

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

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)
Preparation of the 2011)
Integrated Energy Policy Report)
(2011 IEPR))

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

CALIFORNIA ENERGY COMMISSION
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SACRAMENTO, CALIFORNIA

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

Reported by:
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 Jim Bartridge, Her Advisor

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 Ryan Eggers
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Presenters

KG Duleep, H-D Systems
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1 P R O C E E D I N G S

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 11th. 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

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

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.

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

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 your 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 and hours 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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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 II 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.

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 Peter Petty

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 Adam Langton
 Alex Kim, SDG&E
 Joshua Cunningham
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 Jim Lyons, Sierra Research, LLC
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Public Comment

*Anthony Anderoni

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

2 SEPTEMBER 9, 2011

1:22 P.M.

3 MS. STRECKER: Okay, everyone, welcome back.

4 Our first speaker this afternoon is going to be Adam
5 Langton, with the CPUC, and he's going to give an update
6 to the electrical vehicle rulemaking.

7 And let me just add that we're a little bit
8 behind schedule so if we can keep things moving this
9 afternoon, that would be fabulous.

10 VICE CHAIRPERSON BOYD: I am now armed with a
11 gavel and I can see the clock directly so --

12 (Laughter)

13 MR. LANGTON: All right, I'm going to go ahead
14 and behind. My name is Adam Langton; I'm an analyst
15 with the Energy Division at the California Public
16 Utilities Commission.

17 And I work on -- excuse me -- I work on our
18 electric vehicle proceeding. And I want to give a
19 little background on our electric vehicle proceeding,
20 talk a little bit about the adaption rate projects that
21 we've received from the IOUs, and talk a little bit
22 about some of the potential grid impacts and how we --
23 how we try to estimate what those will be.

24 So, the California Public Utilities Commission
25 regulates the investor-owned utilities in California.

1 And in the electricity sector that mostly consists of
2 PG&E, SCE and SDG&E. We don't regulate the muni's, but
3 what we do regulate comprises about 85 percent of
4 electricity sales in the State of California.

5 In 2009 we started in electric vehicle -- or
6 regulatory proceeding looking at electric vehicle
7 adoption and how the Commission and the utilities could
8 support electric vehicle adoption.

9 We essentially broke our proceeding into three
10 phases. The first phase we looked at whether or not
11 charging service providers and charging stations were
12 categorized as public utilities or not, and that would
13 determine how -- whether or not they would be regulation
14 by the Commission.

15 Ultimately, we ruled that they were not under
16 our jurisdiction and they are not public utilities.

17 And in our second phase, which we began this
18 past spring or, rather, last fall and continued into the
19 spring and issued a decision on in July, we looked at
20 the utility role in electric vehicle adoption and
21 electric vehicle charging. In particular, we looked at
22 infrastructure issues, cost allocation and PEV tariff
23 rates.

24 The decision did a number of things. I'm just
25 going to go through just a couple of these in the

1 interest of time. But this was -- our phase two
2 decision was voted out in July of this year and this
3 lists kind of the seven major aspects that we looked at
4 in this decision.

5 A couple that I want to talk about right now are
6 that we ruled that utilities are not allowed to own
7 charging equipment that is on a customer premise. That
8 falls on the customer side of the meter and so utilities
9 are not allowed to own it.

10 And then number -- number two is regarding the
11 shared costs of distribution upgrades. When someone
12 installs an electric vehicle charging station,
13 particularly in a residential area, it can have impacts
14 on the distribution that is already set up in that
15 residential neighborhood.

16 If upgrades are needed, that creates a cost that
17 prior to this decision looked like it would be the
18 responsibility of that residential customer.

19 What we decided is that we want to treat that as
20 a shared cost until July of 2013. And the reason we
21 want to do that is so we can have some time to better
22 understand what those costs are and better understand
23 ways to assign those costs.

24 So, we may reexamine that in 2013. We'll have
25 some additional information to do that by that time.

1 So, I mentioned that there's three phases.
2 Phase three is begun now, and in phase three there are
3 three issues that we're looking at. We are looking at
4 load research and -- is the first one, let me talk about
5 that.

6 So, as part of our decision we asked that the
7 utilities develop a load research plan so that we can
8 understand the impacts that electric vehicles have on
9 the distribution infrastructure.

10 We felt like there was a lot of unanswered
11 questions in this area and the way we would answer those
12 questions is we would begin researching the electric
13 vehicles that are out there and start understanding what
14 their charging profile looks like, and try to understand
15 how that impacts the distribution infrastructure that
16 the utilities. And so that then we can start to
17 understand how that impacts costs and then decide how we
18 want to treat those costs.

19 So, they will begin that research in 2013 or,
20 rather, they'll begin that research in the spring of
21 2012. And in January of 2013 they'll come to us with
22 that research, we'll have that research to then start
23 evaluating the PEV rates.

24 So in this decision that we passed, in July, we
25 made some small adjustments to rates, but we realized we

1 didn't have enough information to make a lot of changes
2 to those rates, so we want to do this load research so
3 that then we can understand how to structure those
4 rates.

5 One of the concerns is how do we minimize -- how
6 do we use rates to write an incentive to discourage on-
7 peak charging and encourage nighttime charging, so
8 that's one of the things we have to learn from this
9 research.

10 There's a lot of unknowns and we kind of have a
11 sense of what those are. We're not sure what the
12 impacts that PEV charging will have on the electricity
13 system. We're not sure what the costs associated with
14 off-peak charging are versus on-peak charging.

15 But we do think that there's a big difference
16 between the distribution impacts whether you're charging
17 on-peak or off-peak.

18 So, we know we want to encourage off-peak
19 charging, but we want to get a sense of how people
20 currently charge their vehicles, those early adapters
21 that are purchasing their vehicles now and in 2012. And
22 then understand how they're charging them and then use
23 that information to develop PEV -- to revise our PEV
24 rates.

25 We've had PEV tariff rates on the books since

1 the mid-nineties, when we first went through a round of
2 PEV adoption. So those are still on the books, we're
3 making some small adjustments to those this fall, but we
4 want to really reexamine the structure of those rates
5 after we have this load research.

6 The second area that we're looking at this fall
7 is utility notification. To better understand the load
8 impacts and what infrastructure upgrades are needed, we
9 want utilities to be notified when somebody purchases an
10 EV and installs charging infrastructure.

11 So, the utilities right now are working with
12 different stakeholders to figure out a plan to get that
13 notification. They're working with OEMs, and dealers,
14 the DMV, and installers, perhaps local governments to
15 figure out when -- who has access to information on when
16 somebody is purchasing a vehicle and installing those
17 charging infrastructure elements so that we can -- so
18 that they can better anticipate where grid distribution
19 upgrades will need to take place so that we can avoid
20 outages and other problems associated with that.

21 And then the third aspect that we're looking at
22 in phase three is sub-metering. So, we've ordered the
23 utilities to develop rules that would accommodate
24 customer-owned PEV sub-meters. And we've recognized
25 that those sub-meters may be located on a house, they

1 could be in a charging station, or they could be in the
2 vehicle, itself.

3 And we'd like the utilities to develop rules to
4 accommodate that so that they can use that sub-meter in
5 their billing system and bill off of it. That would
6 allow a customer to have a separate rate for their home
7 from the rate that they charge for the -- from the
8 tariff that they use for their electric vehicle.

9 There's a number of challenges associated with
10 that so right now the utilities have formed a working
11 group and they're starting to consider the different
12 challenges.

13 And we've ordered them to send us a protocol of
14 a set of requirements by July of 2012. So, they're
15 working on that now and we want them to have tariffs
16 submitted to us by September of 2012. So, a year from
17 now we should have tariffs in place that will allow them
18 to use sub-meters for billing purposes.

19 So, in terms of looking at EV adoption and an
20 adoption rate, since I know that's the primary purpose
21 here, at this particular workshop, in order to
22 understand the grid impacts -- we want to understand
23 both the adoption rates but, from a CPUC perspective,
24 we're also concerned about what the charging behavior is
25 and what charging level customers are using.

1 So this graphic here shows, in the lower left-
2 hand corner, the rate of charge that we expect that
3 customers could use. They could use a 120-volt, which
4 is similar to, you know, a three-prong outlet that folks
5 are used to using. It has a much slower charge rate and
6 it takes a lot longer to charge up.

7 And these times indicate how long it takes to
8 charge a vehicle from zero to a hundred percent full.

9 If we do see that folks are using the level two
10 or the 240-volt chargers, and those are at 30 amps, then
11 as this graphic shows here on the right, that charge
12 level at the time that it's charging would exceed the
13 average charge level for houses throughout different
14 parts of California.

15 You can see a comparison to houses in --
16 households in San Francisco, Berkeley and San Ramon.
17 It's significantly higher than that.

18 Since we're anticipating that most of the
19 adoption, early adoption is going to take place in
20 coastal cities, that comparison to Berkeley and San
21 Francisco is pretty significant.

22 And that's important to us because if folks are
23 using those high-level charges and the grid
24 infrastructure is not built out to accommodate that,
25 then we could see impacts like transformers degrading

1 more quickly than we're used to or, perhaps, lower
2 quality of electricity services to the homes in these
3 areas. So that's why we're particularly concerned about
4 this.

5 Now, the charge times there indicate the
6 charging from zero to 100, which is kind of an extreme
7 situation, and the 6.6 kilowatts that we see there in
8 that graph assumes that somebody is using a level two
9 charger. That's an assumption that we usually see in a
10 lot of these estimates, but we don't know if folks are
11 going to be using level two chargers or not, or what the
12 penetration of level two chargers will end up being in
13 residential homes. I'm going to talk a little bit more
14 about that in a minute.

15 But next I wanted to talk about the PV adoption
16 rates that we've received from the utilities. As part
17 of our smart grid proceeding, we asked last fall that
18 utilities develop smart grid deployment plans that
19 outline their plans for deploying smart grid
20 infrastructure.

21 And as part of those plans, which were submitted
22 this summer to us, they provided PEV adoption estimates,
23 and so we've received those as part of that proceeding.

24 We have not yet begun to analyze those. We just
25 had the prehearing conference on this proceeding on

1 Wednesday, so this is still at an early phase of
2 analyzing these things.

3 But I wanted to provide sort of what the
4 estimates are that they provided to us and what kind of
5 our early take on those estimates is.

6 So, first, this is SCE's PV adoption rate. This
7 shows cumulative PEVs in their service territory.
8 They've provided a high forecast, a mid forecast and a
9 low forecast.

10 The high forecast anticipates one million PEVs
11 in 2020. And this appears to be a combination of BEVs
12 and plug-in hybrid vehicles, and they also provide an
13 estimate for 2015 as well.

14 And, again, these are three estimates and they
15 include BEVs and plug-in hybrids.

16 PG&E provided a similar analysis, it looks very
17 similar to what we see from SCE. In their high case,
18 they're anticipating 850,000 electric PEVs in their
19 service territory in 2020.

20 And their low case in 2020 is only anticipating
21 220,000, so there's a pretty big spread there between
22 their estimates. And then the middle is anticipating
23 about half a million PEVs in their service territory.

24 And then, finally, SDG&E also provided adoption
25 estimates in their smart grid deployment plan. They

1 provided one estimate but they broke out the plug-in
2 hybrids from the all-battery electric vehicles in their
3 estimates.

4 And as you can see here, they are assuming that
5 the battery electric vehicles comprise about ten percent
6 of the PEVs in their service territory.

7 And they're anticipating about 280,000 PEVs,
8 altogether, in 2020.

9 In terms of the aggregate of these estimates, if
10 we take the mid estimates from PG&E, and SCE, and
11 combine that with SDG&E's estimate, well, we get a total
12 of 1.2 million PEVs by 2020.

13 And if we want to look a little further down,
14 kind of see how this looks from, you know, a density
15 perspective, what this graph shows is the number of
16 people per PEV in their service territory.

17 And you can see that the PG&E and the SCE
18 estimates look pretty much similar, you know, comparing
19 their low, to mid, to high. And so when you look at
20 this graph, the higher columns indicate sort of a lower
21 density, they indicate more people per PEV, and the
22 lower columns are higher penetration rates.

23 So, the PG&E and SCE estimates look pretty
24 similar when you compare them to a population basis.

25 SDG&E's estimate is lower than the PG&E and SCE

1 high estimate, so they're estimating about one EV per 11
2 people in their service territory. And that's more -- a
3 higher penetration rate than PG&E and SCE's high
4 adoption rates.

5 I'm not sure what to make of that, exactly.
6 PG&E -- or SDG&E's service territory is -- I'm imagining
7 it's more urban and it's more coastal, and that's where
8 we're expecting to see higher adoption rates, anyways.

9 So, looking at this, it's hard to say whether
10 that estimate is too ambitious or not, and it might be
11 right on the mark.

12 But adoption rates are just one part of
13 understanding the impact that EVs will have on the grid.

14 The other impact that we want to understand is
15 charging behavior. And to give us a better sense of how
16 charging behavior looks and how it might impact
17 electricity needs, we put together a charging model at
18 CPUC, and this is -- we're in the process of developing
19 this.

20 This is kind of the early stage, still at this
21 point, so I want to show you some preliminary numbers.
22 We're going to complete this at the end of October and
23 we'll be able to share some final, some more finalized
24 numbers from this.

25 But what we did was we took a DOT Transportation

1 Survey, where they surveyed households on their
2 transportation behavior. They looked at when and where
3 households traveled from and to, and how far they were
4 traveling.

5 We took that information and looked at just the
6 California information and tried to estimate how
7 charging could look for a typical day for a customer.

8 This is just a one-day snapshot of drivers that
9 they do in their transportation survey, so it's a little
10 bit limited in terms of what it says.

11 But we took this analysis and the first thing we
12 did was we tried to figure out what the average driving
13 range would be for drivers. The different averages are
14 there, at the bottom of this table, based on different
15 cuts of the data that we took.

16 But it's about between the mid-thirties and high
17 thirties in terms of average miles per day that
18 customers are traveling.

19 The chart here breaks those down, breaks those
20 vehicles down into different groups. The largest one,
21 of 43 percent, is driver who travel zero to 20 miles per
22 day. Those drivers would need less than five kilowatt
23 hours per day to charge.

24 Now, they only need five kilowatt hours per day.
25 If they have a charging station that charges at 6.6

1 kilowatts, they would be able to charge in less than an
2 hour.

3 So, what this could suggest is that there are
4 customers who don't need a level two charging and may be
5 able to do all their charging with a level one charger.
6 If that's the case, the grid impacts look a lot
7 different.

8 So, from looking at this data we are curious as
9 to how many customers will actually adopt level two
10 charging stations and wondering if we'll see more
11 customers that are adopting just level one charging
12 stations since they have small driving ranges.

13 But, obviously, there's some drivers that -- you
14 know, about 15 percent or so that are driving more than
15 60 miles per day, they would certainly need a level two
16 charging. But it's questionable as to whether drivers
17 that are driving that far would want to buy an electric
18 vehicle in the first place.

19 Infrastructure, in that case, could provide --
20 public infrastructure and workplace infrastructure could
21 provide an incentive for them to do that charging.

22 And then what we did was we took this data and
23 we broke it down, and we looked at charging throughout
24 the day. Since we knew where cars were throughout the
25 day, we wanted to look at what charging could look like

1 at different times of the day.

2 And this is kind of an extreme scenario, we
3 assume that level two charging stations were available
4 at every location, wherever anyone parked. This is kind
5 of unrealistic but it kind of provides like kind of a
6 bookend to some of our assumptions here.

7 Based on this assumption about 98 percent of
8 drivers could complete all their driving needs, if they
9 had all those charging stations. Two percent couldn't
10 because they were simply driving too much or driving too
11 long before they came to a charging station.

12 We looked particularly at peak charging, that's
13 that red-highlighted area, and what we found -- so this
14 is looking at average kilowatt hours or kilowatts per
15 vehicle. And what we found is that using our data
16 during the peak hours, assuming the peak hours are 11:00
17 to 6:00 p.m., there was about 3.2 kilowatt hours per
18 vehicle.

19 And what we saw here, under these assumptions,
20 is that the peak charging is happening during these peak
21 hours. Not much charging is taking place at night. In
22 fact, the average battery is 97 percent full at
23 midnight, under these assumptions.

24 If we assume that drivers are only using level
25 one charging, that's what this scenario shows, that

1 we've put level one charging, which are essentially
2 three-prong outlets, at every location where someone
3 parks. And you can kind of see the comparison here
4 between level two and level one.

5 Peak charging drops to 2.8 kilowatt hours per
6 vehicle but, at the same time, we've moved from a lot
7 slower charging but, still, 95 percent of drivers can
8 complete their driving needs.

9 And batteries are still 91 -- the average
10 battery is 91 percent full at midnight.

11 So under -- using just level one charging, folks
12 are able to complete a lot of their charging.

13 One of the concerns that we have with this data,
14 that we're going to look at revising, so we're concerned
15 that this data may over-sample nonworking households.

16 In DOT's dataset they did have a weighting
17 factor that's designed to account for that and we used
18 that weighting factor in this data, but we're a little
19 bit concerned that the charging rates that we see
20 between 1:00 and 5:00 p.m. seem a little bit high to us
21 at this time. So, we're looking at ways to adjust the
22 data to account for that.

23 But based on this data we are -- we are curious
24 to see what the adoption rate of level two charging
25 stations will be.

1 The common assumption that we see is that all
2 households will adopt level two charging stations, but
3 we think that the data suggests that there may be a lot
4 of households or certain kinds of households that will
5 not use those.

6 And this is important to understand and
7 something that we hope to learn through our load
8 research because it has a big impact on the grid
9 infrastructure impacts. And when we understand that and
10 when we take it and combine it with the adoption rates
11 we can start to understand what kind of infrastructure
12 impacts, what kind of infrastructure costs we'll be
13 facing.

14 And we can use that, we can also use that
15 information to understand how to structure our electric
16 vehicle tariffs.

17 At this time I'd be happy to take any questions.

18 VICE CHAIRPERSON BOYD: Thank you, Sam. Real
19 quickly and I don't know if it's a question to you, or
20 to everybody in the electric vehicle area. And I meant
21 to say, before introducing you, that to those in the
22 electric vehicle area who felt neglected this morning, I
23 noticed in the agenda I was giving of who's testifying
24 that this entire section is electric vehicles, so you're
25 getting more than your fair share of the agenda.

1 That aside, you had vehicle estimates, the ARB
2 does vehicle estimates, we do vehicle estimates, the PEV
3 collaborative which is fairly new and we'll hear from
4 them shortly, does vehicle estimates. I have no idea if
5 these are all in concert or whether we have differences.

6 So, I just throw that on the table. I don't
7 expect you to know the answer, unless you happen to know
8 the answer, because you folks are part of the PEV
9 collaborative as well.

10 MR. LANGTON: Yeah, I'm not sure to what extent
11 collaboration is occurring on these estimates. We know
12 that the utilities are involved in the PEV
13 collaborative, and there's other collaborative groups
14 that are working together.

15 But I think that's a good question as to how we
16 can coordinate these.

17 And this is -- they're just looking at their
18 individual service territories. And I know some other
19 groups are looking at statewide estimates, which would
20 then include Sacramento and L.A.

21 VICE CHAIRPERSON BOYD: Okay and here comes the
22 PEV collaborative.

23 MR. CUNNINGHAM: Joshua Cunningham, Plug-In
24 Electric Vehicle Collaborative. And I'll just say that
25 I have two slides teed up in my slide deck to address

1 that question.

2 VICE CHAIRPERSON BOYD: Good. Thank you.

3 Okay, next we're going to hear from the
4 utilities, I guess, and Alex Kim, SDG&E, also a member
5 of the collaborative.

6 MS. STRECKER: I think Commissioner Boyd just
7 did a wonderful job of introducing you. Now, I don't
8 have to. Thank you.

9 VICE CHAIRPERSON BOYD: I'm using the fast
10 gavel, fastest approach to the afternoon approach.

11 MR. KIM: Good afternoon, Commissioners, thank
12 you for inviting me to participate. I'm more than
13 thankful to be here after what's happened in San Diego,
14 yesterday.

15 VICE CHAIRPERSON BOYD: Glad you got out.

16 MR. KIM: I'm glad to say that all of our 1.4
17 million customers got their service back in 12 hours, so
18 it's a tremendous job, very proud of our company for
19 getting all of our customers back online.

20 VICE CHAIRPERSON BOYD: It wasn't one of your
21 workers who made the mistake.

22 MR. KIM: And it wasn't our fault so --

23 (Laughter)

24 VICE CHAIRPERSON BOYD: But it really has
25 brought into question, in this Agency, why the simple

1 act, theoretically, of pulling a monitoring instrument
2 out shuts down a big part of the Western United States.

3 MR. KIM: Yes.

4 VICE CHAIRPERSON BOYD: Well, anyway, you'll all
5 look into that, I'm sure.

6 MR. KIM: I'm sure there will be much more to
7 say about that as well, too. But thank you, again, for
8 the opportunity.

9 I'm going to focus my discussion primarily on
10 giving you a little bit of insight on what's happening
11 in San Diego with the plug-in electric vehicles.

12 And I'm also going to focus on some of the
13 barriers and offer up some, at least, solutions from our
14 perspective for electric vehicles, and how do we get rid
15 of those barriers with electric vehicles.

16 So, we just talked about -- a little bit about
17 the projects and so this is the projections of many
18 different organizations, some from a very high rate
19 projection, some a very low level projection.

20 This particular chart here is from the
21 California Plug-In Electric Vehicle Collaborative, where
22 you see a lot of different estimates. And you just saw
23 the differences in the utilities with our projections,
24 with the plug-in electric vehicles.

25 And the variations are very much in the line

1 with what Adam is saying. One of the things, for
2 example, with San Diego and why our projections are so
3 high, and I'm going to talk a little bit about it, is
4 because of the activity that's actually happening in San
5 Diego and the type of customers that we have in San
6 Diego we believe warrants a much higher projection.

7 But is that projection right? You know, we
8 don't know. We think it is definitely our best estimate
9 based upon the information that we have and based upon,
10 you know, the adoption of hybrid electric vehicles, for
11 example, in our service territory and the very high-tech
12 community that we do have now.

13 So, just a little bit about SDG&E's situation;
14 our area is part of the EV Project, which is a project
15 that is a DOE-funded project to install electric vehicle
16 charging infrastructure throughout the United States.

17 In the San Diego Region that includes 1,500
18 public charging stations, as well as 1,000 home charging
19 units.

20 We also have some additional funding from the
21 CEC, thank you, also for that, to install chargers in
22 that project as well, too.

23 In addition to that, one of the things that we
24 are doing is we're also doing a rate experiment, and so
25 one of the things that we're testing is the price

1 elasticity of customers and their behavior to charge
2 during the off peak and during the peak period, and
3 understanding -- providing that price differential and
4 what price differential makes a difference for them to
5 charge in different periods. And we're just starting to
6 get some of that data in, now, and I'll share a little
7 bit about that a little bit later.

8 Another thing that's happening in San Diego is
9 Car To Go, which is an affiliate of Daimler. Had
10 announced its first all-electric car sharing program to
11 be launched in San Diego, this will be the first in the
12 world.

13 They're going to have 500 Smart EVs as part of
14 this program. These vehicles will float throughout the
15 San Diego Metropolitan area and they're going to be
16 starting that program in December of 2011.

17 Lastly, there's been several announcements from
18 different auto manufacturers planning to launch their
19 vehicles in California but, specifically, in San Diego.
20 So, again, one of the reasons why we have a higher
21 projection rate than maybe some of the other utilities
22 in California is because of the different discussions
23 that we've had, and the different announcements that
24 we've seen as far as electric vehicles coming to the San
25 Diego area.

1 This map here shows currently, at least as of
2 June, the number of electric vehicles that we have
3 throughout our service territory. We've mapped this by
4 transformer, so the green dots that you see there are
5 actually number of electric vehicles, one electric
6 vehicle per transformer, or one customer per
7 transformer.

8 The yellow dots that you see there are two
9 customers per transformer.

10 And the most interesting one that you see there
11 is the blue dots, which is customers that have both
12 electric vehicles, as well as solar photovoltaics.

13 Currently, about -- just some statistics, we
14 have about 500 Leafs, at least that we know of, Nissan
15 Leafs in our service territory.

16 We've got over 100 Chevy Volts in our service
17 territory, so over 600 electric vehicles so far in our
18 service territory. And this primarily had started
19 probably early in Q2 is when the bulk of the vehicles
20 were starting to arrive this year.

21 About 47 percent of the EV owners have a higher
22 income base, as well. And the electric vehicle owners
23 that I mentioned, that also have solar, about 35 percent
24 of them also have solar.

25 We're also seeing about an average charge rate

1 of about 7 to 8 kilowatt hours per customers in average
2 use per day, so that equals about a 25-mile range on a
3 Nissan Leaf as well, too.

4 So, going back to, I think some of the
5 information that Adam presented, we're also starting to
6 see, you know, customers not necessarily needing to have
7 a full charge on their vehicles. At least in our
8 service territory where we -- our metro area's
9 relatively close, so in our area we don't see that --
10 we're not starting to see that need as much with our
11 customers.

12 Talk a little bit about some of the barriers and
13 solutions, and so I've got four -- four areas I really
14 want to focus on and one of them is the fuel price.

15 As was mentioned earlier today, the fuel price
16 with electric vehicles, we believe providing that
17 incentive to our customers, helping them to drive down
18 the cost of that fuel, in other words the electric
19 prices, will help drive electric vehicle sales.

20 And one way to do that, I know the discussion
21 after this is going to talk about the low-carbon fuel
22 standard. One way to do that is to take the credits and
23 the value of those credits that are generated and
24 provide those as an incentive to help drive down the
25 costs.

1 So, that accomplishes two things. One of them
2 is it helps customers and consumers to continue to have
3 that price signal, to be able to purchase electric
4 vehicles. But secondly, and I think most importantly is
5 it provides that experience, that continued experience
6 so when they're buying their next electric vehicle
7 they'd still have that price signal and that continued
8 motivation to want to drive the electric vehicle.

9 Just an anecdotal note here is, you know, we've
10 had customers that, initially, when they purchased their
11 electric vehicles they did it because they wanted to be
12 green, they wanted to have something new, they wanted to
13 have the new technology, but it wasn't until they got
14 their first electric bill that they realized what a
15 significant savings that it was and what a tremendous
16 investment it actually was for them as well, too.

17 And we think that word of mouth, as that starts
18 to spread to their friends and family, and through the
19 different electronic mediums, we're starting to see much
20 more customers very interested in electric vehicles.

21 And so while we had a very high projection for
22 plug-in electric vehicles or plug-in electric hybrid
23 vehicles versus battery-electric vehicles, you know, we
24 may start to see actually more electric vehicles and
25 plug-in electric vehicles than we originally had

1 thought.

2 The other thing is these incentives can also be
3 used to help to drive -- to control the rate of charge.
4 And so, example, with our demand response programs we
5 can provide that incentive from the credits that are
6 generated to our customers as well, too, to further
7 encourage them to help the grid, which would have been
8 very helpful yesterday, and actually today as well, too,
9 in our service territory. But also help to control the
10 rate of charge, but also the timing at which our
11 customers charge.

12 Here is some data, this is very early data that
13 we've collected from our customers here. Here, you see
14 about 86 percent of our customers are charging during
15 the super off peak. For SDG&E that period is between
16 midnight to 5:00 a.m. About nine percent of those
17 customers are charging during the off peak. And only
18 five percent are charging during the on peak.

19 Again, this is at home, so we don't have the
20 data yet for what's happening with public charging. But
21 at home, primarily, most of the customers are charging
22 either during the off peak or during the super off-peak
23 period.

24 Also what we have included here is the price of
25 our -- or at least our equivalent price of gasoline as

1 well, too. So, in the on-peak period when our rates are
2 around 38 cents for our high rate that we're testing,
3 the equivalent gallon is about \$2.74 cents. In the off
4 peak it's anywhere from 54 cents to 99 cents.

5 So, I know there's some discussion about the
6 chart in the report and so, you know, we'd be glad to
7 work with staff as well to understand where those
8 numbers came from, and provide some of the estimates
9 that we have as well.

10 Barrier number two is the price of ownership for
11 the electric vehicles so, one of the things that we see
12 as a solution is maintaining the current incentives that
13 are available, now. We need to ensure that the cost of
14 the vehicles are still affordable. We think that's
15 needed at least until the market is established.

16 So, maintaining both the Federal and the State
17 incentives are important. It encourages the customers
18 to buy the electric vehicles now, it gives them that
19 incentive to act. But it also helps to encourage more
20 growth of the industry, specifically in California, and
21 driving more jobs into California for the services that
22 are needed to support those electric vehicles.

23 Barrier number three is the consumer and
24 stakeholder knowledge. Right now that is very minimal.
25 The utilities are doing a tremendous effort, I think, in

1 all their service territories, both the municipal
2 utilities, as well as the investor-owned utilities at
3 providing neutral and informative information, such as
4 information about rates.

5 So, not necessarily providing information about
6 the vehicles, themselves, we believe that's the
7 responsibility of the auto manufacturers and the
8 dealers.

9 But encouraging customers and making them
10 understand about, you know, when is the best time to
11 charge, what is the value of charging during those
12 different periods of time?

13 But not only doing outreach for our customers,
14 we're also talking about the different markets within
15 our customers. So, for example, the multi-unit dwelling
16 area, apartments and condominiums, for example, they
17 have different types of needs working with the
18 homeowner's associations.

19 So, for example, one of the things that we're
20 doing at SDG&E is we have workshops, where we invite the
21 homeowner's associations to there, we invite the
22 contractors, as well as the EVSE installers to talk over
23 the issues, and for them to be educated on what it takes
24 to provide charging in multi-unit dwellings.

25 The same goes for fleet and workplace charging.

1 One of the things that we've done as a company, and
2 we're pushing this information out to our customers is,
3 as a company we're offering workplace charging.

4 But as a corporation, we understand that there
5 are different issues, tax-related issues for example,
6 issues related to policy about when employees can
7 charge, and how long they can park there.

8 So, we're taking that information and we're
9 sharing it with others, we're sharing it with the
10 California PEV Collaborative so that information can get
11 passed out to the different commercial customers that we
12 have, as well as providing information about fleet
13 charging.

14 Lastly is the stakeholders; the policymakers,
15 the dealers, for example, are a key, critical piece to
16 this, making sure the dealers understand the
17 information.

18 We talked a little bit about -- it was mentioned
19 a little bit earlier about having the OEMs and making
20 sure that the customers contact the utilities before
21 they purchase an electric vehicle because it's not like
22 buying a regular vehicle, where you can just drive the
23 vehicle off the fleet, go to your nearest gas station,
24 fill it up and go.

25 It takes some time, for example, to coordinate.

1 If you are getting level two charging, to get a charging
2 station you have to have a contractor come out there and
3 install that, and when to charge your vehicle.

4 So, those are the types of education that we
5 want to make sure that the dealers understand, that the
6 customers need to contact the utilities as well, too.

7 Last barrier is the cost of the electric vehicle
8 service equipment. So we talked about or it was
9 mentioned earlier that the cost of this equipment right
10 now is relatively high. And so we believe that one of
11 the things that needs to be done is to encourage a lot
12 of different options.

13 And so Adam talked about different ways in which
14 a customer's going to charge. Are they going to charge
15 using level one charging, level two charging or even
16 possibly, you know, have the need to have -- to do DC
17 fast charging for public charging stations.

18 And we think there's a lot of different options
19 that need to be available out there. There are
20 definitely a lot of companies out there that are
21 offering this. We're well aware of over 40 companies
22 right now that have a different product. And so
23 creating that price and product competition is very
24 important.

25 And also providing incentives, I believe. Right

1 now the Federal -- the Federal government has an
2 incentive for these. We believe that needs to continue
3 until the cost of these go down.

4 But also it depends on the different types of
5 technology options that are needed for these electric
6 vehicle service equipment. Some of them can be very
7 basic. If you've ever looked inside one of these, it's
8 just a few wires put together and some of them are very
9 basic, where other of them are very sophisticated. They
10 have smart grid technology capability, for example, they
11 can interface with the meter, but those add cost to the
12 equipment.

13 And so letting the utilities, I think, work with
14 the electric vehicle manufacturers or electric vehicle
15 service providers to determine what service, what
16 technology options are needed to provide the lowest
17 cost.

18 The last slide I have here is just a glimpse
19 into the future. So I started off talking about, you
20 know, what is the projection of electric vehicles in the
21 future?

22 And this was an event that was a dedication for
23 the first public charging station in Balboa Park, which
24 is a big park in San Diego. What you see there is over
25 60 electric vehicles in the parking lot, probably the

1 largest gathering of electric vehicles in the country at
2 this time.

3 And this was a few months ago. And the question
4 is, you know, is this what our future's going to be? Is
5 the future going to be electric vehicles? Is this what
6 the parking lot of the future is going to look like,
7 where you've got a lot of electric vehicles in one
8 location?

9 I don't have the answer to that. I wish I did
10 have the answer to that. But it's definitely a future
11 that the utilities are working toward. Trying to break
12 down some of those barriers I mentioned to you are the
13 activities that we're working toward to help make this
14 future happen.

15 So with that, thank you, and I'll take any
16 questions.

17 VICE CHAIRPERSON BOYD: Thank you. Any quick
18 questions? Seeing none, I'll thank you.

19 MR. KIM: Thank you.

20 MS. STRECKER: Here comes Adam to make a
21 comment. And then after Adam, Joshua Cunningham, from
22 the PEV Collaborative, will speak next.

23 MR. LANGTON: One thing that I wanted to
24 mention, that I had forgotten to mention, that now Kyle
25 reminded me of, is regarding the LCF credits and how

1 we're addressing those credits that go to the utility.

2 We have a GHG OIR that is looking at the use of
3 GHG auction revenue that goes to the utilities that
4 began this summer. As part of that we're also looking
5 at the use of LCFS revenue that goes to the utility.

6 And we'll begin looking at that revenue, the use
7 of that revenue, in January. We're anticipating that
8 ARB will have a new LCFS ruling in December and once we
9 have that we can start looking at the use of that
10 revenue.

11 So, that was the one thing I had forgotten to
12 mention that I wanted to put out there.

13 MR. CUNNINGHAM: Thank you for the opportunity
14 to present, Commissioners and staff.

15 There are a number of areas that the Plug-In
16 Electric Vehicle Collaborative operates in but I want to
17 focus today a couple of trends and observations we have
18 on the infrastructure topic, given that that's the most
19 relevant issue for your workshop today.

20 As a multi-stakeholder collaborative, with the
21 Air Board, and other agencies, and private sectors,
22 we're very happy to have CEC and direct engagement of
23 Commissioners and staff in our program. So, thank you
24 for your participation.

25 There are three key topics I want to hit on in

1 my brief slide deck. The first is what I'm calling kind
2 of the today's numbers, some vehicle count and charging
3 counts that we're seeing this year and next year, to
4 give some context.

5 I'll also have a couple of slides, as I
6 mentioned, on the projections, on the current
7 projections out there.

8 The second topic is the -- a few areas within
9 the Collaborative activities that we're touching on
10 related to charging infrastructure, and then some
11 interesting trends that are emerging that should be
12 quite relevant for the longer term in terms of cost
13 reductions and public infrastructure growth.

14 So, everybody's familiar with the Leaf, the
15 Nissan Leaf, and the General Motors' Volt, both of those
16 are on this table. But I want to highlight that every
17 major manufacturer has a product coming to market that's
18 a plug-in vehicle in the next year or two.

19 The one that's next coming up is likely the Ford
20 Focus, which is in the lower left there, coming out late
21 this year. BMW, the car right above that, is also
22 coming out, and then Honda, and Mitsubishi. So,
23 everybody has a car coming out.

24 And I think it's pretty clear from what we've
25 seen in the press that there are long -- there are

1 waiting lists for the Leaf and the Volt, so we don't
2 expect a demand issue from the next year or two in the
3 early adopters.

4 The critical issue is can we sustain that
5 demand, both as we move past early adopters and as we
6 move into a saturation in the market with a larger
7 number of auto companies bringing products to the
8 market.

9 So those are large unknowns. All we know today
10 is that we have two exciting cars on the market and
11 they're selling well.

12 So, I have two slides on the projections. This
13 one Alex presented earlier, it was from our Taking
14 Charge Report in the fall. And it's meant to be only a
15 comparative slide of all -- a large number of the
16 projection studies out there.

17 So this is 2020 sales projections from a number
18 of studies. And to give some context, the way we look
19 at this there are two types of projections. One are
20 organizations that have policy targets in the future and
21 they're looking backwards to try and project what are
22 the required number of electric cars to meet certain
23 targets, whether it be a 2050 GHG target or some other
24 metric.

25 And then there are forward-looking projections

1 that take into consideration traditional factors of
2 vehicle price, technology readiness, consumer
3 preferences, et cetera.

4 And, commonly, they'll arrive at very different
5 answers.

6 So, I just wanted to provide this as a scale of
7 what's being discussed.

8 Category Item C is the Air Resources Board's
9 public statement they've given in terms of what will
10 likely be coming out in the ZEV regulation proposal to
11 the Board this fall.

12 It's around five percent by 2020, the regulation
13 will be going out further than that.

14 But then you can see there are a number of
15 studies that go up to a higher projects.

16 And I think the easy answer, Commissioner Boyd,
17 is that nobody knows exactly what's going to happen and
18 I certainly don't have a crystal ball.

19 But I do think that in terms of policy and fuels
20 analysis in terms of what the Energy Commission has
21 done, using the State's zero emission vehicle regulation
22 as a touch point for sales, I support that approach to
23 ensure consistency in what we're looking at.

24 COMMISSIONER PETERMAN: Excuse me, Josh, you
25 mentioned that there's two types of approaches. Can you

1 highlight which of these took which approach, versus
2 focusing on the mandates and working backwards to
3 building up?

4 MR. CUNNINGHAM: Yeah, two examples of the
5 looking backwards from a policy target, Item C, which is
6 the Air Resources Board's projections. The new proposal
7 that they're taking to the Board takes serious
8 consideration into the 2050 greenhouse gas target, the
9 Governor's Executive Order. So, that was a looking
10 backwards approach.

11 The last one, which has a much higher
12 projection, the International Energy Agency did the same
13 thing. They looked at the United Nations' 2050 targets
14 and what it meant for the North America Region and that
15 was their number.

16 Looking forward, a good example would be the
17 McKinsey Study, Item G, or the Boston Consulting Group,
18 Item H. And so there's -- but even within those
19 groupings there's variations, so it comes down to
20 assumptions.

21 I'll mention for context that it took ten years
22 to get the hybrid electric vehicle market in California
23 to five percent. The conditions for the electric
24 vehicle market are different, I'll acknowledge that, but
25 that's an important thing to keep in mind that in terms

1 of on-road fleet growth it does take time to develop
2 market penetration.

3 So in California, today, we're at about five
4 percent of new car sales are hybrids, and so that's ten
5 years from the early sales.

6 So going back, this is the chart we had in the
7 Taking Charge Report. We are purposely not picking a
8 specific projection as the Collaborative. The
9 Collaborative's effort is to simply try and advance the
10 market and deal with challenges. We're not going to try
11 and venture into the debate of which number is right.
12 But we showed this to show the range.

13 So the lower slice, the green slice are sales,
14 and the band of that correlates to the previous slide of
15 the different scenarios are out there.

16 The State's ZEV regulation is closer to the
17 bottom part of that slice.

18 And then the blue slice would be the on-road
19 fleet numbers. And so for a range, in the green area
20 this represents in 2020 on the area of hundreds of
21 thousands of sales per year in California, equating to
22 on the road of between a half and one million PEVs on
23 the road, so there's a wide range there and most of them
24 are relatively aggressive.

25 For specific sales this year I threw the boxes

1 on the top. As of July, there were 3,000 Volts sold in
2 the country and over 4,000 Leafs. The Leafs are now up
3 to about 6,000. GM has disclosed that about a thousand
4 of those are in California. And Nissan hasn't said, but
5 it's safe to say maybe half of those are happening in
6 California from what we've seen from the utility
7 numbers.

8 Some relatively reliable projections could say
9 at the end of this year we'll get about 15,000 sales in
10 California, combined Volts and Leafs, so that's just
11 some context.

12 For stations, the Energy Commission knows a lot
13 about this with your AB 118 program and public charger
14 investments.

15 The slide here on the left is from some of the
16 Energy Commission's work on the existing stations pre-
17 2011. A lot of these are due to be upgraded to the new
18 standards for the SAE plug.

19 But in the text language I just wanted to
20 provide some rough numbers that we're talking about,
21 between five and ten thousand public chargers going in,
22 in the next year or two, in California, which is
23 significant. And so the challenge is how do we plan
24 appropriate for where those chargers should go and how
25 do we learn from how well they're being used.

1 And I'll mention that within those numbers
2 there's a very small, but important, quantity of DC fast
3 charging that are going into a couple of Bay Area and
4 Southern California. And then there is one better
5 place, battery switch project happening in the Bay Area.
6 So those will provide some lessons in terms of how often
7 are they used, how do they impact the grid locally, and
8 what are their costs, et cetera, so those will be
9 important to study.

10 So, briefly, what we're doing to address -- you
11 know, our goal as a multi-stakeholder effort is to
12 identify what are the key challenges occurring over the
13 next ten years that we expect to be needed to tackle to
14 move the market forward? And where is there a need for
15 partnership between different stakeholders, what can we
16 do collectively?

17 So one of the areas, we've broken down the
18 phases over the next ten years into kind of a market
19 launch, market growth, market takeoff in terms of the
20 potential scale of sales.

21 And in the early stages the demand for the cars
22 are not the challenge, the issue in the next year or
23 two, on the ground today is how do we streamline the
24 residential equipment upgrade and getting owners their
25 equipment installed in an efficient way?

1 And then, also, when we're looking at the public
2 planning for the public stations how do we -- what are
3 the rules of thumb that we're learning about where
4 public charging should go and how do we deal with local
5 bottlenecks?

6 So, Malachi did ask me to elaborate a bit on the
7 streamlining of the charging issue. There's a large
8 number of stakeholders in California dealing with this,
9 utilities are directly getting involved with their
10 homeowners, the auto companies are getting involved.

11 And broadly what it involves are two areas; one
12 is process. How do we make sure that the local cities,
13 that each city that has EVs coming into their residence
14 has a system for permitting, and inspection, and getting
15 the equipment put in place in a timely fashion.

16 So there's definitely process issues that
17 involve local contractors, inspectors, and front desk
18 people of the city staff.

19 The other issue is once you get past the process
20 there are -- how do you get the correct decisions to be
21 happening between the homeowner and the utility?

22 So once a homeowner buys the car there's a
23 number of decisions that the utility companies and the
24 State, when we deal with grid impacts, want the
25 homeowners to consider and that has to do with level one

1 or level two, which is a 120 versus 240 charging
2 equipment. It also has to do with time-of-use rates.
3 Is the homeowner going to be educated and understand
4 what their options are for that?

5 Another tier there would be if they take
6 advantage of a second meter in the home, they could get
7 a special EV time-of-use rate. And so there are a
8 number of issues there, all of which have cost
9 implications.

10 And so part of the streamlining issue is how do
11 you -- what's the robust process for all those
12 homeowners to get that information and make those
13 decisions so that we can grow the infrastructure

14 And one trend that I'll highlight later on, that
15 Adam brought up, is that some of the hybrid owners
16 likely won't need a level two in their garage, and so we
17 want to make sure that they know that before making
18 investments. And that depends on the size of their
19 battery in their car and their commute patterns.

20 Just briefly and kind of looking at the next
21 phase, past early adopters, depending on how the market
22 grows, vehicle cost reductions will continue to be
23 likely the biggest issue.

24 But moving into, again in the residential
25 charging equipment side, we all need to start moving

1 forward on what is the protocol and arrangement for sub-
2 meters in their garage, so homeowners can take advantage
3 of the special TOU rates for the EVs.

4 That will also likely be an issue when it comes
5 to policy, like the low carbon fuel standard or fuel
6 taxation changes in the future.

7 And then there is some technology evolution
8 where we'll have smart level one chargers, so an
9 extension cord that has some smarts to it, that can do
10 demand response, talking to the utilities, and be a much
11 cheaper option than some of the equipment that's being
12 putting in there today.

13 And the workplace charging needs to be the next
14 front that we put focus on.

15 And then, finally, long term continued
16 reductions in the cost of the vehicle and the battery,
17 but there will be some new factors in the equation in
18 the future, and we're not sure when that happens, but
19 there will be new things that affects the cost tradeoffs
20 that the consumer thinks about. There's going to be
21 changes to the national fuel taxation so that EVs and
22 hydrogen cars don't get a free ride anymore.

23 There will be potential value from the low
24 carbon fuel standard passed down to the owners. There
25 will be potential V2G issues in the future, battery

1 second ownership. A lot of these are speculative so I'm
2 not going to put any validity to it, but only to say
3 that there will be some things in the future that will
4 change the equation of the car and the ownership.

5 I won't go through this, but you'll have it in
6 the slide deck. These are the five broad areas that we
7 have set up working groups to tackle. But I want to
8 just focus on the infrastructure today and stick to my
9 time slot.

10 On the infrastructure topic, in coordination
11 with local communities, one of the early actions that we
12 took as a collaborative was to bring a number of our
13 partners together and put together a single statewide
14 proposal to the Federal DOE grant solicitation that came
15 out in the spring.

16 They had identified \$5 million for the whole
17 country. And differently than the ecotality of the
18 cool-on earmark money from the Feds a couple years ago,
19 this is money that DOE's putting into, specifically
20 for -- it's not for equipment, it's for local planning
21 efforts, to get money into the hands of local planners
22 to improve how they install public and private charging.

23 This is very similar to what the Energy
24 Commission is doing with the chunk of -- their \$1
25 million from the AB 118 program, and we've been

1 coordinating with them on that.

2 We asked for \$1 million for the State and we
3 helped to organize the State into six broad regions,
4 where we had a leading stakeholder and set of partners
5 somewhat roaming around the DOE clean cities
6 stakeholders in each region.

7 And the goal is to make sure that we're
8 coordinating between the regions, that we're
9 establishing workshops to do training for local
10 policymakers, et cetera.

11 And I'll just, in closing, that a very timely
12 announcement, yesterday we heard we got this award, so
13 we're very excited about that.

14 Finally, two or three slides on some interesting
15 trends that might play into how the Energy Commission
16 and other stakeholders think about planning for
17 infrastructure. These are just observations on some of
18 the many announcements and private sector activities
19 that are occurring that I thought were interesting.

20 On the OEM front Ford, and a couple of the other
21 companies, are starting to connect outreach issues for
22 the renewable power for the car to their buyers. So,
23 Ford has a partnership with SunPower to make sure that
24 the dealership car owners are becoming aware of what
25 they can do in their home for renewable power.

1 It's not getting in the way of PVs or anything
2 else, but it's just connecting stakeholders to each
3 other and information to pass all along.

4 GM, and a number of other companies, are
5 experimenting with direct communication with the
6 utilities, so demand response capability of tying the
7 utilities to the cards.

8 Nissan, and this is an interesting one, after
9 the nuclear disaster this spring, they've already had
10 several of the car companies with conventional hybrids
11 having 120 plugs doing vehicle-to-home capabilities to
12 provide backup power.

13 And Nissan now has announced their going to take
14 a V2H capability for their leaf in Japan. They're not
15 doing it in other markets, yet, but that's an emergence
16 of what happened this spring and potentially something
17 that Japan's going to jump on.

18 And then the only other one I'll mention here,
19 Nissan and City Ventures, that's an example of some of
20 developers getting involved in doing EV circuitry
21 designed into new homes, so all their homes in that
22 particular development would have a 220 circuit designed
23 in from the get go.

24 On the charging partnership side, just some
25 trends to note. Most of the auto companies have

1 partners on this. But Leviton, which is one of the
2 largest and, you know, oldest companies doing electrical
3 equipment, is now partnered with Ford, Mitsubishi and
4 Toyota to do their equipment for their electric cars.
5 So, that's an important partnership of some large
6 companies with established history.

7 Best Buy is going to be a contractor to help
8 distribute some of that.

9 And then the third one I'll mention there is
10 that GE is getting involved with their equipment and
11 they're going to be distributing it through Lowe's.

12 So, I think I just want to point out that there
13 are a number of large, traditional retail outlets and
14 partners that are getting into this, that should bring
15 some investment capability and confidence to the
16 consumers.

17 And I'll close on this one, to just summarize a
18 couple of the trends on the infrastructure side. The
19 triangle down at the bottom, a lot of the stakeholders
20 point to this as out of all the charging that the EV
21 owners are going to want to have access to, the experts
22 believe and we hope that it goes this direction, the
23 majority of charging happens at home, because that can
24 primarily be nighttime off peak.

25 The next level of demand would be from the

1 workplace charging and then, finally, the small chunk --
2 hopefully, small chunk would be public.

3 And so the question of how big these pieces of
4 the pyramid are is a big issue, but I think most people
5 see this as the appropriate balance.

6 In terms of the residential -- the cost ratios
7 of the residential equipment, because that will be a
8 hindrance for the market, smart level one, cord sets as
9 I mentioned, which would be a 120 circuit capable of
10 doing communications with the utilities, vehicle
11 communications with the utilities and then the sub-
12 meters. These are all topics that are really important.

13 And then just an observation, plug-in hybrids
14 likely will rely on public infrastructure more than
15 battery electrics. Battery electric cars would be able
16 to have a longer electric range and could charge at
17 home.

18 That's not, you know, a blanket statement, but
19 could be a trend that's important to monitor in terms of
20 which of those two technologies are more dominant in the
21 fleet.

22 And then just to mention that the multi-unit
23 dwelling topic is going to become an increasingly large
24 challenge that we need to tackle.

25 So, let me stop there and I'm happy to take any

1 questions.

2 VICE CHAIRPERSON BOYD: Thanks Josh. Any
3 questions? WSPA? Time's up.

4 (Laughter)

5 MS. GREY: Gave me enough time to get the
6 mouthpiece down to me here. Gina Grey with WSPA. Slide
7 9, when you talk about addressing market challenges, the
8 last bullet, you have long-term market takeoff 2020 and
9 beyond, and the last bullet there says "no cost factors
10 LCFS."

11 So, are we to infer from this that the
12 Collaborative feels that, really, the LCFS credits in
13 terms of impact probably wouldn't be kicking in until
14 the 2020 and beyond time period?

15 MR. CUNNINGHAM: I'm going to avoid that
16 question somewhat, only to say that to begin with the
17 Collaborative, we're not going to be taking positions on
18 policy. So we're not putting out opinions on what's
19 going to happen on the regulatory side.

20 And so the use of the 2020 there was supposed to
21 be a little bit vague.

22 But from my personal expectation, I would think
23 that it is later in the decade that we'll start seeing
24 electric LCFS credits having the value in the market,
25 but that's strictly a speculation.

1 MS. GREY: Okay, which -- thank you. Which
2 would be a concern, obviously, because ARB is
3 considering those credits being available before the end
4 of the 2020 time period within the LCFS program.

5 MR. CUNNINGHAM: Yeah.

6 MS. GREY: And I guess there are a lot of
7 utilities that are a part of your Collaborative. Have
8 any of them expressed, because I did ask this question
9 during the last workshop we had for this subject, asking
10 them whether they anticipate having an ability to
11 purchase credits from the oil industry, et cetera, and
12 none of the utilities at that point in time had anything
13 to say.

14 So I was just wondering if, during the
15 Collaborative discussions, if that has been discussed?

16 MR. CUNNINGHAM: No, we have taken a pretty
17 clear approach at the Collaborative that we do not want
18 to venture into specific regulatory discussions.

19 MS. GREY: Okay.

20 MR. CUNNINGHAM: And that's to make sure that
21 the individual stakeholders feel comfortable in our
22 forum that we're talking about public issues that are
23 common challenges.

24 MS. GREY: Okay.

25 MR. CUNNINGHAM: And so we're -- we won't tackle

1 that directly.

2 MS. GREY: Thank you.

3 VICE CHAIRPERSON BOYD: Seeing no other hands or
4 people leaping up, thank you Josh.

5 MR. CUNNINGHAM: You bet.

6 VICE CHAIRPERSON BOYD: Gordon, it says here
7 you're going to talk about renewable fuel standard, now.

8 MS. STRECKER: Before we have Gordon, we're
9 going to have a couple minutes from Tim Carmichael, I
10 understand, and then Gordon will be up.

11 VICE CHAIRPERSON BOYD: Uh-oh. You want equal
12 time?

13 MR. CARMICHAEL: No, the EV and plug-in hybrid
14 folks are a lot more long-winded than I am.

15 (Laughter)

16 MR. CARMICHAEL: That was a joke. I love you
17 guys, that was a joke.

18 Just thank you to the staff. Just a few brief
19 comments and I'm doing it now because it fits in better
20 following up on what the staff has already presented
21 this morning. And I will share these bullets with the
22 staff, I just didn't get them into a presentation in
23 time for right now.

24 Just a broad point, there's still quite a bit of
25 contrast between where the IEPR is and where the AB 118

1 investment plan is. And what I mean by that is even the
2 background information that's put into the two plans in
3 some cases almost seems in contrast, or contradictory,
4 as opposed to on the same path.

5 The AB 118 investment plan, the one just adopted
6 is talking about demo projects of hundreds of natural
7 gas trucks in the, you know, heavy-duty market, large
8 quantities.

9 The IEPR is, at least based on the data so far,
10 is more focused on projections based on transit and what
11 might be happening in the light-duty market. And as
12 I've said already, we're going to work with the staff on
13 the IEPR to get them more data on the heavy-duty trucks
14 because that's where we see the greatest growth
15 potential over this time frame, the next two decades.

16 And I think there's significant potential, also,
17 in the light-duty fleet market based on what we know
18 today. But the heavy-duty truck market, I think, is
19 where you're going to see the greatest growth.

20 And I think the AB 118 investment plan is
21 already capturing that in the background discussion
22 supporting various investments. I don't think the
23 IEPR's there, yet.

24 One other relevant point is the PIER program,
25 along with DOE and the air districts, has been putting

1 money into R&D for heavy-duty, natural gas trucks and I
2 think that's significant, supporting this trend.

3 On infrastructure, specifically, not yet
4 captured in the IEPR and I talked briefly with the staff
5 about it, this summer there was some major investments
6 made relative to natural gas refueling infrastructure.
7 Four companies have put in \$300 million into clean
8 energy fuels, just this summer. Four companies, \$300
9 million to build approximately 300 new heavy-duty
10 refueling stations across the country.

11 But that number in context, there are about a
12 thousand out there today, across the country. So in one
13 summer investments coming in -- now, granted, it's going
14 to take two to three years to build those stations, if
15 everything goes smoothly, but that's a 30 percent
16 increased based on investments made this summer.

17 Just this week Shell announced a major
18 investment in Canada for LNG refueling stations.
19 They're going to be doing that in partnership with
20 Westport, one of my member companies. But the word on
21 the street is they're starting with Western Canada, with
22 an intention to invest in the United States in the near
23 term.

24 So you've got clean energy fuels, one major
25 company, you've got Shell, and then the third news just

1 this week Entergy, one of the big energy companies in
2 the country, a Fortune 500 company, buying two other
3 companies, Trillium and Pinnacle, who build natural gas
4 refueling stations to, you know, in theory become a
5 major player in the market to build competitive natural
6 gas refueling stations. A lot going on in a very short
7 period of time that I think significantly influences
8 what we're likely to see as a growth trajectory for
9 natural gas, especially in the heavy-duty market.

10 On the vehicle front, historically, the growth,
11 the sales numbers have been in the transit bus market
12 and a lot of that driven by air quality incentives and
13 regulations. There's a shift happening right now, where
14 the market is shifting away from that pattern of
15 development to a cost-based, a cost differential-based
16 market in the heavy-duty truck market, as well as the
17 light-duty fleet market.

18 Look at companies like Waste Management, look at
19 UPS, look at, in the light-duty fleet, AT&T and Verizon,
20 thousands of vehicles that they're buying to run on
21 natural gas primarily because of the price point
22 differential with petroleum.

23 On top of that you have the Obama Administration
24 adopting a plan for 2015 for Federal fleets and don't be
25 surprised if there's a push here, in California, to get

1 the California public fleets to follow that plan where
2 all new purchases, starting in 2015, for Federal
3 vehicles will be alternative fuel vehicles. Of course,
4 they won't all be natural gas, but some percentage of
5 that pie will be natural gas.

6 So, you know, you've got low fuel prices, you've
7 got growing fueling infrastructure, you've got a broader
8 array of engine options. A lot is coming together,
9 which I think suggests that, back to my tipping point
10 comment earlier, the trajectories that we've seen in the
11 past I don't think are the trajectories we're going to
12 see in the future. And I think there's enough evidence
13 to at least talk about that in the narrative of the
14 IEPR, even if the staff doesn't change the curves that
15 they presented today.

16 Finally, in the renewable fuels, which Gordon's
17 going to be talking about, there isn't really any
18 discussion of biomethane and that's an important piece.

19 Commissioner Boyd and I have had a few
20 discussions about which way is that industry going to
21 go? Is it going to be predominantly for electricity
22 supply locally or on the grid, or are they going to feed
23 the transportation sector? The fact is we don't know
24 today, but there is significant potential for it to feed
25 into the transportation sector either directly, you

1 know, for remote fleets, or blended through a pipeline
2 to greatly reduce the carbon intensity of fossil fuel
3 natural gas.

4 And as you see in the Air Resources Board carbon
5 intensity tables, that approach, you know, becomes one
6 of the most competitive fuels based on carbon intensity
7 in the next decade.

8 As I said earlier, I've spoken briefly with
9 staff and have committed that I'm going to be working
10 with my members and the staff to get as many of the
11 players together in meetings, hopefully, face-to-face
12 meetings, if not on the phone, to share the latest data
13 to update the IEPR team on where things are going, which
14 I think is markedly different from where they've been
15 over the last five to ten years.

16 Thank you very much for the time.

17 VICE CHAIRPERSON BOYD: Thanks Tim. It's
18 interesting you noted some energy companies are really
19 trying to become real energy companies. Others haven't
20 gotten the message, yet. Thanks.

21 MR. CARMICHAEL: Thank you.

22 VICE CHAIRPERSON BOYD: And the poor staff
23 hasn't even seen what I've done to their report. You
24 should see the pages and pages of edits. And, anyway,
25 it is a staff draft.

1 COMMISSIONER PETERMAN: And I'll also add, Tim,
2 that Commissioner Boyd and I have talked with the staff
3 that worked both on the transportation forecast, as well
4 as 118, about some of the differences across those and I
5 think there are some legitimate reasons for the
6 differences. As you pointed out, one uses historical
7 and customer base as part of the larger -- thinking
8 about alternative fuels as part of the larger
9 transportation infrastructure in the state, while 118 is
10 more different focused and uses different resource
11 materials.

12 And we've talked about how to better explain
13 some of those differences between them. And I support
14 your suggestion to get your comments and see what can be
15 included in the narrative.

16 I think natural gas, though, is not unique in
17 that the future is uncertain. It might be different
18 from an historical trend and so we want to be careful to
19 consider everything using the same kind of evaluation
20 metrics, but can appreciate where you see the difficulty
21 with that and particularly in fleets of natural gas and
22 biomethane.

23 MR. CARMICHAEL: That reminds me of one comment
24 I wanted to make. There's a rationale for government
25 agency to take a more conservative approach when you're

1 talking about what the future is going to look like, but
2 given that the CEC is one of -- you know, I was going to
3 say in California one of the agencies but, really,
4 globally one of the agencies doing as much as any to
5 push, you know, cleaner fuels and technology it's
6 important for this agency to talk about the potential,
7 even if you don't state it as this is absolutely going
8 to happen this way. And so you can have that
9 conservative baseline and say there's also the potential
10 for this growth across these alternative fuels and
11 technologies that we're talking about today.

12 And I think that's very -- I think you can cover
13 yourself with the more conservative approach but also
14 really help, you know, give that push by talking about
15 the potential because a lot of people pay attention to
16 what -- in the private sector pay attention to what CRC
17 and ARB say relative to these topics. Thank you.

18 VICE CHAIRPERSON BOYD: Agreed.

19 COMMISSIONER PETERMAN: Thank you.

20 VICE CHAIRPERSON BOYD: Gordon, you're up.

21 MR. SCHREMP: Good afternoon, my name is Gordon
22 Schrempp, staff of the California Energy Commission. And
23 I'll be not going through the low-carbon fuel center
24 just yet; I'll probably start with the RFS2 stuff.

25 Thank you, Jesse, just what the doctor ordered.

1 Okay, Malachi covered earlier --

2 VICE CHAIRPERSON BOYD: Be crisp, Gordon, be
3 crisp.

4 MR. SCHREMP: Okay, Malachi covered some of
5 the --

6 VICE CHAIRPERSON BOYD: And Malachi's still
7 here.

8 MR. SCHREMP: All right, so since Malachi's
9 still here and if anybody has any questions, then I'll
10 go into my next presentation.

11 (Laughter)

12 MR. SCHREMP: Some of the things I think maybe
13 we want to be a little bit clearer on is we did a
14 proportional share of the RFS2 obligations and we looked
15 at the total amount of basically biofuels required under
16 that according to Congress. And we assumed all that
17 except for the biomass-based diesel was ethanol. So
18 that's how we calculated our target for ethanol, our
19 proportional share, and then that's the amount of
20 ethanol that requires us to go to a lot of V85.

21 So we are using these total biomass numbers when
22 we do that type of post-processing of the initial
23 forecast.

24 I want to make a distinction because when we
25 conducted the low carbon fuel standard analysis we did

1 not use the cellulosic targets. We used targets that
2 were much lower based on EIA's forecast, and I'll get
3 into that in my next presentation, but I just wanted to
4 point that out.

5 The telling point of this slide is that the
6 cellulosic biofuel mandate, as originally envisioned by
7 Congress, has been downgraded by EPA every year because
8 there's inadequate production capacity in the United
9 States. That's still the gas three years running and
10 next year is a billion gallons, or 2013 will be a
11 billion gallon target that they will likely revisit.

12 So, what's important to note is that was lowered
13 and the other was raised.

14 Now, I mentioned that the total targets can't be
15 changed, that's incorrect and I think John Braeutigam's
16 going to mention this, is that there is the ability to
17 change to lower these numbers, all of them, even the
18 total.

19 So, these are not sacrosanct, they're not set in
20 stone, not being able to change unless Congress does it,
21 they can actually be changed if those kinds -- if the
22 cellulosic or something or other gets large, and other
23 advanced, increasing it that much is just unrealistic
24 based on market conditions.

25 So, we will see how this plays out, but for all

1 intents and purposes we took these numbers on a face
2 value when we did the post-processing. So in fact if
3 they're lower or lowered, then the amount of E-85 you
4 saw Malachi showing you in his slides would be less than
5 indicated in the infrastructure, et cetera.

6 So this goes to show you the breakout and how
7 aggressive the cellulosic is that may or may not occur.
8 And our fair share, our proportional share's been about
9 ten percent. And saw this, our ethanol use is expected
10 to go over 3 billion gallons, so that's more than a
11 doubling from where we are today.

12 And the main take away on these two slides is
13 that it pushes down gasoline and brings up E085.

14 Now, Commissioner Boyd, you had a question from
15 this morning about global diesel demand, refinery
16 operations in the context of some of these issues.
17 Well, in fact, RFS2 will depress gasoline demand and
18 affect refineries, meaning they'll start to get a little
19 bit out of balance so to speak. They're gas producing
20 machines in California, they'll start to look, go more
21 toward the European model. Demand for diesel keeps
22 going up, demand for gas seems to decline.

23 It's also declined because of improved fuel
24 economy and will decline further because of LCFS will
25 displace more gasoline molecules, and LCFS will displace

1 some of the diesel molecules.

2 It will depend, but we don't think there will be
3 a lot of biodiesel use and I'll get into that later.

4 So, those regulations will put the California
5 refineries under, I think, more pressure from an
6 imbalance perspective. And so that kind of thing is
7 what we believe, and I think Ryan Eggers will talk about
8 in the crude oil analysis portion, why we think some of
9 the scenario in refinery operations is to actually have
10 some consolidation.

11 So it's really because of these other factors,
12 improved fuel economy, higher prices that are sort of
13 driving a growing imbalance in the product slate.

14 So I won't dwell on these, E-85 goes up, it
15 depends on the scenario.

16 The important point on the infrastructure for E-
17 85 is lots of dispensers and more vehicles. So on the
18 dispenser side, it depends on how much fuel goes through
19 the dispenser of how many you need. So, initially,
20 there will be a lower through put, and this is normal,
21 and then the through put will go up.

22 So, will it ever achieve sort of an average of
23 450,000 gallons per year per dispenser? It depends. If
24 it's a sole-fuel dispenser, which most of the E-85
25 dispensers going in now are, they likely won't get to

1 that level because those are modern, multi-fuel
2 dispensers, three grades of gasoline, even diesel. So,
3 150,000 is probably a more likely plateau scenario where
4 they could get to, but they'll start low and go up
5 higher. So we're still talking, possibly, 10,000 or
6 more. That's a lot of infrastructure in California that
7 will have a -- have a cost.

8 Flex-fuel vehicles; the good news from this
9 slide is that there seems to be plenty in our forecast
10 to meet the E-85 demand requirements based on our
11 assumptions on how frequently they fuel, and only more
12 later in the forecast period. So, that's good news.

13 And then I'll go right into ethanol. Lots of
14 ethanol, we're approaching the upper limit of RFS2, 15
15 billion gallons starts and you can -- you know, still
16 using the program. You can use more if you want, but
17 you won't really get credit. So it's very close to that
18 in the nation.

19 California has also gone up and that's because
20 there was a phase-out of MTBE in 2003, started and
21 completed in 2004, that's why you see these two jumps.
22 And then, again, in 2010 because preparation for RFS2
23 proportional share more ethanol is going to have to be
24 used in California because we're sort of lagging behind
25 the rest of the country so to speak because we were

1 using a lower concentration than, really, any other
2 place in the United States in their gasoline up to that
3 point in time.

4 So, the infrastructure was modified and then the
5 pipeline distribution company, Kinder Morgan, said okay,
6 well, we're going to go to ten percent, now, and that's
7 the majority of the gasoline through put through their
8 system, so the entire market went.

9 Ethanol supply has continued to grow, primarily
10 in response to MTBE phase out and RFS2. And what's
11 important to note here is that you're starting to see
12 the apparent demand line go below production and that
13 means exports. Exports are occurring. So why, why
14 would that happen?

15 Well, that's happening for a couple of different
16 reasons. One is there was a rapid build and over-supply
17 of ethanol, more than can be put into gasoline to meet
18 the ten limit.

19 Two, that led to a depressing market, in more
20 ways than one, and relatively low prices to export
21 opportunities. So what are we seeing? Ethanol going
22 outside of the borders in record volumes and this has
23 never happened before.

24 And most recently, the June numbers have just
25 come in and they are -- they now set a record, they're

1 just a little above the April number there, the top
2 point here. And I think about a quarter of that or 22
3 percent of that volume went to Brazil, that was the
4 third, and Canada and the European Union were 27
5 percent, respectively, each.

6 So, that's the destination this time. Brazil
7 will likely want more.

8 So the ethanol blend wall, ten percent, has been
9 raised if you will, EPA has allowed E-15 in probably
10 two-thirds of the fleet can go to E-15. But there are
11 many other challenges that still remain, vehicle
12 warranty, liability for misfueling at retail stations.

13 But as time goes by the blend will be exceeded
14 and that's for two reasons. One is increased use of E-
15 85 nationwide and in California, as well as some people
16 in time likely going to E-15, more of that in different
17 locations.

18 So this line, this increase in percent will
19 continue, this concentration line.

20 Now, switch gears to Brazil, I just want to
21 highlight from this slide that the significant
22 differences from Brazil to the United States are plant
23 size. As you see, around 18 million gallons per year at
24 a typical Brazilian plant and 63 for in the United
25 States, actual production volumes for 2010 per plant.

1 However, I guess one might say the efficiency in
2 how much ethanol you can produce per acre is greater,
3 sugar cane, no surprise. And so 655, you know, gallons
4 per acre compared to 425. So that's sort of a take away
5 from that slide.

6 Production had been going up and has plateaued a
7 little bit recently. And also note there are different
8 flavors on here and different geographies of Brazil, and
9 these are production regions, but hydrous and anhydrous.

10 Hydrous is used in their flex-fuel vehicles and
11 anhydrous is used in, I think, gas -- lower-level
12 blends.

13 If I said that incorrectly, someone fix me.

14 All right, so this market is -- has been
15 growing, of course, because that's how Brazil has a plan
16 to meet a lot of their demand, but there are problems.
17 Production this year is expected to decline
18 approximately 18 percent.

19 So you had a question, Commissioner Boyd, about,
20 you know, we're going to be depending on certain types
21 of biofuels, well, production's going to be down in
22 Brazil. Not only that, in recognition of demand that's
23 growing at approximately 10 to 11 percent per year in
24 Brazil, for ethanol, prices have become very high and
25 consumers are getting a little upset.

1 So, a decision was made by the government to
2 drop the blending rate from about 25, 26, down to 20
3 percent. So that is a way to, I guess, buy more time,
4 keep a little bit more -- I mean keep a little bit more
5 ethanol.

6 And what's really going to happen is they won't
7 have to import as much ethanol and they'll probably
8 import a record amount of gasoline as a consequence.

9 So what does that mean for us, as analysts, when
10 we look at, well, this is a good blend stock for low-
11 carbon fuel standard, it's a good blend stock for other
12 advanced under the RFS2.

13 And so export forecast for next year of 530
14 million gallons, half a billion, don't think so. That's
15 very unlikely that that's going to happen. Brazil will
16 likely have a record amount of imports of ethanol this
17 year.

18 So, it's very, almost disconcerting that the
19 incremental supply one would look for to potential be
20 available from Brazil, of the right kind of biofuel at
21 this time, the low enough carbon intensity may not be
22 there.

23 So it leads right into your question from this
24 morning is what kind of potential is there for ethanol
25 shuffling, the Sao Paulo/Houston shuffle, are quite

1 high. That is a way to get adequate supply of Brazilian
2 ethanol into this market. The Midwest ethanol goes down
3 a boat, unloads, picks up Brazilian cane ethanol comes
4 back to the United States, but at a price, and we'll
5 talk about that later.

6 So there are, I think, concerns about we don't
7 believe incremental supply of Brazilian ethanol will be
8 available, but we think swapping is a possibility, but
9 at a much higher cost.

10 And that infrastructure to bring, say, Brazilian
11 ethanol in may not be as robust as we would like for
12 marine facilities in California, but it hasn't had to
13 have been up to this point in time. As you can see,
14 that would be the green stack bar, very little, and this
15 is really, mostly imports from Caribbean-based
16 initiative companies.

17 But none in 2010, mostly rail, 96 percent,
18 averaged about 91 percent over this period of time. So,
19 rail import can serve Brazilian ethanol because it could
20 come through Texas. It could come through Houston, in
21 the ship channel, be offloaded and put on a rail and
22 that same rail car that's coming from the Midwest now
23 comes from Houston.

24 So, it's feasible, it would take a little bit of
25 work to complete the last part of that project, Kinder

1 Morgan's project in the Houston ship channel, but this
2 is at least feasible and we have a pretty robust and
3 dependable rail infrastructure in the state.

4 Shift gears to biodiesel, biodiesel production
5 has rebounded from 2010, primarily because of the
6 blenders -- the dollar-a-gallon tax credit was sort of
7 not in play for most of 2010 and not until the end of
8 the year; retroactive, but too late then.

9 This year in play, more of it's happening. And
10 I think there just was a record production of biodiesel
11 in, I think, last month, or June, the last figures
12 available, I think, yeah, 95 million gallons.

13 So this figure will probably, now, this is an
14 estimate we had from a couple of months ago for 2011, it
15 will go up and it will likely beat the record for 2008.

16 Why? Higher demand for biomass-based diesel
17 under RFS2 and the reinstate of the dollar-a-gallon
18 blender's tax credit which I think is scheduled to
19 expire at the end of this year.

20 So, are we back to the same down and up, down
21 and up? We will see.

22 Consumption in California very low, has been
23 declining. Primarily, that's a price reaction, very
24 expensive biodiesel, biodiesel in the Gulf Coast and in
25 Chicago yesterday, selling for between \$5.90 a gallon to

1 \$6.03 a gallon. I would consider that expensive,
2 especially because it's wholesale.

3 So, biodiesel is expensive. The feedstock's
4 very expensive. So why you don't see a lot being used
5 here.

6 Now, someone might think these figures are
7 pretty low. Well, if California used the average
8 concentration of biodiesel in the United States in 2010,
9 our five million would be closer to 14. So, just to put
10 it in some perspective, so California's using a little
11 bit less. And I mean that's just the way it is because
12 the infrastructure in California may not be as robust as
13 other areas.

14 And what I mean by that, if you want to blend
15 five percent biodiesel, you have to have a storage tank
16 at the distribution terminal for B100, then you may
17 blend it into your carb diesel and make biodiesel, but
18 not until that point.

19 So that we understand there is sort of a lack of
20 that kind of capability at this time, but as demand goes
21 up, which we believe will happen because of the LCFS
22 that, hopefully, more of that infrastructure will be put
23 in.

24 Just supply, this just goes to show you a lot of
25 exporting was occurring before Europe sort of tightened

1 up that behavior to prevent it, countervailing tariffs
2 and all, and then the line's gone back up. So, more of
3 it's going to stay here because of the RFS2 and the
4 dollar-a-gallon reinstatement.

5 And a small percent, much smaller percent, now,
6 of course, being exported.

7 So, here's the concentration. As you can see,
8 since January it's been going up steadily every month,
9 so this is a resurgence of ethanol or biodiesel blending
10 to actually a record level in the United States. And so
11 we expect this to continue rising somewhat, but the
12 economics are very challenging.

13 So, some of the issues that I haven't touched
14 on, besides the economics and the infrastructure, is a
15 five percent blend limit is something we're assuming in
16 California. There is a concern about incremental air
17 pollution, of NOx, oxides of nitrogen, and sort of
18 saying that maybe B5, up to B5 levels there may not be a
19 NOx mitigation required. We will find out more as the
20 Air Resources Board works through that regulation. But
21 blends above six percent, six to 20 will require some
22 sort of mitigation, we're just not sure what that is,
23 yet.

24 And there are some warranty issues being
25 rescinded about B10, and last take away is renewable

1 diesel really doesn't have any of these other sort of
2 issues, if you will, except higher feedstock certainly
3 is something that renewable diesel can have, depending
4 on what they're utilizing.

5 So that kind of drop in fuel does have some more
6 desirable attributes.

7 Spend just a few minutes of my time here to
8 finish up on agricultural. I understand that I believe
9 there's -- Commissioner Boyd, there will be a forum on
10 the 22nd of September, is that correct, to discuss some
11 of these issues?

12 VICE CHAIRPERSON BOYD: Yeah, I can't remember
13 if it's the 21st or the 22nd but, yes, a joint Food and
14 Ag/CEC forum on biofuels and agriculture, and the
15 nexus -- well, bioenergy and agricultural and the nexus
16 there between. The hearing notice should go out today,
17 that's why my advisor is missing he's trying to get it
18 fixed.

19 MR. SCHREMP: Okay. Well, thank you. So, we'll
20 make sure the people on the list serve for these
21 proceedings will also receive that notice as well, when
22 it's available.

23 So, corn demand for ethanol, no surprise it's
24 been going up rapidly, as has production for ethanol.
25 And this will plateau. In a couple of years the 15-

1 billion gallon limit will be reached, so it really
2 won't, you know, get much more than that.

3 But as it's gone up, the percent of corn used
4 for this purpose has risen rather dramatically and is
5 not the top use, if you will, of corn demand in the
6 United States and has resulted in, you know, some
7 pressure on corn commodity prices, debatable on what
8 portion is due to this increase in demand but,
9 hopefully, being discussed on the 21st or the 22nd.

10 VICE CHAIRPERSON BOYD: That's -- let me
11 interrupt you, Gordon, it is the 22nd, you were correct.
12 And the chart you just showed is some of the genesis of
13 the decision to have that hearing and the Investment
14 Plan, AB 118 Investment Plan that was just released by
15 this Agency a little late into this fiscal year contains
16 zero dollars to provide for any incentives for the
17 California production of ethanol from corn, and that was
18 quite a controversial issue.

19 Just like in prior years hydrogen was always a
20 controversial issue. So, not very popular politically,
21 very controversial with food versus fuel, extremely
22 controversial in fuel versus the cost of animal feed has
23 led to us having this -- making the decision we made in
24 having this joint forum on what the future might be for
25 ag and bioenergy. Enough of a commercial.

1 MR. SCHREMP: Okay, thank you for that
2 clarification.

3 This is just another way of looking around the
4 percent, the total number has been basically pushed up
5 by an increase in the red bars, the use to make fuel
6 ethanol.

7 Now, one way of making more corn available is to
8 increase the yield and that's been progressing at a
9 rather steady clip, as you can see here. Not quite a
10 record in forecast for 2011, but close to 160 bushels
11 per acre, so rather impressive.

12 And that's allowed the agricultural community,
13 collectively, to not have to plant as much corn as in
14 the past.

15 And as you read down at the bottom here, I mean
16 the amount in 2010 was almost 30 million acres more than
17 1917, the record, yet produced a whole bunch more corn.
18 Why? Because of the improvements in yield that are
19 accomplished through, you know, GIS fertilizer
20 application, and genetics, primarily, over the last 20
21 years. So that is continuing and is forecast to
22 continue.

23 Now, what's interesting about another issue that
24 comes up with increased corn is, well, you're going to
25 use a whole bunch more acres of land, so it's a land

1 issue. Well, actually, the amount of land is sort of
2 staying flat that's being used. So if you see this,
3 these are the top three crops in the United States. And
4 if you took the top eight crops, you'd be upwards of
5 about 250 million acres, so just a little bit more than
6 this.

7 But as you see the line, it's going down, so
8 it's almost flat or going down a little bit, it's about
9 a 1.9 percent decline over this period.

10 Well, how can that be if demand for these crops
11 is going up and actually their production is because,
12 once again, the yield's continue to grow for all three
13 of the main crops, and others, between 10 and 15 percent
14 over the forecast period, not per year but over the
15 forecast period.

16 So, still an assumption of continued yield
17 growth.

18 This one is interesting, showing a decline in
19 the amount of corn as a percent and not because of other
20 uses going up, because the assumption made by USDA is
21 that there will be a yield improvement. I take a
22 bushel, how much ethanol do I get?

23 Well, they're looking -- they're talking about a
24 six percent increase over just the next four years.

25 Well, you know, we probably think that may not -- this

1 might be overly optimistic because in the period 2006
2 through 2010 the yield actually declined. So, that's
3 sort of a questionable assumption, but it wouldn't
4 change the numbers that much.

5 Final slide, two issues that have, I think,
6 routinely come up have been corn uses a lot of water,
7 you're going to use more corn than more water, and it's
8 a scare resource in many places in the U.S.

9 Well, actually, it sort of depends if you're
10 talking about the water used to grow the corn, that's a
11 small percent when it comes to irrigated -- irrigation
12 is 15 percent. So, the vast majority depends on, you
13 know, the skies, it has to rain, but not too much to
14 flood me out.

15 So, assuming that stays constant then, you know,
16 shouldn't have a lot of water use.

17 But local water use to process corn in a new
18 facility may in fact be a legitimate issue in some areas
19 where, depending on where the plant is sited.

20 But fertilizer use is another issue, it has gone
21 up, but only about eight percent over a period of 30
22 years, and the yield has gone up 68 percent. So, yield
23 increases of that magnitude are not because of an eight
24 percent increase in the nitrogen application rate, are
25 in fact these other reasons, these genetic reasons of

1 why you have much greater yield increases.

2 So, be happy to answer any questions you have at
3 this time.

4 VICE CHAIRPERSON BOYD: No more questions up
5 here. Anyone? There's a hand. Welcome.

6 MR. BRAEUTIGAM: Good afternoon. I'm John
7 Braeutigam with Valero Energy Corporation.

8 Gordon, can you go back to slide number four,
9 your RFS2 slide? And we -- Valero will be providing
10 written comments, also.

11 VICE CHAIRPERSON BOYD: Thank you.

12 MR. BRAEUTIGAM: I'd like to make about five
13 points about this, I'll try to be pretty brief. If you
14 look -- like you said, we've scaled back, EPA has scaled
15 back the cellulosic amount each year. I would suggest
16 that your base scenario should be the EIA projection,
17 not this projection. They're going to continue to scale
18 it back and the reason is capital.

19 And you can't -- you just can't overcome
20 economics. A corn-based ethanol plant, 120 million
21 gallons a year, in 2008 costs \$150 million because you'd
22 have to put in additional technologies to qualify it,
23 now, for 15 percent greenhouse gas reduction, would cost
24 \$200 million. That's a 1.67 dollars per gallon of
25 capital.

1 Cellulosic ethanol plant, \$25 million, \$200
2 million dollars, \$8 per gallon of capital.

3 And I don't want to name the technology
4 provider's estimate there.

5 Valero is one of the largest ethanol producers
6 in the U.S., we are looking at cellulosic ethanol, we're
7 looking at renewable diesel and other advanced biofuels.
8 These are numbers that we're looking at.

9 Renewable diesel, 135-million-gallon-a-year
10 plant, \$350 million, \$2.60 a gallon capital cost.

11 If you look for capital recovery of 20 percent,
12 plus your cash operating costs, your cellulosic, now, is
13 running about \$1.65 a gallon. Corn is \$2.45 and that
14 would be about a \$6 or \$7 a bushel corn price.

15 The renewable diesel, if you're going to use,
16 make true renewable diesel, the hydrocarbon equivalent
17 or look-alike, a cheap feed is \$3.50 a gallon. That
18 equates to \$147 a barrel.

19 So your renewable diesel, before you put in
20 operating costs, just your feed, itself, is going to
21 only be economical when you -- because of something like
22 the LCFS or the RFS2.

23 We really believe that when you look at these
24 numbers the actual cellulosic amounts are going to be
25 closer to the EIA because the industry isn't going to --

1 where's the capital going to come from, okay.

2 And we think the EPA will scale back both the
3 total advanced biofuel requirement by the same amount
4 they scaled back the cellulosic each year, when they
5 issued a waiver, and the total renewable fuel standard.

6 And we see that happening for many years to
7 come, just because if you look at the total advance, you
8 know, one point -- my glasses aren't that good -- 1.1
9 million, 1.5 billion in 2016. That's not going to be
10 there. And the cellulosic waiver allowances that you
11 can buy from the EPA cannot be used against the advanced
12 renewable volume obligation or the total.

13 So they're going to have to scale those two
14 back, they have the authority. EESA gave them that
15 authority, that's why I would suggest that you --

16 VICE CHAIRPERSON BOYD: They have the authority,
17 do they have the political wherewithal?

18 MR. BRAEUTIGAM: Well, what they've used the
19 excuse of that, the Brazilian ethanol was there. And
20 now, for what they proposed last year, they were using
21 that excuse again, even though none's come in and it's
22 \$1.50 out of the market.

23 At some point I think they're going to have to
24 do it because what's going to happen is the industry,
25 not every company, but the industry will go into default

1 on the RFS2 because that advanced biofuel is not there.
2 We need 800 million gallons this year. The industry
3 isn't even producing that much.

4 There was a deficit ran last year and the
5 industry has to make up that deficit this year, the same
6 parties can't make a deficit run two years in a row.

7 Valero's been saying there's an RFS2 train wreck
8 coming, not just an LCFS. Both of them have major
9 problems, too ambitious.

10 COMMISSIONER PETERMAN: I think your point is
11 well taken. And I would ask staff, if time permits, a
12 sensitivity test, the results with the EIA cellulosic
13 projections, although appreciating I think the baseline
14 should reflect what's current statute, but let's start
15 there and see where it goes.

16 MR. BRAEUTIGAM: I think that would be a good
17 sensitivity.

18 Two other quick points; as Gordon said, the
19 exports are going to Brazil. You could do the Sao Paulo
20 shuffle, but it's still an awful lot of volume to move.

21 The IEPR does a real good job of pointing out
22 the barriers, but then it tends to go and says don't
23 worry, all will be well.

24 I mean even your base case with that much E85,
25 on the other graph, once again where is the capital

1 going to come from for the E85 pumps?

2 And by the way, E85 is only legal in flex-fuel
3 vehicles today. It is illegal in 2001 and later model
4 year cars. The health effects testing has not been
5 submitted and has not been approved by the EPA. And the
6 survey of the retail outlets is not up and running.

7 There's several conditions required before it
8 can be sold in those 2001 later vehicles, that haven't
9 been met yet.

10 That's all, thank you.

11 VICE CHAIRPERSON BOYD: Thank you. Another
12 question?

13 MR. STEVENSON: Thank you, Commissioner Boyd,
14 this is Dwight Stevenson, with Tesoro.

15 I think I heard you say that you had a question
16 about the wisdom of a policy that was going to be moving
17 ethanol back and forth in order to comply with the low-
18 carbon fuel standard. A very keen point to be made and
19 this is what I think you ought to be concerned about in
20 terms of what can show up in the Sacramento Bee.

21 And it's not just a matter of cost, it's also
22 that the greenhouse gas emissions that we think we're
23 getting, we think we would get in California, the
24 reductions, would be completely offset by either
25 gasoline imports into Brazil or the ethanol that would

1 be shuffled back to it.

2 So I think I commend you for looking at that
3 issue.

4 And as far as the -- I think I've heard it
5 deemed a theory, as far as it may be happening, it has
6 happened. There have been ships that have taken ethanol
7 out of the Gulf Coast, down to Sao Paulo, discharged,
8 back-loaded, back to the U.S. Gulf Coast, so it is
9 happening.

10 VICE CHAIRPERSON BOYD: Why is it happening if
11 there isn't the LCFS, yet?

12 MR. STEVENSON: The primary driver was the EISA,
13 it was the RINs credits for advanced renewable.

14 VICE CHAIRPERSON BOYD: Speculation.

15 MR. STEVENSON: Sorry?

16 VICE CHAIRPERSON BOYD: Speculation or just --

17 MR. STEVENSON: Well, it's a description from
18 the trader who was doing it.

19 VICE CHAIRPERSON BOYD: Okay.

20 MR. STEVENSON: That's what he said.

21 COMMISSIONER PETERMAN: Can you just clarify
22 that, was there a requirement, an EIS requirement that
23 was in place now that they were trying to meet?

24 MR. STEVENSON: Yeah, the RINs that are -- the
25 RIN credits that are generated from the advanced

1 renewable paid for that.

2 COMMISSIONER PETERMAN: Okay, thanks.

3 MR. STEVENSON: And, of course, at no, now,
4 greenhouse gas benefit. In fact, obviously, a little
5 bit of a cost there.

6 And as for the -- thanks, Gordon, for responding
7 on this last slide, was that -- was that for me?

8 MR. SCHREMP: The very -- the very last slide?

9 MR. STEVENSON: The very last slide, yeah.

10 MR. SCHREMP: Oh, did you say --

11 MR. STEVENSON: Yeah, I've been asking these
12 questions and so I appreciate this answer. But I wanted
13 to respond that the difference between -- I guess the
14 term is all things being equal, so there is going to be
15 this growth and, you know, thank goodness that we've got
16 an ag industry that does so good a job of providing
17 food, and they're going to continue, I hope, to provide
18 more and more bushels per acre.

19 But the point is that if you impose the ethanol
20 consumption, all things being equal, there will be not
21 just the normal three percent or one and a half percent
22 growth, but there will be a requirement for crops being
23 grown out of cycle, with irrigation, and with more
24 fertilizer.

25 Is that clear or --

1 MR. SCHREMP: Well, I'm not sure that that's
2 exactly clear but I think --

3 MR. STEVENSON: Okay.

4 MR. SCHREMP: -- certainly the second sub-bullet
5 there, you know, assuming the ratio remains fairly
6 constant it's -- I mean, for example, since clearly 2007
7 circa data, and we're studying 2011, has a lot of this
8 corn acreage shifted to places that are purposely using
9 irrigation.

10 Don't know the answer to that question, so there
11 could be disproportionate amount, you're right. So, all
12 things being equal, no, if they're not -- if they're
13 unequal and the area's being targeted for corn use,
14 especially now, with very high prices and some of the
15 farmers chasing some additional opportunity --

16 VICE CHAIRPERSON BOYD: Right.

17 MR. SCHREMP: -- where is that crop being grown?
18 And if they want more certainty because of the very high
19 price, maybe they go to an irrigation business model and
20 not dependent on weather, because the value is so high.
21 So, you're right, we don't know the answer.

22 MR. STEVENSON: And that's my point is, yeah,
23 the incremental corn is going to come out of that, it's
24 going to come out of more water and more fertilizer
25 being put on the ground. And so you can't just look at

1 the average from an incremental demand, you've got to
2 look at the incremental effects.

3 And it's called farming intensity and so far
4 CARB has not yet considered that in -- they've got
5 indirect land use change included, but they haven't got
6 the intensity, farming intensity.

7 Thank you.

8 VICE CHAIRPERSON BOYD: Thank you. Okay, let's
9 move on to the next item. Mike Waugh, from ARB's going
10 to talk about the Low Carbon Fuel Standard.

11 You're only -- we're only two hours behind,
12 Mike, so -- I'm not telling you to speed it up. I know
13 people have been waiting, sitting on their hands waiting
14 for this one.

15 MR. WAUGH: Thank you and good afternoon
16 Commissioners, the CEC staff, other stakeholders.

17 I was asked here to give an update on the Low
18 Carbon Fuel Standard, and apparently to break up back-
19 to-back Gordon presentations, so I hope to accomplish
20 both.

21 What I'm going to do here, briefly, today is go
22 over the goals and the benefits of the Low Carbon Fuel
23 Standard, kind of a reminder of why we have it, look to
24 see how we're proceeding on our 2011 implementation.

25 We have in process right now two large efforts;

1 one is a formal review of the LCFS, with an advisory
2 panel, and the second one is proposed amendments to the
3 LCFS.

4 As a reminder of the LCFS, the goal is to reduce
5 the carbon intensity of the transportation fuel by ten
6 percent by 2020. We consider a full lifecycle in this
7 assessment of the production and transportation use of
8 the motor vehicle fuel.

9 We do have separate standards for gasoline and
10 diesel. However, if one of these standards is over-
11 complied with and credits are generated, it can be used
12 for the other standard.

13 The LCFS is estimated to reduce greenhouse gases
14 by 16 million metric tons of CO₂ equivalent by 2020,
15 which is about ten percent of the overall GHG reduction
16 goal of the larger AB 32 program, so it is a sizeable
17 part of California's goal to reduce GHG emissions by
18 2020.

19 These emission reductions can be achieved
20 through the use of lower carbon intensity biofuels, you
21 know, ethanol, biodiesel, cellulosic fuels.

22 Or there is a distinct advantage, we think, with
23 the Low Carbon Fuel Standard over the Federal RFS2
24 program in that electricity, hydrogen, biogas, natural
25 gas can also play a role. And based upon some of the

1 presentations given already, there's obviously a very
2 healthy interest in these other alternative fuels.

3 Another goal of the LCFS is to reduce the amount
4 of petroleum consumed and dependence on foreign oil,
5 and we're also hoping that we establish a model for
6 regional and national standards as well.

7 2011 implementation -- 2010 was a reporting
8 year, only, 2011 is our first implementation year.
9 There's a modest requirement this first year and that's
10 a quarter of a percent of carbon intensity reduction for
11 2011. The LCFS is back loaded in that the first few
12 years are pretty modest and then the curve really dips
13 down towards the end of the decade, especially the last
14 three years.

15 Already, quarterly reporting requirements, we've
16 had the first and second quarters reported. This is
17 where the regulated parties report their credits and
18 deficits. A credit is when you introduce a fuel that
19 has a CI that's lower than the standard and a deficit is
20 when you introduce a fuel that has a CI or carbon
21 intensity that's higher than the standard.

22 And then so you can generate credits on a
23 quarterly basis and they're available for purchase or
24 transfer.

25 One of the things that the -- one of the

1 programs that we have and I'd like to give you an update
2 on, and Gordon's next presentation is based a lot on
3 some of this data that we shared with the CEC, is our
4 Biofuel Producers Registration Program. It's a
5 voluntary program. One thing that's not voluntary is
6 they have to show evidence of physical pathway, which
7 means they have to show that they have actually brought
8 biofuel into California. So, that's required by the
9 regulation and we use the registration program as a
10 vehicle to get that requirement.

11 But also, the producers can provide regulated
12 parties with claimed CI values. Essentially, it's
13 either in the look-up table or they've gone through our
14 method two to get a CI associated with their biofuel,
15 and they can show what their value is and regulated
16 parties can find them via our registration program.

17 VICE CHAIRPERSON BOYD: Mike, do you need
18 evidence of a physical pathway or do you need evidence
19 of the green molecules showing up here?

20 MR. WAUGH: Physical pathway. You know, in the
21 case of, for example, of like biogas that's introduced
22 into a pipeline, we don't need the molecules to be here.
23 If, for example, a biogas is introduced in some other
24 state into a natural gas pipeline that comes to
25 California and a similar volume of gas is pulled out on

1 this end to be used for transportation purposes, we
2 would assume that that biogas, for example, has come to
3 California. We're not interested in the molecules,
4 themselves.

5 VICE CHAIRPERSON BOYD: Well, maybe Commissioner
6 Peterman and I can give you a warning of something that
7 might be coming your way. We, as an agency, have been
8 catching a lot of grief over the assignment of renewable
9 portfolio standards to biogas from out of state. And
10 there's a feeling on the part of some people in high
11 places that you need to prove that the molecule actually
12 showed up at the burner tip in that case, which is a
13 physical impossibility.

14 So, you may have heard about this, but it may be
15 coming your way or maybe you have more friends than you
16 do that will shield you from this, but in any event
17 interesting. That's why I asked the question.

18 MR. WAUGH: I appreciate the heads-up,
19 Commissioner Boyd. I'm not sure, by the time we get
20 through this presentation, we'll see if we've got more
21 friends than you do or not.

22 COMMISSIONER PETERMAN: I'll also add that we're
23 having a workshop looking at delivery pathways for
24 biomethane, for RPS compliance, on September 20th, here
25 at the Commission. And I know you have a very busy

1 week, so stop by for that, first, or send anyone you
2 know. That would be great to just have someone from
3 your team listen in or attend to see where the
4 discussion's going.

5 MR. WAUGH: Thank you, Commissioner Peterman. I
6 think the mode these days is that we go to meetings all
7 day and work in the evenings and on the weekends.

8 So, I have some dates coming up in my
9 presentation, too, so you invite us to your party, we
10 invite you to our party.

11 We have a lot of facilities registered in our
12 program, over 15 U.S. facilities, now, and that
13 represents 10 billion gallons a year of capacity. We
14 also have some Brazilian facilities registered. They
15 are in a different table because they haven't provided
16 evidence of physical pathway and that they haven't
17 actually sold ethanol in California, yet.

18 We're just now looking at the second quarter
19 data, so unless there's a surprise there, we haven't
20 seen any Brazilian ethanol, yet, in California the first
21 part of this year.

22 This is very important, this is what I call our
23 method two pathway. Method one is you look up in our
24 look-up table for a CI that applies to you. You could
25 be, for example, a dry mill, a dry distiller of grains,

1 insolubles, natural gas plant and you get a 98.4 in the
2 look-up table. Or if you think that you're doing
3 something better than that, then you can apply for a
4 different CI. And we've had quite a few facilities
5 apply for new fuel pathways with lower CIs.

6 We had an EO hearing in February, where we took
7 eight -- 28 pathways to the executive officer. Twenty-
8 five were from applicants, most of them were from corn,
9 there were some Caribbean-based initiative ethanol, and
10 then we developed three, ourselves.

11 We also posted for use, in June, some more
12 pathways. Right now, because what we've decided to do
13 through our reg advisories, is that we post -- when we
14 are going to present for approval to the EO or to the
15 Board a new pathway, we'll post it and we are allowing
16 regulated parties to use those CIs until, you know,
17 until we can -- or at least before we end up with an
18 official approval by the EO or the board.

19 We have some, I know we're talking about the
20 difference in CI between Brazilian ethanol and Midwest
21 corn ethanol, for example, but we've seen some really
22 lower CIs come through, there have been a lot of
23 innovation in some of the plants in the Midwest. Use of
24 waste heat more efficiently, using waste heat, also
25 greater use of biomass as a fuel.

1 And some of these corn ethanol plants have CIs
2 that start to approach those of Brazilian ethanol and
3 one actually is lower than Brazilian ethanol because
4 they use a waste wheat slurry, as well as a feedstock.

5 So, we think this is working as planned. There
6 are two driving forces, really. One, if these plants
7 can make their product with lower operating costs,
8 that's the bottom line for them, but they get a double
9 benefit because when you're more efficient you get a
10 lower CI and there's value in the market for that as
11 well.

12 This is the first quarter 2011 reporting
13 results. As I mentioned earlier, you get credits and
14 deficits. And staff looked at the first quarter and you
15 can see that the number of credits generated were
16 greater than the number of deficits generated.

17 So, you have about 150,000 metric tons of
18 deficits and these are, again, fuels that are higher
19 than the standard, and you've got 225,000 credits of
20 those lower than the standard. So, there was a net
21 75,000 metric tons credit generated in the first
22 quarter. And these credits will be available for use,
23 for regulated parties, should they not be able to,
24 perhaps, procure fuels to meet the standard.

25 And how they were generated the first quarter;

1 the four bars to the left are all ethanol, so most of it
2 was generated by having lower CI ethanol blending into
3 gasoline. There's some natural gas there, and
4 biodiesel. And the one on the end is "other" and the
5 "other" is electricity and hydrogen. There's a lot more
6 electricity out there.

7 This was reported as in terms of direct metered
8 electricity. So, there is an effort right now to go out
9 and define more of these EVs, figure out how to estimate
10 how much electricity they're using and get them into the
11 program.

12 I think as Eileen Tutt said this morning, one of
13 the things that we want to do is to get as many credits
14 into the LCFS program as we can so that some of these
15 credits aren't abandoned out there, but can be brought
16 into the program and used for compliance.

17 COMMISSIONER PETERMAN: Can you say again what's
18 an "other" is that electric?

19 MR. WAUGH: That was electricity and hydrogen,
20 yes.

21 COMMISSIONER PETERMAN: Okay.

22 MR. WAUGH: Yes. And like I said, that should
23 be more than that. I think there's some people who
24 aren't quite familiar with the LCFS so we expect natural
25 gas, and electricity, and hydrogen all to go up.

1 This is a big effort. We have a formal review
2 of the LCFS. It's required by the regulation. The
3 first one is due to the board by January 1, 2012 and the
4 second one January 1, 2015. We are, in fact, doing the
5 first formal review at this point.

6 The reg requires the executive officer to
7 convene an advisory panel, that's been done, and the
8 next slide will go into that.

9 The regulation identifies minimum topics of the
10 review, so the programs' progress against the LCFS
11 targets, fuel availability, economic and environmental
12 impacts, advances, challenges related to the low CI fuel
13 production in harmonization with the international and
14 Federal programs.

15 A lot of this effort here is similar to what the
16 CEC is doing for the IEPR. Essentially, there's a lot
17 of overlap here and I must say right now that I
18 appreciate the dialogue that we've had with the CEC
19 staff. They've shared their assumptions, we've shared
20 some of our assumptions and so we do have a lot of work
21 here.

22 We're doing a similar analysis with regard to
23 LCFS targets and compliance, as what you'll see in
24 Gordon's next presentation.

25 We have our number one hourly employee on this

1 program and that would be Mike Scheibel, so we feel
2 confident in his abilities.

3 The advisory panel, itself, there's about 40
4 members of industry, academia and NGOs. In fact,
5 several of them are here today. It was first convened
6 in February. We've added two topics, in addition to the
7 ones that were in the regulation, itself. One is high
8 carbon intensity crude oil and the other is a credit
9 trading program, so these were added by the advisory
10 panel in the February meeting.

11 The panel's met four times, providing feedback
12 to ARB staff proposals. Typically, we've been sharing
13 outlines of chapters and then writing up the chapters,
14 and this is continuing. And the final meeting is in
15 October, we hope to have the draft white paper
16 available. I think some of it is coming out in pieces
17 at this point. There are some things that will be late
18 in showing up just because they're a little bit more
19 challenging pieces of the puzzle.

20 And we're going to discuss this program review
21 at the December board hearing.

22 The other concurrent and very important effort
23 that we have, we're looking at proposed amendments to
24 the LCFS regulation. These are the larger ones, the
25 opt-in/opt-out provisions. The regulation now allows

1 people to opt in. This will be clarifying language so
2 they can feel more comfortable of this is how I opt in
3 and if I want out, this is how I opt out.

4 Also, there's an enhanced regulated party
5 provision. Some of the upstream fuel providers, fuel
6 distributors wanted to become regulated parties so that
7 they could generate credits. Right now, the regulation
8 only allows regulated parties to hold credits, so a
9 third-party broker, for example, couldn't start buying
10 up credits and manipulating the market. So, you have to
11 be a regulated party to hold credits and some of these
12 have indicated that they would like to voluntarily opt
13 in.

14 Credit trading process; credit trading's allowed
15 today. This, again, is clarifying language as to how
16 the process is going to work.

17 Certification process for method 2a/2b, right
18 now it's a regulatory process and that is a burdensome
19 process on staff. We think that we can go to a
20 certification process. There are several of these at
21 ARB. We would maintain the technical rigor of 2a/2b and
22 also the public input of the regulatory process, we'd
23 maintain that in the certification process.

24 This is for streamlining so that we can get more
25 of these processed and out the door.

1 Also, in high carbon intensity crude oil we're
2 looking at revisions. I want to make sure that I make
3 this point, that they're going to be talking about
4 HCICO. I don't know who decided the first "C" was
5 silent, but that's how we say it.

6 We'll be talking about HCICO later. And the
7 current regulation has provision for HCICO. When the
8 board approved our reg two years ago, they recognized
9 that some crude oils take more energy to produce than
10 others and they agreed with staff that the high carbon
11 intensity crude oil, there was a deficit created when
12 those were produced and brought into California, again,
13 going with the full lifecycle analysis that we do.

14 What we're doing now with regard to HCICO is
15 we're working with the interested stakeholders and there
16 are several, many, plenty on should we deal with HCICO
17 differently than what the current regulation deals with
18 it right now?

19 Electricity regulated party, we've got language
20 in the reg, we're making revisions to that. I don't
21 need to tell you at this time of the day there is a lot
22 of interest in electricity credits.

23 And then there is the potential revision to land
24 use change values. We have a contract with the
25 professors at Purdue to look at sugarcane ethanol, corn

1 ethanol, and soy biodiesel, looking at the land use
2 change values for that.

3 The potential impacts from the analysis, if the
4 land use change values change significantly, you know,
5 if they alter the soy, corn, and sugarcane biofuels that
6 may alter the baseline and, therefore, the compliance
7 curve. So, we don't have the answer for that, yet, but
8 we are aware that since the baseline was gasoline, with
9 ten percent corn ethanol, if that value for corn ethanol
10 goes down then the baseline changes and the compliance
11 curve would change as well.

12 On the HCICO, we have offered up a handful of
13 options to deal with existing language and we're engaged
14 in conversation with stakeholders there.

15 And how we ultimately end up dealing with HCICO,
16 it may affect the generation of deficits.

17 And, finally, in crediting trading and opt-in
18 revisions we've -- those are clarifying procedures, as I
19 said earlier. And we think that once the credit trading
20 program gets up and the opt-in revisions kind of show
21 people how to get in, that we think we're going to
22 attract additional credits into the program, which is
23 very important to us.

24 Here's our party dates; a workshop next
25 Wednesday, in the morning. We have a workshop on land

1 use change. In the afternoon we are talking about the
2 other proposed amendments that I just mentioned,
3 previously.

4 For the advisory panel, on September 29th we
5 have a public meeting to discuss progress on the
6 advisory panel. And the final advisory panel meeting is
7 on October 27th.

8 Our board hearing will be -- right now it's
9 scheduled for December 15th, in Sacramento. We will be
10 taking to the board proposed amendments, the LCFS formal
11 review, and sustainability which I didn't mention
12 earlier, but that's a third effort that's going forward.

13 Here's contact information. As I said, I'm
14 Chief of the Transportation Fuels Branch. Floyd is
15 Chief of the Alternative Fuels Branch and he is back
16 against that wall there, so he and I share the LCFS at
17 this point.

18 And we've got a couple of key staff members
19 here; Michelle Buffington is advisory panel co-chair. I
20 think those, obviously on the panel, are familiar with
21 her.

22 And then Aubrey Sudeco works in Floyd's branch
23 and she's coordinating the record revisions.

24 So, I'd be happy to answer any questions that
25 you have right now or I can go back and say if there's

1 not enough time, there's plenty of opportunity. Thank
2 you.

3 VICE CHAIRPERSON BOYD: Thank you, Mike,
4 appreciate you being here.

5 Any questions? I don't have any questions about
6 your presentation, I appreciate the -- a better
7 understanding and clarification.

8 Let me throw one thing into the debate, coming
9 from the stand point of an Energy Commissioner versus an
10 Air Board member, let's just say, and that is as we sit
11 here and worry about energy security, energy diversity,
12 et cetera, et cetera, I know theoretically energy
13 security doesn't buy carbon intensity credits, at least
14 at the present time. But I, for one, have talked about
15 this for a while and I, for one, am wondering as a
16 nation state when we make final decisions about where we
17 want to go and from whom we want to buy our
18 transportation fuels, and shuffling that takes place
19 before or after, if the idea of energy security points
20 maybe isn't something we consider.

21 Now, I know that -- well, that may or may not
22 give you carbon. I mean I worry about shipping stuff
23 halfway around the world in dirty tankers, and having
24 some third world country burn our stuff which, if it's
25 in the Far East comes back to this state as a criteria

1 air pollutant in the stratosphere.

2 I just don't know, when you talk about doing
3 full systems analysis of things, I don't know if we're
4 taking everything into account.

5 But energy security is not something that
6 totally gets points, but maybe it would enter into a
7 discussion about where you shuffle stuff to and what the
8 consequences are. And in the shadow of the tenth
9 anniversary of 9/11 one thinks about energy security.

10 And I'm suddenly reminded by that comment where
11 I was on 9/11, I was with the CalEPA Secretary Winston
12 Hickox, with the present, now, head of the Council on
13 Environmental Quality, and the former executive director
14 of this agency in Nebraska, trying to make peace and
15 understand ethanol and corn ethanol, and it turned out
16 to be a very sad, if not interesting experience.

17 In any event, just some thoughts with regard to
18 my thinking and the kind of thinking we need to think
19 about. And maybe it was stimulated a little more in the
20 last year by participating in the production of a second
21 report by what I consider an illustrious group of people
22 called the Cal STEP group, which generated a report
23 several years ago that, as far as I'm concerned, led to
24 the existence of AB 118.

25 This report tried to inject -- it suggested a

1 greater injection of the question of California energy
2 security into the debates that were going on in this
3 State on the subject. And it's a very prestigious group
4 of folks from the environmental community, industry, not
5 much from government, but et cetera, et cetera.

6 And so it's something to think about, I think,
7 when you're a policymaker here in the State dealing with
8 energy.

9 So, it's just I'm just sharing that with you
10 because I don't get many audiences with ARB. So, thanks
11 Mike.

12 MR. WAUGH: Thank you, Commissioner Boyd. You
13 know, we had several discussions with representatives of
14 Canada and we've talked about that. We read recently
15 about carbon capture and sequestration that may occur up
16 there and we're excited about that part as well.

17 And I think that the different options that
18 we're discussing with regard to HHICO, some of those
19 options would, I think, at least temper some of the
20 potential crude shuffling. So, we're cognizant of that
21 and we're working with stakeholders on that.

22 VICE CHAIRPERSON BOYD: Any questions from
23 stakeholders? There's the first hand.

24 MR. STEVENSON: Dwight Stevenson, with Tesoro.
25 Could you go back to slide 8? So, slide 8 shows a net

1 balance of the deficits and credits. And I'm not sure
2 how to make this point, but I guess I'll ask the
3 question. Are you saying that all the credits shown
4 there are certain and allowable by all those parties
5 that generated them?

6 MR. WAUGH: Well, Dwight, as you're probably
7 aware, that since the HCICO issue has not been address,
8 yet, we gave three options with regard to how to handle
9 credits generated in 2011, while HCICO was still
10 uncertain.

11 One of them was that you can use all these
12 credits in 2011 and then wipe the slate clean and start
13 over in 2012.

14 The second option was to maintain these credits.
15 Certainly, some of them would be frozen so you couldn't
16 use them until we figure out how they would be
17 discounted by HCICO.

18 And the third was that if there was a default
19 value applied to potential HCICO, because right now all
20 we have is non-HCICO, which is like three-quarters of
21 the crudes, and one-quarter of the crudes is potential
22 HCICO.

23 So, until we can get the actual HCICO
24 identified, some of these credits would not be available
25 for use unless you chose a default value for your carb

1 and diesel.

2 MR. STEVENSON: Okay, so some of these credits
3 are not going to be available for use in following
4 years?

5 MR. WAUGH: Yeah, the sooner we get the HCICO
6 issues answered then I think we can adjust these credits
7 and they'll all be good, what's left.

8 MR. STEVENSON: Okay. But some of them may not
9 be?

10 MR. WAUGH: Some of them may not be, yes.

11 MR. STEVENSON: And it's an interesting graph
12 because it really shows -- this is a quarter percent and
13 so next year it's going to be half percent, and so the
14 deficits that are going to be generated are going to be
15 roughly twice that amount. And it's interesting when
16 you go to that next level of deficits that what's
17 happening this year is not going to be sufficient for
18 compliance next year.

19 MR. WAUGH: Well, as I said, I think we're going
20 to get a lot more credits, too. I think that that bar's
21 going to go up because I think people are going to go
22 out and search for electricity credits, natural gas
23 credits. I think that with the method two we're going
24 to get lower and lower CIs for some of the corn ethanol.
25 And, you know, perhaps if some of the Brazilian ethanol

1 shows up, the credit bar, itself, will also go up.

2 MR. STEVENSON: And I've got a -- so that's --
3 thank you for that. I've got a point to make here as
4 concerning the certainty and I'm -- I've yet to see CARB
5 or the CEC make a full projection, year by year, even
6 just for the near term as to how that you expect the
7 State will, you know, comply with the Low Carbon Fuel
8 Standard.

9 And you mentioned the Brazilian ethanol and that
10 cost, of course is in the -- you know, in terms of
11 gasoline price, 10 to 15 cents a gallon increase with
12 that material. Clearly, in the next year or two that's
13 going to be happening, at least from my stand point.

14 But what is lacking here is some understanding.
15 You know, we ought to be describing to the State -- you
16 ought to be describing to the State what's going to
17 happen and how much it's going to cost the State. Thank
18 you.

19 MR. WAUGH: Yeah, Dwight, thank you. Just to
20 let you know that, you know, that effort is being done
21 for -- it's for the advisory panel. You are on the
22 advisory panel, so we are doing the economic analysis,
23 we are doing a fuel availability, we are doing that kind
24 of analysis, and so we hope to share that with you next
25 month.

1 MR. STEVENSON: Some time before the panel is
2 ended?

3 MR. WAUGH: Yes, that's the goal.

4 MR. STEVENSON: Oh, okay.

5 VICE CHAIRPERSON BOYD: Okay, Mike, thank you
6 very much.

7 MR. WAUGH: Thank you. Guess it's back to
8 Gordon.

9 VICE CHAIRPERSON BOYD: You're getting off
10 easier that I thought you would.

11 Now, Gordon, the next header has the heading of
12 "Case Analyses", but the list that I'm provided has a
13 whole bunch of issues on it. My reaction is we've
14 talked an awful lot about some of those. So, are you
15 going to be able to lightly skip over some of these and
16 talk a little bit more about others where there hasn't
17 been much discussion?

18 Like, the first item says "Transportation and
19 Electricity Demand Forecast." Well, we've certainly
20 talked about that.

21 The "Availability of Electricity Credits," maybe
22 that deserves a little more discussion.

23 "The Forecasts of Natural Gas Use in
24 Transportation Sector," well, we've certainly talked
25 about that.

1 "Outlook for Biogas Production," we haven't
2 talked about that as much.

3 "Prices of Various Biofuels," no, we haven't
4 talked much about that.

5 So on and so forth. So, recognizing the
6 lateness of the hour, I would look to you and Malachi,
7 whose wife we must have really influenced, to try to be,
8 you know, condensed as best as possible, so we can save
9 time for the other several items still on the agenda,
10 and people who've spent a lot of time and effort to make
11 presentations.

12 So, with that said, carry on.

13 MR. SCHREMP: Well, first of all, you weren't
14 supposed to see that list and --

15 VICE CHAIRPERSON BOYD: I have my ways.

16 MR. SCHREMP: But since you have it, now, I will
17 do my best to skip over items we've already covered.

18 Gordon Schremp, staff with the Energy
19 Commission. I'll be going through our preliminary case
20 results of the analysis performed by Malachi.

21 So, if there are any -- if there are any
22 disagreements by what I'm showing, then please direct
23 those questions at Malachi.

24 If you have any compliments for here, you know,
25 you can give them directly to me.

1 (Laughter)

2 MR. SCHREMP: So, I just want to point out that
3 this is basically a first-step analysis, an LCFS
4 analysis that we've undertaken.

5 You know, Dwight's comments, well, I've yet to
6 see, well, you're sort of going to see a little bit of
7 that here.

8 And as Mike Waugh mentioned, you're going to see
9 a little bit more when they release some of their draft
10 information on compliance pathways.

11 So, this is a first step, but it is not a
12 forecast. We've constructed these cases, I know there's
13 a lot of detail in the draft staff report about sort of
14 what our whole set of assumptions are for running each
15 of these cases.

16 And, really, we're looking at feasibility based
17 on fuel use, fuel availability, but having not mentioned
18 credits, oh, by the way we are looking at, you know,
19 credit generation and accounting for that in the
20 balances from year to year.

21 So, does this have an economic overlay or
22 constraint applied to it, which is more real world? No,
23 not at this point, but that is some of the continuing we
24 will -- and I'll be discussing that in just a little
25 bit.

1 So, those of you who read through this portion
2 of the report, you know there's four cases and how
3 they've been set up.

4 There is a change. We did talk about using lots
5 biodiesel, B10, B20 after a certain period of time. We
6 modified that assumption and reran these cases with a B5
7 max limit.

8 The purpose of doing that was to avoid getting
9 to an area of having to do NOx mitigation. One of the
10 potential NOx mitigation strategies above blends of B6
11 to B20 is to use a certain ratio of renewable diesel.

12 So, we didn't actually go there. I mean you
13 could do that, but because there's a limited volume of
14 renewable diesel, your opportunity to use even more
15 biodiesel is somewhat constrained by that.

16 So, yeah, some additional credits could have
17 been generated, but they're rather modest, but we did do
18 a B5 limit in all the cases.

19 And then, of course, no cost at this point but
20 we will be doing that.

21 So, what I think all of you have to be asking
22 yourselves and thinking about as we move through these
23 cases is plausibility of the assumptions. People could
24 characterize a lot of the assumptions in fuel supply
25 availability as rather optimistic. Also, keep in mind

1 some of the information I provided earlier about outlook
2 for certain biofuels like, you know, ethanol from
3 Brazil.

4 So, case one assumptions, some of the high
5 points, no cellulosic fuel is used here, and we did use
6 the lowest carbon intensity fuels available.

7 And thanks, again, to Mike Waugh and his staff
8 for providing that information from the registered
9 facilities. We couldn't have done this analysis without
10 them.

11 And oh, by the way, we have been working rather
12 closely with technical staff at ARB and will continue to
13 do so in discussing our assumptions, electricity
14 forecast outlooks, use of FFV vehicles and E85. So,
15 we're trying to understand, you know, what our joint
16 assumptions are and where there are differences,
17 understand why there are differences. so we continue to
18 work through that process.

19 So, electricity, Mike Waugh mentioned that not a
20 lot of electricity in the first quarter, as you saw in
21 that other category rather modest, and we would agree
22 that it's not a lot of people are quite aware that they
23 could do this and register credits.

24 So, we have taken all of the electricity as
25 credit, recognizing, ultimately, that some of it may not

1 technically be eligible, or lags because they don't get
2 into the system in time but for all intents and purposes
3 light- and heavy-duty electricity demand forecast that
4 Malachi have, both high and low, we took all of those
5 credits, the same for natural gas and transportation.

6 So, this includes heavy-duty things like
7 existing transit, or electrified rail like here in
8 Sacramento, or Bay Area Rapid Transit. So, all that
9 electricity we took as a credit.

10 So here are all of the fuels together, lots of
11 colors, a kaleidoscope of colors, you'll see, because
12 there's lot of different fuels.

13 And, actually, there are many more fuels, as
14 Mike Waugh was pointing out, different pathways and
15 different carbon intensities. And so this shows one
16 stark result is Brazil ethanol, a lot of it. Well,
17 that's more Brazilian ethanol that has almost been
18 exported to the United States, ever, that would be at
19 2014, so that's a lot of Brazilian ethanol.

20 It shows in the gasoline portion there is some
21 Midwest ethanol. This is some lower carbon intensity,
22 not the traditional corn ethanol but some of the
23 facilities, as Mike mentioned, more efficient process,
24 lower 84, 85 grams.

25 And then we're seeing some sorghum ethanol,

1 which certainly is a lower carbon intensity. No
2 cellulosic at this point.

3 So, you'll notice that California ethanol always
4 used, it's sort of a ground rule, we thought it's here,
5 we better use it. People could argue that because it's
6 slightly higher carbon intensity than some of the other
7 ethanols that it would maybe go out of use and possibly
8 be exported as possible.

9 But the ground rule was to use that in all the
10 cases.

11 The diesel blends have a lot -- do have
12 biodiesel, but it is B5, once again, and it's cherry-
13 picking the lowest carbon intensity, which would be corn
14 oil biodiesel, 5.9 grams, very, very attractive, but not
15 a lot of it produced today and, arguably, likely quite
16 expensive.

17 But the fact of the matter is we're looking at
18 commercial available fuels or that could be available,
19 reasonably, absent the economics, and to see what kind
20 of compliance, how close you can get to compliance.

21 So this slide takes those credits, sums them in
22 a stack bar arrangement, and then shows the deficit, as
23 Mike was talking about, and how the deficit will grow.
24 And this deficit is a generation of the gasoline and
25 diesel, the petroleum portions for that particular year

1 relative to that target, and this is all using high-
2 demand forecast, our high-demand forecast. We, of
3 course, have a low one so the numbers would be
4 different, but I didn't want to present 150 case results
5 here. I thought you wouldn't give me that kind of time.

6 So, as you can see there is compliance through
7 2015 or the first half of the program with the
8 assumptions for these kinds of fuels, yet a deficit or,
9 you know, a lack of adequate credits beyond that point.

10 So, what would it take? More credits,
11 obviously. And in areas of using more volume for
12 certain types of fuels because in the case one we
13 limited it to what's in the registrations. We know the
14 volumes will go up, more people will register, but we
15 did limit it to what's in the registrations.

16 And just a point to make that since these cases
17 are showing the results of selecting the lowest carbon
18 intensity ethanol first, you won't see any Midwest
19 traditional corn ethanol in these results.

20 It doesn't mean you can't use it. Obviously,
21 what Mike was presenting in the first quarter results
22 are lots of Midwest corn ethanol. Yes, it can be used,
23 but it won't generate as much credit.

24 So, I think I skipped over one point is that
25 although that line went -- you know, where the stacked

1 credits were below the line in 2016, the use of built-up
2 credits in advance of that carried compliance through
3 for an additional three years.

4 Probably don't have to go into these concerns.
5 Certainly, lots of Brazilian ethanol, very aggressive
6 there. How realistic is that; you know, please give us
7 comments.

8 And ethanol shuffling is something that we
9 believe wouldn't be necessary to ensure because we don't
10 think the incremental supply would be available, not in
11 these volumes.

12 And biodiesel, even though it's a B5 limit, it's
13 a lot of biodiesel. So, 50 percent of the record
14 consumption in the United States, in California in 2012,
15 so that's a lot, but there would need to be an adequate
16 infrastructure in order to blend B5 at all the
17 distribution terminals that had diesel. So, that's not
18 in place yet.

19 As well on the first point, on the
20 infrastructure, that the infrastructure capability in,
21 say, the Houston ship channel has not yet been
22 completed, so that's not in place yet, either.

23 So case two we said, well, let's get more low-
24 carbon intensity material, so cellulosic we introduced.
25 And as I mentioned, we're assuming our proportional

1 share from RFS2, but not those aggressive, large
2 cellulosic volume targets, a smaller amount, and I'll
3 show you what that is a bit later.

4 So, we said we're taking our proportional share
5 of that smaller. John Braeutigam mentioned suggesting
6 using that EIA projections and we have those projections
7 for the two scenarios that most closely match our high-
8 demand and low-demand forecast, and we have those
9 volumes available.

10 So, use that and also we're assuming that the
11 lowest carbon intensity Brazilian ethanol is now
12 available. And that's all the facilities that have
13 cogeneration capabilities, about 600 million gallons of
14 capacity, currently, and we expect more registered.
15 We're assuming all of it goes to mechanized harvesting,
16 which then drops their carbon intensity down to 58.2.

17 So now the results are lots of Brazilian
18 ethanol, but you start to see the cellulosic fuels come
19 in. And the cellulosic fuel is not just cellulosic
20 ethanol, it's three types of cellulosic fuels;
21 cellulosic ethanol, biomass to liquid, gasoline and
22 biomass to liquid diesel. These are drop in fuels,
23 these are very attractive fuels for LCFS utilization for
24 two reasons.

25 One is they displace gasoline completely, the

1 same energy content, and its associated carbon debt, and
2 it brings in a fairly low CI and gets a lot of credit.

3 So, that's a good material so we're using, this
4 is our proportional share of EIA's forecast of those
5 three types of fuels available, and lots of ethanol,
6 still.

7 So, similar here, but now you're starting to see
8 some BTL gasoline in the yellow and some cellulosic
9 ethanol in the dark purple being used more, as more
10 becomes available in that EIA forecast.

11 And we're also seeing some BTL diesel fuel in
12 large volumes near the end, upwards of 300 million
13 gallons by 2030, the end of our forecast period, and
14 then it wants to use a lot of used cooking oil.

15 So, these are the most desirable blend stocks.
16 And so now what happens? Well, more credits from these
17 better fuels available in a little bit more quantity,
18 and you have compliance through 2016 and the additional
19 credits give you two more years, the same through 2018.

20 So, not enough credits, still, so you need more
21 cellulosic fuel, more drop-in fuels and a little bit
22 more of the other ones, so that's what we increase in
23 case three.

24 So, very heavy dependence on Brazilian ethanol,
25 still, same concerns with biodiesel. However,

1 cellulosic fuel in these volumes does raise some
2 concerns and that's because it's nearly equal to the
3 entire amount USDPA believes would be available next
4 year in terms of capacity. And that, I should note, is
5 the upper end of their estimate at this time.

6 Sometime in November, the range is 3.5 to 12.6
7 million gallons, they'll finalize the number for
8 compliance next year. So that's -- so that would be a
9 lot of cellulosic ethanol to use in California at the
10 beginning of next year, so just with that caveat there.

11 So like I said on case three more, more low-
12 carbon intensity material, so we say, okay, half of the
13 cellulosic fuels that EIA says is available in the
14 national supply, we'll use that.

15 And then we start looking at larger amounts of
16 renewable diesel, significantly larger. And as we wrote
17 in our report, you see these are some, you know, 50
18 percent of U.S. supply from that type of feedstock.

19 So, is that a lot? Yes, it is, but we want
20 to -- we want to sort of test the sensitivity of how
21 much more of certain types of fuels might be necessary
22 to help achieve compliance.

23 So now we're seeing greater use of BTL material
24 because we've significantly increased that about five
25 times worth because we're ten percent of proportional

1 share and some of these other fuels have increased
2 because we've increased that proportion. So, gasoline,
3 you don't, Brazilian ethanol, no Midwest. Lots of
4 cellulosic ethanol and BTL gasoline, an awful lot, which
5 gives you lots of credits.

6 And now we're seeing diesel go up. Now, I
7 mentioned B5 is the limit, so you go, well, how can you
8 have almost two billion in total? Well, because once
9 again the BTL diesel fuel replaces carb diesel. So,
10 it's not a biodiesel, it would not be a NOx issue
11 requiring mitigation, that I know of.

12 And then we're increasing inedible tallow, which
13 is a very good low CI material, by increasing that
14 feedstock's availability.

15 So, where does that get you? Well, that gets
16 you compliance through a longer period through 2017.
17 And sort of a strange thing happens here, a period of
18 you're out of compliance and then you can go back in.

19 Well, how can that happen is because of the
20 greater and greater use of drop-in fuels, you get less
21 deficits in light of redline declines, and more credits,
22 a lot of the credits rise, so that's why you can go back
23 into compliance.

24 So, you also build up excess credits and that
25 can go through, carry you through to 2020, so that's

1 almost, if we go back up there, that's not quite fully
2 compliant, there's some space to still fill in. So,
3 this is pretty close. But, certainly, we're making
4 some -- we're making some assumptions about certain
5 supply availability that are quite high as, I mean, you
6 can read through this list.

7 But, certainly, the cellulosic fuels, 56 million
8 gallons beginning next year, that's four and a half
9 times greater than the maximum available.

10 So, is this a bit of a stretch? Likely on the
11 cellulosic side, maybe some of the others not quite as
12 much, but we want to look at what are some feasible
13 pathways through the program, itself.

14 So, case four, I'll show these, I'll go through
15 rather quickly. We were increasing the used cooking
16 oil, which is a rather low carbon intensity. However,
17 because of the B5 limit in the selection of more
18 desirable -- or greater availability, lower CI material
19 for diesel replacements, it really wasn't used.

20 So, the results of this case, and even
21 increasing the Brazilian ethanol to a higher amount of
22 the best type, immediately in 2011, it still didn't take
23 that much more of it, and so the results of this case
24 are essentially identical to the other and you really
25 don't get much of a change.

1 So, that sensitivity is like, well, that doesn't
2 really get you anywhere, so it's almost as if you could
3 ignore the results of case four.

4 So, I'll just pass through the observations, the
5 concerns would be the same of all the previous cases.

6 I've covered this ground, cellulosic
7 availability, hmm, in those volumes -- in the downgraded
8 volumes, yes, but in the higher amounts.

9 Here's what I've been talking about; we didn't
10 use the redline for that cellulosic availability,
11 Congress's vision, we used the stacked bars on the
12 bottom. That's the U.S. availability, according to EIA,
13 for cellulosic fuels, all three types.

14 So we used these, our proportional share of
15 about ten percent, and then in the case three we used
16 half of these volumes.

17 But as you can see, they almost pale in
18 comparison to what Congress has suggested.

19 And, you know, in John Braeutigam's suggestion
20 and Commissioner Peterman's direction to look at a
21 sensitivity for this, of changing that, yes, if we were
22 to use the cellulosic volumes and replace the ones in
23 the original table, the amount of E85 would go down and
24 it would change -- it would change these results because
25 we're looking for ethanol in certain flavors to meet

1 that ethanol target, which would now be lower.

2 So, it's possible that the deficits will be a
3 bit higher and the credits may be a little bit less once
4 we do that for LCFS analysis, but RFS2, post-processing,
5 the results will be less E85 and less infrastructure
6 impact.

7 So, but we -- but that's, I think, good
8 direction and it would be very good to look at that and
9 see how it all plays out.

10 So, these are some supply assumptions on some of
11 the best low-carbon intensity and, hopefully, we can get
12 some feedback from the forum on the 22nd of September,
13 because this is a lot of -- corn oil, certainly, in the
14 ag community, how reasonable is this? Could all of it
15 be moved into a transportation fuel use or is that
16 unrealistic?

17 What are the upper limits of inedible tallow and
18 used cooking oil, how really far could you go because of
19 this inverse relationship, collecting smaller and
20 smaller quantities at higher and higher cost.

21 So, we're looking for feedback in your comments
22 about these assumptions. It's very important that you
23 sort of -- you weigh in, most importantly, on the
24 expense of the fuels. Why? This is the next set of
25 analysis we intend to run on the LCFS, overlay an

1 incremental cost constraint.

2 So, how do you do that? We're looking at three
3 mechanisms, near-term pricing information, Brazilian
4 ethanol's a good example, good prices on that. We can
5 calculate what the delivered price is to California, we
6 have lots of data on that.

7 Federal RIN, renewable identification number
8 values, lots of information on that. How are we reading
9 that? Are we reading that properly? What does \$1.30 a
10 gallon cellulosic RIN mean? Is that the incremental
11 price it should be relative to corn ethanol?

12 These are good questions we want to properly
13 understand what we're looking at to properly use these
14 near-term historical references as a starting place to
15 run some cost sensitivities.

16 A final point is we expect low-carbon fuels,
17 like the Federal RFS fuels, to have credit trading
18 activity. Once the platform is up and running, we think
19 that will start to give us information on what the
20 values should be.

21 Right now there's very little information. The
22 Oil Price Informational Service does show two different
23 types of corn ethanol, and if you calculate the carbon
24 intensity difference, it works out to be .2 cents per
25 gram.

1 So, we're going to start with using that as an
2 adder for some of these fuels, but it's very modest. I
3 mean, I'll just give you a couple quick examples, that
4 best corn oil biodiesel would, probably, because of this
5 kind of low amount of premium, about 15 cents a gallon
6 adder.

7 And something like the best Brazilian ethanol,
8 it would be about 6 cents a gallon and cellulosic about
9 10 cents a gallon.

10 Certainly, when we see RINs for cellulosic about
11 \$1.20, that these values might be low, this is an early
12 type of reporting in the system and until the credit
13 trading platform gets up and running for LCFS credits,
14 we won't really know, but we expect these to go higher.

15 So, we're looking at a sensitivity over the
16 higher range, but we just don't know how much higher we
17 should go and your input would be appreciated.

18 So, here are the prices, they're pretty
19 expensive for Brazilian ethanol because of the tightness
20 in the market I explained, and this can be a cyclic
21 thing that can occur or it could be something that's
22 more persistent and could get a little bit worse. We
23 don't know, but history will tell.

24 Biodiesel is very expensive, \$3.00, I gave you
25 some prices, about \$6.00 a gallon now. That's certainly

1 a lot more than the \$3.00 wholesale prices that they'll
2 sell for diesel. So, it is really expensive at this
3 time, which is why some of the companies, a lot of them
4 are having challenges getting enough to meet the Federal
5 standard.

6 So, should -- and that's just regular old soy
7 biodiesel, easy to make, lots of it around, there's lots
8 of capacity for that. How about difficult, more
9 expensive feedstock? Should it be the same, should
10 there be more of a premium? Don't know the answer to
11 that, but we're looking for some input.

12 The same with cellulosic and these other --
13 these other measures, what are some appropriate metrics
14 to have a cost, what sources of information should we
15 use and what rationale?

16 So, we will -- we'll going to do this. We're
17 going to be looking at this overlay of a cost
18 constraint. We want to be clear that if there was no
19 LCFS program there would be a use of cellulosic fuels in
20 this State, as well as advanced, more expensive things
21 like Brazilian sugarcane, and we believe all of that has
22 an incremental cost, so that could occur anyway.

23 So, our comparative is not going to be just
24 where we are now then, oh, you know, here's all the
25 incremental costs and it's all the LCFS. No, it's a

1 portion of this is going to be RFS2 obligations, our
2 proportional share and that will be the sort of the
3 starting point in the comparative. And then how much
4 more fuels would we use that would be different than the
5 RFS2 obligations, and what would those incremental costs
6 be?

7 So that would be sort of a part of the results
8 of the analysis.

9 And I think we've covered this and we've had a
10 suggestion on maybe what to do with the proportional, so
11 I think it's good to take a look at the EIAs forecast
12 and leaving -- and leaving the other advanced alone and
13 then lowering the total.

14 so, I think that's a good suggestion to take a
15 look at and see how that changes the results of both our
16 post-process forecast with RFS2 and the LCFS analysis.

17 Final slide, I believe, or close to that, is I
18 think Mike Waugh mentioned, regional and national. So,
19 just briefly, pointing out the obvious that as you saw
20 from these case results, using a whole variety of fuels
21 and all these electricity and natural gas credits still,
22 you know, there's some challenges here and some of them
23 can be significant.

24 And so that's California using 50 percent of the
25 cellulosic field or a whole bunch of Brazilian ethanol

1 that has ever been imported to the United States and, in
2 some cases, has ever been exported to the world by
3 Brazil. So, that's a lot of fuel.

4 So if you put these other areas, they're looking
5 at the LCFS in context of their fuel that they consume,
6 compared to California, you see things like gasoline,
7 3.7 times greater; diesel, 7.2 times greater.

8 so, these are the regions, if they were to go
9 and pursue LCFS-like regulations. That competition for
10 those kinds of fuels would be also with these other
11 parties then. And so that -- I mean that will likely
12 have an impact on the marketing floating price of those
13 more desirable fuels.

14 So, I just wanted to point that out, that that
15 would certainly be a concern, a selfish concern, if you
16 will, from a California perspective of other areas going
17 and competing for some of the fuels that obligated
18 parties here will need.

19 So, I think -- I think that's it for now.

20 VICE CHAIRPERSON BOYD: Very good, Gordon. No
21 question here. Question from the audience? There's one
22 hand, Jim Lyons is next. Gina, you too? Okay.

23 MR. BRAEUTIGAM: Jon Braeutigam, Valero. Three
24 quick points. When I -- the suggestion I made, Gordon,
25 was when you switched to the cellulosic for a given year

1 if the drop from the original Congress amount is X, that
2 you also reduce not just the total, but also the total
3 advance requirement also by X.

4 Okay, because if you don't, you're just not
5 going to have all this other total advance.

6 You may want to look at how high you're going on
7 drop-in renewable diesel to have TC labeling
8 regulations, treat renewable diesel the same as
9 biodiesel. If you have more than five percent renewable
10 diesel in, you have to label the pumps, which means it's
11 really going to -- if you could put five percent
12 renewable diesel in upstream at the head of the pipeline
13 and people could still use B5 blend at the rack and not
14 have to label the pumps.

15 But if either one of those goes over five or if
16 the sum of the two goes over five -- goes over ten,
17 excuse me, I can't even do simple math anymore, then you
18 would have to label the pumps, which makes it a --
19 almost forces having to do the renewable downstream
20 which, once again, you have the infrastructure issue.

21 We don't see cellulosic available until maybe
22 late 2012, probably 2013 and that's at a plant that's
23 announced in Iowa. I would caution maybe watching that.

24 The EPA's gotten the avails wrong two years in a
25 row, and with what they're proposing for next year, I

1 think they're going for, what we call in hockey, a hat
2 trick, you know, having three years straight be in way
3 too low.

4 As far as your costs, my advice would be figure
5 out what is the incremental, low CI biofuel coming in,
6 in a year to set the compliance? What's it's
7 incremental cost like, if it's an early year, it's
8 sugarcane ethanol, and the sugarcane ethanol is \$1.50
9 out of the market, so you're paying \$1.50 a gallon for
10 that sugarcane ethanol, because of its low CI. Look at
11 that CI versus the standard, divide the \$1.50 by the
12 delta CI numbers.

13 That should set the market clearing price for
14 all CI numbers, including corn ethanol, at whatever that
15 cent per CI number is, which I think is around six cents
16 or something, if you're at about the \$1.50 level which,
17 obviously, six cents versus .2 adds an awful lot more
18 costs to the program.

19 Thank you.

20 MS. GREY: Gina Grey, WSPA. First of all just
21 wanted to just say it's kind of unfortunate that this
22 presentation didn't happen this morning, and I know
23 we're short on time so I really need to truncate my
24 comments severely this afternoon.

25 We also have --

1 COMMISSIONER PETERMAN: Don't forget to submit
2 them written, as well.

3 MS. GREY: We will. Thank you.

4 We also have two contractors that we asked to
5 come here today to speak, one on this subject and then
6 the next one on the high-carbon intensity crude oil, so
7 I'd wanted to give them time to talk as well.

8 But first of all just wanted to say WSPA really
9 appreciates the fact that the Commission took this issue
10 on. We did request that in one of our earlier sets of
11 comments because we felt this was a very significant
12 part of the overall forecast for what the Commission
13 feels is going to be happening in terms of energy
14 supply.

15 Recognizing that the LCFS was constructed by
16 California Air Resources Board, another sister State
17 agency, but you folks definitely have a very unique and
18 important perspective in the State, which is to look at,
19 you know, reliable, secure energy supplies for the
20 State, make sure that nothing's going to occur that
21 would perhaps impede sufficient transportation fuel
22 supplies, and look at things such as costs, et cetera.

23 So, just a since thank you that you actually did
24 take this on and are doing some of these compliance
25 curve analyses.

1 I think one of the things that we also asked for
2 earlier on was just a look back at what ARB had proposed
3 as possible compliance scenarios in the 2009 time frame,
4 and would be interested in staff's comment as to just
5 why those were not done. If they were felt to be
6 unrealistic at this point in time, we'd be interested in
7 hearing that, as to why these scenarios were selected,
8 et cetera.

9 I think WSPA, when we participated in the
10 advisory panel, we did show a compliance curve that
11 showed some possible issues cropping up in the 2013-2014
12 time frame in running through all these low-curve
13 intensity fuels, as to whether or not they're even going
14 to be available, let alone what the costs might be.

15 So, I'm interested in what Gordon has been
16 talking about today in terms of sort of the fact that
17 what has been done here are very optimistic assumptions
18 and inputs in terms of availability of these certain
19 types of low-CI fuels, in terms of costs, et cetera, et
20 cetera.

21 So, we will certainly be providing Gordon with
22 some comments on the assumptions that went into these
23 and would be interested in perhaps configuring what
24 staff feel is maybe a more realistic scenario as well,
25 not so optimistic.

1 But, certainly, if we're looking at the 2016 of
2 '17 time frame, even, and saying that these compliance
3 scenarios appear to be showing potential problems with
4 compliance during that time frame, not the 2020 time
5 frame, I think that's cause for pause and consideration
6 of what are these scenarios telling us.

7 And one, I think, statement that was on page
8 128, and is actually under the National LCFS portion of
9 the document, but this, I think, kind of summarizes what
10 people should be thinking about here even, you know,
11 regardless of all the scenarios and everything else.
12 But, you know, the basic statement that "the calculated
13 volumes required by California-obligated parties either
14 approach or nearly approach the entire national supply
15 of renewable fuels with low enough carbon intensity."
16 That's let alone, you know, if there's any national LCFS
17 programs, or state programs, et cetera, just California,
18 alone, in theory looks like it needs all of those very
19 low CI fuels.

20 So, that fact, alone, which staff has put on a
21 piece of paper here I think, should give pause for
22 everyone that's considering what's going to be going on
23 with the LCFS program, let alone, as I mentioned, any
24 cost aspects or anything else.

25 So, you know, we will be supplying detailed

1 comments and when folks feel it's ready, we do have a
2 contractor here to give some more specific comments.

3 MR. SCHREMP: And I'll just, your first question
4 about why didn't we look at those -- I guess I don't
5 want to mischaracterize Mike but, you know, the
6 scenarios that -- you know, from 2009. It's my
7 understanding that Mike's group is reexamining those,
8 those scenarios, and so we knew that was going to be
9 happening. We didn't want to duplicate, replicate that
10 kind of work and we wanted to go from an approach of
11 using our most recent forecast outputs, adjusted for
12 RFS2 proportional share compliance, and then examine
13 what fuels would be necessary and in what combination to
14 try to achieve compliance with the LCFS.

15 So, our approach was a lot different and we
16 didn't want to be duplicative of what Mike's group was
17 doing.

18 And so their work hasn't come out, yet, so I
19 think your answer to that question is you will soon see
20 this analysis.

21 Did you want to add anything else, Mike?

22 MR. WAUGH: Yeah, Mike Waugh with ARB, again.
23 Regarding the 2009 illustrative compliance scenarios, I
24 mean we stated clearly in our staff report that the LCFS
25 was relying on a successful implementation of RFS2.

1 And I think the challenge that we have and that
2 the CEC staff, we're all looking at the same thing,
3 which is cellulosic ethanol, which was supposed to be in
4 the marketplace in sufficient volumes, and it's not
5 there. And so we're going back to figure out at this
6 point, as required by our regulation, and through the
7 help of the advisory panel that we're looking to see,
8 okay, without the volumes of cellulosic ethanol that we
9 thought would be there two years ago, how can regulated
10 parties comply with the LCFS.

11 So, again, we're trying to align our assumptions
12 with CEC staff assumptions and we're all looking at this
13 at the same time.

14 So, that's the big difference is that the
15 cellulosic ethanol is not there. We said that we were
16 relying on RFS2 to be successful, for the LCFS to be
17 successful as well.

18 VICE CHAIRPERSON BOYD: Thanks, Mike. I
19 empathize with your dilemma. It suddenly dawned on me
20 your cellulosic ethanol was my advanced batteries of the
21 nineties.

22 Is Jim rising to give his presentation or is Jim
23 rising with a presentation? You're next on the agenda.

24 MR. LYONS: I can do either. Let me just add a
25 couple of quick comments and then I'll give my

1 presentation.

2 First, I understand your point about costs and
3 attributing the RFS2 program its fair share of costs,
4 but I think you also need to present the total costs to
5 get to the total goal RFS2 plus LCFS.

6 As you pointed out, RFS2 can be modified and if
7 that program's modified, LCFS cannot, and so you'd still
8 be stuck with the total cost, but it would just be
9 apportioned differently.

10 And then the second thing is with regard to the
11 plausibility of assumptions, I think you need some sort
12 of a rating scale, because your presentation convinced
13 me today that compliance isn't feasible, but I could see
14 absent some sort of a rating scale that it might
15 convince somebody else otherwise. So, you know, like
16 very likely, highly unlikely, some of them might require
17 a miracle in order to be plausible, those types of
18 designations so people can kind of sort through that.

19 And I would second Gene in his recommendation
20 for at least one sensitivity case with your most likely
21 set of assumptions to show what happens in that case.

22 VICE CHAIRPERSON BOYD: Does anyone else have
23 any questions or while Jim's still standing he can --
24 I've been trampling on people on the phone, giving
25 deference to those people who are toughing it out with

1 us here.

2 All right. Would everybody like a 30-second
3 stretch break, while Jim is getting ready? Just stand
4 up, breath deep, massage the parts of your body that
5 hurt.

6 (Break)

7 Okay, hate to break up the joy in the audience
8 but -- this might be to your benefit, Jim, we've got
9 some blood flowing.

10 MR. LYONS: I think you're right, thank you.

11 I guess I'll go ahead and start here.

12 VICE CHAIRPERSON BOYD: All right, Mr. Lyons is
13 going to begin.

14 MR. LYONS: I'm Jim Lyons with Sierra Research,
15 I'm here today on behalf of the Western States Petroleum
16 Association, presenting some observations from a review
17 we're doing of the CEC's Transportation Energy
18 forecasts.

19 I'm going to give some initial observations. I
20 know this is a work in progress and a lot of what I've
21 heard today is already leading me to the understanding
22 that a lot of my concerns are going to be addressed as
23 the report goes towards finalization.

24 One thing in the current report, the data is
25 kind of presented in a shotgun fashion. There are very

1 interesting pieces of information that are kind of
2 strewn all over the document and you have to kind of go
3 get them and bring them back together in order to do any
4 kind of meaningful analysis and so, hopefully, that will
5 be something that's tightened up as the report comes
6 together.

7 One point that was just discussed is that the
8 IEPR assumptions differ considerably from the CARB
9 assumptions in 2009, particularly with regard to the
10 electric fuel cell vehicle sales.

11 And I think as Mike Waugh just pointed out,
12 there's a large difference in the assumptions regarding
13 cellulosic and advanced -- other types of advanced
14 biofuels on the gasoline side.

15 I think it's very important that one common set
16 of assumptions come together and get used by both
17 agencies so that everyone is talking off the same page,
18 and all the comparisons are apples to apples.

19 The LCFS analysis not only needs to consider the
20 fuel cost, in my mind, but should also include the
21 vehicle costs for electric and hybrid vehicles. You can
22 say those belong in another program, but I think an
23 informed analysis of the overall impact on the public
24 would also at least identify those costs and not just
25 pretend that they're zero for purposes of a fuel

1 regulation.

2 And as other people have already pointed out,
3 you think that it's a very questionable assumption to
4 have California getting assumed to have access to almost
5 all of the nationwide supply of low-carbon intensity
6 fuels.

7 This is a very busy slide, it's from CalEPA.
8 It's just here to highlight the importance of
9 considering the practical limitations and barriers to
10 the introduction of different kinds of fuels into the
11 transportation fuel marketplace.

12 When you look across here there is, you know,
13 E15, which isn't a player in California at the moment
14 and several years would be required, by my estimate, to
15 get all of the steps to get that fuel into the
16 marketplace.

17 So, I just want to make sure that any analysis
18 of what could happen in California reflects the
19 practical reality of what's currently allowed and
20 factors in the lead time associated with what would have
21 to happen in order to get it here.

22 I like kind of looking at this on a fuel-by-fuel
23 basis. I'm going to start with ethanol at the E10
24 level. The forecast demand in 2020, and I picked that
25 year because that's the current culmination of the LCFS

1 ramp-in, is about 1.3 to 1.45 billion gallons. As
2 Gordon's already illustrated, that's a lot more than
3 Brazil plans to export to the U.S., based on figure 512
4 in the current IEPR.

5 And I would also note that that export forecast
6 is down from the export forecast that was in the 2009
7 IEPR, so that kind of bears out the trend that Gordon
8 presented, that Brazilian imports are going down.

9 And even the EIA forecasts appear to be fairly
10 optimistic because they've got two billion gallons in
11 imported ethanol for 2020.

12 And then the cellulosic ethanol forecast is, as
13 was pointed out, much less than the RFS2 requirement.

14 I'm going to talk a little bit about price.
15 These are some of the different price numbers or cost
16 numbers that are in the current version of the IEPR
17 that, you know, range from two cents for low-carbon
18 intensity fuel to \$1.75 per gallon for Brazilian
19 ethanol. There's really kind of no value that's been
20 selected.

21 I saw the \$1.50 today, that appears to be a
22 fairly reasonable number.

23 Anyway, my point is that if you use some of
24 these numbers you can get an incremental cost for
25 ethanol at about \$1.50 to -- or \$1.75 to as much as \$2.5

1 billion per year. That's a big cost number and that's
2 just for the E10 portion of the fuel market. And those
3 kind of bottom line cost numbers, it sounds like they're
4 coming, but I would strongly urge you to get those into
5 the report and have them featured prominently.

6 Impacts of infrastructure limits, it goes back
7 to the plausibility of assumptions and the costs, and
8 then it's already been talked about today on ethanol
9 fuel shuffling, so I won't belabor that any further.

10 The current E85 forecast is about the same as
11 for gas and about another 1.3 billion gallons. The
12 current assumption that each E85 FFV uses about 800
13 gallons of E85 a year. For a 2010 Flex Fuel Malibu,
14 that's about 12,000 miles of operation or pretty much
15 all of its annual mileage accumulation. So, that's a
16 smaller vehicle, with higher fuel economy and it might
17 be 50 or 75 percent for some of the other numbers, but
18 you might want to go back and check and see what you're
19 using for E85 fuel economy.

20 Again, since it's about the same volume, we've
21 got potentially about the same cost if this is going to
22 be low-carbon intensity fuel. Obviously, if it is, that
23 has LCFS ramifications, but it could be as much as
24 another two and a half billion dollars.

25 Straight out of the IEPR is the infrastructure

1 cost which is, over a ten-year period, about one to 21
2 billion. It would probably be good if we could narrow
3 that range down a bit because that's a pretty broad
4 range.

5 And I'd also note that the assumed number of
6 FFVs in the current version of the IEPR is much less
7 than it was in the previous version of the IEPR. I
8 don't know if that's just because of economics or better
9 data on what manufacturers are actually producing, but I
10 think that fact should be acknowledged.

11 Talking about FFVs, this was alluded to earlier,
12 I've got a graph here that shows the available CAFE
13 credits going out through 2014 and then starting to
14 decline.

15 And then the IEPR forecasts the continued growth
16 of FFVs in the California vehicle population.

17 As I can see it right now, this is about the
18 only incentive to actually produce an FFV.
19 Manufacturers might do so for other reasons, but it's
20 not clear that they will.

21 And I'd also like to note, in the bullet point
22 at the top, that the IEPR currently assumes about
23 166,000 new FFVs a year in California over this period,
24 and when I look at the 2009 IEPR, the total then was
25 about 380,000. Look at this one and it's 443. So, in

1 two years we've got about 60,000, and so we're nowhere
2 near 166,000 per year based on that data.

3 A similar kind of slide for biodiesel, at B5
4 it's about 200 million gallons, as Gordon pointed out.
5 It goes up if you assume higher biodiesel levels. And
6 the cost infrastructure and warranty issues have already
7 been pointed out, so I won't need to talk about those
8 further.

9 Drop-in fuels, if you look at the biomass to
10 liquid and the renewable gasoline diesel in EIA, you get
11 about 800 million gallons, .8 billion, as the IEPR
12 points out. Only renewable diesel is currently
13 commercially available and I think that has implications
14 for what you can do for forecasting that.

15 There's a statement that it's more costly, but
16 there's no quantification of what a likely price
17 increment is. You just asked for information on that
18 and so that obviously explains it.

19 But I think you really need to do a forecast for
20 drop-in fuels for California. It looks like it's kind
21 of coming out of your LCFS work in terms of what would
22 be required.

23 But again, in kind of at least semi-
24 quantitatively addressing the plausibility of some of
25 the assumptions, I think you need to forecast what you

1 think is likely to get here.

2 Natural gas and biomethane it's -- I guess Tim
3 Carmichael's gone, but it's limited by the small natural
4 gas vehicle population, which isn't forecast to grow
5 substantially. If it does, then obviously the potential
6 for biomethane could go up.

7 The refueling infrastructure is limited, it's
8 mainly for centrally-fueled fleets, which is why you
9 don't see it so much in the light-duty market. And it
10 wasn't clear from Tim's conversation today if these
11 private companies were continuing to invest in different
12 types of centrally-fueled fleets or a real broader
13 application for heavy-duty vehicles.

14 The other thing to consider here is CARB has got
15 fuel specifications for natural gas that's used in
16 vehicular applications. It's not clear to me that
17 biomethane meets those fuel specifications.

18 I guess if you blend it into the natural gas
19 pool and dilute it enough, then maybe it's not an issue,
20 but it's certainly a factor that needs to be considered
21 if you're going to assume that biomethane is going to be
22 used as a transportation fuel in large amounts.

23 Onto electricity; we've now got about twice as
24 many plug-in hybrid vehicles forecast as back in 2009.

25 And I think there's a typo or something in the

1 electricity demand because it was 500 gigawatt hours,
2 about 150 million gasoline gallon equivalents in the
3 2009 IEPR and it's down to 700 or about 21 million
4 gasoline gallon, equivalent gallons -- gasoline gallon
5 equivalents in the current one, so someone should check
6 into that.

7 The electric vehicles, you assume, are mainly
8 plug-in hybrid electric vehicles. The CARB assumptions
9 assume far more straight battery electric vehicles.
10 That's got some fairly significant vehicle cost
11 implications.

12 Your assumed increase in PHEV sales rates is far
13 higher than the assumed increase in sales rates for
14 flexible-fueled vehicles. If we're having that much
15 trouble getting the flexible-fueled vehicles into the
16 market, which are functionally equivalent to gasoline in
17 conventional vehicles, these ones have a price increment
18 and it's not clear that the consumers are going to
19 accept those, in those volumes.

20 If you take a fairly conservative cost estimate
21 that came out of a 2009 car publication, of about \$7,000
22 a vehicle for a PHEV, and you've got 3 million of them,
23 then that's an incremental vehicle cost of \$21 billion,
24 which is a fairly significant amount of money. And,
25 again, I think it's something that needs to be presented

1 in the context of all of these LCFS and IEPR reviews to
2 let people know that, yeah, you can save money on the
3 operation of these vehicles, but there is a substantial
4 cost and this is what it is.

5 If you look at the recharging infrastructure and
6 assume \$1,000 per vehicle on average, including public
7 and other kinds of charging, that's another \$3 billion
8 to get 3 million vehicles into the market.

9 And at some point there should be a
10 quantification about the fuel savings costs, as was
11 suggested earlier today, but you also should probably
12 look at the battery replacement costs, if you're going
13 to assume that there is any battery replacement going on
14 because that will have to be amortized at some point as
15 well.

16 These are the most recent CARB sales forecasts
17 I've seen for different kinds of vehicles. You see
18 conventional vehicles dropping rapidly. Here's a couple
19 of, I'll call them blips, for hybrids and plug-in hybrid
20 electric vehicles and then a massive increase in fuel
21 cell vehicle and battery electric vehicle sales.

22 If we look at 2020 or 2030, in the chart on the
23 right you'll see that there's a lot more fuel cell and
24 battery electric vehicles in play, than plug-in hybrids.
25 That's kind of the opposite of what the CEC IEPR

1 report -- excuse me -- report is indicating. So, again,
2 there's a need to reconcile these different assumptions
3 and make sure that when we're talking about what's going
4 to happen as a result of the ZEV mandate, or the CARB
5 regulations and their impacts on transportation fuels,
6 that everybody closes the loop so that we don't have one
7 set of numbers being used in one regulatory vehicle, and
8 a different set of numbers being used in a different
9 regulatory venue.

10 This just kind of shows it a different way. By
11 the time you get to 2025 you've got lots and lots of
12 hydrogen fuel cell vehicles and battery electrics in the
13 CARB forecast, that aren't in the CEC forecast.

14 And as for hydrogen, as has already been pointed
15 out, there's no demand forecast, there's no assessment
16 of the required fueling infrastructure.

17 One kind of key point is if you look at the
18 carbon intensity for hydrogen, even after you apply the
19 EERs and the LCFS regulation, it's not real good. And
20 the prices that you've got in this report don't, you
21 know, reflect biomethane which is referenced as a way to
22 lower the carbon intensity of hydrogen.

23 And, again, the assumption of a small fuel cell
24 vehicle population is at odds with what CARB is saying
25 in the zero emission vehicle rulemaking.

1 On the conclusions, as I've pointed out a couple
2 of times, we need consistent assumptions, we need
3 reasonable assumptions regarding the amount of low-
4 carbon intensity biofuels that can show up in California
5 relative to the nationwide production values.

6 Again, the cost of the vehicles, the fuels and
7 the fueling infrastructure needs to be clearly laid out
8 so that the total cost of the programs can be assessed.

9 And this goes back to the shotgun of data
10 comment I made at the beginning, it would be good to
11 have a very clear, concise analytical summary that shows
12 these total costs and impacts, and gives kind of a more
13 forceful assessment of what's likely to happen in the
14 State as a result of these regulations.

15 I'll take any questions anyone might have and,
16 again, this work is being funded by WSPA.

17 VICE CHAIRPERSON BOYD: I don't think I have a
18 question, Jim, just a reaction to the desire for
19 consistent -- consistency between agencies, and that is
20 always the utopian desire.

21 And as you've heard from the very cooperative
22 relationships that exist, I'm sure staffs are trying to
23 reconcile numbers.

24 But I have lived through periods of time when
25 you just can't reconcile, you have different opinions.

1 And that certainly has been true with plug-in hybrids
2 all along. I mean it went from zero interest in one
3 area to kind of interest in another, and I think that
4 was -- that's proven to be -- you know, one agency
5 seemed to have been a little more correct than the
6 other.

7 The same holds true for the role of natural gas,
8 there were some very significant differences of opinion
9 on that subject for a few years and it just appears that
10 natural gas has taken on a greater role, as envisioned
11 by this Agency, just because of all kinds of facts that
12 have happened. Some couldn't even be seen, like I don't
13 think we envisioned all the shale gas that was around,
14 but et cetera, et cetera.

15 So, good point, I mean and everybody would hope
16 you could do that, and I'm sure the staffs are trying.
17 Can't always guarantee that.

18 COMMISSIONER PETERMAN: And I'll just also add
19 there that I think what we're striving to do is have a
20 continued greater transparency, if consistency's not
21 possible. So, if there are particular parts in the
22 document where you think the assumptions are not clear,
23 or it could be laid out in a more clear way, that would
24 be useful to have comment on.

25 And also, I'll note that with 250 plus pages, we

1 appreciate stakeholders, like yourself, doing a careful
2 read and pointing out where you see inconsistencies or
3 have questions because that's how you check it. So,
4 thanks.

5 MR. LYONS: Thank you. And if I could respond
6 just on the assumptions real quick, I understand it's
7 impossible to always get everybody making the same
8 assumptions. however, it's important that people
9 understand where there's different assumptions, because
10 otherwise you'll get into this shell game where you'll
11 take some of the costs for a program and put them one
12 place, and ignore them in another place.

13 VICE CHAIRPERSON BOYD: Certainly, internal
14 consistency is uppermost.

15 MR. LYONS: Thank you.

16 VICE CHAIRPERSON BOYD: Did anybody in the
17 audience have any questions of Jim Lyons and his
18 presentation?

19 You have a question?

20 MS. TUTT: Yes, thank you. This is Eileen Tutt
21 with the Cal ETC and I just want to point out that I
22 think the one thing we know about forecasts is they're
23 not going to be right and they will be different next
24 year than they are this year.

25 So I understand the particular Vice Chair Boyd's

1 comment on that in terms of I think it's okay to have
2 differences, but I also agree with Jim that you have to
3 understand why there are differences, and I had similar
4 questions early on.

5 And that will be helpful in particular with
6 agencies that are your sister agencies. So, it's good
7 for us to understand on the outside.

8 And I do -- I also just want to say, because I
9 had another meeting I had to go to while the LCFS
10 discussion was going on, so I'm going to loop back with
11 staff and just warn you that I have an interest and I
12 just want to make a few comments on that, but I'm not
13 going to use my time now to do that.

14 I just -- I do want to point out that I actually
15 -- my point for this particular section is that
16 forecasts, everybody -- I think it is appropriate that
17 they're not identical, so I'm okay with that, I just
18 want to know what the differences are and why they're
19 different.

20 VICE CHAIRPERSON BOYD: Thank you, Eileen, and
21 thank you for -- and, you know, very definitely come
22 work with the staff, I'm sure they're very open to
23 hearing your comments. And the tired audience here is
24 grateful for the fact that you're going to pursue that
25 avenue.

1 Any other questions, folks? Hearing none, I
2 guess we move on, on the agenda.

3 MR. EGGERS: Good afternoon, Commissioners.
4 Ryan Eggers, Fuels and Transportation Division; I'll be
5 giving staff's presentation on Crude Oil Import -- on
6 the Crude Oil Import and Infrastructure Forecast for
7 California.

8 Shown here is the United States crude oil
9 production from 1981 to 2010. As you can see, crude oil
10 production here in the United States has been on the
11 decline.

12 In 2009 and 2010 there was an uptick in United
13 States crude oil production, this was mainly from
14 increased production in the Gulf Coast states.

15 Also displayed here is California's share of
16 total U.S. crude oil production.

17 Looking a little bit closer at California crude
18 oil production, as you can see by the green area on this
19 particular chart, California has gotten most of its
20 crude oil production from onshore sources, which have
21 been in decline since 1985.

22 And when we look at a more longer-term view of
23 crude oil production here in California, from that peak
24 in 1985, of 424 million barrels, crude oil production
25 has been declining fairly steadily and fairly

1 significantly, to the point that current crude oil
2 production is at roughly the same level as it was in the
3 1940s.

4 So here are some of the production totals in
5 2010 for the world, U.S. and California. After looking
6 at some of these trends, staff believes that crude oil
7 production in both the U.S. and California will continue
8 to decline barring any new production techniques that do
9 come out into the market and change that dynamic.

10 When looking at California crude oil imports,
11 here from 1982 to 2010, we see from the early eighties
12 into the mid-nineties that Alaska was the most imported
13 crude oil into California.

14 At about the turn of the century foreign crude
15 oil became a more prominent imported crude oil here into
16 California and is now the most imported crude oil into
17 California.

18 Looking at some of these trends, from 2000 to
19 2010 total crude oil imports have increased 13 percent.
20 Alaska's share of that crude oil imports has declined 47
21 percent.

22 To make up for that decline in Alaskan crude oil
23 imports, foreign crude oil imports have substituted for
24 that and it's increased roughly 71 percent from 2000 to
25 2010.

1 So, in order for staff to make its crude oil
2 import forecast, staff first has to make two other
3 forecasts in order to get to that import forecast and,
4 thus, the infrastructure requirements from that
5 forecast.

6 The first forecast would be the refinery
7 distillation capacity forecast and then the second one
8 would be a decline rate for California crude oil
9 production.

10 In the case of the refining capacity forecast,
11 staff looked at two different utilization rates for
12 California refineries. The first being roughly a 90
13 percent utilization rate, which was an average from 2000
14 to 2010.

15 In the case of the lower utilization rate of
16 87.6 percent, the last four years' average was used. As
17 part of this lower utilization rate, I would also like
18 to note that staff assumes that the economics of this
19 lower utilization rate will likely force some refinery
20 assets to possibly close.

21 In order to forecast the closures of those
22 refinery assets staff, as part of this utilization rate,
23 has also forecasted about a half-percent decline in
24 refinery capacity as part of that forecast.

25 Looking at crude oil production, staff chose two

1 different decline rates for California crude oil
2 production decline. The first lower decline rate was a
3 decline rate of 2.2 percent, which was the decline of
4 crude oil production from 2009 to 2010.

5 In the case of the higher production decline
6 rate, a 3.1, 3.2 percent per year decline rate was used,
7 which was the average decline of California production
8 from 2000 to 2010.

9 When combining these two assumptions, actually
10 four assumptions, in the case of the high forecast that
11 90 percent utilization rate was combined with the higher
12 decline rate of California production and, thus, a high
13 forecast of crude oil imports was created that has crude
14 oil imports increasing from 376 million barrels in 2010
15 to roughly 480 million barrels in 2030.

16 In the case of the low case, with that decline
17 in refining capacity and a lower decline rate or
18 production, crude oil imports go from 376 million
19 barrels in 2010 to roughly 398 million barrels in 2030.

20 This slide shows how some of these assumptions
21 were combined in order to create the high and low
22 forecasts, which I've already gone over.

23 Once we have the crude oil import forecast
24 settled on, staff can then make assessments on how many
25 additional tanker visits will be needed in order to

1 supply this additional crude oil import.

2 Staff is projecting an additional 12 to 149
3 additional tanker visits by 2030. The wide variation in
4 these two forecasts has to do with the tanker capacity
5 differences between VLCC and Aframax. The VLCC total
6 was applied to the lower forecast, creating that 12
7 additional incremental visits, while the Aframax cargo
8 size was applied to the higher forecast in order to
9 create the 149 additional tanker visits assessment.

10 In looking at crude oil storage capacity, two
11 different cycling rates were used in order to create the
12 additional storage tank capacity requirements in
13 requirement forecasts for staff.

14 In 2030, additional storage for California has
15 been forecasted to increase to 1 to 8.6 million barrels
16 by 2030. Staff estimates about 60 percent of this
17 storage will need to occur in Southern California.

18 But in the low-case projection there is
19 currently enough existing infrastructure to accommodate
20 this additional capacity need, barring any foreclosures
21 of those facilities, of course.

22 There are some uncertainties in our forecast.
23 The first would be technology advancements in the
24 production of crude oil, which could change and thus,
25 California might actually have more crude oil than it

1 normally would have.

2 An example of this would be California shale oil
3 reserves. These are currently estimated by the EIA at
4 about 15.42 billion gallons. Actually, I believe that's
5 14.2 billion barrels. I apologize for that.

6 Another thing that could affect our forecast
7 would be new import facilities wouldn't have been
8 completed in time to adequately supply this crude oil to
9 California, thus throttling the amount of imports that
10 could come into California.

11 Another possible change in our crude oil import
12 forecast could be the opening up of drilling off the
13 shore of California.

14 The DOE currently estimates about 5.8 to 15.8
15 billion barrels of undiscovered, technical recovery
16 resources out there off the shore of California, in
17 Federal waters.

18 The Mineral Management Services estimates that
19 under the current price of crude oil, today, that these
20 crude oil reserves would be technically recoverable.

21 Some restraints in moving forward with this
22 production would be, of course, the crude oil spill
23 that's recently happened in the Gulf of Mexico, and also
24 new infrastructure requirements would be needed to
25 develop these areas.

1 Looking at that no more --

2 VICE CHAIRPERSON BOYD: Excuse me, is that to
3 say this is not obtainable off of existing platforms, it
4 would take new platforms?

5 MR. EGGERS: A lot of those existing platforms
6 would likely have to be updated and there would be some
7 additional platforms that would have to be built.

8 VICE CHAIRPERSON BOYD: Good luck.

9 MR. EGGERS: Well, say California was, I guess,
10 lucky, the DOE is estimating if this was actually
11 happened, a no-moratorium drilling scenario, that this
12 oil could be gotten at as soon as 2015.

13 A part of this forecast, DOE is also expecting
14 that 74 percent of this incremental production would
15 come off the shore of California.

16 And if this production was actually coming
17 online, this would reduce the amount of imports under
18 both the high and low forecasts to less than totals of
19 2011.

20 That concludes my presentation, I would like to
21 take any questions or comments from the Commissioners
22 and Advisors, first.

23 VICE CHAIRPERSON BOYD: I have no questions. I
24 said my thing.

25 COMMISSIONER PETERMAN: I have no questions but

1 thank you for your presentation and your swift movement
2 through it.

3 MR. EGGERS: Questions from stakeholders?

4 VICE CHAIRPERSON BOYD: Here comes Dave.

5 MR. HACKETT: Hi, I'm Dave Hackett with
6 Stillwater Associates. Stillwater's an energy
7 consulting company headquartered in Irvine and our
8 practice areas include policy, technology development
9 and mergers and acquisitions in this space.

10 And I had a couple of things that are sort of a
11 wide range of comments, so let me sneak them in here. I
12 came up because I really wanted to hear the low-carbon
13 fuel standard forecast. I think it's a signal event,
14 it's the first time we've seen the government put out
15 the balanced. And so I appreciate that and I'm looking
16 forward to studying it and understanding them better,
17 but thank you for that.

18 I think you guys wrote a comprehensive report.
19 I read the whole thing. I think -- or my issues here, I
20 applaud your continued emphasis on the need for
21 logistics facilities, not only for petroleum, but for
22 renewables.

23 I think the issue with the low-carbon fuel
24 standard is primarily the assumption around the fact
25 that cellulosic ethanol would be available and it's not,

1 and so the program needs to be adjusted for that lack of
2 technology development.

3 In your plan you've got a lot of biodiesel, but
4 I don't think there's enough vegetable oil supply to
5 have, maintain.

6 There's also an assumption that the Europeans
7 could supply biodiesel to California. You need to look
8 at the economics of that, but they wouldn't likely
9 support biodiesel to California.

10 And the same, look at the economics of the cost
11 to produce a renewable diesel in jet, they're not cheap.

12 You mentioned a potential for a refinery to shut
13 down. Well, maybe, but depending on world markets, that
14 excess refining capacity could be devoted to exports.

15 I will also say that we like compressed natural
16 gas, primarily because of the big spread between natural
17 gas and petroleum primarily as a function of drilling
18 technology.

19 I learned today that electricity is cheap, a lot
20 cheaper than petroleum, but I also don't think that
21 they're including the taxes when they do that, do those
22 economics. And what is there, 75 cents a gallon taxes,
23 today, that I don't think goes on electricity.

24 And then, finally, I think that there are two
25 crude oil projects, crude oil internal projects in

1 Southern California, probably enough demand for one of
2 them. So it's going to be interesting to see, you know
3 how all that sorts out. Thank you.

4 MR. EGGERS: Thank you for your comments.

5 Any other comments from stakeholders? Then I
6 will turn my presentation over to Gordon.

7 VICE CHAIRPERSON BOYD: When you guys said 9:00
8 to 5:00, you meant it, didn't you? And on a Friday,
9 nonetheless.

10 MR. SCHREMP: Yeah, we're not in Australia,
11 okay, we work here.

12 (Laughter)

13 MR. SCHREMP: No disrespect to the subcontinent.
14 Gordon Schremp of the California Energy
15 Commission. Is this the last scheduled one, am I it?

16 VICE CHAIRPERSON BOYD: No.

17 MR. KIM: No.

18 VICE CHAIRPERSON BOYD: We've got --

19 MR. SCHREMP: Oh, that's right. Sorry, Skip.
20 Oh, there might be some comments. Okay.

21 So, this is, as Mike Waugh mentioned earlier,
22 there is a high-carbon intensity crude oil element of
23 the low-carbon fuel standard. We'll be talking about
24 some of the work we've done.

25 He's already stated, you know, sort of the

1 purpose of that, I won't cover that again.

2 Staff was most interested in the potential
3 impact on the availability of crude oil supply, so we
4 worked, did a lot of work on looking at crude oil types,
5 we'll call them marketable crude oil names, or MCONs.
6 We didn't make that "C" silent, like they did for HCICO,
7 so MCONs, and we looked at almost 250 of them.

8 And the purpose was to see what's available
9 around the world and what categories they might fall
10 into.

11 So, potential HCICOs and I'll stress the word
12 potential, that's why it's in bold and red, in part, and
13 that's because I think, as Mike briefly mentioned, there
14 is a process to go by, that parties can go through to
15 submit additional information to say, no, my -- this
16 crude oil that I would like to purchase is actually not
17 a high-carbon intensity crude oil.

18 So, there is a process to go through, you know,
19 how difficult it might be to collect the information to
20 prove your point, I don't know, it depends on a case-by-
21 case basis.

22 But it's -- you know, there still is an
23 opportunity to look at some of these. And I think
24 that's probably something that's less likely for oil
25 sands and, you know, Mike might agree that that's pretty

1 much if you're mining down in the ground, yeah, it's
2 probably high-carbon intensity. Or if you're sticking
3 it through an upgrader, using lots of energy to upgrade
4 to something, yeah, that's a high-carbon intensity crude
5 oil.

6 But something from a flaring country that might
7 be close to the standard, and recognizing that flaring
8 intensity calculations are all of the crude oil
9 production, you know, is the denominator, and the
10 flaring amount estimated is the numerator, and then you
11 get an intensity for all of the crude oil.

12 Well, all of the crude oil being produced is not
13 being produced equally, with the same amount of
14 associated gas being burned. There could be regions
15 that don't do that, collect it, pump it back in.

16 So if you can demonstrate that, that that crude
17 that you're getting from that part of the country has
18 not had flaring, then you can have that recharacterized
19 as a non-HICO crude.

20 Enhanced oil recovery, thermal enhanced oil
21 recovery is probably something that will be a HICO,
22 although I imagine it could possibly depend on the
23 amount of cogeneration that may be occurring, I'm not
24 sure about that.

25 So these are the categories and these are what

1 we looked to tag, these certain crudes.

2 Just a quick point of reference that California
3 does in fact use thermally enhanced oil recovery to a
4 rather significant amount. But this is a group of crude
5 oil production or category that is, I guess
6 grandfathered, for lack of a better phrase.

7 The 2006 baseline crude is the California crudes
8 and then a list of foreign source crudes imported at
9 that time.

10 So, this is just an update of what we have in
11 the draft report. The 2009 data is now just coming in
12 for this. I know it's 2011, but I guess there was a lag
13 over at Department of Oil, and Gas, and Geothermal
14 Resources.

15 So, it's about 51 percent now, in 2009, and
16 that's almost the record level. So, it's been going up
17 recently but, as you can see, there have been cycles
18 that have occurred in California.

19 But, certainly, the older fields in California
20 do require some secondary oil recovery and thermally
21 enhanced oil recovery continues to be a large element of
22 California's production.

23 VICE CHAIRPERSON BOYD: Gordon?

24 MR. SCHREMP: Yes.

25 VICE CHAIRPERSON BOYD: TEOR, thermally enhanced

1 versus CO2 injection, if somebody substituted CO2 for
2 their present use of steam, is anybody calculated -- is
3 there a net benefit with regard to the HICO analysis and
4 the CI score, et cetera, et cetera?

5 MR. SCHREMP: Well, I think at this time the
6 crude oils are really sort of in two -- they'll be in
7 three camps, I suppose. One is non-HICO and everybody
8 is pretty clear.

9 VICE CHAIRPERSON BOYD: Right.

10 MR. SCHREMP: Another is clearly HICO, like oil
11 sand mining. And then there's the potential ones that
12 could be.

13 So, it's really not a quantification of what its
14 carb intensity might be for a particular flavor of crude
15 oil, whereby you would take in some of these other
16 considerations going on.

17 But if, in fact, you're injecting CO2 as a means
18 of trying to do a secondary extraction of oil, that's
19 not a potential HICO crude oil production activity,
20 certainly.

21 Now, if your question is I'm actually capturing
22 CO2, I'm injecting it, sequestering it, as Mike
23 mentioned before, is that something that could get
24 credit. So, I don't know -- he's nodding his head yes,
25 but if there's a better explanation.

1 VICE CHAIRPERSON BOYD: I don't want to protract
2 this but it's in --

3 MR. WAUGH: Real quickly, the LCFS explicitly
4 allows a high carbon intensity crude oil to use
5 innovative techniques, such as CCS, to reduce its CI and
6 become a non-HICO.

7 VICE CHAIRPERSON BOYD: And as I understand it,
8 actually CO2 more drive more oil out of the ground than
9 steam would, too, so anyway.

10 MR. WAUGH: Sounds like a win/win.

11 MR. SCHREMP: Thank you, Mike.

12 So, the results of the screening of the 248
13 MCONs are this, and this is a county if you will, just
14 numbers.

15 And so, as Mike pointed out earlier, nearly 80
16 percent are pass. The others in the potential category,
17 you can see the different reasons. Most because they
18 fail the flaring screen, the initial flaring screen.
19 And that's the 51 received a fail and 45 were because
20 they were over this flaring intensity limit of 10 cubic
21 meters per barrel.

22 So, there's some that fail a couple of different
23 screens and so that's why you won't add these numbers
24 up, they won't exactly equal, so there's double failures
25 in here. But mostly it's because of flaring.

1 Now, all crude oil production of a certain
2 flavor are not equal in terms of their volume, and so
3 when you volume weight it you see that there is a
4 slightly higher percentage of them that are potential
5 HICOs.

6 And so the number of non-HICO now drops to 74.
7 So it's like -- as like Mike said earlier, it's about
8 you know, three-quarters are good and one quarter is
9 potential.

10 So, California does, has used potential high-
11 carbon crude oil. And in 2010, this is an illustration
12 of source countries and potential HICO. And you see
13 they add up to nearly 17 percent and since imports of
14 foreign oil are about half of what we use, about eight
15 percent of the total crude oil being used in 2010, by
16 refiners, we believe there's a potential high-carbon
17 intensity crude oils that, if continued to be used would
18 have to offset those incremental carbon deficits,
19 especially if they want to retain any credits they may
20 have used for use of renewable fuels under the LCFS.

21 So, we think the likelihood that refiners will
22 pursue this would be not high, to give it a ranking.
23 Very unlikely because it's quite difficult, even a
24 modest eight percent offset, the carbon deficit is quite
25 high in this example I gave, and even a lower two

1 percent it's difficult to offset.

2 So, we think that refiners will, instead, elect
3 to use alternative crude oils and then that will have,
4 you know, some impact on their operations.

5 With regard to potential changes outside of
6 California, by crude oil producers, solely in reaction
7 to the HICO provisions, it's unlikely. And that's
8 because California, the market for California is small
9 relative to other markets that they can sell to.

10 And, certainly, none of these producers are what
11 I call captured; they're not in a location where they
12 can only sell into California. If, in fact, the high-
13 carbon intensity crude oil provision was applied in the
14 State, then as you see a great deal of TEOR production
15 that they -- some of them could have been captured and
16 some of them may be able to get their product to market
17 and exported, and but that's not the case. So, we think
18 that's unlikely.

19 And just want to point out that activity to
20 reduce carbon footprints outside of California and these
21 other countries are done for economic reasons, a high
22 enough return on investment, and these are -- there's
23 various types of projects, but they're done mainly to
24 reduce operating costs or if they can collect the gas
25 they're flaring, and have another market, a higher value

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1 and that pays for the investment.

2 And the final point is that there are -- there
3 are fees imposed, carbon fees, and this is the case in
4 Canada, and so you can see a reaction by lowering the
5 carbon footprint.

6 So, a conclusion is that certainly we think that
7 the access to crude oil globally will be somewhat
8 restricted and then there will be, you know, an impact,
9 but we don't think it will be too the point where
10 refinery operations will have to be significantly
11 altered, but they will incur a higher cost of operation.

12 So, what is that cost? Well, we didn't quantify
13 that as part of this work, but you need to know some of
14 the items I have listed here.

15 And shuffling has been mentioned. And I think
16 maybe Skip is going to talk a little bit about that.
17 But you want to know where the replacement crude
18 originated from and what those differences, relative
19 differences are.

20 Now, you could look at, say, Canadian crude
21 coming here and that's fairly close, and so an
22 alternative crude to that is probably not going to be
23 the same distance or closer because that's almost as
24 close as you can get.

25 So, shuffling is a legitimate issue but, you

1 know, quantifying that into what degree, you know, we
2 did not -- staff did not do that.

3 And the final point is, as you mentioned this
4 morning, Commissioner Boyd, energy security. That's a
5 very good question, but certainly the challenge is what
6 kind of framework and structure do you put around to get
7 that kind of ranking of, you know, good countries and
8 bad countries, good sources and bad sources.

9 So, that's a good question and so we're
10 certainly -- staff's very interested in taking some
11 additional, you know, direction and feedback on that
12 issue. And that's it.

13 VICE CHAIRPERSON BOYD: Good conclusion slide
14 there. All right, thanks Gordon.

15 I'm going to -- a quick comment, because I don't
16 want to keep people any longer than I have to. The
17 question about CO2, I want to leave you with another
18 thought because I won't be sitting here this time next
19 time, or next time you do another IEPR, or what have
20 you. But I'm just trying to bring a bunch of subjects
21 together and one of them is the fact that, you know, we
22 have been talking for a couple years now to utilities
23 about someday AB 32's going to come home to use natural
24 gas burning generators, and you're going to have to do
25 something about it, and you might think about capturing

1 your CO2.

2 And to the extent that they're even barely close
3 to California oil fields, somebody might consider the
4 thought of using CO2 instead of burning gas to create
5 heat to make steam, to inject in the ground. And if I'm
6 not mistaken, I understand that the chemistry involved
7 actually drives more crude oil out of the pore space and
8 they might actually get a net increase.

9 So, some people might start thinking in the
10 future of something like that in lieu of as much crude
11 shuffling as you talk about because there may be an
12 incremental improvement in their HICO score, if I can
13 use a crude analogy. Pardon the pun.

14 In any event it's just something to think about
15 for the future because I won't be here to pound it into
16 your heads anymore.

17 So, okay, enough said. Any questions for
18 Gordon?

19 Then we should move on to our very patient
20 speaker, Skip's been sitting there, like the rest of us,
21 all day, and we did commit to stay to the bitter end.

22 MR. YORK: Hi, I'm Skip York, I'm a Vice
23 President in Downstream Consulting for Wood MacKensie
24 Consultants.

25 What I'm going to do is use the charts here, but

1 I'm going to deviate a little bit and try to
2 qualitatively talk about some of the issues that have
3 come up about today.

4 We, at Wood MacKensie, take a little bit
5 different view because we see things globally, as a
6 global firm. So, we work carbon cost issues, not just
7 in California, but we're also doing similar analysis in
8 other parts of the world. And that also means that,
9 predominantly, we're doing a lot of -- a fair amount of
10 work in Europe.

11 So what I'll do is at certain points I'll sort
12 of compare and contrast the work that we've done around
13 how the HICO or how carbon oil, carbon intensity under
14 the LCFS and sort of draw some our conclusions for the
15 State of California, but then also contrast them with
16 some areas.

17 One of the things thing I want to do is that we
18 agree with the CEC on the point that when you look at
19 things from a global basis it's going to be very
20 challenging for a market, as small as California, and I
21 know that may sound a little bit strange for people who
22 live in California, but on a global basis it's going to
23 be difficult for a market as small as California to have
24 a material impact on how the crude or how the global
25 dynamics for the pricing and movements of crude flow.

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1 There will be -- when we get to the crude
2 shuffling point, there will be a point where we will
3 pause and actually talk through what the HICO
4 implications are of crude shuffling and some of the
5 strategic risks that the HICO provision as proposed, and
6 not the final rule, but as sort of what's been laid out
7 there what, potentially, you could be selling yourself
8 into and it's just a risk that needs to be thought of
9 and addressed as we go through it.

10 So, with that as an introduction, what we do
11 want to do is when we look at crude oil markets on a
12 global basis, Gordon made a very good point that as long
13 as the crude producer, as long as the well head does not
14 have to comply with the LCFS and has the ability to go
15 someplace else, there is an economic incentive for them
16 to choose to push themselves into another market.

17 And it's not just the LCFS, that's true of
18 any -- that's true of any restriction that you put on
19 the global crude oil market.

20 Now, in particular, when you think about what's
21 happening in California with the decline in California
22 production and the decline in Alaskan production, that
23 means that every makeup barrel that is -- every barrel
24 that is brought in to make up a barrel of lost
25 production in California or Alaska is coming in off of

1 the water, and that means it's being exposed to the
2 global crude markets.

3 And, therefore, as Gordon used it, it's not a
4 captured barrel, it's a barrel that will flow to its
5 best economic value.

6 And that's where we kind of say the sub-point
7 here is that one of the things that needs to be
8 considered is the increased carbon emissions from the
9 crude oil shuffling, as tankers -- as the HICO provision
10 will literally encourage tankers or you're going to
11 create an incentive for tankers to pass each other on
12 the open seas, with high-intensity crudes flowing away
13 from California and low-intensity crudes flowing towards
14 California.

15 In addition, the California refineries were
16 designed to produce, you know, a heavy, deep conversion
17 sort of crude oil which is what's in decline. The high-
18 intensity crudes tend to be more of your low API, high
19 sulfur, they tend to be the very nonfungible, difficult-
20 to-refine crudes.

21 And they're going to be replacing them with the
22 lower-intensity crudes, you're reducing the operational
23 efficiency of the California refiners and you're placing
24 that difficult refined crude into more simpler, less
25 complex, less conversion, you know, less efficient

1 refinery somewhere else in the world and that's going to
2 have energy efficiency implications, which means there
3 are carbon emission implications when those high HICO
4 crudes end up wherever they're going to end up.

5 The other point that we want to do is kind of
6 point that the future is today in the -- although the
7 baseline was defined in 2006, we're going to show how
8 just in the last four years we've seen dramatic changes
9 in how the California crude slate, refining crude slate
10 has changed, and that is just sort of precursor of the
11 shape of things to come.

12 And then the conclusion then being that the
13 high-carbon crudes, if you deflect them from California,
14 they will still be produced. Because if you think of a
15 world in which we're going from 85 million barrels today
16 of crude oil consumption today, to 90 or 100 million
17 barrels a day of crude oil consumption, the bottom line
18 is the oil sands are coming.

19 That the global oil market cannot possibly meet
20 growing oil demand, especially in the emerging world,
21 without the development of the -- what we call sort of
22 the extreme sources, such as the Canadian oil sands or
23 the ultra-deep water production.

24 That production has to come in order -- if we
25 believe that the emerging world is going to pull itself

1 out from being an emerging world and into a developed
2 world, it's going to require more energy. And if that
3 energy takes the form of liquid fuels, then there's no
4 way that that equation can possibly be met without
5 bringing these sort of new sources, or these
6 unconventional crudes on stream.

7 So, here's just a view of when we define the
8 base year, you know, about 95 percent of the crude slate
9 in 2006 fit the baseline definition. So, in other
10 words, it would be a low-carbon intensity crude oil by
11 definition, as the definition that's been -- the
12 potential definition that's been proposed.

13 But if you look over the next five years, just
14 through the natural decline in baseline crudes out of
15 California and out of Alaska, that we've sort of seen
16 that those baseline crudes are now less than 80 percent
17 of the California crude slate and they're being made up
18 by one of two ways, either you're going to be importing
19 more barrels from someplace else in the world and those
20 barrels, by definition, were non-baseline crudes, or
21 you're going to be cutting refining runs; which means
22 instead of bringing in an imported barrel of crude,
23 you're going to be bringing in an imported barrel of
24 product in order to satisfy California petroleum demand.

25 Now, this is where we're going to slow down for

1 a bit and kind of talk about the security and supply
2 implication. So, if you sort of think in a very simple
3 term, what the HICO definition does, if you sort of say
4 that we're not going to allow -- you know, that we're
5 going to define sort of like the Canadian oil sands
6 crudes, or heavy production crudes out of Brazil or
7 Columbia, out of Venezuela as being high-intensity
8 crudes, then what you do is you end up putting up a
9 brick wall to those locally-sourced crudes from South
10 America or from Canada.

11 And at the same time you're going to still have
12 refining crude runs that need to be met and the low-
13 intensity crudes that fit the definition, since the
14 Californian and Alaskan crudes are in decline, you're
15 increasingly pulling barrels of crude, which is the
16 green magnet, away from the low-carbon intensity crude
17 country defined areas, which is largely from the Middle
18 East.

19 So, here's what has to happen for that barrel to
20 make it to California, when we think about it from an
21 energy supply basis. First of all, just the mere
22 distance of coming from Canada to California, versus
23 from the Middle East to California, the length of
24 distance increases the length of the supply chain. In
25 other words, there's more distance and there's more time

1 for something in the supply chain to go wrong. And that
2 means if the barrel of crude doesn't show up in time to
3 be refined the way you'd -- at the time that you need it
4 to be refined in order to keep the California market
5 supplied.

6 But the other thing to note is that -- is two
7 other things. One, that marginal barrel of crude that's
8 having to come in today, so as you sort of think about
9 that, the baseline crude's going from 95 percent down to
10 80 percent, that 15 percent swing from baseline to non-
11 baseline crudes is being met by Middle East barrels.

12 Now, that Middle East barrel has to come out of
13 the Strait of Hormuz which, at its narrowest point, only
14 allows two tankers to flow.

15 If it can make it through that without the
16 political uncertainty in the Middle East, if it makes it
17 out of the Strait of Hormuz, it then has to flow past
18 the Straits of Malacca, which is the most pirate intense
19 shipping lane in the entire planet.

20 If it makes it through the Straits of Malacca,
21 you now have to bid that barrel of crude away from the
22 Asian refining demands in order to make it attractive to
23 land in California.

24 Now, the reason why that last point is in
25 important is that since the Global recession ended in

1 2009, more than 100 percent of the growth in oil demand
2 has been in Asia. And the reason why it's more than 200
3 percent of demand is that we still have declining oil
4 demand in the developed worlds of Europe, North America,
5 Japan or Australia.

6 So, the growth market of the world, on an oil
7 demand side, that barrel is going to have to get priced
8 at a point where it will -- the Chinese, or the
9 Singaporean, or the Korean refiner will let that
10 expensive barrel slide by and head on to California, and
11 then it has to cross the Pacific with no mechanical
12 interruptions, or no impact, and land in California just
13 in time to hit the tanks and then go into the refinery.

14 Now, at the same time, if you're pricing those
15 low-intensity crudes at a high enough point to pull it
16 out of Asia and into California, you're also discounting
17 those high-intensity crudes coming out of Canada and
18 coming out of South America, and you're actually
19 discounting crudes into Asia, so that's where the crude
20 shuffling goes on.

21 It happens because the California refiners have
22 to put a high enough price to pull the low-intensity
23 crude out of the Middle East and a big enough of a
24 discount, and you're discounting the local Canadian
25 crudes, or the nearby Canadian crudes so that they can

1 flow to Asia, and those tankers literally pass each
2 other on the open seas.

3 Now, while all that's going on, this kind of
4 just goes to Gordon's point and this is just a chart
5 that demonstrates, you know, how you have to kind of
6 move the -- what you have to believe that this policy
7 actually alters world oil demand, world oil production,
8 is that the dark blue line at the bottom of the chart is
9 California oil demand and the light blue is demand
10 everywhere else, which is somewhere in the neighborhood
11 of 85 million barrels a day and growing.

12 So, as you move through time, as we move going
13 forward, California actually becomes a smaller
14 percentage of the world oil demand and so its influence
15 to -- its ability to influence the well head economics
16 in places like either Canada, or the Middle East shrinks
17 in proportion to its -- to the size of its -- to where
18 it fits in the global market.

19 Now, that leads us to the final chart. So, if
20 you're in a world where that marginal barrel comes from
21 a water borne barrel, and that water borne crude barrel
22 can flow anywhere in the world, once it hits a ship it
23 can land on any refinery anywhere, the producer has the
24 ability to avoid the policy implications of the LCFS
25 through HICO.

1 And even if it's a low-intensity crude, it has
2 the ability to price itself into whatever market is
3 going to offer it the most attractive price.

4 On the other hand, if you're a refiner, the HICO
5 definition restricts the number of crudes that are
6 available to you, and by restricting the number of
7 crudes that are available to you, you reduce your
8 ability to either influence the price and attract
9 crudes, or you also reduce your ability to diversify
10 your supply, which sort of says that the HICO -- when
11 you define HICO, what you need to be looking for is
12 something that avoids the crude shuffling because that's
13 a net increase in carbon emissions, greenhouse gas
14 emissions. And you also want to be looking for
15 something that doesn't adversely impacting your security
16 of supply by unduly restricting the portfolio of crudes
17 that you can select from.

18 And so that's kind of the essence of what we
19 wanted to talk about today was that, you know, we
20 largely agree with what the CEC has put in their draft
21 report, that the California market has -- the size of
22 the California market makes it difficult for them to
23 influence policy in other parts of the world.

24 And that if you're not careful with how you
25 define your policies, you're going to end up putting

1 yourself at -- you actually take on taking energy supply
2 risk with no benefit, with no direct benefit, and
3 possibly with a carbon cost due to the crude shuffling.

4 And that's just what we'd -- the comments that
5 we have is that as you're finalizing the policy that you
6 sort of be thinking about ways to mitigate those
7 potential security supply risks and those carbon
8 emission risks. And that's the extent of my comments.

9 VICE CHAIRPERSON BOYD: Thank you. In your
10 analysis have you ever looked at the issue of at what
11 point California crude oil leaves California instead of
12 being processed in California?

13 MR. YORK: Well, we didn't look at it in this
14 analysis, but there is -- I guess there's good news, in
15 that there is an Executive Order signed back by the
16 President -- there's a Presidential Executive Order,
17 signed back in 1982, which prohibits the export of U.S.
18 crude. And there's only -- without a Presidential
19 exemption, and there's only two crude oils that have
20 that exemption today, one of which is ANS.

21 So, absent a Presidential waiver, California
22 crudes are captive to California refiners, or to U.S.
23 refineries --

24 VICE CHAIRPERSON BOYD: Right, to the U.S.

25 MR. YORK: -- and that by their logistics

1 they'll be captive to California.

2 VICE CHAIRPERSON BOYD: Any other questions from
3 folks here? Yes?

4 MR. STEVENSON: Dwight Stevenson, Tesoro. I
5 wanted to amplify a little bit on what Skip had to say,
6 and thank you for sticking it out so long, Commissioner
7 Peterman.

8 VICE CHAIRPERSON BOYD: Yeah, she has a meeting
9 in the Governor's --

10 COMMISSIONER PETERMAN: I'll get a recap of your
11 question.

12 VICE CHAIRPERSON BOYD: There's a meeting with
13 the Governor's staff that is rather important.

14 MR. STEVENSON: Okay. The point I want to make
15 is that when you're changing the incremental crude
16 market, the incremental crude that's coming into a
17 refinery, and instead of having something that's lower
18 priced from Canada, and having to buy something that's
19 more expensive from the Arab Gulf, you're going to go
20 look for other alternatives, first, and what happens is
21 that all of those other alternatives get bit up, and as
22 a final resort you go to the Arab Gulf.

23 So, this is not just on the high-carbon crude,
24 this impact of a higher price is not just on those 10,
25 20, 30 percent potential high-carbon crudes, we don't

1 know how many, it's the entire crude market.

2 Would you agree with that?

3 MR. YORK: Yeah, I would agree that once you
4 start -- once you start restricting the crudes that
5 you're going to look at and you start bidding against
6 those then, you know, the -- it's not just one refiner
7 in California that will be bidding into that market, it
8 will be every refiner in California that bids into it.

9 And that crude could have more value to some
10 other refiner than it has to you and that starts another
11 bidding, the bidding game as well.

12 And so the market, it's a bit of the Genie gets
13 out of the bottle, once you start it it's -- the
14 crude -- the crude markets will find a new equilibrium,
15 but that new equilibrium could have unintended
16 consequences in terms of the cost of supply for
17 petroleum products to California and the security of
18 supply of the volume into the California markets.

19 VICE CHAIRPERSON BOYD: Other questions,
20 comments?

21 Okay, thank you, Skip.

22 MR. YORK: Yeah.

23 VICE CHAIRPERSON BOYD: Now, public comment,
24 Gina is waiting anxiously.

25 MS. GREY: Gina Grey, from WSPA, again. And I

1 apologize, but these are -- we have some prepared
2 comments and I will try and keep these short, but the
3 WSPA organization did feel that we wanted to make some
4 comments at the end to try and summarize our general
5 view of the Transportation Report at this point in time.

6 First of all, congratulations are in order
7 because we actually, as WSPA, want to thank and
8 recognize the tremendous effort by staff to improve the
9 IEPR Transportation Report.

10 And I know I've stood in front of you many
11 times, Commissioner Boyd, and had a long litany of
12 complaints and issues with the report, but we actually
13 have seen a seed change, I think, in improvement in the
14 report. It's very much improved from what was produced
15 in the past.

16 There's a greater understanding and recognition
17 in the report of the complexities of the transportation
18 fuels arena, and the considerations and challenges
19 inherent in trying to transition to a wholly different
20 fuel system in a rapid time frame.

21 What appears to be one of the main themes,
22 however, is the high level of uncertainty in what lies
23 ahead, particularly with respect of future contributions
24 of various renewable and alternative transportation
25 fuels and technologies.

1 There are, for example, questions about the
2 adequacy of alternative fuel supply, the adequacy of the
3 infrastructure and the technical, and environmental
4 questions still to be addressed.

5 Overlaid on this are the prevailing issues of
6 whether the fuels, the vehicles and the consumers will
7 nicely match up.

8 In contract to historical IEPR documents that
9 painted a very optimistic picture of the alternative
10 fuel future contributions and the rapid demise of the
11 petroleum industry, this document appears far more
12 balanced. And I think we heard that from other people
13 today that they sort of characterized it as a more
14 balanced report.

15 One aspect we did find disappointing, however,
16 was the lack of a next step analysis, and I think I
17 heard this from John Braeutigam earlier, that would take
18 much of the information obtained over these many months
19 of staff work and provide what is required by the
20 enacting Bowen Bill, which is to develop policies for
21 the IEPR.

22 The report identifies many significant problems,
23 but normally doesn't go the next step in providing
24 recommended solutions or changes to State policy, for
25 example.

1 And we actually took an example from the report,
2 which is relative to E85. We see in the report that
3 staff projects E85 infrastructure costs, alone, will be
4 from \$3.1 billion to \$101.8 billion, and that's if you
5 add up all of the components out to 2030. Which, they
6 say, on a per-station basis for dispensers are many
7 times greater than the total annual profits of a typical
8 retail station.

9 the report also says the number of FFEs needed
10 is needed to increase from 450,000 in 2010 to 5 million
11 by 2030 to enable an adequate market for volumes of 85
12 needed to meet RFS2.

13 So, the reader is left with many questions. How
14 is all of this going to happen? Or, more importantly,
15 does the CEC believe this will realistically happen?
16 What will be the impact on the State's economy and the
17 consumers? What needs to be done or undone in order to
18 accomplish this?

19 So, there's the types of questions that
20 typically go through your head as you're reading this
21 report.

22 Now, we do note an exception to this lack of
23 sort of next step, which was on page 88, where the staff
24 recommends the EPA consider convening a forum to
25 ascertain the primary causes for a lack of progress

1 regarding the growth of cellulosic biofuel production
2 capacity under the RFS2, along with a consideration of
3 modifications to the program.

4 This is an example of what we'd like to see more
5 of in the report.

6 So, WSPA would like this report to provide
7 policy recommendations as input to the overall IEPR.
8 And I think that's what we have said in the past, too,
9 that even if a lot of these issues and comments are
10 incorporated in this Transportation Report, we typically
11 don't end up seeing it in the actual IEPR.

12 So for policymakers, who are looking at just the
13 IEPR document, often those key issues are missing.

14 In our March set of IEPR comments we stated,
15 "The CEC does not appear to be actively and urgently
16 working to chart a specific strategy that will deal with
17 a very tight demand supply outlook embedded in the
18 Commission's Transportation Fuels Forecast."

19 So, this comment and our concern still stands
20 relative to that March comment.

21 We would like to request that certain main
22 issues be highlighted in the main IEPR document, so
23 policymakers are appropriate forewarned.

24 Some of the issues and we'll probably have more
25 in our written comments, that we'd like to have included

1 in the IEPR are, and first of all, this first one may
2 strike you cold because we were going to say this
3 earlier in the day, but time was short, which is the
4 need for CEC to conduct the transportation fuels
5 analysis on an annual, rather than a biannual basis.

6 I don't see staff saying rah-rah over there.

7 VICE CHAIRPERSON BOYD: Do you have a revenue
8 source to get the added staff that --

9 MS. GREY: Yeah, I noticed that in the report,
10 too, about the resources.

11 Since many of the fuels were not dealt with in
12 detail in the report and there are several sections that
13 talk about why that was, but it also says that this is
14 ongoing work that will be completed at some point in
15 time, but it's not explicit as to when all that will be
16 completed.

17 So, we just, again, would like to suggest that
18 this be an annual report, particularly at this point in
19 time when it seems -- you know, with the LCFS, with the
20 RFS2, a lot of these programs in play.

21 It seems that the transportation fuels arena in
22 the past, I know we've said this a lot, has received a
23 bit of short shrift in the IEPR context where
24 electricity is, annually, but transportation fuels is
25 not. So, it's consistent with what we've said before.

1 VICE CHAIRPERSON BOYD: Don't you know what CEC
2 stands for? The "California Electricity Commission."

3 MS. GREY: The "Electricity Commission" right.

4 (Laughter)

5 MS. GREY: All right, second bullet, which we
6 talked about earlier today and I mentioned, the need for
7 a CEC reporting mechanism for alternative fuels.

8 Thirdly, the need to include a detailed analysis
9 of the vehicle and consumer side of the equation and I
10 think it was kind of interesting this morning when we
11 were talking about sort of the vehicle attributes, and
12 the consumers were kind of in there. But when you look
13 at the back end of the document there is, I think, a
14 couple of paragraphs and three or four tables that deal
15 with the vehicle side of this whole thing. And I think,
16 again, we're always saying the three-legged stool,
17 vehicle, fuel, consumer.

18 And, unfortunately, because this is, as I know,
19 transportation fuels, but very important need to include
20 the vehicle side in probably a more prominent position
21 in the report.

22 And the next bullet was the need to highlight
23 the possible consequences of the LCFS program including
24 the crude differentiation approach.

25 And the need to continue to support the

1 petroleum industry in terms of expanded crude
2 production, marine and other infrastructure.

3 And I think a lot of that goes to our continual
4 mantra which is, fine, if the State wants to continue
5 with alternative and renewable view focus in terms of
6 transition, but don't forget about the petroleum side as
7 well, and the fact that just making sure that that side
8 of the equation doesn't have a hindrance in terms of our
9 ongoing energy supply while the transition takes place
10 is equally important.

11 And I think there are several things mentioned
12 in this transportation report, like the marine
13 infrastructure, that, again, need to be highlighted in
14 the IEPR.

15 And then, lastly, the need to translate this
16 report for use by the AB 118 effort and to determine if
17 revisions are needed to the AB 118 program.

18 And I think by that we just mean that, again,
19 making sure that whatever comes out in this report is
20 recognized and understood, and the AB 118 Advisory
21 Committee is educated on maybe some of the elements of
22 that, because not everyone reads 270 plus pages.

23 And, plus, just there have been some discussions
24 recently about whether or not the AB 118 program, in
25 terms of how it's constructed, what the rules of the

1 game are, et cetera, are appropriate as we move forward.
2 And maybe there are some revisions that may be necessary
3 in that, and that's probably legislatively driven and
4 you need to change that, but that was just another
5 thought on our part.

6 So, those were just some of the thoughts that we
7 had in terms of what needs to be reflected in the IEPR
8 in addition to what's in this Transportation Fuels
9 Report. Thank you.

10 VICE CHAIRPERSON BOYD: Thank you, Gina.

11 Any other public comments? Any questions out
12 there in -- staff, do you have any concluding wrap-up
13 comments you'd like to make?

14 MR. PAGE: Jim Page, of the Energy Commission.
15 Just that we have an IEPR schedule that's actually
16 fairly tight, where all of these -- all this work that
17 we're proposing or has been proposed probably will
18 not -- will almost certainly make it into the IEPR given
19 the short lead time.

20 Our final report we have no time, there is no
21 date at which our final report has to be completed.

22 And I would like to emphasize, too, that this,
23 while not maybe an annual process, is a continuous and
24 ongoing process for staff to learn, to understand, to
25 incorporate, to get information, to learn about new data

1 sources, to hear ideas about how that can be
2 incorporated into analysis, new problems that come up,
3 issues people have with our work. This is ongoing, it
4 will continue long after I'm gone.

5 So, that's really all I want to say.

6 VICE CHAIRPERSON BOYD: Are you retiring, too?

7 MR. PAGE: Don't tempt me. Yes, that's really
8 all I want to say is that we do have a short lead time
9 to contribute to the IEPR, so not all of the work that's
10 been proposed can get done in that time frame.

11 But, again, we do have more time to do the final
12 report. Whether we can do more workshops, we would like
13 to look into that possibility. Obviously, there's a
14 whole slew of questions that have been raised and we
15 have not -- we're not close to the answers for all of
16 them.

17 But for the IEPR purposes, it comes every two
18 years and we just -- we can't stop it. Whether we're
19 ready or not, we have to contribute by a certain date
20 and that's the constraint that we will always have.

21 And I would also like to thank you all very much
22 for staying this long, this late and contributing so
23 much. It's really a pleasure, I really appreciate it.

24 VICE CHAIRPERSON BOYD: Thank you, Jim. Well,
25 let me just say that I, too, appreciate, one, the work

1 of the staff, the tremendous amount of work that has
2 gone into that. And only I, in particular, some of us
3 know that we have fewer staff now than we've ever had in
4 the past, in light of these tough times, so they've
5 taken on a big task and they have worked very hard to
6 bring it where it is. And the fact that some people
7 like it better than they used to like it is indicative
8 of, I think, the hard work that has gone on.

9 Commissioner Peterman, who did have a 5:00
10 o'clock appointment in the Governor's Office, and put
11 him off until 5:25, whispered in my ear, just before she
12 left, that this is one of the best workshops she's
13 attended and she's only been here roughly a year, but
14 carries a workload on the renewables area. Although, I
15 share the Committee with her, she's the Chair, I let her
16 do the heavy stuff.

17 So, it was impressive to all of us and we
18 appreciate your input.

19 There is a desire, continuously, to shrink the
20 size of the IEPR down because it's so big that nobody --
21 I mean we struggle to get people to pay attention to it.

22 Jim's comments about, you know, the subordinate
23 report, we have more time to finish it up and we have
24 been talking about having more workshops, just some way
25 to have a continuing dialogue on the subject.

1 And with the passage of time and events, and
2 what have you, a lot of the people have learned about,
3 you know, the status of the economy, what you can and
4 can't do, things not realized. The cellulosic ethanol
5 example is one good one of what people predicted the
6 future would be and it didn't turn out that way. And
7 I've had to wait a long time for the second coming of
8 batteries in electric cars, et cetera, et cetera.

9 So, again, thank you all for your input, we'll
10 work with it, we'll work on it, with work with the
11 staff, the Commissioner and I, in helping them craft the
12 final version of this report and, more importantly,
13 craft what will go into the IEPR in the limited page
14 space we've been allocated, I'm sure.

15 So, anyway, thank you all, have a good weekend,
16 and appreciate the work you all put into this effort.
17 It's been very enjoyable, very educational. Thank you
18 and good night.

19 (Thereupon, the Workshop was adjourned at
20 5:35 p.m.)

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