VICE CHAIR WILKERSON: Yes, I think it's good for his people. So we could have -- that's what I'm for, if we could go before that.

CHAIR KENNER: So I'm sure, so are we saying still trying to meet in August?

MEMBER DENARO: Or September.

MR. LEONARD: Are you guys familiar with ITS America in Pittsburgh? ITS America BB if people are attending, ITS America could probably accommodate some break out groups for

subcommittees.

So if you're planning on attending, there is a potential opportunity there, May 31st, for us to capitalize. It's a great venue for learning about ITS, getting current.

VICE CHAIR WILKERSON: We could get speakers.

CHAIR KENNER: And where is it?

MR. LEONARD: Pittsburgh.

CHAIR KENNER: So what do people think of that as a proposal, to try to do it at that timeframe?

MEMBER MCCORMICK: The only problem with that is that Telematics Detroit is June 2nd, 3rd, 4th.

I don't know how many people here participate in that. I'm not chairing it this year, so that's not an issue.

CHAIR KENNER: Scott, Steve are you mentioning subcommittees or were you thinking about the entire committee?

MEMBER MCCORMICK: Yes.

CHAIR KENNER: So certainly we want to break out and the subcommittees establish how they're going to work together and develop. Then we want to bring them back together with us, and that's the meeting we're talking about. When would we come back together?

VICE CHAIR WILKERSON: So the end of May, June?

CHAIR KENNER: Wouldn't you say -- Scott has a conflict on --

MR. LEONARD: That's June the 2nd, 3rd, 4th, is Telematics Detroit. So if we're done, and I'm back by the 2nd -- no later than the 2nd, that's okay. But I think you said you wanted to do the 3rd, right?

MEMBER MCCORMICK: All right, this one we got a problem because it would start on a Saturday. We have to check all of the calendars.

MEMBER DENARO: Did you say on Sunday and Monday?

MEMBER MCCORMICK: I said like Monday, Tuesday.

VICE CHAIR WILKERSON: May 31st to June 3rd.

MEMBER MCCORMICK: June 3rd, right.

VICE CHAIR WILKERSON: So it's really the 1st?

CHAIR KENNER: Well, the way we've done it in the past is we would say, we wouldn't want to do it actually during it, but if you're already there and then stay another day, we could meet then.

So that would put it in the 4th, which would directly conflict with what --

MEMBER MCCORMICK: Yes, I would have to leave on the 4th for my son's wedding in San Diego.

VICE CHAIR WILKERSON: And people are out for the week, so it would hard to -- and the rest overlap.

CHAIR KENNER: So going back to if we picked --

MEMBER QUIGLEY: Is this a one day meeting or a two day meeting?

(Simultaneous speaking)

MEMBER QUIGLEY: Generally? Okay. It would be nice if we had a one day, so people would get in and get out.

VICE CHAIR WILKERSON: I'm thinking a Monday all day meeting might be more efficient than having two days.

MEMBER QUIGLEY: Monday, the 1st? Is that what you're saying? Monday, June 1st?

VICE CHAIR WILKERSON: Is that -- what do folks think about that?

MEMBER QUIGLEY: I'm fine with that.

VICE CHAIR WILKERSON: Well, I think the other thing, too, is that people can issue --

(Simultaneous speaking)

VICE CHAIR WILKERSON: No, but I mean it could be that you could submit a report for those who are not there. Submit a report on where they are.

CHAIR KENNER: If we did that on the 1st, that would be

concurrent with, so you couldn't participate in the ITS America events that day.

MEMBER MCCORMICK: If we do that -- I mean how many people are going to go to the ITS America event in general?

FEMALE PARTICIPANT: I'm out of the country.

MEMBER MCCORMICK: So there's two people. So we could meet on the Saturday, the 30th. And then people are free for the Saturday night and then on Sunday.

CHAIR KENNER: What about if we decoupled it? So we decoupled it from that since there's not as much people participating, what would be then another alternative?

MEMBER MCCORMICK: The only block I have is the 18th, 19th and 20th for this insurance summit in Chicago, in the month of May.

CHAIR KENNER: What about if we went back to what we had done before, in August, if we did it like on August 3rd or the 10th?

MEMBER MCCORMICK: I didn't see anything on any of the event calendars for that period in August.

CHAIR KENNER: Yes, it doesn't have to be the one day, right? If we did a one day, what would be the preferable one day?

MR. GLASSCOCK: In the future BB or in the past, people were reluctant to travel on Sundays. So we've always had the meeting Tuesday, Wednesday or Thursday.

And again, if it works better for the committee to get the advice pre-mailed to us in October, it is -- that was just an arbitrary, hopeful date. Please don't have it a lot later than that because BB October is going to be here and BB probably not and it never has been.

I don't think that we -- please don't put so much weight in that, if it makes it inconvenient for the rest of you.

MEMBER DENARO: On the other hand, if we have to arbitrarily wait to do it later and do it in the subcommittees. We also talked that if the memo was not as --

(Simultaneous speaking)

MEMBER MCCORMICK: And so for logistics: Tuesday, Wednesday, Thursday is better in terms of travel cost, but that's better than trying to travel on Monday or Friday.

MEMBER CAPP: I prefer the 5th. I don't know if you still want, do we want to do it here? Is it better for you guys?

CHAIR KENNER: So what about August 5th, Wednesday?

MEMBER QUIGLEY: This doesn't work for me, but as long as the chair's there.

CHAIR KENNER: It doesn't work for you?

MEMBER QUIGLEY: It doesn't, no, but it works with other committee members.

CHAIR KENNER: What would work for you?

MEMBER QUIGLEY: Let's not do that. It's so hard. It's summer. With me, summer is hard.

MEMBER MCCORMICK: You should have older kids like me.

VICE CHAIR WILKERSON: Would that be potentially here in Washington? Is that what we're thinking?

CHAIR KENNER: Yes.

VICE CHAIR WILKERSON: Okay.

MEMBER DENARO: We could go to Grand Lake, Colorado.

MEMBER MCCORMICK: We have quite a few members that travel from the West Coast, right?

VICE CHAIR WILKERSON: So I was wondering if there was -- I'm just asking.

MEMBER MCCORMICK: So it takes them a day to get here, right?

CHAIR KENNER: So far, is there anyone that knows now they can't make the 5th? Other than Tina? All right, why don't we lock that in?

MR. GLASSCOCK: August 5th?

CHAIR KENNER: August 5th.

MEMBER DENARO: In a one day meeting.

CHAIR KENNER: We'll try and do it in a one day meeting.

MEMBER QUIGLEY: I will be in Sun Valley, so if you guys want to meet in Sun Valley, that works.

MEMBER DENARO: Works for me.

VICE CHAIR WILKERSON: Is there another meeting in between that timeframe? Was there another meeting the last time?

MR. GLASSCOCK: Oh, I can't remember. I'm sorry.

VICE CHAIR WILKERSON: We can also do a conference call.

MR. GLASSCOCK: Yes, conference calls and webinars.

VICE CHAIR WILKERSON: Throw out some dates BB potential holding dates.

MEMBER DENARO: Yes, because the first year that we held the meetings was in May and October and then we have meetings in March.

CHAIR KENNER: Yes.

MEMBER DENARO: So again -- I mean the subcommittees have work to do and basically this meeting in August would be the vetting of that. I think we want to have a draft.

So we want to get some schedules in place for the subcommittees BB so that's up to you. So we could at least put

together a draft and we would have better chance to look at it before, even if we just come in and talk about it.

MEMBER MCCORMICK: How much lead time do you need for that?

A month, three weeks?

MEMBER DENARO: For what?

MEMBER MCCORMICK: To get the information to Steve and Sheryl ahead of the meeting. How much ahead of that meeting do you need it submitted?

MEMBER DENARO: Because most of the discussion is vetting that we're going to do together, it's really just the physical act of putting stuff together because they're really not doing any editing of it, per se, because that's what we're going to talk about.

MEMBER MCCORMICK: So we'd say July 17th?

CHAIR KENNER: Yes, that's my --

VICE CHAIR WILKERSON: That's Friday.

CHAIR KENNER: So we said July 17th we submit draft, right? That's good.

MR. GLASSCOCK: And remember, this would just be the topics that you're considering. It can be as in depth as you want, or it can be as high level as you want.

CHAIR KENNER: Right.

VICE CHAIR WILKERSON: We are aspiring to provide --

MEMBER DENARO: Your question, Steve, about other meetings. The problem with -- if we don't have another meeting before then is, if we want to get further information, speakers and that sort of thing, we won't have that by then.

VICE CHAIR WILKERSON: Yes.

CHAIR KENNER: We won't have anymore than we have today. We have to go back and read.

VICE CHAIR WILKERSON: That's what I was thinking about.

CHAIR KENNER: Because one of the things we had talked about is when we meet after lunch that we would capture some of the notes from the last couple days, talk about the cadence of the subcommittee but then also what the subcommittee would request in terms of additional information or resources, right?

MEMBER DENARO: Well, the point is that there is no chance to act on that prior to the July date.

VICE CHAIR WILKERSON: Right.

MEMBER MCCORMICK: Well, we do have that one day meeting. We ought to have a substantive enough report so that we brief the entire committee, that they know what direction each one of those committees is going. Just for awareness, in the case of parallel work that they're doing.

MEMBER DENARO: Yes, but then the subcommittees might not have access to additional information from other people.

MEMBER MCCORMICK: Well, I think that's the responsibility of whoever the chair is of each committee. If we're going to be doing a webinar or a teleconference anyway, always pull in those speakers. We can always bring in the white papers. We don't all have to sit down and look at the speaker.

CHAIR KENNER: Certainly as you referenced in the past, having a checkpoint -- in probably May, which is say the midpoint between when we meet again and I think is probably necessary and appropriate, right?

MEMBER DENARO: To meet by teleconference?

CHAIR KENNER: Exactly.

VICE CHAIR WILKERSON: That's what we're thinking.

CHAIR KENNER: So that's what -- I think we should try and do that in the beginning of May.

Yes. So if we go and look at May.

MEMBER MCCORMICK: Anytime before the 15th works for me.

CHAIR KENNER: All right, what about the 12th, 13th, 14th?

This is again for our conference call.

VICE CHAIR WILKERSON: I can do the -- well --

FEMALE PARTICIPANT: I'm good on the 3rd, too.

VICE CHAIR WILKERSON: Of what month?

FEMALE PARTICIPANT: May.

VICE CHAIR WILKERSON: Yes, maybe that will work.

MEMBER DENARO: Thirteenth looks good.

CHAIR KENNER: All right, May 13th for a conference call.

In Canada you don't have the time difference concern then.

VICE CHAIR WILKERSON: Yes, I'll look at it. I'll try to do that.

CHAIR KENNER: All right.

MALE PARTICIPANT: Did you pick a time?

MEMBER MCCORMICK: Usually, it's in the afternoon to accommodate the West Coast people.

VICE CHAIR WILKERSON: Yes, the West Coast.

CHAIR KENNER: Yes, so what if we picked like 1:00 Eastern Time. That would be 10:00 for West Coasters. Does that work? All right.

Yes. So at least what I think we agreed to that we'll do a conference call on May 13th at 1:00 Eastern Time. We'll ask the subcommittees to submit their drafts on July 17th. And then we'll meet in person for the day of August 5th.

And then what we want to do -- oh, Scott, we didn't capture

your interest in committees. So we're only doing the five committees you see there bolded. So which ones BB we can put that on the spreadsheet now. Which ones do you have the greatest interest in?

MEMBER BELCHER: I can't read them, what are they?

CHAIR KENNER: The first one is Data. The second one is Funding/Public/Private Partnership. The third one's Scenario Planning. The fourth one's Public Transportation, and the fifth one's Shared Use.

VICE CHAIR WILKERSON: Can you blow it up just for Scott?

MEMBER BELCHER: Data and Shared Use.

CHAIR KENNER: All right, so --

MEMBER BELCHER: Or where do you need me most? I'll do whatever you need.

MEMBER DENARO: Good for me.

CHAIR KENNER: Either one. Which one would you want to have as your highest priority, Shared Use or Data?

MEMBER BELCHER: It doesn't matter to me. Wherever you need me.

CHAIR KENNER: All right, so we'll put you down as Data number one and Shared Use number two.

MEMBER BELCHER: Sure.

MEMBER DENARO: And meeting adjourned. Been a long time since I've been called that.

CHAIR KENNER: Perfect.

VICE CHAIR WILKERSON: Thank you.

CHAIR KENNER: All right. So let's talk about after lunch logistics then. So we agreed to have -- I think the proposal was to have Data, Funding and Public Transportation. Those three committees meet after lunch for the first chunk of time, and I'll think we'll BB I have to look at the schedule again.

Yes, so it could be for 45 minutes and then we'll switch to have Scenario Planning and Shared Use meet for the second 45 minutes. So if you can help with the logistics of where the committees could meet, it would be great.

MR. GLASSCOCK: Lunch is here.

CHAIR KENNER: Oh, good. So for after lunch, let's tell people where to go for Data, Funding and Public Transportation.

MR. GLASSCOCK: There's the bar, and then there's a table all the way at the end of the hall. Both have electricity. There's a sitting area at the bottom of the escalator. There's more, just sitting area.

MEMBER MCCORMICK: I am going to suggest that Scenario Planning, because of the size, stay in here.

VICE CHAIR WILKERSON: Yes.

CHAIR KENNER: You can have it one, maybe two.

MR. GLASSCOCK: Two might be too much.

CHAIR KENNER: I believe that we're going to have Data, Funding and Public Transportation here, right?

VICE CHAIR WILKERSON: The bar area for Data.

CHAIR KENNER: So Data is going to go into the bar BB

VICE CHAIR WILKERSON: BB area.

CHAIR KENNER: Oh, the area.

VICE CHAIR WILKERSON: The bar sitting area. The tables down the hall for Funding and Public/Private Partnership.

CHAIR KENNER: Okay.

VICE CHAIR WILKERSON: And then we can still use this room for -- how about Public Transportation.

CHAIR KENNER: All right, deal.

MEMBER MCCORMICK: Is it in the bar?

CHAIR KENNER: It is in the bar area.

MEMBER MCCORMICK: Let's decide which bar it is.

CHAIR KENNER: All right, and that's it. And then what we'll do is at -- after the 45 minutes, then the Scenario Planning team will meet, let's say in this room at 1:45.

And then Shared Use can meet in the bar area because it's

the closest one. How's that?

VICE CHAIR WILKERSON: And then if there is -- I'm sorry.

MEMBER WEBB: You think someone can participate by phone?

VICE CHAIR WILKERSON: I'm going to email folks. I can't get access to their phone numbers until the computer's -- it's on that computer that's being used for the PowerPoint.

So I am going to try to reach out to the folks who are highlighted in yellow that we have, and then Susan and Ginger as well. Okay, so I'll do that during the lunch.

MEMBER DENARO: So what are the time periods for those sessions again?

CHAIR KENNER: So 1:00 to 1:45 and then 1:45 to 2:30. And then we'll meet back together and then just talk.

MEMBER DENARO: And say the second session, where are we meeting?

VICE CHAIR WILKERSON: The table. There's a table area -- I'm sorry?

MEMBER MCCORMICK: A counter.

VICE CHAIR WILKERSON: Yes, a little counter area just down the hall here.

MEMBER DENARO: For which one?

VICE CHAIR WILKERSON: The Funding.

MEMBER DENARO: The 1:45 to 2:30 section is Funding --

CHAIR KENNER: So 1:45 to 2:30, Scenario Planning is in this room, and Shared Use will be in the bar area.

VICE CHAIR WILKERSON: All right.

CHAIR KENNER: All right.

VICE CHAIR WILKERSON: And we can type that up and put it on the screen, so if people --

CHAIR KENNER: If you forget after lunch or something.

VICE CHAIR WILKERSON: All right, can you do that for us?

CHAIR KENNER: I think we're ready to take lunch then.

(Whereupon, the above-entitled matter went off the record at 11:43 a.m. and resumed at 2:33 p.m.)

Subcommittee Updates to Committee

CHAIR KENNER: So what we're going to do now is just sort of have either the committee chairs or the people who volunteered today to be committee chair to go through and summarize for us the discussion they had.

And we talked about sort of three things, a summary of the areas that you want to investigate further, how you're going to connect with each other as a team and then third, if you identified any incremental needs for information or support of any need at this point.

And then certainly, like most of us are in a situation where there will be forthcoming, maybe not today. So if you don't mind, again, apologies for the engineering mentality here.

But if we can go from left to right and start with the Data subteam first.

MEMBER DENARO: Well, we met at the bar and they had a really nice new microbrew.

(Off the record comments)

MEMBER DENARO: So we talked about what we mean by data, definition of data. This needs further work, but we identified that data can come from the infrastructure, from vehicles, traveler data.

It can non-ITS data. That's nevertheless important to the subject, and then kind of an outlier, but we decided to piece it under the data area, GPS data or addressing the GPS issue that we heard earlier.

As background, there are at least two resources right now. In the strategic plan there's a section on enterprise data, a two page section there which talks to this, and then in the Beyond Traffic report, there's like a ten page section, at least that.

There might be more as I work my way through it. But that

talks about data and the GPS problem in particular.

So the initial areas of inquiry we came up -- and these are just preliminary to some brainstorming that we came up with -- one was ownership, storage, discoverability, anonymity of data.

Second one, process for sharing. How's that really going to happen? This whole idea that we discussed yesterday about state mobility issue potentially and the fact that we've got to figure out a way to go work the problem.

And maybe that needs to be done state by state with the goal of eliminating those barriers to data sharing.

Next one is intersection of, what Nat mentioned today, intersection of technology and privacy and the plan to work the consumer perception issue there and the fact that it's more than just promotion to the consumer.

There needs to be a good plan to address that up-front before it's a problem. Another issue or opportunity looking at the healthcare industry as a model of how they share and protect data and protect privacy.

Another issue, car data ownership, consumer owning the data, but the auto maker being a steward of that data. If we push that out further, how would all the people in the value

chain there, what are their responsibilities?

How do they get involved? A question about data as a commodity, looking at that concept and, which gets data flowing but then how do you make this essentially free data flow through the system, get processed, get moved around.

What funds those various stages of that effort where people are adding value? And then the last one was what we had talked about earlier with the GPS problem of potentially requiring greater accuracy and more importantly, greater reliability than we have today or in general, GNSS and other systems as well besides GPS.

And the possibility of inviting a technology forum, request for information or whatever to see novel solutions to that.

And then the organizational conclusion there is that we're going to have a teleconference, in each of March and April prior to the May meeting, to bring more structure to this.

And in that process, potentially identify additional inputs and resources that we would like as a subcommittee.

CHAIR KENNER: So does anyone have any comments or suggestions based on what Bob went through? I think most committees are in a similar situation where you're going to probably have to request for more information that you haven't

fully developed yet.

And that's certainly understandable, but the key is for anyone that's looking for that support, make sure you let us know so that we can try and make sure that you get the information and we connect you up with the right people.

I was in that group in the beginning of the discussion, so the other part of trying to meet basically once a month. So we do it in March and then April, and then we agreed that we would meet as a team again on May 13th.

So it just seemed to be a cadence that we were all aligned around to make sure we were making progress. Any gaps in what you just heard? Okay.

I have to say we were originally not sure about doing data, but there was a lot of energy and people involved in that discussion.

FEMALE PARTICIPANT: Came full circle.

CHAIR KENNER: All right, so then why don't we go to the second group to talk about the Funding. I can't remember. Who is the --

VICE CHAIR WILKERSON: There were only two people there other than, I think ITS America and Raj.

MEMBER WEBB: We had a small but very high quality group.

CHAIR KENNER: And the quality went down when I joined them at the end of the discussion.

MEMBER WEBB: The chair is Ginger Goodman, and Kirk is also. So two key people, as far as my view, were not on this opportunity.

We did get Raj to participate by phone, so that was a good addition as well. First thing this group talked about was P3.

As Kirk mentioned yesterday, there are several issues as far as people knowing what P3 is.

Raj brought up the point that our highway is just going out with, he called it a test ed, but I call them pilots, where you're looking at five locations or up to five locations, funding from \$2 million to \$20 million to try to get real world things.

And he says that seems to be a real opportunity to look at the public/private partnership for those kind of things. So we're going to be very interested to see what kind of responses we get to your solicitation that one.

But the other major issue was on a P3, what Kirk's position was yesterday, that while there seems to be people thinking there's money out there, there's always this issue of yes, that's money looking for a return on investment.

So we're trying to go straight on and figure out if in

fact yes there is money. Is it an issue that everybody needs to face and say, well there's money that can be put into this up-front, but they're going to need to be paid back.

And what would be the source of that payback? So we're going to do a little bit more investigating with P3s, certainly from Kirk's role on national and so forth and like that.

They've had a lot of experience in P3 discussions, so I'm going to value his input on that area. Then we also talked about, the other part of this group was funding for federal, state and local issues.

One of the big issues that I thought that our chair had written a very nice email I think it was that Sheryl had, that did a great job summarizing, from a local perspective, that it is just not on the radar screen of local elected officials.

And when they do sort of tune into it, it's sort of like well, why is that a benefit to my community? So I think there's going to be this issue of how do we do a better job of showing what the benefits are and educating.

That was part of, I think, last year's thing from the outreach committee that we wrote as far as a recommendation to the Secretary. And so I see some of that flavor is still out there as far as that kind of stuff.

Well, we had issues that there certainly would be from a local perspective, some guidance. The thing we'd be looking for, well, where connected vehicles would probably be first best as far as the infrastructure side.

Every local official I've talked to has sort of said okay, well if they put these things in cars, and they're talking making the car safer, okay.

But why do I have to go spend money to put devices on the side of the road? And certainly in some entities we've talked to, I've had some of the northern states say well, it's beneficial from a weather aspect.

I've had some California people say we like it for mobility information and so forth like that. But I think we may be making and looking at recommendations as far as developing sort of a menu list of here's maybe the top two, three, four or five areas.

And this is why you might want to consider making these kind of investments. Bottom line, no one size in the connected vehicle world fits all.

So it's sort of like where can it best be targeted. We're also talking about -- we talked to Raj because he's so heavily involved in the autonomous world -- that on the local side,

how do you prioritize the expenditure of doing your resurfacing and your re-stripping versus potentially putting infrastructure in to support connected vehicles?

And his comment was, well, they complement each other. And I said, well yes, I think they all understand. So we're going to wrestle through that issue as far as well, what and how is the importance and the direction of local dollars that we're going to have that.

Sheryl also talked about a report that came out in the fall from the Department of Treasury?

VICE CHAIR WILKERSON: Oh, we were talking about the working group following the Secretary of Treasury and Foxx discussions that are ongoing about private funding and equity funding for ITS.

MEMBER WEBB: Again, that's money waiting on the side lines before I make an investment. We want to pursue that a bit further to find out what and how about that one.

So the other thing that at least I got in the note that Raj says one of the things that he's heard in connected vehicles is just the long time line to get something out there from the approval process and so forth.

So finding some opportunity to try to do that. He also

threw out a suggestion that we're going to investigate about potentially producing some sort of credit for getting connected vehicle infrastructure in cars and maybe on the roadside in some fashion, which again, credit means subsidies.

It's something we're going to look at. So that's the general areas of interest. Connecting with each other since we have fewer than 50 percent of the committee, I think we're going to do it by email and have Ginger sort of lead us into trying to get a regular schedule going.

And as far as the need for information, we're going to come back again and probably have that first discussion with the committee I mentioned and talk with each other on the phone.

CHAIR KENNER: Great, so any comments or suggestions? I think the one thing we mentioned yesterday when Kirk made his sort of summary of his experience with public/private partnerships was that perhaps investigate some of the various specific ones that seem to have promise that didn't prove out in that way to try and understand maybe what are the barriers to success, right.

Because it seems like everyone says it's, there's untapped potential and there's lot of money out there and people waiting to invest and partner up. And yet it's not happening on its

own.

And you would think that it's either the potential isn't there for certain reasons, and we should understand what those reasons are as consistent with our charter of trying to understand barriers to implementation of ITS.

That was one I captured from the discussion yesterday. The other thing logistically -- and Sheryl I didn't mention this to you -- but it would be helpful I think for Sheryl and I to, as you guys are setting up your meetings and notes, just cc Sheryl and I on the notes.

It would be helpful. That way we kind of get a sense of how the teams are progressing as we continue on after today.

MR. LEONARD: Steve, if I could ask that you also cc Stephen Glasscock, the DFO, so that he can keep track.

CHAIR KENNER: Absolutely.

VICE CHAIR WILKERSON: Maybe circulate a telephone, a document that shows a particular meeting -- other people can sit in.

CHAIR KENNER: All right.

MEMBER BERG: Is there a reason why the subcommittees need to circulate that in kind of emails to the whole committee?

CHAIR KENNER: You could, for sure.

VICE CHAIR WILKERSON: That's the goal. I was saying if we could have a list with when people are going to meet, we maybe could keep that so anybody could join.

CHAIR KENNER: Yes, for sure. Part of my mindset was respecting email traffic for everyone, but if everyone is okay with getting, being cc'd on the various subcommittee notes, I certainly -- I was going to embrace that myself.

So I certainly that's a great suggestion. Okay. The next one, Scenario Planning -- Scott?

MEMBER MCCORMICK: Yes, we went through an exploration of what everyone viewed scenario planning as because some people saw it a little bit differently.

It was looking through a pinhole of an elephant in five different directions. And it ranged everywhere from contingency planning to possible features.

Bob had an excellent example where you have, it's either connected or not connected. It's either automated or not automated. We're in this scenario right now.

And we're looking at this scenario, but what happens when you look at the other scenarios. Two, evaluating what your underlying assumptions were and understanding if it those underlying assumptions proved false or failed, one of things

we considered.

Again, this was to give back to Ken and company. Here's something that we think you might want to consider doing. Another example that was also given by Bob that talked about when we went and briefed the ITE engineers.

And all of a sudden, this made huge impact on them that they weren't aware of. And so that brought us up to the point that says well, okay.

There's also a negative economic impact when you go down this route, the example being have to access, after the half of the people that go to the hospitals on the weekend are from car accidents and all of the traffic that goes into the body shops that occurs because crashes occur.

Also, that doesn't go away, so now you'd need half as many doctors on the weekend. Are you over-facilitized? And of course, it's useful to know what the impact is of any technology change.

And if that's communicated appropriately, then those other industries, business sectors, governmental entities can sort of start their own process of planning to go forward. So we captured, go ahead.

MEMBER DENARO: Can you I give an example? In our last

summer workshop, because apparently something between 70 and 80 percent of organ donations come from highway fatalities. And if you eliminate highway fatalities, what happens to that number?

MEMBER MCCORMICK: So one of the things we looked at is what scenario planning applications are there that can actually be used, what issues should be scenarioed and which ones are outside of this scope to look at, outside of the ability for us to really address.

Sheryl brought up the point that there are future visionaries that have the ability to talk and figure outside the box. It might be worthwhile listening to.

It might be just worthwhile recommending either that reading material or that talks that they give is something to be considered.

One of the questions was to talk about what are the most important risks that ITS should address, both in terms of the capability of the technology or the communication protocol or the adoption rate if an economic downturn occurs.

That always lengthens any kind of implementation that goes out just between 2008, 2009 time frame, with the auto industry difficulties, things got stretched out longer than that, and

industries re-characterized themselves.

So players might not exist and they currently exist in this space right now, and one of the organizations that are truly taking on these issues right now.

There are companies that are being opportunistic to figure out that okay, if this happens, this is what's going to go there.

There's also companies that are taking the short side saying that okay, if this doesn't occur or it fails to occur, and one of the things that was brought up is there could be a huge pushback over some medical issues that may not exist or that we may not be aware of that are worth exploring.

So we're also going to set up and do a monthly call, probably not far from, I'll send out the note, and we're going to get a hold of Susan Shaheen and talk to her about taking over this role.

She has a variety of tools at her disposal. And she's an expert in scenario planning. So I'll be having some conversations with her, kind of brief her on where everyone is looking at and where they're going, as well as we're fortunate to have both Larry and Ken in this session with some feedback on what it is they currently do and how it's properly addressed.

So that's where we were at. I don't know if you have

anything else to add.

CHAIR KENNER: So the one thing I'd mention is that when we talked to Susan, remember we had also talked about her in Shared Use, so we need to make sure. I think we shouldn't have anyone run more than a single committee.

MEMBER MCCORMICK: Yes, whatever she wants to do.

CHAIR KENNER: And certainly the area where she has the greatest interest, we'd want to plug her into where her passion is. So that's good. So the thing I didn't completely understand. So are you going to actually -- maybe different than some of the other committees -- actually conduct a scenario planning?

MEMBER MCCORMICK: Well, what we kind of agreed to is that we're going to address the framework of: what are the possible business sectors, topic areas, issues that should be considered when you do a scenario planning?

CHAIR KENNER: I see. Okay.

MEMBER MCCORMICK: Like I said, we're not here to solve world hunger. We're just trying to tell you something.

CHAIR KENNER: Okay. Any other comments or other questions? Okay. So let's see, Public Transportation. Joe, is that you?

MEMBER CALABRESE: Yes, it is. We were also pretty focused on public transit, and I really want to thank the JPL Group for participating in our conversation.

There's a lot we think ITS can do to better optimize and help provide our customers with a safer, more efficient, more productive ride. However, we don't think we know enough about what's happening today both in terms of the JPL and FDA.

So I think that step in the process is going to be have a conference call and webinar to find exactly what's being -- what's happening. I really believe a lot is happening that we don't know about.

We need to know what's going on, what direction before we can make a suggestion as to what other avenues to go down.

So we're going to do it by conference call.

We've got a very good group we think. We know that public transit ridership is going. We know the trends will continue.

A lot of that is because of greater demographic change because of population shifts.

We're seeing, there's the population growth we're seeing in the major cities. So we've got to be able to serve more people. The question is: through better data, how can we do it more efficiently and productively?

CHAIR KENNER: All right, so any other comments or --

MEMBER CALABRESE: Ken is going to fix us up with some people in Congress.

CHAIR KENNER: Good. I mean it's good that you knew what you're looking for in terms of incremental support. Okay, Shared Use.

MEMBER JOHNSON: I'm Shared Use in the absence of Susan. So we have, like others have reported here, we are really struggling with the ambiguity of what it is that we're to do.

And so there is a clear cut nexus with public transportation, so what we're going to do subsequently is actually have a dialogue with Susan, Joe and the rest of our committees to discern whether or not that they, do they need to evolve.

But the essence of the discussion talked about when you look at shared use, we talk about first and last mile and how that would factor into the equation.

But then, what we really honed in on, the non-traditional components outside of the urban core, because when you talk about those that live in the suburban areas maybe have to get in the seat and go to a vehicle to access public transit.

How do you create a model using shared mobility to get

that demographic into an area in which they can utilize the other aspects, via Uber, Sidecar, Lyft, via ride sharing, via car sharing or some other aspect like Carma or something like that?

Additionally, keeping that in mind, there's elements of P3 that are compounded into this discussion as well because when you look at the model across the board, there is data application aspects that can come into play.

So really what we're going to do is have a conference call to discern whether or not we need to merge the group and then set up monthly meetings.

And we'll be reporting back to you all whether this is just one big group talking about both components or whether we'll bifurcate them as they stand today. Anything my group wants to add that I didn't cover? Thank you.

Discussion of Action Items and Next Meeting

CHAIR KENNER: All right, well great. Greg, glad you're here to join us. I didn't know if you wanted to make any comments because we did have quite an interesting dialogue over the last couple days.

The help to get the right people here that were engaged, knowledgeable and helpful to us was really appreciated, as I

know it took a lot of energy to get the people here.

But I think really, it was helpful. In any case, it seemed like we had way more time than we needed. And then we started doing questions.

And then, all of a sudden, we ran out of time. So it was really good. The things, just so you're aware, that we agreed to is that -- independent of the subcommittee meetings between now and the next time we meet as a group -- we are or we have a scheduled time on May 13th to have a teleconference so we can all come together.

We have tentatively said that on July 17th that we want to have the subcommittees provide a draft for everyone to be able to view, and then we're planning on meeting together in person here in D.C. on August 5th.

And then, so we -- because some people have to leave a little bit earlier, so we wanted to kind of compress this to make sure that we got alignment on the next steps.

And then if you know, the intent is that we would have a draft some time in September to support the following February approval. So that's something we already worked through.

And then when we broke up into subcommittees and had to report out, we just wanted to make sure everyone was off to

a good start, and quite frankly, the help in having the people come in and help get around which subcommittees we'd like to have and who wanted to be on them and lead them and so forth.

Assistant Secretary Winfree's Remarks

MR. WINFREE: Well, certainly, my team has communicated several things, one, this is a world class assembly of talent around these issues.

So from a Department perspective, we're extraordinarily pleased that folks take time out of their busy schedule to help us move this project forward.

Interestingly, when I looked at the breakout groups, even though there are five, I would say they all really center around scenario planning. Because everything we're doing from this point forward, whether it's data, funding, public transport or shared use, we've got to be able to talk to multiple constituencies about their issues, their challenges, their thoughts about how this technology moves forward, whether this technology moves forward, whether they're excited about it, whether there are other issues that are preventing folks from getting onboard.

You talked about electromagnetic frequency issues that we didn't foresee when we started to get the comments. So there

are going to be other communities out there that are going to want to have their opportunity to weigh in on this lifesaving technology.

So I know we're all big proponents and fans of it and foresee it as making the monumental change in how transportation is conducted.

But we have to be cognizant of the many different areas that we'll need to respond to. So just this exercise and having these subcommittees, it is a great approach.

And I think we're really going to challenge ourselves and push ourselves as we start to scope it out going forward. So again, just thanks to everybody for taking time out of schedules.

And we'll look back at some point and we'll remark on what an opportunity we had at this juncture to really transformatively change transportation.

I didn't even know -- the bit I know I don't know how wide and how broad and how deep this technology will penetrate and what the ancillary benefits would be.

We're only tapping into what we know. It's what we don't know and how impactful this would be. That's the point that really drives certainly our team at DOT and hopefully everybody who engages with us.

CHAIR KENNER: And you'll be happy to know that Sheryl did represent the motorcycle constituency in some of that discussion.

MR. WINFREE: Absolutely.

CHAIR KENNER: So Sheryl, any comments for me?

VICE CHAIR WILKERSON: No, I appreciate everyone's participation and those who could not be here who were willing to take time out of their schedules to be on the phone.

CHAIR KENNER: So Sheryl actually reached out even yesterday on subcommittee selections to people that couldn't be here, got responses back.

Some people as you heard, actually called in, so it was really effective in terms of reaching out. And Sheryl also pulled together this matrix in almost real time right after we decided yesterday what the committees were. It was really helpful.

MR. WINFREE: Steve, one final thing I would say, to the extent we talk around bicycle and pedestrian, I think we need to really bring it more into the center of the conversation.

At DOT we tend to focus on mechanized transportation, and I call it active transportation, bicyclists and pedestrians.

It's a core priority for our Secretary, and everything we do

across the Department is focusing on those issues.

So we need to step up our game in considering how this technology is going to roll forward and get to the vulnerable ones, which is commuter and motorcycles.

CHAIR KENNER: Yes. All right, now any comments from anyone else because I think I'd just like to thank you all for coming here, for being engaged and present in the discussions.

I think we made a lot of progress, and as always, I learned a lot, not just from the speakers but actually from the conversations with you.

So I think the way we set this up, we had a lot of time to get to know each other a little better. So I really appreciate that, and thank you for your commitment to the committee and spending the time.

Adjourn

And with that, I think we'll actually uncharacteristically adjourn a little bit early, but several of you have commitments and travel plans that required you to leave early anyway.

So we wanted to try and accommodate that. So thank you very much.

(Whereupon, the above-entitled matter went off the record at 3:04 p.m.)