

STATE OF CALIFORNIA - THE RESOURCES AGENCY  
BEFORE THE  
CALIFORNIA ENERGY COMMISSION (CEC)

In the matter of, )  
 ) Docket No. 11-IEP-1L  
 )  
Preparation of the 2011 )  
Integrated Energy Policy Report )  
(2011 IEPR) )

Volume I of II

Transportation Energy Forecasts and Analyses for the  
2011 Integrated Energy Policy Report

CALIFORNIA ENERGY COMMISSION  
HEARING ROOM A  
1516 NINTH STREET  
SACRAMENTO, CALIFORNIA

Friday, September 9, 2011  
9:06 A.M.

Reported by:  
Peter Petty

COMMISSIONERS

James D. Boyd, Vice Chair and Presiding Member,  
 Transportation Committee  
 Tim Olson, His Advisor  
 Carla Peterman, Commissioner and Associate Member,  
 Transportation Committee  
 Jim Bartridge, Her Advisor

STAFF

Gene Strecker, Supervisor, Fossil Fuels Office  
 Ryan Eggers  
 Aniss Bahreinian  
 Malachi Weng-Gutierrez  
 Gordon Schremp  
 Jim Page

Also Present (\* Via WebEx)

Presenters

KG Duleep, H-D Systems  
 Adam Langton  
 Alex Kim, SDG&E  
 Joshua Cunningham  
 Mike Waugh, CARB  
 Jim Lyons, Sierra Research, LLC  
 Skip York, Wood MacKensie for WSPA

Stakeholders

Gina Grey, WSPA  
 Tim Carmichael, Natural Gas Vehicle Coalition  
 Tom Fulks, for Bosch  
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 \*John Shears, CEERT  
 \*Max Baumhefner, NRDC  
 John Braeutigam, Valero  
 Dwight Stevenson, Tesoro  
 Dave Hawkins, Stillwater Associates

Public Comment

Anthony Anderoni

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## P R O C E E D I N G S

1  
2 SEPTEMBER 9, 2011

9:06 A.M.

3 MS. STRECKER: Audience members, Staff, my name  
4 is Gene Strecker and I'm a Supervisor in the Fossil  
5 Fuels Office. This morning we'll be discussing the  
6 Transportation Energy Forecasts and analyses for the  
7 2011 Integrated Energy Policy Report.

8 Before we begin, there is a few housekeeping  
9 items we need to take care of. For those of you not  
10 familiar with this building, the closest restrooms are  
11 located just across the hall from this building, behind  
12 those frosted glass windows. There is a snack bar on  
13 the second floor under the white awning.

14 In the event of an emergency and the building is  
15 evacuated, please follow our employees across the street  
16 to Roosevelt Park. We'll reconvene there. Please  
17 proceed safely and calmly. And again, follow Energy  
18 Commission staff across the street.

19 Finally, the meeting this morning is available  
20 remotely via WebEx and is also being recorded. We ask  
21 that you hold your questions and comments until the end  
22 of each presentation. At the end of each presentation  
23 we will take questions and comments from the audience  
24 members that are here at the Commission -- followed  
25 first -- then we'll follow those with questions from our

1 WebEx participants.

2           Please identify yourself and your affiliation  
3 and speak clearly into a microphone before you start  
4 making your comments. And in addition, if you'd like to  
5 make some comments at the end of the day, please fill  
6 out a blue card that you can find in the foyer, and give  
7 them to Laura and Jesse right here with the laptop.

8           And with that, we're ready to get started. I  
9 think -- Commissioner Boyd, do you have a few words?

10           VICE CHAIRPERSON BOYD: I'm -- yes, thank you. I  
11 always have a few words. Uh, thank you for the  
12 opportunity to participate in the Workshop. And  
13 welcome, everybody, and thank you for your attendance,  
14 your participation, your interest in this item. This  
15 is, of course, a workshop on the staff's analyses to  
16 date published in a draft forecast and analysis that  
17 ultimately will find its way to our 2011 Integrated  
18 Energy Policy Report.

19           But a few words from me about my view of today's  
20 activity, and this entire activity that is fairly well  
21 documented in the notice of this workshop, and chose  
22 that this is one of a series of actions -- public  
23 interactions -- that have taken place as the staff  
24 strives to deal with this subject.

25           The title of this workshop -- the title of this

1 draft report -- is -- the title is somewhat innocuous in  
2 my mind -- the title of Transportation Energy Forecast  
3 and Analysis for the 2011 IEPR -- is somewhat bland.  
4 But, in reality, the breadth -- the reach of this  
5 subject affects views and -- that we have about this  
6 subject -- and is affected by, in reality, the events  
7 and policies of the entire transportation fuels system  
8 that is in play in California. So, it's really trying  
9 to sum the whole of all the inner -- interlaced  
10 activities that lead, ultimately, to a demand and, uh,  
11 analysis of California's future.

12           What is in play at the present time in  
13 California is a product of, and is affected by,  
14 California's policies and practices, as well as national  
15 and international policies and practices. So, while we  
16 try to deal with the consequences and the issues  
17 relative to California, they're all interlaced with what  
18 goes on in this nation. As much as I'd like to see us  
19 as the Nation-State of California, we are part of a  
20 nation as a whole, and a national scene -- an  
21 international scene.

22           So, as California, which is usually on the  
23 cutting edge of technology with regard to transportation  
24 fuels, and vehicle technologies, which obviously is on  
25 the cutting edge of climate policy, and has a long

1 established record of concern for the public's health  
2 with regard to criteria air pollution, what's more the  
3 fate of the planet and climate, it causes us to take  
4 actions to address these types of issues. And  
5 California needs to consider -- and this Agency,  
6 therefore, needs to consider all policy initiatives, and  
7 their effect on our programs, and our state and our  
8 economy. Thus, as I said, while the title seems  
9 innocuous, the subject matter is anything but that.

10           So, as California reflects on its long history  
11 of Transportation Energy policies and taken always in  
12 concert, like I said, with air quality, with other  
13 environmental policies - through energy security  
14 policies, energy diversity policies -- the need to  
15 reduce our dependence on petroleum for energy security  
16 purposes and for various environmental and public health  
17 goals, this theme has been dominant for decades. The  
18 goals that I referenced frankly date back to certainly  
19 the '80's and '90's, when multiple agencies here in the  
20 State worked together on alternative fuels for a host of  
21 reasons.

22           And of course, all of that has carried into this  
23 century, with multiple studies of our fragile dependence  
24 on certain fuels -- a conclusion that we need to reduce  
25 our dependence on petroleum. The requests that various

1 agencies, including our own, prepare alternative fuels  
2 plans for the State, such as AB1007, the provision of  
3 funds through AB118 to this agency and the Resources  
4 Board to facilitate new technological development, both  
5 in transportation technologies and the fuels for those  
6 transportation technologies, have resulted in continuous  
7 activities, the AB32, its resulting scoping plan -- the  
8 Low Carbon Fuel Standard -- which is a subset of that  
9 activity, and other actions that I am sure we'll hear  
10 about today. They all interact, and they all intersect  
11 in a way to affect the CEC Forecast and Analysis that  
12 we're going to talk about today.

13           Therefore, it's our expectation, as somewhat  
14 documented in the Hearing Notice, as a Committee to hear  
15 comments, to hear your questions on the interaction of  
16 all the above California policies, national policies,  
17 and world policies, and to therefore fold our  
18 conclusions into what will ultimately become a final  
19 policy report that will in turn, then, be folded into  
20 the Agency's 2011 IEPR and will affect all of our views  
21 with regard to future analyses of transportation fuel  
22 supply, demand, and price.

23           And I guess on that last point I would just like  
24 to say I know this body and this Commissioner, in  
25 particular, is extremely interested in the costs

1 attributed to lots of policies and the price  
2 ramifications for Californians -- the citizens of  
3 California. And what in these tough times they have to  
4 pay for their transportation fuel, and what we, as a  
5 policy agency can do to at least contain costs to  
6 mitigate the impacts upon our economy, which is in need  
7 of some repair and expansion.

8           So, with that, I would just -- again, thank you  
9 all for being here. I hope you recognize this is a  
10 workshop, and while this is a very formal setting, we  
11 want as much cross-talk and dialogue as possible, we  
12 want a lot of input, and so I know we, as a Committee,  
13 look forward to an interesting day.

14           And with that, Commissioner Peterman, would you  
15 like to leave us with a few thoughts before we turn it  
16 back to the staff to carry out?

17           COMMISSIONER PETERMAN: Thank you Commissioner  
18 Boyd, and thank you for that introduction and overview  
19 of the reason for being here today, as well as the  
20 significance and the importance of this report. I agree  
21 with all of the Commissioner's comments. We are excited  
22 to be here. He and I have talked about some of the  
23 questions that we have on this topic, and I can assure  
24 you that we won't have enough time today to cover them  
25 all. We will use this as an opportunity to raise some

1 questions, highlight some things in the Report and  
2 appreciate your comments and feedback, both in the  
3 Public Comment section, as well as in your written  
4 comments.

5           The Commissioner and I also work on electricity  
6 and renewables, and transportation is more complicated  
7 because, as Commissioner Boyd noted, we are in a world  
8 market, both with transportation fuels, as well as the  
9 other sectors in which -- with which transportation  
10 intersects, such as agriculture. However, in the world  
11 market we're being affected by policies that we've  
12 developed within this state. And so there is a direct  
13 tie between the research that we presented here, as well  
14 as the work that Commissioner Boyd and I are doing on  
15 AB118.

16           And as we look forward to the next AB118  
17 Investment Plan, getting your feedback and Staff's  
18 comments about the projections regarding alternative  
19 fuels, the assumptions used, and uncertainties that  
20 might affect -- increase or decrease our reliance on  
21 fossil fuels will be greatly appreciated and valued.

22           So, with that, thank you again, to the Staff,  
23 for all the hard work that they've put in already. And  
24 we'll note that we have our Advisors here with us, as  
25 well. Uh, my advisor, Jim Bartridge is here to my left,

1 and the Commissioner's advisor, Tim Olson to the right.

2 And we look forward to your participation. Thank you.

3 VICE CHAIRPERSON BOYD: Thank you. And we'll  
4 turn it back to you, Gene.

5 MS. STRECKER: Thank you Commissioners. Uh,  
6 we'd also like to add the comment that we will be  
7 accepting written comments until, I believe, September  
8 16th. It's in our Workshop Notice.

9 And with that, Ryan Eggers will be our first  
10 speaker. He'll be talking about the Transportation  
11 Energy Trends of the past several years. Ryan?

12 MR. EGGERS: Good morning, Commissioners,  
13 Advisors, Stakeholders. Again, my name is Ryan Eggers,  
14 I'm in the Fossil Fuels Office and I will be presenting  
15 the Trends in Transportation Energy Consumption.  
16 Speaking of energy consumption and transportation, here  
17 it is. It's broken out by the different fuel types. As  
18 you can see, gasoline is the most consumed  
19 transportation fuel here in California, followed by  
20 diesel and jet fuel. Also of note, the ethanol blended  
21 into gasoline is included in the gasoline totals on this  
22 chart.

23 One of the reasons why gasoline is the most  
24 consumed fuel here in California has a lot to do with  
25 the on-road vehicle stock. In 2009, 93% of the vehicles

1 on-road in California were dedicated gasoline-powered  
2 vehicles. When you consider the fact that hybrid  
3 vehicles run exclusively on gasoline, and flex-fuel  
4 vehicles are likely fueling with gasoline, that number  
5 jumps up to about 96%.

6 So here are some of the trends in finished  
7 gasoline consumption. Of note, from 2004-2009,  
8 California has experienced five consecutive years of  
9 gasoline decline -- or gasoline consumption decline. In  
10 2010 that figure leveled off a little bit with a slight  
11 increase from 2009.

12 From 2004-2008, average gasoline prices rose,  
13 and then fell in 2009. In 2010 they rose, once again,  
14 to above three dollars -- an average of three dollars a  
15 gallon, and it has been increasing and fluctuating above  
16 that mark ever since.

17 Looking a little bit closer at gasoline  
18 consumption, specifically Per Capita Gasoline  
19 Consumption -- which is shown here by the red and green  
20 line -- US and California per capita gasoline  
21 consumption from the early '80's into the early '90's  
22 was relatively the same. Then in that early '90's  
23 period, California gasoline -- per capita gasoline  
24 consumption fell below the national average, and then  
25 leveled off through most of the '90's and into the early

1 2000's.

2           From 2004 into 2010 California per capita  
3 gasoline consumption began to decline, once again, while  
4 US per capita gasoline consumption rose through most of  
5 the early 2000's and then declined in 2008 and into  
6 2009. One of the primary reasons for this decline has  
7 been a decline in driving behavior here in California,  
8 shown here as Per Capita Vehicle Miles Traveled, as well  
9 as gasoline -- per capita gasoline consumption.

10           As you can see, from about 2000 to 2009, both  
11 per capita gasoline consumption and driving has been  
12 closely tracking each other. And as the decline in per  
13 capita VMT occurs, we also see a decline in per capita  
14 gasoline consumption.

15           One of the reasons for this decrease -- or this  
16 decline in driving has a lot to do with increased  
17 transit ridership, which you see here by the blue bars.  
18 From 2004 to 2008 transit ridership has been increasing  
19 here in California. That being said, we don't really  
20 see a real sharp increase in transit ridership in 2008  
21 to really account for that very noticeable per capita  
22 fuel consumption in 2008.

23           It is here that staff believes it's the  
24 worsening economic conditions of 2008 and 2009 which are  
25 playing a part in this reduced consumption. Shown here

1 are US and California unemployment rates, as well as per  
2 capita gasoline consumption for both the US and  
3 California. As you can see in 2008 and in 2009 an  
4 increase in unemployment rates is accompanied by that  
5 decline in per capita fuel consumption. This sort of  
6 decline was also mimicked back in the early '90's as  
7 both the US and California per capita consumption rate  
8 fell as unemployment rates got above eight percent in  
9 that time period.

10           Also of note here, is one of the reasons for the  
11 divergence of California per capita consumption rates  
12 and US per capita consumption rates might be the change  
13 in unemployment rate relationship between the US and  
14 California. From the early '90's all the way into 2010,  
15 California's unemployment rate has been higher than the  
16 national average, which might account for that  
17 divergence.

18           Another reason for this decline in gasoline  
19 consumption has a lot to do -- or might have a lot to do  
20 with prices here in California. Shown here by the green  
21 line is California expenditures on gasoline as a percent  
22 of income. From 2002 to 2008, that percent of money by  
23 Californians spent on gasoline has been on the rise.  
24 And even though it did decline in 2009 with the decrease  
25 in prices, it is still above levels that we were at in

1 2002.

2           So, in summary, per capita gasoline consumption  
3 had been on the decline, even before the recent economic  
4 recession. That being said, that very noticeable shift  
5 in 2007 -- actually in 2008 -- does seem to be a result  
6 of economic factors. And the general decline does seem  
7 to be a result of decreased driving over that time  
8 period.

9           Moving on to diesel and jet fuel consumption.  
10 Prior to 2008 both jet fuel and diesel consumption had  
11 been on the rise. Then when the worsening economic  
12 conditions of 2008 and 2009 came upon us, both jet fuel  
13 and diesel consumption did decline very noticeably.  
14 Both of these fuels do have a linkage to freight, and so  
15 staff does assume that they are both going to be fairly  
16 income sensitive.

17           Also, finally, California diesel prices have  
18 been showing the same behavior as gasoline prices,  
19 rising from 2004 into 2008, before falling in 2009.  
20 More on that link between income and diesel consumption,  
21 which you can see here. As California -- California per  
22 capita income and US per capita income increased from  
23 2004 to 2007, so did diesel consumption. When the  
24 worsening economic conditions of 2008 and 2009 came upon  
25 us, income decreased, and we also see the decrease in

1 diesel consumption, which we would expect in the  
2 decrease of freight -- on-road freight movement.

3           This pattern is mimicked in US rail activity, as  
4 well. As you can see from 2004 to 2007 we did have an  
5 increase in rail activity, which helped push up diesel  
6 consumption here in California. Then as US rail  
7 activity began to fall, we see a decline in California  
8 diesel consumption.

9           Finally, this pattern is also mimicked in  
10 California port activity. Again, as income rose from  
11 2004 to 2007 we see an increase in port activity, here  
12 in California, likely stimulating diesel -- on-road  
13 diesel traffic through freight movement. As port  
14 activity fell through 2008 and 2009, again we see a  
15 decrease in diesel consumption and a decrease in per  
16 capita income.

17           Moving on to jet fuel. Again, the same sort of  
18 situation as going on here. With the rise in income  
19 from 2004 to 2007 we see an increase in departures from  
20 California airports. This, of course, stimulates jet  
21 fuel consumption as it rises from 2004 to 2007. As  
22 income begins to decline in 2008 and 2009, as you would  
23 expect, jet fuel and departures also begin to decline.

24           Another reason for the -- the very noticeable  
25 drop in jet fuel consumption and departures in 2008 has

1 a lot to do with the relationship between income and  
2 ticket prices, which you see here. The lines are ticket  
3 price indexes for California airports, and the US as an  
4 average. From 2004 to 2007 increases in ticket prices  
5 were accommodated by increases in income, as well,  
6 lessening the effect of those ticket price increases.  
7 Well, in 2008 an increase in ticket prices was  
8 accompanied by a decrease in income, likely making those  
9 ticket prices even more burdensome than they normally  
10 would be.

11           Finishing up with alternative fuels. Excluding  
12 the ethanol blended into gasoline, natural gas is the  
13 most-consumed alternative fuel here in California.  
14 Again, most of the -- well, actually most of this  
15 natural gas consumption is in the medium and heavy-duty  
16 vehicle consumption -- or medium and heavy-duty vehicle  
17 arena. Also, again, excluding the ethanol in gasoline,  
18 the percent of alternative fuels consumed here in  
19 California has been on the rise from about 1 to 1.6  
20 percent of gasoline consumption from 2006 to 2010.

21           Here are those consumption numbers. As you can  
22 see, by a large margin, natural gas is the most-consumed  
23 alternative fuel here in California. Also included are  
24 biodiesel and E-85 numbers, which have been fluctuation  
25 over this time period. That being said, Staff would

1 like to note that both the natural gas and electricity  
2 number are Staff estimates based on analysis and  
3 conversations with public utilities. If any of the  
4 Stakeholders has any other data sources for this  
5 information, we would very much like to take comments  
6 upon that.

7           As I said before, medium and heavy-duties form  
8 the bulk of natural gas consumption for transportation  
9 purposes here in California. Traditionally, government  
10 has been the largest owner of that natural -- of that  
11 medium and heavy-duty natural gas fleet, but we have  
12 seen a trend of increased commercial ownership of  
13 natural gas heavy -- medium-duty vehicles here in  
14 California.

15           Finally, to wrap this all up, energy consumption  
16 has been on the decline on a daily and annual basis  
17 recently, even before the economic difficulties. That  
18 being said, we have seen a noticeable drop in  
19 consumption in gasoline, diesel and jet fuel, because of  
20 the high unemployment rates and high prices here in  
21 California recently. Finally, retail alternative fuel  
22 consumption has been on the rise, but still remains a  
23 very small portion of transportation energy use here in  
24 California.

25           At this time I'd like to open up questions to

1 the Commissioners and Advisors, and then questions from  
2 the Stakeholders at large.

3           VICE CHAIRPERSON BOYD Thank you. I don't know  
4 if this is an observation or a question, frankly. One  
5 thing I'd like to learn more about today is, with regard  
6 to diesel fuel, is what's going on in the world, and how  
7 it might, in the future, affect California. Before we  
8 slipped into significant recession most prognoses were  
9 that the developing world was going to increase --  
10 steadily increase demand for diesel fuel, as a result of  
11 their needs and desires to move their goods around their  
12 nations and ultimately into the world economy. And that  
13 was going to put a crimp into the ability of the world  
14 refining industry to supply diesel fuel, thus having a  
15 traditional demand versus supply price impact.

16           I'm just wondering what people's thoughts are  
17 with regard to the future as we dig our way out of this  
18 recession. Is that still likely something we have to  
19 deal with and are we capable of dealing with it through  
20 provision of traditional supplies -- traditional  
21 petroleum-based diesel fuel? Or do we, as an agency  
22 through 118 and others have to give significant thought  
23 to greater injections of money into the biodiesel, or  
24 even more so, the renewable diesel arena in order to  
25 spur its production to affect supply, to affect cost, to

1 affect the cost to California business and California  
2 folk? So, that's really kind of an expectation I's like  
3 to get out of today, more than a question to you, unless  
4 you have a comment you'd like to make on the topic.

5 MR. EGGERS: Well, unfortunately, Commissioner,  
6 most of our analysis has focused on California to this  
7 point. That being said we will probably endeavor in the  
8 future to address some of those concerns you brought up  
9 today.

10 VICE CHAIRPERSON BOYD With you having said  
11 that, then I have to extend that concern to multiple  
12 fuels -- I have to extend that concern, certainly, to  
13 the issue of ethanol as it relates to the pressures on  
14 this country through RFS-2 renewable fuel standard as  
15 modified for the nation, the pressure that the low-  
16 carbon fuel standard will put on lowering the carbon  
17 index of fuels, the great debates about the wisdom and  
18 desires for corn-based ethanol produced in this country  
19 versus that produced in other countries, like Brazil,  
20 because cane ethanol gets a better carbon index than  
21 does US ethanol. And I'll be interested in any  
22 discussions of ethanol shuffling that may be forced to  
23 take place to accommodate that. Rumors of us sending  
24 ethanol to Brazil to receive Brazilian ethanol concern  
25 me some, in that is I was a Brazilian investor I'd sure

1 be looking for the best and highest price I could get  
2 for my ethanol knowing that there is an absolute need  
3 and demand for it. While I'd be glad to buy cheaper US  
4 corn-based ethanol to meet my national needs, etcetera.

5           So, I think all I'm trying to say is what we do  
6 here is so tied into what goes on in the nation and the  
7 world with regard to demand, supply and price  
8 implications, we really do need to consider that as we  
9 finalize an analysis that we make based upon the trend  
10 that you put out here, and that we hear from folks here,  
11 with regard to, you know, where California is going to  
12 go -- with regard to its ability to get supply to meet  
13 its demand at a reasonable cost. So, just for the  
14 record.

15           COMMISSIONER PETERMAN: Ryan, thank you for that  
16 presentation. I would be interested in seeing most of  
17 these graphs, but particularly the income sensitive ones  
18 back to '98, maybe '99. Just curious to see how you're  
19 seeing the trends around -- the slow-down around 2011,  
20 around September 11<sup>th</sup>. Because obviously the economy is  
21 having a true impact on consumption and we do have some  
22 recent history with some slow-downs. But if you have  
23 anything to say about how the trend looked in that  
24 period, that would be great. Even our -- in the final  
25 document.

1           MR. EGGERS: Will do, thank you Commissioner.  
2 Any other comments from the dais? Stakeholders, any  
3 questions, please come forward. If you have a card,  
4 please give it to our transcribe, if available. Thank  
5 you. And do introduce yourself for everybody on WebEx.

6           MS. GREY: Thank you. Good morning  
7 Commissioners and Advisors. My name is Gina Grey; I  
8 work for the Western States Petroleum Association. I  
9 have one question and a comment relative to this portion  
10 of the presentation.

11           I think that the first one is a question, and  
12 this is totally born out of ignorance, you may have a  
13 very simple answer, but it's with regards to the  
14 challenge that seems to be implicit both in the  
15 presentation and several parts of the report where it  
16 talks about the challenges in collecting information on  
17 alternative fuels from a historical perspective. Since,  
18 you know, the collection of the data is critical, and I  
19 think I heard those comments from both Commissioners  
20 this morning in terms of looking at what the history is,  
21 being able to then put the picture together with what we  
22 see in terms of the future projections.

23           The question that we have is basically, you  
24 know, data collection being very critical, and the fact  
25 that the petroleum industry under PIIRA is required to

1 supply a significant amount of detailed information to  
2 the Commission, is there an ability to expand that to  
3 the alternative fuels arena, either through something  
4 like PIIRA or some other mechanism? And I know it may  
5 be complicated because we heard today that a lot of the  
6 information that's in the alternative fuels arena  
7 relates to the heavy-duty and medium-duty sector, and  
8 we're talking here more about retail, I'm not too sure  
9 how all this would be dealt with, but it is a question  
10 that I think needs to be put to the Commission as to  
11 whether or not as we transition to a new alternative  
12 fuel future, there is not an obligation to be collecting  
13 this information from all those sectors, and have,  
14 whether it's legislative authority or some other  
15 authority. So that's one question. And that may not be  
16 able to be answered today, but we thought we'd put it on  
17 the books.

18 VICE CHAIRPERSON BOYD: Thank you, Gina. I have  
19 a thought, but I think I would first, since this is a  
20 Staff-driven draft report to date, I would ask the Staff  
21 to respond, lest I provide the wrong answer. But I  
22 think I know what's happening.

23 MR. SCHREMP: Thank you Commissioner Boyd.  
24 This is Gordon Schremp, Staff, Energy Commission. The  
25 question about expanding -- the potential to expand the

1 PIIRA activities to include alternative fuels -- that's  
2 a good idea. I mean, Staff has been thinking about this  
3 for a long time. PIIRA has been revised once, and this  
4 I think was about five years ago, and it was a large  
5 undertaking to respond to the change in the industry.  
6 There was an extreme differentiation of fuels, a need to  
7 collect more specificity for California operations that  
8 the Federal forms we were receiving were inadequate to  
9 meet those needs.

10 In the alternative fuel arena -- yes, there is  
11 an area of data collection that is sort of under the  
12 radar. We're flying a bit blind. And that is non-  
13 retail, fleet application, independent car lock  
14 facilities. PIIRA activity is something that needs to  
15 be a rather specific in terms of scope, so we can -- it  
16 is possible to undertake a rule-making. We have done  
17 this, as I mentioned, five years ago. And that process  
18 would involve bringing in all the Stakeholders, Staff  
19 proposing what that scope of the data collection would  
20 look like, how we would propose to collect it, what new  
21 affected parties would be involved, potential cost to  
22 them, and the timeline to work all this through the  
23 system.

24 So, it's a long process, I won't say it'll be  
25 short, but our ability to judge how well petroleum

1 reduction is occurring or to be able even to measure  
2 that is handicapped by our inability to peer in and  
3 obtain information that's credible from these fleets.  
4 And even Federal military operations that have  
5 recently -- in recent years -- more at the forefront of  
6 using, say, biodiesel, E-85, and now going to bio blends  
7 in military jet fuel. So the ability to measure that,  
8 and assess it -- right now we don't have the explicit  
9 authority.

10           We could do an ad-hoc survey of -- that we do  
11 every year for retail -- it could be for all of these  
12 other non-retail outlets, so we believe we have the  
13 authority to do that on a one-time basis, but we need to  
14 consistently reach out, collect that data, include all  
15 of those appropriate Stakeholders, identify new  
16 Stakeholders coming to that process, that kind of  
17 activity to be able to get a firm baseline from which to  
18 measure change.

19           So, yes, we've -- you know, it's been a concern  
20 for a little while, so, this is something we've been  
21 thinking about internally. And, so I guess back to the  
22 dais, it's sort of a joint effort here, where the  
23 Commission would like to go, but I think that's a very  
24 good suggestion from a Staff perspective.

25           VICE CHAIRPERSON BOYD: Thank you, Gordon. What

1 I would have said, and will say, is I was aware that the  
2 Staff was looking at this question. I was aware -- we  
3 are aware also that Staff does get the data it gets now  
4 through, you know, surveys, outside of PIIRA that people  
5 have been cooperating with us on. So, I don't think  
6 you're flying blind. I'm afraid you used that  
7 expression, Gordon. But, I think we -- we're convinced  
8 you have a reasonable amount of data, and as we look to  
9 the future, Gina, that's a very good suggestion, and I  
10 am sure the Staff will continue to pursue that.

11 MS. GREY: Thank you. And the second part was a  
12 request. And I think this relates to the fact that, we  
13 as WSPA have been at this dais for many, many IEPRs, as  
14 you know Jim. And I think we find it interesting that  
15 Staff concluded that government policies have been the  
16 main drivers of alternative fuel use in California.  
17 Staff referenced the South Coast Fleet Vehicle Purchase  
18 Policy, yet they also concluded that retail sales of  
19 alternative fuels remain a small share of transportation  
20 fuel use in the state. And I guess this really  
21 underscores in our mind the questions to whether an  
22 aggressive policy, such as ARB's LCFS is in fact  
23 achievable, or even realistic in the marketplace within  
24 the required timeframe that has been provided. And I  
25 think this goes to Commissioner Peterman's comment, or

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1 request, that we would really like to see more of a  
2 retrospective analysis going back to all the earlier  
3 IEPRs.

4           And I think we've said this, actually, in some  
5 of our earlier comments this year, where the CEC would  
6 go back and actually look at what were the projections  
7 for the future years, trying to tie that into what's  
8 occurred, or what has not occurred. And, you know, all  
9 the government alternative fuel programs that were  
10 mentioned, they've received substantial subsidization  
11 over many years. So, if the Commission could devote  
12 some portion of the report to just going back and  
13 looking at what has hampered this transition to a non-  
14 hydrocarbon future, and provide some commentary on that,  
15 I think that would be useful in the actual IEPR, you  
16 know, in addition to perhaps this Transportation report.  
17 But definitely in the IEPR, as well. So it's just a  
18 request.

19           VICE CHAIRPERSON BOYD: Thank you.

20           COMMISSIONER PETERMAN: Thank you for that  
21 request. As you were talking, I was thinking about the  
22 fact that with our last AB-118 plan with nearly 100  
23 million dollars for alternative fuels, but I believe the  
24 request was 1.3 billion that -- yes of interest. And  
25 so, I say right off, one thing that's hampering the

1 industry is just the ability of financing. And, but  
2 we'll take your comments under consideration. Thank  
3 you.

4 VICE CHAIRPERSON BOYD: And don't get me going  
5 on subsidies to the petroleum industry over the decades  
6 and centuries.

7 MR: CARMICHAEL: I'm here to help. Tim  
8 Carmichael with the California Natural Gas Vehicle  
9 Coalition. I have some comments that I'll give later  
10 that talk more general about the IEPR and where we are  
11 relative to natural gas. And a brief conversation that  
12 I've already had with Staff, and I appreciate the  
13 request from Ryan for any additional contacts and data  
14 from the industry, and I'm working on that with my  
15 membership.

16 Just a couple of things from this presentation,  
17 specifically. On slide 17, I want to note that it's a  
18 little dangerous to -- point four there, "the initial  
19 analysis of retail alternative fuels indicate the  
20 consumption. These fuels are unstable and likely highly  
21 sensitive to changes in economic conditions." That's a  
22 little dangerous to make a comment that broad, given the  
23 mixed development of the alternative fuels industry.  
24 Not all the fuels are progressing on the same  
25 trajectory. Not all are trying to feed the same market

1 segment -- transportation market segment.

2           And so, I would caution against a statement like  
3 that in the IEPR because -- take natural gas, for  
4 example -- the trend for the last several years has  
5 shown in the slide -- the next slide, 18 -- has been up,  
6 and actually in a down economic time. And part of that  
7 is because of the very favorable price point for natural  
8 gas when compared to diesel. And I think it would be  
9 helpful for the IEPR to have an additional slide like  
10 this, but comparing the fuels that really compete with  
11 diesel today -- primarily compete with diesel -- shown  
12 as a percent of diesel consumption in the state. Note  
13 on this slide, all the alternative fuels are shown as a  
14 percent of gasoline consumption. But biodiesel and  
15 natural gas, really most of it is being consumed by  
16 heavy-duty vehicles competing with diesel. And I think  
17 that might be a helpful comparison point for another  
18 slide.

19           And then, finally, on the next slide, just a  
20 point about, you know, the CEC working with the data  
21 they have and I will take some responsibility for my  
22 membership not yet providing as much information as we  
23 can to the CEC Staff to make the report that much  
24 stronger this year. But, you know, having to go back to  
25 2006 to calibrate numbers five years ago is just not

1 good enough, and we can do much better here in  
2 California, and our membership are going to do our best  
3 to help the CEC Staff get much more current data. Thank  
4 you.

5 VICE CHAIRPERSON BOYD: Thank you, Tim. And  
6 appreciate your offer of cooperation. I guess I could  
7 have said at the opening of this meeting that a very  
8 sincere thanks to the Staff. We have about -- we have  
9 half the amount of people doing twice the amount of work  
10 that we used to have to do. So this was a herculean  
11 task in and of itself, and we do need collaboration,  
12 cooperation from all involved.

13 Uh, your point about that bullet -- I reacted a  
14 tiny bit to the use of the word 'unstable'. I'm not  
15 sure the rest of the sentence is -- because things are  
16 highly sensitive to changes in economic conditions. But  
17 I hear you, and that's a good point, and we always have  
18 to be careful -- we in government -- what we say in  
19 terms of concerning people. On the other hand, they  
20 rarely pay attention to us anyway. But, in any event,  
21 good point.

22 COMMISSIONER PETERMAN: Yes, I agree with your  
23 point on bullet four. Since fossil fuel usage is also  
24 sensitive to economic conditions. So, Ryan --

25 MR. EGGERS: One bad is not that bad, so --

1           Well, thank you Commissioner, Stakeholders. At  
2 this time I'll turn my presentation over to my  
3 colleague, Aniss Bahreinian.

4           MS. BAHREINIAN: Good morning Commissioners,  
5 Staff and Stakeholders. My name is Aniss Bahreinian,  
6 and I work at the Forecasting Unit in the Fossil Fuel  
7 Office. Uh -- height difference, sorry.

8           Uh, I'm here today to talk, not about numbers,  
9 but rather about concepts and measures that goes in to  
10 the machinery that generates those numbers.  
11 Specifically I'd like to add clarity to the discussions  
12 on why periodically we conduct a California Vehicle  
13 Survey.

14           We're explaining how the survey fits into the  
15 fuel demand forecast and analysis, how it is different  
16 from other surveys, how it is different from past  
17 surveys, and how it is related to our collaborations  
18 with other State and local agencies. We also, of  
19 course, like all the other presenters would like to seek  
20 your feedback on what you think to be important in this  
21 process.

22           Starting point with any kind of model or survey  
23 design is what questions do we want to answer and what  
24 policies do we want to evaluate? So that is our number  
25 one starting point. The response to these questions

1 will guide our model and survey designs. For instance,  
2 you may ask us how much natural gas will be used in the  
3 transportation sector in the next 20 years. This will  
4 raise a series of related questions for which we will  
5 need to find an answer before we can respond to your  
6 question, including, what are the consumer preference  
7 for natural gas vehicles. So there are a number of  
8 other questions that need to be answered first, like  
9 what is the price of natural gas, what kind of  
10 technologies will be in the market, etcetera. But one  
11 of them is the consumer preferences for natural gas  
12 vehicles.

13           Now, how does it work? Well, survey design --  
14 we start out with survey design. We are going to  
15 execute the survey, so we move on to survey execution,  
16 and we are going to collect a survey data. What is  
17 important for you to know here is that our survey is  
18 designed to estimate a model. We are not conducting an  
19 opinion survey; rather we are conducting a survey, the  
20 results of which we are going to be using in estimating  
21 a model that is going to be used to produce quantitative  
22 numbers.

23           So the survey data, then -- if you go to the  
24 second row of boxes -- you will see that the survey data  
25 is then being used to estimate vehicle transaction and

1 choice models. The most important of these for  
2 everybody here is their vehicle choice model. Now, what  
3 do I mean by estimated vehicle choice models? What I  
4 mean are -- what is referred to in economics as utility  
5 functions. And 'utility' is a term that economics use  
6 to equate with satisfaction. So, we want to know, for  
7 instance, how much satisfaction you are going to get  
8 from driving a natural gas vehicle, from buying a  
9 natural gas vehicle.

10           Then we are going to move to the forecasting  
11 model. So the way that I would articulate the  
12 difference between the forecasting model and the  
13 estimated model is that in the estimated model we have a  
14 bunch of behavioral equation that measures the utility  
15 that you derive from the different vehicles and vehicle  
16 attributes. In the forecasting model, on the other  
17 hand, we are going to add some accounting equations to  
18 those behavioral equations so that you can measure the  
19 probability of you selecting a natural gas vehicle,  
20 based on how much satisfaction you are deriving from  
21 that, and based on your income, prices etcetera.

22           Then this vehicle -- in addition to the utility  
23 functions that we have, of course we are going to have  
24 to occupy this forecasting model with economic and  
25 demographic projections. My colleague, Ryan Eggers,

1 goes to -- at length in order to sum up a lot of these  
2 demographic and economic projections to fit it into this  
3 forecasting model.

4 In addition to that, one important piece of this  
5 forecasting model is what is called vehicle attribute  
6 projection. Vehicle attribute projection is what the  
7 manufacturer -- the attributes of the vehicles that the  
8 manufacturers are planning to offer in the market.

9 I need to emphasize here that we do not have a  
10 vehicle supply model, we have a vehicle demand model.  
11 And therefore, we seek the services of our consultant,  
12 Mr. KG Duleep, who does have a vehicle supply model,  
13 then he uses his model to generate the vehicle  
14 attributes that go into the forecasting model that we  
15 have for light-duty vehicle demand.

16 And this light-duty vehicle demand forecasting  
17 model is fed into Dynasim software, which also houses  
18 travel demand models, aviation model, and freight model.  
19 And then at the end it is going to generate fuel demand  
20 forecast.

21 So, we go through a lot of different steps in  
22 order to do that, but the biggest portion of our model  
23 is the vehicle demand model. As you know, a lot of the  
24 consumption fuel -- transportation fuel consumption  
25 happens with the light-duty vehicles in California and

1 that is an important piece of our equation.

2           Are there other surveys? Why do we have to do  
3 surveys here? Well, yes, there are other surveys that  
4 can inform the question that you raise. But I want to  
5 kind of bring your attention to one thing. You ask me  
6 how much natural gas we are going to use. You didn't  
7 ask me whether or not we are preferring natural gas  
8 vehicles to others. You didn't ask me how much. So in  
9 order to answer that question I am going to have to go  
10 through a more detailed analysis to provide an answer  
11 for you.

12           Some of these surveys that are out there are  
13 opinion surveys, others rely on manufacturers'  
14 perspectives, some are national surveys and not specific  
15 to California, some are out of date and do not reflect  
16 current consumer preferences.

17           So, but we all know -- and especially some of  
18 the economists that are included among our  
19 Commissioners -- we know that as consumers are engaged  
20 in making choices, they have -- they take out their  
21 calculator and they make comparison. All right, how  
22 does the price of this vehicle compare to the other one,  
23 what is the tradeoff between price and performance of  
24 the vehicle, et cetera. That is why our stated  
25 preferences survey is needed, and that is what it is

1 going to enable us to do. It's going to enable the  
2 tradeoff between all these different attributes.

3           This is an example of one of those surveys --  
4 one of the other surveys that I talked about. This is  
5 Green Cars Consumer Report National Research Center.  
6 This is the 2010 survey, so it is a recent survey. And  
7 as we can see here, it is looking at people's  
8 preferences for different attributes of the vehicle by  
9 age, gender, household income, and region. And you can  
10 see obviously the west coast here. What it is for the  
11 West Coast is not California.

12           This is another question that they're asking.  
13 What power type are considered for new vehicles? What  
14 power type do you think is most likely for you to  
15 purchase? So, as you can see here, conventional  
16 gasoline, no surprise it comes out with 69%. Flex fuel  
17 is 38% for men, 32% for women. So there are some gender  
18 difference, there are age differences and there are  
19 income differences between the consumers.

20           What we need to know is whether or not survey  
21 participants intend to buy a vehicle. So, do you want  
22 to buy a vehicle? That's our question. If you do want  
23 to buy a vehicle, then what vehicle do you prefer to  
24 another type? What vehicle type do you prefer to  
25 another vehicle type? Consumer preferences are revealed

1 in the vehicles that they already purchased. So if you  
2 have a Mercedes Benz, I know you prefer that car. And I  
3 know that you obtain satisfaction from driving a  
4 Mercedes.

5           So when I look at the cars that you do own, I'm  
6 looking at your revealed preferences. But if I'm  
7 talking about the cars that are not yet in the market,  
8 or policies that are not yet implemented, then I'm going  
9 to have to rely on what you say, and that is what we  
10 call stated preferences. So I have to ask you, what do  
11 you think? Are you going to do this? Well suppose that  
12 there is a car with these attributes, are you going to  
13 buy it when it times come -- when the time comes for you  
14 to purchase it? Now, do they actually do what they say?  
15 Well that's always likely that some people don't. But  
16 it is a reliable method that we have used. And they are  
17 planning to test that. We have obtained our own data,  
18 and in the future we are planning to follow some of  
19 these consumers and see if they actually did what they  
20 said they would do.

21           Stated preferences survey creates hypothetical  
22 vehicles. A lot of people have heard about stated  
23 preferences survey, but we need to explain what they do  
24 here. They create hypothetical vehicles to represent  
25 the vehicles and attributes that do not currently have

1 an established market. But as well as the ones that do.  
2 Stated preferences surveys describe a hypothetical  
3 vehicle type to the participants by its attributes. So  
4 we don't tell them, this is a hybrid, are you going to  
5 buy it or not? You're going to describe the attributes  
6 of this hybrid vehicle, including its price, including  
7 miles per gallon, fuel efficiency and other attributes,  
8 range and others, and then you are going to ask them,  
9 well alright, now you make your choice. So we give them  
10 a set of four vehicles and then we ask them, choose one.

11           This is a sample one. For instance you see here  
12 Vehicle A, Vehicle B, Vehicle C, Vehicle D. If you  
13 participate in this survey -- in this stated preferences  
14 survey, you'll notice that we are talking about the fuel  
15 type. Well, I've done A is gasoline, B is full  
16 electric, C is hybrid electric, and D is natural gas.  
17 But it is not just the fuel type, it's also all these  
18 other attributes, like purchase price, incentives that  
19 may be offered on these vehicles, MPG or equivalent fuel  
20 cost per year. One of your concerns as a consumer is  
21 how much is it going to cost you to drive this vehicle.  
22 And then, of course, the maintenance cost, accident  
23 insurance, etcetera. And then at the bottom you see the  
24 row select one. We collect that information.

25           So, if you notice here, what do I have? I have

1 Vehicle A, Vehicle B, Vehicle C, Vehicle D. We have a  
2 gasoline, we have a full electric, we have hybrid  
3 electric and we have natural gas. Now, if all of our  
4 vehicles -- if all of our choices are going to include  
5 these, but not another fuel type, we cannot include that  
6 in our model. We cannot accurately gauge consumers'  
7 preferences for a hypothetical vehicle, or vehicle  
8 attribute, if it has not been presented as a choice to  
9 respond, as in the choice experiment. So they need  
10 to -- somehow it needs to be offered to them.

11 We cannot place a hypothetical vehicle in the  
12 choice experiment without having some realistic idea  
13 about the range of its attributes, including, but not  
14 limited to, price and MPG. We cannot include a vehicle  
15 in the estimated model if it has not been part of the  
16 stated preferences survey. So it all fits together.

17 Vehicle surveys have revealed unstated  
18 preferences. So when I say revealed unstated  
19 preferences, when I survey and individual I am asking  
20 then well what kind of vehicles do you own. That's the  
21 revealed preferences. Then I give them this -- to some  
22 of them who are planning to purchase this vehicle -- I  
23 give them this stated preferences survey, and so they  
24 are going to tell me what it is they are going to buy.  
25 That's their stated preferences. We have been doing

1 that since early 1990's. This survey is conducted  
2 periodically at the Energy Commission to assess shifts  
3 in consumer preferences. So what we want to know if  
4 whether the consumers have changed since last time we  
5 conducted this survey. That's the reason why we are  
6 conducting them periodically.

7           The 2011 survey is going to defer from previous  
8 vehicle surveys at the Energy Commission by integrating  
9 household vehicle survey with CalTrans travel survey.  
10 CalTrans is conducting their travel survey, as you know.  
11 We have been involved with them. So what we are going  
12 to do is to combine our survey -- integrate our survey  
13 with what they do. In other words, we are going to  
14 select from the same pool of participants that are  
15 participating in CalTrans travel survey, and from those  
16 we are going to select individuals to complete vehicle  
17 surveys.

18           The 2009 vehicle survey included more  
19 alternative fuels than previous surveys. It included  
20 CNG and electric vehicles not in the 2007 survey. So we  
21 had those two additional fuel types in the 2009 survey.  
22 2009 vehicle survey did not include hydrogen vehicles in  
23 the vehicle choices. It included more regional  
24 differentiation. So we did look at, for instance, San  
25 Francisco versus Los Angeles versus Sacramento and see

1 what these differences are.

2 It also included cell-phone only households. As  
3 you know, a large portion of the population are just  
4 holding cell phones. So if you're calling people on  
5 land lines, you are going to miss those individuals. So  
6 we did include cell phone only households. It also  
7 included model estimated for more refined market  
8 segments. In 2007 we only had one and two-plus vehicle  
9 households. But in 2009 we had one, two and three-plus  
10 vehicle households.

11 So, what did 2009 survey say? This is obviously  
12 very brief and just highlights some of the preferences.  
13 It says that all California consumers, households and  
14 commercial prefer gasoline vehicles to electric and CNG  
15 vehicles. It showed that households with more than one  
16 vehicle prefer PHEV, hybrid, FFV and diesel to gasoline.  
17 It showed that households with more than one vehicle,  
18 they respond positively to all the incentives. We had  
19 five incentives and they responded positively to all the  
20 incentives.

21 On the other hand, households with one vehicle  
22 prefer hybrid to gasoline. Not the other types of  
23 alternative fuels. They also respond positively only to  
24 tax credit. So tax credit was actually something that  
25 was attractive to all consumers. All commercial sector

1 fleet owners respond only to the HOV lane incentive.  
2 Obviously it's going to make them drive faster, and for  
3 businesses, time is money.

4           Now I'm going to turn to what we are doing,  
5 which is related to these surveys, and those are the  
6 survey and modeling collaborations. We are  
7 collaborating with CalTrans, since 2008, on their  
8 Household Travel Survey project. Cal Trans actually  
9 approached us in 2008 and we have been in conversation  
10 with them since then. In 2009 we helped CalTrans, or we  
11 participated in the development in their RFB. Since  
12 2010, my colleague Bob - Bob McBride and myself, we have  
13 been participating in the Steering Committee, and the  
14 Technical Advisory Committees of the CHTS. That is also  
15 including ARB and multiple local agencies. I have also  
16 been participating in the Administrative Committee of  
17 the CHTS, in addition to that.

18           We also have contributed funds to equip travel  
19 survey participants driving alternative fuel vehicles  
20 with GPS and OBD. We have also participated, with my  
21 colleague Bob McBride, in the Peer Advisory Board  
22 involved in the development of the CalPECAS model, now  
23 known as CalSIIM model since 2008. We have served on  
24 the interagency team involved in updating RPP guidelines  
25 to meet SB-375 with our colleagues in Special Projects

1 office.

2           As a result, collaboration and coordination with  
3 CalTrans, SCAG, and others is built into the 2011 survey  
4 design. So it is not just in words that we are  
5 collaborating. We have designed our survey so that it  
6 integrates with CalTrans travel survey. 2011 vehicle  
7 survey will create an integrated travel and vehicle  
8 survey data. So what is important for us is that we are  
9 going to have a database that we can use later after  
10 2013 to build an integrated travel and vehicle choice  
11 model. We can't do it before then, but after 2013 we  
12 can do that.

13           We also have started conversation with ARB since  
14 last month, on scope modifications of our future  
15 projects, as well as consumer choice projects listed on  
16 ARB's Strategic Research Plan. We examined vehicle  
17 demand models at ARB, and CEC coordinate -- I'm sorry --  
18 coordinate integrate travel and vehicle choice model,  
19 they are interested in the same thing that we are  
20 pursuing. And potentially on commercial vehicle travel  
21 survey because the field is actually lacking in  
22 commercial vehicle travel survey. There's a lot of  
23 household surveys but not enough commercial vehicle  
24 surveys. And we're talking about the light duty,  
25 although it could potentially expand to medium and

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1 heavy-duty, as well.

2 A project is also due to begin for SCAG using  
3 our 2009 vehicle survey data to explore the relationship  
4 between land use and vehicle choice. We want to see  
5 whether land-use patterns are influencing your choices  
6 of vehicle.

7 I'm sorry -- I think everybody knows the  
8 benefits of collaboration, and I have been asked to be  
9 short. So next, looking forward to 2013 and beyond.  
10 Any questions? Commissioners? Advisors?

11 VICE CHAIRPERSON BOYD: I have no questions.  
12 Commissioner Peterman?

13 COMMISSIONER PETERMAN: I do. I have a couple  
14 of questions but also a bunch of paperwork -- under the  
15 questions here.

16 Hi. Thank you for that presentation. A few  
17 questions. First, starting with slide number seven -- I  
18 wasn't sure how to read this table, since the totals are  
19 beyond 100.

20 MS. BAHREINIAN: Absolutely, that's a question  
21 that came up before.

22 COMMISSIONER PETERMAN: Okay.

23 MS. BAHREINIAN: And I have to say that I took  
24 this out of another slide presentation. I don't have  
25 the entire document --

1 COMMISSIONER PETERMAN: Okay --

2 MS. BAHREINIAN: -- to fully respond to that.

3 But I think they have been given more than one choice,  
4 that's why you see more than 100%.

5 COMMISSIONER PETERMAN: Okay. Yeah, we get to  
6 follow up on that. Yeah, and I'll also be interested in  
7 what went with the first choices, but -- good  
8 background.

9 And then, I appreciated your discussion about  
10 the extent to which we've included alternative fuels in  
11 the past surveys. I think this gets at the question  
12 that was raised earlier about why we don't have more  
13 historical data, or an accurate record of alternative  
14 fuel vehicles. And so, I guess I would just ask Staff,  
15 I note here that we did not include electric vehicles or  
16 compressed natural gas in the 2007 survey, but there  
17 were vehicle at that point in time. So, let's  
18 reconsider what our minimum threshold is to start  
19 including a representative vehicle type, just to make  
20 sure that in the 2011 survey that, if there are any that  
21 are really small we not -- consider including just  
22 because a two year time frame can make a difference, and  
23 it would be good to have a larger record beyond --  
24 before 2009. So let's start establishing that.

25 And also, since we're basing this analysis off

1 of the 2009 survey, I hope there's an opportunity -- and  
2 let's talk about what type of opportunity there is to  
3 use the information in the 2011 survey and provide  
4 that -- whatever trends or insights come from that  
5 before the 2013 IEPR. So, perhaps you can comment on  
6 how long the 2011 survey process will take. But I'd  
7 like to, just at least get some type of in-between  
8 document just with some update about how this would have  
9 changed.

10 MS. BAHREINIAN: Absolutely. What will happen  
11 is that the count -- as you know I have been trying to  
12 explain here that our vehicle survey is not married to  
13 CalTrans CHTS survey. The CHTS survey is due to end  
14 mid-2012. They have to complete data cleaning, data  
15 processing because those would be raw data, and they  
16 expect that by the time they would be finished with that  
17 is going to be the end of 2012 or beginning of 2013.  
18 Which is also going to coincide with our 2013 IEPR.

19 COMMISSIONER PETERMAN: Okay, that makes sense.  
20 I still have some concern that will take us a while to  
21 get a sense of where the technology preferences are now,  
22 but appreciate your continuing to think about it.

23 MS. BAHREINIAN: Sure.

24 COMMISSIONER PETERMAN: I understand the  
25 limitations with the combined survey.

1 MS. BAHREINIAN: We can give you portions of the  
2 data, but not the complete data, because they have  
3 already started the pretest. And from what I see  
4 actually it is encouraging, because one of my concerns  
5 was whether we have good representation of all the three  
6 vehicle categories, one vehicle, two vehicle and three-  
7 plus. And I was looking at it the other day and it was  
8 actually matching the distribution in California, which  
9 is good for us. But that's pre-test. So we have to  
10 keep our fingers crossed and hope that it's going to be  
11 the case for the entire survey, not just the pre-test.

12 COMMISSIONER PETERMAN: That's great. And  
13 again, any preliminary information that you can provide  
14 in the interim -- appreciated. Thank you so much.

15 MS. BAHREINIAN: Any questions from  
16 Stakeholders? Staff? Yes.

17 MR: CARMICHAEL: I promise I'm not going to do  
18 this all day long, but one quick point. I think UC --  
19 to your question -- your last question, Commissioner  
20 Peterman -- I think UC Davis, Berkeley, and I think UC  
21 Riverside are all doing their own sort of vehicle trend  
22 surveys -- different departments there are doing vehicle  
23 trend surveys -- and the Commission may be well served  
24 by trying to tap into what's available from them. Maybe  
25 it's an alternating year type process or shorter

1 timeframe to get more current data. Or maybe it's  
2 already happening at the Staff level, but I want to make  
3 sure that the Commission is tapping into outside  
4 resources, as well.

5 VICE CHAIRPERSON BOYD: Thanks Tim. We are  
6 aware of those surveys. We -- I'm aware the Staff talks  
7 to them fairly regularly, and we encourage the  
8 individual institutions to try to reconcile their own  
9 numbers with each other, as well. So -- but good point.

10 MS. BAHREINIAN: Any other questions? Okay.

11 MR. ANDERONI: I have a question. Hello?

12 MS. BAHREINIAN: Anthony, do you want to --

13 MR. ANDERONI: Yes --

14 MS. BAHREINIAN: -- ask the question?

15 MR. ANDERONI: I can just -- I'm sorry --

16 VICE CHAIRPERSON BOYD: We need to turn the  
17 volume up. We can't hear you.

18 MR. ANDERONI: How's that?

19 VICE CHAIRPERSON BOYD: Still not discernable.

20 MR. ANDERONI: Okay. If I speak up can you hear  
21 me better?

22 VICE CHAIRPERSON BOYD: If you really speak up  
23 loud we might barely hear you. Go ahead and try.

24 MR. ANDERONI: I just had one clarification  
25 question, in asking why national data was presented

1 versus California-specific data.

2 MS. BAHREINIAN: Sorry, I couldn't hear.

3 MR. ANDERONI: I did also send my question via  
4 the chat, so it may be handled through that, as well.

5 MS. BAHREINIAN: Well, the reason why we are  
6 presenting -- we first of all, as I said, we basically  
7 use our own data to build a model. That's the purpose  
8 of our own data. So we have not really presented a  
9 summary result, like the national survey did. But one  
10 of the reasons why I used that was because it was the  
11 more recent data, it is a 2010 survey, versus our survey  
12 that started in 2008 and ended in 2009. That was one of  
13 the reasons why I included the national survey.

14 I also wanted to point out that there are gender  
15 and age differences in the national survey. You can  
16 clearly see some of the gender/age differences when it  
17 comes to vehicle preferences. But I also want to note  
18 that we have not included gender and age in our  
19 forecasting model. Although, when we have the data, the  
20 survey data can be really used to estimate a lot of  
21 different varieties of models. But we have to be  
22 concerned because our purpose is to do -- produce  
23 forecast, we need to be able to get the data that can be  
24 used in projection of those inputs by gender and age, if  
25 you are going to use them. And doing so is going to

1 increase computational demand of the model and we have  
2 not done so yet.

3 MR. ANDERONI: Yeah, and I just think what Tim  
4 brought up earlier was due to the fact that, you know,  
5 California has a very different demographic when it  
6 comes to vehicle choices. And I know you all work very  
7 closely with the Air Resources Board. But given the  
8 fact that there are a significant number of hybrids in  
9 California versus other states, and the fact that more  
10 electric vehicles are going to be predominant in  
11 California, does skew the overall data picture.

12 MS. BAHREINIAN: Yes. Actually, the national  
13 survey also -- if you look at the column again, which is  
14 regional, it show that Western states have higher  
15 preferences for hybrid vehicles. In addition to that,  
16 in our last survey we also noted that, for instance,  
17 different regions in California have different  
18 preferences. San Francisco is a prime area that has  
19 higher preferences for hybrid vehicles compared to the  
20 rest of the state. Los Angeles has higher preferences  
21 for sports vehicles, etcetera. So there are regional  
22 differentiations within California.

23 MR. ANDERONI: Thank you.

24 COMMISSIONER PETERMAN: Uh, so just a follow up  
25 question on that. Can we summarize our data in this

1 type of tabular format?

2 MS. BAHREINIAN: Uh --

3 COMMISSIONER PETERMAN: I appreciate it goes  
4 into the forecast, but I think it's such a great  
5 resource that we're already doing --

6 MS. BAHREINIAN: Absolutely --

7 COMMISSIONER PETERMAN: -- that it would be  
8 useful just to have something like this so that we're  
9 all aware where we are.

10 MS. BAHREINIAN: Absolutely. We can do that.

11 COMMISSIONER PETERMAN: That would be terrific,  
12 thank you.

13 MS. BAHREINIAN: Any other questions? If  
14 there's no other question, then I'm going to introduce  
15 our next presenter that I promised early on. I said  
16 that we do not have a vehicle supply model. Vehicle  
17 supply model belongs to Mr. Duleep. And Mr. Duleep is  
18 the President of H-D Systems, a consulting firm  
19 affiliated with ICF International. He is well-known for  
20 his -- for the work that he has completed on projecting  
21 vehicle attributes, not just to the CEC. He has been  
22 affiliated with CEC since 1991, but also with the  
23 Department of Energy and elsewhere. He is a well-known  
24 consultant in this area. And, I'm going to just -- he  
25 has advanced degrees in Engineering, and in addition to

1 a Master's Degree in Business. So, without further ado,  
2 I'm going to introduce Mr. KG Duleep of H-D Systems  
3 Consulting.

4 MR. DULEEP: Thank you Commissioners. I  
5 appreciate the opportunity to be here. And I'm also  
6 happy that it's a good deal less foggy than I saw you  
7 last, Commissioner Boyd.

8 VICE CHAIRPERSON BOYD: Yes, welcome here, KG.  
9 A little warmer, too.

10 MR. DULEEP: Yeah, a little warmer too, yeah.  
11 Uh, just to segue from Ms. Bahreinian's talk, she gave  
12 you a little overview of how the system operates. And  
13 they use a consumer choice model. And just listening to  
14 the comments from the floor, and Ms. Bahreinian's  
15 comments, we do work with US Davis and Oakridge National  
16 Lab and all of these people in supporting it. And over  
17 the years, I must say that the stated preference  
18 approach seems to be very time-consuming, very  
19 expensive. And perhaps now that many of these cars are  
20 coming into the field a revealed preference would be a  
21 much easier and more reliable way to go in my opinion.  
22 But having said that, the supply model actually supports  
23 either type of model calibration.

24 What the CEC model requires is a forecast for 15  
25 different car and light truck classes. So we support

1 the light-duty model, as well as different fuel types  
2 and plug-ins and regular and conventional hybrids. The  
3 model that -- just to give you a small overview -- we  
4 developed a model when we were EEA, known by a different  
5 name in the late '80's. We've supported the National  
6 Energy Modeling System, which uses a very similar model.  
7 And essentially what we try and do is to simulate  
8 manufactured decision-making, on what new products to  
9 offer given the situation of the economics.

10           And I think the one drawback that we have now is  
11 that our model doesn't interface in a dynamic way with  
12 the CEC model. It's sort of a one-way communication.  
13 And any two-way communication is only through discussion  
14 with Staff and refinement after looking at their  
15 outputs. And it would certainly be nice if the models  
16 could talk to each other.

17           The vehicle classes, we have sort of defined  
18 them in the usual way. They are relatively homogenous  
19 groups, from a consumer perspective. So we have six car  
20 classes, and one extra one that's called the small-tall  
21 wagon which is like a Toyota Matrix or the Chevy HHR or  
22 something like that. We have lots of classes of SUVs  
23 because CEC wanted to differentiate between the  
24 crossover type SUV and the body and frame types. And we  
25 have standard vans, and compact vans and pick-up trucks.

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1 And of course the pick-ups and the standard vans are  
2 generally mostly cargo. And we have gasoline, diesel,  
3 ethanol, CNG and electricity. So, it's a tall order,  
4 we're required to forecast all this for the next twenty  
5 years. And what I'm hoping I'd do today is just give  
6 you a quick overview of how we do it.

7           The attributes that are of most interest to CEC  
8 are vehicle price, the fuel economy, and then some  
9 variables that relate to the performance of these  
10 vehicles. So the performance metrics they want -- the  
11 zero to 60 acceleration time, they want a measure of  
12 grade ability, which is at this point somewhat poorly  
13 defined, but we understand it as the speed over the hill  
14 climb, and range which just turns out to be nothing but  
15 of course on-road MPG times tank size.

16           And another important variable, which at least  
17 we managed to make that one interactive, is a number of  
18 vehicle makes and models within each class. Because  
19 that represents how many choices the consumer has, which  
20 is important for these choice models. And we have to  
21 forecast all of these attributes at the vehicle class  
22 and fuel type level. So there's a lot of data coming  
23 out of these models.

24           So the basic concept behind this is that  
25 manufacturers respond to forces like economic pressure

1 and to fuel process by using new technology to update  
2 their vehicles. They don't sort of just make them  
3 cheaper or make them smaller if people want -- fuel  
4 prices go up. What they try and do is respond to that  
5 so that people can still have what they want by using  
6 more technology. And so really what this boils down to  
7 is really having a very good understanding of future  
8 vehicle technology improvements, and how do they impact  
9 cost, how do they impact performance, how do they impact  
10 fuel economy. And, of course, people don't pay cost,  
11 they pay price, but economic theory says that in a  
12 competitive industry retail price is related to cost.  
13 Because in the long run no manufacturer can extract the  
14 so-called rents or excess profits. And we've seen that  
15 to be generally true. There are short term periods when  
16 that can happen, but over the long term you can't  
17 extract rents.

18           So really, all of this is being driven in our  
19 model by our understanding of when technology is going  
20 to happen, and what they cost and what the timing is.  
21 Technology data collection becomes a very important part  
22 of this. And the way we do it, of course, is that we  
23 constantly monitor technology development throughout the  
24 world. And, of course, Commissioner Boyd, of London to  
25 even Paris and Berlin, and so on, so -- you know we are

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1 all there at the same time. And what we try to look at  
2 is research papers, data from prototypes and prototype  
3 vehicles. And we follow that up with extensive  
4 discussions with manufacturers and tier one suppliers.

5           And in this context, what's happening to the  
6 industry is they are pushing more and more technology  
7 development to the tier one suppliers. And by this I  
8 mean people like Delphi and Bosch and Siemens and so on.  
9 And that's nice for us analysts because the tier one  
10 guys are more willing to talk to us than the  
11 manufacturers are. And they'll often tell us a lot of  
12 details about how technology is developing because  
13 they're interested in marketing it to a lot of people.  
14 But more importantly, they often criticize their  
15 competitors, which is also very good for us because t  
16 hen we really understand what is happening in the  
17 technology.

18           And lastly, we don't just sit back. We sort of  
19 validate all these against what's coming out from the  
20 National Academy of Sciences, MIT and so on. And in  
21 this context, I have to say, as you know there is a 54.5  
22 MPG rule-making that's going on, and both EPA and ARB  
23 are very involved in it. And they put out a report late  
24 last year which had surprisingly low costs for certain  
25 key technologies. And that's kind of riled the

1 industry. We have incorporated that as a separate  
2 scenario, but we have in fact tried to examine that.

3           And now the whole issue is how do manufacturers  
4 adopt technology. And based on what they tell us, based  
5 on what industry -- on all the surveys we've seen, based  
6 on trying to model how consumers behave, it appears as  
7 though consumers are willing to pay for things that pay  
8 for themselves within four years. So if the fuel  
9 savings offset the cost of the technology -- it offsets  
10 the increased price of the car in four years, it looks  
11 like most consumers will buy that. And I'm using this  
12 in the sort of a discounted net present value basis, so  
13 if you do a simple payback, it's more like a three year  
14 payback. And all the manufacturers tell us that that's  
15 what they find with their own marketing people and so  
16 on. And that's how we represent what manufacturers will  
17 do, because consumers really buy a car, not a specific  
18 technology. And so manufacturers can make those  
19 decisions for them based on their understanding of what  
20 consumers like.

21           And so, obviously the cost benefit ration  
22 dictates the rate of technology adoption. And also it  
23 dictates ultimately what market penetration a technology  
24 can achieve. And where we see the effect of income is  
25 when you narrow it down and look at particular size

1 class levels is there -- how much performance people are  
2 willing to buy. So when fuel process go up more and  
3 more people by four cylinder engines rather than the V-6  
4 option, or the V-6 rather than the V-8. And so you see  
5 these shifts in horsepower that occur within the  
6 particular class. And so we've sort of incorporated  
7 that into the model.

8 To give you a very brief flavor of the kinds of  
9 technologies we have, what we have found is that even to  
10 respond to all the suture standards that are coming  
11 out -- greenhouse gas, the new CAFÉ standard and so  
12 on -- conventional technology is the cheapest thing to  
13 do always. And, so improving conventional technology  
14 is -- takes first place and we are seeing a lot of that  
15 happen today.

16 And some of the technologies are up on the  
17 screen; I won't read them out to you. But there's one  
18 in red called Turbo-GDI-VVT, which is to use a turbo  
19 charger and direct injection and downsize the engine  
20 substantially, so you can replace a, like a three and a  
21 half liter V-6 with a two liter turbo charged direct  
22 injection I-4, and that gives you a lot of fuel economy,  
23 and that's what GM and Ford and hopefully in the future,  
24 Chrysler will also be doing.

25 And that technology, although it's already here,

1 has still a long way to go. Here's a typical example of  
2 what somebody like Bosch tells us. You remember turbos  
3 were out even back, I think in the late '80's from  
4 Chrysler, and where -- and if you look at that, that's  
5 the green line in the graph where I think at the low  
6 speeds, like 1000 RPM would correspond to sort of trying  
7 to take off from a stop light or so, those cars were  
8 real dogs because the turbo wasn't up to boost. And so  
9 nobody bought them. But as you see how the technology  
10 is evolving, there's a huge emphasis on low-end torque  
11 with the new direct injection systems, and we're not  
12 done. There's still a long way to go.

13           And so, way out in the future we can see these  
14 engines producing enormous amounts of power. Maybe two  
15 and a half to three times the power that the old turbos  
16 were producing, and we have incorporated this kind of  
17 information that we get from suppliers into the  
18 forecast.

19           VICE CHAIRPERSON BOYD: KG, aren't -- my  
20 knowledge is more faint than it was years ago when I was  
21 at the Air Board, but the gasoline direct injection,  
22 does it not come with an emissions penalty?

23           MR. DULEEP: Not anymore. They've essentially  
24 solved that problem. They used to have a hydrocarbon  
25 penalty in the old days, but the new systems are much

1 better, and they are relying on earlier injection so you  
2 get better mixing of the air and fuel, and --

3 VICE CHAIRPERSON BOYD: Not a NOx penalty in the  
4 gasoline, for direct injection?

5 MR. DULEEP: And so -- no they're actually --

6 VICE CHAIRPERSON BOYD: Or partic -- how about  
7 particulates?

8 MR. DULEEP: I'm sorry?

9 VICE CHAIRPERSON BOYD: Particulates?

10 MR. DULEEP: This -- well there are some people  
11 think there might be issues with very fine particulates,  
12 but so far that's not been the case. That some of the  
13 tests they've conducted have shown very minor increases  
14 relative to conventional gasoline.

15 VICE CHAIRPERSON BOYD: Thanks.

16 MR. DULEEP: So, just as a quick summary of what  
17 we see in 2016, we see continuous lateral lift, we see  
18 gasoline direct injection, and then we see this  
19 Turbo-GDI combination. And one thing I brought to your  
20 attention is that when you replace a V-6 engine with a  
21 small four cylinder, you save money on the base engine,  
22 and therefore you pay for a lot of the other equipment  
23 that goes in the turbo charger and the direct injection.  
24 So the marginal cost of that technology becomes very  
25 low, which is why people are doing it now. It's a

1 fairly low-cost technology for what you get out of it.

2           And that -- as I said, that's not the end of it.

3 We see a lot of potential with the conventional engine.

4 Perhaps going up all the way to becoming as efficient or

5 even more efficient than a diesel engine, with things

6 like lean burn, combining that with turbo, and so on.

7 And those we see out in the future, coming perhaps in

8 the next decade. And all these technologies are

9 represented in our model. Similarly, we have

10 transmission technologies, the six and seven speed

11 automatics, and so on, the CVTs for the small cars, and

12 the dual-clutch automated manual transmissions for

13 sporty cars. So the whole range of transmission

14 technologies. And, of course, the big ones yet are the

15 weight reduction and drag and rolling resistance

16 reduction, and then driving the accessories

17 electrically.

18           And here I'd like to make a comment. This is

19 one of the areas where I think ARB recently put out a

20 report that claimed that you can do 20% weight reduction

21 on a car for almost -- for negative cost. And 40%

22 weight reduction for a very low cost. And I think all

23 the manufacturers were in an uproar about this. And

24 there are, in fact, considerable new studies going on to

25 see whether any of that is valid or not, since that

1 study was done by Lotus Engineering, which as you know  
2 is a very famous sports car maker. It had the added  
3 advantage of being -- at least had some credibility with  
4 all the participants.

5           We'll be looking at hybrid systems. There's a  
6 whole lot of them out there in the market. Of course,  
7 the Toyota system get -- it has two electric models and  
8 a battery will get you a lot of fuel economy, but it's  
9 also very expensive. There's one motor system of the  
10 Honda type that Hyundai is doing and Nissan is doing,  
11 and that seems to have the best cost benefit. And since  
12 we are going on a cost benefit basis, we have picked  
13 that system in our forecast for CEC.

14           Alternatively, though, we don't include things  
15 like drivability and feel and things like that. And at  
16 least some people think that the one motor system does  
17 not have the smoothness that the two motor system has.  
18 So it shows you the complexity with which we have to  
19 deal with in making these forecasts.

20           Electric vehicles, of course, we are seeing a  
21 huge surge of interest. But a lot of the costs there  
22 are being driven for batteries. And do the  
23 consideration of battery costs and how that will change  
24 with costs -- I mean with scale and learning is a big,  
25 big issue. We've recently completed work with the

1 European Union and for the Department of Energy and  
2 looking at these functions, and we have, in fact,  
3 incorporated a great deal of cost and learning-based  
4 cost reduction -- I'm sorry, learning and scale-based  
5 cost reduction for batteries within the scope of the CEC  
6 forecast.

7           Now, the whole issue of scale again brings up  
8 this issue. We don't forecast sales. The CEC model  
9 does. So in effect what we do is sort of -- we've  
10 picked the ZEV mandated targets as a reasonable  
11 expectation for where sales could shake out, to  
12 determine what the scale economies are. So this is an  
13 example where if you had the models talking to each  
14 other we might be more efficient. And especially now  
15 that we see the new CAFÉ standards coming out, we  
16 anticipate that hybrid and EVPATV penetrations will be  
17 driven more by mandates than by markets.

18           We've looked at diesels, of course. They're  
19 very similar to hybrid in many aspects, in terms of  
20 costs and benefits. But that's only in fuel economy  
21 terms, in greenhouse gas terms they're not that good,  
22 because diesel fuel has 12% more carbon than gasoline,  
23 per unit volume. So the fuel economy improvement you  
24 get is offset partly by the increased carbon in the  
25 diesel. So in a GG constrained world, as diesel starts

1 to look a little less attractive.

2           And second, I think you brought up the issue  
3 about where diesel fuel prices are going, and so on.  
4 Right now diesel fuel is selling at a somewhat higher  
5 price than gasoline. And for all of these reasons  
6 people seem to be losing interest in diesel. We see  
7 less and less attraction to diesel in the markets. And  
8 some of the programs that were due to come out in the  
9 last year or two have been cancelled.

10           VICE CHAIRPERSON BOYD: Somebody didn't like  
11 what you said, KG.

12           MR. DULEEP: That's okay --

13           VICE CHAIRPERSON BOYD: And downed the whole  
14 system. I would have thought Bosch might have done it,  
15 but they're sitting in the audience, so they couldn't  
16 have --

17           MR. DULEEP: Well, I think Bosch is doing very  
18 well with the gasoline direct injection, so --

19           And lastly, I was asked to comment on fuel cell  
20 vehicles. We don't have fuel cell vehicle in the  
21 forecast. And that was directly as a request from the  
22 CEC Staff for several reasons. First I think the model  
23 doesn't really have the capability to simultaneously  
24 model infrastructure, fuel supply and vehicles all  
25 trying to happen at the same time.

1           And second, I think we've seen the cost of fuel cells  
2 and hydrogen storage on the vehicles still are fairly  
3 significant issues. So, the -- any forecast that says  
4 yes we'll achieve these cost targets becomes problematic  
5 in terms of believability.

6           And lastly, I think we've seen the current  
7 administration at some auto manufacturer starting to  
8 back away from fuel cell vehicles, largely because they  
9 seem to have placed their bets on battery electrics, or  
10 plug-in hybrids. And so for these reasons, we haven't  
11 included the fuel cell vehicle within the scope of this  
12 forecast.

13           Uh, just a quick summary of where things are.  
14 For each percent reduction in fuel consumption, here is  
15 how much we think you spend. Conventional technologies  
16 in the near term, it's about 35-50 dollars per percent.  
17 By 2025 that will go down to 30-40 because of economies  
18 of scale and learning. But of course, you're to use  
19 them all up, so to speak, in just meeting the 2016  
20 standards. And we see advanced conventional occurring  
21 in 2025 for 50-60 dollars.

22           And you can see that the hybrids and the full  
23 hybrid and the plug-in still remain more expensive than  
24 the conventional technologies. But their costs do come  
25 down as battery costs come down. So the margin between

1 the two tends to fall very sharply. So as you move  
2 further out in the future, these technologies generally  
3 tend to become more cost-effective. Although that is  
4 partially offset by the fact that your conventional car  
5 itself is becoming more efficient. So it raises the  
6 legitimate question that if you already own a car that  
7 gets 40 or 50 miles per gallon, would you spend a lot of  
8 money to get from 50 to 60, and I think that's part of  
9 the issues that CEC has in their forecast.

10           What we've seen is CAFÉ and greenhouse gas  
11 standards, they are set to 2016 and we know President  
12 Obama has announced the 2025 standard, and the 2016 we  
13 believe can be met largely with conventional technology,  
14 just a fairly modest increase in hybrid vehicle  
15 penetration. I know that President Obama announced a  
16 54.5 Mile Per Gallon target, but that seems to be a  
17 pseudo number that has a lot of different credits and  
18 various restrictions for full-sized pick-ups and so on.  
19 So until we see the final regulation it'll be difficult  
20 to know exactly what that means and what fuel economy  
21 level is to be attained. But in any event, we do see  
22 that any kind of number in the high 40's, even, would  
23 require a large increase in hybrid an electric vehicle  
24 penetration.

25           So, because of this, the way we deal with it in

1 our model is that due to the both the ZEV mandate and  
2 the high CAFÉ standard, we show a large number of new  
3 models being introduced. And that gives the CEC choice  
4 model more choices among these vehicles to select from.

5 Another issue that was brought up briefly is the  
6 low carbon fuel standard, where we've kind of had to  
7 deal with that externally. I think Staff seems to  
8 believe that the low carbon fuel standard will largely  
9 be met with ethanol. But not with CNG or other fields  
10 in the light-duty segment. So we continue in our model  
11 to estimate light-duty CNG vehicle cost as a low-volume  
12 segment. So the costs are actually fairly high for  
13 conversion, just because there are no economies of  
14 scale.

15 But on the other hand, because of the ethanol  
16 push, we see flex-fuel model available, to continuing to  
17 expand. Even though in reality, once the CAFÉ credits  
18 are phased out after 2016 for flex fuel vehicles, the  
19 exactly the reverse may actually happen. So we are sort  
20 of forcing the model in this particular case.

21 Lastly, I just wanted to show you some quick  
22 results. If you have high fuel process and the -- just  
23 the 35 MPG CAFÉ standard, this is what we see mid-size  
24 vehicles -- which is the upper two lines -- mid-size  
25 vehicles and mid-size hybrids. And you can see that the

1 hybrid continues to maintain something like a 5 -- 6  
2 mile per gallon differential over conventional vehicles,  
3 although both are going up steadily. But in percentage  
4 terms, that comes down, because of course 6 miles  
5 divided by 27 is more than 6 miles divided by 37 -- by  
6 40 miles per gallon. And so in percentage terms, the  
7 differential narrows between hybrids and so on.

8           The other issue is that when you have  
9 differential fuel prices, we find the response to be  
10 fairly small, because right now, even just the 35 miles  
11 per gallon standard, technology is being driven more by  
12 mandates than by price. And so between the low and high  
13 fuel price, we see only a two mile per gallon increase  
14 in cars and a one mile per gallon increase in trucks,  
15 largely because the CAFÉ has squeezed out the  
16 differentials between -- squeezed out the technology  
17 response to fuel price by making it mandatory and the  
18 only response you're seeing is consumer shifting from  
19 more power to less powerful cars, within segment.

20           That's all I had. I'd be pleased to answer any  
21 questions.

22           VICE CHAIRPERSON BOYD: Thank you, KG, I have no  
23 questions. Commissioner Peterman, any questions?

24           COMMISSIONER PETERMAN: No, I don't have any  
25 questions at this time, thanks.

1           VICE CHAIRPERSON BOYD: I think Tim has a  
2 question for you, KG.

3           MR. OLSON: Yeah, thanks for the presentation.  
4 A couple questions. To your knowledge, given you worked  
5 for DOE on a very similar type of forecasting, how  
6 effective are the consumer choice surveys and models in  
7 predicting the introduction, expansion, in this case new  
8 vehicle technologies and fuels? And what's your  
9 confidence level -- how far in the future do you think  
10 that you're confident in that kind of forecast?

11           MR. DULEEP: I -- personally I believe that the  
12 revealed preference rather than stated preference is a  
13 much better way to go, because when we ask people  
14 questions they often tell you what you think they want  
15 you to hear, rather than what they'll really do. And in  
16 looking back at some of the DOE work on this and UC  
17 Davis work on this, we do see the over-estimating some  
18 of the newer technology market penetrations as a result.  
19 Just because people respond much more positively when  
20 they don't have any stake or they don't have to lay out  
21 cash for that response. So, from that standpoint I  
22 think I would certainly suggest that the CEC move to a  
23 revealed preference structure, because it will also save  
24 you money in the long run, I think, because those  
25 surveys are quite expensive to do.

1           MR. OLSON: And a question on -- in all the  
2 factors that you're using to evaluate the technology  
3 supply, how would you rank things like introduction --  
4 economy scale manufacturing, introduction of new start-  
5 up companies that might have more disruptive technology  
6 approach, European manufacturing techniques, those type  
7 of -- how -- in essence -- and to what extent can  
8 government action accelerate or influence expansion of  
9 those alternative options?

10           MR. DULEEP: Uh, It's a fairly complex question  
11 to answer in a direct way, but I can say first that the  
12 automotive industry is a global industry, so we're  
13 seeing less and less difference on a regional basis in  
14 technology. So things that happen in Europe migrate  
15 here fairly soon. Just because Bosch is as much an  
16 American supplier and Siemens is as much an American  
17 supplier, and Delphi is in Europe. So all these people  
18 are all playing in all the markets. So we see it as a  
19 global industry where we don't see much differentiation.

20           Second the issue of start-ups and new technology  
21 in automobiles has been one, by the track record has not  
22 been good. There's hardly any I can think of that have  
23 developed any significant or major technology, just  
24 because the ability to produce these kinds of high  
25 volume, low cost components require tremendous

1 manufacturing skills and deep pockets. So start-ups  
2 have not had a significant role in this arena.

3           And third on the issue of government subsidies,  
4 I think in some cases there have been some really good  
5 success stories, and I think battery technology is one  
6 area where I think government funding has accelerated  
7 RND greatly and has resulted in significant new  
8 breakthroughs. But on the other side, there have been  
9 some failures too. So that one's harder to judge on a  
10 comprehensive basis.

11           MR. OLSON: And one other question. it appears  
12 your analysis does not address medium-duty, heavy-duty  
13 off-road options. Is that a different kind of -- you do  
14 that analysis? Have you conducted that kind of work?

15           MR. DULEEP: We have, not for the CEC. They  
16 haven't hired us to do that, but we do support, as I  
17 said the DOE in some of the -- the European Union in  
18 some of these areas. So, at this point we're not doing  
19 it for the CEC model. Also I think their modeling is  
20 somewhat different in that arena than we have in the  
21 light duty arena. But we are not partnered at CEC in  
22 that area.

23           MR. OLSON: And given that you do similar work  
24 for kind of nationally -- DOE -- and you're working for  
25 the Energy Commission California market, is there a

1 noticeable difference -- are there things that we were  
2 doing here that maybe enhance, improve, accelerate in  
3 the development from your kind of outsider look?

4 MR. DULEEP: Uh, I think the two areas where we  
5 have seen significant effects of California are in fact  
6 the electric vehicle at the ZEV Mandate regulation  
7 switch, created a lot of interest in researching this,  
8 and many observers think, in fact, it triggered similar  
9 ideas within Europe and Asia. So, it -- by having --  
10 establishing that leadership position, I think it did  
11 that. And also in the emissions arena we've seen that  
12 what California has proposed as LEV standards have  
13 slowly migrated first to the 49 states, and then also to  
14 the European Union, where now most of the standards are  
15 sort of moving to very similar levels of stringency.

16 VICE CHAIRPERSON BOYD: KG, one quick question I  
17 did think of. Uh, light-duty natural gas, you indicated  
18 you didn't go too deep into that because of Staff  
19 doesn't feel that there will be much volume, let's say,  
20 in that area. UH, do you have any different feelings,  
21 just again from your outside perspective of any future  
22 for light-duty natural gas in this country or in this  
23 state?

24 MR. DULEEP: Uh, right now there is that fairly  
25 significant price differential that is driving some

1 interest. But we see almost no interest in the car  
2 markets, that is -- or at least I should say that in the  
3 private car market. Because I think that consumers  
4 value things like trunk space and ease of refueling too  
5 highly, and the cost of convergence is still not that  
6 low.

7           The second thing I think not well-recognized is  
8 that even though natural gas at the well-head is very  
9 cheap, compressed natural gas that you can put in your  
10 tank is not. I think the stations have fairly severe  
11 markets because -- just because of the low volume factor  
12 that they have to amortize the capital on the refueling  
13 equipment, but with very few cars. And so they -- the  
14 markups are very high. And that is a further  
15 restriction.

16           VICE CHAIRPERSON BOYD: Ok, thank you. Now  
17 Stakeholder questions if --

18           MR. FULKS: Uh, yes. Hi, Commissioner Boyd,  
19 Commissioner Peterman. My name is Tom Fulks. I'm here  
20 today representing Robert Bosch Diesel Systems and the  
21 Diesel Technology Forum. And if I could ask you to put  
22 your diesel slide back up on the screen please?

23           Uh, would I would like to do is, for the record,  
24 indicate a couple of points. One of the things that  
25 jumped out at me with your presentation on greenhouse

1 gases was you were basically making the assertion -- and  
2 I guess you inputs reflect this -- that there is no  
3 benefit -- greenhouse gas benefit with using diesel  
4 powertrain compared to a comparable gasoline powered  
5 train.

6 MR. DULEEP: No, no, sir. I said there is a  
7 much reduced benefit because of the 12% increase in  
8 carbon --

9 MR. FULKS: Yeah --

10 MR. DULEEP: -- so it'd be the 12 minus the 30.

11 MR. FULKS: and I would like to refer you to the  
12 California Air Resources Board's White Paper that was  
13 prepared in preparation for the low carbon fuel standard  
14 conducted by UC Berkeley, UC Davis, that did a well-to-  
15 wheels comparison -- comparative analysis of diesel  
16 versus gasoline, using identical platforms. And that  
17 research pointed out that when you do a mile-per-mile  
18 comparison, all things considered, including the energy  
19 density of diesel fuel you get a 220% greenhouse gas  
20 benefit from diesel compared to gasoline. You can shake  
21 your head, but please go look it up.

22 MR. DULEEP: Uh, no, no sir, I am agreeing with  
23 you because that's 35 minus 12. That's 12% more carbon  
24 but you get 30-35% better fuel economy.

25 MR. FULKS: Okay, I just wanted to --

1           MR. DULEEP: So you have to just subtract the  
2 two, is all.

3           MR. FULKS: Just for the record I wanted to make  
4 it clear that diesel powertrain actually does give you a  
5 greenhouse gas performance benefit per mile.

6           Secondly, with regard to tailpipe emission  
7 standards, I can only presume when you say that diesels  
8 have only recently shown the ability to comply with  
9 California tailpipe emissions standards that most recent  
10 I guess would be 2009 model year. That's when the TDI  
11 first came to market. But I wanted to also make it  
12 clear that while I don't speak for these companies we  
13 also represent -- or we do work for the LEV-3 Working  
14 Group, which is made up of Bosch, Audi, VW, BMW and  
15 Daimler. And they have been working very specifically  
16 with regard to diesel compliance with the pending LEV-3  
17 tailpipe emissions regulations. Meaning everything new  
18 sold after the 2017 model, or beginning with the 2017  
19 model year would have to be SULEV compliant.  
20 Essentially Prius tailpipe compliant. All internal  
21 combustion engines, including diesel.

22           So when you say that the diesel market in the US  
23 seems to be fading with rapidly rising diesel fuel  
24 prices, this runs actually contrary to what most of the  
25 major OEM, including General Motors have been saying in

1 recent months about diesel. The most recent example is  
2 General Motors' announcement that the Chevy Cruze will  
3 be adopting a 2 liter diesel engine, primarily because  
4 of the new fuel economy regulations. So we've also got  
5 all kinds of model year announcements from the European  
6 manufacturers indicating that new diesel models are  
7 coming to the American market. The only OEM who has  
8 said -- who has withdrawn a previous announcement is  
9 Honda. And that wasn't because of tailpipe compliance  
10 issues; it was because of market consideration issues.  
11 But if you take a look at Mazda, they're dropping a  
12 diesel engine with a platform to be announced.

13           So I did -- just in terms of your inputs I  
14 wanted to make sure that the record reflects what the  
15 actual OEM statements are relative to the assertions  
16 that your researcher is making with regard to diesel  
17 powertrain. Thank you.

18           MR. DULEEP: Uh, if I may just respond to that.  
19 First I -- if I said that -- if you thought there was an  
20 implication that I said it doesn't reduce GHG, that's  
21 not correct. All I said was that it has 12% more  
22 carbon, so you have to subtract that from the fuel  
23 economy benefit that you get. So if I subtract the 35,  
24 and take the 12 away, then I get the 22.

25           Second, I think what we're showing in our model

1 is actually more favorable to the diesel because we are  
2 assuming that future standards will be met with no  
3 additional compliance cost. So, what we're saying is  
4 future standards may impose larger costs to compliance,  
5 but those are not in the model. So we're trying to  
6 actually present a favorable picture for the diesel.

7 Third, this last comment on the diesel market, I  
8 have to note that both GM and Ford announced V-8 diesels  
9 two years ago, and they both have actually, either  
10 postponed or cancelled those programs, and you mentioned  
11 Honda, as well. And certainly the percentage  
12 penetration of diesels has fallen in 2011, relative to  
13 the last two years.

14 MR. FULKS: Well, what you're failing to mention  
15 is that while the V-8 diesel programs may be fading out,  
16 the 6 cylinder diesel truck engine programs are ramping  
17 up. They're just downsizing diesel engines. Especially  
18 Cummins and Chrysler. Those are big announcements that  
19 you have omitted from your presentation. So with regard  
20 to the presentation you made about gasoline downsizing,  
21 the exact same thing is being done with diesel engine  
22 powertrains, which is precisely why some of the OEMs are  
23 downsizing their diesel powertrains for the light-duty  
24 truck market.

25 So, anyway, that last statement that the diesel

1 seems to be fading, I just have to completely disagree  
2 with that assertion, because the data don't support what  
3 you're saying. In fact, the OEM announcements run  
4 exactly the opposite of what you're saying.

5 MR. DULEEP: That last statement was specific to  
6 2011 market penetration and perhaps that needs to be  
7 made more clear. But nevertheless, in the model I think  
8 the CEC choice model forecast what the penetration would  
9 be, and what we've tried to present is the most  
10 favorable case for the diesel by not including any  
11 additional costs for LEV-3 compliance.

12 MR. FULKS: Well, I appreciate that. But I did  
13 want to make it clear that if we're going to be putting  
14 in a price of diesel fuel comparison with gasoline in  
15 trying to make some market forecast on that, I would  
16 encourage you to do a price per mile calculation versus  
17 a price per gallon calculation, because the real crisis  
18 in America, in terms of education I believe is a math  
19 problem, and if people could actually do the math and  
20 compare the mileage compared to the cost of the fuel of  
21 diesel, even at a dollar a gallon difference between  
22 diesel and gasoline, you're still coming at basically  
23 equal, in terms of the cost per mile. Right now we're  
24 looking at 20 -- 30 -- 40 percent cost differences. If  
25 you fill up on a tank of diesel you're still doing

1 better economically per mile than you would be with a  
2 gasoline powertrain. Thank you.

3 VICE CHAIRPERSON BOYD: Gina.

4 MS. GREY: Gina Grey, Western State Petroleum  
5 Association. Just a quick one, KG. Uh, quite a  
6 surprise for your fuel cell vehicle slide. not to  
7 question that, you know, these are your conclusions,  
8 etcetera, but they run counter to what we've been  
9 hearing out of the California Air Resources Board in  
10 terms of their expectations for what the manufacturers  
11 are going to be doing to comply with the ZEV program.  
12 And we have been hearing from -- through the Clean Fill  
13 Outlet Regulation Workshops, etcetera, that the  
14 manufacturers are saying they will be ramping up in a  
15 few years' time -- an of course this is all relative,  
16 but -- they'll be ramping up on FCVs and that basically  
17 the only hindrance is retail infrastructure for  
18 hydrogen. So I'm interested in the apparent dichotomy  
19 in what you've claimed here at the end, versus what ARB  
20 is claiming. Just curious.

21 MR. DULEEP: Uh, it's no secret that the Obama  
22 Administration has tried to zero out funds for fuel cell  
23 vehicles for the last few years. And we have seen  
24 several manufacturers starting to not be as positive on  
25 fuel cells. Some other manufacturers continue to be

1 quite positive, and so the only issue is that having  
2 done this for 20 years I have heard these positive  
3 statements a lot of times, and nothing happens  
4 eventually, so I don't know.

5 But again, fuel cell vehicles are just not in  
6 the model right now because that whole issue of how do  
7 you simultaneously solve for how fast the fuel supply  
8 comes in, how fast the infrastructure gets built out. I  
9 think it requires a very complex model, which in fact  
10 has been done by Oakridge, but I think that unless some  
11 kind of dynamic issue is incorporated it is very  
12 difficult to represent that. But I'm sure CEC Staff can  
13 respond to that in more detail.

14 MS. GREY: Okay, thank you.

15 MS. BAHREINIAN: Sorry, this is Aniss  
16 Bahreinian. Just to the gentleman who was speaking  
17 about diesel fuel. Just as a point of reassurance, when  
18 we are going to the stated preferences surveys we are  
19 giving the consumers fuel costs, not the fuel price.  
20 And that incorporates their vehicle miles traveled in a  
21 year, which is kept constant for all the different  
22 vehicles. So that is actually a modeling advantage for  
23 us.

24 MR. LYONS: Good morning, I'm Jim Lyons with  
25 Sierra Research. Uh, KG I think it would be very

1 informative if you could get the fuel economy technology  
2 supply curve that comes out of your forecast into the  
3 report in the model so people can see that. It deals  
4 with issues like the last slide that you showed where  
5 the technologies are cheaper in 2025, but have already  
6 been used to get to the 2016 technology, so I think that  
7 would be a very valuable addition to the report.

8           The second question I have is I understand that  
9 you're putting more vehicle options out of your vehicle  
10 supply model to deal with the ZEV mandate. What I'm not  
11 sure that I'm hearing is if there is actual  
12 demonstration of compliance with the Zev mandate by the  
13 vehicle fleet in California in this modeling approach,  
14 and I was wondering if you would either assure me that  
15 that's happened or confirm that it's not happening.

16           MR. DULEEP: We are, as I said -- our model just  
17 feeds data into the CEC demand models. We have almost  
18 nothing to do with how their model reacts, and I'll let  
19 the expert speak to that.

20           MR. WENG-GUTIERREZ: So, uh, yeah I'll be  
21 discussing that in the forecast portion of it. But we  
22 do -- we have forced the model to meet the numbers of  
23 vehicles that are required in the ZEV program for the  
24 EVs. So that's --

25           MR. LYONS: Okay, thank you.

1 MR. WENG-GUTIERREZ: Yeah.

2 VICE CHAIRPERSON BOYD: Okay, it looks -- uh,  
3 all right.

4 (Unidentified off-microphone speaker): The  
5 first one is --

6 MS. TUTT: HI, this is Eileen Tutt with the  
7 California Electric Transportation Coalition. Can you  
8 hear me okay?

9 VICE CHAIRPERSON BOYD: Uh, not too good Eileen.  
10 Just a minute, let's see if we can get the volume up.

11 MS. TUTT: Okay.

12 VICE CHAIRPERSON BOYD: You're going to have to  
13 speak up. We seem to have trouble in the room here  
14 today getting the volume up.

15 MS. TUTT: Okay. Is this better? Can you hear  
16 me?

17 VICE CHAIRPERSON BOYD: Yeah, I --

18 MS. TUTT: Okay, okay, so I feel like I'm  
19 yelling at you, so if I sound like that please tell me  
20 so I can talk --

21 VICE CHAIRPERSON BOYD: You're not -- believe  
22 me, you're not yelling on this end.

23 MS. TUTT: Okay, so KG, I really appreciate all  
24 the work that you've done over the years. And I just  
25 wanted to point out some sort of -- from a policy

1 perspective, when you talk about the market now, you  
2 know, it's not really a market demand-driven market, so  
3 to speak, it's more of a regulatory -- you know the  
4 regulation is driving the demand. I would actually  
5 suggest that policies that actually get adopted or  
6 implemented typically have, you know, market or  
7 political support. Meaning, you know, the people  
8 support those policies, and so I would sort of frame it  
9 a little differently in that the mandate does drive the  
10 market, there's no question about that. The policy  
11 drives the market, and in some cases that's very, very  
12 essential because you need that policy direction to  
13 drive the market in a way that protects public health  
14 and other things.

15           But once that policy is in place, then the auto  
16 makers, they start marketing these vehicles based on  
17 what they think customers like. And in the case of  
18 electric vehicles it's performance, torque, home  
19 charging, cheap fuel, and environmental benefits. So,  
20 that's just kind of a -- I just a shift in how we talk  
21 about this, perhaps, in that I think the market demand  
22 does drive -- if the people don't want to buy these cars  
23 they won't sell. But to the degree to which policies  
24 allow a market to grow, that's just the mandates of the  
25 policies helping to drive a market.

1           But I wanted to say that in the report -- and I  
2 thought a lot of this discussion was very good -- but in  
3 the report there's very little about electricity demand  
4 in the transportation sector, and in the appendices  
5 there are some costs, which I'll talk about a little bit  
6 later, because I'd like some clarity around that. But,  
7 I think the report does need to reflect the full  
8 transportation and fuels market and forecasts and growth  
9 in -- for transportation fuels in all of the alternative  
10 fuel, you know for all of the alternative fuels. And if  
11 the Staff's assumption is that the ZEV mandate will be  
12 met, and I think that's a sensible assumption, then the  
13 report itself should reflect the market demand for  
14 electricity and -- very clearly, which is currently  
15 doesn't. And I think even in the LCFS discussion, I  
16 don't know why the CEC Staff is assuming that it will  
17 largely be met with ethanol, but my sense is that that's  
18 certainly not where the Air Resources Board is thinking  
19 is leading us. I mean, we're working very closely with  
20 them to get a lot of the electricity sold or used in  
21 vehicles, PEV is -- we want to get those credits into  
22 the LCFS marketplace and thereby make the LCFS more  
23 attainable, and therefore more cost-effective.

24           So, I know that -- I'm just going to comment,  
25 perhaps this is a later comment on the LCFS component,

1 because I see it's going to be discussed later, but I'm  
2 only teeing it up because KG brought it up. So thank  
3 you.

4 MR. DULEEP: Uh, Madam, again the discussion of  
5 the actual market penetration of electric vehicles is  
6 part of the CEC model. All we're doing is just  
7 providing characteristics of the EVs where we do show  
8 the economies of scale and learning. And the only  
9 reason that we have put in the ZEV mandate type numbers  
10 was to get an estimate of what that economy of scale  
11 would be. Because it is quite dependent on how many  
12 millions you produce. And so that was the reason that I  
13 brought up this year the ZEV mandate, and I hope there's  
14 no misunderstanding on that. That was only the estimate  
15 what the rate of scale -- what the economies of scale  
16 and learning were.

17 Second, on the issues of market-driven, what I  
18 was trying to focus on was that as you push the CAFÉ  
19 standard, fuel process seem to matter less in making  
20 that decision because the manufacturer's already doing  
21 everything they can, and I wasn't -- at least I hope I  
22 wasn't' taking anything away from the fact that the  
23 regulation is providing technology that may not be cost-  
24 effective in a two -- three year time frame, as  
25 consumers demand. But suddenly over the life of the

1 cars they are widely cost effective. So from that  
2 perspective I don't have any issue there, at all. I was  
3 just mentioning the fact that as you drive technology  
4 more with CAFÉ standards, then fuel prices seem to have  
5 less influence in determining what fuel economy cars  
6 get.

7 MS. TUTT: Okay, well then I guess my comment is  
8 largely to the Staff in that I think the document itself  
9 -- it is a policy document, and I'm going to assure you  
10 that it's respected and used in the policy arenas, both  
11 the Regulatory and the Legislative policy arenas. So  
12 the degree to which we have a forecast for  
13 transportation energy, and we assume a ZEV mandate and  
14 other alternative fuels penetrations, we probably need  
15 to include those forecasts in addition to gasoline and  
16 diesel.

17 MR. WENG-GUTIERREZ: Okay, yeah, hi Elaine, this  
18 is Malachi Weng-Gutierrez and I just wanted to comment  
19 on again I will be touching on the decision that we made  
20 about the E-85 as a compliance mechanism. We certainly  
21 did not exclude electric -- electricity and natural gas  
22 as a crediting mechanism for LCFS compliance, but we did  
23 see that there was going to be a large volume of ARRA  
24 required ethanol in the marketplace and that that would  
25 be a potential source of compliance in California for

1 the LCFS.

2 MS. TUTT: Thank you.

3 VICE CHAIRPERSON BOYD: John, you there?

4 MR. SHEARS: Yes. Uh, good morning. Before I  
5 speak, can everybody hear me okay?

6 VICE CHAIRPERSON BOYD: Yeah, suddenly the  
7 volume has gone up so you don't have to shout.

8 MR. SHEARS: Okay, great --

9 VICE CHAIRPERSON BOYD: Not that you are. I've  
10 never known you to shout John.

11 MR. SHEARS: So yeah, just for the transcriber  
12 this is John Shears with CEERT, the Center for Energy  
13 Efficiency and Renewable Technologies. And I just  
14 wanted to inquire with Mr. Duleep's observations again  
15 about fuel cell vehicles. You know, many of us on the  
16 call attending remotely, and many of the folks in the  
17 room, including Energy Commission Staff, the ARB Staff  
18 are working together on California's fuel cell  
19 deployment issues. There's no denying that there are  
20 many challenges associated with, you know,  
21 commercializing the fleet and getting the fueling  
22 infrastructure out there.

23 Uh, Energy Commission and Air Resources Board  
24 have, you know, as part of their survey work, worked  
25 closely with vehicle manufacturers to make sure, you

1 know, that -- exactly what their plans are with  
2 deployment for fuel cell vehicles. And we've received  
3 assertions, all of us, that they actually have their  
4 products in the pipeline, which is not so much subject  
5 to, you know, what's happening with DOE funding, which  
6 is targeted mostly at research. The surveys show that  
7 the auto manufacturers plan on deploying cumulatively  
8 53,000 vehicles in California by 2017, as part of a ramp  
9 towards, you know, true commercialization of fuel cell  
10 vehicles.

11           And so I just wanted to ask Mr. Duleep if he  
12 could provide a little more context for where he's  
13 derived his impressions that, you know, the major OEMs  
14 who have been committed to fuel cell vehicle technology  
15 are pulling back or losing their enthusiasm, because  
16 certainly they have not provided us, in California, with  
17 any indication that they have lost their enthusiasm for  
18 the technology.

19           MR. DULEEP: Uh, two responses. So first, I  
20 think we don't have any objection to having the fuel  
21 cell vehicle as part of the menu options the CEC's model  
22 selects from. It's only the fact that the CEC model, as  
23 I mentioned, because of the complexity of sort of  
24 solving for all aspects of it simultaneously decided not  
25 to leave it in. That's the only reason we don't have it

1 in there.

2           The comments about manufacturers -- some  
3 manufacturers backing away, I can --there's been a while  
4 sort of series of articles written about it, but one  
5 image that comes to mind was that GM had the car of the  
6 future, it was a fuel cell model, and then the Volt came  
7 out and all of a sudden that -- it switched very sharply  
8 and was widely noted in the press -- in the trade press  
9 about how manufacturers seem to be pressing electric  
10 vehicles and battery electric and hybrid vehicles more  
11 than what they were saying about the fuel cell vehicles.  
12 So, and certainly it's no secret that a couple of  
13 manufacturers have backed away.

14           But I think the other issue that you brought up  
15 is these numbers that have actually been quoted. And  
16 I've actually seen some of these quotes, and there are  
17 some caveats that they put in when they say these  
18 numbers, they say if there's enough fueling  
19 infrastructure of fuel available or something like that,  
20 so there's always some kind of uncertainty in my mind as  
21 to whether these things will really happen. And as you  
22 probably know, we've heard many of these statements  
23 before, and nothing's happened.

24           So, that was why I had that particular statement  
25 in there. But regardless, I think we're quite happy to

1 supply fuel cell vehicle characteristics as best as we  
2 can understand them to the CEC model. So I'll let  
3 Malachi --

4 MR. WENG-GUTIERREZ: Hi John.

5 MR. SHEARS: Yeah I wasn't -- sorry, just a  
6 second. So Mr. Duleep I wasn't questioning, you know,  
7 why it wasn't included in the model. I understand the  
8 challenges with that. I just wanted to clarify where,  
9 you know, what the basis for your impression around, you  
10 know, this loss of enthusiasm. As it turns out, I work  
11 with, on a weekly basis, many of the staff at the OEMs  
12 that are working on these issues, and are also working  
13 on the other ZEV deployment issues. And these are  
14 people who are, you know, tasked with, you know,  
15 implementing, you know, the strategy for fuel cell  
16 vehicles and plug-in electric vehicles with this  
17 company -- these companies. And I have not heard from  
18 any of them that they are not -- that they have lost  
19 their commitment for fuel cell vehicles. While at the  
20 same time, you know, all of these companies certainly  
21 are pushing ahead with, you know, their strategies for  
22 plug-in vehicles.

23 So I just want to clarify that, you know, based  
24 on my experience working with the industry, I have not  
25 heard or been given the impression --

1           VICE CHAIRPERSON BOYD: John, this is Jim Boyd -  
2 -

3           MR. SHEARS: -- for the other technology. So, I  
4 just wanted to just clarify the basis of that assertion.

5           VICE CHAIRPERSON BOYD: John, Jim Boyd here. I  
6 don't want to protract this discussion any longer  
7 because we're losing time.

8           MR. SHEARS: Yeah, no I don't want to --

9           VICE CHAIRPERSON BOYD: I just want to tell you  
10 from the dais --

11          MR. SHEARS: Thanks Jim --

12          VICE CHAIRPERSON BOYD: -- and to tell KG when  
13 he made that statement earlier I leaned over to Tim and  
14 said, man he hit a hot button. Uh, so, I expected this  
15 dialogue. And rest assured I think the staff knows, and  
16 we at the dais know only too well, we just released the  
17 8118 Investment plan with a big chunk of dough in it for  
18 hydrogen fueling infrastructure. So I think there is a  
19 different climate in California and we recognize it vis-  
20 à-vis maybe a national climate. And I agree with John  
21 Shears' comments about what the manufacturers tell us.  
22 We fashion our investment plan over what manufacturers  
23 tell us sometimes. And confidence will be their roll  
24 out of demos. But hydrogen still is an RND demo phase,  
25 and we're not even charging for hydrogen, so to speak.

1 So it doesn't fit into the traditional -- in the  
2 traditional forecast of transportation fuels for the  
3 immediate future. But rest assured that the CEC knows  
4 only too well and is deeply invested in the future of  
5 hydrogen. So thanks for reminding us of that.

6 MR. SHEARS: Well, thanks Jim. I just wanted to  
7 get it on the record, because you know, I know that we  
8 all know, but there's going to be a transcript and a  
9 WebEx recording that's posted, and so without some  
10 clarifying discussion in the record I didn't want there  
11 to be this impression left --

12 VICE CHAIRPERSON BOYD: No, I agree with you. I  
13 agree with you.

14 MR. SHEARS: But I know the Energy Commission  
15 fully is familiar with the same terrain that I am, so  
16 thanks.

17 VICE CHAIRPERSON BOYD: Well, Gina Grey noted  
18 that in her comments earlier, so yes, we wouldn't want  
19 her to run back and say hydrogen is dead. So in any  
20 event, thank you everybody. Let's move on to Malachi  
21 then.

22 MR. WENG-GUTIERREZ: Good morning Commissioners,  
23 Advisors, Stakeholders. My name is Malachi Weng-  
24 Gutierrez, and I will be just going over the  
25 transportation forecast and some of the analyses we

1 performed. I think I -- it sounds like everybody has  
2 taken a pretty good look at the documents. I'm pretty  
3 happy with that, pretty pleased. There's some good  
4 questions out there, so I'm going to probably go through  
5 some of these fairly quickly so that we can kind of have  
6 that question and answer period at the end.

7           Before I start, though, I did want to just  
8 comment on John Shears' comment as well -- his question.  
9 And just assure that -- him that, you know, certainly  
10 for this current forecast we haven't included fuel cell  
11 vehicle populations as well as the hydrogen demand  
12 associated with them, but we are looking at in the  
13 future trying to incorporate them in the future surveys  
14 and the future estimates of the models. So we are  
15 looking at it. Hopefully in the future we'll have those  
16 incorporated. And also -- well I'll touch on it later  
17 when I talk about the ZEV program and how we've  
18 implemented. But I just wanted to just start with that.

19           So, uh there were a couple of things that have  
20 changed over the - from 2009 -- on our forecast that we  
21 produced for 2009. And we have kind of developed a new  
22 framework under which we do our modeling work. It has  
23 resulted in some of the different components being  
24 upgraded and updated. We are using very similar  
25 structures for the personal vehicle choices and the

1 commercial vehicle choices, so that's kind of the  
2 foundation of that light-duty component. But the VMT  
3 and some of the other elements are being calculates in  
4 other areas of the model. And we certainly have  
5 upgraded the freight and the aviation components. And  
6 As I mentioned in the February Workshop, when we  
7 discussed our methodology and our approach that we were  
8 going to be using for developing our forecast, we have  
9 provided -- we have decided upon a two-step approach,  
10 and that was to allow for certain types of policy  
11 analysis to be included in our analysis -- in our  
12 forecast.

13 So what we do is we start, basically, the  
14 preliminary set of fuel demand forecasts, which are  
15 actual outputs from the models themselves. And then as  
16 a second step we perform some post-processing activity,  
17 and that's to overlay the impact of the Federal  
18 Renewable Fuel Standard, or the RFS, on California's  
19 consumption. And then that -- the product of that post-  
20 processing activity, when we're considering again the  
21 RFS impacts, becomes our final forecast.

22 In addition to that post-processing activity, we  
23 also have an additional policy analysis, which is the  
24 low carbon fuel standard, or LCFS analysis, and that is  
25 a post-processing activity that we lay on top of our RFS

1 adjusted, or final demand forecast set of numbers. So,  
2 and the LCFs and the RFS will be discussed slightly  
3 later, but I'll touch on them obviously here, because  
4 they influence our final demand numbers.

5           So, just a couple of slides on uncertainties.  
6 Obviously we -- you know, there's a wide variety of  
7 things that are uncertain in the future, and we attempt  
8 to capture many of those in our models. And certainly  
9 in the context of developing a high and a low demand  
10 forecast, we try to capture those. So the number of  
11 inputs that we use that are both high and low, the  
12 trends that we use, all of them are an attempt to,  
13 again, capture these uncertainties.

14           So a couple -- to highlight a couple, you know  
15 KG Duleep provides us with the attributes that we feed  
16 into the model. He is provided, as the basis of some of  
17 his analysis, our forecast for prices of fuels and our  
18 kind of policy sets and guidelines that we're using, and  
19 hence he referred to our decision to use E-85 as a  
20 mechanism for -- a mechanism for LCFS compliance, as  
21 well as RFS compliance. He's, you know, he's  
22 considering that then, as he stated, in what vehicle are  
23 offered into the future. We can -- that doesn't  
24 preclude us from doing alternate scenarios or having him  
25 look at other technologies, and doing further analysis,

1 but it is the basis of our analysis, we've decided upon  
2 a structure for the policies.

3           And then of course prices are always variable,  
4 but I think we've done a great job -- Ryan has done a  
5 great job and others have done a great job in developing  
6 the price forecast for the fuels that we use in our  
7 forecasts. And I think we've captured a good range of  
8 prices.

9           Some of the uncertainties which are not  
10 captures, which were kind of touched on by Aniss and  
11 others, are things like consumer preferences. And that  
12 is a product of taking a snapshot of preferences in our  
13 survey and then applying it to the entire forecast  
14 period. It certainly is, even others raised -- John I  
15 think also mentioned it -- preferences can change over  
16 time. And then that would then influence the population  
17 the demand, following demand. And we certainly can't  
18 capture future consumer preferences, but we can do a god  
19 job of capturing today's preferences, you know, and then  
20 applying that to the future forecasts, and that's what  
21 we've been doing. These other uncertainties are also  
22 not captured, but -- and they lead to, you know -- we  
23 try to capture them in our analysis, elsewhere in our  
24 analysis.

25           So again, just to -- I'm just going to go

1 through these slides quickly. This has been already  
2 discussed in our February Workshop, but the conditions  
3 under which we're developing our forecast. We have a  
4 high petroleum fuel demand forecast and a low. They're  
5 a combination of different inputs, prices, economic  
6 growth activities, impacts, penetrations of  
7 efficiencies, and again, electricity and natural gas  
8 prices trends.

9           So, just to highlight the difference about the  
10 prices. Under the high price conditions for petroleum  
11 products and E-85, uh we have associated that with a low  
12 electricity and a low natural gas price in order to try  
13 and capture -- allow them to capture more market share.  
14 And then under the high petroleum fuel demand forecast  
15 there's a varying degree of inputs that are somewhat  
16 opposed or opposite of those for the low petroleum  
17 demand forecast.

18           And again, this -- what I just wanted to show  
19 quickly again, was we have a series of inputs. This is  
20 the Gross State Product, but there are a number on  
21 inputs that we use in our forecast related to economic  
22 activities. We have generally been consistent with the  
23 demand analysis office and some of their assumptions  
24 that they have used in their demand -- in their  
25 forecast. There are some differences pairing economic

1 growth with certain price cases, but we have been using  
2 the same sources, and so it is our intent to do an  
3 identical analysis using the same set of conditions that  
4 they're using, potentially to feed into their final  
5 forecast for electricity.

6 But, we have been consistent in the sources of  
7 data that we use. And one of the ramifications of that  
8 is that the high and the low cases of some of our  
9 economic data are coming from different sources and that  
10 leads to different trend lines. And so I just wanted to  
11 point out that, as you can see these are from two  
12 different sources -- ISIS Global and Moody's -- there is  
13 a difference in the shape of the curves, and that's  
14 because of those different sources. And that has an  
15 impact, then, on our forecasts, as well.

16 Just as an example of how fuel economy changes.  
17 This is kind of a simple -- this is a simple  
18 representation, it doesn't clearly represent the fuel  
19 economy as a whole. It really is just an output of  
20 gasoline specific vehicles and the associated fuel  
21 economy of that fuel type. So, it doesn't include the  
22 consumption of other fuels, and it doesn't include the  
23 higher-efficiency vehicles, as well. So it's just a  
24 representation to show that fuel economy is changing  
25 over time -- it's increasing -- and that's -- there is a

1 difference between the high and the low petroleum demand  
2 forecast that we use in our -- to come up with the high  
3 and the low cases, or the results.

4 In addition to the light-duty vehicle fleet, we  
5 also have looked at truck -- heavy-duty fuel economy  
6 numbers. There's the standard for heavy-duty economy  
7 vehicles. And we've incorporated that into our forecast  
8 and this is a representation of the EIA cases, or the  
9 EIA evaluation of the impacts of those standards on the  
10 fleet-wide average. So we've used that as a basis of  
11 our increasing fuel efficiency for those sectors.

12 And then similarly we've looked at EIA's  
13 estimate for fuel economy gains in the aviation arena  
14 and have used their projections of -- or varying  
15 projections of fuel economy growth to represent the  
16 introduction of new airplanes and higher=efficiency  
17 airplanes, and maybe even the change in the fleet that  
18 it's used. So that if the jet fuels prices increase  
19 significantly, they might switch from one -- decide to  
20 ground certain planes over others. So, this is the two  
21 tracks that we used for the fuel economy to represent  
22 those fuel economy gains.

23 And, before I get to the fuel demand forecast, I  
24 just wanted to show the high and the low - -the vehicle  
25 fleets associated with the high and the low demand

1 forecast results. These are the outputs from our  
2 forecast, and they show -- there's two axes here. The  
3 secondary axis, or the one on the right is -- represents  
4 the gasoline vehicles, and it's - obviously it goes up  
5 to, you know, in the 20-30 time frame for gasoline  
6 there's about 24 million vehicles. It's fairly flat  
7 over the forecast. And this is, again in the high  
8 demand forecast -- high petroleum demand forecast where  
9 you have low petroleum prices.

10           The alternative fuels, you see, there's a fairly  
11 aggressive increase in the number of vehicles over the  
12 forecast period for technology such as hybrids. And the  
13 second line there also -- plug-in hybrids almost  
14 parallel to hybrids in their adoption rate through the  
15 forecast. And then next is -- it says ethanol there,  
16 but that's a flex fuel vehicles -- the green line if a  
17 flex fuel vehicle, and then the blue is the diesel.

18           In our low petroleum demand forecast the  
19 vehicles that are in these, again, are only light-duty  
20 vehicles. We noticed that there is a lower number of  
21 gasoline vehicles in the marketplace -- two million  
22 vehicles less, or so. The alternative fuel market  
23 penetrations -- the percentages obviously increase  
24 because of that, but the absolute value of those  
25 vehicles appear to be close to what they are in both

1 cases.

2           Alright, so, to get to the forecast itself,  
3 California -- the gasoline demand forecast that we have  
4 shows a market increase in the high-price case for the  
5 preliminary. Again we -- I guess the solid lines are  
6 the preliminary numbers and the dashed lines are the  
7 final numbers. So, to begin with, you know, the solid  
8 high line obviously shows a fairly decent growth -- I  
9 think it's about 14% growth over the forecast period.  
10 The final high demand forecast is fairly flat. It's  
11 actually only about a four percent growth over 2010, I  
12 think.

13           Under the low price case, there's a decline over  
14 the forecast period, even in the preliminary result of  
15 about four percent or five percent. And then adding on  
16 top of that, the RFS adjusted, or the proportional share  
17 of, you know, adding on top of that E-85 ethanol  
18 proportional share, which is then -- reduces gasoline  
19 demand, lowers that substantially to just under 12  
20 million -- or 12 billion gallons, sorry, and that's a  
21 decline of about 21%. So that's pretty significant.

22           And then, just interesting, if you look at the  
23 recent history from 2004 to 2009 -- 2010, I know that  
24 Ryan touched on this -- it's about a seven percent  
25 decline, adding RFS. And looking at our final forecast,

1 gasoline consumption would have to -- would be declining  
2 kind of at that same rate over the forecast period, and  
3 it really is kind of an unprecedented long-term decline  
4 in gasoline demand. So, the factors that are going to  
5 that are not only high, high prices, but also the  
6 introduction of all these alternative technologies,  
7 mandates, and all the things that we've kind of layered  
8 on our forecast.

9           The diesel forecast show both in the  
10 preliminary -- or the RFS adjusted, or the final --  
11 substantial growth over the forecast. They -- it's, you  
12 know -- basically the same. There's very little  
13 adjustment between the preliminary and the final. And  
14 that's primarily due to the fact that RFS itself -- the  
15 standard requirement for the biomass-based diesel is  
16 fairly small. And so California's proportional share is  
17 not significant, and doesn't lead to a significant  
18 decline in our diesel demand.

19           And as noted, you know again, this diesel demand  
20 is driven primarily by medium and heavy-duty activities.  
21 As the economy recovers, you would expect it to grow  
22 throughout the forecast, and we don't see -- even when  
23 we see a decline -- or a significant decline in the  
24 gasoline demand, we see a substantial increase in the  
25 diesel demand. In the low case we're looking at a 25%

1 or 26% growth, and in the high-demand case we're looking  
2 at somewhere above 50% growth over the forecast period.

3           So, E-85 demand -- so our preliminary E-85  
4 forecasts are fairly flat. It looks flat here, it is  
5 growing through the forecast period, it's just not --  
6 the scales kind of change and it really illustrates the  
7 volume of E-85 that has to enter the marketplace in  
8 order to comply with the Federal RFS. So, although you  
9 can't see it really, it's about 50 million gallons ---  
10 you know, 50-60 million gallons in both the high and the  
11 low case for the preliminary results. And that's again,  
12 since the scale on the left hand is so large you can't  
13 really differentiate them.

14           The post RFS numbers are substantially higher,  
15 and that really leads to an incredible amount of E-85  
16 that will need to enter California, and be sold in  
17 California. And so I think some of the ramifications of  
18 that will be discussed in the discussion on RFS itself.  
19 But, again, we're talking about in the high petroleum  
20 demand case, where you have a lower amount of E-85, it's  
21 still going to be over two billion gallons in the -- at  
22 the end of the forecast. And in the low petroleum or  
23 low gasoline demand case, we can have volumes of ethanol  
24 or E-85, exceeding three billion gallons. So, that's  
25 again, pretty significant.

1           For natural gas, I think we -- this X-axis is  
2 off a little bit, and also these numbers I think are  
3 certainly preliminary. The point that I wanted to make  
4 here was that you see there's an overlap between the  
5 high and the low petroleum-demand scenarios, and that is  
6 a product of the different inputs that we're using for  
7 the two different sources. So the takeaway really here  
8 is that we're not seeing significant variance between  
9 the two, given the inputs that we're using, and the  
10 assumptions over the forecast period, between the high  
11 and low cases. We do see a growth, obviously, over the  
12 forecast period, and I think that we are going to be  
13 taking a closer look at the basier numbers and taking a  
14 look at some of the values that we're using for the  
15 early years, and the technologies as well. So this is  
16 certainly a preliminary set of numbers, but I just  
17 wanted to show the curves and the trends. We do see  
18 that the natural gas will increase in demand, driven  
19 probably mostly by the heavy-duty sector I think. But  
20 the commercial light-duty sector, obviously there's a  
21 continued growth in the demand for light-duty vehicles  
22 in that sector as an output of our model, as well.

23           So, for jet fuel, we are seeing, you know,  
24 growth in both the high and the low cases, primarily,  
25 again, due to economics. As the economy recovers and

1 people start to travel further and more often, that  
2 leads to an increase in jet fuel demand. The variation  
3 here is -- the variation between the two forecasts I  
4 probably also influenced by the differences in the fuel  
5 efficiency vehicles being offered or entering the  
6 marketplace, like the Boeing 787, things like that --  
7 the technologies that are coming to bear to reduce the  
8 emissions, and also increase the efficiency of the  
9 vehicles.

10           And then for the electricity demand forecast,  
11 just to touch on a couple of the points that were  
12 already touched on -- the ZEV program -- what we did  
13 was, you know, there's a couple of approaches that are  
14 out there. You have the supplier side saying we're  
15 going to produce this many. You have others that are  
16 taking market conditions, either incremental costs, and  
17 they're not going to see appreciable market shares and  
18 things like that.

19           We've kind of taken a combined or hybrid  
20 approach here. So, for -- to implement the Zev program,  
21 we've assumed in our forecast that it will come to pass  
22 that vehicles are offered and taken up by consumers in  
23 chairs that will comply with the ZEV program. So we've  
24 forced that onto the model, made that true, and then --  
25 for the time period that is covered by the ZEV program.

1 And then allowed the market conditions to take effect on  
2 the choices after the ZEV program -- the current ZEV  
3 program discussions are completed. So it basically  
4 means we forced the model up to a certain point, then we  
5 allow market conditions to apply, and that's where you  
6 start seeing, at the latter portion of the forecast,  
7 kind of a decline in the electricity demand, and that's  
8 a product of, you know, it entering the marketplace and  
9 the competition that's occurring at that time.

10 Now, KG Duleep also talked about, though, the  
11 assumptions he makes about production site costs,  
12 influences. So if you have a high set of production  
13 numbers that will influence prices a certain way -- the  
14 retail price of the vehicles -- I think he's already  
15 incorporated those, because we have asked him -- we have  
16 told him that the ZEV program will come to pass, these  
17 are the vehicles that will be into -- entering the  
18 marketplace. So he's incorporated the production  
19 numbers into the prices that we have put into the model,  
20 as well. So, uh -- so I am going to leave it at that.

21 Again, I think these are preliminary numbers --  
22 there are a couple of number -- a couple of values that  
23 we were looking at that we want to take a closer look  
24 at, and I think in the final number -- final forecast,  
25 and in the final report these will be elevated slightly.

1 Or they'll be elevated, I think. And just to touch on  
2 that though, the LCFS analysis -- the electricity demand  
3 that's used in the LCFS analysis is slightly different  
4 than this, and it does reflect what we do anticipate  
5 being a more final set of numbers for electricity.

6 And that's my last slide, so I think I've  
7 covered most everything I've wanted to touch on.  
8 Hopefully we've gained a few minutes here, and I haven't  
9 gotten a call from my wife, so that's good. I'm  
10 expecting a baby any day now, so it was uncertain --

11 VICE CHAIRPERSON BOYD: No, your wife is --

12 MR. WENG-GUTIERREZ: Yeah -- I ended up -- yeah  
13 well she is certainly. Well, I'm expecting too. So  
14 hence the --

15 VICE CHAIRPERSON BOYD: Well, we know you  
16 anxiety --

17 MR. WENG-GUTIERREZ: -- the two names here. I  
18 might not be here in 20 minutes or so, but if you have  
19 questions you can direct them to Bob. So if there are  
20 any questions from the dais?

21 VICE CHAIRPERSON BOYD: There are.

22 MR. WENG-GUTIERREZ: Okay.

23 VICE CHAIRPERSON BOYD: Go ahead, Commissioner.

24 COMMISSIONER PETERMAN: Yes, Malachi, thank you  
25 for being here. Commissioner Boyd and I have been

1 calling your wife and encouraging -- trying to calm her  
2 down with soothing sounds. So, glad it's working.

3 Uh, just a couple of clarifying questions  
4 related to some of the material presented. Uh, just  
5 starting from the end with electricity demand forecast.  
6 Can you comment on why we're seeing a decline in the  
7 2020-2027 period under the low petroleum scenario? That  
8 seemed an -- counterintuitive to me.

9 MR. WENG-GUTIERREZ: Uh, so, yeah, this was a  
10 product of how I forced it to -- forced the model to  
11 have those outputs. Basically I had a target vehicle  
12 population that I had received from ARB. I forced the  
13 model to reach these numbers in these timeframes, and I  
14 couldn't quite get it to match in the same way, because  
15 it's obviously running with a whole set of different  
16 inputs. So, I think it was a time constraint issue. I  
17 fully intend on making them a little more consistent  
18 over the forecast period and that -- but I -- it was  
19 just purely, basically how I forced it to comply with  
20 the ZEV program.

21 COMMISSIONER PETERMAN: Okay, so more of a  
22 slightly artifact with the modeling, versus something we  
23 should be aware of.

24 MR. WENG-GUTIERREZ: Yeah, more of an artifact  
25 of my limited time, so --

1           COMMISSIONER PETERMAN: Okay. Thanks. And then  
2 maybe this -- the same answer will apply to the  
3 petroleum demand forecast. So, with both the high and  
4 the low petroleum demand forecast we do see a dip in  
5 demand in the last teens, early twenties, and I was just  
6 wondering if you can comment on that?

7           MR. WENG-GUTIERREZ: Right, so this one is a  
8 little different, actually. This is a product of the  
9 rate at which the RFS program is being implemented. And  
10 then also the rate of our -- California's gasoline  
11 demand, and the rate of US demand. So this is a little  
12 complicated. So there's obviously the RFS is a  
13 percentage -- there's a standard that's a percentage,  
14 and it results then in a renewable volume for the  
15 different obligated parties. And in our proportional  
16 share calculation, we have assumed, you know, whatever  
17 California's demand percentage is plays into that. So  
18 it's -- there's a couple of things that are playing into  
19 these numbers, and it's basically those three items that  
20 I've talked about -- demand -- US demand, California  
21 demand, and then the standard itself.

22           And so, you do see a certain trend line to about  
23 2022, and that's to be expected, because that's the  
24 implementation timeline for RFS. And then post 2022  
25 currently the standard is basically flat -- but the

1 standard is flat, demand is not flat. So you still --  
2 but the interplay between those elements is what gives  
3 you the shape of these different curves, and affects how  
4 flat they are in the latter part of the forecast.

5 COMMISSIONER PETERMAN: Great, thanks. And  
6 also, just on that graph, I guess just visually as a  
7 little bit of -- visually noticed just that the electric  
8 car forecast, you know you can barely see with the red  
9 line. And I was just wondering if you could comment for  
10 a minute -- I mean I appreciate that the plug-in hybrid  
11 forecast are much higher, as well as the hybrid. And so  
12 when we're kind of hearing about the interest in  
13 electric cars, etcetera, there's part of this that  
14 encompasses also the plug-in hybrid vehicle as well, or  
15 just -- if you can just speak to whether you were  
16 surprised by these results.

17 MR. WENG-GUTIERREZ: Uh, I wasn't necessarily  
18 surprised by the results. And it really comes down to  
19 the -- you know, as Aniss touched on in her  
20 presentation, the coefficients that are estimated that  
21 are used in the model to, you know to calculate the  
22 utility of the vehicles and then the percentage of  
23 adoption. So as she stated in her presentation, she  
24 mentioned that certain technologies were preferential  
25 over gasoline. The full electrics were not preferential

1 over -- but the PHEVs were. So you would expect that  
2 you would have a higher number of PHEVs, you know,  
3 entering the marketplace.

4 In addition to just the straight consumer  
5 preference component of it, there are all the other  
6 inputs that play a role in the adoption rates, such as  
7 incremental price, and fuel price, and all these other  
8 elements. So I think it wasn't necessarily surprising,  
9 but it certainly doesn't -- I mean, it is what it is,  
10 and it's a product of the calculation. Certainly we  
11 have tried to, you know, increase the number of vehicles  
12 by overlaying the ZEV program analysis, forcing it to  
13 comply in certain years and -- but it certainly doesn't  
14 mean that in the latter part of the forecast, as I think  
15 John mentioned, that if you had a bunch of vehicles then  
16 it could potentially lead to a wider adoption.

17 COMMISSIONER PETERMAN: Great, thanks. That  
18 helps. And for presentation purposes, whether it's here  
19 or in the final paper, for those vehicles where there's  
20 less than a million, it would be useful just to footnote  
21 kind of what that number is, because it's hard to see  
22 what -- how much it differentiated from zero.

23 MR. WENG-GUTIERREZ: Oh, sure. Yeah, good  
24 point.

25 COMMISSIONER PETERMAN: Thanks a lot.

1           VICE CHAIRPERSON BOYD: Malachi, a question on  
2 the  
3 E-85 demand forecast. As I heard you, that's  
4 basically -- the plot is basically what would need to be  
5 absorbed by an E-85 infrastructure to meet the  
6 California RFS-2 requirement, after you've poured all  
7 you can into the gasoline blending market, is that  
8 correct?

9           MR. WENG-GUTIERREZ: That's correct.

10          VICE CHAIRPERSON BOYD: What's the penalty for  
11 not complying? I mean, I am highly suspicious of  
12 consumers responding to this need and going out and  
13 buying that much more E-85. It just doesn't seem to  
14 catch on. There are a lot of flex fuel vehicles out  
15 there, but --

16          MR. WENG-GUTIERREZ: Sure, good point. I think,  
17 uh, you know, in our analysis that we assumed that there  
18 was compliance and that it did come to market and was  
19 consumed. I think the nuances of the renewable fuel  
20 standard and the requirements to bring that to pass will  
21 be touched on in that conversation, but certainly you  
22 have to look at it and say, is it reasonable that we can  
23 attain these numbers, and how do we get to these numbers  
24 for compliance. You know, given that we have some  
25 infrastructure and lots of vehicles, how do you get more

1 of that fuel into the marketplace? The pricing  
2 differential and --

3 VICE CHAIRPERSON BOYD: Well, it's a massive  
4 price advantage; I just don't see a sudden uptake like  
5 this --

6 MR. WENG-GUTIERREZ: Right, so I think --

7 VICE CHAIRPERSON BOYD: -- so maybe I'm getting  
8 ahead and getting into another presentation --

9 MR. WENG-GUTIERREZ: Well, perhaps a little bit  
10 ahead, but it looks like Gordon's going to jump up and  
11 maybe touch on it.

12 VICE CHAIRPERSON BOYD: Well, do you want to  
13 wait until your presentation, Gordon? Because I know  
14 how long your answers are.

15 (Laughter)

16 VICE CHAIRPERSON BOYD: Go ahead.

17 MR. SCHREMP: I learned that from somewhere, I  
18 don't know where.

19 VICE CHAIRPERSON BOYD: Careful.

20 MR. SCHREMP: Uh, Gordon Schremp, Energy  
21 Commission Staff. Might as well just respond, sort of  
22 real quick. There are certainly a lot of challenges,  
23 when we look at the RFS-2. I will talk about them in a  
24 little bit more detail. But case in point, E-85 sales,  
25 trying to force that in, I mean, the obligated parties

1 under RFS-2 will certainly have to get enough credits  
2 and/or use the correct combination, unless there is some  
3 relent by US EPA. There has to be a modification to the  
4 legislation to be able to downsize the total volume so  
5 we don't get in this situation, but --

6 VICE CHAIRPERSON BOYD: Who's the obligated  
7 party in this instance?

8 MR. SCHREMP: Refiners, major marketers,  
9 importers like under the LCFS. So what is going on is  
10 you have service station owners are primarily not the  
11 majors. They own now less than -- own and operate less  
12 than two percent of the stations in the -- you have  
13 160,000 stations in the United States. So where is the  
14 impetus to install the E-85 dispenser or two? It's  
15 really not. So those service station owners are not  
16 obligated parties under RFS-2, they're not obligated  
17 parties under LCFS. So where is their obligation or  
18 push to do that?

19 And then what Malachi just mentioned, my last  
20 point is the pricing. The pricing -- the relative  
21 pricing of where is ethanol relative to your wholesale  
22 gasoline is extremely important. If ethanol is less  
23 expensive blend stock, then you're using 85% of that in  
24 your blend versus someone that's using ten percent, you  
25 have a marketing advantage plus a little bit of a tax

1 incentive, as well as maybe RAIN credits, LCFS credits.  
2 But when ethanol is more expensive than your gasoline  
3 blend stock, which we can foresee further in the RFS-2  
4 program and in the LCFS program using certain types of  
5 ethanols that are more expensive currently, then an E-85  
6 purveyor is under sort of a penalty and a disadvantage  
7 then by selling E-10. So how can that work out? You'd  
8 have to start amassing some very large credits. And so,  
9 there's a lot of concern about how -- can all of that  
10 get to a point where it's at a big enough discount to  
11 entice people and their cars to voluntarily say I want  
12 to select E-85 50% -- 75% of the time. It's a very big  
13 challenge. But I'll touch on some of those issues a  
14 little bit later.

15 VICE CHAIRPERSON BOYD: It's kind of a different  
16 clean fuels outlet issue all over again.

17 MR. WENG-GUTIERREZ: Sure, and then actually  
18 just to add a quick comment to what Gordon said -- not  
19 to prolong this presentation, but RFS doesn't  
20 necessarily require -- I mean, you can comply with RFS  
21 with other types of biofuels. So there -- it doesn't  
22 necessarily mean that ethanol will be entering the  
23 market. There could be some other advanced biofuels --  
24 cellulosic biodiesels -- other things that enter the  
25 marketplace that comply, which could affect some of

1 these numbers, as well.

2 VICE CHAIRPERSON BOYD: Right, you want to put a  
3 bid on that?

4 (Laughter)

5 MR. WENG-GUTIERREZ: I'm not going to put a bid  
6 on that, I'm just saying that there's an alternative  
7 potential --

8 VICE CHAIRPERSON BOYD: You need that for your  
9 child's college education.

10 MR. WENG-GUTIERREZ: Yeah, I know. Hopefully  
11 I'll invest a little better than that. But any other  
12 questions I guess? Or from the dais?

13 VICE CHAIRPERSON BOYD: Gina? You got you hand  
14 up first, then Tim.

15 MS. GREY: Gina Grey, WSPA. Uh, Malachi,  
16 slide -- let me look at it here, I've got my glasses  
17 on -- slide five. The last bullet there says fuel price  
18 effects of RFS-2 or LCFS are not captured in this  
19 analysis. I'm curious, and I assume the answer is no,  
20 but in AB-32s you know there's not only the LCFS program  
21 but there's also the part of the program that deals with  
22 transportation and fuels under a cap. That, I'm  
23 assuming was also not captured.

24 MR. WENG-GUTIERREZ: That's correct. So, as  
25 part of our analysis so far, we have not captured that

1 and included those as costs that play a role in the  
2 preliminary demand forecast. We do intend on touching  
3 on some of the price implications in our analysis, and I  
4 think Gordon will be discussing that later on, so --

5 MS. GREY: Okay. And I would just ask then that  
6 that be clear in the report, that that was not included.

7 MR. WENG-GUTIERREZ: Perfect.

8 MS. GREY: And this goes a little bit far  
9 afield, but sort of looking at this overall report  
10 structure, and I'll be a little bold here. Personally,  
11 I feel this would be very helpful if this report was  
12 entirely restructured and maybe we can think about that  
13 for later on. But people tend to look at chapters one-  
14 by-one, and if they take the demand chapter and start  
15 looking at the charts, etcetera, it can be taken totally  
16 out of context in terms of what the actual picture looks  
17 like for these various fields, etcetera. So I would  
18 just suggest that perhaps in the future we can consider  
19 structuring it so you have you know, your demand, you  
20 have your supply, you have your challenges and barriers  
21 by fuel, rather than by this type of characterization.  
22 So, just a suggestion.

23 MR. WENG-GUTIERREZ: Okay, that is a great  
24 suggestion. We'll talk about how we can do that.

25 MR: CARMICHAEL: Uh, Tim Carmichael, natural Gas

1 Vehicle Coalition. First a question. Uh, on slides 12  
2 and 13, it's curious to me in the difference in your  
3 high petroleum and your low petroleum demand forecast  
4 you see the gasoline and flex fuel vehicle numbers going  
5 down. But you don't see the other types of vehicle  
6 numbers going up commensurately, and can you speak to  
7 that a little bit?

8 MR. WENG-GUTIERREZ: So I think --

9 MR: CARMICHAEL: If you did already, I apologize  
10 it didn't sink in.

11 MR. WENG-GUTIERREZ: No, no, I didn't, but  
12 you're absolutely right. There is a decline in the  
13 numbers of gasoline vehicles. The other numbers decline  
14 slightly as well, between the high and the low demand  
15 forecast, so you don't see an actually -- wait --  
16 there's no increase in the number of alternative fuels  
17 as the number of gasoline vehicles decline, between the  
18 two cases. And I think that's primarily because the  
19 differences between them are not great enough to  
20 overcome the overall economic and income and other  
21 inputs that we're using for fuel prices. I think what  
22 we're seeing is there's a decline in overall activity --  
23 travel -- as a product of our economic inputs --

24 MR: CARMICHAEL: As opposed to a shift to an  
25 alternative mode of technologies --

1           MR. WENG-GUTIERREZ: -- as opposed to a shift  
2 between the technologies that you might see if there  
3 were really distinct differences in the technology  
4 attributes.

5           COMMISSIONER PETERMAN: Then that would be good  
6 at -- to note maybe just whether just the concluded  
7 vehicle miles travelled are between the two different  
8 projections, as a footnote.

9           MR. WENG-GUTIERREZ: Okay, sure.

10          MR: CARMICHAEL: Second point, uh, in other  
11 forms, other context, and this may not be the majority  
12 view yet, but you hear a lot of talk about tipping  
13 points, and I'm curious -- you know, and this came up at  
14 (phonetic) Asilimar a week or two ago, where some of the  
15 scenario-playing academic types have -- they play out  
16 scenarios with tipping points. And whether it's a  
17 petroleum price-driven tipping point, or an economies of  
18 scale associated with one of the alternative fuel  
19 technologies, you can have scenarios where you don't  
20 have gradual lines like this. And I'm curious to what  
21 extent CEC has played out some of those scenarios or  
22 factored in that possibility. We are talking about a 20  
23 year timeline here.

24          MR. WENG-GUTIERREZ: Uh-huh. To date we haven't  
25 necessarily played out those types of scenarios. I

1 think that's an interesting question, and it's one that  
2 I think is kind of addressed as well, you know, in our  
3 evaluation of AB-118 funding, and things like that.  
4 It's really trying to identify at what points do you  
5 gain that kind of market traction to get the  
6 technologies into the marketplace. Certainly we can do  
7 more of that in the future. Again, to date we haven't  
8 done that, primarily a resource constrain, time  
9 constraint, all those sort of other things. But I think  
10 it's a very interesting question and I think we would  
11 like to look at that a bit more.

12 MR: CARMICHAEL: And then one final point, if I  
13 might. Looking at slide 17, uh, call me bullish on  
14 natural gas, but in again, other forms, other sources of  
15 information, a number of people are projecting that a  
16 reasonable target for natural gas trucks is 20%-25% of  
17 the market by 20 -- of the fleet -- by 2030 -- 20-25% of  
18 the fleet by 2030. That's assuming petroleum prices  
19 continue to go up and natural gas prices continue to  
20 stay relatively low. That coupled with, you know, in a  
21 different context, legislation that CalStart in our  
22 organization pushed this year, which we'll push again  
23 next year, feeding off of the AB-1007 alternative fuels  
24 plan, that 25% or 26% alternative fuels in California by  
25 2022 is a reasonable target for this state.

1           And just as a side note, in conversations with  
2 WSPA and some of their member, in the past they would  
3 have walked out of the room when we put that idea  
4 forward, and that did not happen this year. And those  
5 two inputs combined, you know, you look at this  
6 projection versus the diesel projection and you could  
7 easily have four or five times the natural gas sales by  
8 2030 that you're projecting, and I would say a  
9 commensurate diesel reduction. You know, assuming  
10 transit stays relatively the same, light-duty stays  
11 relatively the same, the big shift is in heavy-duty.  
12 I'm just curious to hear your reaction to that. This  
13 seems really low to me, based on what we know today.

14           MR. WENG-GUTIERREZ: Sure. So I think it --  
15 obviously the rate of change here is dependent on the  
16 inputs and some of the assumptions that we have made.  
17 You know, given the price differential, the  
18 technologies, how we are looking at the heavy-duty  
19 sectors and how natural gas comes into those  
20 marketplaces, it leads to this type of kind of gradual  
21 increase. I don't know that we have reached that 26% by  
22 2020 goal -- or 2022 goal. That was something that I  
23 had intended on putting in and looking at more closely.  
24 And certainly in the context of those types of goals,  
25 these might be higher numbers. There might be higher

1 numbers in the latter part of the forecast, but it  
2 really would depend on can you expand the technologies  
3 outside of niche markets, what is the incremental cost  
4 of those technologies and things?

5 So certainly, if there are drivers that are pushing  
6 the technologies into the marketplace and people making  
7 decisions to adopt those vehicles, it would influence  
8 this demand. We can take a closer look at that. And  
9 certainly any inputs you have about that would be  
10 helpful for us to clarify those kind of --

11 MR: CARMICHAEL: Yeah, the 26% by 2022 is not  
12 yet State law, and that's an aside. But take the --  
13 keep that separate and we should talk more about it.  
14 But just based on, you know, the cost of fuels and other  
15 projections for the potential for natural gas heavy-  
16 duty trucks is much, much greater than what you've got  
17 here. And I think that's economy -- uh, cost-driven,  
18 not regulation driven. Thanks.

19 MR. WENG-GUTIERREZ: Okay, great, thank you.

20 COMMISSIONER PETERMAN: Just a quick question  
21 though. Regarding the cost of the fuels -- regarding  
22 the comment made earlier about, although the price of  
23 natural gas has come down, the cost of CNG has not, can  
24 you just comment on that quickly?

25 MR: CARMICHAEL: Yeah, uh, so my crystal ball

1 says that we will likely see some increase in the price  
2 of natural gas at the wellhead because of additional  
3 regulation associated with fracking, and that will come  
4 this decade. At the same time, Mr. Duleep talked about  
5 what the markup is today at the pump. And one way to  
6 look at that is they are trying to cover their cost for  
7 the infrastructure they're developing in an early  
8 market, as he suggested.

9 Another way to look at it is there isn't much  
10 competition there yet. And I'm not talking about diesel  
11 versus natural gas; I'm talking between natural gas  
12 stations. There just aren't enough yet to have real  
13 competition between them. And the fact that there is a  
14 significant markup at the pump suggests that there's  
15 some margin there for them to reduce their price over  
16 time if competition increases. So I see it as not a  
17 deterrent, but as a possibility for even better margins  
18 in the future between the natural gas pump price and the  
19 diesel pump price.

20 MR. WENG-GUTIERREZ: Thank you. Uh, are there  
21 any questions from online?

22 MR: BAUMHEFNER: Uh, yes. Max Baumhefner, from  
23 the Natural Resources Defense Council. Can you hear me?

24 VICE CHAIRPERSON BOYD: Yes.

25 MR: BAUMHEFNER: Okay. So, first of all, I'd

1 like to commend the CEC Staff for presenting the price  
2 of electricity as a transportation fuel in the  
3 appendices of the report in a cents per gallon gasoline  
4 equivalent. And I'd also, just as a preliminary note,  
5 hope that Malachi is still in the room, and wish his  
6 wife the best today.

7 MR. WENG-GUTIERREZ: Thank you, Max.

8 MR: BAUMHEFNER: So, unfortunately, I think, as  
9 I indicated in an email earlier this week, I think a  
10 mistake was made in the price conversion calculation, as  
11 those tables essentially report that the cost of  
12 electricity as a transportation fuel is more than the  
13 price of gasoline. Again, I'd like to commend Staff for  
14 deciding to present the price of electricity in gallon  
15 gasoline equivalent terms. People are used to talking  
16 about the cost of transportation fuels in dollars per  
17 gallon, so this makes comparisons between electricity  
18 and gasoline much easier. Converting from cents per  
19 kilowatt hour of electricity to dollars per gallon  
20 equivalent is essentially equivalent to asking the  
21 question how much would gas have to cost for driving as  
22 gasoline vehicle to cost the same as driving an electric  
23 vehicle. That's a good question to ask.

24 The Staff report estimates that the cost of  
25 electricity as a transportation fuel is about 12 cents

1 per kWh, currently. Both the LEAF and the Volt use  
2 about a third of a kWh per mile, so on 12 cent  
3 electricity, that's about four cents per mile. In  
4 contrast, the average gas car gets about 22 MPG and on  
5 four dollar a gallon gasoline, that's about 18 cents per  
6 mile, which is about four times what it costs to an  
7 electric vehicle -- or drive an electric vehicle that  
8 same mile. In fact gas would have to be less than a  
9 buck a gallon in order for the cost of driving the  
10 average car to be the same as the cost of driving an  
11 electric vehicle.

12           So, in other words, the per gallon gasoline  
13 equivalent price of electricity as a transportation fuel  
14 should be less than a dollar, not more than four  
15 dollars, as displayed in the draft report. So, I would  
16 urge Staff to fix these, as the draft report is  
17 basically saying there's no cost savings on fuel to be  
18 gained by the decision to drive on electricity.

19           And I'd also wonder if correcting this mistake  
20 might help answer Commissioner Peterman's question about  
21 why the forecast on slide 12 shows that there's  
22 virtually no battery electric vehicles, even in 2030  
23 under the high petroleum demand scenario. I'm guessing  
24 Nissan might take issue with that.

25           MR. WENG-GUTIERREZ: Thanks Max. Well, as you

1 know -- I mean, the forecast itself actually includes --  
2 the model itself uses a price per mile as the value for  
3 both the adoption of the vehicles, as well as the  
4 calculation for consumption. So, it is incorporated  
5 into the decision that's made to buy the vehicle. We  
6 didn't portray it in that specific table because we  
7 didn't want to complicate it by trying to incorporate  
8 the fuel efficiency of all the different vehicles that  
9 the fuels were going into. But agreed. I mean, what a  
10 consumer sees at the end of the day really is a cost per  
11 mile; it's not necessarily the cost at the station. You  
12 know, what they care about is really how much it costs  
13 to drive that mile. So I think Aniss also has a quick  
14 comment on it.

15 MS. BAHREINIAN: Uh, along the same line I'm  
16 just going to repeat the same thing that was -- the same  
17 answer that I provided to -- for diesel. What the  
18 consumers see is the fuel cost for different alternative  
19 vehicles and the conventional vehicles. And what we do,  
20 we assume that they are driving, let's say 12,000 miles  
21 a year, and we are computing the cost for one year. And  
22 that is what they see on those stated preferences  
23 choices experiments. So, assuming the same number of  
24 miles that they drive, we just compute the fuel costs  
25 and that's what they see, that's what they decide on.

1           MR: BAUMHEFNER: That's good to hear. It still  
2 doesn't answer my question about why the draft report  
3 representing the cost of electricity in gallon per  
4 gasoline equivalent is off by a factor of four. It  
5 shouldn't be four dollars a gallon, it should be a buck.  
6 And you have to account for a vehicle efficiency when  
7 you make that conversion, there's no way to do it  
8 otherwise because it's a hypothetical question.

9           MR. WENG-GUTIERREZ: Okay, well then it -- well  
10 we can certainly look at that. I think the notion was  
11 that we were not trying to incorporate the actual  
12 efficiency of the vehicles into that slide. It was a  
13 direct calculation and conversion just to represent it  
14 in a way that you could see the scales. But again, I  
15 mean, if we were to incorporate the fuel economy of the  
16 vehicles into that --

17           MR: BAUMHEFNER: But --

18           COMMISSIONER PETERMAN: This is Commissioner  
19 Peterman, so I will just ask -- to step in -- and just  
20 ask Staff to please re-look at this again, and if you  
21 feel the table does not truly relay what the cost per  
22 gallon is, then let's not put it as a table, and we'll  
23 offer something descriptive. And perhaps a couple of  
24 examples from different cars where we know the fuel  
25 efficiency, and just say with this car, this efficiency

1 this would be then, the price per gallon. I hope that  
2 answers your question.

3 MR: BAUMHEFNER: Yeah, because you can't do the  
4 conversion without looking at the fuel efficiency of the  
5 vehicles. So I would just suggest they use the average  
6 on-road and then the average of the electric vehicle  
7 efficiencies, which is -- and we can provide additional  
8 details on sources for those numbers in our written  
9 comments. But it just -- it's a mistake that needs to  
10 be corrected because it's basically saying there's no  
11 savings from driving on electricity.

12 COMMISSIONER PETERMAN: Great, thanks. Look  
13 forward to your comments.

14 MR: BAUMHEFNER: Thank you.

15 MR. WENG-GUTIERREZ: Is there another question?  
16 Eileen Tutt? Okay. Go ahead Eileen.

17 MS. TUTT: This is Eileen with the California  
18 Electric Transportation Coalition. I presume you can  
19 hear me now.

20 MR. WENG-GUTIERREZ: Yes.

21 MS. TUTT: Okay. So want to say that I'm going  
22 to suggest -- I totally wholeheartedly agree with Max,  
23 and I wasn't sure when that was appropriate to bring  
24 that up -- but I would suggest that the table should be  
25 transparent and reflect what your model does reflect.

1 You do have to show -- like you said -- you have some  
2 assumption on life and some assumption on deficiency in  
3 the model, and that's not apparent. So I thank you,  
4 Commissioner Peterman, but I would suggest that -- I  
5 want to know what's in the model. We'll help you come  
6 up with some of those numbers. We work very closely  
7 with NRDC.

8 My question -- so that -- I think that issue is  
9 something that is clear. The Staff and the Commission  
10 is willing to work with us, and we appreciate that. My  
11 question is on slides 12 and 13. I -- two things; one,  
12 are the vehicles sort of performance -- is how the  
13 vehicle performs and the desirability and the market of  
14 those vehicles -- are those based on Mr. Duleep's  
15 assessments and do they include improvements over time,  
16 would be my first question.

17 MR. WENG-GUTIERREZ: Yes. All of the attributes  
18 change over time as the conditions in the marketplace  
19 change and how the technologies are adopted.

20 MS. TUTT: Okay. And then are these consistent  
21 also -- I mean I don't know if they can be because of  
22 the Air Boards fuel cell assumptions -- but are these  
23 numbers consistent with the Air Board's projections for  
24 LCFS and AB-23?

25 MR. WENG-GUTIERREZ: Uh, with LCFS and AB-32,

1 I'm not sure. They certainly are consistent with the  
2 ZEV program. And that was the primary program that we  
3 looked at, at making sure we pegged it to. So, I can  
4 look further into the electrification -- the further  
5 electrification beyond the ZEV program that might be  
6 implied by the AB-32 regulations.

7 MS. TUTT: Yeah, I mean they have projections of  
8 numbers of -- for both -- for the ZEV mandate and for  
9 the other two programs -- the numbers of PHEVs, the EVs,  
10 and fuel cell vehicles, but -- but yeah, I would  
11 suggest -- and again, very happy to work with you on  
12 that.

13 And then on slide 19, I heard your response to  
14 Commissioner Peterman was that, you know, the plug-in  
15 hybrids have a -- you know, they are more desirable than  
16 a gasoline vehicle. Whereas, the pure battery electrics  
17 are less desirable, so you see that down tick. And what  
18 I would say is that I don't -- for some reason that's  
19 in -- I mean you said you're going to work on this, and  
20 again, we'd really like to work with you, so please keep  
21 that in mind -- but if a plug-in hybrid is more  
22 attractive to a customer than a gasoline vehicle, then I  
23 don't know why that -- why the table would tick down,  
24 because your other projections show that the majority of  
25 the electricity sold that's displacing gasoline is used

1 in plug-in hybrids, presumably.

2           So I would like to -- I know that table is  
3 under, you know, under consideration for modifications,  
4 but I think there must be some fundamental -- there's a  
5 fundamental disconnect there that I don't understand.

6           MR. WENG-GUTIERREZ: Okay, well we -- again, as  
7 you said we're working on this one. I'd be happy to  
8 work with you in looking at that latter part of the  
9 forecast and see how we might better represent it or  
10 consider other elements.

11           On the AB-32 and the ZEV program again, we are  
12 using their numbers, and they were actually updated  
13 numbers from them, as the values that we are using in  
14 our forecast. So, we should be pretty much absolutely  
15 consistent with the ZEV program as it is, you know -- as  
16 of two weeks ago -- you know when they go their Board  
17 and present it might be slightly different, but  
18 certainly we have been in communications with them and  
19 working closely with them to make sure that we are  
20 incorporating that appropriately.

21           you know when they go their Board and present it might  
22 be slightly different, but certainly we have been in  
23 communications with them and working closely with them  
24 to make sure that we are incorporating that  
25 appropriately.

1 MS. TUTT: And -- just really quickly -- and I'm  
2 sorry, but because the Air Board assumes so many fuel  
3 cell vehicles meeting the Zev program in the 2030  
4 timeframe certainly, did you -- what -- how did you --  
5 what was the proxy -- was that a pure battery electric,  
6 or -- because the ZEV program -- was that how you did  
7 it?

8 MR. WENG-GUTIERREZ: Right, no, no. Uh, so  
9 basically with the fuel cell vehicles, again, since we  
10 didn't -- we haven't modeled those, the presumption is  
11 that they will come to market in the appropriate  
12 volumes, as well, for minimum compliance with the ZEV  
13 program. But there's no way for us to include those  
14 into our model. And it didn't -- I mean we could  
15 certainly create a proxy for the EVs and put them in  
16 there, but then that really doesn't -- then you're kind  
17 of distorting the electricity demand by what should be  
18 hydrogen demand.

19 Alternative, we could, you know, calculate the  
20 potential hydrogen demand for compliance with the ZEV  
21 program, and then present that as a value. That, I  
22 think would be probably more appropriate.

23 MS. TUTT: I agree.

24 MR. WENG-GUTIERREZ: Okay.

25 MS. TUTT: Thank you.

1           MR. WENG-GUTIERREZ: Okay, go ahead John. Okay,  
2 if there -- if there are no further questions -- I guess  
3 if John has a question he can -- yeah type it in or let  
4 us know a little bit later. But with that, I'm going to  
5 go ahead and pass it on to, I think --

6           VICE CHAIRPERSON BOYD: Well, wait a minute, let  
7 me inject here, if you don't mind --

8           MR. WENG-GUTIERREZ: Oh -- additional questions?

9           VICE CHAIRPERSON BOYD: Well, no questions.  
10 It's just that I'm looking at the clock and looking at  
11 the agenda, and we're pretty severely behind schedule.  
12 So I need to ask here if this is as good a time as any  
13 to take a lunch break. But I guess I needed to ask --  
14 according to my information, Mr. Langton at the PUC  
15 would be next.

16          MR. WENG-GUTIERREZ: That's correct.

17          VICE CHAIRPERSON BOYD: And I just wonder if he  
18 has a time constraint or not. Or whether we could take  
19 an hour break now for lunch and come back --

20          MR. WENG-GUTIERREZ: That's not --

21          VICE CHAIRPERSON BOYD: -- and pick up at that  
22 point?

23          MR. WENG-GUTIERREZ: Yeah, go ahead, Adam.

24          MR. LANGTON: Yeah I'm Adam Langton. Uh, I'd be  
25 fine with taking an hour break if we start at 1:00. I'd

1 be happy to go on at 1:00.

2 MR. WENG-GUTIERREZ: Okay --

3 VICE CHAIRPERSON BOYD: How about 1:15, now?

4 MR. LANGTON: 1:15 would be fine as well. I  
5 have to leave after my presentation because I have to  
6 get back for a meeting, at 3:30.

7 VICE CHAIRPERSON BOYD: Okay.

8 MR. WENG-GUTIERREZ: Okay, great. Well then --

9 VICE CHAIRPERSON BOYD: Does that work, Mr.  
10 Page, for you and your folks? Okay. One hour we'll be  
11 back in this room. That doesn't give you a lot of time.

12 (Break for lunch at 12:14 P.M.)

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