

STAFF WORKSHOP
BEFORE THE
CALIFORNIA ENERGY COMMISSION

In the Matter of:)
)
Implementation of Alternative and) Docket No.
Renewable Fuel and Vehicle) 08-ALT-1
Technology Program)
_____)

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08-ALT-1	
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CALIFORNIA ENERGY COMMISSION

HEARING ROOM A
1516 NINTH STREET
SACRAMENTO, CALIFORNIA

FRIDAY, SEPTEMBER 19, 2008

9:16 A.M.

ORIGINAL

Reported by:
Peter Petty
Contract No. 150-07-001

CEC STAFF PRESENT

Michael Smith

Peter Ward

Gerry Bemis

Charles Mizutani

Malachi Weng-Gutierrez

ADVISORY COMMITTEE MEMBERS PRESENT

Anthony Brunello (via teleconference)
California Air Resources Board
California Resources Agency

Tom Cackette
California Air Resources Board
California Environmental Protection Agency

Will Coleman
Mohr Davidow Ventures

Peter Cooper
California Labor Federation

Remy Gardaret for Daniel Emmett
Energy Independence Now Coalition

Bonnie Holmes-Gen
American Lung Association of California

Tom Frantz (via teleconference)
Association of Irrigated Residents

Elisa Odabashian
Consumers Union

Karnig Kazarian
Business Transportation and Housing

John Shears
Center for Energy Efficiency and Renewable
Technologies

ADVISORY COMMITTEE MEMBERS PRESENT

Richard Shedd
Department of General Services

Carla Din (via teleconference)
Apollo Alliance

ALSO PRESENT

Michael Jackson
TIAX, Inc., LLC

Jeff Stephens
Propel Biofuels

David Modisette
Public Policy Advocates
California Electric Transportation Coalition

Nathalie Hoffman (via teleconference)
California Renewable Energies

Raj Singh
SunX Energy

Danielle Fugere
Friends of the Earth

Bonnie Scott
Global Cooling Solutions

Geoffrey Sommer
AC Propulsion

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P R O C E E D I N G S

9:16 a.m.

MR. SMITH: My name is Mike Smith. I'm the Deputy Director for Fuels and Transportation here at the Energy Commission. And I want to welcome each of you to our second of two informal staff workshops with the advisory committee for our alternative and renewable fuels and vehicle technology program.

As a starting point for today's workshop I'd like to go around the table to have the advisory committees introduce themselves for the record, and also if there are folks, advisory committee members that are on the WebEx, participating via WebEx, I'd like for them to introduce themselves, also.

Peter, do you want to --

MR. COOPER: Yes, Peter Cooper with the workforce and economic program at the California Labor Federation.

MR. CACKETTE: Tom Cackette with the Air Resources Board.

MS. ODABASHIAN: Elisa Odabashian, Director of the West Coast Office of Consumers Union, publisher of Consumer Reports magazine.

1 MR. GARDARET: Remy Gardaret with Energy
2 Independence Now. I'm sitting in for Daniel
3 Emmett.

4 MR. SHEDD: Rick Shedd with the
5 Department of General Services.

6 MS. HOLMES-GEN: Bonnie Holmes-Gen with
7 the American Lung Association of California. I
8 will have to leave a little early due to a
9 previous meeting I've committed to.

10 MR. SHEARS: I'm John Shears, Center for
11 Energy Efficiency and Renewable Technologies, and
12 also if we run too close to 11:30, I'm going to
13 have to be leaving early, as well.

14 MR. COLEMAN: Will Coleman, Mohr Davidow
15 Ventures.

16 MR. SMITH: Thank you. Let me -- are
17 there any advisory committee members on WebEx?
18 Could you identify yourselves, please?

19 MR. BRUNELLO: This is Tony Brunello
20 with The Resources Agency.

21 MR. SMITH: Good morning, Tony.

22 MR. BRUNELLO: Good morning.

23 MR. FRANTZ: Tom Frantz with Association
24 of Irrigated Residents in the San Joaquin Valley.

25 MR. SMITH: Hello, Tom.

1 Anybody else? Okay.

2 Let me just very quickly go back to
3 Bonnie and John. You have a time commitment. Is
4 there -- do we need to accommodate any comments or
5 information you want to present specifically or
6 not? I'll be more than happy to if there's
7 something you want to --

8 MS. HOLMES-GEN: No. I'm just very
9 interested in hearing about the methodology --

10 MR. SMITH: Okay, --

11 MR. WENG-GUTIERREZ: -- for allocating
12 funds.

13 MR. SMITH: Okay, --

14 MR. SHEARS: Sorry. I know we're
15 supposed to focus on the investment plan, but I
16 just was wondering if it would be possible to just
17 take a few minutes to talk about the staff's work
18 on the sustainability discussion paper in the regs
19 later on --

20 MR. SMITH: Probably after the
21 discussion items on the plan.

22 MR. SHEARS: Sure.

23 MR. SMITH: Okay. I do want to announce
24 that the October 6th advisory committee workshop
25 that had been previously scheduled has been

1 postponed. We will be, over the course of the
2 next week or so, surveying the committee members
3 to find a suitable new date for the next advisory
4 committee meeting, which will be a Commission-
5 sponsored, rather, I should say a Committee-
6 sponsored workshop. So Commissioners Boyd and
7 Douglas will be heading up that workshop.

8 The purpose of today's staff workshop is
9 to continue our review of the process that staff
10 here at the Energy Commission has developed to
11 determine priorities and opportunities for the
12 program.

13 Keep in mind that statute AB-118
14 requires that the investment plan determine
15 priorities and funding opportunities for the
16 program. It also asks that the Energy Commission
17 describe how our funds will be complemented by
18 other funding sources, both public and private.

19 So we're in the process of developing
20 those sections of the plan, but we want to focus
21 primarily on this process to determine priorities
22 and opportunities.

23 And what we want to focus on primarily
24 today is the methodology that we have been
25 developing, and that we presented at the September

1 2nd workshop, that determines the relative
2 greenhouse gas emissions reductions contributions
3 of each of the categories of fuels and
4 technologies.

5 That forms the very very important
6 starting point for the investment plan in
7 determining priorities and opportunities in the
8 plan. So we want to make sure that in developing
9 this process we have addressed comments raised in
10 the last committee meeting. And to hear any
11 additional comments or questions that the
12 committee, as well as stakeholders and the public,
13 have about the process.

14 It's very important that we get this
15 initial step lined up with expectations.

16 So, with that, is there any questions
17 before we begin?

18 Okay, I'd like to turn it over to Peter
19 Ward.

20 MR. WARD: Good morning, everybody.
21 Thanks for coming, those of you that can be here
22 with us today, and thanks to those of you that are
23 on the phone, and of course, thank you for
24 everybody that's showing up in the audience today,
25 as well.

1 This is the second staff and advisory
2 committee workshop for the AB-1007 -- 118 program.
3 And this is basically to clarify our methodology
4 and approach to incorporating the greenhouse gas
5 goals and climate change goals that we have that
6 are primary for the program.

7 As Mike mentioned, we will be delaying
8 the October 6th meeting, but that is really to do
9 better, get a firmer grip on how we're going to
10 incorporate sustainability into the program
11 solicitations and criteria for the program.

12 We have come to realize that this is a
13 very bright light that's shining on California
14 which is an excellent opportunity for California.
15 It's not one that we've ever shied away from. But
16 I think at this point we want to put our best,
17 absolutely best foot forward and lead in not just
18 the state, but the country and possibly the world
19 in how we go about this.

20 The agenda for today, and I guess I
21 should mention, also, that as I did last time,
22 that the restrooms are right outside. If we have
23 to evacuate you'll see monitors with hardhats.
24 Just do what they say, follow orders, and
25 everything will be fine.

1 We're hoping to bring this to a
2 conclusion by noon today, so if any of you folks
3 thought we were going to do a re-do of the last
4 time when we went to 1:00, I think we're going to
5 hopefully get out of here before that. And to
6 accommodate John and Bonnie's needs, as well.

7 Briefly, it'll be the introduction
8 overview. We're going to update the analyses that
9 we had from last time, the reverse engineering
10 from 2050 back to 2020 and to 2008.

11 Both Gerry Bemis and Malachi Weng-
12 Gutierrez are here to update and present the final
13 conclusions there. Not final, because, of course,
14 we would like to have your comments, as well. If
15 you see things that we can modify, we'd like to
16 hear that.

17 Today we're fortunate to have Mike
18 Jackson with us today, in person, to present the
19 gap analysis that they performed for us. And he
20 was on the phone presenting it last time. He is
21 here to present for us today, and I appreciate him
22 coming. And he can answer questions, if you have
23 those, at that time.

24 We'll be going over the components of
25 the investment plan, as we see it, at this point.

1 The status of regulation, we'll be updating that.
2 Seems like that changes each time we meet. And
3 Chuck Mizutani will present that later.

4 Funding opportunities -- priorities and
5 opportunities we'll be discussing, as well. And
6 then we'd like to open it for public comment.
7 Actually, I'd like to see if we can have half of
8 this allotted time for public comment and comment
9 among the advisory committee members.

10 I think that would serve us very well.
11 We are anxious to hear what you folks have to say
12 on the final conclusions we have on our analyses.

13 I'm going to quickly go over the
14 comments from the dockets that were made at the
15 July 9th meeting. I think we have incorporated
16 these. There are some people here and on the
17 phone that weren't at the September 2nd meeting,
18 so I'd like to quickly go over these saying that
19 this is what we heard. We were listening at the
20 meeting and we've had subsequent phone
21 conversations with some of you. And so we want to
22 make sure that we are incorporating your comments
23 realistically as best as we can capture them.

24 And one was the coordination with PIER,
25 the alternative fuels roadmap. I think we are

1 very closely aligned right now with our PIER
2 program at the Energy Commission. We view that as
3 a very important component to this program, so
4 that it is the adjunct for not just research and
5 development, but for analysis, as well, we're
6 finding.

7 We will be guided by the full fuel cycle
8 assessment established under AB-1007 alternative
9 fuels plan. And we are committed and have already
10 begun the process to update those inputs and
11 update that California GREET model.

12 The goal-driven methodology for
13 allocating funds you'll hear from Gerry Bemis and
14 Malachi very shortly. Capital efficiency, a
15 discussion we had with Will Coleman. And that was
16 very helpful and I think you might see traces of
17 that in what we're presenting.

18 Reverse engineering is just the nuts and
19 bolts, if you will, how we went ahead and
20 constructed our reverse engineering task.

21 The gap analysis is now prepared and
22 completed. And we're told that we should be
23 emphasizing in -- development workforce training,
24 which we are certainly at the task of doing.

25 We are going to be continuing the

1 sustainability market and incentive studies, as
2 well. This piece is really an important part for
3 me, personally. I think that the program, if we
4 are to make a mark in the state and the country
5 and the world, this program has to be informed on
6 a real-time consistent basis. So that we are
7 completely cognizant of any developments as they
8 occur, when they occur and they are incorporated
9 into the program as we move forward.

10 Overview of the investment plan. The
11 primary goal is to assist California in achieving
12 its state climate change policies. AB-32
13 establishes a goal reducing statewide GHG
14 emissions to 1990 levels by year 2020. Right,
15 Tom? Got that right?

16 The Governor's executive order
17 establishes a statewide goal of reducing GHG
18 emissions 80 percent below the 1990 levels by the
19 year 2050. And the transportation activities
20 responsible for 38 percent of greenhouse gas
21 emissions in California.

22 The investment plan will prioritize the
23 categories, assigning each a percentage of
24 available funds based on their GHG reduction
25 potential.

1 We'll describe categories of funding
2 that will be eligible to receive funding. Some
3 are in the statute, and some we will be
4 identifying, as well. May incorporate other
5 considerations in determining the final percentage
6 of available funds.

7 And this plan will be adopted by the
8 Energy Commission. All funding decisions will be
9 consistent with the priorities and opportunities
10 determined by this process.

11 We will further define sustainability
12 goals to influence the determination of the
13 priorities and opportunities as we go along.
14 That's part of the real-time informing of the
15 program that we seek.

16 And accordingly, determining the
17 priorities to the program. We defined the goals
18 to 2020 and extended those to 2050. We did a step
19 we were proposing and have accomplished a step-by-
20 step analytical methodology for allocation. And
21 performed a gap analysis for the areas of need and
22 opportunity.

23 The step after the gap analysis is to
24 seek industry stakeholder input on a refined gap
25 analysis. That is what we have identified gaps

1 that exist. We may have strategic partners,
2 alliances or other stakeholders that have
3 anticipated these gaps and already are about the
4 business of filling those. We do not want to
5 duplicate that.

6 We want to make sure that the gaps that
7 we identified ultimately for funding for our
8 program are true gaps and not taken up by partners
9 or other stakeholders. So there won't be any
10 redundancy.

11 We will be seeking stakeholder and
12 public input on these gaps to determine the gaps
13 being addressed. This is the process for that
14 basically, determine the gaps that remain;
15 prioritize and refine and seek input as to what
16 our partners would fill. And prepare strategic
17 opportunities for funding a list of prioritized
18 goals.

19 I think at this point it might be a good
20 time to call on Gerry to make his updated
21 presentation on the analysis that he's been
22 working hard at, not just up until the last
23 meeting, but ever since, as a matter of fact.

24 So some of the comments we received at
25 the last workshop he's taken to heart, and

1 actually put them on the graphs. And has tried
2 his best to work all those out.

3 So, this is Gerry Bemis, who will be
4 followed by Malachi Weng-Gutierrez. And then
5 after that it'll be Mike Jackson giving his
6 presentation of the gaps analysis that TIAX has
7 performed for us.

8 Gerry.

9 MR. BEMIS: Good morning, everybody, and
10 everybody that's online. Yes, I have been working
11 to update and incorporate comments I've received
12 at the September 2nd workshop.

13 And I don't really know -- I think a
14 number of faces are new, but a number of faces
15 were here before. This is a lot of repeat in what
16 we had before. So if I'm going over material
17 you're already familiar with, I apologize. But I
18 was told that there's enough new faces to expect
19 new faces that I should go through everything
20 again. So, here I go.

21 As Peter just said, transportation
22 accounts for about 38 percent of 2004 emissions.
23 This, again, as Tom mentioned before, this is
24 coming out of the vehicles. This does not include
25 the upstream emissions; this does not include

1 crude oil production and refining, anything like
2 that. This is just at the vehicle.

3 In 1990 it was a little bit less. It
4 was 35 percent. And now it's grown to about 38
5 percent. Sort of setting the context for how
6 transportation fits into the bigger picture.

7 This shows a rate of growth relative to
8 a 100 percent level in 1990. And it shows the
9 total greenhouse gas emissions were kind of
10 stagnant in the early 1990s, and later took off in
11 the late 1990s and onward.

12 But it also shows the transportation,
13 the dark black line, is growing at a faster rate
14 than is total greenhouse gas emissions. Which is
15 why the 35 went to 38 percent in 2004. And today
16 I'm sure it's a greater percentage than 38.

17 And if anybody has a question that they
18 want me to stop, just yell out and I will. But
19 otherwise I'll proceed through these fairly
20 quickly.

21 Okay, so I was asked, can we work
22 backwards from 2050 vision that was expressed in
23 the state alternative fuels plan to a starting
24 point that would allow us to move down that path
25 to proceed towards the goals expressed in the 2050

1 vision, which again was an 80 percent reduction in
2 transportation emissions by the year 2050.

3 So, that's what this analysis attempts
4 to accomplish. And then to come up with emission
5 reductions associated with that. And those would
6 become part of the weighting process. So that's
7 where we're going.

8 Okay, so began with the vehicle
9 attributes expressed in the 2050 vision from the
10 state alternative fuels plan. I assumed that most
11 vehicles get 60 miles per gallon, electric drive
12 vehicles get 80 miles per gallon. I came up with
13 a couple of categories that we'll talk about.

14 Super ultra low carbon vehicles would
15 become 40 percent of the fuel mix in 2050. Ultra
16 low carbon vehicles are 30 percent. And other
17 fuels are about 30 percent.

18 The supra ultra low carbon vehicles
19 achieve overall a 90 percent reduction in carbon
20 intensity in the fuel cycle. The ultra low carbon
21 vehicles receive about an 80 percent reduction.

22 And example of the super ultra low
23 carbon vehicles are fuel cells, plug-ins and
24 battery electrics. And an example of the ultra
25 low carbon are ethanol fuel vehicles.

1 Lastly, the per-person vehicle miles
2 traveled were reduced from 10,300 under business-
3 as-usual in 2050, to 8200 in 2050. Now, that's
4 about a 5 percent reduction from today, or about a
5 20 percent reduction from business-as-usual in
6 2050. The 10,300 was used as the basis for
7 extending the forecast period out to 2050.

8 Okay, so I took population data from the
9 Department of Finance, which in 2050 was 59.5
10 approximately million people in California. The
11 2050 vision had 55 million. And I went with the
12 Department of Finance data because I needed data
13 for every decade in between. I interpolated in
14 between decades to get population estimates for
15 each year.

16 I held the miles per gallon fuel economy
17 at the 2030 levels for each of the 45 vehicle
18 classes that I'm modeling out to 2050 under
19 business-as-usual.

20 And, again, I used the 10,300 as the
21 basis for extrapolating this per person times the
22 number of people gives me the total VMT.

23 One of the comments that was made by
24 both Bonnie and Tom was that the growth rate
25 looked wrong. And it was wrong. Because I, in

1 doing the calculation, I accidentally used the VMT
2 per person row instead of the total VMT row. And
3 that's fixed.

4 Okay, I broke the vehicle classes into
5 three groups. They were low carbon fuels,
6 vehicles that achieve up to 60 miles per gallon in
7 2050 and a 10 percent carbon reduction. The ultra
8 low carbon vehicles, again, achieved 60 miles per
9 gallon and 80 percent carbon reduction. And the
10 super ultra low vehicles get 80 miles per gallon
11 and 90 percent carbon reduction.

12 One of the updates is I broke the super
13 ultra low carbon vehicles into three subcategories
14 for more refined calculations. By that I mean I
15 used storyline vehicle market penetrations for
16 plug-in electric vehicles, battery electric
17 vehicles -- plug-in hybrid electric vehicles,
18 excuse me, battery electric vehicles and fuel cell
19 vehicles. And used associated attributes for each
20 one of the those to do the super ultra low
21 category. I'll show it a bit later.

22 Okay, this is again from the previous
23 slide show. This shows the relative fuel cycle
24 greenhouse gas emissions on a percentage basis
25 relative to gasoline on the far left. CarFG is

1 California gasoline reformulated.

2 And it shows that, for example, over
3 towards the right the E-85 cellulosic ethanol is
4 really not 80 percent, it's only about 72. It
5 varies by year, but in the year that this was done
6 for, which I believe was year 2022, it's about 73
7 or '4 or '5 percent, 73, I think. And I extended
8 that out to 80 percent in the year 2050.

9 That's a repeat slide; going the wrong
10 way? Okay. I think those were duplicate slides,
11 I apologize.

12 Then I added alternative fuel vehicles
13 to the mix using storylines from the emerging
14 technologies office that were developed for the
15 state alternative fuels plan, and then updated
16 recently by staff.

17 So market penetrations for compressed
18 natural gas or for propane or for fuel cells, et
19 cetera, come from the storylines which are being
20 prepared by staff.

21 The nonpetroleum alternative fuels, code
22 words for propane and compressed natural gas, are
23 restricted to replacing gasoline and diesel in the
24 low carbon category because of their carbon
25 intensity.

1 The biofuels I also use, and this is an
2 update from the September 2nd meeting, were used
3 for a portion of the low carbon -- the LD should
4 be low carbon diesel, a typo -- ultra low carbon
5 and vehicle fuel portion of the super ultra low
6 plug-in vehicles. Translation, I used where I had
7 biodiesel I used it in the low carbon and the
8 light-duty vehicle diesels based upon the quantity
9 of biofuels expected to be available for light-
10 duty vehicles.

11 The ultra low carbon vehicles are flex-
12 fuel vehicles and the plug-in vehicles are assumed
13 to be flex-fuel for the fuel portion of the plug-
14 in trip. Basically E-85. The super ultra low
15 carbon vehicles include battery electrics and fuel
16 cells, as well as the plug-ins.

17 Okay, this shows a little bit now of how
18 I went from 2030 to 2050. And, again, this is a
19 review from the last meeting. The dark red line
20 is VMT per capita from our computer model CALCARS
21 which is used to do our forecast. And on the far
22 right, at the far end of that green line on the
23 right, the upper line, that is 10,300 from the
24 storyline. And I can fit a straight line in
25 between and match the red line pretty well. So

1 that's how I was able to do the business-as-usual
2 projections.

3 The blue line, the lower line, is
4 basically 8200 in 2050 and I granted back and met
5 it in around 2016 and smoothed it in there. So
6 that shows that under the strategies where we're
7 differing from business-as-usual, we're reducing
8 the vehicle mileage of the fleet proportional to
9 the difference between the upper and the lower
10 lines.

11 This is the CALCARS project again in
12 red. And CALCARS vehicle population of new
13 vehicles sold between 2026 and 2030 in red on the
14 left. And on the right in green the extension out
15 to 2050. I just straight-line extended that out
16 under business-as-usual. For the strategies where
17 we reduced vehicle miles traveled I reduced the
18 number of vehicles sold, so that it was
19 proportional to the reduction in VMT. That's
20 another change from last time, and it was around
21 3.1 to 3.2, as I recall, million vehicles in 2050.

22 This shows the results under business-
23 as-usual for the expected vehicle miles traveled.
24 You can see it's mostly gasoline. There are
25 diesel, diesel/biodiesel, if you will, in the

1 upper line, the purple bars showing up as a
2 percentage of the vehicle fleet out to 2050.

3 MR. CACKETTE: Going --

4 MR. BEMIS: Yeah.

5 MR. CACKETTE: Going back to the other
6 one on the new vehicle sales, I didn't catch
7 what -- is this the end result, or you said
8 something about increasing to 3.1?

9 MR. BEMIS: This is a business-as-usual
10 result. I didn't show it on here, but the
11 strategy result, the 2050 vision results are
12 reduced down to about 3.1.

13 MR. CACKETTE: Due to the VMT --

14 MR. BEMIS: Yes.

15 MR. CACKETTE: -- or other things?

16 MR. BEMIS: Due to the VMT change and
17 what that -- the implication of that is what I did
18 was I kept a VMT per vehicle constant by reducing
19 the number of vehicles. So that the vehicles get
20 used just as much as they did before on a per-year
21 basis.

22 And if I remember the number, it was
23 around 3.1 new vehicles in 2050. I didn't put
24 that line on here. It would be kind of similar to
25 the previous line that showed that line right

1 there, that gap, that ratio, if you will. If you
2 added another line, it would be down -- let's see
3 if I can show it -- it would be down in here.

4 So, the implication of that is that I
5 kept the miles per vehicle, not the miles per
6 person, but the miles per vehicle the same between
7 2030 and 2050. And that means the cost
8 effectiveness of using that vehicle is the same.

9 If I had chosen to increase the
10 population of vehicles, then the VMT per vehicle
11 would be down, and the vehicles would be more
12 expensive to operate per vehicle. Fixed costs
13 have fewer miles to be distributed over.

14 MR. SMITH: Gerry.

15 MR. BEMIS: Yeah.

16 MR. SMITH: Can I interrupt just for
17 a --

18 MR. BEMIS: Sure.

19 MR. SMITH: -- public service
20 announcement. When you have comments could you
21 speak into both microphones. The court reporter
22 is having a little bit of difficulty hearing your
23 comment.

24 And if you have comments from the
25 audience please come up to the podium and

1 introduce yourself, and make the comments directly
2 into both microphones, please. Thank you.

3 MR. BEMIS: Well, where am I. So, I
4 don't remember if I clarified or not. The blue
5 line on this graph is about 20 percent lower than
6 the end of the green line in 2050. If you look
7 back, that blue line in 2050 is only about 5
8 percent less than today's rate of travel on a per-
9 person basis.

10 Okay. Here's the results with business-
11 as-usual for gasoline and diesel vehicles. Before
12 the trend leveled off after about 2030 and stayed
13 fairly flat because, as I said, I had accidentally
14 left out the population growth rate. When I add
15 that back in, the values to the right increase.
16 And the increase is on the order of about 20
17 million metric tons higher than what it was
18 before. So that makes the job that much more
19 difficult.

20 The red lines on the left, the upper red
21 line is at the 1990 emission level of about 108.5
22 million metric tons. And I ended that at 2020
23 because that's when the 1990 goal is supposed to
24 be met, in 2020.

25 The lower red line is the 2050 goal of

1 an 80 percent reduction below 1990, and have
2 plotted about where it belongs, at 21.7 million
3 metric tons.

4 Okay, so here's business as usual. And
5 then I'm going to start adding in strategies. The
6 first strategy I'm going to add in is the low
7 carbon fuel standard. And you'll see it reduces
8 the emissions approximately as shown.

9 They go down to and hit a bottom around
10 2030 and then start gradually increasing again
11 after that. This is scaled in to achieve a 10
12 percent reduction in emissions by 2020.

13 MS. HOLMES-GEN: And what baseline --
14 what is the baseline that's being used for that
15 estimate of a 10 percent reduction from LCFS --

16 MR. BEMIS: The baseline is 100 percent.
17 I just chose an adjustment factor where I started
18 in, here is where I started, 2010. And 1 percent
19 per year until I got to 10 percent in 2020.

20 MS. HOLMES-GEN: So, using 2010
21 gasoline, essentially, as the baseline in terms of
22 10 percent reduction of GHG from what year?

23 MR. BEMIS: Every year would be a 10
24 percent reduction of what it would have been as
25 business-as-usual, for every year. With the 2020

1 value being the first year where it was 10
2 percent.

3 So linear implementation of that program
4 from 2010 to 2020.

5 MR. SHEARS: Just to clarify, I think
6 what Bonnie's driving at is the carbon footprint
7 of reformulated gasoline in 2010 versus, for
8 example, ARB in the low carbon fuel standard had
9 proposed 2006 reformulated gasoline as the
10 baseline fuel.

11 So, I think -- so, is this assuming 2006
12 reformulated gasoline, 5.7 percent ethanol, as
13 opposed to --

14 MR. BEMIS: Yes.

15 MR. SHEARS: -- 2010 with 10 percent
16 ethanol?

17 MR. BEMIS: Yes.

18 MS. HOLMES-GEN: Thank you.

19 MR. BEMIS: Thank you for clarifying
20 that for both of us.

21 MR. WENG-GUTIERREZ: Gerry, actually I
22 think -- oh, sorry. This is Malachi Weng-
23 Gutierrez with the fuels and transportation
24 division. I just wanted to clarify that in the
25 baseline demand forecast that we do for the light-

1 duty sector, we do include a transition to an E-10
2 blend in 2012.

3 So that's part of our baseline forecast.
4 So it does transition from in 2010 to 2012 it's
5 increasing from the current standard ethanol blend
6 to an E-10 blend.

7 MR. BEMIS: And just so everybody knows,
8 Malachi's the one who does the light-duty vehicle
9 forecast using the CALCARS model. So he knows the
10 nitty-gritty of the model in a way that I don't.
11 So, thank you, Malachi.

12 Okay. then I added the tire efficiency
13 program. And this, again, is another change that
14 was suggested by Tom, where we were double-
15 counting the benefits of the tire efficiency
16 program and other forms of requiring lower rolling
17 resistance tires, specifically as an
18 implementation strategy for Pavley and also
19 probably for federal CAFE requirements.

20 To the degree that the auto
21 manufacturers use low rolling resistance tires, if
22 we assume a program that has low rolling
23 resistance tires it's double-counting unless our
24 rolling resistance tires are more fuel efficient
25 than what the OEMs would be offering.

1 So, I reduced the percentage to 1
2 percent, assuming that was associated with a
3 program of tire inflation maintenance and anything
4 that might be beyond the OEM, that's original
5 equipment manufacturers, requirements. But mainly
6 due to a proper tire inflation, and I used 1
7 percent instead of 3 percent, which I used last
8 time. And it doesn't do much.

9 Then I added the nonrenewable
10 alternative fuels, that's CNG and propane, and you
11 can see a small spattering of the bar, the top
12 part of the bar, the yellowish part is the
13 emissions associated with that category of
14 vehicles. Not very big bar because the vehicle
15 populations are small.

16 Next I added the ultra low carbon
17 vehicles, that's the blue bar here. And the
18 emissions go down to a point where we're getting
19 close to the 2020 goal.

20 Now, these were assumed -- these could
21 be anything that achieve the specific requirements
22 of the fuel economy and the 80 percent carbon
23 reduction intensity, again by 2050. I show a
24 higher carbon intensity in the earlier years here.
25 And also I assume these are flex-fuel vehicles,

1 and that the fueling pattern is such that they
2 achieve a 50 percent fueling with E-85 out in the
3 later years. But not in the earlier years.

4 If I used a different ULC vehicle, if I
5 used a dedicated ethanol vehicle those bars would
6 be lower, especially out in the mid years, in the
7 2020 to 2030 time period. But since these are
8 flexible fuel vehicles, they're E-85, and we're
9 assuming that they're fueling on E-85 50 percent
10 of the time, these bars are higher than what they
11 would otherwise be.

12 Next I added in the super ultra low
13 carbon vehicles. These are the red vertical bars
14 here. You can see that the emissions associated
15 with that category of vehicles is pretty small
16 because the carbon footprint is small, and the
17 fuel economy is high. So we're getting down
18 closer to the goal, but we're still not there yet.
19 We're in over 70 and the goal is 21.7, so there's
20 a long ways to go. But we're getting closer now.

21 Then I added the VMT reductions that I
22 showed you earlier. We get closer to the goal.
23 This is the best result I got. We're still above
24 the goal, we're around 38 million metric tons with
25 the goal of 21.7. We're below the goal in 2020.

1 But we're not quite there in 2050.

2 And looking at ways to try to further
3 decrease emissions, I don't think there's much
4 more to get out of the super ultra low carbon
5 vehicles, that red bar. We could get a little bit
6 more out of the blue bar by assuming more than 50
7 percent fueling with E-85. And then the purple,
8 the vertical purple bar is smaller than it was
9 before because it includes the biofuel, bio-
10 sourced diesel, whatever the right term is.

11 So the purple bar is pretty narrow,
12 also, because we're using biofuels in that
13 category. And the gasoline vehicle is almost up
14 to the standard all by itself, so to really get
15 down to that standard we need to get more out of
16 the gasoline.

17 Yes, Tom.

18 MR. CACKETTE: Let me get all my mikes
19 here. Did you do any sensitivity analysis on any
20 of the assumptions, on this chart here? For
21 example, what happens if the vehicles are 70 miles
22 per gallon instead of 60 miles per gallon, and the
23 electric drives are 100 instead of 80, and what's
24 the most critical assumption that would vary the
25 number by 40 potentially a lower number in 2050?

1 MR. BEMIS: I think I tried to allude to
2 the answer to that. You can see that the green
3 bar is almost up to the red line. You've got to
4 do something with the gasoline vehicles.

5 You could -- so, we're already getting
6 60 miles per gallon which, to me, is fairly
7 heroic. The question is how far you push and when
8 do you stop.

9 And, you know, I'm not going to be
10 around till 2050. Who knows what we really end up
11 with in the future is probably going to be
12 something more sophisticated than this based upon
13 some wonder widget that gets developed between now
14 and then.

15 But, given what we know today, this is
16 as far as I felt I could push that. Sixty miles
17 per gallon fleet average means some of the
18 vehicles are getting much greater than 60 miles
19 per gallon. Because there's 45 different classes
20 or categories of vehicles in that pool of vehicles
21 making up the onroad fleet.

22 We could lower that bright blue bar by
23 having dedicated ethanol vehicles, as I said. But
24 the bottom of that bar starts out pretty close to
25 the line, so we've got to reduce the green bar to

1 really get anywhere.

2 And, no, I didn't try going beyond 60
3 miles per gallon for the gasoline vehicles. But
4 that would certainly reduce the size of that green
5 bar. We could also displace those vehicles with
6 other kinds of vehicles, too.

7 We could use more diesel vehicles; the
8 purple bar could be bigger and that would reduce
9 the size of the green bar. There would be a net
10 reduction if we had more penetration of diesel
11 vehicles, also. But we've got to get that green
12 bar down in order to get down to the 2050 goal.

13 Okay, now this shows a little bit about
14 what's happening --

15 MR. SMITH: Gerry.

16 MR. BEMIS: Oh, yeah.

17 MR. SMITH: Just to add to Tom's
18 comment. Is it fair to say that for example on
19 the nonrenewable alt fuel vehicles, where we show
20 such a small, almost imperceptible, penetration
21 rate, at least from this analysis.

22 We're using numbers that we are
23 obtaining from our conversations with the vehicle
24 folks and the fuel folks, but should that number -
25 - would it be fair to say that perhaps a strategy

1 might be to find ways of increasing propane and
2 natural gas vehicles in an effort to bring that
3 number more in alignment with the 2050 target on a
4 faster slope?

5 MR. BEMIS: Of course, that would help.
6 According to the numbers that I'm using in the
7 analysis on the carbon intensity scale the propane
8 and LNG vehicles have about 80 percent the carbon
9 intensity of gasoline. So it would only help in
10 that ratio.

11 MR. SMITH: All right.

12 MR. BEMIS: Because they're assumed to
13 have the same miles per gallon.

14 MS. HOLMES-GEN: Can I ask an additional
15 question? This is assuming full fuel -- these are
16 full fuel cycle numbers, correct?

17 MR. BEMIS: The carbon intensity is
18 for -- yes.

19 MS. HOLMES-GEN: Not just tailpipe?

20 MR. BEMIS: Correct.

21 MS. HOLMES-GEN: I'm just wondering if
22 you could comment a little bit. I know that
23 you're using the information that we have at hand,
24 and these are future projections. But it does
25 seem clearly there's a huge wild card in here when

1 we're talking about biofuels. And there are
2 significant use of biofuels projected in these
3 scenarios here.

4 And, you know, there is a wild card, as
5 we are learning more about indirect land use
6 emissions and how to fully estimate the greenhouse
7 gas emissions from these fuels.

8 And so, I mean it just troubles me a
9 little bit, you know, that we're not mentioning
10 that there's definitely some uncertainties here
11 that we're still trying to investigate and
12 understand, to better understand and calculate the
13 emissions from these various types of fuels.

14 MR. BEMIS: Oh, I completely agree with
15 you, that we need to be careful about a lot of the
16 assumptions, including that one. The fuel cycle
17 analysis that I used was from our full fuel cycle
18 analysis report, which was published last year.

19 And I think, as Peter mentioned, we are
20 in the process of updating that work. And as time
21 goes on, we will be incorporating what we learned
22 from doing that into the analysis.

23 This is our best shot for right now
24 given the information that we have available right
25 now. But moving forward I fully expect that those

1 results will be integrated into this analysis as
2 we move along. And this is just what I have
3 available to me right now.

4 So I do expect that situation to change.
5 And I agree with you the indirect effects of land
6 use are a huge wild card.

7 MS. HOLMES-GEN: And just a quick
8 followup. Would we have some type of updated
9 analysis that would include our best understanding
10 of indirect land use before we move any final
11 recommendations for this investment plan?

12 MR. BEMIS: That's really a question for
13 Peter or Michael.

14 MR. SMITH: Well, I think what I'll say,
15 Bonnie, is that we will revise our analyses, as
16 Gerry says, as we get information. We're
17 certainly very sensitive to the huge implications
18 for biofuels.

19 I think both Commissioners, it will be a
20 decision as to how we reflect that in the report
21 that Commissioners Boyd and Douglas will need to
22 make. But they, too, are very sensitive to how
23 this will be reflected in the report.

24 And we don't want to present a
25 prioritization that is misleading in any way. So,

1 we're going to do our best to reflect that. We're
2 not sure exactly how to do that yet, given the
3 state of knowledge.

4 MS. HOLMES-GEN: Okay.

5 MR. CACKETTE: If I could add one thing,
6 you know, this assumes cellulosic processes, which
7 have a 70 percent lower carbon footprint. So, by
8 definition, it excludes any of the -- at least in
9 today's understanding, I think it exclude anything
10 that would be a food-crop-related process.

11 So, I don't know, you know, ultimately
12 cellulosic is somehow blends back into that. But
13 right now I think it's considered to be a separate
14 and distinct animal from corn or sugarcane or
15 anything like that.

16 MR. SMITH: That's a very good point,
17 and I'm glad you mentioned that. But we do still
18 have the issues of biodiesel and renewable diesels
19 that do -- and the indirect issue doesn't go away
20 in that regard.

21 So, it's something we need to consider
22 very seriously and very carefully as we finalize
23 this approach and finalize the investment plan.
24 But I appreciate the concern, the comment.

25 MR. SHEARS: Just as a followup, you

1 know, I was going to ask to clarify. My
2 understanding was, as Tom related, which is E-85
3 is being used to -- or cellulosic is being used to
4 drive ethanol penetration.

5 I'm just wondering, Gerry, when -- I
6 assume there'll be some kind of background writeup
7 to support this stuff. Could you also discuss the
8 supply availability challenges of, you know,
9 producing this much cellulosic ethanol? And how
10 that might reflect upon some of those, you know,
11 penetration scenarios for, you know, for these
12 particular projections?

13 MR. BEMIS: Yeah, I mentioned, I think,
14 at the last meeting that I was concerned about the
15 quantities of biofuels that we were assuming would
16 be available for this analysis. And we still have
17 that concern.

18 We do have some staff work as to ongoing
19 in looking at the adequacy of say instate
20 resources for biofuels and out-of-state resources
21 for biofuels.

22 So, it's something that we are in the
23 process of developing.

24 MR. COLEMAN: So, one more question on
25 this. Is this going to be used, this analysis,

1 this scenario, going to be used to reverse
2 engineer or to -- I think we talked earlier about
3 reverse engineering allocations. Is this part of
4 what will influence that reverse engineering?

5 MR. BEMIS: Yes, I've got another slide
6 to show in a few minutes.

7 MR. COLEMAN: Okay. So, I guess what
8 I'm getting at is I think that the question about
9 biofuels is indicative of the fact that we'll
10 probably have those questions about every single
11 one of these new technologies.

12 I mean today biofuels is a tempest in a
13 teapot, but you know, when we start trying to go
14 to other cups of technologies, these same
15 questions will be raised.

16 So, you know, it could be what kind of
17 profile the electric grid has when we're doing
18 plug-in electric vehicles. You know, it could be
19 any number of these things that we haven't done
20 LCAs on.

21 So I guess the question is when we get
22 to the point of reverse engineering, the
23 allocations, is there going to be an opportunity
24 to talk about how this might or might not, or
25 should or should not actually influence that type

1 of allocation.

2 Because it seems to me that we need to
3 think about how to set the standard such that
4 people are actually proving their carbon profile,
5 regardless of technology, rather than making
6 assumptions about the averages of those
7 technologies, and then driving where we allocate
8 our funds.

9 MR. BEMIS: That's a question for Mike
10 or Peter, again.

11 MR. SMITH: Well, I guess I'm going to
12 ask you if you could clarify what you mean by the
13 standard. There's, what we're trying to
14 accomplish here is to develop a methodology that
15 shows the relative contributions to reducing
16 greenhouse gas emissions among the various fuels
17 that will be available to the state for the
18 future.

19 Not quite sure how any standard plays
20 into that. That's not our purpose here, is to set
21 any standard, or to have --

22 MR. COLEMAN: So what I'm getting at is
23 this is really just one scenario example. There
24 could be hundreds of different examples where you
25 get to the same level using different ratios of

1 different technologies in this --

2 MR. SMITH: That's correct.

3 MR. COLEMAN: -- assumptions. And, as
4 Gerry pointed out, most likely by the time we get
5 there there'll be a whole other set of
6 technologies that are in this graph that we
7 haven't even dreamed up yet.

8 MR. SMITH: Absolutely.

9 MR. COLEMAN: And so, you know, to
10 predict what it'll be in 2050, and then reverse
11 engineer or allocations based on that could
12 essentially send us down a course where we just
13 allocate funds to things that'll never be used,
14 because ultimately there'll be some other
15 technology that is far better than what we're
16 allocating our funds towards.

17 And so, you know, what I'm wondering is
18 how we create a methodology of allocation that
19 allows us to reward the best-in-class technologies
20 as they emerge. Because, you know, we can bet on
21 today and tomorrow with pretty good vision on it,
22 pretty good clarity in what those technologies are
23 then. But even within two years we don't have
24 that much clarity.

25 So, --

1 MR. SMITH: And part of the beauty of
2 the process set up in AB-118 is that this plan is
3 to be updated annually.

4 Now, granted, I think we've reached
5 agreement with the committee that the -- the
6 advisory committee, that this initial plan will
7 cover the first year and a half. So the first two
8 fiscal years.

9 But there's nothing that prevents us
10 from reevaluating the process and this
11 methodology, reevaluating the plan and the
12 priorities and opportunities we identify in the
13 plan each and every year moving forward.

14 In fact, the law insists that we do.
15 And so we will continue to refresh this analysis
16 as information is updated.

17 But, yes, you're correct, Will. I mean
18 your concern about looking 42 years into the
19 future based on technology today presents a
20 certain risk as to whether or not we've guessed
21 right.

22 And I think we can almost be assured
23 that we will not have guessed right. Our children
24 will look back in 2050 and, what were they
25 thinking. But it's the best information we have.

1 And we've been asked to make these projections and
2 identify these relative contributions based on the
3 best information we have.

4 And so this sort of input is important,
5 but we have to paint some sort of picture that
6 gives us our initial allocation and initial
7 prioritization for the funds. It's a balancing
8 act.

9 MR. COLEMAN: Yeah, I agree with that.
10 I think the one thing that I would say also in
11 terms of the short term, is that I think when we -
12 - if you went back about six slides you would have
13 a stack of averages for each type of technology in
14 terms of their greenhouse gas reduction
15 potentials.

16 And, you know, in some ways that's what
17 we're choosing, that's what we're using today and
18 tomorrow to do these allocations. But there are
19 huge error bars around that. Because, you know,
20 you look at everything from, you know, just take
21 cellulosic biofuels, for instance.

22 It's not, you know, a technology comes
23 in tomorrow and makes a proposal for funding from
24 this group, and it's not sure that they're going
25 to have a 70 percent reduction. They could have,

1 you know, a 50 percent reduction depending on the
2 technology. Or they could have 120 percent
3 reduction depending on the technology.

4 So I think the risk is that we can use
5 averages and we can try reverse engineering, but I
6 think we have to figure out in the methodology how
7 to leave it open to the technologies that are
8 coming in the door to prove what their actual
9 lifecycle emissions are.

10 And so if we can figure out how to do
11 that, and I don't know if this is the forum to
12 discuss that further, but it may be the next
13 investment plan meeting or it may be comments that
14 happen off, you know, off the, you know, out of
15 this forum.

16 But, some guidance on maybe we should
17 address that, or how we should address that would
18 be helpful.

19 MR. SMITH: I think raising it right now
20 is important. Probably the most appropriate forum
21 for a protracted discussion on that is going to be
22 the next advisory committee meeting. It will give
23 us an opportunity to go back to our drawing board.

24 And we think, based on this sort of
25 input, how do we reflect that uncertainty. And

1 how do we reflect technological evolution that
2 will no doubt occur. And will no doubt make this
3 analysis obsolete in a couple years.

4 That's just the nature of the game and
5 we admit to that.

6 MR. COLEMAN: Okay, great, thanks.

7 (Parties speaking simultaneously.)

8 MR. CACKETTE: I just wanted to give a
9 little bit different take. I agree a lot with
10 what Will says, we're not going to really know
11 what's out there in 2050.

12 But, you know, this is about
13 prioritization. And I think what the real
14 challenge for the Energy Commission and the
15 advisory committee is to try to establish
16 priorities that put us on paths that have the
17 potential to get to 2050.

18 And something that has a reduced carbon
19 footprint of 20 percent today, you know, something
20 like a nonpetroleum fuels, and is not going to
21 allow us to get there. And so putting a lot of
22 effort into that, it just simply doesn't -- 20
23 percent doesn't look like 80 percent. And that's
24 the kind of reduction we need.

25 So, while some of these other ones, like

1 you mentioned cellulosic, have a big error bar
2 around them, there's at least an argument that
3 they could play a significant role because they
4 have a reduced carbon footprint potential of 80,
5 90 percent.

6 And so, you know, in a priority scheme
7 you would tend to want to invest in those to at
8 least narrow the error bar. And you would tend to
9 want to not invest in those that inherently have a
10 lot of carbon in them that cannot, in our current
11 vision, at least, be envisioned to ever get a 60,
12 70, 80, 90 percent intensity reduction.

13 So, it's almost more like what has the
14 potential and what doesn't have the potential, and
15 give a low priority to those that have little
16 potential, and higher priority to those that have
17 a larger potential.

18 I think that's the way I look at it.
19 It's not really what are we doing today, but what
20 is the potential.

21 MR. SMITH: And that's hopefully where
22 we'll end up, where we see allocation relative to
23 greenhouse gas reductions. Those become the areas
24 where we want to focus and give priority to.

25 I think we want to continue to have a

1 portfolio approach to this. But the whole point
2 of this is to prioritize. And you're absolutely
3 correct, Tom, it's still looking 42 years in the
4 future, but we have to start somewhere and we have
5 to start to make prioritizations based on the best
6 knowledge we have at the time, current knowledge.

7 MR. COLEMAN: And let me just clarify.
8 I agree with that, if you need to set on a course,
9 we need to actually have priorities in this
10 process. I just want to make sure that we're
11 aware of the fact that we are using inexact
12 averages and assumptions in setting those
13 priorities. And we need to make sure that there's
14 some mechanism that exceptions can also be
15 allocated to them.

16 And also, you know, if we find that
17 biofuels is not a priority, or if we find that
18 plug-in hybrid electric vehicles is not a
19 priority, we need to have some mechanism of
20 exception where if, in fact, someone can show that
21 it does have very high reductions for low cost,
22 that that can, in fact, receive funding.

23 MR. COOPER: This is Peter Cooper with
24 the Labor Federation. While I agree we need to
25 set priorities, and priorities also need to be

1 cognizant of the labor market realities and if the
2 skills, workforce skills are in place to actually
3 make it practical to have such a focus and
4 prioritize in such a manner.

5 So as we move forward, as we do this
6 reverse engineering, I think it would be
7 worthwhile to also consider not just the
8 population, but the working population forecasts.
9 And to keep that in the back of our minds.

10 MR. SHEARS: Yeah, but I'd like to offer
11 just a few obviously observations, not to keep
12 dragging this out, but I look at, you know, venues
13 like this as think tanks. And I think, you know,
14 this process is very valuable. Not just for this
15 year's investment plan, but also in the coming
16 years.

17 I just want to, you know, sort of also
18 support, you know, Tom's queries about sensitivity
19 analysis and Will's comments in terms of, you
20 know, recognizing the limitations of the
21 assumptions.

22 And so I hope that, you know, through
23 the support of the work that the staff are doing,
24 and the conversations, the discussions that we'll
25 be having in other staff workshops and other

1 advisory committee meeting that we can explore
2 more some of these issues. So that when we are
3 making recommendations we're making them with
4 transparent recognition of the limitations for
5 some of these.

6 So I think the discussion today, we're
7 sort of raising things, is raising that we sort of
8 maybe need to have a little more of that
9 discussion so that everyone can have a comfort
10 level with, you know, what the bounds are on some
11 of these storylines and pathways.

12 So, we can have hopefully consensus
13 moving forward in how to use these scenarios for
14 the portfolios that we're going to be funding.

15 MR. BEMIS: Bonnie.

16 MS. HOLMES-GEN: Thank you. A question
17 and a comment. The question, so we're trying to
18 get to 40 percent of the fuel mix for --

19 MR. BEMIS: I've got some slides to show
20 on --

21 MS. HOLMES-GEN: -- electric drive, I
22 mean, is that --

23 MR. BEMIS: I have got some slides to
24 show you.

25 MS. HOLMES-GEN: Okay. Well, here's --

1 what I wanted to get to is at what time would be
2 the appropriate time to talk more about my
3 perceived -- the need I perceive to make the
4 vision more aggressive in the area of electric
5 drive vehicles.

6 And we talked about that last time. And
7 since we're going to be using these scenarios for
8 reverse engineering, I wanted to have that
9 discussion at some point. So I don't know what
10 would be the appropriate time to do that.

11 MR. BEMIS: Okay, --

12 MR. SMITH: Gerry has just a few slides
13 to conclude, and then I think you'll see towards
14 the end there's a real opportunity to introduce
15 that topic.

16 MS. HOLMES-GEN: Okay.

17 MR. BEMIS: And also the market
18 penetrations are based upon the storylines
19 developed by staff. And to the degree that we
20 have a greater reliance on electric drive
21 vehicles, that's the red bars there, we could
22 displace more gasoline vehicles, and that's the
23 green bar which we need to lower.

24 So, I agree with you that further
25 increasing the penetration rate would, in fact,

1 get us in the right direction.

2 I was kind of moving a little bit fast
3 earlier, and I neglected to state what the basis
4 was for the electricity portion of the battery
5 electrics and the plug-ins. And that was a
6 comment that Will made, I think, earlier.

7 What I did was I used the scenario
8 projects option number 4A, which is part of our
9 2007 Integrated Energy Policy Report. It's one of
10 the more aggressive, but not the most aggressive,
11 option. And that was for the 2009 to 2020 period,
12 starting out at around 900-ish pounds of carbon
13 dioxide per kilowatt hour, I think were the units.
14 And then getting down to an average, statewide
15 average of about 595 pounds of CO2 per kilowatt
16 hour. Again, if I remember the units and the
17 numbers properly.

18 Then for 2030 out to 2050 I leveled it
19 off at 500, from 595. And I just used a
20 rounding -- just rounded off in between the
21 transition from those two. Because it couldn't
22 keep going down forever.

23 So, I used essentially scenario 4A from
24 our scenarios project, and leveled it off to 500
25 pounds. I could have gone down to 450 or

1 something like that. It would change a portion of
2 the red bar, it wouldn't change it very much. I
3 don't think it's a sensitive assumption.

4 But it does have an implied resource mix
5 associated with that, and I don't know what that
6 is off the top of my head. But I'm sure it
7 includes things like photovoltaics and wind, as
8 well as it could include some biomass. But I
9 don't have those numbers.

10 MR. SMITH: Gerry, doesn't that scenario
11 also assume something pretty close to a 33 percent
12 RPS?

13 MR. BEMIS: It's the one that gets the
14 closest to the 33 percent in 2020 I think it was.

15 MR. SMITH: It's a pretty aggressive
16 scenario.

17 MR. BEMIS: Pretty aggressive scenario.

18 MR. SMITH: Which gets back to the
19 issue, and I'll just make the point again. That
20 when you have this sort of aggressiveness in terms
21 of the electricity sector, it creates a demand for
22 the biomass, for the renewable resources, to the
23 extent that renewable resources is made up by
24 power plants fueled by biomass.

25 Now we have a competing demand for the

1 biomass that could take away from biomass
2 available for transportation fuels. Or even the
3 production of biogas for thermal purposes.

4 So we're actually trying to go through
5 this of looking at what these competitive or
6 competing demands are. And to try and paint a
7 clear picture about what limitations there might
8 be on biomass resources.

9 Because clearly built into this analysis
10 are some very aggressive uses of biomass resources
11 for fuels. So, we have to be very careful.

12 MR. BEMIS: So, for clarification, Jim
13 just mentioned, whispered in my ear per megawatt
14 hour, I think he said. So it goes down from
15 somewhere on the order of 900-and-something pounds
16 of carbon dioxide per megawatt hour to 595 in
17 2020. And then I rounded it off to 500 for 2030
18 to 2050. Pounds of carbon dioxide per megawatt
19 hour. Thanks, Jim.

20 Okay, so now here are the new vehicle
21 sales by class of vehicles. Notice that the
22 orangish, yellowish-orange line is real thin. You
23 can barely see it. It's between the green and the
24 bright blue.

25 Somewhere on the order of 50 percent of

1 the vehicles on the road are for sale. The new
2 vehicles for sale in 2050 would be the super ultra
3 low vehicles, essentially electric drive vehicles.
4 And notice the number is a little bit over 3
5 million now, 3.1 to 3.2. As we talked about
6 earlier, it's not 3.9.

7 And there's a fair amount of diesel
8 vehicles and a dwindling number of gasoline
9 vehicles. So we're pushing the gasoline vehicles
10 out and replacing them with the flex-fuel vehicles
11 and the electric drive vehicles.

12 MR. GARDARET: Gerry, can I ask a
13 question about that? Just looking at those
14 vehicle sales, it looks quite dramatic and quite a
15 rapid changeover in terms of the new vehicles.
16 And in comparison with the total stock in the
17 graphs we've seen before, it just sort of jumps
18 out that the question is how quickly that stock
19 turns over.

20 Do you have sort of a fixed assumption
21 about the lifetime of a vehicle? And does that
22 change over time? And I guess in line with that,
23 are there any scenarios where we do conversions of
24 the least efficient vehicles, or some kind of
25 retrofit programs in addition o focusing on new

1 vehicles?

2 MR. BEMIS: These are new vehicle sales,
3 which could be retrofitted vehicles. But they're
4 really modeled as if they were new vehicles.

5 What I have in the spreadsheet is I have
6 a tab for every model year between 2005 and 2050.
7 And on each tab I have the usage rate of the
8 vehicles that are in that model year. As they
9 decay over time, I have a decay function that I
10 use. So that a vehicle that's one year old gets
11 something like 90 percent of the vehicle miles
12 traveled as it did when it was new. And that
13 decays over time over about 15 or 18 years, I
14 forget the number of years.

15 But towards the end there, operating a
16 very low percentage of the hours, if you will, of
17 the miles they were when they were new. So that's
18 how I do that. And I do that for every model year
19 and for every year of operation.

20 And the some that report the quantity of
21 the fuel that's used in a given year is based upon
22 the vintaging, if you will, of those vehicles.

23 MR. COLEMAN: Gerry, what's the big jump
24 in 2012 for ultra low carbon vehicles based on?

25 MR. BEMIS: 2012, what's the big jump.

1 MR. COLEMAN: The light blue.

2 MR. BEMIS: -- the light blue, I don't
3 really know off the top of my head why that jumps
4 there. Some of that early startup year stuff -- I
5 look at this graph and says, what's the step, why
6 does the green step down from 2011 to 2012, which
7 is the same question you're asking.

8 And it's because of the ultra low carbon
9 vehicles and I don't recall why. There's a fuel
10 switch when we go to E-10; that might be buried in
11 the -- no, that wouldn't be in the ultra low
12 carbon vehicles. I don't know.

13 Pavley kicks in starting in 2010 to
14 2016, doesn't it. But I don't think that one-year
15 step would be explained by Pavley. I don't really
16 know.

17 Moving right along, here is all vehicles
18 on the road, and the fuel that they are using for
19 each year. And you can see the gasoline pool
20 declines, the diesel pool. You can see here
21 diesel and biodiesel, if you look closely enough,
22 right above the purple is a turquoise-ish bar.
23 And that's the biodiesel. And above that is the
24 thin yellowish line, it's the nonrenewable. It
25 separates the nonrenewables from the ultra low

1 carbon. That's basically E-85 in the bright blue
2 where the vehicles operate up to half the time on
3 E-85.

4 I looked at these percentages of these
5 for the various years to see how close this
6 matches with what's in the 2050 vision. And
7 they're kind of close. I didn't bring that table
8 with me, but I compared.

9 There was an expression of what the
10 vehicle penetration, the fuel mix would be in 2050
11 and 2030, and I don't know, 2022. And I went back
12 and compared these percentages and they're
13 consistent, they're not exactly the same. In some
14 cases they are exactly the same.

15 But what I do remember is in 2050 it was
16 40 percent. So that red bar is 10, 20, 30, looks
17 like about 35 percent if you count down from the
18 top, looks like it's about 35 percent instead of
19 40 percent right here in the transition between
20 the bright blue and the red.

21 And then this was about 30 percent, the
22 ultra low carbon vehicles. And this was about 30
23 percent. The intermediate years were even closer.
24 But this, again, the market penetrations are based
25 upon the storyline vehicles here.

1 And this is just a side shot of the
2 ultra low carbon vehicles that are broken down
3 into plug-in vehicles, battery electrics and fuel
4 cells. And you can see that the greenish bars are
5 the plug-ins. Over time the battery electrics
6 capabilities get better and better and the plug-
7 ins give way, they give market share to the
8 battery electric vehicles, as shown by these
9 graphs.

10 It doesn't show up on the photocopy
11 version very well. You can't tell the difference
12 in the bars, but this shows it pretty well.

13 The last meeting there was a question
14 about well, what kind of volumes will we expect
15 retail stations to be pumping. So I added this
16 slide. It's not in your handouts, because I just
17 remembered it this morning.

18 But these are sales volumes expressed in
19 physical volumes. In other words, that the ULC
20 vehicles are volumes of ethanol, E-85, and the
21 hydrogen is shown as a liquid hydrogen over here.

22 So you can see that the quantities that
23 would be pumped at the retail station are on the
24 order of 16 to 17 in the 2006 to 2010 timeframe.
25 And then decline and level off at somewhere around

1 12 billion gallons out through the 2030s, and then
2 decline a little bit after that.

3 MR. SMITH: Gerry, could you go back a
4 slide, please.

5 MR. BEMIS: Like that?

6 MR. SMITH: The plug-in hybrids, the
7 fuel, is that gasoline, plug-in hybrids?

8 MR. BEMIS: These are fueled with E-85.
9 The nonelectric portion of the trip I assumed that
10 we've got E-85 for FFVs, why don't we use it for
11 our plug-ins. And so I used -- I tried to get the
12 emissions down as far as I could. And this was
13 one of the ways I did that, was assuming that
14 these were fueling with E-85.

15 Again, 50 percent of the trips are
16 fueled with E-85 out in the later years.

17 Okay, this is kind of a summary of the
18 changes since our last meeting. First of all, as
19 we talked about, I corrected the business-as-usual
20 projected vehicle miles of travel. Then I reduced
21 new vehicle sales numbers to keep the VMT per
22 vehicle constant. We already talked about that.

23 Before I used a generic super ultra low
24 carbon vehicle getting a 90 percent reduction in
25 carbon intensity. Now I'm using storyline market

1 penetrations for flex fuels, for plug-ins, for
2 battery electrics and fuel cells. So that should
3 say ultra low carbon and super ultra low carbon
4 vehicles on that third bullet. They use storyline
5 market projections for the flex fuel, plug-ins, et
6 cetera.

7 More changes. I used the fuel cycle
8 analysis for each of the specific vehicle types
9 instead of the generic SULC vehicles. I used
10 biodiesel to displace petroleum diesel based upon
11 our estimated light-duty biofuel supply. And that
12 was a suggestion made at the last meeting. And I
13 reduced the tire efficiency, the effect of the
14 tire efficiency program to 1 percent.

15 Bottomline. This represents the
16 reductions that I came up with for each one of
17 these vehicle categories. One that I hadn't
18 talked about before, because I didn't have time to
19 prepare the graphic, was we assumed some fuel
20 economy improvements.

21 We separated out fuel economy
22 improvements that could be attributed to just fuel
23 economy improvements, going from 40 miles per
24 gallon to 60 miles per gallon. And that's that
25 upper light blue bar. Figuring that the market

1 would achieve 40 miles per gallon by 2030. And
2 that we could influence to get from 40 miles per
3 gallon to 60 miles per gallon as part of our
4 program.

5 So you can see that the bottom bar is
6 the low carbon fuel standard. Now, not all of
7 these categories will be in the AB-118 investment
8 plan, but these are what I included in my
9 assessment so that we could come up with what the
10 AB-118 portion would be. And then see how close
11 we get to the 2050 goal.

12 So you can see that the low carbon fuel
13 standard is the bottom vertical bar. Next is the
14 tire program, which I mentioned was about 1
15 percent. Then in the middle blue color there, or
16 green color there, is the ultra low carbon
17 vehicles. And the biodiesels are in the light
18 green above that. And then the color you can't
19 even see, the red, are the nonrenewable
20 alternative fuels, again propane and CNG. And,
21 again, those are really small because the market
22 penetration is really small.

23 Next up is the super ultra low carbon
24 vehicles. And above that is the fuel economy
25 improvements. And at the last are VMT reductions.

1 So, basically to stop here for a second.
2 The approach that we're considering is to take the
3 areas expressed by these that are eligible for the
4 AB-118 program, and figure out a proportion of the
5 reductions that would accumulate over time out
6 through 2050 from each one of these categories
7 that we're including in the analysis.

8 And if there's any remaining questions
9 beyond what were expressed --

10 MS. HOLMES-GEN: Could you put that
11 slide back --

12 MR. BEMIS: Yes.

13 MR. SMITH: Did you have a question?

14 MS. HOLMES-GEN: I just wanted to see --

15 MR. BEMIS: Oh.

16 MR. SMITH: Go ahead.

17 (Parties speaking simultaneously.)

18 MR. CACKETTE: Gerry, can you explain
19 the fuel economy improvement part? Because, you
20 know, there's fuel economy improvements starting
21 in 2009, if I've got the right color there. Maybe
22 I don't, but --

23 MR. BEMIS: You don't.

24 MR. CACKETTE: -- i shows it as 2030.

25 MR. BEMIS: Yes. Oh, yes, that's what

1 we used.

2 MR. CACKETTE: Because I don't --

3 MR. BEMIS: Well, I --

4 MR. CACKETTE: -- fuel economy
5 improvement versus the ones that are occurring in
6 the baseline or before.

7 MR. BEMIS: Those are already cranked
8 into the baseline. Because of Pavley and all,
9 that's already in the baseline. And, again, we
10 don't want to double-count. So if I included
11 those I'd be double-counting. This is just
12 additional, going beyond 40 miles per gallon, out
13 to 60 miles per gallon. And, again, I started it
14 in 2030.

15 So, yeah, these are not all the fuel
16 economy improvements we expect. These are just an
17 increment of fuel economy improvement going from
18 40 miles per gallon out to 60 miles per gallon.

19 And I didn't have a slide on emission
20 reductions for that one.

21 MR. SHEARS: You know, this -- since
22 we're talking Pavley, I just want to also remark
23 that a lot of the analysis has been focused on
24 based upon getting reductions from reduced fuel
25 use and CO2 generation, or CO2 equivalent

1 generation from fuels.

2 And I'm just curious whether staff has
3 been looking at any of the other components,
4 Pavley-like components, for getting reducing GHGs
5 from transportation technologies.

6 MR. BEMIS: Such as?

7 MR. SHEARS: Right now this is -- you
8 know, I just sort of want to raise the -- a lot of
9 the focus has been on, basically on the fuel
10 approaches, those vehicle technologies, as they
11 relate to fuels. But I'm just wondering if there
12 are any low-hanging fruit out there.

13 You know, Tom has -- I don't want to put
14 Tom on the spot here, from the ARB, but is there
15 anything out there that could be using support
16 that maybe should be looked at in some of the
17 analyses. You know, other --

18 MR. CACKETTE: Well, I'm still
19 struggling here with this fuel economy
20 improvement, because what's the fuel economy
21 assumption for the purple vehicles which start
22 having a significant penetration in 2020?

23 MR. BEMIS: Some of those are 60 miles
24 per gallon, some of those are 80 miles per gallon.
25 The light blue is going up to 60.

1 MR. CACKETTE: So does that only apply
2 then to gasoline vehicles?

3 MR. BEMIS: No. It applies to all the
4 vehicles. It applies to all the vehicles, but
5 only for that portion going from 40 to 60.

6 MS. HOLMES-GEN: So are there some
7 electric or super ultra low carbon in that
8 category then?

9 MR. BEMIS: Yes.

10 MS. HOLMES-GEN: So then the purple
11 doesn't reflect all the super ultra low?

12 MR. BEMIS: Correct. In looking at it
13 that way, that's true.

14 MR. CACKETTE: So before 2030 if you
15 have a plug hybrid electric vehicle, it's fuel
16 economy is better than 40, between 20 30 or not?

17 MR. BEMIS: There's a transition period.
18 The 60 miles per gallon is the value for 2050.
19 And there's a transition period. And frankly, I
20 don't remember where that transition started. I
21 don't think it started before 2030. I think it
22 was in 2030 to 2050, now that I think about it.

23 MR. CACKETTE: So you need to go back
24 and look at whether there's -- whether the picture
25 being portrayed is that for at least conventional

1 technologies, that the efficiency of the vehicles
2 stalls in 2016, the end of Pavley-1, and doesn't
3 change again until 2030. Or whether there's some
4 transition for those vehicles. And whether those
5 technologies also get translated into vehicles
6 like plug hybrid vehicles or the biofuel vehicles,
7 as well.

8 MR. BEMIS: I think, I may have to ask
9 Malachi to pay attention here for a second. The
10 question has to do with the fuel economy of the
11 vehicles from 2016 out to 2030.

12 I think the fuel economy of those
13 vehicles does improve over time based upon what's
14 in the CALCARS model.

15 MR. WENG-GUTIERREZ: Yeah, would say
16 that they would be improving (inaudible).

17 Malachi, again. Yeah, they would
18 continue to improve over those four years between
19 2016 to 2020. Actually you were saying 2030 --

20 MR. BEMIS: 2030 is the question.

21 MR. WENG-GUTIERREZ: Yeah, and again, it
22 would improve over that timeframe mostly because
23 of the vehicle offerings. The vehicles being
24 offered in the marketplace would be higher fuel
25 economy in general. And then the transition in

1 the marketplace would be from vehicles that had
2 less efficiencies to those with greater
3 efficiencies.

4 MR. BEMIS: So that's built into the
5 forecast already. As is the Pavley change.

6 MR. CACKETTE: I'm wondering what the
7 sensitivity is if you assume that all of the
8 liquid fuel burning vehicles, which would be the
9 conventional and the plug hybrids when they're not
10 on electricity, is if you assume that by 2030
11 they're all 60 miles per gallon vehicles. And I'm
12 talking about the nonelectric part of a plug
13 vehicle, --

14 MR. BEMIS: Right.

15 MR. CACKETTE: -- conventional vehicles.
16 Rather than starting it off at 2030. This sort of
17 implies, and I knowing CALCARS a little bit, it
18 sort of implies that a general market consumer
19 choice to buy a little bit more efficient vehicle
20 starting in 2016. And, you know, doesn't really
21 put us on a rapid change where we're planning
22 Pavley-2, which is going to take the close to 40
23 miles per gallon vehicles and probably bump them
24 up at least 10 miles per gallon equivalent by mid
25 2020s.

1 MR. BEMIS: So, what I --

2 MR. CACKETTE: -- consistent with that,
3 or do you think it's more conservative than that?

4 MR. BEMIS: It might very well be more
5 conservative. Maybe Malachi can chip in here.
6 But what I did was I used the CALCARS model for
7 2008 out to 2030. And I extended it out to 2050
8 using the 10,300, et cetera, assuming that the
9 consumer choices were frozen at their 2030 level.

10 So that during from today out to 2030
11 there was an evolution, if you will, of the fleet
12 average miles per gallon fuel economy. And then
13 under business-as-usual I held that constant from
14 2030 to 2050.

15 MR. WENG-GUTIERREZ: But then you did
16 add the fuel economy gain from 2030 to 2050,
17 right? Which is reflected in that light blue
18 between --

19 MR. BEMIS: Correct.

20 MR. WENG-GUTIERREZ: Yeah.

21 MR. BEMIS: So part of the vision was
22 that vehicles would achieve a 60 miles per gallon
23 fuel economy in 2050 for the ultra low carbons,
24 and the super ultra low carbons would achieve 80
25 miles per gallon fuel economy.

1 If you go back and re-read the vision
2 statement, it says gasoline vehicles achieve 40
3 miles per gallon. So we went up to 60 miles per
4 gallon to try to squeeze it down as much as we
5 could. And that's what I'm trying to show here.

6 MR. CACKETTE: What may be triggered is
7 that when other analyses like this have been done,
8 what it shows is that because of fleet turnover
9 you've got to have the most efficient vehicles and
10 the significant use of the low carbon intensity
11 fuels, you know, 15 or 20 years before 2050 in
12 terms of the new car availability. So that the
13 fleet can actually turn over to all those types of
14 vehicles.

15 And this sort of shows that, I think it
16 shows that you're really still doing a lot of
17 improvement in efficiency over that last 20 years,
18 rather than trying to get that efficiency before
19 2030 or 2035.

20 MR. BEMIS: Yeah, this slide that I
21 flipped back to shows that at least for the super
22 ultra low carbon vehicles that's why it builds up
23 in the 30s, so that by the time it gets to 2050
24 they are a significant fraction of the fleet of
25 actual mileage traveled.

1 So I agree with you that you've got to
2 get them in early in order to get their benefits
3 in 2050, which is really what you just said.

4 Going back to this, there is a
5 continuing improvement in the fleet average fuel
6 economy over the 2008 to 2030 time period to get
7 to the levels that they get to. And I assumed
8 that that was fleet average of 40 in 2030 was
9 incorporated. And getting from 40 to 60, that's
10 the light blue.

11 So there is a continuing improvement in
12 fuel economy over time, Tom.

13 MR. CACKETTE: But what I'm saying is,
14 though, if that was occurring between 2020 and
15 2030, then the green line would -- the green line,
16 in terms of vehicle emissions, --

17 MR. BEMIS: Yeah.

18 MR. CACKETTE: -- would go down, which
19 is what your objective is, is to try to shrink the
20 green line, because it almost eats up the
21 available 2050 emissions by itself.

22 MR. BEMIS: Yeah, I think fuel economy
23 improvements are good. And if we pushed harder we
24 could get those numbers lower.

25 MR. CACKETTE: Well, based on what you

1 said, I think you under-predicted what can be
2 done. Because at least under Pavley-2, which
3 we're planning on doing, it would be more than I
4 think what you assumed there, starting in 2017,
5 phased in, you know, over about four years. So
6 2020 and beyond would be better than what the
7 baseline is for the conventional vehicles. And
8 I'm not sure that I see that.

9 MR. BEMIS: Yeah, I don't know what you
10 guys are doing for Pavley-2. So I don't know that
11 that's -- hasn't been shared with me, at least.

12 MR. CACKETTE: Well, read the scoping
13 plan, it's in there.

14 MR. BEMIS: Okay. I haven't read it.

15 Okay, I do want to show one -- I'm
16 pretty much -- Bonnie?

17 MR. HAYES: Just one question. Are you
18 assuming any particular mix of technologies within
19 the low carbon fuel standard? You have that line
20 there.

21 MR. BEMIS: The nonrenewable alternative
22 fuels are part of the low carbon vehicles. And
23 they're, again, a fairly small market penetration.
24 A very small market penetration.

25 MS. HOLMES-GEN: So for that blue

1 swath --

2 MR. BEMIS: The blue swath --

3 MS. HOLMES-GEN: At the bottom. You
4 said it's low carbon fuel standard.

5 MR. BEMIS: Yeah. Oh, excuse me, the
6 low carbon fuels is what it should say. Fuel
7 vehicles is what it should say.

8 Oh, no, this is the effect of the low
9 carbon fuel standard, sorry. Sorry.

10 MS. HOLMES-GEN: So it's -- just
11 assuming it's successful; there's no specific mix
12 of technologies that are attached to it?

13 MR. BEMIS: Yes, that's correct. I
14 assumed that whatever we're doing is in addition
15 to whatever is done to meet the low carbon fuel
16 standard, if it's biofuels or whatever it is.
17 Maybe that's a better way to answer your question.

18 MR. SHEARS: Right. And I just want to
19 sort of revisit sort of that we recognize that
20 when we're talking about reducing GHGs from
21 transportation, granted, you know, some of these
22 other were just, you know, were part of Pavley,
23 the Pavley rulemaking don't generate huge numbers
24 necessarily, but just want us to recognize that
25 when we're talking about getting GHGs down in

1 transportation there are other things that can be
2 done in terms of refrigerants and, you know,
3 aerodynamics and all the rest of that.

4 So, probably when we get to 2050 what
5 we're going to discover is, again, it's the silver
6 buckshot -- a few silver bullets. And so just
7 want to be cognizant that this program may have to
8 also be thinking about some of those other
9 technologies in that there still may be some low-
10 hanging fruit to get, you know, some additional
11 marginal reductions that can contribute to what
12 the picture's going to look like down the road on
13 this.

14 While I admit that we need to be
15 focusing on some pathways that are going to help
16 us insure that we can get some really big
17 reductions.

18 MR. BEMIS: You know, the 80 percent
19 reduction is a huge huge change. We need
20 everything that we can to get there as a society.
21 We need to do everything we can to get there. And
22 this is just my best shot at what we could do with
23 light-duty vehicles.

24 And I apologize, Tom, I haven't read the
25 scoping plan. I'll have to go back and look at

1 that and see if there's anything in there that I
2 should have included.

3 MR. CACKETTE: Yeah, well, I think there
4 is because what's planned in there would, I think,
5 come close to doubling the baseline benefits of
6 Pavley-1 by 2030 or so.

7 MR. BEMIS: Do you recall how much
8 reduction you get from Pavley-1?

9 MR. CACKETTE: Yeah, 27 million metric
10 tons.

11 MR. BEMIS: So we go from, say, 25 to
12 50 --

13 MR. CACKETTE: -- 20-some million metric
14 tons in 2030-ish timeframe just as the baseline.

15 MR. BEMIS: Okay. Let me -- I think
16 that's it. I do want to show -- I didn't -- I
17 want to show this one graph. The blue line here
18 shows the assumption about the vehicles that are
19 using E-85 rather than gasoline for the flex-fuel
20 vehicles. And we talked about that before.
21 Levels off at 50 percent in the mid 2020
22 timeframe.

23 I didn't talk about this, but the green
24 bar on top, the line on top shows the plug-ins
25 operating what part of their range do they operate

1 as zero emission vehicles starting at 40 percent
2 in 2012 and gradually getting up to 80 percent by
3 2050, staff estimate.

4 So I used that in the analysis, also,
5 that by 2050 they're -- batteries have improved so
6 that they are operating as equivalent to ZEVs by
7 about 80 percent of the trips. And I kind of
8 forgot to mention that earlier. So, carbon
9 intensities.

10 Again, the 80 percent for the
11 nonrenewables, that orangish line there.

12 So, if there's any questions anybody has
13 that they want to ask now or later or any time in
14 the future, there's my email, there's my phone
15 number, I'd be glad to take questions.

16 Thank you.

17 MR. CACKETTE: I just want to say this
18 is really helpful, this kind of stuff we need to
19 be looking at, I think, to help shape the plan.

20 MR. BEMIS: Yeah. My intent with this
21 is to try to be as transparent as possible.
22 There's a lot of details I have to go through to
23 do the analysis. And I'm sure there's other
24 assumptions that could be made here and there.

25 But I'm trying to shed some light on

1 what we had done in the effort to explain where we
2 got where we got. The bottomline for me is that
3 graph.

4 MR. WARD: Thank you, Gerry. Next we'll
5 hear from Malachi, but while Malachi gets up there
6 I'd like to encourage everybody from the advisory
7 committee to provide Gerry the comments that he
8 seeks, if not in this forum, email or another
9 forum. Because we are working hard to present
10 this in the best way we can and your comments are
11 very useful. And your advice is, as well.

12 That's for the stakeholders, the
13 advisory committee and the public, as well.

14 Malachi.

15 MR. WENG-GUTIERREZ: Thanks, Peter.
16 Good morning. I am going to go through the
17 medium- and heavy-duty greenhouse gas emission
18 calculations that we've done. I used a very
19 similar methodology to Gerry, and I tried to be
20 consistent with all the carbon content and all the
21 calculations.

22 So I won't be going over most of the
23 early methodology slides that he had in his
24 presentation. I'll be basically going to the
25 calculations, themselves, and the results.

1 So, I just wanted to highlight some of
2 the changes that I made since the last meeting.
3 Basically I've updated all the alternative fuel
4 displacements. Staff had provided me with
5 additional displacement and calculations and
6 assumptions. And I've incorporated those into the
7 results you'll see in the following slides.

8 In addition I added rail consumption and
9 the emission footprint from the rail sector, and
10 I'll show that, as well, in the slides coming up.

11 And then I made all of my carbon content
12 values consistent with what Gerry had been using.
13 One of the major ones was the electricity carbon
14 content. And that was what he described before,
15 using that case 4A from the scenario project.

16 And then the last item here is that I
17 added offroad emissions to the goals. And so that
18 raises the goal slightly and better reflects the
19 offroad emissions that we've included in our
20 forecasts.

21 So, with that, this is the first slide.
22 Again, just showing our base forecast. And this
23 is for the medium- and heavy-duty sector. It
24 includes offroad. So this is the gasoline, other
25 fuel and diesel distinguished emissions from our

1 baseline IEPR forecast.

2 Now in our forecast we do have a bunch
3 of scenarios. The case that we're looking at here
4 is consistent with the AB-1007 work, as well as
5 what Gerry used, which is the high-price case.
6 And so that's what I'm using here for the medium-
7 and heavy-duty greenhouse gas emission
8 calculations.

9 This is the same as the previous slide
10 except I've overlaid the rail emissions. And
11 that's the bright yellow or orange bars at the top
12 of the slide. So you can see that it actually
13 increases, you know, fairly significantly from,
14 you know, 52, 54 to around 62.

15 In this slide I've shown the increase in
16 emissions due to the VMT shift from the light-duty
17 sector. Gerry had mentioned that as part of the
18 vision statement there is a reduction in VMT in
19 the light-duty sector. That's primarily comprised
20 of people starting to telecommute, use public
21 transportation, different methods for reducing
22 VMT. There's a density population change, those
23 sorts of things.

24 We've assumed a fraction of that VMT
25 would be shifted to bus or transit use, and that's

1 what we reflect here. So you see an upward shift
2 in emissions due to that population shift using
3 public transportation primarily.

4 This slide basically represents the
5 reductions associated with the LCFS, the low
6 carbon fuel standard. And I used the same
7 methodology that Gerry used, implementing it from
8 2010 to 2020. From 2020 on it remains constant,
9 having the effectiveness of 10 percent. So 10
10 percent reduction.

11 So there is a slight flattening or
12 reduction between 2010 and 2020, but then after
13 that the overall growth in demand increases, and
14 therefore you have a continued increase in the
15 emissions.

16 This is the same emission footprint but
17 it's broken out differently than the previous
18 slide. So here we have it in transit, freight,
19 offroad and rail, showing the emissions for each
20 of those sectors. This is by fuel. So this is
21 showing gasoline, other fuels in the blue. And
22 then diesel as the purple.

23 The next thing that I applied was the
24 fuel economy assumptions. And we made an analysis
25 of potential fuel economy gains. And I mentioned

1 this in the last meeting that there is a range of
2 potential fuel economy gains that could be applied
3 or adopted into the different sectors.

4 I primarily looked at the heavier class
5 vehicles, class 7 and 8 vehicles, and the
6 application of the fuel economy to longer haul
7 trucks and those sorts of things.

8 There are some fuel economy gains in the
9 medium-duty vehicle classes, between 3 and 6,
10 which might result from hybridization. That's not
11 necessarily included here. The hybridization fuel
12 economy gains would be reflected in staff's
13 numbers and reductions that they provided to me.

14 So, here we're basically just looking at
15 fuel economy gains from technologies adopted in
16 the heavier duty sector. And it results in a
17 reduction, a pretty significant reduction here,
18 over the course of the forecast.

19 And, again, this is broken out by the
20 four different sectors that I've shown, the rail,
21 offroad, transit and freight. This is, again,
22 broken out by fuel type just to show how much of
23 that is being reduced by what sectors are being
24 affected.

25 And it's primarily affecting diesel, but

1 here it's not represented. So, significantly,
2 because diesel shows -- is across all
3 technologies, all sectors. So transit buses and
4 others. And it's primarily focused at the freight
5 sector. The fuel economy gains are primarily
6 adopted by the freight sector is what I've
7 actually included.

8 I did look at including additional fuel
9 economy gains for rail, as well as buses. And
10 that's something that I'll probably continue to
11 look at and see what assumptions can be made about
12 fuel economy gains in those areas.

13 There are already baseline fuel economy
14 gains over the forecast period, but this would be
15 additional technology that could be adopted in
16 those sectors that would lead to additional
17 reductions.

18 And this is pretty close to my final
19 slide. And this basically includes the reduction
20 strategies and storyline volumes. So you can see
21 that there's a shift from diesel to others, which
22 you would expect if you were introducing
23 alternative fuels.

24 But the volumes here -- or the emission
25 footprint here is still fairly high. So you're

1 not getting a huge reduction. There's still lots
2 of emissions there. And we certainly aren't
3 hitting the 2050 goal.

4 We do reach the 2020 goal, but then only
5 for, you know, that span of time. And then by
6 2043, 2044 we're starting to no longer meet that
7 2020 goal because of growth in the sectors. Even
8 with the reductions that have been provided to me
9 from the emerging fuels and technologies office.

10 This is basically the slide that Gerry
11 had that represents the different categories of
12 technologies or emissions. And their associated
13 reductions. So, overall I had a reduction for all
14 of the technologies, LCFS, the technologies, fuel
15 economy gains of around 25 million metric tons,
16 which is fairly small compared to what Gerry's
17 was, because obviously the medium- and heavy-duty
18 sectors are not as large an emitter as the light-
19 duty sectors.

20 And LCFS plays a fairly, you know, it's
21 5- or 6 million metric tons in 2050. So if you
22 were to remove that, because that would not be
23 part of what you would be considering for the
24 allotment, then the key players would be the top
25 three elements.

1 The supra ultra low carbons, which,
2 again, are not penetrating the heavy-duty
3 marketplace very significantly. The low carbon
4 petroleum options, or low car options which play a
5 role, a fairly significant role. And then the
6 fuel economy gains, as well, would play a
7 significant role.

8 And with that, I'm done. So, if you
9 have any questions, or suggestions, I'd appreciate
10 them.

11 MS. ODABASHIAN: I have a question. It
12 seems to me that in addition to the technology
13 assumptions in these models is an assumption that
14 there will be -- well, you've said that there is a
15 reduction in vehicle miles traveled.

16 And inherent in that is a change in
17 consumer behavior. And I'm wondering if there is
18 any plan to invest in education or changing of
19 consumer behavior. How do we intend to change
20 consumer behavior in this plan?

21 MR. WENG-GUTIERREZ: I don't know if
22 that's a question for Peter, but I can say that
23 the VMT for medium- and heavy-duty appears to be
24 increasing because of the VMT shift from the
25 light-duty sector.

1 I would assume that the VMT portion,
2 which is the reduction apportioned to that VMT
3 shift, would, you know, the things necessary to
4 bring that shift about would include things such
5 as education, outreach and those sorts of things.

6 I think that would be reflected in that slice
7 of the pie.

8 MS. ODABASHIAN: And I'm just wondering
9 if there's any thought being given to investing in
10 changing consumer behavior, in pushing it down.

11 MR. WARD: We do definitely anticipate
12 funding categories that may or may not be directly
13 attributable to lowering GHG. And some of those
14 that will be -- I'll be mentioning in the rest of
15 my presentation. Some include the -- the biggest
16 for VMT is the land use planning. And that's
17 really the thorniest.

18 Having the state help the local
19 governments plan their land use. And that is
20 probably one of the most pernicious issues is to
21 how you get to lowering VMT. It isn't handled by
22 fuel switching or it might be more mode shifting
23 to mass transit.

24 I know that it was seen recently with
25 the higher gasoline and diesel prices we've seen,

1 a voluntary mode shift by a lot of people, saying,
2 you know, we'll go with public transit. Now that
3 those prices are coming down a bit, I hope that
4 shift doesn't change back.

5 But with public education and outreach
6 these are elements that we are considering, and
7 we'd like your input on how we would structure
8 those type of education programs.

9 MS. ODABASHIAN: I just want to, you
10 know, just reiterate that this is an assumption in
11 all of these models that seems to --

12 MR. WARD: it is the grand assumption in
13 all these models, --

14 MS. ODABASHIAN: Yes.

15 MR. WARD: -- I think. It is really the
16 most thorny, I think. Gerry, you had a comment?

17 MR. BEMIS: Yeah, let me contribute to
18 that a little bit. The VMT reduction assumptions
19 are built into the 2050 vision. And that's why we
20 used them, because I was told to use the 2050
21 vision as a starting point and work backwards to
22 today.

23 The bigger question that you're asking,
24 I think, is okay, how are we going to make that be
25 real instead of just being something on paper.

1 MS. ODABASHIAN: Um-hum.

2 MR. BEMIS: And one opportunity may be
3 within AB-118, I don't know. But in addition to
4 that we do have in the special projects office,
5 the unit that deals with land use and
6 transportation, so that there are things that are
7 going on at the agency that are outside of AB-118,
8 that could contribute to that.

9 MR. SHEARS: Yeah, I don't know if Gerry
10 or Malachi would give us the answer, I'm just
11 wondering if you could comment to what extent, you
12 know, CALCARS has parameters that work, you know,
13 it can model what's happening with -- projections
14 and how consumer behavior changes.

15 You know, these scenarios that are being
16 presented today, you're not using them to drive
17 any of this, right? That's correct.

18 MR. WENG-GUTIERREZ: Well, there is an
19 assumption made in the baseline demand forecast
20 which is that we are using the high-price case
21 scenario for IEPR 2007. Gerry, did you want to
22 add?

23 MR. BEMIS: Well, I was going to say
24 yes, we do use the CALCARS model for out to 2030.
25 And for 2030 to 2050 that's where we don't. We

1 freeze the CALCARS consumer choice attributes, if
2 you will, at the 2030 values in terms of the mix
3 of vehicles that the consumers would choose, et
4 cetera.

5 And Malachi is the one who does that
6 work, so he probably could answer whatever
7 detailed questions you might have. But we used
8 the version of CALCARS that was part of the 2007
9 adopted forecast in the Integrated Energy Policy
10 Report, and the high-price scenario associated
11 with that.

12 MR. WENG-GUTIERREZ: Right, but again, I
13 think, just to clarify, we didn't include in
14 CALCARS the alternatives. And then determine
15 through 2030 what their competitive, you know,
16 their competitiveness would be in the marketplace.

17 The baseline demand uses CALCARS. Then
18 Gerry laid over that all of the alternative fuels.

19 MR. SHEARS: So okay, so just to follow
20 up then. So, the IEPR numbers are just taken with
21 AB-1007 numbers that were used for price
22 assumptions?

23 MR. WENG-GUTIERREZ: No. I think
24 there -- no, I think they're consistent. The AB-
25 1007 and IEPR -- the IEPR had six cases, six

1 different cases. AB-1007 used one of those cases.
2 And then, the high-price case. And that's what
3 we're using here, as well.

4 MR. SHEARS: Okay, so you're using
5 roughly just under \$5 a gallon?

6 MR. WENG-GUTIERREZ: Yes.

7 MR. SHEARS: Okay.

8 MR. WENG-GUTIERREZ: Are there any other
9 questions? On the phones? Okay.

10 MR. WARD: Very good, thank you,
11 Malachi.

12 MR. WENG-GUTIERREZ: Thank you.

13 MR. WARD: Next -- oh, we could have one
14 question.

15 MR. STEPHENS: Jeff Stephens from Propel
16 Biofuels. I've got a comment on some great work
17 being done on this model. One of the things that
18 I notice from looking at the data, and especially
19 contrasting the light-duty case with the heavy-
20 duty, and meeting the heavy-duty case, is that
21 much of the gains that you make in reductions,
22 especially early on, are conversion of gasoline
23 vehicles to ultra low carbon vehicles.

24 And that's essentially a conversion to
25 an ultra low carbon fuel in that, if I understood

1 Gerry correctly, that that's a conversion from
2 gasoline to cellulosic E-85. That that's how you
3 make those gains in the reductions.

4 In contrast you don't see a reduction in
5 the diesel pool. There's fewer diesel vehicles in
6 the light-duty so it doesn't have as large an
7 impact. But there's no provision for a ultra low
8 carbon renewable diesel, as there is for an ultra
9 low carbon gasoline substitute.

10 And I think that's partly probably
11 because there isn't an LCA of -- a lifecycle
12 analysis hasn't been done on something like algae
13 biodiesel. And I think that lack of data for an
14 ultra lower carbon diesel substitute is hindering
15 and actually influencing the dataset.

16 It's particularly evident in the heavy-
17 duty and medium-duty case where you don't get very
18 large reductions, as large a reduction as you do
19 in the light-duty case, because you don't have
20 ultra low carbon substitute for diesel fuel.

21 So, I think in looking at your
22 potential, if you don't have the possibility for
23 an ultra low carbon renewable diesel, it's going
24 to change your projections for what to do in the
25 medium-duty and heavy-duty and also in the light-

1 duty case.

2 So, I would -- because the potential for
3 algae biodiesel and algae biodiesel being an ultra
4 low carbon fuel I would urge you to potentially to
5 look at developing a lifecycle analysis for those
6 renewable diesels. Because I think that that
7 could influence your vehicle and your fuel mixes.

8 MR. WENG-GUTIERREZ: Thank you for that
9 comment. I actually -- I did include a number, a
10 blended mix of biomass-derived diesels to evaluate
11 the carbon content. So it is weighted by the
12 introduction of different biomass-derived diesels
13 into the marketplace.

14 And that is encapsulated in actually the
15 low carbon alternative, only because of the
16 blending component, and when they come online for
17 different suppliers for producing the lower carbon
18 diesels. But it is in there.

19 Granted, we do have a limited mix of
20 scenarios that are evaluated as part of the
21 California GREET model for the full fuel cycle
22 analysis. So, I had to choose between those.

23 But I did use that to try and come up
24 with a more realistic footprint for that biomass-
25 derived diesel component.

1 MR. WARD: Thank you, Malachi. I'd like
2 to call on Mike Jackson, if there are no other
3 questions. Mike's going to give us his
4 presentation on the gap analysis.

5 MR. JACKSON: Okay, thanks, Peter. We
6 have called this study work that we've done a gap
7 analysis. It might be more appropriate to say
8 it's a look at what's being invested, or what the
9 investment landscape is to these clean fuels and
10 clean vehicles, as opposed to a gap analysis.

11 We did try to extrapolate where we
12 thought some of the holes were, based on our own
13 experience. But I want to emphasize that the part
14 that Peter talked about earlier today, that is
15 working with industry, and talking not only with
16 the fuel suppliers and the fuel producers, as well
17 as the OEs, is a very very important part of this.

18 And also making sure that you're talking
19 to the people that are funding the various
20 technologies right now to get their perspective,
21 too.

22 So, with that introduction, I have
23 provided a more detailed presentation of this at
24 the September 2nd meeting. And what I thought I
25 would do today instead of repeating that, which is

1 the handout that's out there, I would try to give
2 you a slightly different perspective.

3 With that, then I'm going to go on. The
4 objective of this work was to identify what
5 funding was being committed or being spent on the
6 development and commercialization of cleaner, more
7 efficient technologies for the transportation
8 sector.

9 So, how do we go about doing that. We
10 did a quick literature review and constructed a
11 number of tables and Excel spreadsheets of the
12 funding. And then we tried to take different cuts
13 at where that -- what was happening with that
14 funding to give us some insights of what was going
15 on.

16 We looked at vehicle efficiency. And
17 primarily vehicle efficiency here, the way we use
18 it, compared to the way it was used just
19 previously by Gerry, I think slightly different,
20 but here we're using it in terms of improvements
21 in gasoline and/or diesel technology, that is
22 engine technology. But also somewhat relative to
23 the drive trains.

24 Biofuels, natural gas and propane.
25 Gerry referred to those as the nonrenewable fuels.

1 And then the electric drive technologies, which I
2 have broadly categorized as battery electric,
3 plug-in hybrid electric vehicles, and then fuel
4 cell vehicles, hydrogen fuel cell vehicles in
5 particular.

6 And we tried to get information on what
7 was being spent relative to R&D, research and
8 development, demonstration and deployment.
9 Infrastructure, which we broadly categorized as
10 fuel production, storage, distribution and
11 dispensing. And then what was being spent on
12 incentives.

13 So we first started by contacting key
14 government and industry stakeholders and got their
15 budgets. And then we further went on to talk to
16 them to confirm what we thought we saw. And also
17 to get an update on their programs. And finally,
18 to get a perspective on the barriers, need to
19 overcome these barriers.

20 And I'm not going to spend -- I
21 summarized those comments at the last meeting, so
22 I'm not going to spend much time on that. What I
23 am going to spend time on is just kind of
24 reviewing what the major -- where the major
25 funding landscape is.

1 So, if you want me to get back into
2 those kind of questions, I'd be happy to do that.
3 But that's not part of this presentation.

4 So, just to remind everybody again, and
5 Gerry did a good job of this, is that you have
6 different technologies. One thing we probably
7 ought to start doing when we show these slides is
8 not show reformulated gasoline. But the baseline
9 probably is more accurately a reformulated
10 gasoline with a low carbon fuel standard on it.
11 Which would then tend to make some of these
12 alternative fuels have less of an advantage than
13 are shown here.

14 So what you see here is that LPG and
15 natural gas should give you a small incremental
16 benefit because they're a low carbon. You're not
17 increasing or decreasing the fuel economy
18 necessarily of the vehicle. It's a straight
19 substitution.

20 Biofuels have the potential of getting a
21 heck of a lot less, but, again, we've talked about
22 the indirect land use effects. And you got to be
23 very careful about those. And, as Will has
24 stated, these are average numbers that could be,
25 in some cases, the indirect effects could be even

1 greater than gasoline if it's not handled
2 correctly.

3 And then the increasing electric drive
4 is shown on the right. So just to put it in
5 context.

6 This shows the total answer, including
7 all private, federal and state funding, as we've
8 gathered and made estimates of what we think it
9 is. It's over \$35 billion per year that's being
10 invested in this space. And it includes things
11 like asset finance, pilot projects, public
12 markets, corporate R&D.

13 And the R&D is factored down to include
14 only what we think is included here, such as
15 vehicle efficiency, and doesn't include
16 development of new vehicle platforms, for example.

17 Venture capital, state and federal
18 funding. Some of the take-aways or observations
19 that I get in looking at this is one, on the
20 biofuels side, the renewable fuel standard, which
21 is a national standard, is really driving the
22 investment for biofuels.

23 The fuel suppliers are required to blend
24 up to 15 billion gallons of renewable biofuels,
25 this could be corn ethanol, it could biodiesel, by

1 2015. And then another 21 additional billion
2 gallons of cellulosic and advanced biofuels by
3 2020.

4 And then also favorable here, of course,
5 is the economics at the current oil prices.
6 Regardless of what we do or what happens here,
7 this is in place and the investment is really
8 being pushed by the fact that this is in place.

9 On the other side of the coin the
10 natural gas and propane capture pretty much the
11 lowest investment. And a lot of that has to do
12 with lack of product being in the marketplace.
13 There are fuel, vehicle and infrastructure
14 incentives in place. If there was more vehicles
15 out there, if there was more fueling stations
16 built, there would be more investment by private
17 and by public agencies into that.

18 On the vehicle efficiency the automakers
19 are making most of that investment, although there
20 is some advanced R&D that's being done on the
21 federal level. And there are significant and
22 still small investment being focused on the R&D
23 for the electric drive technologies.

24 So, I'm trying to give you sort of the
25 top line here; again, where could you leverage the

1 funding on AB-118 based on what we saw.

2 One, biofuels. There's already a
3 substantial investment in generation one.
4 Technologies, generation two, I'll show you in a
5 little bit, are coming. There's investment being
6 done on that.

7 Some possible areas where you could do
8 some investments would be on the generation two
9 biofuels, especially instate, since instate
10 production is a part of the goals the Governor has
11 set for us.

12 And then there's possible funding for
13 infrastructure and end use in the higher blends.
14 And I make a distinction between E-85 and maybe a
15 higher blend fuel such as an E-30 or something
16 like that. Both of which could give you similar
17 benefits from a greenhouse gas emissions point of
18 view.

19 And I'd be happy to discuss those. I
20 think some of that was brought up in the
21 storyline. From the perspective of understanding
22 what the benefits are and how the vehicles are
23 used, I don't think it matters what assumption you
24 make relative to the scenario. But it's getting
25 that fuel into the marketplace is most important.

1 For natural gas and propane, there's an
2 obvious need for products in the market. And to
3 provide, you know, incentives on getting those
4 vehicles into the market and/or product
5 development where needed.

6 Improved vehicle efficiency. It looked
7 like there would be, from the comments we got back
8 from mostly the feds and DOE folks, there's quite
9 a bit of work going on relative to engine
10 improvement, driveline improvements.

11 But one area that's lacking somewhat is
12 reduced weight technologies and improved
13 aerodynamics. And those could be an area that one
14 might want to think about.

15 On hydrogen and fuel cells there's lots
16 of opportunities to invest here, but one of the
17 critical things is the infrastructure for the
18 yearly rollout of the vehicles right now, in that
19 this infrastructure is going to be such, the
20 vehicles will not be in volumes that will make
21 this infrastructure a viable business opportunity.
22 But if it's not there the vehicles will never get
23 in the market and we'll never be able to take it
24 to the next step. So, this is really important.

25 On the plug-in and battery electric

1 vehicles, we're just getting to the point where
2 the vehicles are hopefully going to enter the
3 market. But there needs to be a huge -- there
4 needs to be more work done in terms of
5 demonstrations that would prove the value
6 proposition of these vehicles.

7 Will people actually charge at night
8 versus charging during the day. Does the cost
9 proposition make sense relative to increased cost
10 of the vehicle versus the fuel savings. So
11 funding vehicle and infrastructure are important.

12 So that's sort of my top line, sort of
13 conclusions. I just want to walk through real
14 quickly where we got some of the data that's on
15 here.

16 This shows the 09 federal requested
17 funding. It's not approved yet. It has to be
18 approved by Congress. So it gives you an idea of
19 what these various agencies will have for budgets
20 for these various technologies.

21 We walk through each one of these, and
22 then try to assign where this would go in terms of
23 R&D and other demonstration, et cetera, and assign
24 some of these dollars to those categories. And
25 that's how this -- and deployment -- and that's

1 how this happened.

2 This shows you the total federal, and
3 we're in the, I guess, a little over \$4 billion
4 per year in 2009 requested funding. And you can
5 see again the biofuels here, and most of this is
6 the incentives. Incentives really is foregone
7 revenue, but it's money that's getting invested
8 into that technology.

9 The incentive portions for biofuels and
10 natural gas and propane and vehicle efficiency,
11 tax incentives for the hybrid vehicles as well as
12 natural gas vehicles, is taking a good chunk of
13 that over \$4 billion investment that's happening
14 every year.

15 You can see that the R&D is similar, on
16 the same order of magnitude, say, for the electric
17 drive, hydrogen and fuel cells, vehicle
18 efficiency, as well as the biofuels. Whereas
19 demonstration is somewhat lacking except where you
20 get into the biofuels.

21 If you take out the incentives and
22 deployment, it gives you, again, a better picture
23 of what's happening here. And just restates what
24 I said. Sort of comparable R&D budgets, although
25 you'd have to say hydrogen fuel cells has been a

1 little bit more and is being planned to be a
2 little bit more than, say, the electric drive or
3 vehicle efficiency or biofuels, with the biofuels
4 getting more demo.

5 If you put that in context as to what
6 has been lobbied Congress in terms of
7 appropriations, here is a summary of the farm
8 bill, Energy Independence and Security Act, and
9 EPAct, which basically represents somewhere on the
10 order of \$25 billion in commitments.

11 Now, keep in mind this is
12 appropriations, and it has to be authorized,
13 right. And it may never be -- or this is what's
14 requested. It may never be appropriated.

15 But it gives you an idea again of where
16 the government is wanting to spend its money. And
17 most of it, again, is concentrated in the biofuels
18 with very little or none in natural gas, propane.
19 Some in the vehicle efficiency, and a little more
20 focused on the electric drive at this point,
21 compared to sort of a switch between the hydrogen
22 and fuel cells.

23 Now we move to state funding. Most of
24 this, we did an estimate of state funding. And,
25 again, this kind of mirrors what we saw in the

1 federal side, that biofuels are getting the
2 biggest chunk of this. And most of it is coming,
3 again, from incentives.

4 There is more demo that's seen in the
5 state side of things versus R&D, not to be
6 surprised, since generally the feds do more of the
7 R&D and the states do more of the demo. This is
8 about a factor of 10 less than what the feds are
9 putting into the market.

10 I think I had a question last time on
11 what is California's funding outlook. And here is
12 our estimate of 2008 shown in this table. And
13 this includes things like the South Coast mobile
14 source air pollution reduction review committee,
15 MSRC. Includes South Coast technology advancement
16 office, TAO. Some Sacramento, some CEC and
17 several of the ARB programs.

18 Now, we lined out all the programs we
19 think are going to criteria pollutants such as
20 Moyer and prop 1B funds.

21 Total here in 2008 was estimated to be
22 around \$20 million. Also considerably less than
23 what the feds are doing, of course.

24 Now, let me just show you some charts on
25 comparison of what the public is doing and what

1 private is doing, just to give you an indication
2 of the emphasis where people are putting their
3 money.

4 This one here shows the comparison of
5 the California state funding versus federal
6 funding. And, again, kind of indicates to you
7 that the state is doing more in terms of R&D and
8 demonstration, whereas the feds are doing more in
9 terms of R&D.

10 The private sector is also shown here
11 and our estimates of it. Again, divided between
12 electric drive, hydrogen fuel cells, vehicle
13 efficiency, biofuels and natural gas and propane.

14 And, again, biofuels are capturing the
15 majority of the investment in this space.

16 Now, this is global estimates, whereas,
17 of course, the fed is national and the state is
18 national, so it's a different type of estimate
19 here.

20 Now I'm going to show you three or four
21 charts that kind of compare public sector
22 investment to private sector investment for the
23 various technologies.

24 So on the left-hand side here we show
25 you our estimate of 2008 public sector investment,

1 which you can see is primarily being put into
2 batteries, although there is electric propulsion
3 and vehicle integration that's being performed.

4 On the private side the batteries make
5 the bulk of the investment. Not much is being
6 done in terms of the vehicle technologies or the
7 infrastructure, for that matter. Kind of
8 indicates maybe that's the right place for the
9 investment to be right now. Batteries, of course,
10 are one of the key barriers to these technologies
11 getting into the marketplace. But also indicates
12 a potential area where more work will be needed in
13 the future to get these vehicles on the road.

14 Hydrogen and fuel cell investment
15 estimates. On the left again is the public sector
16 investment. This is more balanced towards what
17 the private sector is doing. There is work
18 ongoing on both private and public on the
19 production and distribution and hydrogen storage.
20 Private is investing more in terms of the fuel
21 stack and balance of plant compared to public; and
22 vehicle integration is somewhat similar.

23 When you get to the more mature
24 technologies like vehicle efficiency, you see that
25 the privates are doing most of the work in terms

1 of deployment. Although advanced engines and
2 waste heat recovery, et cetera, are being
3 incorporated.

4 And then finally, when you look at the
5 biofuels you get sort of a similar indication.
6 Gen 1 biofuel production on the public side, and
7 the private side, is dominating the investment in
8 the biofuels. You'll see some investment starting
9 on the generation 2 biofuels, as shown. And
10 particularly in production on the private side.

11 Natural gas and propane, sort of similar
12 kind of things, again. Station deployment is
13 probably the highest investment, with some
14 investment in the vehicles.

15 So, I think this gives a -- the data
16 that's contained in the reports that we've given
17 to the Commission give the Commission and the
18 advisory committee a starting point as to what the
19 landscape is, where the investments are going.
20 And will help understand how to leverage those
21 investments.

22 But a couple of caveats here. This is
23 what's being spent today, not necessarily
24 tomorrow. And then another caveat here is, you
25 know, it's really important to keep in mind what

1 the status of the technology is. Where are you in
2 its commercialization path. Are you in R&D; are
3 you at the end point where what you really need is
4 to get volume up, so you need incentives on the
5 vehicle. All that is important to consider when
6 you're starting to put together where you're going
7 to put your money.

8 And I said this at the beginning, you
9 really need to determine what is needed by the
10 stakeholders in the business here, to accelerate
11 these things.

12 The Commission, in the past, has been
13 very very good at putting together partnerships,
14 public/private partnerships to bring technologies
15 forward. It's my personal belief that you've got
16 to leverage those partnerships to bring
17 technologies to the marketplace.

18 And leveraging, of course, ongoing
19 private and public funding is going to be very
20 very important.

21 That concludes my presentation. I'd be
22 happy to take any questions, either here or
23 online.

24 MR. COLEMAN: I've got a question. What
25 are the next steps for this analysis, this

1 process, and then how is this going to factor into
2 the allocation methodology that we're putting
3 together?

4 MR. JACKSON: There are several things,
5 in my opinion there's several things. Peter maybe
6 should answer this question, too. But I'll give
7 you my opinion, and then, Peter, please step in
8 here.

9 I think this is just one piece in terms
10 of understanding what's being spent at the various
11 places. There's a couple other things that are
12 very important to consider in terms of allocating
13 the funds.

14 One is what technologies are going to
15 be, you know, what current regulations are going
16 to influence technologies. Right. So, for
17 example, the low carbon fuel standard is required
18 to the fuel suppliers. The fuel suppliers are
19 required to meet the low carbon fuel standard.

20 Necessarily then providing them money to
21 meet that standard probably doesn't work in terms
22 of AB-118. So that's another constraint that's in
23 this space.

24 This is yet another one, in my view,
25 another one of the constraints that's in the

1 space, as to how much money is already flowing
2 into it to bring these things to the marketplace.

3 And then the next part of it is okay,
4 industry, what do you need. You're mandated to do
5 this; you're spending this much money; what else
6 has to happen here in order to get these
7 technologies in the marketplace. And that's the
8 meeting with the stakeholders; that's putting
9 together the partnerships that would help
10 understand how these technologies are going to go
11 to the marketplace.

12 You know, examples of how that's been
13 done in the past. You know, working with EOE's
14 brought together a flexible fuel vehicle for
15 California. And how that vehicle rolled out; how
16 we got the fuel to get to those vehicles. That
17 was all important steps of doing that. There
18 needs to be that third part of getting the
19 stakeholders involved in this discussion.

20 MR. COLEMAN: Is that analysis going to
21 be done for the investment plan methodology
22 allocation?

23 MR. JACKSON: There I stop.

24 MR. WARD: Well, as I mentioned, we're
25 going to be taking the work that Mike and TIAX

1 have done and taking it the next step to the
2 partnerships that we're hoping to strike. We have
3 a few more slides on that, I think, was presented
4 at the last time. You may be familiar with it.

5 What we're hoping to do is identify
6 those gaps that partners or stakeholders can --
7 are already planning to fill. We'd like to get
8 your input, though, as a strategic partner and a
9 member of the advisory committee and -- inform us
10 better what are the gaps that are recognized here
11 that the investment community is taking up, too.
12 Because that's a gap that we -- I really don't
13 have access to. So we'd like your comment on
14 that.

15 Beyond that we will be prioritizing
16 after that. Those are kind of like the refined
17 gap analysis to see what we can find out that are
18 being filled. And then we would anticipate that
19 being the refined list of gaps that this program
20 could potentially fill.

21 MR. COLEMAN: So I guess what I'm
22 wondering is I didn't see in here two things which
23 seem to be in the first analysis that we saw back
24 in July, one of which was the thing you described,
25 which is the technology-by-technology analysis

1 about, you know, what the status of that
2 technology is, and what more is needed for that
3 technology to get into the marketplace and have an
4 impact. That seemed to be something you did do in
5 the analysis that you've done for, I guess it was
6 SDG&E or somebody like that, or SCE.

7 So, is that piece going to be done for
8 this analysis?

9 MR. JACKSON: To a certain extent it was
10 done for the alternative fuels plan in terms of
11 the Commission met with all the various
12 stakeholders and said, where are you, what do you
13 need, where is the technology and what do you need
14 in terms of getting that technology in. That's
15 the so-called storylines.

16 MR. COLEMAN: That will be used, though,
17 for --

18 MR. JACKSON: Yes.

19 MR. COLEMAN: -- look at the
20 methodologies. Okay.

21 MR. JACKSON: Yeah. And that, I
22 believe, is being updated as we talk, right?

23 MR. WARD: Right. The storylines are,
24 yes.

25 MR. JACKSON: And you guys have renewed

1 the discussion with the stakeholders?

2 MR. WARD: With the stakeholder
3 groups, --

4 MR. JACKSON: Yeah.

5 MR. WARD: -- absolutely.

6 MR. JACKSON: So that it's another chunk
7 of what's, you know, that's that part of talking
8 with the stakeholders that I was talking about.

9 With the storylines, the previous work
10 with the storylines is another part that fits into
11 that.

12 MR. COLEMAN: Great. Okay. And then
13 the other piece that wasn't in here, I don't know
14 if it was in a prior analysis, is looking at all
15 these technologies according to total dollars
16 required to get the reductions of dollars per
17 impact, you know, if we can -- that will be
18 generated by every dollar in. And I'm not just
19 saying the dollars in from this fund, but actual -
20 - as you look at the cost of getting actual
21 vehicles on the road that are powered by hydrogen
22 fuel cells, that also includes the cost of
23 infrastructure to actually power those vehicles,
24 et cetera, you add all that up and then see what
25 the actual overall cost would be per ton of

1 reductions.

2 Is that analysis going to be done?

3 MR. JACKSON: That, I mean there is bits
4 and pieces of that lying around. Some parts have
5 already been done. For instance, the NRC,
6 National Research Council, has done an estimate
7 for the hydrogen scenarios. So that's there.

8 We did some of that estimate, some of
9 those estimates on the alternative fuels plan. I
10 think all that needs to be updated, but it's
11 there.

12 There's a slightly different approach
13 here. You can kind of see you have to almost
14 throw the kitchen sink to meet the goals. And
15 then the question is, well, what's the cost to do
16 that.

17 It may not be that you have an option in
18 terms of optimizing the cost to get there. Maybe
19 there is.

20 MR. COLEMAN: Right. When you think
21 about what we have to do and the size of the funds
22 that we actually have at our disposal, they're not
23 very large relative to the size of the problem.
24 So, I guess one of my concerns is that when you
25 look at those the charts of where funding has

1 gone, it would be easy to look at them and say,
2 oh, well, there's a ton going into biofuels, all
3 these others are neglected, let's pour money into
4 these others.

5 When I think that it gets back to a
6 question of if there is some money, you know, if
7 you looked at the private dollars flowing into
8 say, biofuels, for instance, you see that it's an
9 infrastructure demonstration in R&D, but zero goes
10 into infrastructure.

11 And so the question becomes for the
12 maximum reductions in greenhouse gas emissions is
13 it more effective to put a dollar into
14 infrastructure for biofuels than say a dollar into
15 R&D for fuel cells.

16 And so figuring out how that dollars
17 will actually have impact on greenhouse gas
18 reductions, I think, would be important for us to
19 figure out in terms of how we're going to do the
20 allocation .

21 MR. JACKSON: Yeah, I agree fully.

22 MR. WARD: Thanks for your comments,
23 Will. Question? Hello, Carla?

24 MS. DIN: Oh, good. Hi. Thank you very
25 much for that presentation. I was just wondering

1 if any analysis has been conducted of what it
2 takes to get industry to locate in California.

3 For instance, yesterday there was an
4 announcement about Tesla, and in order to attract
5 them and site them in San Jose, that the city had
6 to offer them a 90-acre rent-free parcel for ten
7 years. They also got a sales tax exemption that
8 amounted to about \$8 million.

9 So, I think this factors in quite
10 heavily in terms of situating a company and
11 retaining that company over the long run.

12 And my second question is has there been
13 an examination of the supply chain issues,
14 bringing, for instance, vehicle manufacturing
15 components, parts-makers, closer to the source.
16 And what that would entail and require.

17 MR. JACKSON: I think the short answer
18 is no and no.

19 MR. WARD: I think that's right. Carla,
20 I think we can probably rely on you and your
21 organization for some of that information, if I'm
22 not mistaken.

23 MS. DIN: We'd be happy to contribute to
24 that.

25 MR. WARD: That's great. Thank you.

1 Other questions? No.

2 (Pause.)

3 MR. WARD: I think Carla's question is
4 pretty apropos there. Other areas that we'll be
5 funding that we'll be funding that may not be
6 directly GHG related, although vehicle fuel
7 efficiency certainly is.

8 We have expanded the analysis, much
9 earlier, this program needs to be informed, and I
10 think we're about that business of identifying
11 those areas that we would set up as a structure to
12 on-go the informing of this program throughout its
13 7.5 years.

14 We understand that if we are to move
15 this ball down the field workforce training Will
16 raised is an important area that we need to be
17 funding in anticipation of those jobs being
18 actually needed here in the state. If we are
19 going to bring economic development to the state,
20 bring the Teslas and the follow-ons, the workforce
21 training will be a key element. And it's not too
22 soon to consider that.

23 Public education. Consumers are
24 probably going to be having some choices in their
25 future. And I think the earliest that we can

1 mention that and educate, that's another area of
2 funding that we are basically identifying in the
3 basket; public outreach, as well, is another one.
4 We are aware there are many organizations out
5 there right now that are doing good work, and we
6 want to reach out to them to be a partner with
7 them in their area of expertise. And I think they
8 have better area of expertise than, so far as
9 they're actually on the road and on the street.

10 We'll be identifying the existing and
11 the complementary funding sources in the future.
12 We've already had discussions with some of these.
13 And some include the different state agencies,
14 federal agencies, as well, air districts and local
15 governments. This is something that we've done
16 fairly effectively in the past. We hope to do
17 that in the future, as well.

18 I think it was alluded to by Mike that
19 we somehow during the methanol program brought the
20 local, state and federal government, along with
21 private sector, into a program that really kind of
22 knocked down all the popouts that popped out
23 during that particular experience. And I am very
24 familiar with that, and I think that's an area of
25 diligence that we want to share with other people

1 in other areas, and the levels of government.

2 We do anticipate -- I know the Air Board
3 is anticipating leveraging their funding that's
4 available under this program with the State
5 Treasurer's Office to perhaps provide low interest
6 or loan guarantees for production facilities, be
7 they vehicles or vehicle components, or actually
8 fuels.

9 As I mentioned, i think, in our first
10 meeting, that's a little bit more dicey. I think
11 everybody understands we need to do a lot of work
12 to be sure that if the state's going to make a
13 long-term investment to the production of fuels,
14 we have to make sure that it's properly nailed
15 down, and all the indirect and direct land use
16 impacts are known.

17 There may be some fuels that aren't as
18 thorny, if you will. But I do think that there
19 are some areas that we may be able to fund in the
20 near future. But certainly not until we identify
21 all the environmental aspects and the
22 sustainability aspects that everybody is very
23 aware of at this point.

24 Identify federal partnership potential
25 with the Volpe Center. NREL, the folks from NREL,

1 just announced yesterday that the DOE Clean
2 Cities, USEPA and Department of Food and
3 Agriculture are all among the potential partners
4 that we hope to foster relationships with.

5 We, with the guidance of Will and
6 others, will be trying to come up with the best
7 incentive mechanisms that fit the opportunity
8 best. This is more the financial side of making
9 sure that we have the incentives that are allowed
10 to us, and in the legislation they are many. We
11 want to make sure that we can use those in the
12 best way that actually foster the competition
13 within the market and not just take it off onto a
14 side-track.

15 Project suggestions from stakeholders in
16 the dockets and the suggestions that are made to
17 us from our advisory committee are very welcome to
18 us right now. You'll see that we have had
19 discussions with many. There are generic project
20 examples in the investment plan, when we finish, I
21 think that would be instructive for people to see.
22 They will be just that, generic. But I think it's
23 important to show how a specific incentive would
24 be helpful and useful for any particular type of
25 project. We may have several type of those

1 generic examples in the investment plan.

2 Other considerations for allocation as
3 was mentioned in the first draft of the investment
4 plan. We want to provide some consumers choice
5 and we'll need to get them ready for that choice.

6 We want to increase economic development
7 in the state. I think there's an outstanding
8 opportunity as fuel prices are as high as they
9 are, they have come down a bit, but I think we
10 need to take advantage of the higher prices. This
11 is on everybody's mind, and I think that this does
12 spur economic development for California.

13 I think not to be California-centric,
14 but I do think there are a lot of eyes focused on
15 this state. And I think we want to live up to the
16 expectations that people around the country and
17 around the world are looking to California for.

18 We'd like to leverage California's
19 specific innovation. And by that I mean there are
20 many areas of excellence already in California.
21 Silicon Valley comes to mind, of course, when we
22 try and bridge the gap from research and
23 development to actual plausible technology and
24 technology development.

25 This is something that I think it's

1 mixing -- kind of mixing the metaphor here, but if
2 we can leverage our money and leverage our
3 innovation with that money, I think that would
4 suit us very well. I think it's, relatively
5 speaking, a small investment for a large potential
6 reward in the future.

7 We want to build on the existing
8 investments that we have made as a state, and
9 federal government in the state. Those
10 investments, they require updating at times,
11 whether it be infrastructure or even the
12 organizations that are operating in the state. I
13 think we need to build the capital investment and
14 the human investments that have been made over
15 time in California.

16 We are focused on using California's
17 waste stream. As I mentioned, I think, in our
18 first meeting that's a way of kind of dodging the
19 bullet that we all have recognized for food crops,
20 row crops or purpose-grown crops. I think that's
21 a priority that I know my former boss is very
22 interested in.

23 And use renewable resources whenever
24 possible. And to favor those technologies of
25 fuels that have a bridge to renewability. I think

1 most of those that we're looking at now do have
2 some element of renewability in their future. And
3 to the extent that's true, then I think provides a
4 good path for us to fund.

5 In the program implementation side of
6 this, perhaps maybe at this point I'll just turn
7 to Chuck. Would you like to do the regulations
8 update nor or -- okay. I'm going to call on Chuck
9 Mizutani to do the regulations update, and we'll
10 finish off with this at the end.

11 MR. MIZUTANI: Good morning. I'm Chuck
12 Mizutani. I provided this timeline at the last
13 staff workshop with the advisory group. And also
14 provided this timeline at the September 9th
15 workshop, Committee workshop, on our rulemaking.

16 The only thing that has changed is based
17 upon the workshop comments dealing with funding
18 restrictions we are looking at proposing some
19 wording changes to that regulatory language.

20 And so we are in the process of posting,
21 by September 22nd, a modified language, as well as
22 sort of background information discussion. So
23 that the public can provide written comments by
24 October 1st, which we would incorporate into our
25 regulatory package that we would be submitting to

1 the Office of Administrative Law on October 7th.

2 MR. WARD: Thanks, Chuck. Any questions
3 on the regulation development that we're
4 proceeding with? Hearing none.

5 As we go forward with the implementation
6 these are things that we have committed to,
7 basically. And that we will be about the business
8 of over the next several months.

9 One is the continuation of
10 sustainability analysis, as I mentioned
11 previously, we are committed to updating and have
12 already commenced the updating of the full fuel
13 cycle assessment for California modified GREET
14 that we used in the AB-1007 alternative fuels plan
15 process.

16 We plan on updating technology
17 assessments and fuel market assessments throughout
18 the term of this program. We understand this is a
19 rapidly changing area. And we actually hope that
20 this program is one of those influences that
21 rapidly changes this area.

22 We want to be able to track our own
23 success, but also be cognizant of those other
24 developments around the world and around the
25 country that are shaping this particular area.

1 And so we are vowed and committed to doing that.

2 We want to develop an analysis of
3 finding what are the best incentives and how can
4 those be best applied. I'm sure after this
5 advisory committee's work is done with the
6 implementation, and we start to get the
7 implementation of the investment plan, I'm sure
8 we'll be calling on some -- and Will is probably
9 one of those that we would like to discuss; we've
10 had discussions with him already about what is the
11 capital efficiency of our funding -- how we can
12 best use it, where it doesn't perturb the market.
13 And what can be best useful to make best use of by
14 the market participants.

15 We'll be identifying the solicitation
16 areas. And I know that's probably something that
17 everybody here is interested in knowing. And I
18 am, as well. But I think that we don't want to
19 get ahead of ourself here. We want to make sure
20 that are doing the step-by-step methodology that
21 we have committed to, to determine the areas and
22 determine the gaps and the gaps that are refined
23 and that are available at that point. We will be
24 identifying the solicitation at least prior to
25 preparing those.

1 We have committed, and I think it's very
2 important for us to have committed to an annual
3 program evaluation of this program. It was
4 drilled into me in graduate school and public
5 administration, this is just the right thing to do
6 to make sure that the public's money is well
7 spent.

8 But it also, in this particular program
9 of in an area that is rapidly changing, I think
10 that we really need to be aware and flexible as we
11 change and modify our offerings every year.
12 Things do change quickly, as I mentioned before, I
13 hope this program is one of those factors for
14 change.

15 We want to be able to be flexible so
16 that we make sure year to year that the incentives
17 that we offer are taken up. And if they're not,
18 then we have the capability to not only identify
19 that, but to resolve that by redirecting or re-
20 emphasizing particular incentives or incentive
21 areas.

22 Lastly, and of course this fits into
23 pretty much all of this, is the measuring of the
24 market's success and establishing the metrics by
25 which we can do that. One, of course, will be the

1 GHG reduction. There will be petroleum reduction,
2 alternative fuels increase, utilizing our biogas
3 resources, increasingly renewable fuel
4 development. These are all that could basically
5 determine how well this program and how this
6 program is effective in the respective markets.

7 This is another thing that we have committed
8 to doing.

9 In the intervening time we will be
10 continuing to formalize our partnership
11 relationships. And address administrative needs
12 and remedies. I think in this area this is
13 something that if we are going to be funding
14 something, we want to make sure that we can make
15 it as smooth a transition for our funding.

16 And if there are certain things that we
17 can do to provide remedy that don't include money.
18 That may be just procedures that we can help with
19 or certifications and assurances that we can
20 provide that would show.

21 Some of this may be, actually, what
22 comes to mind are some of the evaluations of the
23 fuels and technologies, themselves. We hope to be
24 able to enable some of those proposed to be able
25 to quantify their GHG profile or their

1 environmental profile for a project prior to
2 proposing. So maybe that's one of those areas
3 that we can help and address an administrative
4 need that may or may not include funding.

5 We will be developing an implementation
6 schedule soon. We don't want to get ahead of this
7 advisory committee or the Transportation Committee
8 here at the Energy Commission. You heard a little
9 bit more about our schedule which is now about two
10 weeks delayed from what we had from October 6th,
11 and we'll be getting back to you on that.

12 Again, just to note, this is in your
13 packages, these are some of the entities that we
14 have started to discuss strategic alliances with.
15 Some we've done well in the past with. Others
16 that aren't even on here. We actually would seek
17 their interest, as well, if they could express it
18 to us.

19 There are many other expressions of
20 interest. These are more of the folks that are
21 interested in potential projects, and that have
22 approached us over the past few months. And still
23 further.

24 On the right-hand side these are some of
25 the entities that we may, as well, strike

1 partnerships with. CAPCOA comes to mind as one of
2 those that I've already spoken to.

3 If there are any other questions, I know
4 that Danielle is going to make a statement, but I
5 don't want to cut off questions before that. I
6 just want to make sure that you're queued -- I
7 said queued, you're cute, too, but you're queued
8 up for this.

9 If there are any other questions I'd
10 take them now. Tom.

11 MR. CACKETTE: I'm just curious, where
12 do you expect us to be and what kind of draft
13 investment plan will we have at the post October 9
14 meeting, the rescheduled October 9 meeting?

15 MR. WARD: Okay, it was going to be
16 October 6th --

17 MR. CACKETTE: 6th.

18 MR. WARD: Thanks for giving us an extra
19 three days.

20 (Laughter.)

21 MR. WARD: We'll use it, I assure you.
22 We're hoping that we can hold that meeting around
23 October 20th. And definitely, our goal is to
24 provide the next draft of this investment plan 10
25 working days. If that is our goal, it would be a

1 minimum of seven days prior to the meeting.

2 So, that's kind of the timeframe that
3 we're looking at right now. We'll be about the
4 business, it will be a busy time, that's for sure.
5 Because we are --

6 MR. CACKETTE: Is it going to have, you
7 know, we recommend funding in this area and this
8 area and that area type of a beginning at that
9 point or not?

10 MR. WARD: Well, what we hope to have
11 are the baskets, if you will, of funding
12 available. I think what you're seeing today are
13 the, you know, the ULC and SULC are baskets. We
14 are also talking about these other funding areas
15 like workforce training and vehicle fuel
16 efficiency, its own entity, possibly.

17 These are things that we've identified
18 that some are in statute, some are things we've
19 identified, and some are these categories or
20 baskets.

21 I, frankly, just don't know how, you
22 know, how much more detail I can give you right
23 now. But I think you'll see that on a percentage
24 basis we will be, I would say, authorizing areas
25 to be spent, for funds to be spent in.

1 And then, as I see it, this is kind of
2 the superstructure of how we achieve the goals of
3 the trajectory needed for 2050, and how we can
4 apply the opportunities that avail themselves to
5 us now. Because what's out there to be proposed
6 is not necessarily completely cohesive with that,
7 with the goal structure.

8 So, we'll be trying to apply that to
9 that goal structure as best we can, given what the
10 opportunities have available, themselves.

11 Dave.

12 MR. MODISETTE: Dave Modisette with the
13 California Electric Transportation Coalition. I
14 did have one comment on the allocation of
15 methodology, and it's really just to, I guess,
16 amplify something that John Shears said, and then
17 Mike Smith broadened it out a little.

18 The specific thing that Mike said was
19 that when you're looking at the allocation
20 methodology you need to consider limitations on
21 the quantity of biofuels available and biofuels as
22 feedstocks.

23 And I guess I want to broaden that out
24 just a little bit, well, quite a bit, and to say
25 that I think you also need to take into

1 consideration all of the supply constraints for
2 the fuels and the feedstocks and the market
3 constraints as well.

4 And I guess I wanted to remind you that
5 at least some preliminary work in this area was
6 done by TIAX, done by Mike Jackson, and presented
7 as part of his presentation in July. I don't know
8 if you recall, but he did what he called an
9 unconstrained scenario, unconstrained by these
10 kind of market constraints.

11 And then developed a percentage
12 allocation based on the unconstrained scenario.
13 But then he said, you know, we need to recognize
14 that there are these kind of supply and other
15 market constraints, market penetration
16 constraints.

17 And so he did a second scenario which
18 reflected, you know, at least as best he could,
19 those supply constraints. And the difference
20 between those two scenarios was quite dramatic.

21 And so I guess that's the issue that I
22 want to raise, is that those kind of market and
23 supply constraints can dramatically affect the
24 allocation, and I think should.

25 And, again, you may want to go back and

1 take a look at some of the analysis that Mike
2 presented back in July.

3 MR. WARD: That's a good point, Dave.
4 The constrained and the unconstrained is something
5 that has been a topic of conversation here at the
6 Commission. And we are definitely about the
7 business of making sure -- we want to make sure
8 that this is constrained to the best of our
9 ability to effect and to represent the reality
10 that is actually present, not that what we wish
11 could be.

12 MR. MODISETTE: And I also want to thank
13 and congratulate staff and Mike for great
14 presentations today, thank you.

15 MR. WARD: Thank you, Dave. We have one
16 question? Nathalie?

17 MS. HOFFMAN: Hi, hi, Pete.

18 MR. WARD: Hi.

19 MS. HOFFMAN: I was only able to join
20 this workshop just a few minutes ago, or a half an
21 hour ago, 15 minutes ago. So I'm not sure whether
22 you covered this, but you did mention updating the
23 GREET model for different pathways. And I wonder
24 if that updating includes a pathway for sugarcane
25 grown in California and for sugarcane ethanol

1 produced in California?

2 MR. WARD: I'm pretty sure that it does.
3 Or that it will.

4 MS. HOFFMAN: Okay. That's good. And
5 then also I wasn't sure, you made a comment toward
6 the end about dodging a bullet with regard to
7 purpose-grown crops and row crops. Could you tell
8 me what the problem is with row crops? I don't
9 understand that.

10 MR. WARD: I may have overstated the
11 concern. I was generally trying to relate to
12 basically the swirling controversy about land use
13 impacts, in both direct and indirect land use
14 impacts, in that it was stated to unfairly group
15 all row crops.

16 But let me just assure you that, you
17 know, the greenhouse gas is the profile that we're
18 looking at. And, you know, if the row crop is
19 acceptable from that standpoint, it will be given
20 consideration. McKinley nods to me that we will
21 be including that in our GREET model runs for the
22 updated GREET, California-modified GREET.

23 MS. HOFFMAN: Okay, and I'm assuming
24 that your comment about, you know, perhaps
25 overstating it would apply to purpose-grown crops,

1 as well as row crops.

2 MR. WARD: Right.

3 MS. HOFFMAN: Because Dr. Kaffka's
4 presentation made it clear, I think, that these
5 concerns, purpose-grown crops and row crops, these
6 concerns about sustainability are not an issue
7 here in California. And I think we have to be
8 very cognizant of that.

9 MR. WARD: I'm sure that's the case.
10 I'm sure it depends on crops.

11 MS. HOFFMAN: Okay, that will be good.
12 And then I just wanted to, you know, add
13 California Renewable Energies to the list of
14 companies that are interested in getting funding
15 under AB-118. You know, we have been here and
16 just want to put that on your list.

17 MR. WARD: Okay, so we would put you
18 under the category that you're expressing
19 interest?

20 MS. HOFFMAN: Yeah, you have a whole
21 list of companies, and you can put us there. I
22 don't know if there's another sugarcane ethanol
23 company on there.

24 MR. WARD: Okay, thank you.

25 MS. HOFFMAN: Okay.

1 MR. WARD: Anything else, any other
2 questions?

3 MS. HOFFMAN: Well, I wasn't able to
4 hear all of Mike Jackson's, and I wasn't able to
5 get all the slides because, as I said, I got on
6 late.

7 I was concerned when I looked at the
8 slides from the last presentation he made, and I
9 don't know if this has been remedied by now or
10 not, I just can't see the whole presentation.

11 But, when you looked at it it looked
12 like biofuels were getting such a tremendous
13 amount of money. And I think Danielle made the
14 comment, well, biofuels shouldn't get any money
15 because it's obvious that they've got so much
16 money.

17 But it's very important to note -- and
18 some folks made the comment that, you know, try to
19 get it best. The money that's been available for
20 biofuels, I looked at the last report that was
21 done for the state on ethanol fuel incentives
22 applied in the U.S., and that was done in January
23 2004. I'm not aware of a later one.

24 But there are no incentives that I'm
25 aware of for biofuels produced in California, and,

1 you know, produced and grown in California. All
2 those state biofuels incentives are for states, as
3 Tom pointed out, in the corn belt or the soy belt.
4 We don't have any here in California.

5 And since we have the opportunity to
6 grow crops here as Dr. Kaffka pointed out, not
7 only sugarcane, sorghum, detropha, all of these
8 good crops, I think that we should really
9 reconsider those and break them down into
10 California, as opposed to the rest of the states.

11 No incentives for growing them. And we
12 need to establish purpose-grown crops. They're
13 not commercial crops yet, we need to have a
14 mechanism to establish them. The private equity
15 community doesn't get into doing that. They're
16 interested in technology, patents. And that's not
17 what happens when you need to establish a crop,
18 that may be turned into an energy crop.

19 So I think we really have to break down
20 those incentives much more closely and see what
21 they apply to; make sure we don't preclude an
22 overlooked category that needs incentive and need
23 money and investment.

24 MR. WARD: I think you were referring to
25 State of California incentives, right?

1 MS. HOFFMAN: Yeah.

2 MR. WARD: Yeah.

3 MS. HOFFMAN: He had some slides --

4 MR. WARD: I know it was in the
5 aggregate of states.

6 MS. HOFFMAN: Yeah, but I don't think
7 there are any California incentives in there. I
8 mean it looks --

9 MR. WARD: Is that what you found, Mike?

10 MS. HOFFMAN: -- like it's just states.
11 And somebody made the comment before that it needs
12 to be broken down to show California vis-a-vis the
13 other states. Because, after all, those relate to
14 -- and subsidies and so on and so forth.

15 We don't have any crops in California
16 that receive subsidies for biofuel. None.

17 MR. JACKSON: This is Mike Jackson. In
18 the presentation today I did show California
19 programs in terms of state funding. And you're
20 right, there's no incentives in there for the
21 biofuels.

22 MS. HOFFMAN: Yeah, none. There's a
23 federal program called BCAP which recognizes that
24 there has to be funds allocated for the
25 establishment of a commercial crop for these crops

1 that can turn into good feedstock. Not only for
2 first generation, current generation feedstocks,
3 but also for cellulosic ethanol, which we really
4 want to get to, et cetera.

5 And by the way, sugarcane is absolutely
6 the best feedstock for both this generation and
7 for cellulosic fuels of biobutenol aviation fuel,
8 et cetera. And so it's really in a special
9 category, which needs to be looked at, too.

10 Because it has -- greenhouse gas reduction study,
11 period study, shows that it has an energy balance,
12 at least here in California, of 11, at least 11.6
13 to 1. So that's pretty significant in greenhouse
14 gas reduction.

15 MR. WARD: Okay. Well, thank you,
16 Nathalie. And all your comments are on the record
17 now.

18 MS. HOFFMAN: Okay, thank you.

19 MR. WARD: Um-hum. Any other questions?
20 Yes, sir.

21 MR. SINGH: This is Raj Singh with SunX
22 Energy. We are, at this point, looks like a
23 little late to the game here, but I wanted to get
24 us on the record.

25 We are LG-2 biofuel company out of B.C.,

1 Vancouver, B.C. And we are at the last stage of
2 the working LG-2 biofuel at this point, and we are
3 looking to develop our program in California.

4 And I was wondering how do I get on your
5 list, who should I talk to?

6 MR. WARD: If you can seek our website
7 you can actually provide your comments to our
8 list. You can get on our listserve and you can
9 provide a statement to our docket for this
10 program, as well. I think that's probably the
11 best way to get rolling.

12 MR. SINGH: Thank you.

13 MR. WARD: Thank you. Now, Danielle,
14 would you like --

15 MS. FUGERE: Yes. I'm just going to
16 make a quick statement on behalf of John Shears
17 because he had to step out early.

18 One, he just had the question, and I
19 assume that these presentations will all be
20 online?

21 MR. WARD: Absolutely.

22 MS. FUGERE: Okay. And with regard to
23 the assumptions about cellulosic he just wanted to
24 caution that the GHG emissions may be affected by
25 sustainability factors such as land use, to the

1 extent that those are crop-based biofuels. So he
2 just wanted to note that for the record.

3 And then also wanted to address a
4 framework document that was drafted for the
5 sustainability working group. And he wanted to
6 address that just in saying, first of all, it's a
7 very helpful document. And it's a good start on
8 saying where the agency is going.

9 But it was very much used, language
10 couched in qualified language. And so we were
11 looking to understand whether that is a statement
12 on where the Energy Commission is actually going
13 to go. And whether that's going to become a
14 formal document.

15 And so we were looking for more
16 information about that.

17 MR. WARD: Okay.

18 MS. FUGERE: And there's also charts in
19 the back that we wanted to probably have more
20 discussion with the Energy Commission on. Spend
21 more time on.

22 MR. WARD: Okay. Let me just ask you a
23 question first regarding the residues from row
24 crops, or from purpose-grown crops?

25 MS. FUGERE: Correct. Any, you know,

1 essentially crop-based biofuels may have land use
2 implications elsewhere.

3 MR. WARD: Okay, even from the residues
4 from those? Okay, more --

5 MS. FUGERE: Not the residues. So it's
6 not clear because it may be cellulosic, it could
7 be waste-based, or it could actually be crop-
8 based.

9 MR. WARD: I see, okay. With regard to
10 your second point, part of the reason we have
11 delayed two weeks is to more adequately address
12 the sustainability issues. And all the working
13 papers that we presented so far are going to be
14 newly worked on. So that's really the focus.

15 MR. MIZUTANI: Chuck Mizutani. In
16 particular with respect to sustainability, we have
17 sustainability sort of activities in each of the
18 three sort of phases of this program.

19 So, one is the sustainability goals in
20 the rulemaking. And the second one is in the
21 investment plan, and ultimately in the
22 solicitations.

23 What we are doing is we've established
24 the sustainability working group sort of as a
25 forum to discuss and gather input, have a dialogue

1 on sustainability. And I think what we are
2 planning to do is we're in the process of
3 scheduling the next sustainability working group
4 to sort of talk about the characteristics or case
5 studies that could be compared against the
6 sustainability goals that we have drafted in the
7 rulemaking.

8 MS. FUGERE: So, do I get a sense then
9 that the framework document that was presented is
10 something that is accepted by the Energy
11 Commission? Or is really kind of laying out the
12 pathway for how we'll proceed?

13 MR. MIZUTANI: I'm sort of drawing a
14 kind of fuzzy picture of the paper you're talking
15 about. So that's why I'm sort of at a loss for
16 words.

17 MR. WARD: If I can just say, it is a
18 working paper, --

19 MS. FUGERE: Right.

20 MR. WARD: -- it's kind of a work in
21 progress.

22 MS. FUGERE: Okay.

23 MR. WARD: And we're hoping to, you
24 know, more adequately nail that down so that we
25 can go forward with the investment plan and

1 incorporate it.

2 MS. FUGERE: Okay. Thank you.

3 MR. WARD: Yes, ma'am.

4 MS. SCOTT: My name is Bonnie Scott.

5 I'm with Global Cooling Solutions. And wanted to
6 take a moment to invite the Committee to a
7 presentation we're going to be giving on our new
8 technology. It's on the 29th here at the CEC at
9 10:00 a.m.

10 What we're currently calling this is
11 GEOD, which is green energy on demand. It's a
12 safe and affordable aftermarket automotive
13 addition that reduces greenhouse gases by 85
14 percent and increases fuel economy by 20 percent.

15 This meets the 2050 goal now. There's
16 no infrastructure needed on this hydrogen
17 technology. There's no refining; no fuel stations
18 required.

19 There's no impact on our present carbon
20 footprint. This is a fully renewable and
21 sustainable hydrogen technology. And it works
22 with all gas- and diesel-powered vehicles
23 including locomotives and ships.

24 So we are going to give a full
25 presentation here on the 29th, including a

1 demonstration of the product. If anybody would
2 like to attend to get more additional information.
3 Because it's just a hydrogen technology it's not
4 really fitting in the storylines that they have up
5 here regarding the infrastructure needed, you
6 know, the hydrogen fuel stations and refining and
7 that type of thing.

8 So this is truly a new technology.
9 We're coming out under the woodwork here to bring
10 this forward to you. And we'd like to invite
11 anybody here on the Commission to attend that
12 presentation.

13 And if you'd like to do that you can
14 contact Michael Zack here at the CEC, 916-654-
15 4531. Thank you.

16 MR. WARD: Thank you. That is a CARB-
17 certified aftermarket?

18 MS. SCOTT: We're pending, yeah.

19 MR. WARD: Oh, okay. I just wanted to
20 make sure.

21 Yes, sir.

22 DR. SOMMER: My name is Geoffrey Sommer;
23 I'm representing AC Propulsion, an electric
24 manufacturer and remanufacturer of cars. We've
25 been around since early '90s. Our founder was the

1 designer of the powertrain, the motor for the
2 General Motors -- 1. So we've been involved in a
3 lot of things in the State of California, -- and
4 things like that. We also licensed our technology
5 to Tesla. We helped get them started and we get
6 royalties off of them.

7 Anyway, so we've been around a long
8 time. Unfortunately, despite all the time we've
9 been in California, we've had most good results
10 dealing with customers overseas. And, in fact,
11 our primary investment is from China.

12 The situation we're in right now is we
13 have a large capacity for electric powertrains,
14 about 2000 a year. We have a pretty good idea of
15 what it's actually going to take to get large
16 scale implementation of electric vehicles into the
17 market here and overseas because of our overseas
18 customers.

19 One thing that hasn't been mentioned
20 today, but I think was part of the TIAX work that
21 I haven't seen, was the issue of vehicle-to-grid,
22 V-to-G, smart charging.

23 One thing I wanted to make sure of,
24 because it was mentioned, touched on in the
25 earlier parts of the presentation today, was that

1 there are things outside the scope which matter.

2 Things like demand, customer behavior.

3 And I'd like to just make a play, if it
4 isn't already being considered and hasn't been
5 talked about today, for the intersector issue,
6 specifically with V-to-G. It's the fact that we
7 have renewable energy sources, solar, wind, which
8 have their own problems in coming into large-scale
9 adoption in the country.

10 And what we see specifically with V-to-G
11 is that that's going to be the pathway for large-
12 scale implementation of electric drive from a
13 financial and business perspective. The fact that
14 there's added value to get over this hump stage
15 that we currently have, with very small quantities
16 of very expensive vehicles, partially expensive
17 because of the batteries, although that's coming
18 down. But also very expensive because the
19 quantities aren't up there. We don't have the
20 production lines that a large manufacturer has.
21 So we have to get over this hump.

22 And we see V-to-G as being the key to
23 doing that. Our vehicles right now are the only
24 ones that can do full power up and down to the
25 grid for V-to-G. But as time moves on, our

1 patents expire and so forth.

2 It's just a plea that we consider
3 intersector approach in here, because there's a
4 lot going on in California, EPRI, SCEdison.

5 On the east coast we're a member of
6 what's called MAGICC Consortium. It's the Mid-
7 Atlantic Grid Intelligent Car Consortium through
8 the University of Delaware.

9 Also overseas we're involved in various
10 efforts in Europe.

11 MR. WARD: Right, thank you. Thank you
12 for saying that, and please come to California and
13 manufacture.

14 DR. SOMMER: Well, we're already
15 manufacturing here, and that's the thing. It's
16 just on small scale.

17 MR. WARD: I see.

18 DR. SOMMER: So, if, however, the
19 funding comes from overseas -- we go where the
20 interest is. So, we'd like to be here, but we're
21 not -- Tesla's doing the electric sports car
22 consumer market thing. What we're focusing on,
23 though, is the pathway to large-scale adoption,
24 not a niche market.

25 But how do we get to having very large-

1 scale electric production, and we really think V-
2 to-G is the way that's going to happen.

3 MR. WARD: Thank you. Yes, Peter.

4 MR. COOPER: Yeah, Peter Cooper from the
5 Labor Federation. Just two suggestions for groups
6 that we should consider partnering with.

7 First, regarding leveraging state
8 monies, the employment training, which has money
9 for workforce training and is focusing dollars in
10 this direction.

11 The second is that UC Berkeley Labor
12 Center, which has done a great deal of research
13 looking at the economic models behind the AB-32,
14 and kind of expanding that and looking at the
15 workforce dimensions of them. And they are a
16 great resource that we should work with in the
17 coming months and years.

18 MR. WARD: Great. Thank you for your
19 suggestion, appreciate that.

20 Any other questions?

21 Well, I want to thank you all for
22 coming, those of you that came to visit us today,
23 and those who are on the phone and in the room
24 here. Thanks, again.

25 We will be in touch again on our next

1 scheduled meeting.

2 And on to lunch, everyone.

3 (Whereupon, at 12:15 p.m., the Staff
4 Workshop was adjourned.)

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I, PETER PETTY, an Electronic Reporter,
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IN WITNESS WHEREOF, I have hereunto set
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