CALIFORNIA DEPARTMENT OF INSURANCE
Public Hearing on Autonomous Vehicle Insurance Issues

Unofficial Transcript

September 15, 2014

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0:00 – Title Card + Intro Music

0:22 - Audience Converse among Themselves + Remaining Set Up

*** Beginning of Hearing ***

0:49 - INSURANCE COMMISSIONER DAVE JONES:

Good Morning. My name is Dave Jones and I have the pleasure and privilege of serving as California's Insurance Commissioner and I am told that I have to speak right into this mike in order that it's picked up by all who are watching at home because we are live streaming this event. I apologize for those in the audience if my voice is booming a little bit but we are trying to accommodate both the audience present here as well as the audiences at home. Welcome, I want to thank everyone who has either tuned in or is present here at the Tech Museum of Innovation. We are excited to be here in the heart of Silicon Valley where innovation is a constant, where new technologies, new business models, and entrepreneurs are hard at work bringing to market all sorts of things that improve the lives of consumers and communities across California, the nation, and the

world. I apologize for our late start. Perhaps, if there were more self-driving cars on the roads already, I might have been here a little more on time, but we ran into a little bit of traffic and so we are excited to be here and excited to have all of you as well. For those of us who are joining us via our live video feed on the web, the agenda and background paper are available for download. You can go to insurance.ca.gov, click on the button for this hearing on the California Department of Insurance homepage, and you can view the documents that have been prepared for this hearing. This is a public hearing and we are inviting panelists who are experts in the subject that we are going to take up today, which are self-driving cars and insurance to present to us, but as well there will also be an opportunity at the close of the hearing for members of the public to testify directly to us. I actually had the opportunity, the other week, to be driven in one of these fully automated self-driving cars and it was a fascinating experience, a very exciting one and one in which the car, for essentially 25 minutes, navigated a very complex intercity streetscape and did so flawlessly. I have to say it was with a little trepidation that I first sat down in the car, but after a few minutes I was quite comfortable to see the steering wheel moving by itself. I think that this technology holds great, great promise. And we are going to hear a little bit about that today, the possibility of fewer accidents, fewer injuries, fewer fatalities, and safer driving for all of us. I think at the same time, we in the public sector and those who are in the insurance sector have to think about how we are going to accommodate this new technology and how do we make sure that there are insurance products available for the manufacturers of these vehicles, for those that write the software, for those that make or install the devices, in some cases we are talking about cars that are manufactured that

are self-automated, in some cases cars are retrofitted and also for the drivers themselves – how do we make sure that there continues to be insurance products available and insurance products that protect consumers in all facets of the operation of the self-driving cars. That's a very exciting prospect for all us here and the reason I have convened this public hearing as this state's insurance regulator is to make sure we are ready. I think it would not be good for government to be behind on this and I think with many technologies here in California, those of us in the public sector are acutely aware of the importance of making sure that the public sector keeps pace so our goal today is to do exactly that and to collect as much information as possible from those that are involved in creating these cars, those that are involved in insurance markets, those that are in the public who can provide us with input at the Department of Insurance so that it will inform our thinking about how we go forward to make sure there are insurance products available and what the appropriate regulatory framework is. So, with that in mind I look forward to hearing from the folks on the panels today. I also want to thank our partners in this endeavor, who include the Department of Motor Vehicles. The director has been very hard at work leading an interagency task force to consider not only the questions we are going to be covering here today but a broader set of regulatory questions, which are not the subject of this hearing, but we appreciate her leadership and the leadership of the fine staff at the Department of Motor Vehicles and their partnership as we consider these issues. Our hope is to try to wrap up about a half an hour after than we originally intended. Originally we were scheduled to close at 12:30, but now our goal is to try to close at 1:00. With that, it is my pleasure to welcome our first panel to the hearing and I

want to thank specifically the members of that panel – we are joined by Professor Alain Kornhauser, who is a professor of operations research and financial engineering at Princeton University, as well, we are joined by the Deputy Director of the California Department of Motor Vehicles, Bernard Soriano, and I want to welcome you both and thank you for your patience in our getting started and also thank you for your participation in this hearing and for the testimony that you are about to provide us. So, I think what we would like to do is start now with Mr. Kornhauser and receive his testimony and then move to Mr. Soriano and then we may have some questions from the panel. I am joined here on the rostrum by Deputy Commissioner, Chris Shultz, who oversees our community programs branch and also Summer Volkmer, who is with the legal department – legal branch – of the Department of Insurance and I want to thank them both for helping us get this hearing organized and for the materials that were prepared as well. With that, why don't we start with Professor Kornhauser – Welcome.

6:45 - PROFESSOR ALAIN KORNHAUSER, OPERATIONS RESEARCH AND FINANCIAL ENGINEERING, PRINCETON UNIVERSITY:

Thank you. Good morning. It is a pleasure for me to be here because it is my view that the insurance industry and its regulators are the key players positioned to accelerate the consumer adoption of automation in road vehicles. Automation of vehicles has two distinct market opportunities, initially, the substantially enhanced safety and unburdened drivers. To be followed by the delivery of safe, economical, high quality mobility to everyone. In the past, we have been reluctant to buy safety. No – everyone would be driving Volvos – Why? Because I am a safe driver- it's the other guy, he needs it. I don't. Can't afford it. Also insurers haven't been so thrilled with past crash safety

measures – sure lives have been saved but the cost of accidents has actually gone up – Why? Because the focus has been on crash mitigation. Crush zones, seatbelts, airbags – lives have been saved, and injury severity reduced, but saved lives incur a greater financial cost – fixing the crush car is more expensive, insurance burden has increased, automation technology approaches safety from a different perspective, that of avoiding the accident in the first place. The purpose of analog breaks is to have the vehicle stop faster, that's avoiding accidents. Similarly, electronics stability control. Interestingly, both of these systems monitor the driver's behavior and at some point automatically decide to take over because they determine the driver is not driving properly. With respect to analog breaks, I'm pushing too hard on the brake pedal, they won't let me. With stability control, I'm taking a turn to fast, steering alone isn't going to safely negotiate the curve, what is important is that these systems take over automatically and counter what I am doing wrong. They don't warn, they don't ask for permission, I can't turn them off - they just do it. Automated driving extends these crash avoidance systems and will substantially reduce accidents – reducing the financial liability of this ill equipped vehicles irrespective of who is in the driver's seat, thus insurance has a great deal to save and gain from the accelerated adoption of these technologies. I believe that we will be able to offer these technologies at a price that is less than the present value of the expected liability savings that these technologies will deliver. Thus, at existing rates, the insurer can pay for the automated technologies and make more money and at no additional cost lives are saved, injuries avoided, social pain is diminished. This has to be the ideal arbitrage opportunity for the insurance industry and its regulators – keep rates

the same, make more money, save lives – wow. This is such a fantastic opportunity that a substantial part of this meeting should be focused on figuring out how insurance regulators can help accelerate the research, certification, and commercialization of these technologies. Moreover, these technologies have the opportunity to evolve naturally, propelled by ever-increasing value delivered to the insurance industry and to society. Initially, at NHTSA Level 2s, where substantial action and reduction, reduces insurance liabilities and saves lives as the system improve to Level 3, the opportunity for the drivers to text safely during sanctioned portions of their drive cycle creates a tangible incentive for consumers to purchase this incremental technology - enhancing the arbitrage opportunity for insurers and the public. With respect to driverless Level 4 cars that can go empty for A to B, I anticipate there will be very little consumer demand for personal ownership of driverless cars. Thus, little need for private passenger auto insurance. However, driver less car create the opportunity for a fleet owner to offer common carrier, on demand ubiquitous elevator-like mobility 24/7 without incurring labor costs. No need to own a car when this kind of mobility is available inexpensively. Summarizing, Level 2 is an ideal arbitrage opportunity for the insurance industry and the public at large. Accordingly, its insurance products should the incentivize research certification and commercialization of these technologies. The personal benefits of Level 3 will accelerate the adoption of even safer technologies- expanding the arbitrage opportunity. Consumers and/or the communications providers will gladly pay the extra technological costs because now drivers can now text safely. Society benefits. Level 4 driver less cars will cause fleet operators to substantially erode consumer demand for

Level 2 or Level 3 cars but these new and expanded fleets will deliver unprecedented mobility for all while requiring fleet oriented insurance products. Thank you.

12:30 - INSURANCE COMMISSIONER DAVE JONES:

Thank you very much. I think what we will do is, we'll hold our questions until we hear from the second panelist who is Mr. Bernard Soriano, the Deputy Director of the Department of Motor Vehicles. Welcome.

BERNARD SORIANO, DEPUTY DIRECTOR, CALIFORNIA DMV**:**

Thank you, Commissioner Jones. I would like to thank you for giving us the opportunity to testify at the hearing. As you said, I'm Bernard Soriano. I'm the Deputy Directory of the California DMV (Department of Motor Vehicles). I'm one of the co-sponsors of the autonomous vehicles project and today I would like to speak to the different regulations that we are developing within the department. First, we have finished developing regulations for manufacturers testing autonomous vehicles. In fact, those regulations were approved in May and they will be effective tomorrow. So, as of tomorrow, any carmaker that wants to test their autonomous vehicles on California's public roadways will need to meet certain specifications to do so and they need to have a valid permit from us to do so. In order for them to receive that permit, they need to identify to us, the test drivers that will be testing the vehicles. Those test drivers need to meet certain qualifications for example they need to not have more than one point on their driver's license within the last three years. They can't be an at-fault driver in a crash in the previous 3 years and they can't have had a DUI in the past 10 years. We have put in place certain requirements for those test drivers. In addition, we are requiring that the

manufacturers have a fully developed test driver program, that those test drivers successfully complete before they take vehicles out on our roadways. Another item that we have is that we are requiring manufacturers to record any unanticipated disengagement of the technology during testing as well as any accident that occurs during testing – and they need to report that on an annual basis. And then, finally, there is a requirement that the manufacturers carry a 5 million dollar insurance policy in order to move forward with the testing. There are some other provisions as well that are in those testing regulations but those are the highlights that I wanted to report today. In addition to the testing regulations, we are working on the deployment regulations or the operational regulations as we like to call them, and these are the regulations for the carmakers to meet in order to deploy those vehicles as well as the regulations for you and I to meet in order to operate them when they are on public roadways. We have made a lot of progress, those regulations are in the vetting process and we are hopeful that they will be available for public comment – they need to go through a 45 day public comment period – and we are hopeful that that period will begin soon. Some of the items I can say will be in those regulations are in statute, so it's safe to say that they will have them in the regulations. One of them is that there needs to be a recording device that is separate from the EDR data recorded that is currently on vehicles – on the roadway, there needs to be a separate one - that would record at least 30 seconds of sensor data prior to a crash. We will have that in the regulations. In addition, what we are contemplating is for a completely self driving car – a NHTSA Level 4 car – we are contemplating having special license plates for those vehicles and we are also contemplating having the manufacturers

disclose to the occupants any data that is being recorded – not disclose the data but disclose that fact that data is being recorded – data that is not necessary for the safe operation of the vehicle. We are not being prescriptive in terms of how that disclosure is made, giving them the freedom to be able to design it within their vehicle. If a manufacturer is going to deploy a completely self-driving car, again, a NHTSA level 4 vehicle, there is a provision for the Department of Motor Vehicles to notify the legislature and there is 180 day period before we can issue approval for deployment. In essence, there is a 6-month waiting period from the time the application is made to us. Then finally, there is a provision for a 5 million dollar insurance policy that the carmakers need to have. With that – I wanted again summarize that we are working on completing the deployment regulations and we hope to have that available for public comment very soon. Thank you for the opportunity to testify today.

17:39 - INSURANCE COMMISSIONER DAVE JONES:

Thank you and we appreciate the partnership with your department and thank you for your leadership on this issue. Perhaps we can go back, both of you I have referred you as the NHTSA architecture typology for different degrees of automation of vehicles and that's spelled out in the white paper that we released for this hearing but it may not be immediately be understood by everyone in the audience or those that are online and watching this in the future so – Professor, I'm wondering if you could walk us through, if you can, the NHTSA typology so that we are all clear as to what it is and what the gradations are.

PROFESSOR ALAIN KORNHAUSER, OPERATIONS RESEARCH AND FINANCIAL ENGINEERING, PRINCETON UNIVERSITY:

Yes. There are 5 minutes. I didn't have my normal 80 minutes or whatever,

400 slides.

INSURANCE COMMISSIONER DAVE JONES:

I have no doubt you would have done it had we allowed you to earlier.

PROFESSOR ALAIN KORNHAUSER, OPERATIONS RESEARCH AND FINANCIAL ENGINEERING, PRINCETON UNIVERSITY**:**

Yes, let me just start with Level 2 which is really the important – it is a combination of technologies. The main purpose is to do collision avoidance and keep you in lanes. The primary thing is for the vehicle itself, by itself to determine whether or not it's going to or it needs to apply its breaks or it needs to steer so that it stays in the lane. If one really looks at the driving function, most of the time, we pick a lane, stay in the lane, don't hit anything, so in fact this is probably the aspect of it that delivers the most value, but this piece requires the driver to remain vigilant, in other words, while you can take your hands off the wheel or your feet off the pedal, it requires the driver to remain vigilant. Some suggest that the current, really big problem, with respect to accidents in the cars, is the things that go on when we are not vigilant. Texting, I use texting to mean a lot of different things. It is not until we get this technology to be so good that it then becomes certified that we don't have to stay vigilant to take over that the last instance – not if we could really save the day I don't believe that we can, I think these systems can do it better than we can, but Level 3 basically says okay, it's okay, I can text and the anticipation is that certain roadways at certain times would be certified so that you could actually - you don't need to remain vigilant. You don't need to have all the roadways, if you do, just the

roadways that take 80% of the vehicle miles travelled - that's not that many miles of road. We could have safe havens created there, good paint out there, good capabilities for these systems to work, it wouldn't take too much of an infrastructure investment to have it. That's at Level 3. Level 4, in fact these vehicles are going to go from A to B without anybody in it. That, in a sense, is the great value that can deliver the mobility, because if one looks at the problems – look at the taxi driver – real value of a cab driver is to take the empty vehicle from where the last person got off to where I get in and so in fact if you could do this without a driver then the cost of operation of this could probably go down by in order of magnitude. That, to me, is the great economic and mobility opportunity of Level 4. It's not for me to just be able to hop in the back seat and have it go from my garage to my parking space at work without me being in it, I could handle the front end and the pieces. But if the vehicle picks me up at home and drops me off at the movies, goes and does some other stuff when the movie comes out, it's there I get in, go back to wherever I'm going – it's an enormous mobility opportunity. And that to me is the fundamental concept of Level 4 and where the value of taking the labor cost out of that transportation element really delivers societal value. I guess that was a little long.

INSURANCE COMMISSIONER DAVE JONES:

No. That was very helpful. And I said 5 levels, there are 5 levels, there is actually a Level 0, which I guess is no automation.

PROFESSOR ALAIN KORNHAUSER, OPERATIONS RESEARCH AND FINANCIAL ENGINEERING, PRINCETON UNIVERSITY:

Level 0, I call that a '55 Chevy. I call Level 1 just the analog brakes or the stability systems that are currently in cars. Level 2 is really the safety systems; this is the collision

avoidance. To me this is where the big societal value of improving safety really exists. I have called Level 3 texting machines. Why - because it liberates me and allows me to do stuff in the car. When I got in the airplane last night, I didn't run up to the pilot and say I want to fly but I sat back there and I don't know what I did, I drank a coke. This is the opportunity of Level 3 is to be able to do that of course and Level 4 just does it for me and I don't need to own it and we are like good, we just get around.

INSURANCE COMMISSIONER DAVE JONES:

Are there in the market today cars that are available that have Level 2 under NHTSA's typology- combined function automation?

23:22 - PROFESSOR ALAIN KORNHAUSER, OPERATIONS RESEARCH AND FINANCIAL ENGINEERING, PRINCETON UNIVERSITY**:**

You know, I bought a 2014 S Class with the 997 Package and it comes close. It really comes close because in fact the collision avoidance and the jam assist really work well. Lane keeping, they have got a ways to go but it's the first one and I think that they will have it. And I can see that easily, with the next generation – and hopefully they will give me a little bit of an electronic upgrade – I think that the sensors are there but the software needs a little work but I think that should be here soon. The point at which we all agree that, in fact, you can take your hands off and sit there and text between mob post and so and so on U.S. whatever – that's probably going to take a little bit of time and it's going to take coordination and so on to be sure that it's going to be legit and that's going to take some time. We could have Level 4 in gated communities very soon because in fact there is some demos that are going on in Europe, in respect to, putting these in at low speeds, in mixed environments that in fact you can get started in a retirement community

and a gated community, one could have a demonstration, work out the bugs, get them out there, and have them leak out in society. I see that in the way it would evolve.

INSURANCE COMMISSIONER DAVE JONES:

Great. I know you are from a different state than ours, I believe, so your rules may be a little bit different – I was curious, if you would be willing to share or can remember how was your coastal Level 2 car rated by your insurer, in other words are there any acknowledgement that it had these features, was there any corresponding – I'll pose this question to the insurers as well to give them a chance to answer about California. I'm just curious.

PROFESSOR ALAIN KORNHAUSER, OPERATIONS RESEARCH AND FINANCIAL ENGINEERING, PRINCETON UNIVERSITY**:**

On October 3rd, I'm out holding a thing at Fort Mammoth in New Jersey and Bernie Flynn – the CEO of New Jersey Manufacturers, my insurance company, is going to be there and I'm going to say, Hey Bernie. You know 2 grand for a year to insure this vehicle – you gave me no credit for this. I personally believe that the car reduced the probability of me dying in that car because of its technology by .25. I believe that the car reduced the probability of me being injured in that car by .25. That is an enormously large number. For what are costs, that is valuable and I that it will substantially reduce the expected liability to New Jersey manufacturers for that car. Bernie Flynn is gong to make a ton of money off of me but that's fine, I'm willing to contribute at this point. We have reached a point, that was my present value comment, that this technology is so inexpensive that an insurer can go out and give a person a coupon to go down to Pep Boys and have this put in, just continue to pay your rates and we'll buy the technology for you and they will make more money

and the lives and the injuries will be saved. This is the way to rapidly introduce the societal value of all this technology and – of course I'm assuming it works – but none of us would be in this business if we didn't think it had the opportunity to work or was going to work.

INSURANCE COMMISSIONER DAVE JONES:

Great. Thank you. Our jurisdiction is insurance and making sure that there are insurance products available – of course, the DMV is heading up an interagency group that's looking at a variety of different issues and one issue I'm sure that is being considered there is the question of – well from a traffic violations standpoint – who is or should be held responsible if the completely automated or the partially automated car engages in some sort of a traffic infraction and that decision as to who should be held responsible and do you continue to hold the driver responsible or someone else responsible has implications I think on the insurance side because we really all are grappling on the insurance side is liability – who, in this chain of commerce running from the moment of design and manufacturer all the way to the driver, who might be held liable in the event of an accident and then is there insurance to make sure that all of those actors have something to fall back on to make sure that they are not wiped out financially. One thing I think about is the manufacturer, the designer of the software, the installer of the self-driving car device, if there is a retrofit of an existing vehicle, the driver himself or herself, do we have insurance at each step of that continuum, but correspondingly, there is a similar and related question to who is responsible for something goes wrong and I'm just wondering if there are any thoughts you would hazard in regard to traffic violations. That seems to

be a very specific example where a partially automated or maybe a completely automated car does something, which violates our traffic code, who should be held responsible for that because that may have implications for liability and for insurance too.

29:15 - BERNARD SORIANO, DEPUTY DIRECTOR, CALIFORNIA DMV**:**

Right and Professor Kornhauser gave a really good description of those NHTSA levels and one of the things to separate the Level 2 and the Level 3 vehicles is that with the Level 2 vehicle, the driver is still in control and that driver is the one that is driving the car and when he/she does not want to be in control they push a button and the car takes over but that driver still needs to be vigilant and be ready to take over. With the Level 3 car – that line has been crossed and the car is one that is primarily driving and can operate itself under most conditions and there are some conditions where it won't be able to operate if you talk about construction zone or something like that – at that point the driver needs to take over but Professor Kornhauser is right – while the car is being operated, the driver could be doing some other tasks but they still need to be ready to take over should the situation arise. When we are developing the regulations, the issue of the traffic violation is being discussed and it comes down to the point of who is the (operator of that vehicle) – the vehicle code is very specific in terms of who the operator is now because that vehicle code was developed without any – at a time when a driver with a driverless car was not even thought of – we are looking at the vehicle code and we are also looking at the definition of the driver and the definition of operator for a Level 4 vehicle, none of the occupants could potentially be considered an operator of the vehicle, in fact, the operator of the vehicle may not be within the vehicle itself. The operator of the vehicle could be

outside – that person could be within an office building and so all of those are being discussed now and we are trying to come to some conclusion as to the definition of operator when it comes to a Level 3 as well as a Level 4 vehicle. With a Level 3 vehicle, it is safe to say it would be someone in the vehicle because someone needs to be in control of that vehicle should the situation arise. But it is a very complex question that has a lot of different inputs to get to the answer to.

INSURANCE COMMISSIONER DAVE JONES:

I think it's a question of – the answer to of which we are all collectively engaged in trying to provide – and at point the legislature may decide to provide an answer as well but it has significant implications for licensing for the California Department of Insurance. The insurance companies, whether they are providing commercial product or a personal automobile product, because where that line gets drawn either statutorily or from a regulatory standpoint as implications for them as well in terms of what type of products they might want to provide or what they will be able to provide, so we are appreciative of the opportunity to participate with you and your taskforce and providing our input on that and that's a big part of this hearing today is to hear from the public, other stakeholders, and insurance industry as well as to their thoughts on the questions too. Le me ask Deputy Commissioner Shultz or Ms. Volkmer if they have any additional questions for this panel.

CHRIS SHULTZ, DEPUTY DIRECTOR, CALIFORNIA DEPARTMENT OF INSURANCE**:**

Mr. Soriano, I want to make sure we understand Senate Bill 1298 and what it allows DMV to hypothetically do – setting aside the testing regulations – for the operational

regulations. Do I understand correctly that the manufacturers might propose under the regulations you will soon adopt both a scheme where there is a licensed driver in the vehicle engaging the button and also a scheme where there might not be a licensed driver in the vehicle at all – both of those things might be possible under your 2nd set of regulations.

BERNARD SORIANO, DEPUTY DIRECTOR, CALIFORNIA DMV**:**

That's correct.

CHRIS SHULTZ, DEPUTY DIRECTORY, CALIFORNIA DEPARTMENT OF INSURANCE**:**

And if those regulations are adopted, let's just pick a date, January 1st, then 181 days after that date a manufacturer can propose to DMV for a driverless vehicle and 180 days for the legislature to consider that? I'm just trying to wrap my head around the timing here.

BERNARD SORIANO, DEPUTY DIRECTOR, CALIFORNIA DMV**:**

From a timing perspective, what we are shooting for is the regulations to be approved by the end of the year and should that happen a manufacturer could submit an application to us that would have their intention to deploy a completely self driving vehicle – at that point we need to notify the legislature and 180 days from that date is when we can issue approval, so essentially 6 months from the time an application arrives in our office is when we can approve a manufacturer to deploy a completely self-driving vehicle. If it's not a completely self-driving vehicle, we don't have to notify the legislature of that application.

CHRIS SHULTZ, DEPUTY DIRECTOR, CALIFORNIA DEPARTMENT OF INSURANCE**:**

Thank you.

INSURANCE COMMISSIONER DAVE JONES:

And I would imagine that that is designed to try to give the legislature a chance to weigh in but it's not the case that it is something short of a full blown enactment of a law that would impede the manufacturer from coming into the market, once they have met your regulatory standards provided the notice, sometimes legislation provides for a legislative veto if you will. A particular committee or particular committees have to act, not act in order for something to be allowed to occur – in this case it is a notice requirement solely - but unless the legislature acts or enacts new legislation, which I guess is then signed by the Governor, that manufacturer is free to move forward if they have met all your regulatory requirements.

BERNARD SORIANO, DEPUTY DIRECTOR, CALIFORNIA DMV**:**

That's correct.

INSURANCE COMMISSIONER DAVE JONES:

Ok. Great. I guess I'm sort of curious too, I mean maybe this is something you are still considering as a part of this full blown regulation but obviously as driver's have infractions, they have points, that is implications ultimately for whether they keep their license, that is implications also for them from an insurance context – is there been any thought been given to some parallel structure for automated vehicles, in other words, say you are in a two or a three, where you are still supposed to engage in some way. Level 2 or Level 3 was supposed to still engage in some way. There's an infraction; you don't take a step. Do you get a half point, a quarter point, what's the – generically – the appropriate public policy response? Or do you get dinged as you would fully in the case of any

infraction.

BERNARD SORIANO, DEPUTY DIRECTOR, CALIFORNIA DMV**:**

Those are the questions and the issues we are discussing now because one of the things we have been looking and we are looking at is whether or not there needs to be a separate license for someone to operate these vehicles and if so, what type of exam do we give, what do we test those licensees for? That issue is currently being discussed.

INSURANCE COMMISSIONER DAVE JONES:

Great. Right now too, as a part of getting a permit to test these vehicles not only is there a requirement that you have 5 million dollars in the form of a bond or some sort of proof of insurance that is if you're the entity that is testing these things, but you also have to make sure that the drivers meet the state's mandatory, minimum insurance requirements as well, I understand.

37:04 - BERNARD SORIANO DEPUTY DIRECTOR, CALIFORNIA DMV**:**

That is right. That is absolutely right. Because driver's themselves need to meet the mandatory insurance requirements so the provisions for those test drivers match what the good driver would be.

INSURANCE COMMISSIONER DAVE JONES:

Ok. Very good. Ms. Volkmer?

SUMMER VOLKMER, ATTORNEY, CALIFORNIA DEPARTMENT OF INSURANCE:

I have a quick question for Professor Kornhauser. Did I understand correctly that you do not believe that a personal ownership model is realistic for a Level 4 vehicle?

PROFESSOR ALAIN KORNHAUSER, OPERATIONS RESEARCH AND FINANCIAL ENGINEERING, PRINCETON UNIVERSITY**:**

Why would I want to buy a car that I can't drive? I mean, I just don't think there is a market for it.

INSURANCE COMMISSIONER DAVE JONES:

I would like to buy my kid a car she can't drive – I'd get her two.

PROFESSOR ALAIN KORNHAUSER, OPERATIONS RESEARCH AND FINANCIAL ENGINEERING, PRINCETON UNIVERSITY**:**

Yeah, no, especially I think this is such an incentive for any host of fleet operators to go out there and put these things out there and provide mobility and if you don't have labor costs associated with that, you should be able to offer that at a very attractive price and opportunities to share rides with this thing, you can actually eliminate congestion, you can reduce energy and pollution by 50%. The forces on the fleet side are going to be so great that the competitive market out there are going to say there is no need for you to buy that technology, the fleet will buy that – offer that up and I think that's the dynamics of the market that are going to play out. Sure there will be a couple of guys whatever, just toys I don't know why, and that's my belief.

INSURANCE COMMISSIONER DAVE JONES:

Very good. Well thank you both; I really appreciate your testimony and your taking time to join us this morning, thank you for your response to our questions. So, what we would like to do now is to excuse this panel and invite the next panel. If you have the time, both gentlemen, if you have time to stay that's wonderful because we will have public questions later on. I understand if you have other pressing things that don't allow you to stay but if you can continue to stay with us that would be wonderful, and thank you again

very much – we really appreciate it. Why don't we invite our second panel to take their seats now and as they are doing that, I'll identify them and we'll take them in turn. Next, we're going to have a panel that looks at questions around insuring autonomous vehicles, in the short and long term. We are joined by Robert Peterson; Professor Robert Peterson is the Director of the Center of Insurance Law and Regulation, who is also a Professor of Law at the Santa Clara University School of Law. We're joined by Hillary Rowen, who is a partner at the Sedgwick law firm, and we really appreciate both of your participation. We're joined by Michael Stienstra – who is the chairman of the Casualty Actuarial Society Taskforce on Automated Vehicles. Try to say that quickly. Mr. Stienstra is an actuary in his own right and we really appreciate his participation as well. We are very pleased as well to have Kathy Schwamberger who's with us, who's an associate general counsel for one of the nation's leading insurers, State Farm. Thank you for joining us. As well, Matthew Gilbert, who also represents one of the nation's leading insurers and who is the California Auto Product manager for Nationwide insurance, and finally but certainly not least, Richard Holober, who is the Executive Director of a very important consumer organization here in California – The Consumer Federation of California. So welcome, I thank each and every one of you; thanks for your patience with our delayed start time and what we would like to do is to hear from you in turn, starting with Mr. Peterson, Ms. Rowen, Mr. Stienstra, Ms. Schwamberger, Mr. Gilbert, and then Mr. Holober. We've allotted five minutes for each and then we are going to have questions. I think what we would like to do is hear from all of you first and then we'll have questions from the panel and let me begin by welcoming Professor Peterson. Welcome.

41:20 - PROFESSOR ROBERT PETERSON, DIRECTOR, CENTER OF INSURANCE LAW AND REGULATION & PROFESSOR OF LAW, THE UNIVERSITY OF SANTA CLARA**:**

Thank you very much Commissioner. I was going to say that as a regulator, insurance rating is driven by data and I think you are going to be very frustrated when these come before you because whether it is personal liability or commercial, there is not going to be a lot of data about the risks these cars present. They will be tested with expert drivers in them. They won't be tested with ordinary people driving them or with expert divers at their side. They'll be tested in simulations and that's going to be about it. There's going to be a lot of information reported to the Department of Motor Vehicles, but that information may or may not be available to us as insurers because a lot of the developers consider that to be a trade secret and consequently, insurers are going to have to do a lot of guessing when they first try to rate these cars. I know some insurers are working very closely with car manufacturers so that they can understand the technology and make their best guess but I think in the beginning there are going to be some rough edges around how you rate these. Now when these cars actually come into the market place, we are going to start getting some frequency and severity data that I think is going to useful but its not going to be like the kind of data you are used to dealing with – that's because its credibility is going to change very quickly because these are computers on wheels – these aren't ordinary drivers. So any download that upgrades one of these automobiles is going to probably dramatically change its profile of risk and reducing the insurance burden on the drivers of these cars will increase the acceptance of these vehicles, which will make a lot more safer cars on the road. Unfortunately, California and a lot of states but particularly California, has not positioned itself to nimbly adjust its insurance rates so

that savings can be passed on to consumers as these cars quickly develop. There will be a lower frequency of accidents, we all hope that, if there isn't then the cars should not be on the road, and there will also be some ease in assigning responsibility because that information will be stored in that black box – the last 30 seconds. There are a couple of things that may push us in another direction. Let me put it to you in three very simple hypotheticals. You and your family are gravely injured by an impecunious driver with a 15/30/5 policy, the minimum policy in California. Big case but you will settle that case for 15/30 because that is all that there is. No matter how severe those damages are, they are not going to be reflected in the rates that insurers charge because they haven't been paid. Hypothetical number 2. You negligently drive yourself and family into a tree. Grave injuries again. You are not going to recover obviously because you ran the thing into a tree, but how about your family members? You are liable to them for negligently injuring them but they are not covered because there is family exclusion in the standard automobile policy. Major injuries but they are not going to be reflected in the rates that personal insurers charge. Third hypothetical: Your ignition switch fails and drives your car into the same tree. Now you can recover, your family can recover, and you can probably recover closer to the full value of those injuries because now, it's the OEM that is responsible. So those costs will be folded into the cost of automobiles and passed on to people who purchased the cars. Consequently, there is a chance that those costs are going to go up. Whether or not that is balanced by the lower frequency is a question that remains to be seen. Turning to Proposition 103 – the very good background memo that was circulated - covers a lot of the issues there. The difficulty is that Proposition 103 is

it's driver-centric. It is not vehicle-centric. Two of the mandatory rating factors, your driving record and your years of driving experience, assume that there is a driver who is legally responsible for driving the vehicle and likewise the good driver discount – the 20% good driver discount assumes that there is a driver, who if good, deserves the discount and if not good, will not. These mandatory-rating factors can cause some unreasonable variations of the rates. A good driver for example may pay less for a self-driving automobile even though the good driver seldom actually drives the automobile. A driver who is a not-good driver may have to pay a good deal more for that automobile. That's the very kind of person you want in a self-driving car. This strikes me to as both discriminatory and poor public policies. It's a little bit like charging a poor driver more for a bus ticket. What can we do to get around it? There are a couple of possibilities we could explore. One is we could interpret or possibly amend Insurance Code, Section 660, which is incorporated by Proposition 103. There is a livery exclusion in section 660. These cars are being driven by someone else – they are being driven by a program. And money is changing hands to do that. They look an awful lot like livery vehicles – maybe we could shoehorn them into that. We just went through the process of doing something very similar where personal automobiles that are being driven by 'Uber' and 'Lift' and others – the TNCs. I think we have established the precedent that a car may be a livery or livery-like vehicle for part of the time – while it is still a personal automobile when you are driving it personally. This makes sense because if you try to apply the mandatory rating factors to liability that will ultimately be passed up the chain to the commercial line, the people who supplied the car, they will fold those costs into the cost of the car and

they will sell the car free of any of the constraints of Proposition 103. Put in another way - the good and the bad driver are going to pay the same price for the car. It's not going to make any difference. It's a pointless exercise when ultimate liability is going to pass up the commercial chain. We might take a look at affinity groups. That is something that is somewhat controversial right now. But mightn't we put all self-driving cars into an affinity pool so that at least they are all being rated together and not mixed in with a lot of other cars. You Commissioner have quite a bit of discretion with respect to how you manipulate both the relationship between the mandatory rating factors and the 16 optional rating factors. You are probably familiar with the history of territorial rating and the case of *Spanish Speaking Citizens*, which actually confirms your discretion. There may be some things you can do in that regard to elevate the importance of the car as the importance of the car becomes much more important. You also have to keep in my mind, I suggest, is the brooding omnipresence of the federal system. Car safety is a federal concern. NHTSA set standards for cars; they preempt state laws. NHTSA will undoubtedly participate with respect to developing these cars but if insurance regulations of the state impede the introduction of safer vehicles, that is an invitation and possibly an incentive for the federal government to step in and say look, with respect to these kinds of cars, you can't do this. Just two other points and then I'll shut up. As we get more of these cars in the market, it may be that people prefer to insure themselves against injuries arising from faulty cars with thoughtless drivers. First party insurance, there may be a marketplace for UM/UIM right now. We have already done that with healthcare, all of the healthcare costs that arise from an automobile accident are either covered by the

healthcare you have or by one of the government programs, so we have already moved that to into first party. The second point is that as go even further down the road and get into what they call V2V and V2I, there are cars that are talking to one another and we have an accident, there may be dozens of cars communicating with each other at any particular time and it may be either be impossible or nearly impossible to figure out who is at fault or even what the cause was. That might be a time when we want to move to a completely different compensation system and the one that suggests itself or something along those lines is the National Vaccine Injury Compensation Program. You don't have to show fault if you have a bad reaction from a vaccine. You can recover within certain limits, so we simply move away from a fault-based system all together. That was like a rapid disclaimer at the end of a radio ad. Thank you.

INSURANCE COMMISSIONER DAVE JONES:

Thank you. Thanks, Professor. Ms. Rowen.

HILARY ROWEN, PARTNER, SEDGWICK LLP**:**

Yes, I am going to elaborate and expand on some of the points that Bob raised and fill in some of the interstices he did not address. First, I think, I'm going to lay out what I think is a likely scenario for how the fleet is going to change in the next years, being defined as in the two to ten year time horizon. I think we will see incremental movement into Level 2 and towards Level 3. I think it is going to be very hard, in some circumstances, to draw the type of bright line that the NHTSA category sets between 2 and 3. We are going to see the sort of cars that are at 2.3, 2.5, 2.7, and it's going to be very fuzzy line. In contrast however, the leap from Level 3 to Level 4 is going to absolutely be a clear cut distinction

that is you're going to have vehicles in which the driver has at least the potential to take over or override, I'll get back to the override problem in a second, the self driving autonomous features, whereas the Level 4 vehicles, maybe moving out of our commonsense understanding of an automobile, it's a separate question whether it is moving out of the vehicle code definition of an automobile but what it really is or will be is a street legal robot. It is a robot. You can, leaving aside the question of what people will or will not do to actually personally own one of these, but from my paradigm, I'm going to assume they will because of the private passenger auto issues front and center, at least that's where we want them for discussion purposes. Let us assume you own a Level 4 vehicle and in fact you have an 8 year old and perhaps every morning that is not a school holiday, the vehicle is programmed to such that you plop the kid into the car, it trundles it off to school, it drops the kids at school, it then trundles itself home. End of school, it repeats the process. The navigation software has been rigged so your kid cannot override and go to Disneyland. Some clever hacker kid is eventually going to override and you are going to have to have a car with a 10 or 11-year-old take off to Disneyland and the media will have a field day. That vehicle is probably a street legal robot. Right now, probably, well today it is a street illegal robot but presumably by the time, people are actually – they're in the fleet, it will be street legal robot. Your Level 3 car, your Level 2 car, your car is somewhere between what is currently on the road right now and Level 3 cars, pose interesting insurance questions because you have a scenarios where the car is driving itself with more or less input some of the time. It is driving itself entirely, but only some of the time. The driver has, at least in theory, the capability of taking it out of autonomous

mode at just about any time and therefore you get a whole bunch of questions both in terms of the standard liability causation. I don't think we need to change the liability rules, the basic liability rules still apply: what happened, who's at fault, how much were they at fault, do they have insurance. The details in terms of how do we determine causation and to what extent are we relying or our insurers are relying on, or even law enforcement officials if it's a very a very serious accident, are relying on black box information for example. How is this going to impact essentially the loss adjusting expenses and the insurance product because I think everybody is anticipating the frequency is going to go down, yeah severity is going to go down. Big question mark on property damage severity, very well be said that the repair costs go up on a per instance basis, but the frequency go down so you are likely to see the overall cost of insurance to go down. As the loss cost component goes down, it is not at all clear about the loss adjusting expenses or at least in the initial phase or as technology keeps changing, going to go down at the same rate so you may very well see a system where the Prop. 103 historical data, which assumes a certain relationship between loss costs and non-loss costs, rapidly gets out of whack. Particularly as lost costs, you know the overhead is going to go up as lost costs drop because there is only so much, you can skin fat out of the system before you are really cutting muscle and furthermore, it's more clear to the extent you have situations where the driver can take over. Though you are going to have a lot of causation argument, was this accident the result of a true software or sensor failure or was it the result of the driver taking over and doing something foolish. Not things that lend themselves perhaps ready to really good bulk, product liability segregation claims,

as you would be the case if you actually had a true software flaw that caused the accident, you would kind of have a similar pattern of accidents. You might have a lot of claims but the process of actually resolving them on a bulk basis between the affected insurers and who are responsible for bone fide software defect or bone fide sensor defect would probably be pretty straightforward. But if you have a lot of claims in which there is an argument as to whether it was a software failure, a self-driving car failure: was the car at fault or was the client at fault – you get a lot of claims along those lines– you are not likely to see a proportional drop in LAE relative to the overall lost cost, so that's going to be a factor. Then you get into the class plan issues and there you get all of the complications involving the things Bob already addressed involving how much does driving record matter when the car is mostly driving itself, how much does mileage matter – that is something I think is a very interesting question because I think it is going to become increasingly true that not all miles are going to be created equal. That is the miles driven under autonomous control are much safer miles, but it may be the case that transition miles or that mile in which the driver has to retake control of the car are particularly unsafe miles. It may be that if you are a driver who, for whatever reason, goes frequently from autonomous to non-autonomous mode, and if it turns out and it probably will, people have slower reaction times than when they are retaking control than when they are simply driving. Then you may again have a question to the quantity of the miles as well as the quantity. [Quality] may become more important, significantly more important, than the quantity of miles. Now, I think that that can actually be accommodated without amending Prop. 103 but it certainly will require a very different set of regulations to

capture what vehicle miles travels mean to capture both to capture the type of mile as well as the mode of travel as well as simply the aggregate self-reported miles.

INSURANCE COMMISSIONER DAVE JONES:

Very good – Thank you. Let's now go to Mr. Stienstra.

59:15 - MICHAEL STIENSTRA, CHAIRMAN, CASUALTY ACTUARIAL SOCIETY TASK FORCE ON AUTOMATED VEHICLES & AVP, ACTUARY, QBE THE AMERICAS**:**

All right. I would like to thank the California Department of Insurance for hosting this hearing and for my invitation. Actuaries are not invited to a lot of things. I am an actuary at QBE North America, Fellow at the Casualty Actuarial Society, and the Chairman of the Casualty Actuarial Society's Automated Vehicle Task Force. Both my employers and CAS are supportive of my presence and they would like me to note that the following statements and views only represent my own opinions. In order to better understand, the risk of the public and technology phase and the role that actuaries in the insurance industry can play, I would like to discuss three specific issues at this point in time – they all relate to safety. First, better understanding of automated vehicles risk environment related is required to understand the hurdles that technology faces. While many studies have found approximately 90% of automobile accidents are attributed to human error, none of these studies were aimed at or considered automated vehicles. Using the National Highway Traffic Safety Administration's 2008 National Motor Vehicle Crash Causation Survey, which found that 93% of accidents are attributed to human error. The Casualty Actuarial Society Automated Vehicle Task Force has reevaluated automotive vehicles risk environment. The findings have three key takeaways for this panel. First, the technology faces a vast array of risks as inclement weather, failing infrastructure, and undesirable

driver behaviors may disable the technology or reduce its effectiveness. For scale, approximately 49% of these accidents had one or more of these risk factors attached to them. Second, these risks important will differ by location, with the most obvious example being the varying impact inclement weather has. Third, a number of non-technological solutions might be able to help overcome these risks. For example, better infrastructure maintenance can reduce the potholes or inoperable traffic control devices risk. Driver training programs or automated vehicle-only lanes might increase the likelihood the technology is used correctly and safely. Longer term, removing the driver from the equation completely may actually produce the safest result. Understanding and quantifying the hurdles this technology faces can help policy makers estimate the value of different proposals through an accurate cost benefit analysis. Next, actuaries in the insurance industry can also help establish a more accurate safety benchmark of today's drivers. This can be used to help measure automated vehicles' relative safety. Accident rates vary/differ across different driving types such as highway or city, time of day – rush hour, mid day, or nighttime – and driver characteristics such as age. Thus an accurate comparison would require the selection of the most appropriate benchmark. Further, it may be desirable to compare the technology to both the average accident rate and as yet undefined safe driver accident rate, as this average rate will include both teenage drivers and drunk drivers, miles, and accidents. Lastly, I would like to offer three observations on the risks associated with transferring the responsibility to the system that currently provides protection against automobile manufacturer errors. First, NHTSA regulatory process does not provide sufficient protection for the manufacturers or consumers. The

1980 case of *Richard Dawson v. Chrysler* shows that following NHTSA regulations is not a sufficient defense. Conversely, the illusory park case against Ford in the 1970s, which resurfaced Chrysler in the 1990s, so that known risks would not only be identified and fixed in a timely manner. Second, it's worth noting that personal auto insurers spend approximately 60 billion dollars a year on expenses dedicated towards selling policies, quantifying risk, and determining fault. This is 400 times larger than NHTSA's 150 million dollar annual vehicle safety budget. Third, the auto insurance industry incentives are aligned very well with the societal role they are asked to fulfill. To charge a premium that accurately reflects the accident risk and settle claims fairly and efficiently. Product safety regulars do not face the same financial downside when they over or underestimate risk. Manufacturers likewise face a very different economic optimization equation when addressing a products liability claim. At this point, my only recommendation would be for the California Department of Insurance to engage manufacturers and both personal and commercial insurers to create a robust, transparent, and collaborative testing approach. This will allow the policies to develop along with the technology and help the technology come to market as safely and efficiently as possible. Thank you.

INSURANCE COMMISSIONER DAVE JONES:

Thank you. Ms. Schwamberger.

CATHY SCHWAMBERGER, ASSOCIATE GENERAL COUNSEL, STATE FARM:

I've never said this before, but an actuary just kind of stole some of my thunder. Good morning and we appreciate on behalf of State Farm the opportunity to participate in today's hearing. I would like to begin by acknowledging Commissioner Jones and your

team for putting together what I think is a thorough listing of the issues that we all need to be thinking about as this technology advances. Briefly, it has been suggested by some, not here but in the public dialogue, about this technology that insurance or even insurers could be an obstacle to the development of the technology presumably because it could disrupt insurers' business models. Anytime I hear this, I disagree, I push back, and I ask for more information because I don't believe that will be the case. Speaking on behalf of State Farm, we have a decades long history of standing for auto safety for the benefit of our customers and because this technology has the potential of reducing crashes, reduce injuries, reduce death – I want to make it clear that State Farm does support and our official position is to support the development of this technology. As Michael said, there is a lot of information to be gained and we are actively seeking to understand how this technology will reduce risks and whether any new risks will emerge. As part of that effort, we are a member of the Center for Automotive Research at Stanford. They have a project looking at automated vehicles. We are involved in a collaboration with Ford Motor Company related to the automated vehicle technology and just on September 5th, it was announced that State Farm will be a founding partner in the University of Michigan's Mobility Transformation Center which is a public/private R & D initiative, the goal of which is to accelerate the progress in the development and implementation of both connected and automated vehicle technology. I say all that to say that we are looking forward to being a part of the dialogue here in California as insurance issues are addressed related to this technology. When we think about the insurance considerations, I think they can be broken down in three areas: the underwriting area, the pricing and

rating area, and the claim handling area. And first a word about underwriting, and this has been said, historically the characteristics of the driver have been very important in assessing risk but I think as we go forward, the car's characteristic may become more important while the driver's characteristics will decline in importance and that includes driving safety records and years of driving experience. Now, when we think about pricing briefly, we know in California that pricing issues are complicated by Proposition 103. As Michael said, an insurer's goal is to establish a price that matches the risk as closely as possible and that's already a challenge under Proposition 103 so we are going to have to think through some of those issues. Now, as with underwriting, even with pricing, the vehicles' characteristics will probably become more important over time, while driver's characteristics may decline in importance. At the beginning, and this has been said as well, insurers will be challenged to gather the loss experience that we need to establish a price that matches risk and obviously this is very new and that will be a challenge for everyone. Finally thinking about this from a claim-handling standpoint, again the importance of data. Insurers will need data from the vehicle to understand how the crash occurred. And fortunately, that is included in the California law as the representative from the Department of Motor Vehicle stated. We have been going forward as drivers have become less attentive to the driving environment, they will become less aware of what lead to a crash. So the censor data from the vehicle will shed light on the cause of the accident and that's important because we need to – going forward – ensure that injured parties are compensated fairly, that liability is apportioned appropriately, and to the extent that the driver is no longer a great witness that the data from the vehicle will

be very important. Now having said that, there are other issues related to claims. I think Hilary mentioned some of these. The assumption is that crash frequency will go down but we really need to see what will happen with severity. Will the accidents that do occur be worse per chance? Certainly we need to be thinking about the cost of repair of vehicles that have this technology and something that hasn't been mentioned today that I would consider this an insurance challenge for all of us, will there be repairers equipped to do the repairs to address this technology, that, I suppose, will be an immediate concern for insurers but I think it's something for us to be thinking about – who will be able to fix these cars. In light of these comments, I did want to briefly address some of these questions that were raised in the material that came to us ahead of time. One of the questions was whether a product will be available in 2015 and will it will be a traditional auto policy. We think that as long as the driver is responsible for monitoring the vehicle and can take control as needed, certainly Level 2, maybe to a certain degree through Level 3, we think a traditional auto policy will still be relevant and will still be appropriate. The coverages in them includes uninsured and underinsured motorist, medical payments, comprehensive, and collision and of course liability. Many of these coverages will be needed as the traditional vehicle continues to be on the road. We'll continue to face hazards like falling or bouncing rocks, animals crossing the road, bad weather, as it has been said. With all that said, we do think that insurance products will probably need to change over time as risks change, especially when vehicles become completely autonomous and also if liability laws evolve over time. I think as this technology moves forward, I think over the longer term, insurance policies need will need

to change to match the risks, to match the laws in place, and even through innovation. Second, you asked how do insurers rate vehicles with other semi-automated safety features that already exists. I would say this goes back to data. Insurers gather data, they gather loss experience over time and then they make the appropriate adjustment based on that data. We generally look to our own loss experience to determine these things but sometimes if claim experience is unavailable for new technology for new vehicle type, we may seek the data from elsewhere and that may need to be the case with increasingly automated vehicles. You also asked how will insurers handle after market automated vehicle technology and Dr. Kornhauser brought that up. From an underwriting perspective, insurers would carefully consider the safety and the effectiveness of that after market technology. From a rating perspective it may be difficult to get the volume of data needed to assess the right rate for market technology and also, this could be an issue for us early on, to the extent insurers use the year, make, and model, and even the VIN number to identify what safety features exist on that car, they may not be able to get the fact that there is after market technology on that vehicle by looking at year, make, model, VIN. So, that may be a challenge when it comes to after market technology. Finally, you asked what could the Department of Insurance do to accommodate automated vehicles. And we would say that would be important for Department staff to be flexible as they review rate filings. We won't have a large amount of data as we seek to establish prices that match risk for increasingly automated vehicles and we also think it would be critical for the Department to allow the company actuaries to make reasonable assumptions based on the data that is available. We think that this flexibility will be key to allowing

insurers to set a price that matches the risk, and we think that that is important because that may help consumers see the value in purchasing automated vehicles. If consumers see the value in this technology and part of that may hinge on whether they perceive they are getting a better insurance premium because of it, this will then create demand for the technology, and in turn lead to the production of it and I think that is a good thing – because this is potentially life saving technology. Thank you.

INSURANCE COMMISSIONER DAVE JONES:

Thank you very much. Mr. Gilbert.

1:13:06 - MATTHEW GILBERT, CA AUTO PRODUCT MANAGER, NATIONWIDE INSURANCE:

Good morning and thank you very much for having us here. I just wanted to say that Nationwide is really excited about technologies that promise to reduce traffic related injuries. We want to stay as close to the development on this as possible, we think it represents just a great outcome for society to have a world with fewer accidents. We were planning on being able to meet the insurance needs of vehicles with autonomous technologies, whatever this may be. It's really not clear as we have kind of discussed and found out, it's not clear how the technology is going to evolve once it is made available to the general public or even how it is going to look but we do know that it is rapidly approaching and we are probably very close to that Level 2 implementation within the next few years I would think. The questions were posed to us and the main questions that were asked were if we had the ability to offer an insurance product and what this may look like in the short and long term. The thing that immediately pops into my head and what makes its difficult for the insurance agency, is that we are in somewhat of a

reactionary position here. We are not developing the technology; we're just kind of seeing where it is going and trying to keep in line. So, we've heard a lot of discussion about the liability question, which is also my number one bullet and is the 64,000-dollar question. Nationwide would support the current liability system as well as possibly shifting some the liability to the manufacturers and the developers of this technology, depending on where in the spectrum each risk is located. Long term, it is becoming very complicated especially as more and more autonomous miles are driven and it is definitely an area where we are looking of regulatory clarity to give us guidance on how they will be treated under the law and the differentiation between the different types. Now, shifting from liability to physical damage rates is a different question. From a rating perspective, I think it's a pretty common thought that we will see a significant decrease in accident frequency, while at the same time we will see an increase in the cost of repair or to replace those vehicles. Particularly as this new technology is new to the public, one of the first steps I see is being able to identify one of the vehicles as well as the autonomous capabilities that they have. Realistically, I can see there could be situations where we could have vehicles at every different level on the road at the same time. You are going to have people driving a Level 2 car and some people might have a Level 4. Traditionally, the VIN number has contained information about the safety features and most of the carriers today use it to classify like risk for the purpose of rating, similarly how Kathy was explaining. Another complex issue is the same vehicle in two different households may be used very differently. This could be due to factors like driving preference, driving conditions, weather, and even geography to name a few. This difference in use could actually mean a

significant difference in exposure at this time. Ideally, it would make sense to rate by the type of mileage driven but I fully agree with Hilary about the different types of mileage - no two miles are created equal. You might have one set of rates for a semi-autonomous mile and you have one set of rate for a full autonomous mile. Of course this would mean a huge amount of data would need to be collected for the purpose of quantifying the exposure, but also we would need the ability to use this and information. Technology is already used by the insurance industry to track distance, speed, acceleration trends, hard-breaking events in real time. While this is not able to be used in California, this is showing as a reliable and accurate way to collect a predictive rating factor and provide another option for insurance. This brings me to my last point of rating capability. Currently the California Code of Regulations sets the mandatory and optional factors that are to be used in rating private passenger autos. With the current structure, where three of the mandatory factors - two of the three driver experience and driving record become less and less relevant as more autonomous miles are driven. Optional factors that allow for rating based on types of vehicles are available today but they are weighted less than the mandatory three. In closing, our plan is to evolve to meet the needs of the insurance industry for the private passage transportation, whatever that may look like. With that said, we do need clarity, under the law especially around liability as well as exploring the possibility of expanding different insurance rating methodologies. Thank you.

INSURANCE COMMISSIONER DAVE JONES:

Thank you very much. That was very helpful. Mr. Holober.

RICHARD HOLOBER, EXECUTIVE DIRECTOR, CONSUMER FEDERATION OF CALIFORNIA:

Good morning and thank you for holding the workshop and for inviting me. I do want to thank the Commissioner for your leadership and really anticipating a whole new set of insurance questions before we are in a reactive mode so we believe that workshops in the area are called for and look forward to participating in them and also clearly there is a need for data to be collected and perhaps required by the Department to be collected from insurers as more experience occurs around the Level 2 types of autonomous vehicles. As the technologies develop, I think more data will help us all define the merits and how they should be factored in rates. I think autonomous vehicles are very exciting, when I think of the drudgery of communing and when I think of places where public transit is not available and not having to be stressed out behind a steering wheel sounds like a wonderful thing. On the flip side, driving and owning a car is so integral to what it is to be an American that I imagine that there will be a gradual acceptance, not an overnight acceptance, of autonomous vehicles and you know my comments will be based on the Level 3 type of autonomous vehicles that seem to be in the more immediate future. Clearly if Level 3 autonomous vehicles are resulting in fewer accidents they are loss mitigation tools and as such the benefit should be to the consumer, not simply a windfall to the insurer and in California our regulatory scheme would require that any savings be passed along to the consumer within the parameters of Prop. 103. We do believe that there is considerable room within Prop. 103 to address Level 3 autonomous vehicles and I just want to point out a couple of considerations. As long as there is a steering wheel, that a driver can take over either by choice or by necessity if there is a failure of the autonomous system, your safety record matters and data I imagine will help us but

consider the driver whose first experience is driving an autonomous vehicle and they have got their driver's license they start driving an autonomous vehicle and have little if any experience really doing the driving. If they have to take over in an emergency because of a failure or maybe some other driver not doing the right thing in traffic, is that driver a safer or less safe driver because of the lack of experience, the lack of knowing when to react in those emergency situations. So, I don't think it's that simple or is a one-sided calculation to determine the safety record of drivers of autonomous vehicles. Again, I think we need to collect a lot of data before we reach those kinds of conclusions. There is plenty of room within Prop. 103, particularly under the optional rating factors in terms of 1, 2, and 8 to give considerable weight to autonomous vehicles under the type of vehicles performance capabilities or vehicle characteristics if insurers are also willing to de-emphasize or eliminate the weight they give other optional rating factors such as martial status, smoking, or zip code. Because if the theory is that the autonomous vehicles is the safer vehicles, then why should marital status, why should where you live, or whether you smoke carry any weight. Prop 103 has enough flexibility to place emphasis on the new types of vehicles if insurers are willing to de-emphasize things that are becoming less and less relevant. Let me state the obvious, you can't change Prop. 103 without a vote of the California people or by the legislation that advances the purposes of Prop. 103, a lot of the questions of amending 103 through a vote will depend on the public's acceptance, which won't happen over night, it will happen gradually that people will feel comfortable that these are in fact overall safer vehicles. I think if experience over the years proves that, then there will be an amendments put before voters. However I

think doing it through legislation, I would caution that will certainly be opposition to changes to definitions within Insurance Code, Section 660 as a way of circumventing the requirements of Prop. 103. So, we do not think that the vehicles that are owned by private people for their use or for their family's use are livery vehicles. We also have concerns about the way in which affinity groups are being used. We appreciate that the Commissioner held a conversation with stakeholders on that and hope that that will continue to be pursued, but I think these maybe become gimmicks to try to circumvent rather than deal AV technology within the context of Proposition 103. Let me raise a couple of other issues that need to be part of the discussion. There has been some talk about privacy and we believe privacy is a very key issue, so we do applaud the regulations the Department adopted around the kind of data collected from the transponders or the black boxes that are in vehicles. Insurance companies can collect data related to the number of miles driven which is perfectly appropriate, it's convenient and it makes sense, but not other data in California that really is not related to Prop. 103 factors and I think we need to follow that model in the collection of data on autonomous vehicles. Certainly, there will probably be valuable need to collect aggregate, anonymous data about the overall safety experience of Level 3 vehicles but we have to be careful to protect information that really would be made private about individual drivers and where they drive, when they drive, and so forth. And the other issue that occurred to me when reading the materials and considering the concept that there will be this sort of ongoing, this daily, very frequent, updating of your AV control's system as information is refined and so forth. As technology advances, there is gong to be significant concerns with

hacking and malicious kinds of attacks on the systems. Any system that's created is a target for hacking, as a target not just mischief, but serious harm. I don't know where that factors in but it seems to me that that needs to be part of the risk. There are a lot of wonderful things that these autonomous vehicle hold for the future, but along with that I believe is a huge risk that not only one vehicle can be tampered with by some individual, but that thousands or millions of vehicles can be tampered with in some horrific way and that's a part of the equation that I think needs to be addressed and possibly part of insurance regulation. Thank you very much.

INSURANCE COMMISSIONER DAVE JONES:

Thank you. That was tremendously helpful and I really appreciate each and every one's of your insight and perspective on this issue. One question that immediately comes to mind for the insurers on the panel has to do with the semi-autonomous feature that are currently available on a number of makes and models such as adaptive cruise control, lane assistance, parking assistance, accident avoidance, driver fatigue detection. I'm watching commercials every night that show some of these technologies and how they can avoid collisions or avoid people running over people that have self parking feature, etc. I'm wondering, if you know, if Ms. Schwamberger and Mr. Gilbert can share with us how those features are incorporated into rating currently in here California to the extent that they are, how do you insurance companies currently take those into account and how are those handled.

CATHY SCHWAMBERGER, ASSOCIATE GENERAL COUNSEL, STATE FARM:

I'll give it a shot.

INSURANCE COMMISSIONER DAVE JONES:

Thanks.

CATHY SCHWAMBERGER, ASSOCIATE GENERAL COUNSEL, STATE FARM:

Those are taken into account the vehicle characteristics and those sorts of semi-automated features and it goes back to, as many of us has said, looking at the loss experience we don't say, this car has this technology therefore the rate should be adjusted in a particular direction. It has to be born out by our loss experience and I haven't seen all the details and Michael may know in an aggregate fashion but I don't know if they are all proving to be effective just because it exists, you know. The technology is improving; many different automakers have many different kinds of technology. I think from what I've heard and you may know this better, there have been problems with the lane keeping. It sounds like a great idea, the blind spot detection, but it can be too sensitive and cause the drivers to ultimately ignore it. There is a lot of human machine interaction that place around this technology but to answer your fundamental question, we look at our lawsuit experience, we look at the data, and if its justified, we make the adjustments that we can make depending on the state laws in any given state.

INSURANCE COMMISSIONER DAVE JONES:

Great. Nationwide. Mr. Gilbert.

MATTHEW GILBERT, CA AUTO PRODUCT MANAGER, NATIONWIDE INSURANCE:

I would echo the same comments that Cathy has made. Right now we would be basing this on loss experience and how those losses, when they occur, how long they occur. I think one of the issues is that this is so new, there is not a lot of experience out there yet,

there are a lot of factors we don't know yet that are going to influence that. Most insurers are going the using some sort of VIN identifier to rate vehicles and the theory would be that those differences would be picked up in experience over time, so if there was a significant difference in model A vs. model B that you would see that over time. We would accurately be able to adjust our rates for that, which is why one of my points it's very important for us to not only be able to identify the vehicles, identify the features that are in them because the market could have vehicles at all different stages in the spectrum on the road at the same time.

INSURANCE COMMISSIONER DAVE JONES:

Mr. Stienstra, do you want to add something?

1:31:58 - MICHAEL STIENSTRA, CHAIRMAN, CASUALTY ACTUARIAL SOCIETY TASK FORCE ON AUTOMATED VEHICLES & AVP, ACTUARY, QBE THE AMERICAS:

Thanks. So, a couple comments on that. First, VIN doesn't include, especially with optional features, if you look at BMW, Mercedes, some they have some of these optional automated break-in systems and the VIN will not include that in its equation. HILDI has done a number of studies on this semi-autonomous and what they have had to do is go to the manufacturers and give them a list of VINS and get then what technology is on that vehicle. The second is that, when you are actually coming up with the vehicle symbol, which is how these are mostly rated. When you think about an individual vehicle, it is very small credibility wise. So, how many S-classes are sold in the United States and if the 2014 S classes isn't like the 2013, then that causes an issue. Typically, insurers use two factors: they use the body type style, and then the previous year's symbol to start estimating what that vehicle symbol's relativity should be. When you start looking at

automated vehicles and this technology, one of the major issues is that they are not the same. So, Volvos autonomous break-in system will bring your car to a stop if you are travelling, I think it's under 19 miles an hour with a 9 mile hour difference, they might be improving on that. From what HILDI has found that the BMWs, at least their older ones, will not stop your car if the vehicle in front of you has stopped. It will only bring your car to a stop if you're travelling and the car in front of you is travelling. I think Honda system is never meant to stop the vehicle, but to slow and reduce the severity. So unless insurers get better data in terms of what the technology actually is, how to identify, and how to price it, we might be comparing the current day's model with last year's model, which is no longer applicable or trying to group it with other models that have very different goals in mind. Even if you roll in fully autonomous features, it's going to take a long time, even if they are perfect, just because of the way the credibility is and the way we actually analyze the data. While we are still this separate entity, trying to get data from manufacturers, trying to understand it, we have to go through HILDE and IHS and do all this clean up to the data and on top of that, the most recent study that HILDE came up was lane keeping about a year ago and found that it actually increased accidents. I thought that it might be some noise in the system, but they just did a follow up and now they say, combined with autonomous braking, it actually reduces. There is going to be a lot of noise in these systems too, especially with early severity where I don't we can really say what the impact's going to be or how it's going to flow through to the rates until we get better answers on the liability, we get better data on what is actually going on and

how it is impacting changes, and how people are actually using it. That's to answer some of those issues.

INSURANCE COMMISSIONER DAVE JONES:

Each of you I spoke it to the critical need for more data in various ways – one challenge we face is that the data, which is generated by those that are doing research and development on fully autonomous vehicles or partially autonomous vehicles may not be something they want to share and they may have a variety of reasons for not wanting to share and not wanting to share too soon. There is a requirement in state law now that I guess was testified to by the Deputy Director of the DMV that the vehicles have the ability to record at least 30 seconds prior to the accident and that would apparently be reportable to DMV, but then a number of you have spoken to the issue whether in fact it would be reportable to others, like insurers so that they could use the information and then correspondingly in California we have regulations that limit the ability to collect information from individual drivers as well to Mr. Holober testified to some of the privacy reasons behind that. It's a bit of a puzzle. Mr. Stienstra, you also said that there are some intermediate collectors of data, which I guess go out and get data from R & D or manufacturers aggregate some way and it can be used by insurers, but there is some lag time associated with that, there is a lot of noise, credibility issues associated with that too, if I understood your testimony correctly.

MICHAEL STIENSTRA, CHAIRMAN, CASUALTY ACTUARIAL SOCIETY TASK FORCE ON AUTOMATED VEHICLES & AVP, ACTUARY, QBE THE AMERICAS:

Yeah, for the most part. Lots of the data comes from State Farm, Nationwide, actually support HILDE, they are members and they report data and then they can do their own

studies off of that but it is because the insurance industry, so many members are of HILDE and IHS, so it comes through.

INSURANCE COMMISSIONER DAVE JONES:

They are collecting data about particular vehicles or in some case, particular features on vehicles because each of you have explained the complexity associated with the fact that some of these features are not immediately identifiable based on the VIN on the car. It causes me to wonder on a regulatory standpoint, whether it's my Department or DMV or some entity ought to be thinking about is there a way for us to gather more data up front, to make that in some way a precondition of getting a permit, a license, and aggregate that data in some way, so it does not have necessarily impacts on the, sort of, the proprietary interests of the entities that are doing the R&D and doing the manufacturing the cars, nonetheless is data that is available earlier to insurance companies for purposes of rating. I'm just interested in folk's reaction to that as a concept. I'm sure that there is a all sorts of flaws with it, but I'm just curious, that or other ways to collect more data earlier to give insurance companies a better ability to rate. Maybe we can start with Mr. Peterson and go down the row. If you don't have a comment on it, that's fine too.

PROFESSOR ROBERT PETERSON, DIRECTOR, CENTER OF INSURANCE LAW AND REGULATION & PROFESSOR OF LAW, UNIVERSITY OF SANTA CLARA**:**

I don't know if there is another way to get data. I would think that in respect to the black box, those 30 seconds we shouldn't be overly concerned about privacy for example, because there has been an accident. Once there has been an accident your privacy interest go out the window, you could be deposed, you could be sent to interrogatories, if there is a criminal investigation that could be seized with a search warrant, so that is a

whole different matter form gathering data while you are driving around generally. If there is some impediment to using that last driving 30 seconds now, I would think it would be good in your bailiwick, to get rid of it.

INSURANCE COMMISSIONER DAVE JONES:

I'm not the Legislature. Ms. Rowen.

HILARY ROWEN, PARTNER, SEDGWICK LLP**:**

I don't have much to add but I think it is, your comments had two components, could we get data earlier and can we get cleaner data and I think, I'm skeptical about the earlier because push comes to shove, you have to have the accidents, you have to have the insurance claims basically in order to have the data. Cleaner data I think is something is something that I think a lot of interactive discussions between the Department and the Department of Motor Vehicles, auto manufacturers, and insurers, and may be something that gets picked up at the NAIC level, would be useful because you really aren't going to be able to price in a way that captures the staple feature if in fact, you can't identify which cars have them, even if you have gotten to the point where the actuaries are at least willing to do a, "I'm going to lick my finger and stick it in the air to see which way the wind is blowing" estimate of what the rates are.

INSURANCE COMMISSIONER DAVE JONES:

What they call actuarial judgment. Thanks, Ms. Rowen. You can have equal time.

MICHAEL STIENSTRA, CHAIRMAN, CASUALTY ACTUARIAL SOCIETY TASK FORCE ON AUTOMATED VEHICLES & AVP, ACTUARY, QBE THE AMERICAS**:**

I have two comments on the data. The first is that it's going to take a while to even know what data we need. People talk about accidents, right now auto insurance is a very high

frequency line of business, which is why accidents is what you look at. In the future you may be looking at incidents, numbers for testers, how often did they have to take over, or did the car almost get into an accident and while insurers don't have good data in the aggregate, telematics is leading towards better understanding of how drivers actually drive and what is an average incident rate at which the driver has to avoid or take evasive measures. What even the benchmark should be comparing to, we don't know yet, we don't know how we should be looking at the data and it's going to take time. Specific to California, you guys have gone further in terms of your DMV regulations by requiring all incidents. I'm going to be the actuary and say that what you are requiring is not enough, knowing the number of incidents and types of incidents does not tell me anything about the risk. I need to know a baseline – I need to know how many miles are you driving, what type of miles, where are you driving, the fact that one company has 10,000 incidents, and another one has 100, doesn't mean that Company A is riskier or their product is worse than company B. I need to know more about it to actually come up with a calculation. There are privacy concerns; there are these issues. My hope would be that these companies would want to protect against an unsafe company rushing a product to market. And if you can find a way around the privacy issues and protect their knowledge about working with the insurers to see, we can't tell anything yet, this data looks ok or doesn't, it's sort of an iterative process that might help alleviate, while still driving home what actuaries would like to see in terms of data acquisition.

INSURANCE COMMISSIONER DAVE JONES:

Before we go on, I want to give everyone a chance, but you also suggested that we engage with manufacturers and others to engage in some type of robust testing. I'm wondering you could flesh that out a little bit about what you had in mind before we move on to the others about the issue of data.

MICHAEL STIENSTRA, CHAIRMAN, CASUALTY ACTUARIAL SOCIETY TASK FORCE ON AUTOMATED VEHICLES & AVP, ACTUARY, QBE THE AMERICAS**:**

I guess it would be two fold again. One, you have companies coming out saying that this product is safer or it's not as safe. The question is where is the data. What are manufacturers doing, what are these tests, I think everyone works in somewhat of a silo, and they understand the risks and they know what they are testing for, but there are going to be a huge amount of model risks, the chance that their model that they are using, while it might be true of historical claims, is not going to be as predictive going forward and a simple incorrect assumption or it could actually change behavior like mortgage back securities, the models were extremely safe, and they were definitive and it was a beneficial product, but appearance of safety changed in the way people actually wrote the product, the way it was applied and how it expanded into what it eventually became. In terms of insurers, the folks on personal insurers, which I think they have the best data, they are going to have the best understanding but it can take one simple action – if one manufacturer decides to remove the steering wheel, remove the brake, and they can prove that it is safer and then they roll it out into the city as a livery vehicle, there is no question that it is commercial insurance. They can go ahead and take all the risk and what does that mean. There is a balance between personal and commercial insurers but having worked at both, neither one is good at what the other one does. Commercial insurers

don't compete very well against the State Farms, the Nationwides - the best personal auto insurers. And the personal auto insurers have very small market of the overall commercial space and so if you want to shift the balance and see where it is going to fall, one would be non-admitted excess liability. Manufacturers typically buy non-admitted excess liability, which means their first million, hundred million dollars is self-insured. This isn't going to a first dollar loss, this is actually going to the manufacturer who is saying, you know what, I'm not going to settle this claim quickly because I'm not paid or reimbursed to settle claims I'm down to manufacturer cars, though the cost of the recall if that is greater than the number of settlements and the average settlements - it's a different economic equation than insurers who actually reimbursed and their business model is built on, settling claims quickly and fairly. So, that first dollar that comes to liability has very different impacts, that's why there needs to be this balance between what do commercial insurers need to get comfortable, what do personal insurers, and what are the manufacturers doing with these tests to overcome the risks and approve their safety.

INSURANCE COMMISSIONER DAVE JONES

Thank you. Let me go back to the earlier, more general question: are there ways for us to get data sooner and get data with less noise associated with it.

1:44:40 - CATHY SCHWAMBERGER, ASSOCIATE GENERAL COUNSEL, STATE FARM:

I think your original question is an idea worth exploring to see if through the DMV and in cooperation with the manufacturers, it seems like the earliest best, not perfect, could be the data that is gathered through this testing and certification process and so it seem to

be worth the conversation with manufacturers who are participating in the testing, with the DMV, maybe with some actuarial people to anticipate what are some of the things that should be gathered in the testing and certification process that could pave the way for insuring later and to your point – how do we be proactive, so it does seem like that is worth the conversation. Another thought I had from a market place standpoint, it seems like the dynamics are there for everybody to want to cooperate on this because to the extent these vehicles are safer, I think we are going to be working very to insure these vehicles over our competitors and you want all of them insured, so I think the Department will be a collaborative partner to be as flexible as possible within the constraints of Proposition 103 and allow the actuaries to make some reasonable assumptions based on the data that is there. So it feels like the parties would be prone to collaboration because they want to sell it, we want to insure it, you want to see it insured - that could drive the cooperation.

INSURANCE COMMISSIONER DAVE JONES:

Thank you. Mr. Gilbert.

MATTHEW GILBERT, CA AUTO PRODUCT MANAGER, NATIONWIDE INSURANCE:

Yeah, I agree that one of the biggest concerns is data and having data and knowing what to do with it. With the not knowing of the future, anytime an assumption is made about doing this, will have this outcome, there are always so many different variables that play into that that how do you know hindsight is always 20/20. I do think if we were going go a collaborative way where we are all pooling our data together and being able to look at other's experiences, and work closer with the manufacturers, I think that that would at

least help. I do understand that is a concern, where a technology developer might not want to release information about its safety features for fear of having a competitor kind of cutting in on their business there, I do think at least from the perspective of collecting the data, I think if there is relevant points of the technology differences, they can filter into the data and should available to be used.

INSURANCE COMMISSIONER DAVE JONES:

Thank you. Mr. Holober.

RICHARD HOLOBER, EXECUTIVE DIRECTOR, CONSUMER FEDERATION OF CALIFORNIA:

I agree with the last few comments regarding the value of getting early data from developers. I imagine that there are ways to safeguard trade secret kinds of issues when that data is gathered but it does make sense to collaborate. Once these products are on the road, data collection continues to be very important but I think it can be done in ways that protect personally identifiable information is aggregated in many areas and can be done here as well.

INSURANCE COMMISSIONER DAVE JONES:

Let me see if Mr. Shultz or Ms. Volkmer have any questions.

CHRIS SHULTZ, DEPUTY DIRECTOR, CALIFORNIA DEPARTMENT OF INSURANCE**:**

Thank you, Commissioner. I do have one question. So my iPhone has 20 applications that are waiting for me to update them but I haven't gotten around to it yet because I don't have a good wifi connection. What if a driver fails to upgrade or download the newest upgrade from the manufacturers? Is there an analogy in the failure to maintain the

vehicle in a proper working condition? I wonder; Mr. Gilbert would you mind taking it on and others if they have thoughts.

MATTHEW GILBERT, CA AUTO PRODUCT MANAGER, NATIONWIDE INSURANCE:

Yeah, I think I brought that up as one of the unknowns, you don't know what people's patterns are going to be, there could be a situation where one or two vehicles owners of the same vehicle. One of them is going to be much more diligent in doing that and one might not even know they need to do an update and might assume something, In that case, I could see a significant difference just in the person's - how the owner of that vehicle is maintaining. Then that comes along with the question of what is maintaining – is downloading and uploading maintaining and automobile?

CHRIS SHULTZ, DEPUTY DIRECTOR, CALIFORNIA DEPARTMENT OF INSURANCE**:**

Anyone else have strong thoughts about that?

PROFESSOR ROBERT PETERSON, DIRECTOR, CENTER OF INSURANCE LAW AND REGULATION & PROFESSOR OF LAW, UNIVERSITY OF SANTA CLARA**:**

I think there are ways to handle it where you don't rely on the diligence of the owner. Google car for example will not engage, as I understand it, in self-driving mode until it has received its daily download. You can drive it around but it will say - master I am not ready to engage in self-driving mode. I think it would be very dangerous to rely on the diligence of drivers to download. You have a computer, I have a computer, I notice it all the time, all this stuff has to be downloaded – I'm busy, I don't do it and I think drivers will be exactly the same.

HILARY ROWEN, PARTNER, SEDGWICK LLP**:**

I think you have raised an interesting question that I have not yet seen much addressed because we are so focused on when will they enter the fleet, but there is also the question of when will they exit the fleet. In other words, aside from the download features, there is also the question of when do the sensors hit the point where you start getting sporadic failure just because particularly say they are in salty environments, wintery driving, stressful conditions. You are going to have a whole set of issues that are going to arise as you have a first and second generation Level 2 and Level 3 and Level 2.3 cars start exiting the fleet or start reaching the point where they go – should I repair it or replace it – and you are going to have accidents and equipment failure not the kind we are sort of thinking of through most of this hearing today, but sort of a softer malfunction. Gee, you failed because it started to rust out. That is further down the road quite literally, but is something that insurers, DMV, the Department of Insurance, auto manufacturers, even body shops are going to have to deal with as this new generation of vehicles start to age out.

INSURANCE COMMISSIONER DAVE JONES:

Okay, well, you have given us a lot of food for thought and that really is the purpose of this is to really understand the complexity of the issues we face and be prepared. We are going to have a chance to hear form the members of the public but before we do, I'll probably reiterate this, we have a unique opportunity, given that the degree to which these technologies have entered the market is somewhat limited right now, to try to do the best we can to get the public policy response right at the front as opposed to trying to react at the back end to the technology being in the market already and it raising a host of

insurance questions and ones that frankly haven't been answered and there have been examples of other technologies where that has occurred and there have been fatalities even and the insurance and liability issues have not been worked out. We have some time although, given the excellence of the engineers, scientists, and entrepreneurs in Silicon Valley, California, we don't have a lot of time to figure this out, but I'm confident that with the partnership with the R & D folks and the manufacturers and the companies and entrepreneurs interested in this, as well as the insurance industry itself, consumer groups, the academy, and very able lawyers we can hopefully figure this out. I really appreciate your sharing of your insights you've given me a lot to think about, I made very copious notes and I plan to watch this several times because there have been a lot of complexity and nuance in what you have offered and I hope you will make yourself available to us if we have additional questions – I and my staff, the DMV, or other California agencies as we work our way through this. Thank you very much. I think we are excusing this panel and allow members of the public to come forward if they wish to be center stage and testify for a moment. Thank you very much, we appreciate it. I don't think we have a sign up sheet for members of the public who wish to testify, but I think if there are members of the public who would like to testify this is your moment to do so and perhaps you can come up one by one and identify yourself and your affiliation if you have one. In the interest of time we can only give you a minute, we ask you limit yourself to the subject of the public hearing, which is always a good reminder at a public hearing. It is an opportunity for us to have people who weren't on the panel to share their thoughts or insights so we want to give those folks a chance do that at this time and they

can do that right here, if you are so inclined. You have any number of mikes to choose from so don't be shy; I know this isn't a shy group. Yes, hi.

KATHLEEN BISSELL, LIBERTY MUTUAL INSURANCE:

Thank you Commissioner, this is a great hearing. I learned a lot and I just wanted to share with you that my name is Kathleen Bissell and I represent Liberty Mutual insurance. We are a Boston-based company and our folks at the home office are very interested in the subject and I've taken copious notes that I will be reporting back to them. My question is our team of people who are looking at this closely, who they can contact at the Department for further conversation. Would that be Chris? Would that be you – whoever you assign.

INSURANCE COMMISSIONER DAVE JONES:

I think I'm going to offer up Chris and Chris is going to offer up Summer.

KATHLEEN BISSELL, LIBERTY MUTUAL INSURANCE:

I just want to make sure we have that out there for further conversation because we are very excited about this topic as well.

1:55:50 - INSURANCE COMMISSIONER DAVE JONES:

We are very appreciative that Liberty Mutual is participating and thank you for being involved in our public policy conversations as well – appreciate it. Others? I won't call anyone out – I do recognize a few folks from the industry here but I won't call anyone out. I want to give folks one more opportunity to testify if they so wish or identify themselves if they so wish. Ok, I don't see anyone rushing to the mike. Very good. Well I want to thank our panelists who took time from their busy schedules in Silicon Valley at the Tech

Museum. I want to thank the Tech Museum for affording us this beautiful space and opportunity to hold this hearing. I want to thank, in particular, my staff who worked so very hard and ably to put this together, in particular I would like to thank Kathy Snell, Lisa Strange, Patrick Storm, Madison Voss, Regina Wright, Gil Belcher, Kevin Brown, Frank Morra, Praneet Maharaj, Nimra Syed, and Alison Castro and also Deputy Commissioner Shultz and Ms. Volkmer for all of their hard work and I'm sure I've left someone else out from my team, I apologize. A lot of work went into preparing the background materials, making sure we had panels and organizing this hearing. I want to thank the panelists as well again, for taking the time to share your views and insights. I thank our partners at the Department of Motor Vehicles too – the Director and the Deputy Director and staff from DMV who are working in concert with us. I'm left with thoughts about the great potential of this technology and what it bodes in terms of potentially reducing the incidents of human error and the operation of vehicles and the potential to reduce accidents, fatalities, and injuries – I think that is very exciting and I think here in California, we are at the leading edge of this as we are in so many things. We have companies, entrepreneurs, engineers, scientists working this technology as we speak here, perfecting it, hoping to make it available to California consumers. At the same time, we have very robust insurance markets and very able insurance companies that meet the insurance needs of both commercial entities as well as individuals and families and as the state's insurance regulator, it's my responsibility in concert with other state agencies to make sure that as this technology emerges and as it becomes more available to Californians that consumers are protected and we have that. I was delighted to hear

from the insurers that participated that they are excited about the technology too, they support the technology, and are forward to ways they can offer insurance products to California consumers consistent with the entry of autonomous vehicles into our market, or partially autonomous vehicles in our market as well. That's good news. We have a lot of things to figure out, not the least of which is how much safer does this really make driving? Who ultimately is and will be responsible? How will insurance be priced? What data will be available to help us in identifying that pricing if you will? As well, what interpretations or modifications of regulations will be needed to accommodate this new technology? That's the task in front of us. I didn't set out in holding any expectation that we would answer all the questions but I think the task of posing those questions help us begin to chart a path to begin to answer them and I look forward to doing that in concert with all of you who are stakeholders in this process. Thank you very much for your participation and we look forward to identifying the appropriate public policy response and supporting this technology and it hopefully makes California's roads safer and makes driving safer for Californians. Thank you. With that we are adjourned. Thank you again.