

BEFORE THE
CALIFORNIA ENERGY COMMISSION

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

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

TUESDAY, SEPTEMBER 2, 2008

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CEC STAFF PRESENT

Michael Smith

Peter Ward

Gerry Bemis

Chuck Mizutani

Tim Olson

Malachi Weng-Gutierrez

Pilar Magana

John Margolis

ADVISORY COMMITTEE MEMBERS PRESENT

Michael Walsh

International Council on Clean Transportation

Tim Carmichael

Coalition for Clean Air

John Shears (via teleconference)

Center for Energy Efficiency and Renewable
Technologies

Bonnie Holmes-Gen

American Lung Association of California

Patricia Monahan (via teleconference)

Union of Concerned Scientists

Jim Sweeney (via teleconference)

Precourt Institute for Energy Efficiency
Stanford University

Dan Kammen

Renewable and Appropriate Energy Laboratory (RAEL)
Berkeley Institute of the Environment
University of California, Berkeley

Carla Din (via teleconference)

Apollo Alliance

ADVISORY COMMITTEE MEMBERS PRESENT

Will Coleman (via teleconference)
Mohr Davidow Ventures

Jay McKeeman
California Independent Oil Marketers Association

Tom Cackette
California Air Resources Board
California Environmental Protection Agency

Anthony Brunello
California Air Resources Board
California Resources Agency

Richard Shedd
Department of General Services

ALSO PRESENT

John Boesel, President and CEO
(via teleconference)
WestStart-CALSTART

Gina Gray (via teleconference)
Western States Petroleum Association

Danielle Fugere (via teleconference)
Friends of the Earth

Michael Jackson (via teleconference)
TIAX, Inc.

Tom Fulks (via teleconference)
Neste Oil
Mighty.com

David Modisette (via teleconference)
California Electric Transportation Coalition

Andrew Panson (via teleconference)
California Air Resources Board

Bonnie Scott
Global Cooling Solutions

ALSO PRESENT

Walter Seimbab (via teleconference)
South Bay Cities Council of Governments

Jon Van Bogart
Clean Fuel USA

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I N D E X

	Page
Proceedings	1
Introductions	1
Opening Remarks	3
Overview	7
Comments/Dockets from July 9 Meeting	9
Peter Ward, CEC	9
New Schedule for Investment Plan	181
Peter Ward, CEC	181
Status of Regulation Development	183
Chuck Mizutani	183
Analyses Now Underway	45
a. Updating Storylines	--
Tim Olson, CEC	--
b. "Back casting" Effort for the "2050 Vision"	45
Gerry Bemis, CEC	45
Malachi Weng-Gutierrez, CEC	120
c. "Gap Analysis" - Alternative Fuels and Vehicle Technologies	143
Mike Jackson, TIAX	144
Funding Priorities and Opportunities	186
Peter Ward; Mike Smith; Tim Olson, CEC	186
Schedule	181
Public Comment	187
Closing Comments	188
Adjournment	188
Reporter's Certificate	189

P R O C E E D I N G S

9:21 a.m.

MR. SMITH: Okay, we're going to go ahead and start this workshop. My name is Mike Smith; I'm the Deputy Director for Fuels and Transportation here at the Energy Commission. And pardon the delay getting this started, particularly for those who are on the phone and on WebEx. We thought it wise to at least give some folks a few minutes. Traffic was a bit of a headache this morning. Everybody's coming back from Labor Day weekend, school is starting, college is starting and I'm sure nobody has planned ahead for the commute. So, I wanted to give folks just a few minutes for those that might be traveling a little bit late. But we're going to go ahead and get started now.

What I'd like to do first is go around the table to introduce the members of the Committee that are here present. And then I know there are some folks online that are committee members, also, and after we go around the table I'd like those folks to take a minute just to identify themselves so we know exactly who of the committee membership is listening and

1 participating online.

2 Peter, do you want to introduce
3 yourself.

4 MR. WARD: I'm Peter Ward, Program
5 Manager for the AB-118 program here at the Energy
6 Commission.

7 MR. CACKETTE: Tom Cackette from the Air
8 Resources Board.

9 MR. BRUNELLO: Tony Brunello from the
10 Resources Agency.

11 MR. WALSH: Mike Walsh, consultant.

12 MS. HOLMES-GEN: Bonnie Holmes-Gen,
13 American Lung Association of California.

14 MR. CARMICHAEL: Tim Carmichael with the
15 Coalition for Clean Air.

16 MR. SHEDD: Richard Shedd, Department of
17 General Services.

18 DR. KAMMEN: Dan Kammen, University of
19 California at Berkeley.

20 MR. McKEEMAN: Jay McKeeman, California
21 Independent Oil Marketers Association.

22 MR. SMITH: Thank you. Advisory
23 committee members online, could you identify
24 yourselves one by one?

25 MR. COLEMAN: Will Coleman, Mohr Davidow

1 Ventures.

2 DR. SWEENEY: Jim Sweeney, Stanford
3 University.

4 MR. SHEARS: John Shears, Center for
5 Energy Efficiency and Renewable Technologies.

6 MS. DIN: Carla Din, Apollo Alliance.

7 MS. MONAHAN: Patricia Monahan from the
8 Union of Concerned Scientists.

9 MR. SMITH: The person before Patricia
10 was a bit garbled. Could you repeat yourself,
11 please?

12 MS. DIN: That may have been me, Carla
13 Din.

14 MR. SMITH: Oh, Carla; hi, Carla, how
15 are you? I'm sorry I didn't hear your name
16 clearly.

17 Is there anybody else online that's a
18 member of the advisory committee?

19 Okay. With that we'll get started.
20 This is the third advisory committee meeting of
21 the alternative and renewable fuel and vehicle
22 technology program.

23 This one's a little bit different. This
24 is a staff workshop as opposed to a committee
25 meeting sponsored by the Energy Commission's

1 Transportation Committee.

2 Following the last advisory committee
3 meeting of our Transportation Committee members,
4 Commissioner Jim Boyd and Karen Douglas asked
5 staff to meet informally at a staff workshop level
6 with the advisory committee to present to them and
7 discuss with them and work through any issues with
8 you folks on our revised methodology for the
9 investment plan.

10 And that will be the focus of today's
11 workshop. And I'll go into it in a little more
12 detail in just a minute.

13 We are planning a second staff workshop
14 with the advisory committee on September 15th,
15 which is a Monday, my apologies. That will be
16 about 15 days, just about two weeks from now. As
17 I said it's another staff level informal meeting
18 to work through and discuss with you folks our
19 methodology.

20 The next formal advisory committee that
21 will be sponsored by the Transportation Committee
22 by Commissioners Boyd and Douglas will be on
23 October 6th.

24 There is a notice on the September 15th
25 workshop that was posted on Friday, so there is a

1 notice on the website if you care to take a peek
2 at that. But just to give you a heads-up as well
3 as stakeholders and members of the public, that we
4 will be having another meeting in mid September.

5 MR. CARMICHAEL: When was that?

6 MR. SMITH: September 15th, yeah.

7 I want to apologize in advance to the
8 committee members and to the stakeholders and
9 members of the public in general for not having
10 materials for your review prior to this meeting.

11 Unfortunately we didn't have materials
12 and didn't have the methodology finalized in time
13 to send it to you in advance so that you could
14 review it in any meaningful way and come prepared.
15 So my apologies for that.

16 So the material we will be presenting
17 today you'll be hearing about and seeing for the
18 first time. It makes the September 15th workshop
19 all the more imperative because it will give
20 members of the advisory committee a second bite at
21 the apple to react to our methodology and the
22 process that we are going to undertake in
23 developing the revised investment plan.

24 So you'll have a couple weeks to think
25 about it and come back to a second meeting more

1 prepared to engage. But we wanted to at least
2 take this opportunity to keep the process moving
3 forward, take this opportunity to present the
4 methodology to you for your consideration.

5 MR. CARMICHAEL: Could I just --

6 MR. SMITH: Tim, go ahead.

7 MR. CARMICHAEL: This is Tim Carmichael.
8 If I could just flag something. Bonnie and I were
9 just caucusing. There's, we think, a pretty big
10 conflict for a number of the environmental
11 participants in this advisory group on that day.

12 CAPCOA is hosting their annual
13 conference that Monday and Tuesday. And I know a
14 number of people are planning to attend that. So
15 I don't know if there's any flexibility on the
16 15th, but at least a number of the environmental
17 advocates may not be able to participate in this
18 advisory group meeting.

19 MR. SMITH: Okay, thank you for that --

20 MR. WALSH: I'm scheduled to be there,
21 as well.

22 MR. SMITH: Okay. Thank you for raising
23 that. We'll check into optional dates. If you
24 could provide us with some optional dates that
25 perhaps work for you, that would help us, also.

1 But we'll certainly see what flexibility there is.

2 So there may be a change to the notice
3 then that's up on the website. We want to try and
4 do this with as much participation as possible, so
5 we'll look very carefully at that.

6 Let me just give a very brief overview,
7 and then I'm going to turn this program over to
8 Peter Ward to walk you through in more detail.
9 And then ultimately to Gerry Bemis and to Malachi
10 Weng-Gutierrez, who will talk in more detail about
11 the methodology that we've developed.

12 Essentially we heard from the advisory
13 committee members at the last advisory committee
14 meeting regarding the depth and breadth of the
15 draft investment plan that we presented. We took
16 those comments very seriously; went back to the
17 drawing board and prepared a more goal-driven
18 process or methodology to act as sort of the
19 centerpiece of the investment plan, itself.

20 We are basing the methodology on the
21 2050 vision statement and materials that underlie
22 the 2050 vision statement in our alternative fuels
23 plan. And just as a reminder, that was the plan
24 that was adopted by the Energy Commission and the
25 Air Resources Board last December, December 2007.

1 We've developed a year-by-year
2 assessment penetration methodology for alternative
3 fuels into the marketplace. What we will arrive
4 at is a contribution, relative contributions to
5 reducing greenhouse gas emissions in California by
6 various types of alternative fuels.

7 As you will see in our presentation
8 there's a number of questions that we are still
9 wrestling with in putting together an allocation
10 for the funds in the program, and we would seek
11 input from the advisory committee and from the
12 stakeholders and the public in general on some of
13 the outstanding questions that we are still trying
14 to incorporate into our methodology.

15 But very briefly, though, once we arrive
16 at a determination of greenhouse gas reductions
17 for fuels, we are also we will add, reflect to
18 that, a gap analysis that was discussed at the
19 last advisory committee meeting. And we have
20 engaged the services of TIAX to help us with that.
21 And Michael Jackson is here today to present their
22 preliminary findings on the gap analysis.

23 But that will help us identify holes in
24 the market for funding for alternative fuels and
25 vehicle technologies. But that's not the complete

1 picture because what we also want to do is look
2 from the industry side and get their input on
3 where, given the gaps in funding, where the Energy
4 Commission could most effectively use its money in
5 supporting the entry of alternative fuels and
6 vehicles into the marketplace.

7 And I think with that I'm going to turn
8 this over to Peter who will give you a little more
9 detailed perspective; and then ultimately to Gerry
10 and to Malachi. Thank you. Any questions before
11 Peter begins?

12 Thank you.

13 MR. WARD: Good morning, everybody, and
14 thank you for coming and thank you for being on
15 the phone, those of you who are on the phone. I
16 appreciate your participation and we're looking
17 forward to your advice as we move forward on the
18 investment plan and this methodology which we'll
19 describe today.

20 Some of the housekeeping. The restrooms
21 are right across the atrium from us. If we are
22 required to evacuate there are two doors, one to
23 the left, one to the right. If that happens
24 you'll see a monitor out there with a hardhat
25 directing you to one of those. Hopefully that

1 won't happen. And if that happens, people on the
2 phone, you can just sort of sit back and wait for
3 us to come back.

4 We today are operating on WebEx today,
5 so those that have questions can register your
6 questions. And for those in the room, I'm not
7 sure we need blue cards. Maybe just raising
8 hands. This is a little bit more informal than
9 the advisory committee meetings we've had in the
10 past. And we seek your input along the way.

11 So as we go through, especially Gerry
12 and Malachi and perhaps Mike Jackson's
13 presentations today I'd like to ask you if you
14 have a clarifying question, something that's not
15 clear as we go along, please go ahead and ask it,
16 or raise your hand at that time.

17 If it's more of a discussion-type
18 question that could go protracted, if we could
19 hold those till the end of those presentations
20 that would be appreciated.

21 Again, thank you for those advisory
22 members that are on the phone. And also I'd like
23 to recognize our counterparts, our colleagues from
24 the ARB that are here for the 118 program, Andy
25 Panson and Johanna are here with us, today, as

1 well. Appreciate your coming.

2 The agenda for today is here. It
3 includes some of the analysis now underway in
4 preparation for the investment plan. It will be a
5 little bit -- much more detailed than we had in
6 the past.

7 We'll also briefly discuss the reverse
8 engineering from 2050 to 2020 and to 2008
9 timeframes. The gap analysis, as Mike mentioned,
10 Mike Jackson, I believe, will be on the phone with
11 us today. I don't think he'll be here with us.
12 Updating the fuel and technology storylines is key
13 to the reverse engineering and the gap analysis
14 that we've identified.

15 So we're still in the process of
16 updating those storylines from the different
17 fueling group that we utilized in the AB-1007
18 alternative fuels plan procedures that we had.
19 And a lot has happened in the last few years, but
20 we'll go into that a little bit more later.

21 Also be going over the new schedule for
22 the investment plan. We've delayed a bit, and the
23 status of regulation development, the funding
24 priorities and the opportunities. And then we'll
25 have time at the end for public comment.

1 I'm going to be going fairly quickly
2 through this because I want to allow as much time
3 as we can for the detailed analysis that Gerry,
4 Malachi and Mike Jackson have prepared.

5 At the July 9th meeting we received many
6 comments on the draft plan. As a matter of fact I
7 think we had some unanimous comments, if not
8 unanimous maybe would be held to a voice vote,
9 certainly it was a bit overwhelming. I think that
10 in an advertent way the plan and my presentation
11 of it had a unifying effect for the advisory
12 committee in that way.

13 (Laughter.)

14 MR. WARD: I'm very happy to be a
15 uniter. And there's that new word, again, that
16 we're all familiar with.

17 But basically here's what I heard, and
18 I've heard from my discussions with several of the
19 members in the intervening time. We will be
20 coordinating, and we already have begun the
21 tighter coordination with the PIER alternative
22 fuels roadmap process. And we are already
23 exploring areas where we can potentially interact
24 and jointly fund projects possibly.

25 We will be guided by the full fuel cycle

1 analysis. And we have committed, as I mentioned
2 in the last meeting, that we are committed to
3 updating the inputs to GREET as we go along, and
4 throughout this program, I think that is our
5 definite and steadfast commitment to do so.

6 The goal-driven methodology for
7 allocating funds will be to describe later today.
8 We are right in the midst of that. I want to
9 caution you we are not -- this is a work in
10 progress. And to a certain degree it probably
11 will be for a period of time. I think we'll have
12 a brief final project product. But then after the
13 first year I think we are, of course, committed to
14 updating that as needs require.

15 And discussion about capital efficiency,
16 one of the topics that Will Coleman mentioned in
17 the previous meeting. Reverse engineering that
18 you folks requested and that we are about the
19 business of doing to get to the 2050 GHG reduction
20 targets.

21 The gap analysis that TIAX has prepared.
22 I think we're going to be adding possibly to that,
23 as we'll hear a little bit more about that later.

24 We were asked to emphasize economic
25 development and workforce training which we will

1 pose this as questions to the group, as well.

2 And we are committed to continuing the
3 sustainability market and incentive studies
4 throughout the program.

5 So I really think that this will be one
6 of the best informed programs going forward. We
7 understand our place in time and our place in the
8 country, as a state, and in the world as a nation-
9 state, if you will. And so we do take this work
10 quite seriously. We think that this is one of the
11 best examples and we want to make it turn out that
12 way.

13 The overview of the investment plan
14 process. This is the context for our program, and
15 of course the goal of this program is to develop
16 and deploy innovative technologies that transform
17 California's fuel and vehicle types to attain the
18 state's climate change policies. That's our over-
19 arching goal.

20 We know that AB-32 has, in statute, the
21 goal of 20 percent below 1990 levels by 2020. And
22 the Governor's executive order states 80 percent
23 below 1990 levels by the year 2050. And, of
24 course, that is the ultimate goal that we're
25 hoping to attain, not just the 2020, but to also

1 describe the trajectory that we would pursue from
2 2020 to 2050.

3 GHG reduction for the transportation
4 sector is approximately 38 percent of the total
5 emission reduction needed to achieve the 2020 and
6 2050 emission reduction targets.

7 Further context. We also will be trying
8 to intersperse the state alternative fuels plan
9 and the goals from that plan, which were to
10 achieve alternative fuel use of 9 percent by 2012,
11 11 percent by 2017, 26 percent by 2022.

12 In addition, the bioenergy action plan
13 specifies instate biofuels production of 20
14 percent by 2010, 40 percent by 2020 and 75 percent
15 by 2050.

16 The investment plan process. As we go
17 forward we'll describe the categories of funding
18 that will be eligible to receive funding of the
19 program. And we'll prioritize these categories
20 assigning each a percentage of the available funds
21 based primarily on the GHG reduction potential.
22 That is the guidance that we received from you in
23 the past, and that's what we're going forward with
24 at this point.

25 In essence, the greater the assigned

1 percentage of available funds, the greater the
2 potential to reduce GHG emissions.

3 We may incorporate other considerations
4 in determining the final percentage allocation of
5 available funds and funding opportunities. These
6 are going to be listed later, and they do not
7 necessarily directly relate to the emission
8 reduction potential in GHG. These are like
9 workforce training, economic development and the
10 like. I'll go through those a little bit more
11 later on in the presentation.

12 The investment plan is adopted by the
13 Energy Commission. All funding decisions will be
14 consistent with the categories and allocations
15 determined by this process and in the investment
16 plan.

17 Further overview of the investment plan
18 process. We are committed to the use of the
19 California modified GREET model to use the
20 assumptions of findings that were prepared for the
21 AB-1007 state alternative fuels plans and the 2050
22 vision, which was an integral part of that state
23 alternative fuels plan to better understand the
24 fuel, technology and market changes that would be
25 necessary beyond 2022 to achieve the 80 percent

1 GHG reduction goal for transportation sector by
2 2050.

3 As I mentioned earlier, we'll be
4 updating the storylines for market penetration.
5 Participants in the state alternative fuels plan
6 with fuel and technology working groups we will
7 help understand what changes may have occurred
8 during the last two years. And that is for the
9 update for this plan. But going forward, we plan
10 to stay closely in touch with the alternative fuel
11 working groups and the vehicle technology
12 development groups, as well, so that we can,
13 again, inform this plan in the best possible way
14 as we go forward year to year.

15 This is going to be really critical
16 information. This is basically where the market
17 is out there and how we can balance the available
18 funds to the opportunities that we see out there.

19 Bonnie?

20 MS. HOLMES-GEN: How does that -- so
21 when you're saying that the 2050 vision was added,
22 I mean can you give a little more clarification of
23 what you mean? Just that that specific goal is
24 now incorporated into the work that you're doing?

25 MR. WARD: The 2050 --

1 MS. HOLMES-GEN: Or that it --

2 MR. WARD: -- vision was added to the
3 state alternative fuels plan. It is therefore
4 part of what we're planning on going forward. It
5 was not --

6 MS. HOLMES-GEN: Okay, so the --

7 MR. WARD: -- initially described in the
8 statute of AB-1007. And it was added so that we
9 could be looking toward 2050 in the state
10 alternative fuels plan.

11 MS. HOLMES-GEN: So the specific
12 elements in that chapter of the report are now
13 incorporated into what we're doing here?

14 MR. WARD: That's right.

15 MS. HOLMES-GEN: Okay.

16 MR. WARD: You'll see that the analysis
17 that we have is going all the way out to 2050 and
18 trying to reverse engineer back to the 2022 and
19 the present, basically, to make sure that we are
20 on the trajectory that was outlined in the 2050
21 vision to meet the 2050 goals of 80 percent
22 reduction.

23 I think the storylines pretty much speak
24 for themselves. I know the last investment plan
25 had citations at the end for each one of those,

1 well, those will be updated and probably --
2 hopefully provided very soon to you all, as well,
3 so that we can have a snapshot of where all those
4 fuels and vehicle technologies are right now;
5 where they can be; and what would be needed for
6 them to achieve a higher market sector.

7 Addressing the goals in the investment
8 plan. These are goal-driven assumptions in 2050
9 vision; include 2050 fuel mix for light-duty
10 vehicles. This is right out of the 2050 vision in
11 the state alternative fuels plan. And fuel mix
12 for light-duty vehicles, I should mention, also,
13 that the 2050 vision really was for light-duty
14 vehicles only, not medium- and heavy-duty. But
15 we'll address that later as we are expanding our
16 analysis to potentially include medium- and heavy-
17 duty vehicles, as well.

18 They remain electricity and hydrogen
19 vehicles at 40 percent; biofuels at 30 percent;
20 and a third category, including combination of
21 petroleum, natural gas and propane vehicles of 30
22 percent.

23 In the investment plan we evaluate the
24 following categories which are very very similar.
25 The super ultra-low carbon is comprised of fuel

1 cell, plug-in hybrid, electric and battery
2 electric vehicles that achieve a 90 percent GHG
3 reduction relative to petroleum fuels, and have a
4 fleet average of 80 miles per gallon.

5 The ultra-low carbon is comprised of
6 fuel-flexible vehicles that operate on biofuels
7 and achieve an 80 percent GHG reduction. One
8 would assume there that would be totally a
9 cellulosic biofuel, or a biofuel of the future
10 generation two or three, for the 80 percent GHG
11 reduction, relative to petroleum fuels, and have a
12 fleet average of 60 miles per gallon.

13 And the nonrenewable fuel alternatives.
14 Basically this is the segment of 30 percent that
15 includes natural gas, propane and petroleum fuels
16 that also achieve a fleet average of 60 miles per
17 gallon, as well.

18 MR. CARMICHAEL: Peter, a question.

19 MR. WARD: Um-hum.

20 MR. CARMICHAEL: Just connecting dots
21 that I hope should be connected but I'm not sure,
22 between this slide at the top where you talk about
23 biofuels representing 30 percent in 2050, a couple
24 of slides ago you talked about the bioenergy
25 action plan with a 75 percent biofuel goal by

1 2050.

2 Are we on the same scale, and is the
3 balance going to medium- and heavy-duty vehicles?
4 Or are they not apples and apples?

5 MR. WARD: If I didn't state it, the
6 bioenergy goals are for California-produced
7 biofuels. So the 75 percent, of all the biofuels
8 we would be using at that time, the goal is to
9 produce 75 percent of that in California.

10 MR. CARMICHAEL: Thank you.

11 MR. WARD: Sorry if I missed it.

12 MR. CARMICHAEL: Thank you.

13 MR. CACKETTE: I just want to also make
14 it clear to folks that these numbers you've got up
15 here are fuel use.

16 MR. WARD: Um-hum.

17 MR. CACKETTE: The actual number of
18 vehicles that would be in these mixes differs
19 significantly because of different fuel
20 efficiency, I think.

21 For example, I think the 30 percent of
22 the fuel that's burned by nonrenewable alternative
23 fuels or petroleum is actually only about 10
24 percent of the vehicles in actual --

25 MR. WARD: Right.

1 MR. CACKETTE: -- total vehicles.

2 MR. WARD: Right.

3 MR. CACKETTE: So when you look at the
4 vehicle mix, for purposes of --

5 MR. WARD: Um-hum.

6 MR. CACKETTE: -- funding it will be
7 substantially different.

8 MR. WARD: That's right. And I think
9 Gerry will address that in his. He has a slide
10 specifically on the vehicles -- on the emissions
11 and on the fuel use, as well. So, I think he's
12 characterized all of these things. I think it
13 will address your question when he comes up.

14 DR. KAMMEN: Just one more, if you have
15 a second?

16 MR. WARD: Sure, um-hum.

17 DR. KAMMEN: For the electric and for
18 the hydrogen planning process, is there kind of a
19 formal link to the work that the ISO is doing?
20 Because right now they're involved in a
21 roadmapping plan to think about being the 2020 RPS
22 and beyond.

23 And to try to take advantage of that
24 work it strikes me that there's some really
25 critical issues in terms of upgrading transmission

1 lines, and also potentially getting into the new
2 ones that may be needed if one wants to
3 aggressively meet those goals.

4 From the analysis that we're doing I
5 suspect that's actually one of the most critical
6 issues to the long-range plan. And I'm just not
7 sure if that is formally being done at the state
8 level or not right now. In terms of building the
9 infrastructure costs into your models based on
10 some of the work that they're supposed to be doing
11 right now.

12 MR. WARD: We haven't. We'll take your
13 suggestion, though. And I note that you'll be
14 presenting a paper relative to that. And I'll
15 address the subject probably more thoroughly a
16 little bit later.

17 But I'll note that and I definitely want
18 to cover that, make sure that the ISO is included
19 in our projections, as well.

20 Any other questions?

21 MS. DIN: Peter, this is Carla Din. How
22 did you reach the 75 percent figure regarding
23 (inaudible)?

24 MR. WARD: Those goals were -- basically
25 came out of the bioenergy action plan, as I

1 understand it. It was the Governor's executive
2 order based on the work that was done in the
3 bioenergy action plan of about two years ago, I
4 think.

5 These are goals that we're hoping to
6 provide an economic benefit for California.
7 Obviously that we would be more self-sufficient as
8 a state if we could produce up to the 75 percent
9 of the biofuels we use in the 2050.

10 MR. SMITH: Carla. This is Mike Smith.
11 Those figures were developed, as Peter says, and
12 incorporated in the bioenergy action plan, but
13 they came out -- the bioenergy action plan was
14 developed by the interagency bioenergy working
15 group which is comprised of the Energy Commission,
16 the Air Resources Board, PUC, Food and Ag, other
17 state agencies that have some responsibility in
18 state government for bioenergy.

19 The working group decided, for purposes
20 of the bioenergy action plan to come up with
21 production goals as opposed to use goals in
22 California. So the bioenergy action plan that was
23 submitted to the Governor and the resulting
24 executive order that he signed reflects production
25 goals.

1 I think the desire there is that the
2 state is going to rely increasingly on biofuels
3 rather than import fuels either from the midwest
4 or from foreign sources.

5 There's enough resources in California
6 that we can begin producing, developing our own
7 industry in California.

8 That was essentially the genesis of
9 those numbers.

10 MS. DIN: Thank you.

11 MR. SMITH: Sure.

12 DR. SWEENEY: This is Jim Sweeney with
13 just a quick question. When you use things like
14 80 miles per gallon for fuel cell vehicles, or 60
15 miles per gallon for natural gas vehicles, is this
16 meant as gasoline equivalent? And are you using
17 electric -- just the gasoline used, or the
18 gasoline/electricity combination? How are you
19 defining these numbers?

20 MR. SMITH: Jim, it's meant as gasoline
21 gallon equivalent. And Gerry Bemis can answer
22 that question in more detail in his presentation.

23 DR. SWEENEY: Okay.

24 MR. SMITH: Okay. Thank you.

25 MR. WARD: Thank you. Any other

1 questions?

2 THE OPERATOR: We have one (inaudible).

3 MR. WARD: Okay.

4 MS. FUGERE: (inaudible).

5 MR. WARD: Daniel? Danielle?

6 MS. FUGERE: Hi. Can you hear me?

7 MR. WARD: Yes.

8 MS. FUGERE: Okay. I just wanted to
9 make sure, are you naming -- ultra low carbon, is
10 that intended to name the electricity hydrogen
11 category?

12 You've got supra ultra low carbon, ultra
13 low carbon and nonrenewable. And I just wanted to
14 know how that fit into the first bullet.

15 MR. WARD: Yes. Those are in that first
16 category.

17 MS. FUGERE: Okay, so when you say ultra
18 low carbon, does that mean the biofuels? Or is
19 this some type of separate category?

20 MR. WARD: Well, the biofuels would be
21 the ultra low carbon, the second category, I
22 believe.

23 MS. FUGERE: Okay.

24 MR. WARD: For the flexible fuel
25 vehicles that operate on biofuels that are 80

1 percent GHG reduction, and 60 miles per gallon on
2 a fleet average.

3 So that would be the ultra low carbon
4 would be the biofuels.

5 MS. FUGERE: Okay, thanks.

6 MR. WARD: So I think they're pretty
7 much in order as we have kind of addressed them,
8 and given them slightly different names.

9 MS. FUGERE: Okay, thanks.

10 MR. WARD: Okay. Any other questions?
11 I was advised that if we're answering a question
12 from somebody that's on WebEx, if we could speak
13 right into the microphone; they're having
14 difficulty hearing us if we don't.

15 The sources and steps in the methodology
16 are displayed here. The 2050 vision statement in
17 the state alternative fuels plan focused on the
18 light-duty sector, as I mentioned previously. The
19 fuel demand forecast through 2030 was adopted by
20 the Energy Commission in its 2007 Integrated
21 Energy Policy Report.

22 The expected benefits of the Pavley
23 regulations for new passenger cars sold in
24 California beginning in model year 2009 are
25 included. Zero emission vehicle mandate benefits

1 are included. Low carbon fuel standard benefits
2 are included. Tire efficiency program benefits
3 are included. And the penetration of nonrenewable
4 alternative fuels ultra low carbon and super ultra
5 low carbon vehicles are all addressed in the
6 analysis.

7 Yes, sir, Jay?

8 MR. McKEEMAN: Jay McKeeman, CIOMA. In
9 the timeframe that we're going to put this plan
10 together is it realistic to think that we're going
11 to have a good understanding of what the low
12 carbon fuel standard is?

13 MR. WARD: Absolutely. No, I'm being a
14 little facetious. It is an evolving thing at this
15 point. And I had a discussion with Dan a little
16 bit. The information going into that, as well.

17 It is a complex issue. I'm sure not
18 everything will be nailed down, but we are trying
19 to use the low carbon fuel standard and these
20 others to approximate the benefits that would be
21 projected from those.

22 So I'm sure that not all the details are
23 nailed down, but the expected benefits are fairly
24 clear as they've been outlined in the Governor's
25 executive order, as well.

1 Dan?

2 DR. KAMMEN: Could I just sort of get
3 you to expand on that in terms of what aspect?
4 Because two ways to think about this are one, that
5 the LCFS isn't a big hit on this 40-year plan
6 because it's a 10 percent or more by 2020. And
7 then we would see what comes next.

8 Or you can say it's a huge deal because
9 it's going to determine part of the methodology
10 that feeds into this two-rate all fuels. And I'm
11 just wondering which or any of these -- what's the
12 biggest sort of sticking point you're thinking
13 about, since we're involved in some of the
14 analysis right now on the indirect land use, which
15 is proving to be pretty tough.

16 MR. McKEEMAN: I guess in my mind I have
17 a hard time understanding exactly how the low
18 carbon fuel standard is going to be implemented.
19 I haven't heard a lot of good discussion about --
20 I mean, I understand carbon footprinting; I don't
21 understand how we're going -- if there are a wide
22 variety of fuels that have a lot of different
23 carbon footprints, how we're going to get those
24 fuels into the marketplace and available to the
25 customer.

1 There's a gap in my understanding of
2 understanding about being able to designate
3 certain, I mean fuels by their carbon footprint
4 between the point of being able to designate them
5 and the point of getting them to the customer.
6 And how the marketplace is designed to do that.

7 MR. WARD: I think you're raising
8 legitimate questions. For our analysis here we
9 are using the expected benefit from the low carbon
10 fuel standard. The Air Resources Board will be
11 detailing how that will be achieved. And I don't
12 think that's all complete yet.

13 So, maybe we have a little easier
14 because we're just basically describing what is
15 the projected benefit and applying it to our
16 analysis to see how we should allocate funds for
17 this program.

18 But the Air Resources Board will be
19 coming up in a more definitive detailed plan on
20 how that will be implemented. Is it January or
21 so? First quarter of 09.

22 MR. McKEEMAN: I guess something that --
23 a reason that I'm here at the table is that if
24 there are large-scale changes that are going to be
25 needed in the fuel delivery infrastructure, those

1 changes should be anticipated in spending plan, in
2 the AB-118 spending plan. Or else a wish is not
3 going to come true.

4 MR. WARD: Well, I think that's where
5 the rubber meets the road actually, and I
6 appreciate your mentioning that, because that is
7 one of those practical concerns that we do have to
8 weigh and balance as we go forward with our plan,
9 as well.

10 Thanks for your comment, and keep after
11 us to make sure we include that.

12 MR. SMITH: Jay, just as a followup.
13 There also is an issue that reflects the
14 importance of why this investment plan needs to be
15 updated periodically. We're not going to have all
16 the answers. And for purposes of our analysis at
17 this point, we took a fairly simple trajectory of
18 the benefits, or the compositional benefits that
19 the low carbon fuel standard will provide to the
20 fuel market between now and 2020.

21 When there is more information revealed
22 from the Air Resources Board on their methodology
23 and process, we will try to reflect that in the
24 next iteration of this plan.

25 It's a dynamic process.

1 MR. McKEEMAN: Okay, thank you.

2 DR. KAMMEN: I don't want to belabor it,
3 but just to be fair, though, I mean I think you're
4 absolutely right that there's a lot of these
5 issues that need to be clarified.

6 But Chevron and others, of course, have
7 been commenting in detail, and I assume you have
8 their sets of comments that have been really
9 worked into some of the ARB's planning in terms of
10 how is that lifecycle methodology going to play
11 out, or fuels not only based on their origin but
12 also on the transport and other aspects to bring
13 them to market.

14 So, it's not like there's some surprise
15 here. I mean, at least I hope what's evolving
16 is -- if the metric is a lifecycle analysis, that
17 is the details of that, but I think you're asking
18 about the broad framework unless there's some
19 surprise in the process.

20 It's hopefully one that's evolving in
21 the back-and-forth dialogue around the LC
22 invested, and particularly the material that's in
23 the second point report, the policy one starts to
24 highlight the thinking on that.

25 So I think -- hope the goal is not that

1 this seems like there's some surprise coming up.
2 It's the details of how to work this through for
3 all the different possible fuels.

4 MR. McKEEMAN: I don't think it's a
5 surprise. I think it's more a concern of small
6 businesspeople operating in an environment where
7 it's being teed up for the major oil companies to
8 take over their business. So that's kind of my
9 position at the table.

10 MR. WARD: Thank you for that, Jay.
11 And, Dan, I want to just make it clear that the
12 Chevron comments you refer to are comments to the
13 low carbon fuel standard --

14 MR. McKEEMAN: That's correct.

15 MR. WARD: -- process, and haven't been
16 docketed here necessarily, but --

17 MR. McKEEMAN: That's right.

18 MR. WARD: -- to find them you'd go to
19 the low carbon fuel standard docket. Okay.

20 MR. McKEEMAN: Correct.

21 MR. WARD: Any other questions?

22 The sources and steps of the
23 methodology. As I mentioned, the 2050 vision was
24 done for light-duty vehicles. And we have
25 embarked on extending that to medium- and heavy-

1 duty sectors, as well.

2 We will be relying on the transportation
3 fuel demand forecast through 2030 from the Energy
4 Commission's Integrated Energy Policy Report as
5 the basis, extended to 2050.

6 And we'll be using the fuel composition
7 effects of the low carbon fuel standard. And last
8 is we will be assuming vehicle efficiency gains
9 and adjustments to the land use impacts from the
10 reduction in onroad light-duty vehicle miles
11 traveled as reflected in the medium- and heavy-
12 duty vehicle sectors by increased public
13 transportation energy use.

14 The overview continues. We heard from
15 the last meeting that we should be promoting a gap
16 analysis, and we are doing that. We will be
17 hearing from Mike Jackson of TIAX about that. And
18 that gap analysis will determine the barriers of
19 each fuel and technology basis and the level of
20 funds being invested by state, federal and private
21 sectors to address those barriers.

22 We think this is an important part. We,
23 in the past, have always looked at the gaps, what
24 is needed for each of these sectors to grow. But
25 it's very important that we do this, that we are

1 not duplicative of existing efforts either in the
2 research and development or commercialization or
3 by the fuel providers, themselves. They will have
4 taken on some of these barriers, themselves, and
5 we don't want to double-address those barriers, as
6 well.

7 Developing the complete data on state,
8 federal and private investments currently made to
9 address these barriers as one of the inputs. The
10 type of work needed to address those market
11 barriers. And the status of that work.

12 The relative expense to complete this
13 work and realize the GHG benefits is the area that
14 we will be identifying and hopefully addressing in
15 our program.

16 The gaps identified show where our
17 funding will complement others, as well. Once
18 these funding areas are identified we hope that
19 through partnerships we can maximize the benefit
20 of our program with the resources the others bring
21 in that market sector. And in partnership and not
22 be duplicative of their efforts, as well.

23 This is the overview of the investment
24 plan of other things that we would be considering.
25 Most of the program funds will be allocated based

1 on GHG reduction. But other categories and
2 considerations also come into play.

3 We seek your advice on how to allocate
4 in these areas because they do not directly relate
5 to the GHG reduction. We are interested in
6 hearing from you beyond this analysis. And some
7 of these areas are the vehicle efficiency
8 technologies, workforce training, public outreach.

9 We will be allocating funds for studies
10 of sustainability, markets and incentives on an
11 ongoing basis.

12 And as Tom Fulks mentioned in the last
13 meeting, we will have a category for way-cool
14 things we didn't think of yet, which definitely
15 will drive this program. We do see that those
16 way-cool things may actually exist between
17 research and development and commercialization.
18 We would like to help in that area, as well.

19 But how we allocate funding for these
20 particular areas we do seek your advice and
21 counsel on at this point.

22 Mike.

23 MR. SMITH: Peter, just to clarify. On
24 vehicle efficiency technologies we actually can
25 calculate the GHG reduction benefits from the

1 methodology that Gerry will explain. So we are in
2 the process of doing that. It's a fairly simple
3 process.

4 But the other categories are definitely
5 categories that don't have a GHG foundation. And
6 we will need some input on how to best allocate
7 funds from AB-118 for those activities.

8 These are activities that are called out
9 in statute, so it's important that we not embed
10 them, but rather call them out specifically so we
11 can allocate very explicitly funding for those
12 efforts.

13 MR. WARD: Thanks, Mike. At this point
14 if there are any other questions I'd like to take
15 them now. Otherwise, I'd like to call on Gerry
16 Bemis who has painstakingly taken us through from
17 2008 all the way out to 2005 -- or 2050, or 2050
18 back to 2008, depending on how you look at it.

19 This is a work in progress and we are
20 very interested in your comments as we go forward
21 and finalize this. This is his analytical method
22 for, and our analytical method for allocating
23 program funds for the AB-118 program.

24 Gerry.

25 MR. BEMIS: Peter, the agenda says Chuck

1 was on next. No?

2 MR. WARD: That's an older agenda at
3 this point.

4 MR. BEMIS: Okay.

5 MR. WARD: Gina?

6 MS. GRAY: Yes.

7 MR. WARD: Gina Gray of WSPA. I
8 recognize the voice.

9 MS. GRAY: Thank you. Sorry. Hopefully
10 this is an appropriate time to ask a question.
11 But a couple of slides ago where there was a
12 discussion I think it was -- tried to figure out
13 where these monies might go and how to allocate
14 the funds.

15 And I can understand where you're trying
16 to get a grasp of all the different programs in
17 the state that may, you know, you may need to look
18 at the goals and where the benefits need to be.
19 And therefore try and allocate the funds into
20 these various fuel groupings.

21 But I guess the problem I think I'm
22 having is understanding how that then flanges up
23 with what was in the documentation earlier where
24 it talked about, for example, you know, that folks
25 that have a mandate, in other words a piece of

1 legislation or regulation that they're trying to
2 comply with, would not be able to apply for those
3 funds.

4 So, on the one hand it seems that you're
5 taking into account the LCFS, et cetera, and the
6 types of fuels that may be needed for those in
7 order to create their carbon intensity reductions,
8 but on the other hand the folks that are trying to
9 comply with those are not being allowed to apply
10 for the funds.

11 MR. SMITH: Gina, good morning. This is
12 Mike Smith. Just to clarify the inclusion, and
13 certainly Gerry can explain this in a little more
14 details once he begins his presentation, but
15 inclusion of the effects of the low carbon fuel
16 standard are not intended as a measure of what
17 might be eligible for funding from the Energy
18 Commission.

19 We had to, in the process that we went
20 through we had to start with a demand forecast, a
21 business-as-usual demand forecast, and then layer
22 by layer show the effects on demand of the Pavley
23 regulations and the like.

24 Now, the low carbon fuel standard
25 doesn't necessarily affect demand for

1 transportation fuels. What it does is affect the
2 composition of transportation fuels sold in
3 California.

4 So we're just simply, what we're trying
5 to do is sort of, in a sense, peel back the
6 various layers of the skins of the onion to get
7 down to that market or that demand for
8 conventional gasoline and diesel that's going to
9 be mostly affected or influenced by investments
10 that the Energy Commission makes in its AB-118
11 program.

12 So we're only showing the effects of the
13 low carbon fuel standard there as compositional
14 effects on the market, not as double-counting, I
15 think, as you may be suggesting.

16 Also we're certainly quite sensitive to
17 the fact that the statute requires us, or
18 prohibits us from providing funding for entities
19 that are engaged in projects that are otherwise
20 required by state law, federal law, local
21 ordinances, et cetera, in complying with a
22 regulation.

23 MS. GRAY: All right. I don't think I
24 was implying double-counting. I just was trying
25 to -- it seems to me just a disconnect between the

1 derivation of the allocation of funds and then
2 this exclusionary piece.

3 And I guess, again, one of our comments
4 earlier had been it seems difficult to imagine any
5 particular initiative within the state that isn't
6 somehow tied to some piece of legislation or
7 regulation.

8 In other words, people are going to be
9 moving forward with PHEVs and with biofuel and
10 with all these things because there are state regs
11 that are in place that require certain things to
12 happen. It's not happening in a vacuum.

13 And so I guess we're still struggling
14 with this dichotomy, but I'll let you guys
15 continue.

16 MR. SMITH: Okay.

17 MS. MONAHAN: This is Patty from UCS.
18 Can I ask a question?

19 MR. WARD: Sure, Patty, go ahead.

20 MS. MONAHAN: And should we push the
21 button that says raise-hand, is it better to just
22 interrupt? I want to follow the right protocol,
23 but I'm not quite sure what to do on the phone.
24 Just is it okay to just interrupt, or should I --
25 I tried the raise-hand, but it seemed like it

1 wasn't getting answered.

2 MR. WARD: The advisory committee
3 members are unmuted, so speak right up.

4 MS. MONAHAN: Okay. Well, I had a
5 question about the relationship between the
6 investment plan and the regulations that are being
7 developed as we speak.

8 And I'm wondering if you guys are going
9 to devote any discussion to that today, or whether
10 I should ask some specific questions around that,
11 or actually perhaps more make some comments?

12 MR. WARD: We do have a section on the
13 agenda today to give you a status of the
14 regulation development. Maybe that's a good time
15 to ask that question. Chuck Mizutani will be
16 presenting that.

17 MS. MONAHAN: Okay, I can wait. And can
18 I make a quick comment, then? I wanted to let you
19 all know that a subset of folks on the advisory
20 committee had drafted a letter, which I'm going to
21 circulate to all members of the advisory committee
22 so folks can have a chance to look at it and to
23 sign on if they agree with the letter.

24 And basically it was a restatement of a
25 lot of the issues. I think that you guys are

1 pretty, are doing a pretty good job now of
2 addressing, that came up in the last meeting of
3 the advisory committee.

4 And they laid out some principles for
5 the evolvement of the investment plan that number
6 four. Let me go quickly through them.

7 Basically number one is to prioritize
8 projects that meet the state goals, and that's the
9 broad suite of state goals, including the 2050
10 vision, but also sustainability and air quality
11 goals. And to develop end point for
12 commercialization of high priority technologies
13 and fuels. Sort of lay out a pathway for getting
14 there.

15 The second one was to do a gap analysis,
16 basically determine where we need public funding
17 to achieve the targets, to achieve our goals.

18 The third is to insure transparency so
19 that everyone, and I think, you know, both the
20 community that's going to be applying for the
21 funds, the business community, and also just the
22 public, be clear that this should be a very
23 transparent process for everyone concerned.

24 And the fourth is to fund priorities
25 that still leave room for emerging technologies.

1 And I think you guys have also captured that well
2 in the discussions.

3 And the letter also laid out a
4 relationship that we expect between the
5 regulations and the investment plan. And I'll go
6 into that, I think, more when we actually have
7 that part of the agenda.

8 But I wanted to say, you know, it seems
9 like you guys are doing a pretty good job in
10 addressing a lot of the concerns that we had laid
11 out. And I'll be sure to forward this letter to
12 you all, because I think so far only Commissioner
13 Boyd and Commissioner Douglas have received the
14 letter. But we'll circulate it to everyone.

15 And the folks that sign on the letter
16 include Bonnie Holmes-Gen from ALA, Roland Hwang
17 from NRDC, Daniel Emmett from Energy Independence
18 Now, John Shears from the Center for Energy
19 Efficiency and Renewable Technologies, Tim
20 Carmichael from CCA, Coalition for Clean Air, Mike
21 Walsh from International Council on Clean
22 Transportation, Jan Sharpless, who we all well
23 know is a former CEC Commissioner, Dan Kammen from
24 UC Berkeley and Tom Frantz from the Association of
25 Irrigated Residents.

1 But we welcome sign on by others, and I
2 apologize to those who didn't see a draft. We
3 kind of put this together quickly and weren't able
4 to vet it with everyone. And we wanted to make
5 sure that this was done before the initial
6 meeting.

7 MR. MIZUTANI: Patty, this is Chuck
8 Mizutani. I'll be providing a status on the
9 rulemaking proceeding. But on September 9th we
10 will be holding a Committee workshop on the
11 regulations that we had identified or discussed at
12 the August 11th Committee workshop.

13 And then also we will be discussing the
14 regulatory language with respect to sustainability
15 goals on September 9th.

16 MS. MONAHAN: That's great, thank you.

17 MR. WARD: Thanks for your comments,
18 Patty. Any other questions from the advisory
19 committee?

20 Hearing none, I'd like to call on Gerry
21 Bemis who has done his analysis and is anxious to
22 share it with us. After Gerry, Malachi will be
23 presenting his analysis that takes it to medium-
24 and heavy-duty vehicles, as well.

25 Gerry.

1 MR. BEMIS: Good morning, everybody.
2 I'm Gerry Bemis from the special projects office.
3 And I will try to walk you through the process
4 that I used to develop this methodology. And
5 hopefully I can walk it along at a pace that's not
6 too fast and not too slow. And if you need any
7 clarifying information, please just go ahead and
8 ask and we'll proceed with that.

9 Okay, I wanted to start with a little
10 bit of context setting and talk about the
11 emissions inventory that the Air Resources Board
12 has developed.

13 You see here a pie chart for 1990 and a
14 pie chart for 2004. Oftentimes you hear expressed
15 that transportation emissions constitute 38
16 percent of the inventory, and that was true for
17 2004. Wasn't true in 1990. It was about 35
18 percent. So, it's growing.

19 What we're going to be talking about
20 today, what I'm going to be talking about
21 specifically is that medium-blue wedge, the 25 and
22 28 percent attributable to light-duty vehicles.
23 Those are passenger cars and light trucks.

24 Malachi later will talk about freight
25 and transit. And there's a little green wedge,

1 that's other transportation, and that's marine and
2 aviation. And the 62 and 65 percent is the
3 remainder of the inventory.

4 I also wanted to show you this graph
5 which shows the rate of growth relative to 1990.
6 Everything here is indexed to 1.00, or 100 percent
7 in 1990. The dark red line is the total
8 inventory, including transportation. And you can
9 see that it kind of went down a little bit in the
10 mid-1990 years, as we had an economic downturn.
11 And then proceeded upward from about 1996 out to
12 2004.

13 You can see also that the dark black
14 line is total transportation which proceeded to
15 rise faster than the inventory. And really,
16 overall, the light-duty vehicles rose the fastest.
17 So the fastest growing segment of the inventory
18 is, in fact, light-duty vehicles. And the largest
19 sector of the transportation sector, anyway, is
20 light-duty vehicles.

21 If we were to extend that out to 2007 or
22 2008, to my knowledge, the inventory isn't
23 prepared yet for that, but you would see probably
24 that the light-duty sector was responsible for
25 even more of the emissions.

1 Okay, Peter kind of gave you an overview
2 of this, but what I was asked to do was to address
3 this question. How can AB-118 funding be focused
4 to put California's light-duty vehicle fleet, and
5 I'm only looking at light-duty vehicles, on a path
6 towards accomplishing an 80 percent reduction in
7 greenhouse gas emissions. Oftentimes that's
8 called our fair share of transportation.

9 The challenge I had was to work
10 backwards from the 2050 vision in the state
11 alternative fuels plan to find the starting point,
12 that when proceeding forward, would lead to the
13 outcomes as expressed in this 2050 vision. And I
14 think Peter probably already summarized that for
15 you, so I don't need to dwell.

16 So what I did was I began with the
17 vehicle attributes from the 2050 vision. Again,
18 Peter has already summarized this. Most vehicles
19 get 60 miles per gallon on a fleet average.
20 Electric vehicles, electric drive vehicles, which
21 are the fuel cells, the plug-ins and the battery
22 electrics, get an average of 80 miles per gallon
23 across 15 vehicle sectors, vehicle classes, excuse
24 me.

25 The electric drive vehicles, themselves,

1 constitute 40 percent of the fuel mix. And
2 biofuels are 30 percent; and the other fuels are
3 about 30 percent. And, again, that's what Peter
4 told you.

5 One thing he didn't mention was that the
6 per-person VMT, vehicle miles traveled, is reduced
7 from 10,300 under a distance-as-usual trend, to
8 8200 under the 2050 vision. And I actually used
9 the 10,300, as I'll show you, to help project the
10 forecasted fuel use out to 2050.

11 Okay, how did I extend that forecast out
12 to 2050. I started with population data from the
13 Department of Finance. They have, for every
14 decade between 2020 - 50 estimates of population.
15 It was a little bit larger than what I saw in the
16 2050 vision. The 2050 vision had 55 million in
17 2050, and the Department of Finance number was
18 59.6, if I remember correctly.

19 So I used the 59.6 number to compute
20 total vehicle miles traveled from the business-as-
21 usual case of 10,300 and got total vehicle miles
22 traveled that way.

23 I chose to hold the fuel economy of
24 the -- there's actually 45 vehicle classes in the
25 CALCARS model. There's 15 vehicle classes that

1 run on gasoline, internal combustion engines.
2 Then there's 15 that are hybrid gasoline. And
3 then there's 15 that are the same 15 again that
4 are diesel. So, there's a total of 45
5 combinations of vehicles in vehicles classes.

6 I decided to hold the miles per gallon
7 fuel economy at the 2030 levels out to 2050 to get
8 the business-as-usual. And I extended the per-
9 person VMT to 2050 by 10,300. And then likewise I
10 extended new vehicle purchases.

11 Now, since I am controlling to the
12 10,300, and that's per person, then the number of
13 new vehicles really is a tradeoff between miles
14 per vehicle and number of vehicles. And I just
15 chose, for simplicity sake, to extend that out.
16 It doesn't make a difference arithmetically. If I
17 did it the other way it would just mean more miles
18 per vehicle.

19 I broke the fleet of vehicles into three
20 groups. You heard a little bit about them. I
21 called the first group the low carbon vehicles.
22 Those are the ones that get 60 miles per gallon
23 and 10 percent carbon reduction. That is, they
24 meet the low carbon fuel standard.

25 The next I called ultra low carbon

1 vehicles. Those also get 60 miles per gallon.
2 And they achieve an 80 percent carbon reduction.
3 That comes right out of the 2050 vision.

4 Then there's the super ultra low carbon
5 vehicles, and they get 80 miles per gallon and 90
6 percent carbon reduction. The 80 miles per gallon
7 comes out of the 2050 vision and the 90 percent
8 carbon reduction really comes out of chapter,
9 whatever it was, chapter 3 of the document
10 relative to fuel cell vehicles operating on
11 biomass-derived hydrogen.

12 Later I break that down, but for now I'm
13 talking about that as a group.

14 I wanted to show this slide next because
15 it shows what are the fuel cycle greenhouse gas
16 emissions relative to gasoline. This is from our
17 full fuel cycle analysis that was done.

18 And you can see that LPT or propane and
19 California diesel get about 20 percent reduction.
20 There's a number of options I could have chosen
21 that shows what are really kind of representative
22 or maybe the best option from the appendices.

23 Hydrogen with onsite steam reforming is
24 important; that gets about 58 percent reduction.
25 These are reductions, not emissions. E-85

1 cellulose gets about a 72 or 73 percent reduction.
2 And that really doesn't quite make the 80 percent,
3 which was in the vision.

4 Then electric vehicles with night
5 recharging looks like about 75 percent. And the
6 hydrogen biomass is a little over 90 percent.
7 These were values that I pulled off for the year
8 2030. And they're meant to be just representative
9 of what is in that document.

10 Okay. Then after I developed business-
11 as-usual, I added alternative fuel vehicle
12 penetrations to the mix, using the storylines from
13 the state alternative fuels plan as updated by
14 staff.

15 Now, the emerging technologies office
16 staff is responsible for updating those
17 storylines. And all I did was use them. So if
18 you have any questions related to the storylines,
19 themselves, they should be directed to the
20 emerging fuels staff. If you have questions
21 related to how did I use it, it's appropriate for
22 me.

23 The nonpetroleum alternative fuels were
24 restricted to replacing gasoline and diesel in the
25 low carbon class of vehicles, because their carbon

1 intensity was too high to fit into the ultra low
2 carbon or the super ultra low carbon.

3 Biofuels were used for the ultra low
4 carbon, and SLU vehicles, because part of the fuel
5 cells could be biomass fueled. And electric drive
6 vehicles were all -- made up all of the super
7 ultra lows.

8 Okay, now how did I do it. The next
9 series of slides is intended to kind of walk you
10 through how I extended the forecast out to 2050.
11 The dark red line is total VMT per capita from the
12 CALCARS model. CALCARS is a consumer choice model
13 that we use to forecast light-duty vehicle
14 gasoline and diesel demand.

15 MR. CACKETTE: Gerry, can I --

16 MR. BEMIS: Sure.

17 MR. CACKETTE: In the vision there's
18 still some petroleum out in 2050. How did the --
19 I didn't see anything mentioned about the --

20 MR. BEMIS: It's in the low carbon.

21 MR. CACKETTE: That's in the low
22 carbon --

23 MR. BEMIS: It's in the low carbon.

24 Yeah, there is still some petroleum in, and you'll
25 see some graphs that show it.

1 Let's see, getting back to this graph,
2 so this series of graphs now is going to walk you
3 through how I constructed the 2050 forecast.

4 The dotted green line is the projection.
5 The number on the far right at 2050 is plotted at
6 10,300. And I extended it backward to match in
7 with the red line, VMT per capita. And it shows a
8 pretty linear fit, pretty straight line fit right
9 there. I was very pleased with how that fit
10 together like that.

11 The 8200 from the 1050 vision is also on
12 the far right, plotted at 2050. And then I
13 blended it back into really kind of by eye, to fit
14 into about 2016. What I do later on is I take the
15 ratio between the upper line and the lower lines
16 to calculate the percentage of reduction in
17 vehicle use as a vehicle is used. It's applied
18 not to the model year of the vehicle, but to each
19 year in which the vehicle is operated. So I have
20 to take that ratio and apply it to each year of
21 operation.

22 Okay, then I just extended out the
23 population of new vehicles. The red line again is
24 directly out of CALCARS and the projections are
25 the dotted green line out. It's just shy of 4

1 million vehicles in 2050, 3.95.

2 Here's the result in terms of fuel
3 consumption for gasoline and diesel light-duty
4 vehicles. Dominated by gasoline, but diesel
5 starts coming in. There were a few diesel
6 vehicles in 2005 and earlier. It's not contained
7 in CALCARS and they're really small compared to
8 the total demand. So there's a little bit of
9 brown dots, so small you probably couldn't see
10 them, on the far left.

11 So this is what we're starting with, and
12 this is the vehicle miles of travel. From this
13 graph, starting to see some results. Here are the
14 emissions for gasoline and diesel vehicles based
15 upon the VMT we saw in the previous slide. And
16 the emissions computed.

17 The upper red line is based upon getting
18 -- I want to, I guess, clarify something Peter
19 said. The goal for AB-32 is to get back to 1990,
20 not 20 percent below 1990, by the year 2020. And
21 so I extended this line horizontally out to 2020,
22 plotted at the emissions of light-duty vehicles in
23 1990.

24 And you can see from that we still have
25 a fair ways to go, even with business-as-usual.

1 This business-as-usual, as Peter did mention, does
2 include the effect of the Pavley or Pavley-1, as
3 some people might call it.

4 I also want to note that according to
5 the ARB analysis, the Pavley-1 requirements, when
6 translated into fuel economy, are as strict or
7 more strict than the federal CAFE requirements
8 adopted within the last year or two. So impliedly
9 this includes the effect of federal CAFE changes
10 in the last year or so.

11 The lower line, I don't know if you can
12 read it or not, the lower line is the 2050 goal of
13 an 80 percent reduction below 1990 levels. These
14 are tailpipe emissions; these are not full fuel
15 cycle emissions, they're tailpipe emissions taken
16 directly out of the ARB inventory.

17 The challenge here, and it's a huge
18 challenge, is to get the projected emissions for
19 2020 and for 2050 back to these red lines.

20 MS. MONAHAN: This is Patty from UCS. I
21 have a very basic question which is why isn't
22 there an increase in BAU emissions between let's
23 say the full implementation of Pavley, when the
24 fleet is turned over, and 2050? Why does it stay
25 stable?

1 MR. MIZUTANI: It doesn't, it goes down.

2 MS. MONAHAN: I mean why isn't it going
3 up?

4 MR. MIZUTANI: Why does it go up? In --

5 MS. MONAHAN: Why is --

6 MR. MIZUTANI: -- it --

7 MS. MONAHAN: -- since you have, since
8 you're assuming increase in vehicle sales, and --
9 I'm just confused as to why it's not going up.

10 MR. MIZUTANI: It does go up in about --
11 it goes down because Pavley effects are greater
12 than the growth, and so you have a reduction. And
13 then growth comes on in around 2030.

14 MS. MONAHAN: Well, right, why isn't
15 there an increase in global warming emissions from
16 2030 to 2050 in a BAU case?

17 MR. MIZUTANI: Yeah. Why does it level
18 off, you're saying, in 2033?

19 MS. MONAHAN: Yeah.

20 MR. MIZUTANI: You know, I don't know.
21 That's the way the numbers came out. I'd probably
22 have to take a look at it to answer that question,
23 if I take a look at it. It may be that we show a
24 little bit too much in 2033 because of the way I
25 treat the early vehicles, the 2005 and older

1 vehicles have to be removed from the fleet of
2 vehicles.

3 And I probably could do a better job at
4 that. I did control to 2020 because of the
5 CALCARS model, and I controlled to 2050. But
6 little inundations in between in the mid 30s, I
7 didn't really worry about. I think it's the
8 legacy fleet.

9 MS. MONAHAN: But are you assuming the
10 business-as-usual, that's the -- I guess I'm still
11 confused. I mean between 2030 and 2050 you're
12 going to have increasing VMT, increasing number of
13 vehicles in California. And you said you're
14 holding fuel economy steady. So all those facts
15 indicate that it should be increasing emissions.

16 MR. MIZUTANI: Yeah, it might be that
17 the mid 30s number should be a little bit lower,
18 and that would show an increase if I lowered those
19 down. I think that's what's happening.

20 MR. CACKETTE: I have another question.
21 You show that the new car sales are essentially
22 doubling over this timeframe, but the number of
23 vehicles in the fleet and populations only go up
24 by 50 percent. So what causes the number of new
25 car sales to go up so dramatically?

1 MR. MIZUTANI: The new car sales I
2 projected basically out of CALCARS.

3 MR. CACKETTE: I know, it goes roughly
4 at 2 million or less now. And it would be setting
5 those to 4 million --

6 MR. MIZUTANI: Just about 4 million.

7 MR. CACKETTE: -- in that same timeframe
8 the population and the fleet number of cars, at
9 least as I understand it, grow by about 50-some
10 percent.

11 So it seems like there's --

12 MR. MIZUTANI: I don't know --

13 MR. CACKETTE: -- buy a lot more new
14 cars than we have now, or something like that?

15 MR. MIZUTANI: I don't know. I don't
16 know why, I don't know where your number comes
17 from, for one thing, Tom.

18 MR. CACKETTE: Well, the population
19 number is going from 35 million to 59 million.

20 MR. MIZUTANI: Right.

21 MR. CACKETTE: And the vehicle numbers
22 go up slightly greater percentage than that. So
23 55 percent or something like that, but they don't
24 double, which the new car numbers are doubling, so
25 that's --

1 MR. MIZUTANI: Yeah.

2 MR. CACKETTE: -- something you might
3 want to look at.

4 MR. MIZUTANI: Okay. Again, what I
5 controlled to was the VMT per person. That's what
6 drives the calculation is the VMT per person going
7 to 10,300. And the number of vehicles, like I
8 said, I could reduce, but that would mean that
9 would increase the miles per car. And it would
10 come out the same.

11 MR. CACKETTE: Well, it also means that
12 you'd end up having a faster, when you get to the
13 control scenario wouldn't it mean that you have a
14 faster rate or slope towards getting towards the
15 2050 goal if you only have the new cars being sold
16 going up by 50 percent?

17 MR. MIZUTANI: I don't think it would
18 matter. Given the way that the calculations, I
19 think it would come out the same. I'll check it,
20 though.

21 Okay. The next slide I add the low
22 carbon fuel standard. We had some discussion
23 about this earlier and the way I did it was
24 simple. I just linearly interpolated between 2010
25 and 2020, and decreased the carbon intensity 1

1 percent per year over that time period. And you
2 see the additional reductions here.

3 It's up to Air Resources Board how to
4 implement the low carbon fuel standard. And if
5 they do it on the fuel side then it won't affect
6 the vehicles. If it's an alternative compliance
7 option that includes alternative fuel vehicles,
8 those would have to be considered separate from
9 the alternative fuel vehicle numbers that we're
10 going to get to in a little bit later.

11 So I simply multiplied by carbon
12 intensity to compute emissions for the effect of
13 the low carbon fuel standard.

14 The next thing that I did -- and again
15 the same thing, those goals are right here -- the
16 next thing I did was to add the tire efficiency
17 program assuming about a 10 percent reduction in
18 2010, a stepwise reduction. And you can see it as
19 a little step down in 2010, actually if you look
20 closely enough at that bar. Assuming about a 3
21 percent improvement for light-duty vehicles only.

22 And, again, we're getting closer now to
23 the 2020 goal, but we're still quite a ways above,
24 and we're way above the 2050 goal.

25 MS. HOLMES-GEN: Is this still only

1 considering tailpipe emissions?

2 MR. MIZUTANI: Yeah.

3 MS. HOLMES-GEN: Is there some point
4 where you incorporate --

5 MR. MIZUTANI: Yeah.

6 MS. HOLMES-GEN: Okay.

7 MS. MONAHAN: Can I ask one quick
8 clarifying question?

9 MR. MIZUTANI: Okay.

10 MS. MONAHAN: For the increasing
11 penetration of diesel vehicles, are you assuming
12 that we would actually capitalize on the fuel
13 efficiency -- vehicles, or use something that is
14 going to be met through a combination of gasoline
15 and diesel?

16 MR. MIZUTANI: I used the computer model
17 called CALCARS. I didn't use it, but my colleague
18 did. And that has consumer choices over the 2005
19 to 2030 time period which includes increasing
20 penetrations of light-duty diesel vehicles into
21 the fleet based upon the choices people would
22 make.

23 And all I did was hold the -- let's say,
24 the market penetration, the market percentage of
25 each of the vehicle classes, including diesel

1 vehicles, constant. And that allowed me to take
2 the information from the CALCARS model and put it
3 into a spreadsheet.

4 And when I do that I lose some things
5 and I gain some things. I gain the ability to
6 play what-if stories. I lose the ability to take
7 into account consumer choices, because that's been
8 taken away.

9 So basically the consumer choices are
10 really frozen at the 2030 values in CALCARS for
11 diesel and gasoline. Did I answer your question?

12 MS. MONAHAN: Then I'm presuming that --
13 that California's actually going to see a benefit
14 from increased dieselization in terms of a lower
15 GHG profile, which I don't think actually ever
16 played out in reality.

17 But, you know, that's probably a
18 difference of the CALCARS modeling.

19 MR. WENG-GUTIERREZ: It's actually the
20 efficiency that's pulling --

21 MR. BEMIS: Yeah, the comment that was
22 made by Malachi who runs the CALCARS model is it's
23 the efficiency effect.

24 Diesel has a greater fuel -- fuel use
25 efficiency; it's a more efficient use of fuel, but

1 it also has heavier carbon loading. So those two
2 play off against each other.

3 MS. MONAHAN: Yeah, but usually not --
4 it still comes out as a GHG benefit if you
5 increase the number of diesel vehicles. But in
6 the real world we've never seen that sort of GHG
7 benefit from dieselization. So, --

8 MR. MIZUTANI: Okay.

9 MS. MONAHAN: -- that's not a correct
10 assumption. Basically you have to assume they're
11 going to meet the standard and not exceed the
12 standard by having more diesel vehicles in
13 California.

14 I think the latter is not accurate.

15 MR. BEMIS: I don't think I made either
16 one of those assumptions.

17 MS. MONAHAN: Well, I think the CALCARS
18 model apparently has -- consumer choice where it
19 says basically you're going to get a certain
20 number of certain vehicle amenities and you can
21 either (inaudible) you're going to get a 35
22 percent, some percentage of efficiency benefit.
23 In fact, we're actually going to see, in
24 California, as a benefit beyond the (inaudible)
25 and I would say that's not likely the case.

1 MR. CACKETTE: Gerry, maybe I can --

2 MR. BEMIS: Go ahead.

3 MR. CACKETTE: I think I understand, but
4 tell me if I'm wrong, too. It's the very top of
5 the bars, top of the purple bars is what Pavley,
6 for example, gets you which causes the decline.
7 And then within the bars just CALCARS says how
8 many of those vehicles are diesel versus gasoline.

9 But I mean there's nothing in CALCARS
10 that implicitly says that you're going to get more
11 than what Pavley requires.

12 MR. BEMIS: Right. The CALCARS model,
13 maybe Malachi can explain it better. He's in the
14 audience. But the CALCARS model is based on
15 consumer choice, what people say they would buy if
16 these models, these vehicles were available. If
17 diesel vehicles were available with these
18 characteristics, and fuel price is estimated to be
19 this range, people would tend to buy this vehicle
20 versus that vehicle.

21 MR. CACKETTE: But constrained so that
22 it meets the Pavley requirements, the net sum of
23 the vehicles, right?

24 This doesn't say that you're above
25 Pavley or below Pavley, right? It says --

1 MR. BEMIS: Right.

2 MR. CACKETTE: -- that you're beyond
3 Pavley.

4 MR. BEMIS: Right, yes.

5 MS. MONAHAN: Oh, is that the case?

6 Because --

7 MR. CACKETTE: Yeah.

8 MS. MONAHAN: If that's the case then my
9 question -- have no concern. But my understanding
10 was that it actually did go beyond the standards.

11 MR. BEMIS: Malachi is in the --

12 MS. MONAHAN: -- misunderstanding --

13 MR. BEMIS: Malachi said yes, you are.

14 MS. MONAHAN: Okay, well, --

15 (Laughter.)

16 DR. SWEENEY: Okay, this is Jim Sweeney.

17 I actually want to ask a related question. It
18 looks like from these graphs that the low carbon
19 fuel standard and the high efficiency program end
20 up each reducing the carbon dioxide emissions, but
21 if the Pavley bill is the constraint, I don't
22 understand how adding in those changes -- because
23 it's clear that the Pavley bill is not a fuel
24 efficiency standard constraint, but a carbon
25 dioxide emissions constraint. I don't see how

1 adding those other programs actually has overall
2 reduction in greenhouse gases in your model.

3 I mean, because once you do those things
4 is when you're below the Pavley constraints, the
5 Pavley constraints are no longer binding on the
6 overall system.

7 So, how did you take into account that
8 interactions between these other things and the
9 Pavley as being a greenhouse gas constraint?

10 MR. BEMIS: Are you suggesting that the
11 entire program could be used as a means of
12 complying with the low carbon fuel standard?

13 DR. SWEENEY: Well, if the Pavley bill
14 really is a statement about the fuel efficiency,
15 that fuel efficiency, the carbon dioxide emissions
16 of the vehicle -- and now you have less carbon in
17 the fuels, or more fuel efficient tires, that, in
18 fact, would mean you don't have to push in others.
19 So, yes, I believe it would be a compliance
20 mechanism.

21 MR. CACKETTE: Maybe you could clarify,
22 is the tire efficiency program just new tires? Is
23 it rolling resistance of replacement tires, or is
24 it tire pressure? Because two of those three do
25 not have to do with the directly with Pavley and

1 one --

2 DR. SWEENEY: Right.

3 MR. BEMIS: Well, I assume it was
4 additive. I assumed that these are totally
5 independent and that could be wrong. But I assume
6 that they were --

7 MR. CACKETTE: -- tire pressure --

8 MS. MONAHAN: So, it's replacement --

9 (Parties speaking simultaneously.)

10 MS. MONAHAN: So, it's a replacement
11 tire program.

12 DR. SWEENEY: If it's just the
13 replacement tire program, I agree, it's not
14 compliance. But the low carbon fuel standard, as
15 I understand how Pavley's written, if there was
16 less carbon in the fuel, then that would be a
17 compliance option for the Pavley bill, because the
18 Pavley bill is strictly a carbon dioxide emission
19 standard.

20 MR. CACKETTE: Yeah, Jim, this is Tom
21 Cackette, ARB. That's true probably to a great
22 degree in the Pavley program in that, for example,
23 if you did ethanol -- this is before the land use
24 issue -- you'd get a 26 percent credit off your
25 GHG emissions for running that vehicle on E-85 for

1 example.

2 So, yeah, it does, right now as it's set
3 up, since there is no low carbon fuel standard,
4 per se, on the books yet, it has the opportunity
5 to have double counting. That's something that
6 will get fixed in Pavley-2 once the low carbon
7 fuel standard and other requirements are adopted
8 into the regulation. We'll sort them out so that
9 they don't have the carbon they're double
10 counting, or if there is double counting at least
11 it will be explicitly acknowledged.

12 DR. SWEENEY: Okay. So this is assuming
13 that there's going to be new legislation that's
14 called Pavley-2?

15 MR. CACKETTE: Well, not legislation,
16 new regulation.

17 DR. SWEENEY: New regulations that
18 essentially set -- okay, that's helpful. Because
19 to me it looks like there was some double-counting
20 given the overall system.

21 MR. BEMIS: We certainly want to avoid
22 that, so I appreciate your comment. I did assume
23 these were independent. And I guess maybe Tom
24 Cackette is saying that if they aren't now they
25 will be?

1 MR. CACKETTE: Well, I think it depends
2 on how you meet the low carbon fuel standard since
3 that's not understood yet. If you met it with
4 biohydrocarbons blended into the fuel stock I'm
5 not sure that Pavley would acknowledge that, and
6 you probably would have to double count.

7 At the other end if you do it with
8 alternative fuel of some kind, you get credit for
9 the fuel right now, and it would be double
10 counting.

11 MR. BEMIS: Yeah, well, I stated --

12 MR. CACKETTE: -- 2015.

13 MR. BEMIS: Okay, I stated the fact that
14 if the low carbon fuel standard was achieved via
15 fuel substitution by alternative fuel vehicles,
16 those would have to be not included in the
17 vehicles that we're talking about here. And
18 that's what I meant.

19 Are we ready to move on?

20 DR. SWEENEY: Okay, well, I assume
21 you'll think about it and make sure that you have
22 that sorted out.

23 MR. BEMIS: Yeah, I'm very concerned
24 about double counting, so I appreciate your
25 comment.

1 DR. KAMMEN: The easiest way to do this
2 for the whole group would just to be to produce a
3 table that lists the mechanisms where they're
4 counted and whether they are Pavley, beyond Pavley
5 or whichever category.

6 And I would just have a table that lists
7 each of the items in the model out, and then it's
8 much easier for us to go through them. Especially
9 at the next meeting where I think you'll get a
10 second round on these.

11 MR. CACKETTE: Yeah, and I'd point out
12 that the replacement tire program could be double
13 counting because -- or at least not counted
14 properly because if you use low rolling tires on
15 the compliance vehicles, you build them that way
16 as a new vehicle, I think the assumption right now
17 is that that same tire stays on the car for the
18 life of the car.

19 So the practice is replace them with
20 high rolling resistance tires, then all that
21 program does is bring us back to business-as-
22 usual.

23 DR. SWEENEY: Yeah.

24 MR. CACKETTE: And that's not -- that is
25 the assumption that's used right now, I believe.

1 MR. BEMIS: Okay.

2 MR. CACKETTE: In other words, if the
3 vehicle emits 250 grams per mile of CO2, and part
4 of that is that reduction that got you there is
5 due to low rolling resistance tires put on the
6 vehicles that rolled off the assembly line, then
7 the assumption is, I believe in the models, that
8 it continues to have that 250. It doesn't go back
9 up on the replacement tire.

10 MR. WENG-GUTIERREZ: Well, then the fuel
11 economy of the aged vehicle fleet changes --

12 MR. BEMIS: Malachi's going to come to
13 the mike and discuss that point for those
14 listening in.

15 MR. WENG-GUTIERREZ: I just wanted to
16 make one comment on that. The CALCARS model, the
17 fuel efficiency numbers, you're right. The first
18 tier does reflect the high efficiency tires that
19 are on the OEM vehicles during the -- for the
20 testing.

21 But the used vehicles and the aging of
22 the fleet is incorporating into the fuel economy
23 numbers for those vehicles as the forecast goes
24 forward.

25 So new vehicles each year have a higher

1 efficiency than say a five-year-old vehicle. And
2 that's the tire efficiency is a component of that.

3 MR. CACKETTE: You said higher
4 efficiency, you mean higher fuel economy? Poor
5 fuel economy.

6 MR. WENG-GUTIERREZ: Yes, yes.

7 MR. BEMIS: Tom, I'm curious, is there
8 some kind of a -- will there be a regulation in
9 place so that people, when they go about replacing
10 the tires, will be required to replace them with
11 fully equivalent tires that have the same rolling
12 resistance as the OEMs put on the tires?

13 MR. CACKETTE: If we adopt one.

14 MR. BEMIS: If we adopt one.

15 MR. CACKETTE: -- your authority to --

16 MR. BEMIS: Yeah.

17 (Laughter.)

18 MR. BEMIS: I know, but I mean --

19 MR. CACKETTE: -- I believe.

20 MR. BEMIS: -- I'm wondering -- okay.
21 That's what I'm trying to reflect here. What is
22 the effect of that.

23 MS. MONAHAN: Yeah, I think it says -- 2
24 to 3 percent.

25 MR. BEMIS: I used 3 percent.

1 MS. MONAHAN: Yeah. I mean I think
2 that's within reason.

3 MR. BEMIS: Okay. You know, I actually
4 failed to mention earlier that I do take into
5 account the degradation of vehicle use over time.
6 A new vehicle may get 17,000 miles per year, but a
7 vehicle that's one-year old may only get about 90
8 percent of that, et cetera, et cetera, et cetera,
9 as the vehicle ages. I kind of passed over that
10 point.

11 But I do have a decay rate that's
12 supposed to reflect both a vehicle that's say
13 retired, been in a collision and the insurance
14 company has basically totaled it, quote-unquote.
15 And vehicles that, as they get old, just aren't
16 used as much.

17 Both those factors roll together into
18 one what I call a decay rate, usage decay rate,
19 that I used to calibrate the spreadsheet so that
20 it exactly matches the CALCARS model output for
21 the time period where I have data to compare,
22 which is the 2005 to 2030 period.

23 Okay, now it starts to get a little bit
24 more interesting. I added next on top of what we
25 talked about before, which means the low carbon

1 fuel standard and the tire efficiency program,
2 what I call the ultra low carbon vehicles. Those
3 are the ones that are flex-fuel vehicles,
4 otherwise genericized it to call them ultra low
5 carbon vehicles. And they're assumed to get 80
6 miles per gallon -- 60 miles per gallon, pardon
7 me, correct that -- 60 miles per gallon, and
8 they're assumed to get an 80 percent carbon
9 reduction.

10 And that's the bright blue little bars
11 that were added on the top here. We're getting
12 pretty close to the 2020 goal at 108.5.

13 When I compute the ultra low carbon
14 emissions this is where I'm assuming that that's
15 life cycle, is coming out of our GREET model
16 analysis. And the values represent life cycle.

17 We're still way above the 2050 value, as
18 you can see on the far right.

19 Okay, so I had two ways of looking at
20 the super ultra low carbon vehicles. This is work
21 that's still sort of in progress. And so I'm
22 going to show you two results for these super
23 ultra low carbon vehicles.

24 First of all, before I do that, -- yeah,
25 go ahead.

1 MR. CACKETTE: -- answer from the next
2 slide.

3 MR. BEMIS: The next slide has to do
4 with vehicles as percent of fuel use.

5 MR. CACKETTE: So you add in how many
6 ultra low vehicles in this scenario? If it was
7 all ultra low at some point, it's got to come down
8 way more than that.

9 MR. BEMIS: This is --

10 MR. CACKETTE: -- fuel economy --

11 MR. BEMIS: Let's go to here. This is
12 33 percent of new vehicles in 2033, and 34 percent
13 in 2050. This is kind of an interim step. This
14 is not a final point.

15 I'm really -- I'm driving towards
16 getting down to the 2050 numbers, and so this is
17 just sort of like here's what we are right now. I
18 didn't really try to maximize the reductions at
19 this point.

20 Moving right along. Okay. This is the
21 slide I wanted to get to. We add in the super
22 ultra low carbon vehicles. That's the bright red
23 vertical bars that we see. And this work is, like
24 I said, still a bit in progress.

25 We get pretty close to the standard both

1 in 2020 and in 2050. In this calculation I'm
2 assuming that the super ultra low carbon vehicles
3 are fueled with hydrogen produced onsite with
4 steam methane reforming with the emission factor
5 being a lifecycle number taken out of our low
6 carbon fuel standard -- I'm sorry, taken out of
7 our fuel cycle analysis.

8 In reality, though, these are electric
9 drive vehicles that are, a portion of them are
10 fuel cells, another portion are plug-ins, and
11 another portion are battery electrics. But for my
12 current purposes I wasn't able to break that down
13 into those three subcategories, that's ongoing
14 work.

15 And you can see now we're getting down
16 pretty close. We're down to about 30, which, to
17 me, is remarkable. We still maintain about 80
18 percent of the mobility, personal mobility, which
19 was the 8200 number, is about 80 percent of the
20 10,3000 number. And we get down pretty close to
21 the standard, or not the standard, but the goal.

22 MR. CACKETTE: And for that assumption
23 on the steam reforming, is that like the 55
24 percent lower carbon footprint for that --

25 MR. BEMIS: That was like 65, wasn't it?

1 It was in that bar chart I showed earlier. Okay.

2 This one we get there.

3 This one assumes all the super ultra low
4 carbon vehicles are fueled with biomass --
5 hydrogen derived from biomass, excuse me. And we
6 get down below the standard, which, to me, is
7 remarkable.

8 I think though that the answer is
9 somewhere in between these two ranges that I
10 showed. Once I get the additional calculations
11 done to break out the super ultra low vehicles
12 into batteries, plug-ins and fuel cells, then I
13 think I'll have a better assessment of this part.

14 But I'm encouraged that we can get there. As
15 the grey box says, that work is still in progress
16 and may increase -- probably will increase the
17 emissions at least somewhat.

18 DR. KAMMEN: And did I understand that
19 you're saying that all hydrogen is run by
20 reforming?

21 MR. BEMIS: No. The previous slide --
22 in this slide, yes.

23 DR. KAMMEN: Okay, and then in the next
24 one, no?

25 MR. BEMIS: In this slide, no.

1 DR. KAMMEN: Okay, my --

2 MR. BEMIS: This slide, it's all assumed
3 to be biomass derived. There's a range here. In
4 other words I'm defining a range by looking at
5 these two options.

6 DR. SWEENEY: Okay, this is Jim Sweeney.
7 For the steam reforming of producing hydrogen, I
8 don't understand how you get as much reduction as
9 you do. What happens to the carbon when you do
10 the steam reforming?

11 If it's steam reforming and it's
12 attributed, which I thought I heard you say, it's
13 probably unlikely you'll get CCS out of that.
14 You'll probably have -- because it's just too
15 costly to capture the carbon dioxide that way.
16 And it would then have to be released into the
17 atmosphere.

18 What if you assumed about the
19 disposition of the carbon with the steam reforming
20 at the distributed level?

21 MR. BEMIS: I took these numbers from
22 our full fuel cycle analysis report, which was
23 done in August of 2007. And there's an appendix
24 at the back. And in that appendix, figure A4,
25 page A15, it specifically says that hydrogen with

1 onsite natural gas steam reforming is 198 grams
2 per mile. And on another chart gasoline was 431.

3 The numbers vary year by year. I'm
4 giving you numbers for 2012. And so I took that
5 ratio.

6 DR. SWEENEY: Okay. So that I guess
7 would be consistent with atmospheric release of
8 the carbon dioxide -- steam reforming. Okay, I
9 guess I would like -- I'm surprised that you got
10 down that far. But if you use that procedure that
11 doesn't bother me.

12 MR. BEMIS: This next slide now shows
13 new vehicle sales per year for the various
14 vehicles that were in my analysis. And as, I
15 think it was Mike, said earlier the light blue
16 line shows gasoline. And the one above it in
17 brown shows the diesel. You can see that that's a
18 fairly small percentage of the vehicle sales in
19 2050. Goes down, but doesn't go away.

20 The green area in the middle are the
21 ultra low carbon vehicles. And the purple are the
22 super ultra low. And the nonrenewable alternative
23 fuels, which are the propane and CNG, are the
24 little red boxes above. I only used red because I
25 wanted them to show.

1 Now, this shows the onroad fuel mix for
2 these same fuels over time. And what I did was I
3 varied the percentage of super ultra low vehicles
4 to try to match the parameters that were in the
5 2050 vision, which said basically that the fuel
6 mix in 2050 would be about 40 percent hydrogen.

7 So if you come down from the top you'll
8 see it's about 44 percent actually in 2050. And
9 the biofuels are around 30 percent, which only
10 leaves about 25 percent left over for the gasoline
11 and diesel and the nonrenewables, which are on the
12 very top there.

13 And so I adjusted the market penetration
14 of the super ultra lows and the biofuels to match
15 that. And tried to match it back in 2030, which
16 was an interim value that was in the report. And
17 kind of close, but a little over, I think, in fuel
18 mix shares based upon what was in the vision
19 statement.

20 So this is the best I could do in
21 adjusting and jiggling to try to make the numbers
22 match.

23 And this next slide shows what the
24 electric drive, the super ultra low vehicles would
25 do based upon the story lines. The lower bars

1 here, now in green, are plug-in vehicles. The
2 orange bars are battery electrics and the fuel
3 cells are the upper, the blue.

4 This shows, based upon staff analysis
5 from the emerging fuels office, basically a quick
6 buildup in plug-in vehicles, followed by a
7 transition to battery electric vehicles as the
8 batteries get better and people start buying pure
9 battery electric rather than plug-ins in the later
10 years.

11 But this represents about a 54, if I
12 remember the number right, percent market share in
13 the year 2050 for this group of vehicles, these
14 super ultra low vehicles.

15 This shows gasoline and diesel together
16 in one color. I couldn't stack them, because I
17 wanted to show there's plenty of room for growth
18 for these more carbon-intense propane and CNG
19 vehicles. And so the fuel mix for this segment
20 could be, what I call the low, this is my low
21 carbon basically, could be gasoline, could be
22 diesel, or it could be CNG and could be propane.

23 MS. MONAHAN: I'm sorry, can we go
24 quickly back to the last slide on electric drive -

25 -

1 MR. BEMIS: Yes.

2 MS. MONAHAN: Because the trajectory
3 seems a little odd for fuel cells that you would
4 have this big buildup, which presumes
5 infrastructure is going along with it. And then
6 it's a dropoff.

7 And I'm curious, it's a little bit of a
8 chicken-and-egg story here. Once you have the
9 actual infrastructure for fueling hydrogen
10 vehicles, what would be the rationale for the
11 dropoff?

12 MR. BEMIS: I don't think there's a
13 dropoff. Maybe you have the colors mixed up.
14 The --

15 MS. MONAHAN: -- to do.

16 MR. BEMIS: The green is the plug-ins.
17 Those do drop off. The battery electrics grow and
18 the fuel cells grow.

19 MS. MONAHAN: Oh, sorry, you're actually
20 correct. I was matching the order in the little
21 icons to the order below. But I think I -- look
22 at the colors --

23 MR. BEMIS: Oh, it's the opposite, huh?
24 Sorry about that.

25 MS. MONAHAN: No, that would make a lot

1 more sense.

2 MR. BEMIS: Okay. The main point of
3 this slide is that these are a large share of the
4 market out in 2050, and there's a transition from
5 plug-in to battery.

6 MS. MONAHAN: Yeah, so that makes
7 perfect sense.

8 MR. BEMIS: And these I've got to --
9 this is what I haven't got done yet, was to
10 translate this into emissions.

11 Okay. Again, lots of room for these
12 nonrenewable alternative fuels.

13 And finally, I think this is my last
14 graph, basically I looked at this and I did this
15 analysis based upon emissions, not emission
16 reductions. But other people tend to talk about
17 it in reductions. So I created a chart to show
18 the reductions.

19 And these reductions are, from the
20 bottom working upward, are from the low carbon
21 fuel standard; then the tire program; then working
22 upward is the ultra low carbon vehicles; and the
23 purpose is the super ultra low; and the dark
24 brownish one, I guess, is from VMT reductions.

25 And basically this is the summation of

1 all the slides I showed you before. And that's
2 all I have.

3 DR. SWEENEY: Jim Sweeney, again. Could
4 you talk a little bit more about how you
5 anticipate getting those reductions in vehicle
6 miles traveled?

7 MR. BEMIS: The reductions in vehicle
8 miles traveled could be achieved a variety of
9 processes. In the near term it could be from mode
10 shifting, getting people out of their cars and
11 into buses. It could be from telecommuting. A
12 variety of demand reduction measures.

13 In the longer term, and what's listed in
14 the 2050 vision mostly is land use changes that
15 achieve more smart growth and more dense urban
16 form. So that we get the 8200, I think it was,
17 vehicle miles per person.

18 MR. SPEAKER: Yes.

19 DR. SWEENEY: Good luck.

20 (Laughter.)

21 MR. BEMIS: Thank you. We'll --

22 DR. SWEENEY: Because VMT is probably
23 the hardest of those to accomplish. I think that
24 even hydrogen fuel cell vehicles and getting the,
25 get rid of platinum catalysts and things may be

1 easier than that really profound changes in the
2 amount of vehicle miles traveled.

3 So that's one that I think is maybe, my
4 own guess, it's most difficult to be able to
5 accomplish.

6 MR. BEMIS: I think my personal opinion
7 would be on the same lines. And I think that's
8 why we show it last, show it at the top here.

9 If you recall that graph I showed way
10 earlier where we had the business-as-usual at
11 10,300 and the 8200, it starts really modestly in
12 the mid -- 2016 I think was the first year. And
13 then it starts growing slowly from there.

14 So, that was what was in the 2050 vision
15 and that's what I used. I guess I neglected to
16 show there is a really small little contribution
17 from the nonrenewable alternative fuels, again
18 shown in red, between the green and the purple on
19 this slide.

20 I guess there is a phone request? John
21 Boesel from CALSTART.

22 MR. BOESEL: Gerry, I just had a
23 question on I think one of your very first slides
24 on the total emissions for transportation. It's
25 my understanding that the 38 percent number is

1 just tailpipe emissions, and that that did not
2 include emissions from oil drilling and refining.

3 MR. BEMIS: That's correct. It also
4 doesn't include transporting crude oil from
5 Alaska, the Middle East and wherever else that
6 might be produced. We import about half of our
7 crude oil into California.

8 And I modeled my analysis -- now, Tom's
9 here, maybe he can talk about this -- I modeled
10 the approach that I used based upon what they did,
11 my understanding of what they did, for the Pavley
12 program where they looked at tailpipe emissions
13 for vehicles. And for people who wanted to offer
14 an alternative compliance mechanism, then they had
15 to look at full fuel cycle emissions. And I think
16 it was a jurisdictional issue. That's my guess.

17 MR. BOESEL: I think my point or
18 question was if we included all those other
19 emissions associated with our current
20 transportation system, total number of greenhouse
21 gas emissions would be closer to 50 percent than
22 it is to 38 percent.

23 MR. BEMIS: Well, if you --

24 MR. CACKETTE: I think that's right;
25 because refining, at least, and the industrial

1 side of it is in a separate sector in the emission
2 inventory. So the vehicle part, I think, takes
3 care of the tailpipe emissions. And I'm not sure
4 if it has any other emissions upstream of that.

5 MR. BEMIS: Yeah, then you'd have to
6 somehow partition, I guess, the refining emissions
7 into light duty versus medium duty and heavy duty,
8 and the rest of it, as far as the slate of
9 products coming out of the refinery. And I didn't
10 do that.

11 And you also have the production, when
12 some of the production's in-state and some of it's
13 not, and the refining, also.

14 MR. CACKETTE: Right. To the extent
15 that this stuff is -- the product is moved by
16 trucks, then it shows up in the truck inventory --

17 MR. BEMIS: Correct.

18 MR. CACKETTE: -- under transportation.
19 And I think it does a little bit on ships, but
20 only to the extent that they're operating within
21 the state waters.

22 So, yeah, it's hard to do the allocation
23 particularly. And it's good to know what the
24 assumptions are, so --

25 MR. BEMIS: Yeah, I didn't include

1 marine. I did not include marine. I did not
2 include upstream emissions in this 38 percent, 34
3 percent, 35 percent.

4 MR. BOESEL: Okay, thank you.

5 MS. MONAHAN: I have another CALCARS
6 modeling question, but I'm not sure actually if
7 you can answer it.

8 But, I'm wondering as you look at new
9 vehicles (inaudible) reduction strategies, that
10 the share of (inaudible) increases to about half
11 of the petroleum-based fuels. Unless I'm reading
12 that wrong. What you have is like 21.

13 MR. BEMIS: I don't have the numbers on
14 my slides unfortunately.

15 MS. MONAHAN: So it's -- report --

16 MR. BEMIS: Oh, that one.

17 MS. MONAHAN: New vehicle sales -- it's
18 slide 20, new vehicle sales per year in
19 California. And basically you have increased
20 penetration of, you know, super low low carbon
21 vehicles. Then your share of vehicle increases
22 around --

23 MR. BEMIS: You're saying it becomes 50
24 percent out in the year 2050. That's because --
25 the reason for that is because I'm taking the

1 ultra low and the super ultra low out of gasoline.

2 MS. MONAHAN: -- share in here.

3 MR. BEMIS: Oh, the ultra low vehicles,
4 I assume, were biofuel vehicles. And I assumed
5 that they were coming out of gasoline. Now, if
6 they were biodiesel then I could take them out of
7 that, too.

8 But I took them out of the gasoline.
9 That's why that number's like that.

10 MS. MONAHAN: I mean, our concern is jus
11 that these are gasoline vehicles, from our
12 perspective in the cheapest fuel economy of
13 increasing debt, you can tinker with your gasoline
14 engines and vehicles and light-weight them and do
15 efficiency measures such that you can get the fuel
16 economy or close to that of diesel.

17 And it seemed like your model instead is
18 somehow -- diesel. So I would just suggest maybe
19 take a share of diesel and keep it constant
20 relative to gasoline.

21 MR. BEMIS: Yeah, another way of looking
22 at that is to say, well, that biodiesel could go
23 into the diesel vehicles also.

24 MS. MONAHAN: Right, what we don't want
25 to see actually is incentive for incentives for

1 more diesel vehicles in California. We want to
2 see incentives maybe for very high efficiency
3 vehicles, whatever they're fueled by.

4 MR. BEMIS: Um-hum. Okay, I think I get
5 your point.

6 MS. MONAHAN: Okay, thank you.

7 MR. SMITH: Okay, we have two questions.
8 One from Dave Modisette. Dave, are you online?
9 Is Dave Modisette online? How about Gina.

10 MS. GRAY: I am online, can you hear me?

11 MR. BEMIS: Yes, ma'am.

12 MS. GRAY: All righty. The slide that
13 you have up right now --

14 MR. BEMIS: That one?

15 MS. GRAY: Yes, thank you. And I think
16 it goes to the same point that you were just
17 speaking to, which is -- I'll try to get
18 clarification for how these were all split up
19 because basically I agree that, for example, the
20 diesel vehicles shown on here, they could be
21 running on biodiesel, which is the green biofuel.

22 So, in effect, you know, showing these
23 as vehicles is a little bit strange because these
24 fuels are going to be run in, you know, just like
25 ethanol might be run in gasoline vehicles.

1 So I'm not too sure if this is quite
2 reflecting what you want to reflect.

3 MR. BEMIS: Okay, this slide, this
4 particular slide is a fuel slide. The previous
5 one was vehicles. This one here is vehicles, this
6 one's fuel.

7 MS. GRAY: Okay. And so in the previous
8 one I guess --

9 MR. BEMIS: That one.

10 MS. GRAY: Yeah, --

11 MR. BEMIS: It's possible I could
12 consider the biofuels going into diesel, also.
13 Which is what the previous comment was.

14 MS. GRAY: And that's the green?

15 MR. BEMIS: Yeah. I'm worried about how
16 much biofuels we're talking about here because
17 we're looking at, what, 80 or 90 percent of the
18 vehicle sales being fueled with biofuels out in
19 the year 2050. That's a lot of biofuel. Haven't
20 done that check.

21 MS. GRAY: Okay.

22 MR. CACKETTE: Why would that many be on
23 biofuels, more than what --

24 MR. BEMIS: Well, even just looking at
25 the -- if the purple was --

1 MR. WALSH: -- was biomass-derived --

2 MR. BEMIS: Yeah. Hydrogen. Yeah. A
3 fraction of it would be, maybe a third. Okay.
4 And you'd add that to the green. And maybe if you
5 add that to the brown, that's half the fuel at
6 least.

7 DR. KAMMEN: It would be worth comparing
8 some of this analysis to what's emerging from the
9 renewables fuel application work in Europe.
10 They're supposed to have a series of kind of
11 similar projection graphs available. I think
12 they're talking October 1st, but potentially
13 earlier.

14 Some of the forecasts look quite
15 similar. They forecast like, for example, just to
16 go to Jim's point, they forecast even larger
17 reduction in VMT than you do. And so you can
18 decide how real or not those are, Jim, if you
19 want. But certainly there's some nice comparison
20 work that's just about to be released.

21 MR. BEMIS: Okay, good. Yeah, I didn't
22 create the numbers for VMT reduction, I just took
23 them out of the 2050 vision and used them.

24 MS. GRAY: Can you still hear me?

25 MR. BEMIS: Yes.

1 MS. GRAY: Okay, one thing you might
2 want to think about as all this gets developed as
3 an alternate slide, was the move in the direction
4 of portraying things as liquid, you know, liquid
5 fuel, electricity, you know, gaseous fuel.

6 I think this is where some of the
7 difficulty arises when people start talking about
8 these things and not recognizing that maybe the
9 actual diesel vehicle is going to be burning a
10 biofuel.

11 And so, you know, if you could touch
12 more in line of liquid versus non-liquid, that may
13 help, as well.

14 MR. BEMIS: Okay. I hadn't thought
15 about liquid versus non-liquid, but I had thought
16 about breaking it down into fuel use once I get
17 the super ultra low vehicles broken down into
18 plug-ins versus batteries versus fuel cells,
19 which, again, I haven't done yet. And that's why
20 I haven't gone past this point.

21 MS. GRAY: Yeah, and one of the reasons
22 I say that is at some point here the discussion is
23 going to have to shift, and whether it's AB-118
24 where your funds go, or you know, broader context,
25 is how are these fuels going to get distributed to

1 the public, which kind of goes to Jay McKeeman's
2 earlier comment.

3 And some recognition of the whole
4 distribution system. So I think at some point
5 we're going to have to start thinking liquid, you
6 know, gas and electricity, those types of things.

7 MR. BEMIS: Okay. Also, when I first
8 look at this slide I'm thinking, gee, we could end
9 up with an awful lot of gasoline to export.

10 MS. GRAY: Um-hum.

11 MR. BEMIS: Anyway, that's the end of my
12 presentation I think.

13 MS. HOLMES-GEN: I'm just wondering, I
14 want to comment that it does seem in the electric
15 drive storyline that there's a relatively low
16 number of electric drive vehicles that you're
17 projecting by 2020.

18 And I think that we should consider how
19 we can up that.

20 MR. BEMIS: Okay, that question should
21 be directed to the emerging fuels office because
22 like I said earlier, I just used the storyline
23 vehicle penetration numbers that they gave me and
24 put them into my spreadsheet.

25 DR. KAMMEN: That's the same comment I

1 was actually going to base something I said later
2 on. So, I mean, effectively, I'm in agreement.

3 DR. SWEENEY: And for me I'm more
4 dubious about it. Unless we have some real
5 battery improvement I doubt if we're going to get
6 anywhere near that type of penetration of plug-in
7 vehicles. So this is so uncertain because it's so
8 driven by battery cost improvement.

9 MR. BEMIS: Okay.

10 MR. CARMICHAEL: Tim Carmichael with a
11 quick comment. I hate to disagree with Professor
12 Sweeney, but some of the radicals around the table
13 in the last year have pushed a vision of 100
14 percent electric drive by 2020. So obviously a
15 significant increase over what this scenario
16 shows.

17 I had another quick question. Going
18 back to the -- where's that slide -- oh, there
19 were slides, the fuel cycle greenhouse gas
20 emissions for light-duty vehicles. I think that
21 was the --

22 MR. BEMIS: The bar chart?

23 MR. CARMICHAEL: The bar chart.

24 MR. BEMIS: Yeah.

25 MR. CARMICHAEL: You know, I've heard

1 different snippets from the Air Resources Board
2 and CEC Staff over the last year that ARB Staff,
3 and maybe both agencies staff, were taking another
4 look at these numbers.

5 And I'm just wondering where are we in
6 review of this. Is this the set of numbers we're
7 going to go with for the foreseeable future, or is
8 this under evaluation and likely to change, and
9 when?

10 MR. BEMIS: I think that's a really good
11 question. I used what I had available to me from
12 the published report. There is ongoing work, I
13 think, both at the Air Resources Board and I'm
14 sure at the Energy Commission.

15 As far as the timing of that work and
16 how it would fit into this, I would have to defer
17 that to other people.

18 MS. MONAHAN: -- a quick follow-on,
19 because, I mean, per our discussion it seemed as
20 though those numbers that you have in the chart
21 might not be accurate. It might be that there
22 should be an increase in emissions over time in
23 the business-as-usual case, instead of pretty much
24 a straight line. Between 2030 and 2050. Those
25 numbers are going to need to be revised.

1 MR. BEMIS: I think that if I take out
2 that older vehicles -- back here -- maybe not --

3 MS. MONAHAN: But I mean still you're
4 doubling your number of vehicles from two to four,
5 your new vehicles, --

6 MR. BEMIS: Yeah, I'm going to take a
7 look at that.

8 MS. MONAHAN: -- (inaudible) --

9 MR. BEMIS: I'm going to take a look at
10 it. I think it's the legacy vehicles, the way I
11 treat the older vehicles, and they should come out
12 sooner is what I really think is happening there.
13 But I'll have to go back and take a look.

14 MR. SMITH: Gerry, I'd like to get back
15 to Tim's point. We are working closely with the
16 Air Resources Board on updating not only the GREET
17 model, but the output from the modeling work.

18 Right now there is updates under way at
19 the Air Resources Board looking more closely at
20 these numbers with respect to the low carbon fuel
21 standard. And we're working with them on that.

22 The work that we're about to begin here
23 at the Energy Commission is an update of the GREET
24 model takes on a little bit longer timeframe, and
25 a little bit longer term updates to that effort.

1 So, it's almost a tag-team fashion that
2 we and the Air Resources Board are working on
3 keeping the GREET model and the outputs current.

4 As Gerry said, right now, for purposes
5 of this analysis, we have to go with what's
6 publicly vetted and adopted, and that's what these
7 numbers are. I think anybody looking at these
8 could probably find any number of reasons why
9 these are too low, too high, need to be adjusted
10 this way or that way. Because now we have new
11 data over the last year or two since these numbers
12 were developed.

13 Andy, I don't know if you wanted to add
14 anything to that in terms of where you folks at
15 the Air Resources Board are in developing or
16 updating these outputs?

17 MR. PANSON: Nothing too specific, but
18 as Tom had said earlier, we're going to be
19 adopting the low carbon fuel standard in early
20 2009. And though technical work to support that
21 is going to have to be done in advance of that, so
22 certainly just far more information is going to be
23 coming out. And the work, at least as much as is
24 needed to support the low carbon fuel standard,
25 you know, will be done towards the end of this

1 year or next year.

2 DR. SWEENEY: This is Jim Sweeney.

3 Going back to this portion of new plug-in vehicle
4 battery, responding to Tim Carmichael's point, I
5 agree radicals are proposing a lot of things that
6 have vision, but we can't, you know, Al Gore says
7 no new -- no carbon whatsoever in our electricity
8 system within ten years, but that doesn't mean
9 because people are suggesting it that it's
10 realistic.

11 What I would hope that for this
12 analysis, if you're assuming that large amount of
13 introduction possible for battery electric
14 vehicles or for plug-ins, go back to what you're
15 implicitly assuming about the battery packs that
16 are being put in and what are the costs of those.

17 Are we talking about sort of 40-mile
18 plug-ins, which I assume you may be doing some
19 thing in that. Figure out what the cost is. Make
20 your own judgment about what technological
21 advances you're going to need to have in order to
22 evaluate whether that's going to be realistic.

23 Because, after all, what you're doing is
24 figuring out what technologies might be needed and
25 how you might want to intervene in that.

1 So I think that's such a crucial step
2 that you can't just jump over it as an assumption,
3 and you got to get back to that key parameter.

4 MR. BEMIS: Yeah. What you're
5 describing really is more of a description of
6 electric drive vehicles that will be part of the
7 storyline once that's available. I don't really
8 know what the status is, but I believe that the
9 vehicle range was more than 40 miles by the out
10 years. I don't know what --

11 DR. SWEENEY: I was talking about the
12 short years, like -- I think by the out years if I
13 were going to be guessing, my own personal guess
14 is that orange would be larger and the blue would
15 be smaller by 2050. But I'm talking about the
16 shorter term, the 2020, which, after all, we've
17 got to also be paying attention to for AB-32
18 purposes.

19 MR. BEMIS: Yeah, yeah. Well, you know,
20 this is just one scenario. And I think there's
21 probably an infinite number of scenarios one could
22 construct depending upon --

23 DR. SWEENEY: Sure.

24 MR. BEMIS: -- what you think might
25 happen. But again I used the vehicle numbers that

1 I got from the emerging office staff and put them
2 into my analysis.

3 DR. SWEENEY: That's fine. I'm just
4 suggesting that you probably want to go back and
5 understand the technological assumptions
6 underlying it. Give the descriptors of the
7 investment plan.

8 DR. KAMMEN: And I think in many ways
9 this is the critical point, because no matter how
10 much one agrees or disagrees with the rate of
11 take-off the fuel cells and others, it really is
12 this plug-in one that gives you any real bite on
13 the short-term in here.

14 And so figuring out how the investment
15 plan, you know, plus things like out -- X prizes
16 and whatever else you want to invoke as the
17 mechanisms to draw those batteries out, looking at
18 what project better plays and all manner of other
19 things we're doing, this is really that critical
20 area to achieve these.

21 And so when the plug-in vehicle
22 storyline is fully available, then I think there's
23 a net set of models that everyone's going to want
24 to clamor to do. And that feeds directly into
25 this. I mean that's the most immediate thing on

1 our list as of the final point.

2 DR. SWEENEY: Right. And that's the
3 basic thrust of my point, not whether it's right
4 or wrong, but how you relate to your investment
5 planning.

6 MR. MIZUTANI: This is Chuck Mizutani.
7 With respect to the sort of storylines, we took
8 the storylines from the AB-1007 alternative fuels
9 plan. And basically contacted the various
10 industry people on the various alternative fuels
11 to ask them for any updated information that they
12 could provide.

13 So basically the information starts with
14 basically about a year-and-a-half, two-year-old
15 information and was updated by industry. We are
16 in the process of basically providing a summary of
17 the storyline descriptions for the alternative
18 fuels that we looked at.

19 MR. BEMIS: And one last point is these
20 are the numbers from those storylines.

21 Another question from online? Tom
22 Fulks.

23 MS. SPEAKER: He wanted to know does the
24 forecast include any analysis of diesel hybrid
25 market penetration?

1 MR. BEMIS: The question was does the
2 forecast include diesel hybrid market penetration.
3 At the present time the CALCARS model does not
4 have diesel hybrids in it. It only has gasoline
5 hybrids.

6 Future versions of the model may, I'm
7 not sure about that. But at the present time it
8 does not.

9 MS. SCOTT: I was just wondering if any
10 of your storylines regarding hydrogen are based on
11 -- let me put it this way: Are your hydrogen
12 storylines based on providing hydrogen fuel
13 stations or sources to fuel up for hydrogen? Or
14 have you considered an alternative self-propelled
15 hydrogen hybrid?

16 MR. BEMIS: Again, that's a storyline
17 question. The answer was no.

18 MR. OLSON: Yeah. This is Tim Olson
19 from the Energy Commission. The storylines for
20 hydrogen had assumptions, several different
21 assumptions, that there would be some central
22 station, fueling stations. Also home refueling,
23 but none self-propelled.

24 MS. SCOTT: So if I have such technology
25 should I bring that forward so we can use that as

1 an alternative storyline?

2 MR. OLSON: I think we're open to
3 comments and recommendations from anybody on this.

4 MS. SCOTT: Okay, good. Thank you.

5 MR. BEMIS: John Boesel has another
6 question.

7 MR. BOESEL: Gerry, again maybe this is
8 a question for Mike and Peter, you presented an
9 analysis here on how we could meet the 2050 goals.
10 And it is encouraging to see that that could be
11 done.

12 You know, how -- unfold and how
13 developed and how the marketplace does is very
14 hard to predict. I just wonder if you could just
15 elaborate a bit on what this modeling means for
16 possible AB-118 --

17 MR. BEMIS: I think that this will be an
18 input into the overall development of factors that
19 will be used for weighting. Peter may be in a
20 better position to respond to your question, John.

21 MR. WARD: I think this is basically the
22 first step of the investment plan, what we're
23 trying to do is carefully populate the 2050
24 vision, which will be the allocation. And that's
25 the allocation goals that we have.

1 The other side that will be in the
2 investment plan is what opportunities avail
3 themselves to us now for funding. How those match
4 up has not been determined yet.

5 And we're hoping to take this investment
6 plan on the road and have workshops with
7 interested stakeholders and the public to
8 determine what those opportunities would be in the
9 near future, mid term and long term, as well.

10 So that will be part of the investment
11 plan, but that will be after we establish the
12 allocation priorities.

13 MR. BEMIS: And I think you mentioned in
14 your presentation there are other factors that we
15 need to consider as far as training and all those
16 other things that you mentioned.

17 MR. WARD: Right, the other things that
18 I mentioned in the presentation, as well, that
19 aren't GHG allocated.

20 MR. BEMIS: But important for the
21 program.

22 MR. WARD: Right.

23 MR. BOESEL: Okay, thank you.

24 MR. BEMIS: Another question from the
25 phone? Walter Seimbab, is that right?

1 MR. SEIMBAB: Yes, Seimbab.

2 MR. BEMIS: Hi, -- Seimbab -- Walter
3 Seimbab?

4 MR. SEIMBAB: Yeah.

5 MR. BEMIS: Hi, Walter.

6 MR. SEIMBAB: Hi, I'm the Research
7 Director for the South Bay Cities Council of
8 Governments. And all of this is very impressive
9 and exciting and really an impressive intellectual
10 feat.

11 I wanted to just throw out a strategy
12 that we're trying and make you aware of it. And
13 if you want to work with us, that's fine.

14 We did some studies over the last four
15 years of what's called the transportation
16 performance of our urban forum. And what we
17 discovered in all of that is that the distance of
18 most functional destinations is -- not family
19 things, but going shopping, going to services.
20 Everything but journeys to work, which tend to be
21 longer. Most functional journeys are less than
22 three or four miles. I mean most, -- all.

23 And so we put that together with what
24 technologies are on the market, and we've come up
25 with an initiative to start introducing the

1 electric vehicle for -- electric vehicles, they're
2 battery electric.

3 And we're targeting, we have now 1.6
4 vehicles per household in the South Bay, and if we
5 can reduce that, making certain assumptions about
6 vehicle miles traveled by cars and things, if we
7 can reduce that with targeted 1.0 or 1.1 by -- in
8 other words you're tightening the second and third
9 car with one of these electric vehicles, we think
10 we can reduce the VMT generated by about 25
11 percent with no changes in density whatsoever.

12 And that's the (inaudible) -- enormous
13 reduction. And we are in line to get seed funding
14 to actually implement this initiative.

15 And I would hope something like this,
16 two things might be reflected in your investment
17 plan. One is encouraging others to figure out
18 their own transportation performance (inaudible);
19 and secondly, for innovation to come up with
20 things like that, it would be nice if we didn't
21 have to go around and beg for money. We got about
22 185,000 with the promise (inaudible) official.

23 But if I could get my first option to go
24 ahead and do a very wide demonstration program,
25 because we're trying to stimulate the marketplace.

1 And we think the benefits are tremendous based on
2 what it is we want.

3 So, I just wanted to share that with you
4 so that you could start thinking along those lines
5 with respect to your program.

6 MR. BEMIS: That is an interesting
7 result. I'm really pleasantly surprised that you
8 said 25 percent of your VMT could be reduced by
9 using neighborhood electric vehicles. I wonder
10 how applicable that is to other areas. But if
11 that's really true, I think that's something that
12 should be worthy of investigating further.

13 MR. SEIMBAB: Right. And the MSEVs,
14 there's a problem in that the federal government
15 is restricting them to 25 miles an hour, when
16 they're actually capable of going 30 miles an
17 hour.

18 So one of the things we're joining is
19 with the industry association to try and get the
20 feds to change that, and that would make the
21 introduction of these things even that much
22 easier.

23 But, again, the calculation goes like
24 this, is we're averaging 1.6 vehicles per
25 household, that includes obviously one per

1 household and that funding was back in the third
2 car -- cars, I guess. But we're just targeting
3 it. We're bringing it down, just getting rid of
4 the second and third car, and have them use the
5 electric vehicle to cut around on what trips there
6 are, after all, for the most part, less than three
7 miles.

8 So it seems an obvious application. And
9 something we're just dying to try. So I hope by
10 the early part of next year we'll have this
11 funding -- the funding in place.

12 MR. BEMIS: Yeah. Well, I'm looking at
13 three miles per trip, that must be an awful lot of
14 trips in order to get that 25 percent reduction in
15 VMT.

16 MR. SEIMBAB: Well, the idea is if
17 you're driving your second car 10,000 miles, we're
18 just looking at substituting a battery electric
19 for that car.

20 MR. WALSH: But you're not talking
21 about --

22 MR. SEIMBAB: -- a lot of trips. I
23 think that's exactly right. There are an awful
24 lot of trips.

25 MR. WALSH: But you're not talking about

1 a 25 percent reduction in VMT, are you? You're
2 talking about a 25 percent reduction in the VMT of
3 an internal combustion.

4 MR. SEIMBAB: No, we're talking about
5 changing, reducing all the VMT associated with the
6 second and third cars by battery electric.

7 MR. BEMIS: Oh, with the second and
8 third car, or total VMT?

9 MR. SEIMBAB: Total VMT being reduced by
10 eliminating the second and third gasoline-driven
11 car in the household.

12 MR. BEMIS: Okay.

13 MR. SEIMBAB: I could go over the
14 numbers with one of your analysts (inaudible) to
15 do on the phone, but --

16 MR. BEMIS: Yeah.

17 MR. SEIMBAB: -- I'd be happy to do
18 that. But bear in mind -- out is that the idea of
19 (inaudible) centers and so forth. We looked at
20 our (inaudible) centers and found out that a very
21 high percentage of people are driving a quarter
22 mile to get to that center.

23 And we think if we could substitute --
24 when you start looking at a million people driving
25 a quarter, and a half a mile and one mile things

1 really add up. And that's -- the assumptions
2 around smart growth about walking, taking transit
3 and stuff, at least in the South Bay -- don't have
4 any facilities to how they work. People drive,
5 period.

6 MR. BEMIS: Okay.

7 MR. WARD: Walter? I wonder if you
8 would mind submitting your analysis to our docket.
9 We would like to see that. And it's available on
10 our webpage. And if you have any trouble finding
11 that, just --

12 MR. SEIMBAB: No, no, no, I have -- it's
13 one of my favorites.

14 (Laughter.)

15 MR. WARD: Oh, okay, good. That's nice
16 to hear, as well.

17 MR. SEIMBAB: Yeah, --

18 MR. WARD: If you wouldn't mind
19 submitting that, we'd like to take that into
20 consideration. I appreciate your comments. And I
21 think now we can --

22 MR. BEMIS: I think there's one more
23 call waiting, one more question waiting. Tom
24 Fulks, is Tom available?

25 MR. FULKS: Yes, I'm here. Thank you

1 for taking my phone call. I appreciate that.

2 I've actually got a couple questions,
3 but I did want to add to the neighborhood electric
4 vehicles discussion just a little bit.

5 We have -- my company, on behalf of, at
6 the time, Daimler Chrysler, did a very extensive
7 study of the owners of neighborhood electric
8 vehicles in terms of their travel patterns and
9 their VMT, number of trips a day and so forth.
10 That information is on file at the Air Resources
11 Board. It's part of the ZEV mandate information
12 collecting process that they went through.

13 Bottomline is we found the people who
14 owned these vehicles used them for three out of
15 four trips. Of those trips that they take in
16 their NEVs about 75 percent of them are for three
17 miles or less. Of those three-mile-or-less-trips,
18 two-thirds of them were for one mile or less.

19 What we also found was that on the
20 average people who own these vehicles leave in
21 their driveway two vehicles, in some cases three,
22 internal combustion engine vehicles.

23 And so what we ended up calculating was
24 a significant reduction in cold starts. I should
25 say a significant elimination of cold starts. But

1 we didn't find any VMT reduction at all because
2 people were going to be taking these trips anyway.

3 So what we found was rather than
4 changing their travel behavior, they changed their
5 mode of travel from an internal combustion engine
6 to a neighborhood electric.

7 So, whatever projections South Bay is
8 making in terms of dropping VMT due to a modal
9 shift from internal combustion engines to
10 neighborhood electric vehicles, the data didn't
11 bear that out in our research. But we're happy to
12 share that, or you can go look it up over on the
13 ARB website.

14 But that said, I'd like to move on to
15 another question I had. And that is in this
16 presentation I saw the use of the terms E-85 and
17 flex fuel, and then the term renewable vehicle.
18 And I just wanted to make sure I've got my
19 definitions straight.

20 With regard to E-85 vehicles, I'm
21 assuming those are being described as flex fuel.
22 What I don't know is are light-duty diesel
23 vehicles that use some sort of biobased fuel, are
24 those, as well, considered flex fuel vehicles in
25 this analysis.

1 MR. BEMIS: When I did the analysis, and
2 that was a comment that was made from the people
3 here, I assumed that they were flex fuel vehicles
4 in replacing gasoline vehicles only.

5 The point was made they could be biofuel
6 fuels and they could be biodiesels that replaced
7 some of the diesel use in diesel vehicles.

8 And when I did that analysis and what
9 you see now is based upon just penetrating into
10 the gasoline portion of the fleet. And that's why
11 the ratio between gasoline and diesel increases
12 the percentage diesel.

13 MR. FULKS: Well, that's what I would
14 recommend, just making the language on your
15 presentation, so that when you say flex fuel
16 you're saying E-85 gasoline flex fuel. Because it
17 does make a very big difference in terms of the
18 market mix between gasoline flex fuels and light-
19 duty diesel as you project out into the future.

20 And then secondly, with regard to your
21 author's definition of renewable diesel fuel, I'd
22 like clarification on that. Are you lumping
23 together all biodiesel together under one roof?
24 And that would be the traditional fatty acid
25 methylester or FAME biodiesel, and then the newer

1 iteration, second generation biodiesel called
2 renewable diesel that's made by Conoco Phillips?

3 MR. BEMIS: The answer from the audience
4 was yes.

5 MR. FULKS: I'm sorry, was yes to what?

6 MR. BEMIS: It's inclusive, it's all
7 inclusive.

8 MR. FULKS: So it's all lumped together,
9 renewable diesel is all considered one category
10 regardless of the chemistry or the science?

11 MR. BEMIS: Yes. People are nodding
12 their heads yes.

13 MR. FULKS: Okay, thank you. Well, I
14 would also suggest clarifying the issue because
15 one should be replacing the other as time flies
16 forward onto your market penetration scenarios.

17 MR. BEMIS: Okay.

18 DR. KAMMEN: I want to just highlight
19 one thing which I think is probably obvious, but
20 the discussion we just had about the neighborhood
21 vehicles really does highlight the need in the
22 modeling runs to track and to present changes in
23 VMT, but also changes in GHG emissions, too.

24 I mean it's obvious, but when you have a
25 dialogue on one you want to make sure that the

1 results we're talking about both. Because Pavley
2 gives us some metric on one, but not the other.
3 We really want to think about how this impacts the
4 overall mix.

5 DR. SWEENEY: One other, I guess,
6 question. Jim Sweeney again. The words that you
7 presented looks very very solid. I was very
8 pleased with the quality of the thinking that went
9 under it.

10 But if I understood you correctly this
11 is developed a fairly simple spreadsheet model is
12 calibrated off the CALCARS model, that then
13 allowed you to do these calculations.

14 Is this sort of a vintage capital model
15 where you're able to track the vintages of the
16 various vehicles? For each one track the fuel use
17 and then the greenhouse gas benefits. Or have you
18 done a lot of extrapolating in between?

19 Because if not, I would suggest it may
20 be worthwhile actually taking, constructing a
21 simplified version of the CALCARS model so you can
22 use it as a continuing tool in order to address
23 all of the various questions that are going to
24 continue to come up.

25 MR. BEMIS: I can answer your question

1 about what I used. This is an ExCel spreadsheet
2 where every tab is a different model year. And
3 there's model years going out from 2005 to 2050.
4 And there's calculations on that tab for each year
5 of operation for each vehicle, each model year.

6 So a 2040 vehicle has in it the amount
7 of fuel it would use in 2040, 2041, 2042, et
8 cetera, et cetera, et cetera, using that decay
9 curve I mentioned earlier.

10 And then those are all summed up --

11 DR. SWEENEY: Okay, so you've -- capital
12 everything in that case. I mean, yeah, okay.
13 Well, that actually sounds like the right thing to
14 be doing.

15 MR. BEMIS: It's the same tool we used
16 in our petroleum displacement work several years
17 ago that we did jointly with the Air Resources
18 Board.

19 DR. SWEENEY: I wasn't watching that, so
20 I don't know.

21 MR. BEMIS: And I just updated it to
22 include the current forecast and I included more
23 years and things like that. So, it's been
24 expanded from that time.

25 DR. SWEENEY: Right. Good. So it looks

1 like a very, you know, high-quality piece of work.
2 Congratulations.

3 MR. BEMIS: When I put two versions of
4 this online at the same time the computer crashes,
5 that's how big it is.

6 (Laughter.)

7 MR. BEMIS: I think that concludes my
8 presentation.

9 MR. WARD: Next we're going to hear from
10 Malachi Weng-Gutierrez on the medium- and heavy-
11 duty projections.

12 MS. MONAHAN: Well, I was wondering
13 before we begin is there some way you guys could
14 give us a sense of timing for the rest of the
15 meeting? Hello?

16 MR. WARD: Well, I would project that it
17 depends, of course, on how much public comment we
18 have at the end, but the other sections we have
19 left are Malachi's presentation, briefly going
20 over the schedule, and Chuck Mizutani will go over
21 the regulatory development which is very quick, as
22 well.

23 We are trying to move this along as
24 quickly as we can and save, as I mentioned, all
25 discussion questions for the end, clarifying as we

1 go.

2 I don't know how much time that will be,
3 45 minutes maybe.

4 MR. WENG-GUTIERREZ: For me? I --

5 MR. WARD: No, not for you.

6 MR. WENG-GUTIERREZ: I only have very
7 few slides, so --

8 MR. WARD: Okay. Malachi's probably 10
9 or 15 minutes, I'd say. And then another 10 or 15
10 after that. And then public discussion.

11 MR. WENG-GUTIERREZ: Okay. My name is
12 Malachi Weng-Gutierrez. I work in the fuels and
13 transportation division. And I'm going to be
14 going over the medium- and heavy-duty emissions
15 calculations that I did.

16 I followed basically a very close
17 methodology to what Gerry used in the light-duty
18 vehicles. I didn't have a futures model, which is
19 kind of the spreadsheet that we used in the --
20 that Gerry used and augmented.

21 But I did modify some of the work done
22 by the emerging fuels and technologies office to
23 create the calculations for the emissions.

24 As Gerry showed in one of his early
25 slides there was a -- the amount of GHGs

1 attributable to medium- and heavy-duty is about 7
2 or 8 percent. Seven percent in 1990 and 8 percent
3 in 2004.

4 VMT and vehicle stock growth throughout
5 the entire forecast period. In the fuels and
6 transportation division our forecasts go out to
7 2030. I've extended the forecasts from 2030 to
8 2050 using a fairly simple linear extrapolation of
9 the last five years of the existing forecast so
10 that it shows the same type of curve that's being
11 observed in the forecast for the remainder of the
12 period of time between 2030 and 2050.

13 In this slide I've shown the two goals,
14 the 2020 goal and the 2050 goal. The values that
15 are presented here are from the emissions
16 inventory, ARB's emissions inventory. And they
17 only include bus and transit, I believe, is what
18 I've included here.

19 What I would like to do in the future in
20 the coming weeks is include rail, as well. So
21 that'll be something that I'll be looking to
22 include. And so those numbers will change, the
23 greenhouse gas goals will change because I'll be
24 including additional sectors into the medium- and
25 heavy-duty area.

1 In addition to trucks and buses, it also
2 includes offroad emissions, or offroad consumption
3 is what we forecast. And then the calculation for
4 emissions is presented in this chart, as well.

5 The vehicle attributes in all the values
6 that we used for the future emissions, those
7 estimates of the attributes, as far as fuel
8 economy, those things are obtained from the
9 emerging fuels and technologies office.

10 And again, the foundation of the base
11 forecast is from the approved 2007 Integrated
12 Energy Policy Report, the forecasting work done in
13 that.

14 So, again, this is the base number, or
15 the base emission forecast up to 2030. And then
16 I've extended it to 2050.

17 This next slide shows a shift. And
18 Gerry talked about VMT reduction strategies. One
19 of which would be taking people out of personal
20 cars and putting them in public transportation.

21 So what we did here was we actually
22 included that as an increased emission for medium-
23 and heavy-duty sectors, estimating how much
24 traffic or how much VMT would be shifted to
25 transit, and then estimating what the footprint of

1 the emissions would be for that shift. So that's
2 what's included in here.

3 From that we've applied the other
4 strategies that Peter had actually mentioned at
5 the beginning of the morning, the low carbon fuel
6 standard and then the other being fuel economy
7 gains in this medium- and heavy-duty sector.

8 So, the application of the low carbon
9 fuel standard is pretty much consistent with what
10 Gerry used, as well. We made the assumption that
11 the benefits would be observed here. We made no -
12 - we didn't make any assumptions about how, if
13 there's double counting, or how the low carbon
14 fuel standard would actually be implemented. We
15 just said that it would be a benefit to us and
16 represented it as such. So we'd be meeting that
17 10 percent reduction in carbon content by 2020,
18 and that's reflected in this chart.

19 This slide basically shows a fuel
20 economy gain that we had assumed. We did some
21 research about the different fuel economy gains
22 that could penetrate the marketplace in the
23 medium- and heavy-duty sectors, primarily looking
24 at research that was done recently, papers and
25 things, to make these estimates.

1 And we applied them on top of what our
2 models forecast out to 2030 to see if there were
3 some efficiencies that we hadn't captured for new
4 technologies that might be adopted, and what that
5 impact would be on the overall emissions for these
6 two sectors, medium- and heavy-duty sectors. And
7 this is the result of that calculation.

8 MR. CACKETTE: Can you tell us what they
9 are, both in the basecase and what they are in
10 this case? In other words, what is the percent
11 fuel economy improvement per year or efficiency
12 improvement for heavy-duty trucks?

13 MR. WENG-GUTIERREZ: Sure. It ramps up,
14 I think, the base fuel economy numbers range from
15 I would say about just under 6 miles per gallon to
16 11 miles per gallon, under 11 miles per gallon for
17 all the different medium- and heavy-duty classes,
18 from class 3 to --

19 MR. CACKETTE: Looking for percent per
20 year.

21 MR. WENG-GUTIERREZ: Right. And then
22 the percent per year addition on top of that,
23 that's the base fuel economy numbers. And then
24 the increase, it increases slowly as technologies
25 come into the marketplace, and I think it goes

1 from basically zero up to about, I think, 19
2 percent in the latter years.

3 So in some instances there are
4 percentage increases of up to, I think, just over
5 19 percent for some sectors.

6 MR. CARMICHAEL: So, I just want
7 clarification on that.

8 MR. WENG-GUTIERREZ: Sure.

9 MR. CARMICHAEL: So up to a 19 percent
10 improvement by 2050 in some --

11 MR. WENG-GUTIERREZ: Yes.

12 MR. CARMICHAEL: -- applications?

13 MR. WENG-GUTIERREZ: In some
14 applications.

15 MR. CARMICHAEL: Thank you.

16 MR. CACKETTE: But you don't have a
17 number that's just for the fleet, what it is, per
18 year or what the range is?

19 MR. WENG-GUTIERREZ: We have it broken
20 out by classes. So I mean I could average the
21 numbers. It's just above 19 percent is what I
22 would say. But if you'd like a matrix of the
23 numbers, I can certainly provide that to you.

24 It's just ramping up in a logistic curve
25 from early on in the forecast period to about, you

1 know, under 19 percent, or 19 percent in 2050.

2 MR. CARMICHAEL: Across the fleet?

3 MR. WENG-GUTIERREZ: Yes. I believe
4 it's across the fleet.

5 And, again, if there are more reasonable
6 values that you would suggest we'd be happy to
7 review those or investigate any further
8 technologies that you'd like to be included in
9 this fuel economy gain estimate.

10 And that gets me to almost my final
11 slide. It's very quick. This is basically
12 information that was provided to me from the
13 emerging fuels technologies office, again.
14 Different technologies.

15 I've included the CNG, LNG, biodiesel or
16 biomass-derived diesel, -- diesel -- hydrogen in
17 this to see whether or not, what magnitude of
18 reduction could be attained by including those.

19 And if you notice here, the emissions
20 here in 2050 is about 46.7 million metric tons.
21 In here it's about 44.4, so there's very little
22 reduction in transitioning over to these fuels
23 that I calculated.

24 Now, again, these are very preliminary
25 calculations and I need to look at them. There

1 definitely is a shift in what is being used as a
2 fuel so that here you see the purple diesel
3 emissions is fairly large. And then if you
4 introduce the alternative fuels there's still
5 the -- travel's still occurring, VMT is still
6 increasing and so you do have a larger magnitude
7 of other transportation fuels being introduced.
8 But then they become a larger emission footprint.

9 So, there's still a big gap that needs
10 to be filled, which I'm assuming TIAAX will be
11 discussing for the medium and heavy duty, as well
12 as other technologies that will need to be
13 included in the next couple of weeks.

14 One of the technologies that certainly I
15 didn't include was the electric drive
16 technologies. And that may actually lead to some
17 reduction, as well.

18 Yes.

19 MR. CARMICHAEL: Tim Carmichael, again.
20 Just eyeballing it, we're talking about roughly a
21 30 percent penetration of nondiesel fuels? Is
22 that what that shows?

23 MR. WENG-GUTIERREZ: Eyeballing it, yes.

24 MR. CARMICHAEL: Thank you.

25 MR. WENG-GUTIERREZ: And then it gets --

1 this is my last slide. Again, I was trying to
2 look at the reduction amounts that were provided
3 for each of the different reduction strategies or
4 technologies of fuels that were actually provided
5 to me from the emerging fuels and technologies
6 office.

7 And this is just a slide that shows the
8 magnitude of those reductions over the forecast
9 period. So, again, biomass derived diesel, you
10 know, is the blue. Light green is the CNG. And,
11 again, these are displacing diesel, traditional
12 diesel, but they still have an emission footprint
13 in and of themselves, which is added to the
14 previous slides emission values.

15 And that is pretty much my set of
16 slides. If you had any questions on those I'd be
17 happy to answer them.

18 MS. MONAHAN: This is Patty Monahan from
19 UCS. I'm curious, your rate of CNG penetration in
20 the heavy-duty world is high. And I'm wondering,
21 can you talk a bit more about how that -- where
22 that forecast is coming from, the 2050?

23 MR. WENG-GUTIERREZ: Well, yeah, and I
24 guess it looks high here, but really it's not that
25 -- well, the forecast, the assumptions and

1 everything that I'm using in these calculations
2 come from the emerging fuels and technologies
3 office.

4 And I believe those then primarily were
5 arrived at through conversations with the
6 industry, as well as researching whitepapers and
7 items like that. I'm not sure of the specifics as
8 to how the analysts came up with all the
9 estimates, but I know that it has been vetted
10 through industry, stakeholders.

11 MS. MONAHAN: It is interesting because
12 it seems like you're getting past the old hydrogen
13 technologies and I'm not clear -- and maybe I'm
14 just not understanding why CNG would be so
15 superior to hydrogen over the long run. I see in
16 the short run why it would be.

17 MR. WENG-GUTIERREZ: Yeah. And I think
18 those nuances are things that we still need to
19 look at. I understand the question exactly; when
20 you have a gaseous fuel, you know, why would you
21 -- wouldn't you see a shift towards hydrogen and
22 away from CNG in the long term as the
23 infrastructure becomes available.

24 So I think those are things that we'll
25 have to look at in the coming weeks.

1 Okay, I think there are two -- I'm
2 sorry, go ahead.

3 MS. MONAHAN: No -- thank you.

4 MR. WENG-GUTIERREZ: Okay. John Boesel.

5 MR. BOESEL: John Boesel with CalStart.
6 We've done a lot of work with hybrid trucks and
7 see that market segment really taking off. I
8 wasn't quite sure where that got factored in
9 (inaudible) las slide.

10 MR. WENG-GUTIERREZ: Yeah. Actually the
11 hybrid trucks have not been included in this
12 calculation yet. Again, there was a plug-in
13 hybrid electric, electric and the hybrid trucks
14 were not included in this segment of the
15 calculations yet.

16 There is some questions about the
17 electricity footprint and what we were going to be
18 using for some of those values. And so we're
19 still working out those specific emissions. That
20 should be included, though, in the next couple
21 weeks.

22 MR. BOESEL: Okay, thank you.

23 MR. WENG-GUTIERREZ: Um-hum. And then,
24 Tom Fulks, was there a question?

25 MR. FULKS: Yeah, following up on what

1 John Boesel just asked, I'd also like to ask you
2 to include hydraulic hybrids in your future
3 analysis. Right now I'm speaking on behalf of the
4 Diesel Technology Forum, which is one of the trade
5 associations that represent the diesel, heavy-duty
6 diesel industry as well as light duty.

7 In terms of your scenarios with regard
8 to CNG market penetration, I'm not exactly clear
9 what industry stakeholders you run this one past,
10 but I'm sure if you run it past the CNG and LNG
11 stakeholders they would agree with it. I'm not
12 too sure that the diesel stakeholders would. But
13 that's not necessarily the main point.

14 What I would like to suggest is that you
15 go back and add a category for what we anticipate
16 to be the future growth of heavy duty in terms of
17 power-train technology. That would include
18 electric hybrid, non plug-in. And hydraulic
19 hybrid. Because that's really where we see the
20 growth happening in terms of powertrain
21 development.

22 To some degree way out in the future
23 there's going to be hydrogen, but right now in
24 terms of just the torque necessary to haul heavy
25 loads, that is where the industry is leading. So,

1 for credibility of your slide I really encourage
2 you to do that.

3 Secondly, I think with regard to
4 greenhouse gas emissions reduced, could you tell
5 me in addition to CO2 what other greenhouse gases
6 have been included in the calculation?

7 MR. WENG-GUTIERREZ: N2O and methane
8 were included, I think, in Gerry's and mine, both
9 sets.

10 MR. FULKS: So, yeah. Zeroing in on
11 methane, and I'm not exactly clear how you can get
12 an increase of CNG at this level without a
13 commensurate increase in methane output. And so
14 especially right now unregulated, unfiltered
15 methane venting of fuel tanks on the LNG vehicles,
16 particularly, I'm just wondering if you got that
17 right.

18 MR. WENG-GUTIERREZ: Well, those
19 estimates were, I think, captured from the
20 emission inventory. There was some ratio-ing done
21 that Gerry had provided to me. So, I'm not sure
22 if whether or not it specifically captures that.

23 But I know that the CNG footprint here
24 does capture the methane associated with that
25 sector. I mean I can certainly take a look at the

1 specific calculations for that, and whether or not
2 it's being included.

3 MR. FULKS: Okay, thank you.

4 MR. CACKETTE: And similarly on the LNG,
5 is that a lot of LNG with a tiny benefit, or is it
6 a little bit of LNG with a big benefit? Is that
7 my understanding, it's LNG -- benefit?

8 MR. WENG-GUTIERREZ: As I recall the
9 calculation, I think it's pretty -- there are
10 similar amounts of both CNG and LNG are
11 penetrating the market. It's almost 50/50. I
12 think it varies, but --

13 MR. CACKETTE: How much overall compared
14 to diesel?

15 MR. WENG-GUTIERREZ: Well, again, it
16 would be the segment that here is in light blue,
17 include both LNG, CNG, as well as the hydrogen and
18 others. So the --

19 (Parties speaking simultaneously.)

20 MR. WENG-GUTIERREZ: Yeah, I'd have to
21 look at the calculation. I can pull that up for
22 you and get that to you.

23 DR. SWEENEY: Jim Sweeney. I've got a
24 question. I haven't heard any discussion
25 whatsoever in either of these two presentations

1 about what your beliefs will be about the prices
2 of the various fuels on the marketplace. And --
3 right here where we have CNG replacing diesel.

4 So could you talk about what you're
5 assuming is the price structure over time of
6 natural gas versus the petroleum? And the reason
7 why I ask, of course, is that I believe that over
8 time that particularly with the pressure towards
9 reducing carbon dioxide emissions, we're going to
10 probably going to be using natural gas pretty
11 intensively for electricity generation.

12 We're going to, as much as possible,
13 move away from coal. We may be able to -- we'll
14 get some biomass and significant quantities of
15 natural gas, of the fossil fuels is the lowest
16 carbon dioxide.

17 So I think that that's going to be a
18 little pressure on that for electricity
19 generation. And I would expect very really high
20 prices of natural gas perhaps converging, the same
21 converge roughly to a fuel equivalent to diesel or
22 a petroleum-based fuel.

23 In that case I'm not sure whether, how
24 the market structure supports this movement
25 towards -- amount of CNG. So my real question is

1 what have you really assumed about the prices of
2 natural gas versus diesel over this long period.

3 MR. WENG-GUTIERREZ: So, the price
4 assumption with natural gas is not included in our
5 calculations at all. We do have a price forecast
6 for other transportation fuels in our
7 transportation fuel demand forecast, as in the
8 IEPR, does include forecasts of those
9 transportation fuel prices.

10 But CNG in this calculation, the price
11 of that item is not included.

12 DR. SWEENEY: How can you even begin to
13 estimate market penetration of CNG without
14 thinking about the cost of it relative to diesel?

15 MR. WENG-GUTIERREZ: Well, it may not be
16 included in our calculations, but it is certainly
17 considered, I think, in the market penetration.
18 And I think, you know, the emerging fuels and
19 technologies office can speak to that.

20 MR. OLSON: Mr. Sweeney, this is Tim
21 Olson at the Energy Commission. Yes, we did make
22 assumptions on the prices of all the different
23 fuels in these in the storyline scenarios that
24 made projections from 2008 through 2050.

25 And, of course, the further you get out

1 in time you get lots of questions about how you
2 can predict all this pricing.

3 DR. SWEENEY: Oh, of course, yes.

4 MR. OLSON: And to get your frame of
5 reference, when we did that analysis around August
6 2007 we were using a gasoline, the Energy
7 Commission's projection, the high price projection
8 and 20 percent high and low.

9 And fuel prices at that time were about
10 3.15, 3.20 a gallon of gasoline. And we assumed,
11 based on information we gathered from fleet
12 contracts and then estimates done on projected
13 natural gas electricity rates in the future by our
14 electricity office here at the Energy Commission.

15 We did two different things, fleet
16 pricing and also retail pricing. Fleet pricing
17 for natural gas was averaging about \$1.50 a
18 gallon. Today it's about \$2 a gallon gasoline
19 equivalent.

20 And we did a projection that basically
21 assumed there would be a price increase over time,
22 a steady price increase over time. But still
23 cheaper than gasoline and diesel over time.

24 So, that's embedded into the storyline
25 analysis. It's one of the key assumptions.

1 DR. SWEENEY: Okay.

2 MR. OLSON: And that actually --

3 DR. SWEENEY: -- I'd have to look more
4 precisely at that, but I agree with your point.
5 You really don't know, but it does sound like you
6 at least would take into account natural gas
7 prices should be going out significantly over
8 time.

9 MR. OLSON: Also, to your point on what
10 does this mean in terms of if natural gas is a
11 significant contributor or part of the market, and
12 either light duty or heavy duty.

13 If you remember the discussion we had
14 earlier was we used the moderate case scenario
15 projections based on a lot of input over a year
16 and a half of information gathering.

17 And we asked our electricity office here
18 that does all this kind of big-picture analysis,
19 if we could achieve these natural gas scenarios,
20 as Malachi described here in the medium duty,
21 heavy duty, what would that mean for the overall
22 picture of California use of natural gas, whether
23 it's for transportation or electric power
24 generation.

25 And they did their analysis of the

1 moderate case, and then a real aggressive growth
2 case. And in the most aggressive case it's 6
3 percent of the total transportation -- of the
4 total natural gas use in California, 6 percent
5 would be devoted for transportation natural gas in
6 the most aggressive case; it's about 4 percent for
7 the moderate.

8 MR. WENG-GUTIERREZ: Light duty, medium
9 duty and heavy duty combined?

10 MR. OLSON: It's combined. Light duty,
11 heavy duty, offroad, onroad.

12 DR. SWEENEY: Right. That wasn't the
13 issue. Natural gas pricing will be essentially
14 set on a national market based upon supply and
15 demand for natural gas, basically dominated by
16 electricity supply. And so that wasn't that
17 there's room for it, it's just whether the
18 economics hold that support this sort of market
19 share, given the natural gas prices that apt to
20 set on this national market.

21 That was the nature of the question.

22 MR. WENG-GUTIERREZ: Okay.

23 MS. HOLMES-GEN: What is the E-diesel?
24 I thought I knew what it was, but now I'm not so
25 sure.

1 MR. WENG-GUTIERREZ: What's that E-
2 diesel include?

3 MS. SPEAKER: Diesel and like
4 (inaudible).

5 MS. HOLMES-GEN: Okay.

6 MR. WENG-GUTIERREZ: Okay. The answer
7 to that was that it's diesel blended with 7
8 percent ethanol, I guess, by volume.

9 And then we have two more questions.
10 Walter Seimbab.

11 MR. SEIMBAB: Yes, this is I don't think
12 nearly as profound as what you were talking about,
13 but I noticed in the slide you went by kind of
14 quickly about the mode shift expected to -- from
15 cars to public transit. And I don't know how
16 significant it all is.

17 But at least from the South Bay's
18 perspective, again I wanted to raise our concern
19 about any mode shift to public transit making up
20 any kind of substantial -- we have two kind of
21 concerns about it. One is transit scalable, and
22 then the other is just is it expandable.

23 And by scalable, we mean that when the
24 Pacific Electric was really really successful and
25 in the County there were less than a million

1 people. And almost everybody was going downtown.

2 Today we have 10 million people and
3 they're going to seemingly 10 million different
4 destinations. So I'm not sure that public transit
5 is really going to be up to the job.

6 Second is transit service is kind of
7 universally lousy, certainly in the South Bay.
8 And substandard in a lot of places around L.A.
9 County. And the (inaudible) and the labor and the
10 maintenance and the maintenance yards and all that
11 could really be acquired in a timely fashion and
12 affordably to accommodate these kind of
13 projections.

14 But certainly ARB was making about the
15 role of transit -- in the future. And in regards
16 to that, I'd like to urge ARB, I guess they're
17 there, to kind of work towards what sort of mode
18 split would be required in each region, and what
19 level of service to produce that mode split, and
20 what level of investment would produce that level
21 of service.

22 Because I think we remain pretty
23 skeptical that public transit is going to play
24 much of a role.

25 MR. WENG-GUTIERREZ: Okay, those are

1 good comments. I think we did certainly take a
2 look at what elements of public transportation
3 would be affected. Would there be an increase in
4 load factor with more people riding the buses. Or
5 would there be actual new buses on the roads.

6 And so those were definitely things we
7 considered. These are, of course, preliminary.
8 So if there were some other estimates as far as
9 mode shift and the level of service that would be
10 assumed by ARB, we'd love to have those to
11 consider as well.

12 Is there a second question? Dave
13 Modisette.

14 MR. MODISETTE: Yes, thank you. I just
15 wanted to clarify. Early on in your presentation
16 you said you had included the offroad or what I
17 might call the nonroad vehicles and technologies.

18 But then later on you said you had them
19 included in the electric technologies. So I guess
20 I just wanted to clarify that your current
21 analysis does not include things like truckstop
22 electrification and electric truck refrigeration
23 units in any electric industrial vehicles like
24 cargo handling equipment and things like that.

25 Is that correct? And will those things

1 be included in some future version of the
2 analysis?

3 MR. WENG-GUTIERREZ: That is correct.
4 And we will definitely look at including those in
5 the next few weeks into this analysis. So, yeah,
6 it does not include any of those, the electric
7 stuff, truckstop electrification or anything like
8 that. Those are not included.

9 MR. MODISETTE: Okay, thank you. And
10 what about things like marine port electrification
11 and future high-speed rail?

12 MR. WENG-GUTIERREZ: Right. And I
13 briefly went over this at the beginning, I guess.
14 What is included in these numbers, is only trucks,
15 buses and offroad consumption. So we didn't
16 really look at rail, marine, aviation, anything
17 like that. But we will be looking at some of
18 those sectors at least in the coming weeks and
19 trying to include them in our estimates.

20 MR. MODISETTE: Thank you.

21 MR. WENG-GUTIERREZ: And I guess just
22 for clarification purposes, on this slide where it
23 says P/C shift, that means personal car. It's a
24 shift from personal cars to public transportation.

25 Are there any other questions? If not

1 then I'm going to go ahead and hand this back over
2 to Peter.

3 MR. WARD: Thank you, Malachi. At this
4 point I think maybe we should check in with
5 everybody to see how we're hanging. Does anybody
6 vote for taking a lunch break, or to plow through.

7 I think Tom's already voted.

8 (Laughter.)

9 MR. WARD: Anybody else? Vote to plow
10 through? Plow through, okay.

11 Next up, and I didn't mention this
12 earlier, but it is on our agenda, that Mike
13 Jackson of TIAX will walk us through the gap
14 analysis that they performed for us. He's, I
15 think, already on the phone. Mike?

16 MR. JACKSON: Can you hear me?

17 MR. WARD: There you are. Okay, Mike.

18 MR. JACKSON: I guess I needed to be
19 unmuted.

20 MR. WARD: Yeah. Good afternoon, Mike.
21 Thanks for hanging in with us.

22 MR. JACKSON: Not a problem.

23 MR. WARD: This is Mike Jackson from
24 TIAX telling us about the gap analysis they
25 performed for us.

1 MR. JACKSON: Okay. This is a -- can
2 everybody hear me there okay? Peter, can you help
3 make sure everybody can hear me?

4 MR. WARD: I think we can hear you.

5 MR. JACKSON: All right. What I wanted
6 to do today is walk through at least the status of
7 the work that we performed to date on
8 understanding what -- taking sort of a snapshot of
9 the amount of investments being made in
10 conventional, as well as new, as -- in the
11 transportation sector. We will turn to
12 technologies in the presentation.

13 And then let's go to the second slide,
14 Peter, please, or whoever's doing the slides.

15 MS. MAGANA: Mike, you should be able to
16 control it now.

17 MR. JACKSON: I can?

18 MS. MAGANA: Yeah. You're able to?

19 MR. JACKSON: So I can just do a page-
20 down or something?

21 MS. MAGANA: Yeah.

22 (Pause.)

23 MR. SMITH: Pilar, in the interest of
24 time, just do it manually --

25 MS. MAGANA: Yeah.

1 MR. SMITH: Thanks.

2 MR. JACKSON: I think it's on here now,
3 so okay. Let me just go quickly over what our
4 project objectives were here. And the objective
5 of what we were trying to do to identify funding
6 that was already committed, or at least spent on
7 development and commercialization of cleaner, more
8 efficient technologies.

9 The methodology was one form of quick
10 literature review and construct sort of a table/
11 matrix of funding being committed or supplied for
12 each of the alternative fuel or advance
13 technologies.

14 And that included vehicle efficiency,
15 conventional hybrid was put in our vehicle
16 efficiency. Biofuels, natural gas and propane,
17 and electric drive technologies which would
18 include not only battery electric, but plug-ins as
19 well as hydrogen fuel cells.

20 And we wanted to kind of categorize the
21 extent it was being done in terms of R&D,
22 demonstration and deployment, infrastructure. And
23 used here infrastructure is fairly broad in terms
24 of including both fuel production and storage,
25 distribution and dispensing. And then finally

1 looking at the sort of incentives deployed.

2 Secondly, once we had done that review,
3 we also wanted to talk with key government and
4 industry stakeholders and experts to confirm the
5 funding information that we had collected; and
6 make sure we had an update of what their programs
7 were. And then finally to get a perspective on
8 barriers and needs that they saw in terms of
9 directing those programs.

10 And then finally we tried to seek some
11 information from the various stakeholders that we
12 did contact of how, you know, from their
13 perspective how one could best leverage 118
14 conventionally.

15 So that was the goal of what our study
16 was. As Peter has shown, -- can we go to the next
17 slide.

18 MR. WALSH: Michael, this is Mike Walsh.

19 MR. JACKSON: Yes.

20 MR. WALSH: Did you limit yourself just
21 to the U.S.?

22 MR. JACKSON: No, as you'll see here,
23 Mike, this also is on the -- there's three
24 categories of funding that we were looking at.
25 Federal, which is obviously U.S. State, which is

1 obviously U.S, but private was more global in
2 nature. So we tried to look at all three of those
3 sectors and I'll show you some results of how
4 those have come out so far, at least in our
5 analysis.

6 MR. WALSH: Thank you.

7 MR. JACKSON: On the second slide here,
8 as Peter has shown earlier, this slide is showing
9 the various fuels on the left-hand side of the
10 table. And the various milestone years, 2012,
11 2017, --

12 MR. WARD: Mike, can you hold a second.
13 We're trying to get that slide up for everybody
14 here.

15 MR. JACKSON: Okay.

16 (Pause.)

17 MR. WARD: There we go.

18 MR. JACKSON: Is it up?

19 MR. WARD: Yes.

20 MR. JACKSON: Okay, so again left-hand
21 side we're showing the various alternatives,
22 primarily alternative fuels in this case. And the
23 various milestone years. This came out of the
24 basically California alternative fuels plan, which
25 was adopted December 5, 2007.

1 This chart here was also in Peter Ward's
2 investment plan, table 1 of his investment plan
3 that was presented at the, I think it was the July
4 9th meeting of the advisory committee.

5 And there's two things to know. One is
6 the amount of fuel that's being used; and two, how
7 much of GHG or greenhouse gas emissions are
8 avoided. These are -- millions of metric tons.

9 And again, this is in the -- these are
10 similar to -- these are just sort of snapshots or
11 slices similar to what Gerry Bemis and Malachi
12 just presented -- and put everything back together
13 again in terms of (inaudible).

14 But you can see that there are a couple
15 of alternative fuels like the XTLs, for example,
16 that have a considerable amount of fuel
17 displacement, petroleum fuel displacement, but may
18 not necessarily have similar benefit relative to
19 avoiding GHG emissions.

20 And also highlighted here is the E-10
21 midwest corn-to-ethanol, which apparently is
22 undergoing some debate relative to the indirect
23 emissions impact.

24 The point on this chart is just to put
25 things again in perspective. I think you guys

1 have seen enough of that already this morning.
2 But some of these fuels and technologies are going
3 to have a bigger impact role in the GHG reduction;
4 and some will have a bigger impact relative to
5 fuel displacement.

6 Next slide, please. Now I want to just
7 go through and give you guys some of the
8 preliminary results that we've put together for
9 this presentation looking at where the funding has
10 gone.

11 Peter, are you able to go to the next
12 slide.

13 MR. WARD: You're up, Mike.

14 MR. JACKSON: It's not up on mine.
15 Okay. It's not showing on the webcast.

16 (Pause.)

17 MR. MARGOLIS: I apologize, Mike. On
18 your computer you're seen according to what you
19 control, but everyone else does see the correct
20 slide.

21 MR. JACKSON: Okay, so I don't need to
22 worry about what I'm seeing then. This slide
23 number 3 is -- what we're looking at here is the
24 federal funding. And this is the 2009 estimates.
25 Caveats on this, this spending has not yet been

1 approved, but it is very similar to what's being
2 asked or requested through the various agencies
3 that have requested this.

4 This funding includes not only DOE, but
5 included U.S. Department of Agriculture, as well
6 as other, DOT, et cetera. And we've broken the
7 funding down, as I said before, to R&D, to
8 demonstration, to infrastructure and incentives.

9 And the categories that are shown on
10 this, this is federal investment in millions of
11 dollars, though we're talking about an order of
12 magnitude here, millions of dollars.

13 Electric drive on the X axis; electric
14 drive, hydrogen and fuel cells, vehicle
15 efficiency, biofuels and natural gas and propane.

16 And let me kind of go from the sort of
17 top down here, the incentives. You can see that
18 the categories to the right-hand side of this
19 chart, natural gas and propane, biofuels and
20 vehicle efficiency all are dominated by the
21 incentives that are in place. For natural gas and
22 propane and biofuels that incentive is roughly 50
23 cents a gallon, either in the blender's tax credit
24 for the biofuels, or the 50 cents per gallon
25 incentive that's in place for natural gas and

1 propane.

2 The vehicle efficiency incentive has to
3 do with the tax credits that are available for
4 buying those vehicles, albeit some models like the
5 Prius are dwindling now, but still some of the tax
6 credits are available.

7 And you can see that the electric drive
8 and the hydrogen are primarily focused on the R&D
9 side, although there is the demo that's been in
10 place for several years now on the hydrogen side
11 of things.

12 What dominates here, of course, is the
13 biofuels. And the biofuels dominate because
14 they're is so much of that fuel being introduced
15 now. And we're talking on the order of 7 to 8
16 million gallons of fuel; and you multiply that by
17 (inaudible) tax credit. And you can see that
18 there's quite a bit of money that is going to the
19 biofuels.

20 Next slide, please. Can everybody see
21 the slide?

22 MR. WARD: Not yet, Mike.

23 MR. JACKSON: Okay.

24 MR. WARD: There we go.

25 MR. JACKSON: All right. So let me take

1 out the incentives and just kind of show the
2 pictures, so now I've taken off the large chunks
3 of incentives put there, just to look at what's
4 being invested relative to research and
5 development, demo and infrastructure.

6 Then again you can see that on the
7 electric drive and the hydrogen fuel cells, and to
8 a certain extent on the vehicle efficiency,
9 dominated by research -- what I would call
10 research and development money being spent. With
11 the hydrogen fuel cells being roughly two to three
12 times more than the electric drive or vehicle
13 efficiency.

14 On the biofuel side there is a lot of
15 money being spent mostly on going from what we
16 call, or what's been called gen-1 biofuels -- to
17 ethanol, to more of the cellulosic which would be
18 the gen-2 biofuels. So there's a lot of money
19 within the demonstration part of that.

20 Infrastructure again tends to be
21 fairly -- it's not very much at all being spent.
22 And you'll notice here that natural gas and
23 propane have pretty much zeroed out. There's very
24 little being spent at the federal level on this.

25 Next slide, please.

1 MR. WARD: You're up.

2 MR. JACKSON: Sometimes mine works and
3 sometimes it doesn't. Okay.

4 This next slide now shows where we are
5 relative to looking at some of the state funding.
6 And this is all 50 states. This estimate was done
7 mostly on looking at the types of programs that
8 the various states have in place. And then trying
9 to factor those programs based on some estimates
10 we did of what's happening in California, the type
11 of money.

12 So, it's not as firm as the federal,
13 which we could look at actual numbers that are
14 given for each kind of category of R&D. But also
15 give you an estimate of what's happened.

16 And, again, you can see that the
17 biofuels tend to dominate here, mostly due to
18 incentives that are in place. The electric drive
19 hydrogen vehicle efficiency and natural gas are
20 sort of all on the same order of magnitude.

21 MS. MONAHAN: Mike, this is Patty; this
22 is just state funding --

23 MR. JACKSON: Those are the 50 states.
24 Not California only. And that's -- on our part to
25 indicate how much money is being spent by the

1 individual states.

2 MS. MONAHAN: Okay, thank you.

3 MR. WARD: Separate from federal
4 dollars, right?

5 MR. JACKSON: Separate from federal
6 dollars. And obviously the order of magnitude
7 here is much less than federal dollars, not
8 surprisingly.

9 Now, it does indicate a little bit, this
10 is sort of a trend with state funding, is that
11 there's more -- there tends to be a little bit
12 more emphasis on the incentive -- well, I guess --
13 never mind that comment.

14 Let's go to the next slide.

15 MR. WARD: Okay.

16 MR. JACKSON: All right. If you look at
17 the private sector and Mike Walsh's comment is
18 pertinent here, this is now looking at trying to
19 estimate on a global basis what's being invested
20 in these various fuels.

21 And on an aggregate basis we can do a
22 pretty good job of getting the numbers right.
23 When we try to disaggregate it, that's a little
24 bit of our science that we've done in terms of
25 putting it into these categories. But we believe

1 that we have a pretty good methodology for that,
2 and be happy to share that with you when we put
3 this report together.

4 Again, what you see here is a
5 substantial amount of money that is going into the
6 biofuels commercialization. And not surprising,
7 there's a lot of plants that are being built
8 around the globe to produce these fuels.

9 Whereas the electric drive, hydrogen and
10 fuel cells and vehicle efficiency are still pretty
11 much in the R&D phase. There's a lot of money
12 being put in the electric drive battery elements
13 compared to the hydrogen fuel cells on the private
14 side. But fairly comparable in terms of dollars
15 in terms of order of magnitude.

16 And I would have to say that our
17 estimates on natural gas and propane are less than
18 probably accurate than any of the other numbers
19 here in the sense that we had to go to various
20 annual reports and try to make an estimate of
21 what's happening on the global side.

22 MR. SHEARS: Yeah, Mike, this is John
23 Shears. I'm just curious, given the -- especially
24 when we're talking about vehicle technologies,
25 really, you know, with multinational OEM,

1 (inaudible) also be useful just on background, at
2 least, to develop estimates for funding
3 (inaudible) possibly even China? That may not be,
4 but I think that might be helpful, at least not
5 only for this work, but other work (inaudible)
6 going forward?

7 MR. JACKSON: John, my comment in terms
8 of fidelity of this data is, you know, for what we
9 got that would be very very difficult. We'd have
10 to do additional research to make that happen.
11 But I understand.

12 MR. SHEARS: Okay, thanks.

13 MR. JACKSON: Again, the takeaway here
14 is there's considerable amount of money being put
15 into biofuels and the other technologies have
16 considerable sums being put into them, and sort of
17 matches what's happening at the federal level.

18 Next slide, please. So based on, you
19 know, sort of our takeaways here, again I said
20 this, the biofuels are dominating the investment
21 landscape in both public and private context. And
22 most of this is coming out of the tax credit and
23 the capital investment that is focusing on the
24 gen-1 biofuels. But there's significant private
25 and public sector R&D directed towards the gen-2

1 biofuels.

2 The investment in the high efficiency
3 vehicles focuses on rolling out mostly the current
4 platforms that are coming out on the hybrids and
5 the clean diesel -- the various manufacturers.

6 But technologies that focused on say
7 some of those road-load reductions such as light-
8 weighting and aerodynamic improvements. And those
9 that focus on the heavy-duty vehicles are less
10 heavily funded. Not surprising on the heavy-duty
11 side; a lot of focus has been put on meeting the
12 more stringent emissions standards for 2010 -- for
13 07 and 2010. And less effort has been put on
14 improving the efficiencies of those vehicles
15 (inaudible). But even on the federal level, less
16 of these than others.

17 Battery technology, not surprising, is a
18 huge area of research right now at both corporate
19 and VC level. Public investments in the electric
20 drive technologies, however, have to say, lags
21 significantly behind the private sector.

22 And here, again, our data development
23 isn't all that good, isn't as robust as I'd like
24 it to be, because it's hard, sometimes, to tell,
25 you know, where the investment being made here.

1 Is that for portable battery equipment or is that
2 for vehicle battery. It's hard to break that out.

3 Hydrogen fuel cell funding is primarily
4 done at the federal level, although you did see
5 some amount being done by the private. But it's
6 mostly focused on near-term nontransportation
7 application such as portable power.

8 And judging by the ratio, if you take
9 some of these ratios, the public/private
10 investment, the electric drive vehicles appear to
11 offer one of the highest leverage for getting
12 investment into new vehicle technology.

13 Now, let me give you a couple snapshots
14 of what people that we've talked to had to say.
15 Next slide, please.

16 MR. SMITH: Hey, Mike?

17 MR. JACKSON: Yes.

18 MR. SMITH: This is Mike Smith. Can I
19 ask you a question before you go to the next
20 slide.

21 MR. JACKSON: Sure.

22 MR. SMITH: Can you go back to the
23 slide? Middle of the slide, regarding battery
24 technology, you make the comment that public
25 sector investment lags behind private sector.

1 I guess my question is is there a need,
2 given the private sector investment, is there a
3 need for public sector investment?

4 MR. JACKSON: Well, this is -- that
5 comment has a lot to do with the fact that some of
6 this is going -- some of this research is going
7 into non-vehicle applications. So my basic
8 feeling is yes, there needs to be a substantial
9 amount of effort on public funding to get, to roll
10 these vehicles out, get them into the
11 infrastructure now.

12 That said, of course, there's always the
13 fact that there is some driver for that already in
14 the ZEV regulations. But we have yet to get that
15 technology out there in the marketplace, seeing
16 how it's really going to work, and whether it will
17 work.

18 MR. SMITH: I guess my confusion comes
19 from maybe it's just the way the sentence is
20 constructed. It seemed to focus on battery
21 technology, but then in the latter -- as I read it
22 more carefully, the latter part of the sentence
23 talks about -- you're talking about general
24 investment in electric drive vehicles.

25 MR. JACKSON: Yes.

1 MR. SMITH: Okay, all right. I guess I
2 was more focused on the need for public research
3 of a battery technology. Okay, thank you.

4 MR. JACKSON: And I'm not sure I know
5 how to answer that one, either. There's
6 considerable amounts being done on the battery
7 side, but as Professor Sweeney pointed out, there
8 needs to be a tremendous amount in terms of
9 reducing the cost of the battery.

10 DR. SWEENEY: By the way, note that both
11 presidential candidates have made a very specific
12 part of their plans significant incentives for
13 battery development. So I think whoever's elected
14 president, the federal government is going to
15 shift some of their priorities in that direction,
16 if you can believe what the two candidates say.

17 MR. CARMICHAEL: This is Tim Carmichael.
18 Mike, I've got a quick question, actually a
19 comment and a quick question.

20 The comment is with the exception of
21 biofuels, these numbers all look shockingly low to
22 me. And it's not something I've tracked or looked
23 at before, but I'm curious. You spend more time
24 looking at this, and maybe Mike Walsh does, as
25 well. It just seems like on a global scale these

1 numbers are really low, you know, for me,
2 emphasizing the importance of the program that
3 we're talking about.

4 DR. SWEENEY: Welcome to federal R&D in
5 energy.

6 (Laughter.)

7 MR. JACKSON: I can make one comment on
8 that, Tim. And that is -- well, I can make more
9 than one --

10 (Laughter.)

11 MR. JACKSON: One comment is if you look
12 at what Congress has authorized for some of this
13 research, it is considerably less than what it
14 actually approved for funding.

15 So Congress' wish list, so to speak, in
16 terms of what should be spent, is much much higher
17 than that shown on what actually gets
18 appropriated.

19 MR. CARMICHAEL: Okay, thanks for that
20 additional detail.

21 The other question I had is how much
22 does this vehicle efficiency bar capture of what
23 the industry is investing in regular gasoline
24 vehicles? You know, there's obviously R&D, demo,
25 and commercialization going on for gasoline

1 vehicles today. And I'm just curious, is that the
2 best you could capture it in this vehicle
3 efficiency? Or is there really another big bar
4 that dwarfs these?

5 MR. JACKSON: No. We think that it
6 captures what the industry is actually spending to
7 meet its goals. You know, this is a slice in
8 time, Tim, as of today. They may have to increase
9 that considerably for meeting CAFE, for instance.

10 MR. CARMICHAEL: Okay.

11 MR. WALSH: This is Mike Walsh, Mike.
12 Is this per year?

13 MR. JACKSON: This is a slice -- yes,
14 this is a slice of 2009.

15 MR. WALSH: I would just say I would
16 expect, and I don't know how you would get these
17 numbers, but if one were able to get the kind of
18 numbers that are being spent both publicly and
19 privately in places like China and Europe, I
20 presume you've gotten some of the Japanese. But I
21 would think they would increase these numbers
22 significantly. I don't know how you'd get those
23 numbers.

24 MR. JACKSON: Well, as I said, the
25 numbers that we got, I think we have a fairly good

1 feeling for the aggregate numbers which should
2 include both China and Europe being spent. The
3 fidelity issue to me is kind of like a
4 disaggregate.

5 We can go over in some detail how we
6 developed those numbers, but the report, you guys
7 could take a look at it. Appreciate any comments
8 you have on that.

9 Any other questions?

10 Okay, moving to just a indication of the
11 people we contacted in the short two weeks that we
12 had to do this effort are shown on this page.
13 Again, we sort of focused on those that were in
14 the DOE program because the budgets were fairly
15 well known, plus it gave an indication on what
16 they put in their programs they were working on.

17 I can move to the next slide, kind of
18 summarize some of the input we got from these
19 various stakeholders.

20 In general, the stakeholders basically,
21 and not surprisingly, identified, you know, we
22 really got to work through the transition period
23 going from, you know, research and development to
24 getting it into the marketplace.

25 And that, one of those keys, especially

1 for alternative fuels is making sure that you
2 match the vehicle to the fuel and infrastructure
3 or vice versa. If you're going to fund the
4 demonstrations, provide tax incentives, streamline
5 permitting and create, maybe create what's known
6 as an early mover advantage to those OEM, or those
7 manufacturers that want to get in the market
8 early. It will all help in terms of moving that
9 transition.

10 I think another thing that was stressed
11 throughout, people we contacted, was the fact that
12 there are no silver bullets. I think we all know
13 this now. That it's important to fund multiple
14 technologies, to hedge bets, and recognize
15 technologies aren't mutually exclusive.

16 And really, you've got to be able to
17 increase the size of the funding pie. And for
18 that we'll need a major commitment. Some
19 suggested funding multi-fuel stations or to help
20 the infrastructure issue.

21 And others suggested funding should be
22 spent in relation to the viability, environmental
23 performance and potential to meet the total demand
24 reduction goals is something that the Commission,
25 of course, was highly focused on that.

1 Again, this comment mostly comes only
2 from the ZEVs, but I think you can see that
3 there's quite a bit of work being done on the R&D
4 side, but there's not as much work on these
5 advanced vehicles being done on getting them into
6 the commercial space. So focus on incentives
7 rather than R&D for most technologies.

8 And then finally, of course, if you're
9 going to do that, then it's important to
10 collaborate with the people that are bringing the
11 technology out of the R&D space. So, collaborate
12 with national partnerships, OEMs and the federal
13 government on the planning, testing, codes and
14 standards and vehicle and infrastructure
15 demonstrations.

16 Now let me give you some highlights
17 relative to each of the technologies that we got
18 from various stakeholders. Stakeholders also
19 identified actions for each of these advanced
20 transportation technology.

21 So, electric drive. One, support
22 domestic battery production. That was a big issue
23 that came out. The issue here is, now I think we
24 have to be a little bit careful of this in the
25 context of the world economy, but the issue is if

1 we're supporting oil, why should we be then
2 changed to expert supporting batteries.

3 I think probably a better argument would
4 be jobs. And with California, in particular, U.S.
5 possible.

6 Also I think there is need to evaluate
7 some of the grid impacts and benefits. There's
8 been a lot of studies that have looked at this,
9 but we have yet to have a plug-in hybrid in the
10 neighborhood and how that whole effect, not only
11 the distribution but is there enough power supply
12 to handle that. And how the smart grid can make
13 that all work.

14 Cooperate with industry on testing and
15 codes and standards obviously is important.
16 Making sure that these systems are designed and
17 will work under all circumstances.

18 Demonstrate the vehicles and the
19 infrastructure. What will happen with a smart
20 metering, will people actually off-peak charge
21 plug-in hybrids.

22 Work with the utilities and the OEMs to
23 figure out the value proposition for deployment in
24 the next two to three years. That means, you
25 know, the batteries are a major chunk of the

1 investment. Is it best for the vehicle owner to
2 own that battery. Or is there other ways of
3 handling that cost.

4 Hydrogen and fuel cells. Number one
5 thing on everybody's mind is infrastructure.
6 There's roll-out of vehicles happening today. We
7 need infrastructure in order to support those.
8 And it's got to be infrastructure that is
9 convenient to the user. And these are going to be
10 a losing proposition. Industry is not going to
11 invest in these stations. But if you're going to
12 actually see whether this makes any sense, the
13 public is going to have to make that investment.

14 There was also some comments about
15 overcoming some of the negative public perception.

16 On vehicle efficiency, comments were
17 focused a little bit on the heavy-duty side. And
18 it would help to demonstrate some of those light-
19 weighting issues, or research that's happening.
20 And some of the carbon fiber that is used in the
21 light-weighting concept, some of the recycling and
22 reuse issues that come up.

23 Next slide, please.

24 Two more. Biofuels. The suggestion was
25 that there needs to be a definitive study on

1 sustainability because there's been quite a bit of
2 talk on the indirect effects of these biofuels. I
3 think we have planning to do some of that. And
4 also as part of the 118 process, just the whole
5 issue about what's sustainability, what's the
6 definition of sustainability.

7 Support biofuel infrastructure and maybe
8 high-level blends such as E-30 or B-20 type
9 utilizations.

10 And then look at the possibility of
11 production from biomass/coal mixtures with carbon
12 capture and sequestration.

13 On the natural gas and propane side,
14 there's an obvious need for product. There's one
15 light-duty manufacturer in the marketplace. The
16 others in the marketplace on the heavy-duty side
17 there is one or two engines. There needs to be a
18 broader range of engines available and different
19 vehicle applications.

20 Continue the incentives for deployment
21 of infrastructure and fleet vehicles. And
22 finally, to fund some gas-to-liquids if you can
23 get a greenhouse gas emission benefit out of it.

24 So, what are some of our takeaways?
25 Next slide, please.

1 MS. MAGANA: Go ahead.

2 MR. JACKSON: We see that there's a
3 considerable amount of investments that are being
4 made worldwide in terms of the alternative fuels
5 vehicle technology. We will continue to refine
6 our estimates of current spending by federal,
7 state agencies, as well as private industry. And
8 perhaps private industry be taken a look at in
9 more detail based on Mike Walsh's comments of
10 China and Europe's investments here.

11 Will provide a more detailed breakdown
12 of the current spending and we'll also give you
13 some context for that spending relative to the
14 authorizations that are in the farm bill and the
15 07 Energy Independence and Security Act, as well
16 as the 05 EPAct.

17 There's some caveats on the current
18 estimates. The current federal spending is
19 probably the easiest one to find and categorize.
20 State spending was an estimate based on the number
21 of programs in place, and our estimate of what's
22 being spent in California, and then ratio-ing that
23 to the rest of the states, but not in the same
24 proportion.

25 Private spending is very difficult to

1 estimate. Again, we believe that the aggregates
2 global estimates we got are pretty good, but
3 disaggregating it based on trends, we disaggregate
4 those numbers based on trends and judgment.

5 And then finally, hopefully, these
6 estimates will help develop the investment plan
7 that the Commission is putting together.

8 Thanks for the attention. I'll take
9 your questions.

10 MS. MAGANA: Tom Fulks.

11 MR. FULKS: Yeah, Tom Fulks here. I'm
12 sorry that I'm going to have to, mike, back you
13 up. Your slide number 5 it looks like, I tried to
14 get a question when you were on that. Just wasn't
15 able to get through here on the video conference.

16 MR. JACKSON: This is the one on state
17 funding?

18 MR. FULKS: Yes. And what I'm going to
19 do since I was unable to sort of break in, I'm
20 going to just go down slide-by-slide and just do
21 this really quickly. I've got to jump off the
22 phone here real quickly, so I'll just go ahead and
23 plow ahead.

24 Under the state breakout of spending
25 there's two suggestions. One, I'd like to see a

1 specific slide -- again, this is a suggestion, but
2 I think it would be very helpful for everybody if
3 we saw a specific slide on what exactly California
4 is spending on these various power train
5 technologies or fuel technologies, electric drive
6 hydrogen, vehicle efficiency and so forth.

7 It's interesting that to aggregate all
8 50 states and see how they compare. Potentially
9 put together a financial plan for the State of
10 California. It would be very interesting and I
11 think very helpful to see precisely what is
12 California already doing in these various areas,
13 what with the ZEV (inaudible) and all sorts of
14 other things. That's number one.

15 Number two, I think it would be very
16 interesting on the biofuels issue in particular
17 just to see which states are the ones with the
18 most money in the biofuels. And I have a feeling
19 you're going to see they're coming from the
20 cornbelt and the soybelt. Maybe some from the
21 Pacific Northwest trying to develop fuel
22 infrastructure.

23 But it would be very, I think, helpful
24 to see perhaps the geographical motivation behind
25 various state efforts to promote whatever it is,

1 whatever they're promoting. Because I just don't
2 think this slide is relevant to California in that
3 we are not producing biofuels here in large
4 volume.

5 Then secondly, on the private sector
6 investment, I don't really have any questions on
7 that other than again, under biofuels, are we
8 talking about actual -- development, because, as
9 I'm sure you know, you got literally hundreds of
10 thousands of flex-fuel vehicles on the road
11 already from General Motors, Chrysler and Ford.

12 And so are you including those flex-fuel
13 vehicles in this commercialization category for
14 private investment?

15 MR. JACKSON: I think the answer to that
16 is no, I don't think the \$100 incremental cost for
17 those vehicles is included in this estimate.

18 MR. FULKS: Okay. Next slide, I'll just
19 skip that one. And go to your slide number 8
20 under organizations. I noticed immediately that
21 there was only one OEM in this mix, and that was
22 Honda.

23 Seems to me that to round out your
24 perspective of where the automakers are coming
25 from you owe it to yourself and perhaps your

1 client to at least make the effort to speak to a
2 European auto manufacturer and an American auto
3 manufacturer, just to get the full spectrum of
4 what it is they are investing, what it is they see
5 as barriers and everything else you're doing.

6 MR. JACKSON: Okay.

7 MR. FULKS: Then going on, under
8 stakeholders who have identified actions. Under
9 slide 11, under biofuels, I think that's -- from
10 the industry standpoint that is a piece of work
11 that would be welcome. Similarly, it seems to me
12 that if you're going to be doing definitive
13 studies on sustainability, including life cycle,
14 land use and water and soil, I would really
15 recommend you call for the same sort of scientific
16 research into the full cycle impacts of battery
17 production.

18 I'm talking lithium in particular.
19 Because as far as I know, we don't have any
20 environmental data on the impacts of lithium
21 production for battery use on a large scale, that
22 is. We may have some data on some of the smaller
23 battery applications that are already in
24 commercial use, but I don't think we have any
25 projections in terms of full environmental impact

1 and land use impact on a large-scale ramping up of
2 lithium production.

3 And it would be also helpful to find out
4 where that lithium production in the world is
5 taking place.

6 MR. JACKSON: Yeah. This comment
7 probably should go to all fuel pathways.

8 MR. FULKS: Well, I'm thinking but
9 because this report, TIAX's recommendations is
10 weighted so heavily toward electric drive, that if
11 you're going to go that route you can't single out
12 biofuels as alone for the -- study on
13 sustainability. I think you really need to
14 include the energy storage capability of your
15 electric drive, which has undergone, as far as I
16 know, none, or very little environmental scrutiny.

17 I think just in terms of credibility you
18 may want to throw that in.

19 And those are my comments.

20 MR. JACKSON: Okay.

21 MR. FULKS: Thank you.

22 MS. MAGANA: Okay, next we have a
23 question from Jon Van Bogart from CleanFuel USA.

24 MR. VAN BOGART: I had a couple comments
25 and maybe a couple suggestions on how the state

1 might be able to increase current production of
2 alternative fuel vehicles and also expand vehicle
3 offerings.

4 The changes in the investment plan are
5 welcome. Really like the improvements in the
6 plan, especially where it talks about CNG and
7 propane vehicles. We believe these are two
8 vehicle technologies that are here today,
9 technologies, and I believe the industry is ready
10 to advance those technologies. And that funding
11 will help in that process, not only to speed up
12 acceleration of current vehicle offerings, but
13 expand additional offerings.

14 One of the market hurdles in the past
15 has been the CARB certification of vehicles. CARB
16 versus EPA and having to go through very
17 expensive, two different processes. And so a
18 suggestion would be that if ARB could engage EPA
19 with industry interests to try and carve out and
20 forge a process where we could have a simultaneous
21 certification process, it would be one process and
22 you could get 50-state certification.

23 This would also accelerate vehicle
24 offerings and expanding vehicle offerings for both
25 CNG and propane.

1 We're engaging automakers in a process
2 to where they continue to produce vehicles off
3 their assembly line on gasoline. And then those
4 vehicles go over the fenceline to a factory
5 upfitter. And then can be converted. Go back
6 into the distribution system and delivered through
7 a dealer network. This will also help that
8 process.

9 I think we have seen the history of
10 after-market kits out in the marketplace, and that
11 really hasn't worked because a lot of these are
12 niche market fleet vehicles, and they rely heavily
13 on the dealerships for service and parts. And so
14 this process would help us, as well, where we set
15 up master dealers going and do the training.

16 I think why this is so important, the
17 state's going to reach our 2020 20 percent
18 reductions on time, I think the currently
19 available technologies in the first few years of
20 this program are going to be critically important
21 to getting the amount of vehicles out on the road
22 to reduce consumption of both petroleum and also
23 reduce emissions.

24 Let's see, I've got some other notes
25 here. Both CNG and propane industry, like I had

1 said, are engaging in OEM manufacturers, and with
2 the rising fuel costs the way they are, fleets are
3 coming to us in huge numbers, and they're also
4 coming to General Motors and others, asking for
5 these type of vehicles.

6 And so again we like the improvements to
7 the investment plan, and we look forward to
8 working with you and seeing even added
9 improvements.

10 MS. MAGANA: Bonnie, you can go ahead.

11 MS. HOLMES-GEN: I just wanted to ask,
12 Mike, did you collect any information or
13 recommendations on levels of funding that were
14 needed?

15 MR. JACKSON: No. Not at this point. I
16 mean there is some of that out there. For
17 example, National Research Committee, NRC, just
18 published the hydrogen assessment as to what it
19 needed to reach a implementation comparable to
20 what we were talking about, that Gerry Bemis was
21 talking about. So that report is out there.

22 That will be incorporated in, I'm sure
23 the Commission will incorporate that.

24 MS. HOLMES-GEN: And what about the
25 electric drive category? Is there anything of

1 note?

2 MR. JACKSON: We previously did an
3 analysis for the alternative fuels plan that
4 looked at some of those numbers. They would need
5 to be updated, Bonnie, but I believe --

6 MS. HOLMES-GEN: Okay. I'm just
7 wondering, did you include organizations like the
8 South Coast Air District?

9 MR. JACKSON: No. We looked at all the
10 air districts, for example.

11 MS. HOLMES-GEN: Okay, I just didn't
12 notice them. Thank you.

13 DR. SWEENEY: Can I just jump in here a
14 moment. In the fall the National Research Council
15 will release its study on alternative liquid
16 fuels, which will go through in some real depth
17 the technological opportunities and costs and
18 other issues associated with alternative liquid
19 fuels. That probably will be released late fall,
20 early winter of this year.

21 It's part of the America's Energy Future
22 overall study that the National Academy is doing.
23 So that's something that will probably be worth
24 looking into when it comes out.

25 MR. JACKSON: What's the definition,

1 Jim? Alternative liquid fuels?

2 DR. SWEENEY: It's basically looking at
3 the biomass phased fuel cellulosic, as well as
4 coal and liquid combinations -- coal and biomass
5 combination fuel Fischer Tropsch type of synthesis
6 process.

7 And those will be the ones that are
8 detailed in the most depth. But it will be
9 liquids that come from nonpetroleum sources.

10 Little look at the biofuels and all, as
11 well; and a little look into some of the other
12 sort of ways that bioengineering can design
13 entirely different fuels from -- that are coming
14 basically from biomass.

15 MS. MAGANA: Okay. Tim.

16 MR. OLSON: Mike, this is Tim Olson.
17 Wondered if along the lines of Tom Fulks'
18 comments, if you could break out the federal money
19 dedicated to California. If that's possible to do
20 that.

21 Also like to know in your analysis if
22 you're looking at the effectiveness of these
23 incentives, what are they producing?

24 And mostly your work looks like it's
25 been kind of retroactive or up to date. What

1 about projected other sources like potential
2 utility ratebasing of electric storage or
3 metering, that type of thing that might be home
4 recharging?

5 MR. JACKSON: Yeah, that latter one,
6 Tim, I mean what we're trying to do is find out
7 what's being spent right now, as opposed to what
8 could be done. But, good question.

9 MS. MAGANA: Okay, next we have Carla
10 Din on the phone.

11 MS. DIN: I guess my comments are
12 similarly about -- economy, and I'd appreciate it
13 if you could comment about any more job creation.
14 And I think this is the intention of staff to work
15 on (inaudible) where there aren't direct
16 greenhouse gas emissions reductions.

17 But I did want to relate my interest in
18 a very indepth comprehensive look at different
19 strategies for producing economic development in
20 the state, with an eye towards job creation such
21 as Etax by California -- switch values, the use of
22 instate manufacturing equipment. And also to look
23 at how we can attract new tech businesses and
24 expand without being penalized under some of the
25 tax structures. And as one of the barriers,

1 examine other barriers that are preventing
2 companies from locating here.

3 And also we encourage coordinating with
4 the State Treasurer's Office and the California
5 Business and Transportation -- agencies that are
6 involved in similar programs.

7 MR. WARD: Thank you, Carla.

8 Since there are no other questions,
9 Mike, thank you very much for your presentation.
10 Maybe we'll be getting other comments in a written
11 fashion into the docket. And I'm sure that work
12 that we'll be doing in the future on the subject.

13 I just wanted to briefly bring
14 everybody's attention to the new and revised
15 implementation schedule for the investment plan.
16 We, I think, have made good use of the month
17 delay. I think it's -- and with the information
18 we've been able to provide today.

19 Any question on this? The advisory
20 committee has seen these dates already.

21 Okay, if you have difficulty pulling
22 this up, it is in the docket right now. And as it
23 projects it has both the rulemaking schedule and
24 the investment plan schedule here. We've
25 displayed both with the Energy Commission business

1 meeting to adopt the investment plan on December
2 3rd at this point.

3 Our next meeting of the advisory
4 committee formal will be October 6th. But we will
5 be looking for another date for another more
6 informal workshop with the advisory committee
7 around September 15th, if the 15th is not going to
8 be working readily.

9 MR. SMITH: Peter, if I might interject
10 here, one possibility is September 19th. So if
11 you could check your dates and check your
12 calendars and see if that is a possibility.

13 MR. WARD: In order to make this
14 schedule work, we would certainly like to receive
15 all your comments if they're in written fashion,
16 the sooner the better, especially if we're
17 delaying this next workshop four days from the
18 15th to the 19th. If we can get your insight and
19 advice on what you've seen today, speaking to the
20 advisory committee primarily, but also our
21 stakeholders and the general public, as well.

22 The sooner the better so that we can
23 kind of jumpstart for the next workshop that we'll
24 be having on the 15th - 19th week somewhere.

25 MS. HOLMES-GEN: Would you be

1 considering morning or afternoon, or are you
2 unsure? It's a Friday, are you considering
3 morning or afternoon?

4 MR. WARD: Oh, maybe an evening meeting
5 on Friday.

6 (Laughter.)

7 MR. WARD: How would that be?

8 (Laughter.)

9 MR. WARD: No. We'll try to take that
10 into consideration -- I think we're really going
11 to start in the morning, for the most part,
12 whether it's on a Monday or the Friday.

13 Any questions on the implementation
14 schedule? No. Then, Chuck, would you like to go
15 through the regulation.

16 MR. MIZUTANI: Chuck Mizutani. I think
17 I'm the last one so I'll go very quickly.

18 What I wanted to do was to just provide
19 a status on the rulemaking process with respect to
20 this program.

21 On September 9th we're going to have a
22 public workshop to review our draft sustainability
23 regulations, as well as to come back on the other
24 five items that we had discussed, or identified
25 and discussed, at the August 11th workshop.

1 After the September 9th we're looking to
2 receive written comments on not only the draft
3 sustainability regulations, but also on the other
4 regulatory language for the other five items on
5 September 19th.

6 With that, we will be submitting our
7 draft regulatory package to the Office of
8 Administrative Law on October 7th, which then
9 results in a October 17th notice of proposed
10 action being posted.

11 And then on December 1st that ends the
12 45-day public comment and review period. Assuming
13 that there is no significant comments that would
14 require us to respond and add some additional
15 time, basically a 15-day public comment and review
16 period.

17 We would then be planning to go to a
18 January 14th business meeting for approval. And
19 then submitting our final package to the Office of
20 Administrative Law for their 30-day review period,
21 which would end March 2nd.

22 And then have the regulations published
23 and go into effect on April 2nd. This assumes,
24 again, no significant comments requiring some
25 additional time.

1 Just sort of going back. On July 8th we
2 had a Committee workshop in which we presented the
3 ten steps for areas that we had identified that
4 potentially could require rulemaking or regulatory
5 language.

6 Based on our review at the July 8th
7 workshop, we identified five areas that we believe
8 require clarification or definition.

9 On August 11th we held a workshop on
10 four of those areas, but not the sustainability
11 goals which we had identified as needing some
12 additional time and that we would be discussing at
13 the September 9th workshop.

14 The four areas for additional regulatory
15 language were defined as advanced vehicle
16 technology, funding restrictions, the advisory
17 committee and the investment plan.

18 And then where we're at now is on
19 September 9th we are proposing to hopefully have a
20 final comment period or comment on our draft
21 regulatory language for the four areas. And then
22 to present the regulatory language for the
23 sustainability goals at the September 9th
24 workshop.

25 The regulatory language, the revised

1 regulatory language for the four areas and the
2 sustainability goal regulatory language have been
3 posted. I think they were posted this past
4 Friday. So, they're available on our web for
5 review in preparation for the September 9th
6 workshop.

7 That's it. Any questions?

8 MR. WARD: I'm mindful that everyone is
9 probably fairly hungry. So, I have about 50
10 slides to go through, and I'll speak loudly to
11 overcome the churning of your stomachs.

12 No, actually, I briefly wanted to just
13 go through some of the work that has been
14 happening in addition to the analysis that we've
15 been performing here that you have seen.

16 We have been speaking with these
17 entities, and I'm going to go through this very
18 quickly. These are potential strategic alliances
19 that we hope to strike with to actually leverage
20 the impact of our money.

21 Some of these folks have been partners
22 in the past; some will be partners in the future.
23 We expect that these alliances will complement our
24 dollars and vice versa, I think.

25 We have a whole host, and this is not a

1 complete list because it changes every day, of
2 entities that have expressed interest in the
3 program. This is more of an eye test than I had
4 anticipated, but it is in your materials and you
5 can look through it later. I think we have shown
6 up on the radar at this point, and people are
7 seeking us out.

8 I think it's important to note, though,
9 that we are not engaging in full-time discussions
10 about these, with these folks, about projects or
11 anything like that, because the investment plan
12 takes precedence. And we will hold those
13 discussions after we have completed the investment
14 plan with your advice.

15 These are other entities and fuel
16 infrastructure and fleets and other consumers that
17 have also expressed interest to us over the
18 intervening time.

19 If nobody has any other questions? Oh,
20 come on. Then I'd like to thank you all for your
21 attendance, and for those that are on the phone,
22 thank you for remaining silent.

23 We do have time for public comment,
24 though. If anybody would like to step up and
25 address the workshop at this time?

1 I see none, I hear none. So, again,
2 thank you all for coming. And we'll be getting
3 the information to you about the next staff and
4 advisory committee workshop in the week of the
5 15th-19th of September.

6 Thanks for coming.

7 (Whereupon, at 1:13 p.m, the workshop
8 was adjourned.)

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CERTIFICATE OF REPORTER

I, PETER PETTY, an Electronic Reporter, do hereby certify that I am a disinterested person herein; that I recorded the foregoing California Energy Commission Staff Workshop; that it was thereafter transcribed into typewriting.

I further certify that I am not of counsel or attorney for any of the parties to said workshop, nor in any way interested in outcome of said workshop.

IN WITNESS WHEREOF, I have hereunto set my hand this 11th day of September, 2008.



PETER PETTY