

BUSINESS MEETING
BEFORE THE
CALIFORNIA ENERGY RESOURCES CONSERVATION
AND DEVELOPMENT COMMISSION

In the Matter of:)
)
Special Business Meeting)
)
_____)

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

WEDNESDAY, JUNE 27, 2007

9:00 A.M.

Reported by:
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PETERS SHORTHAND REPORTING CORPORATION (916) 362-2345

COMMISSIONERS PRESENT

Jackalyne Pfannenstiel, Chairperson

James D. Boyd

Jeffrey D. Byron

John L. Geesman

Arthur H. Rosenfeld

STAFF and CONTRACTORS PRESENT

William Chamberlain, Chief Counsel

Michael D. Jackson, TIAX, LLC

Lana McAllister, Acting Secretariat

Tim Olson

Rosella Shapiro

ALSO PRESENT

Richard Epplet, Quality Transport Services

Joe Sparano, Western States Petroleum Association

Catherine Dunwoody

Jamie Knapp, Environmental Coalition

Danielle Fugere, Friends of the Earth

Francisco Gutierrez, Caltrans

John Shears, CEERT

Dwight Stevenson, Tesoro Refining and Marketing

Victoria Junquera, ERM

Barbara Fry, Air Resources Board

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

2 9:02 a.m.

3 CHAIRPERSON PFANNENSTIEL: Good morning,
4 this is a Special Business Meeting. We'll begin,
5 as we do our business meetings, with the Pledge of
6 Allegiance. Please join us.

7 (Whereupon the Pledge of Allegiance was
8 recited in unison.)

9 CHAIRPERSON PFANNENSTIEL: We have
10 before us an agenda with a single item, which is
11 the possible adoption of the State Plan to
12 Increase the Use of Alternative Transportation
13 Fuels in California, Assembly Bill 1007, Pavley,
14 Chapter 371, Statutes of 2005. This report
15 evaluates alternative fuels from a full, fuel
16 cycle assessment of emissions of air criteria
17 pollutants, air toxics, greenhouse gases, water
18 pollutants and other substances.

19 I think before we ask staff to introduce
20 this I am going to ask Commissioner Boyd to
21 introduce the subject. Commissioner Boyd.

22 COMMISSIONER BOYD: Thank you and good
23 morning, everybody.

24 I think it is no secret to most people
25 but I think for the record we should point out

1 that while the hearing notice indicated that we
2 might possibly consider the entire AB 1007 report,
3 Alternative Fuels Plan for the State of
4 California, I think it is pretty well-known, and I
5 apologize to anybody who didn't hear this, that we
6 informed the Governor and the Legislature early
7 this week that because of the incredible
8 complexity of this issue and its recognized need
9 to be integrated with other actions that have been
10 taken since AB 1007, or while AB 1007 was being
11 approved, such as the Governor's efforts on a
12 biofuels program, his bioenergy action plan and
13 executive order, and then later in the process his
14 executive order on a low-carbon fuel standard, all
15 of which have to be integrated and nested, as I
16 like to say, with the alternative fuels plan. And
17 because of extraordinary efforts on the part of
18 all involved to try to finish this plan on time,
19 falling a little short because of these extra
20 requirements.

21 We indicated to the Legislature and the
22 Governor our desire to bifurcate the plan into,
23 let's just say two pieces. And that is, today we
24 are going to consider the full, fuel cycle
25 analysis or what I would call part one of the

1 plan, which has consumed far more time, effort and
2 resources than I think was anticipated when we
3 ventured into this arena because of the
4 recognition of its incredible importance to the
5 low-carbon fuel standard.

6 And I know we directed our staff and our
7 consultant to make extra efforts to deal with this
8 plan, to deal with this analysis and to dive
9 deeper than perhaps we were going to under the
10 original charter of AB 1007.

11 This has just consumed such a great deal
12 of time that we have decided, as I say, to
13 bifurcate the effort. Consider today the full,
14 fuel cycle analysis considered by the Commission
15 as a whole. And if approved by the Commission, to
16 pass it on to the Air Resources Board as indicated
17 in the Governor's executive order regarding the
18 full, fuel cycle analysis work and its correlation
19 and relationship to the low-carbon fuel standard.

20 And then consistent with the incredible
21 request volume. I mean, there were over two dozen
22 folks, stakeholders from various disciplines who
23 starting at our workshop and even after we closed
24 the record on the subject, were piling documents
25 and requests at our front door, so to speak.

1 Asking for more time to deal with this plan in
2 recognition of what I have said, the complexity of
3 it.

4 We decided to yield to our instincts
5 with regard to the preparation of the plan, and
6 particularly yield to those many, many requests
7 for more time, and to provide you more time to
8 reopen the record and to indicate to the Governor
9 and the Legislature that we were going to add
10 about two more months on to this process in order
11 to facilitate continued stakeholder meetings,
12 additional inputs, in order to, let's just say
13 from your point of view and ours, to get this
14 right.

15 Because I think it has been well-
16 recognized, the ramifications of this plan on the
17 actions of the state of California and all the
18 stakeholders in the future transportation fuel
19 arena were going to be quite significant.

20 A new paradigm has been called for by
21 many, including this body, for years. And I think
22 a new paradigm in the transportation fuel arena is
23 well-recognized by everybody now as being
24 inevitable in one form or another.

25 Therefore as indicated today we will

1 deal with the full, fuel cycle analysis and we
2 will be back in the future. In the meantime,
3 having worked with all of you and other affected
4 parties on the completion of the plan, or part
5 two, I would say.

6 So with that introduction, Ms. Shapiro,
7 shall we begin the staff's presentation? I
8 believe Tim Olson, our probably weary by now
9 project manager is prepared to give us an
10 introduction.

11 CHAIRPERSON PFANNENSTIEL: Thank you.

12 COMMISSIONER BOYD: Thank you, Madame
13 Chair.

14 MR. OLSON: Thank you, Commissioners.
15 This morning we will provide a status of the
16 AB 1007 plan and kind of the steps in completing
17 that. We are going to show you how the Full Fuel
18 Cycle Analysis fits into the overall scheme and
19 then we're going to seek your approval of that
20 Full Fuel Cycle Analysis, the methodology and
21 related findings.

22 I guess the way to kind of describe the
23 organization. I have provided a short overview of
24 the AB 1007 update. Mike Jackson from TIAX will
25 summarize the Full Fuel Cycle Analysis Reports and

1 then we will open for questions and comments and
2 then seek approval of the resolution.

3 You'll recognize these trends and
4 issues. They were the major drivers that
5 stimulated our interest in the transportation
6 issues in the year 2000 and they are still valid
7 today. In fact they are more intense and they are
8 more complex today.

9 You'll find that it's -- What we found
10 is it's becoming increasingly more difficult to
11 respond to, to analyze and respond to any single
12 one of these issues in that each one of them
13 affect each other. As we go forward in this we're
14 discovering that we'll need to account for the
15 multiple consequences of each, individual
16 initiative that comes out, flows out of these
17 topics. The increased demand growth, greater
18 petroleum fuel price volatility and this more
19 complex, environmental impacts that we're seeing
20 from the transportation sector.

21 We are also -- The first two strategies
22 on here are going to be addressed in detail at a
23 July 12 IEPR, CEC IEPR workshop in Los Angeles.
24 The third is the topic of today.

25 And then I'm going to go through -- The

1 next two slides illustrate what Commissioner Boyd
2 was saying about the complexity of how government
3 is responding to transportation fuels and energy
4 issues, to energy and environmental issues.

5 And just to kind of point out, this
6 first slide summarizes what we call the petroleum
7 dependency, or efforts to reduce petroleum in the
8 transportation sector, started with the CEC. And
9 CARB adopted goals to reduce petroleum dependency,
10 which led to AB 1007 to develop an alternative
11 fuels plan. And this has been embellished by the
12 Bioenergy Action Plan, directing us to look at
13 increasing in-state fuel production from biofuels.

14 The complexities become more -- This
15 becomes more complex as we start adding in the
16 environmental initiatives, laws, policies,
17 regulations that either reduce greenhouse gases or
18 reduce criteria air pollutants.

19 Each one of these initiatives listed
20 here has had a single, tend to have a single focus
21 and has led to, when you look at it is a whole,
22 kind of this question of what's the comprehensive
23 impact if you start looking at these things
24 together. Each one of them was addressing either
25 reducing petroleum dependency and seeking

1 alternative transportation fuels, reducing vehicle
2 miles traveled or reducing environmental impacts.

3 The challenge we're seeing here for AB
4 1007 is that AB 1007 blends a lot of these
5 objectives into one report and compels us to look
6 at each one of these issues as a combined effort.
7 And we will need to address potential double-
8 counting and double-crediting from a policy
9 standpoint and a financial investment. This has
10 been, this has been one of the factors that we
11 faced, wrestled with. For both agencies we're
12 finding that it's a key factor with most of the
13 stakeholders.

14 This is a summary of the AB 1007
15 requirements. Many of you are familiar with this.
16 I need to point out that even though the plan
17 emphasizes the increase in the use of alternative
18 fuels we are acknowledging and touching on in our
19 report the need for fuel efficiency measures and
20 land use planning efforts to fulfill the overall
21 goals, the comprehensive set of goals.

22 This slide here indicates where we have
23 completed work. And just to kind of run through
24 briefly. What we are discussing today is the Full
25 Fuel Cycle Analysis Report, which has several

1 components to it.

2 You have in your binders and out on the
3 front table the combined Well-to-Wheels. There
4 are several elements that feed into developing
5 that summary, including some very complicated
6 model designed for California conditions and
7 numerous spreadsheets that went into the
8 development.

9 This has been peer reviewed
10 substantially. It has gone through one workshop
11 and probably 20 or 30 different meetings,
12 individual meetings to get this to a point where
13 we feel comfortable using this as a tool to
14 analyze the comprehensive environmental footprint.

15 I have on here we used this to quantify
16 62 fuel pathways. That's just for neat fuels. We
17 also had I think 10 or 15 blends and several more
18 pathways that were combinations.

19 We also feel that what we have done with
20 this fuel cycle analysis is advanced the state o
21 the art of this methodology. From this point on
22 it is pretty clear that we're going to be using a
23 life cycle or a fuel cycle in pretty much all of
24 our analyses. And this probably will carry over
25 into other sectors beyond transportation.

1 The other point I want to make here is
2 that we are not wed to any single model even
3 though we used this California-modified GREET. In
4 fact we encourage other models to be developed and
5 used. We think into the future a key thing we
6 want to accomplish is improving and refining the
7 data, the inputs, the assumptions, and doing that
8 in a very transparent, open process. That has
9 been a key to getting this developed so far.

10 We have also completed several draft
11 reports on alternative fuel scenario story lines
12 and there's the kind of contents listed there in
13 the second bullet. These are several reports that
14 we are now in a position of we need to combine
15 this into a plan and discuss this with many of the
16 stakeholders and different interest groups about
17 what the consequences and implications of that
18 combined plan is. That's what Commissioner Boyd
19 was suggesting that we needed the additional time
20 to do.

21 We have also completed a survey of fleet
22 managers. We received the UC technical analysis
23 for the low-carbon fuel standard that will be
24 inserted into AB 1007. And you can see the
25 efforts we have gone through with the

1 stakeholders.

2 So what is still left to do? The July
3 12 workshop on transportation demand assessment
4 and the fuel price forecast is a critical piece of
5 information that we will need to update our
6 analysis. That is one of the factors in asking
7 for this extension. We are using right now 2005
8 data for those two areas so we're hoping that any
9 new data will give us a better reflection of the
10 world today.

11 We are expecting to have a final plan
12 ready some time in August and seek a CEC adoption
13 of the plan some time in September.

14 And I think that's where I am going to
15 stop my summary. At this point I would like to
16 introduce Mike Jackson from TIAX who will do an
17 overview of the Full Fuel Cycle Analysis.

18 MR. JACKSON: Thanks, Tim, and good
19 morning, Commissioners. What I wanted to try to
20 do today is give you, as Tim said, an overview of
21 the Full Fuel Cycle Analysis as put together for
22 AB 1007.

23 I need to acknowledge some of our team
24 members. Jennie Pont, who is in the audience, has
25 done a lot of work on this. You want to raise

1 your hand anyway. Okay, thanks. Matt Hooks,
2 Larry Waterland, Mike Chan and myself have all
3 worked very hard on this effort.

4 And what I want to try to do is go
5 through an overall introduction then walk through
6 a little bit on the methodology, explaining how
7 the various pieces fit together. Give you one
8 slice of some example results for the light duty
9 sector only. But keep in mind that this
10 methodology works for not only light duty but
11 heavy duty and non-road vehicles as well.

12 And then finally I wanted to end just
13 kind of summarizing a couple of slides showing how
14 the results might come together when you're
15 thinking about putting together policy or plans
16 for AB 1007.

17 So let me walk through the introduction.
18 I think Tim has said this already, but in AB 1007
19 it requires the Commission, in cooperation with
20 ARB and other state agencies, to develop and adopt
21 a state plan to increase the use of alternative
22 transportation fuels.

23 And one component of that plan is a full
24 fuel cycle assessment, which includes not only
25 greenhouse gas emissions, which are important, but

1 also criteria air pollutants, NOx, CO, PM,
2 hydrocarbons. Air toxics, which are firmly a part
3 of the hydrocarbons, greenhouse gasses as I said,
4 but also other multimedia effects such as water
5 pollution. And then any other substances, as
6 written in the legislation, that damage human
7 health.

8 And in the context of AB 1007
9 alternative fuel meant a non-petroleum fuel
10 including electricity, ethanol, biodiesel,
11 hydrogen, methanol or natural gas and we added a
12 number of other of those to the analysis.

13 The plan shall set goals for 2012, 2017
14 and 2022. CEC and ARB added 2030 and 2050 because
15 many of these technologies we're looking at really
16 are in the out years and not really in the near-
17 term years.

18 Some of the goals that we were aiming
19 towards here was really to determine and
20 understand what the emission footprints are for
21 various technologies and how they -- not only from
22 an air emissions but also how they might affect
23 other multimedia impacts.

24 And then are there really any net
25 material increases in any of these sort of

1 pathways that would affect emissions or human
2 health that we need to deal with. And if they did
3 pop up how would you mitigate them, potentially,
4 to get them into the, get those technologies into
5 the marketplace.

6 And then use, the tools should be used
7 as guidance in developing the plan, of course,
8 considering not only GHG emissions, but also I
9 think just as important is petroleum displacement.
10 And we'll talk about that as we go through some of
11 these numbers.

12 Also it was used and probably will
13 continue to be used in helping develop the metrics
14 for California's low-carbon fuel standard as
15 adopted by, as suggested by the Governor's
16 Executive Order S-01-07.

17 And then finally I think it should be in
18 the context of California' Global Warming
19 Solutions Act of 2006, AB 32. That's another
20 place yet where transportation is going to need to
21 reduce substantially greenhouse gas emissions.
22 And as such this tool could be used to help
23 understand where those emissions are and what kind
24 of strategies could be used.

25 Just for a sort of history here. The

1 draft of this Full Fuel Cycle Analysis Results
2 were published in February and we held a joint
3 workshop here at the Commission on the 2nd of
4 March and we received lots of constructive
5 comments. In general we tried to address all
6 those comments. Did we get it all right?
7 Probably not. There are still lots of things that
8 could be improved in this. But our attempt was to
9 be as responsive to the comments as we possibly
10 could.

11 The report is on-line now. A copy is
12 out here on the desk. This still has some minor
13 errors in it but it does do a good job of going
14 through and laying out all the final results for
15 all the different pathways.

16 Let me kind of walk through what a Full
17 Fuel Cycle Analysis is to remind us the context of
18 this. Generally what we are trying to do is track
19 the various emission events that occur throughout
20 the total cycle of where a fuel is produced in
21 terms of production, where it is processed, where
22 it is stored and then how it's transported. Maybe
23 to California. Then it has to be bulk stored
24 again. And then maybe local transportation and
25 distribution has to occur and then final use in

1 the vehicle.

2 And remember, we are trying to do this
3 not only from the perspective of emissions that
4 are occurring all throughout the cycle but we're
5 trying to look at it from the perspective of those
6 missions or boundary conditions. What's happening
7 in California, what's happening in the rest of the
8 world, what's happening in the United States.

9 This first sort of click here shows you
10 potentially, at least the way we have looked at
11 this problem, out of California emissions. In
12 other words, the production of mostly oil on a
13 marginal basis. The next barrel of oil coming
14 into California is going to be imported into
15 California and it is going to be processed outside
16 of California. Or it will be processed inside of
17 California in the case of some biofuels and you'll
18 have to offset those emissions.

19 There are a number of emission events
20 that occur in and around the boundaries of
21 California such as the ships coming into
22 California. You count those emissions within 100
23 miles. You have bulk storage events that are
24 occurring in and around. You have the local
25 distribution of the fuels and the truck emissions

1 that occur. You also have evap emissions coming
2 off of the gasoline distribution tanks.

3 And of course in a vehicle you're going
4 to have emissions coming not only from the
5 tailpipe but also from evap emissions.

6 And then finally you can look at other
7 multimedia impacts and where those impacts are
8 occurring. So boundary conditions here are an
9 important part of this problem and you need to
10 consider where they are occurring.

11 In general, carbon is happening
12 worldwide. CO2 emissions are happening worldwide.
13 We're tracking the carbon throughout the cycle
14 whereas on the criteria pollutants we're really
15 looking at those criteria pollutants that are
16 generated inside California. Or those toxic
17 emissions that are generated inside California.
18 Similarly for multimedia.

19 GREET, which was developed by Argonne
20 National Lab, was used as a backbone for this
21 analysis. It was version 1.7, there is now a new
22 version out. And dare I say, there will probably
23 be many new versions out in the future too. So
24 it's something that will be continually updated.
25 Continually improving the data input, continually

1 improving the types of methodologies and analysis
2 that are done within that, within the context of
3 it.

4 But we also try to make this very
5 California-centric in the sense of adding in
6 emission factors that came from EMFAC model 2007,
7 which ARB helped us run that. Also the new off-
8 road model from ARB was used to bring in emission
9 factors.

10 The other important part of this is
11 knowing what the various transportation distances
12 are. Making sure that you're accurately
13 accounting for sort of the average transportation
14 distance that occurs relative to the tankers,
15 relative to the tanker ship, relative to the
16 tanker trucks and trying to account for all that.

17 The methodology is really broken into
18 two aspects. What we call the tank, the well-to-
19 tank. That is counting all of the emission
20 factors that are happening during production.
21 Going from -- From getting the resource to
22 refining the resource and getting it to the
23 vehicle tank.

24 And then the next step is understanding
25 what happens when you go from the tank-to-wheels.

1 The important part of that is knowing what the
2 vehicle fuel economy is or how much, what the duty
3 cycle is or how much fuel is being used.

4 So that is an important part that goes
5 into the combined Well-to-Wheels Report, giving us
6 an understanding of what the energy use is, what
7 the greenhouse gas footprint is, what the criteria
8 emissions are and what the toxics are on a gram
9 per mile basis throughout the total cycle of the
10 fuel. So that's an overview of the methodology.

11 COMMISSIONER BOYD: Mike?

12 MR. JACKSON: Yes, sir.

13 COMMISSIONER BOYD: Is it fair to say
14 that we have all learned that well-to-wheels is a
15 generic term to represent field-to-wheels or dump-
16 to-wheels or et cetera, et cetera, et cetera in
17 the stew here?

18 MR. JACKSON: A generic term to sort of
19 imply. The well is any feed stock, so to speak,
20 not just necessarily taking oil out of the ground.
21 So correct, Commissioner Boyd.

22 This chart here gives you a little bit
23 of an idea of the complexity of this kind of
24 analysis. On the left hand side you see the
25 different feed stocks, so to speak, for making

1 these fuels. Starting out with petroleum, going
2 all the way down to nuclear energy. But in-
3 between there's lots of different biofuels that
4 you possibly think of.

5 And then sort of on the right-hand side
6 are the finished products or fuels that you would
7 be using in your vehicles, diesel, LPG, LNG,
8 Fischer-Tropsch diesel, which is a subset of
9 diesel, methanol. Some of these are alternative
10 fuels, some of these are conventional fuels. Some
11 of these could be blends of alternative fuels and
12 conventional fuels.

13 And in the middle you have a sort of
14 complex refining, processing that needs to go on
15 and various things have different ways of getting
16 there. For example, corn today is a fermentation
17 process leading to ethanol. Whereas you might
18 take a municipal waste and take that through a
19 gasification process leading to potentially --
20 that could go to ethanol but it could also go to a
21 Fischer-Tropsch diesel, for example.

22 So you can see that there's many
23 different pathways here. A lot of it has been
24 demonstrated. A lot of this is commercial, a lot
25 of it is not commercial and will require

1 investments by private industry to make these
2 processes go forward. So cost here is an
3 important consideration.

4 This analysis is only looking at what
5 the sort of emission footprints are. Cost is not
6 necessarily included.

7 Just to give you a couple of examples,
8 again, of how this works. Let's look at the case
9 of gasoline coming into California. The marginal
10 case is the case of where we are importing oil
11 into California. I'm sorry, the marginal case is
12 where oil is produced overseas. It is refined
13 overseas and then we are importing product,
14 refined product into California. That then gets
15 mixed in with our existing system. So you would
16 take CARBOB, for example, put it in with the
17 ethanol, to give you RFG. That then would be
18 transported to the local fueling station.

19 If you look at it -- Say one example,
20 biomass. You're growing, you're harvesting the
21 corn. All those activities. You're fertilizing.
22 All those things have to be counted. You make the
23 corn, you take it to a dry mill processing plant.
24 You denature it by putting a little bit of
25 gasoline into it. You put it into a rail car,

1 bring it to California, it's coming from the
2 Midwest. That denatured ethanol then is put in at
3 the terminals.

4 If it was an E85 option then you would
5 be mixing that with CARBOB from the refinery to
6 put the E85 into the local distribution network.

7 So what was the scope here? We did
8 upwards of 94 pathways. There were two vehicle
9 applications. Really a little bit more than two
10 because we also did some non-road on the electric
11 side. But the two primary vehicle applications
12 were light duty vehicles and heavy duty vehicles.
13 There were four analysis years that we looked at,
14 2012, 2017, 2022 and 2030. There were two vehicle
15 fleets, so to speak. There were existing vehicles
16 and there were new vehicles rolling in.

17 And for all that we were looking at
18 criteria pollutants, well-to-tank energy, well-to-
19 wheels, GHG, greenhouse gas emissions, toxics and
20 water pollution.

21 Just to give you a little more detail
22 there were like ten conventional fuel pathways
23 looking at California reformulated gasoline,
24 California ultra-low-sulfur diesel. I think there
25 were like 22 blend pathways considering things

1 like E10. There was probably even E15 in there.
2 Biodiesel B20, Fischer-Tropsch diesel at 30
3 percent blend with California ultra-low-sulfur
4 diesel. fuel, E-Diesel, renewable diesel also on a
5 30 percent blend.

6 And then there was a number of neat fuel
7 pathways and the alternative fuels included
8 compressed natural gas, ethanol, electricity,
9 renewable diesel, liquified natural gas - LNG,
10 methanol, hydrogen, LPG or propane, DME, biodiesel
11 and then Fischer-Tropsch itself.

12 So applications again. Light duty,
13 heavy duty, non-road. Tried to be pretty all
14 comprehensive.

15 Most of all of these analyses are shown
16 in the back tables of this report that's sitting
17 out in the front. I think we have tried to be as
18 transparent as we possibly could with all the
19 assumptions and the various results that resulted
20 from the analysis.

21 So let me just give you a couple of
22 example results, okay. I can't go through the
23 whole report for you but I wanted to just look at
24 a slice of some of the results. And most people
25 are familiar with light duty so I chose light

1 duty. And then I'm going to give you some
2 observations/conclusions, not only on the light
3 duty but the results also apply across all
4 sectors.

5 For the light duty in particular you
6 have to consider what the fuel economy is, I've
7 already discussed that. And we do make some
8 assumptions regarding the fuel economy of today's
9 existing vehicles as well as the vehicles in the
10 future. And in particular one major assumption is
11 that the Pavley regulations will be in place,
12 which will require lower greenhouse gas emissions
13 from these vehicles but it will also improve the
14 fuel economy of many of the gasoline vehicles.

15 And then there's alternative fuels. But
16 in general the alternative fuels like CNG, LPG,
17 E85, any of the ethanol options, all have about
18 the same fuel economy as you would see with a
19 conventional gasoline ICE.

20 Where you get into improved fuel economy
21 is when you get into the electric drive
22 technologies like a plug-in hybrid electric
23 vehicle or the hydrogen vehicles, and of course,
24 the battery vehicle itself is much more efficient
25 than the ICEs.

1 So there's a couple of results you could
2 look at. I'm going to show you what energy sort
3 of looks at, looks like for, again, light duty.
4 And starting at the bottom with the reformulated
5 RFG at 5.7 and it's meeting, you know, current
6 California standards. It's an internal combustion
7 engine vehicle.

8 And you can see what we've done here is
9 account for not only the total well-to-energy --
10 well-to-wheel energy in terms of millijoule per
11 mile but we have also broken it down in terms of
12 how much petroleum is used through that energy
13 cycle, plus how much natural gas is used plus how
14 much non-fossil fuel is used.

15 And you can compare that to say an
16 electricity option, which in California with the
17 current mix is mostly natural gas. Much higher
18 efficiency vehicle so you would expect to see less
19 energy needed to propel that vehicle. Also the
20 fact that you are not using a lot of petroleum so
21 this is one strategy that would displace
22 petroleum, as you will see later.

23 You could look at some of the biofuels
24 too. Let's take the example of an ethanol,
25 California using poplar trees. What I would call

1 quote/unquote a cellulosic pathway. Here you can
2 see that in this case a lot of the energy here
3 being used is actually coming from the biomass.
4 There is still some petroleum that's required.
5 And there's actually a credit because you're co-
6 generating back into the grid with some of these
7 processes.

8 Now that said there is a -- This is
9 accounting for -- This particular chart here shows
10 the total energy including the amount of energy
11 that's in the fuel or in the tank, so to speak, so
12 there is a correction here that puts this line
13 down in this part here. It is shown in the text
14 of your other report but it is not shown here.

15 The other thing that we did was look at
16 it not only in 2012 but in 2022. And the big
17 difference here is the fact that the cars are
18 going to be more efficient in the out years but
19 the trends are about the same.

20 COMMISSIONER BOYD: Mike, I don't know
21 if this is the best way to bring this up but when
22 you talk about poplar as a surrogate I guess or
23 growing cellulosic feed stock it reminds me, as I
24 indicated in the introduction, that we need to
25 take into account, we the Commission in working

1 with our partners at ARB need to nest into this
2 whole plan the biofuels component as well.

3 And one of the major thrusts of our
4 biofuels recommendations in this state includes
5 using California's significant cellulosic waste
6 stream, which is comprised of -- and I'll go in
7 reverse order, urban green and wood waste,
8 agricultural field and food processing waste, and
9 the one that really goes at the top of the list,
10 forest biomass waste, before we burn all the
11 forests down. But I'm afraid we've got a head
12 start on the latter suddenly here.

13 We have not really done much in the way
14 of well-to-tank analysis of that component and
15 that is something, that is another contributing
16 issue to those, some of the folks who asked that
17 we take more time in preparing our plan. Are we
18 going to be able to contribute some of that type
19 of analysis to our debate over the next couple of
20 months?

21 MR. JACKSON: I believe that's possible,
22 Commissioner Boyd, and in fact I think some of it
23 is in here already. Like the forest waste residue
24 option, which isn't shown here, is in the analysis
25 already.

1 COMMISSIONER BOYD: I am now reminded of
2 that from reading it quite some time ago. I think
3 we'll be raising that a high priority all of a
4 sudden here.

5 MR. JACKSON: But the municipal waste
6 streams, the other streams of possible feed stocks
7 here need to be looked at and considered.

8 COMMISSIONER BOYD: Well the municipal
9 waste stream is the subject of one of the bio-
10 refinery projects that both the US Department of
11 Energy and this Commission have dedicated grant
12 funds to and it is something I think we need to
13 pay attention to as well. We will be seeing a
14 plant rising at a municipal waste facility in
15 Southern California dedicated to the use of green
16 waste, quite frankly. To turn it into ethanol in
17 the not-too-distant future.

18 MR. JACKSON: Let me go to greenhouse
19 gas emissions now. And here I'm showing the total
20 impact in terms of weighted greenhouse gas
21 emissions, GHGs. And what we mean by that is CO2
22 equivalents. That's CO2 plus N2O plus CH4 all sort
23 of back-equated to the CO2 equivalent units.

24 I am also showing both the well, the
25 tank-to-wheel part of this. So if some fuels, for

1 example, do not generate any GHG from a tank-to-
2 wheel basis -- Hydrogen is a good example of that,
3 there is no carbon in the fuel. Therefore when
4 you burn carbon (sic) in the fuel cell vehicle you
5 are not going to get CO2.

6 And also I'm showing the well-to-tank,
7 that is the upstream part of the process. And I'm
8 showing this for 2012 and 2022. And you'll notice
9 there is not too much difference between 2012 and
10 2022. Again it has to do with the improved
11 efficiency of the vehicles as they are required to
12 meet Pavley regulations on a CO2 basis.

13 So at the bottom you can see that for a
14 standard car in 2012, that is standard being
15 reformulated gasoline, an ICE vehicle, you're just
16 over 400 grams per mile of GHGs emitted. Of that
17 about, it looks we're on maybe 18 percent or so
18 would be from the upstream part whereas the rest
19 comes from the vehicle in the blue bar.

20 But if you go to something like, let's
21 pick Brazilian sugar cane for example, you can see
22 that there is a net benefit from the upstream part
23 because you're basically recycling the CO2 through
24 photosynthesis. I'll explain some of the caveats
25 of that in a minute.

1 But the net here then, you didn't really
2 pick anything up on the vehicle side. The vehicle
3 bar, the blue bar, is about the same as the blue
4 bar on the RFG side, but you did pick something up
5 relative to the upstream benefits and therefore
6 your net is 140 compared to something like 400.
7 If that is true that's a huge benefit in a
8 biofuels way of going.

9 If you go to something like electricity.
10 Again, natural gas generated. Meeting our RPS
11 requirement here in California. Charging at
12 night. You can see that you can get very low GHG
13 emissions also. Also another strategy.

14 And similarly PHEVs, the top bar there.
15 Not quite as good because you're going to be
16 burning some gasoline but the more electricity you
17 use in that vehicle the better off it would be.
18 So it kind of gives you an idea that there are
19 strategies here. Not only from a vehicle point of
20 view but from a fuel point of view, that could be
21 implemented here to give you not only efficiency
22 improvements or improvements in terms of the
23 vehicle itself but also from the fuel.

24 If you look at criteria pollutants. And
25 I know these are busy charts. What I'm showing

1 here is NOx, VOC, CO and particulate matter. And
2 the particulate matter is times ten so it will all
3 sort of compare.

4 But in general if you look at, again
5 through all these various options, you're really
6 not seeing much difference in the bars here. So
7 NOx doesn't change too much, VOCs. There are some
8 like LPG where the current practices to vent the
9 LPG when you are fueling the vehicle, that's
10 something that could be fixed. There is
11 technology available to do that, it's just not
12 done here in California. But if you introduced a
13 technology like that you would do it in
14 California. That's an example of a barrier that
15 technology could easily fix.

16 But in general there is really not much
17 difference between any of these fuels. We don't
18 see any show-stoppers here. It's not something
19 like we've got a huge problem -- We solved one
20 problem but we've got a huge problem showing up
21 anywhere else.

22 And in general what you see is the -- In
23 this case there is a little difference between the
24 2012 and the 2022 years and all of that has to do
25 with deterioration of the newer cars in 2012. In

1 2012 the way these impact runs were done, they're
2 pretty much all new vehicles in 2012, they're only
3 two years old. But in 2022 the vehicles are now
4 20 years old. So be a little bit careful in
5 looking at those results because it depends on how
6 the impact runs are actually done.

7 Okay, I wanted to just give some
8 observations on the GHG emissions now that apply
9 to the total results and not just to these light
10 duty results. As you can see in the light duty
11 side the GHG emissions depend on both the carbon
12 content in the fuel, that's important, and the
13 process that you have to do in terms of making
14 that fuel. In all cases except for hydrogen and
15 electricity the vehicle GHG emissions dominate the
16 well-to-wheel emissions. Not a surprise.

17 The GHG emissions from alternative fuels
18 in off-road equipment generally agree with what
19 kind of impacts we see on the on-road. So there's
20 not huge surprises there when we go to off-road
21 equipment. And by non-road or off-road equipment
22 I'm talking about things like truck stop
23 electrification or I'm talking about e-forklifts.
24 So those kind of applications.

25 There's a wide range of emission factors

1 for various pathways and in general you get
2 greater GHG emission reductions when you have the
3 combination of both higher efficiency and low
4 carbon footprints on producing that fuel.

5 Electric generation mix based on natural
6 gas combined cycle power plants combined with the
7 California renewable power RPS standard or
8 constraint is an appropriate mix, we believe, for
9 doing the calculations. And it not only benefits
10 those technologies that directly use electricity
11 but those that would use electricity in the
12 processing of the fuel.

13 And then finally GHG emissions from
14 biofuels production and use depend upon a lot of
15 factors and you need to be careful about things.
16 And I'll talk about this in a minute, land use
17 conversion for example, but also allocation of the
18 byproducts. That's important. And the level and
19 carbon intensity of the process energy inputs.
20 For example, using coal to produce corn-based
21 ethanol is probably not a very good GHG strategy.

22 And I said this already, most pathways
23 result in comparable emissions relative to
24 criteria and toxics. These emissions tend to be
25 dominated by the upstream events that are

1 occurring in California. That is the marine and
2 rail transportation, which tend to be the dirtiest
3 these days in California but are cleaning up as
4 new non-road standards are implemented and new
5 fuel standards are adopted by ARB.

6 Diesel PM is the primary contributor to
7 the weighted toxics emissions. Although I didn't
8 show you those you'll have to trust me on this,
9 it's in the report. So fuels that are delivered
10 by ship or rail have these highest toxic emissions
11 impact in the near-term years, which will reduce
12 in the out years due to cleaner technology,
13 cleaner fuels.

14 In general criteria pollutant emissions
15 for the electric transportation are comparable to
16 or lower than those from conventional fuels. And
17 those lower emission levels result from efficient
18 new power plants, but also the fact that you could
19 control the emissions at a centralized location.
20 And I think that is an important point that tends
21 to escape us at times. But centrally producing
22 the emissions and petroleum emissions at a
23 centralized facility is probably a lot easier than
24 trying to do it on every vehicle that we have. So
25 keep that in mind.

1 Emissions of NOx, VOC and in some cases
2 PM would need to be offset. Especially if you're
3 doing things in terms of production facilities in
4 California. And we have accounted for those
5 offsets in this analysis.

6 And then finally, fugitive losses and
7 fuel spills are a fairly large source of the ROG,
8 benzene and 103 butadiene emissions associated
9 with gasoline as well as PAHs from diesel. These
10 emissions from the fuel transport delivery are
11 often largely eliminated when you go to some of
12 the alternative fuels like natural gas.

13 Okay, some caveats. Especially on the
14 biofuel side, land conversion effects could be a
15 very substantial effect, possibly negating or
16 substantially lowering any of the benefits we're
17 showing here today. And going from probably a
18 least effect to a huge effect is the existing crop
19 lands.

20 Although if you have to expand to other
21 areas where you're actually taking up grasslands,
22 that is going to have an effect. If you are going
23 to deforest that has a huge effect. If you are
24 going to go to wetlands, which have a substantial
25 peat content in them that store a lot of carbon

1 that will have another huge effect.

2 There is a lot of work that is being
3 done on this and we have to -- any future
4 assessments of GHGs and any future Full Fuel Cycle
5 Analysis needs to incorporate these kind of
6 analyses.

7 COMMISSIONER BOYD: Mike, sorry to
8 interrupt you again. But I'm just going to make
9 the point I made a little bit earlier and just
10 reinforce it.

11 When we had our joint workshop with the
12 ARB in this room and Professor Sperling made his
13 presentation about the work the university is
14 doing on the low-carbon fuel standard and their
15 analyses utilizing this Full Fuel Cycle Analysis I
16 asked Professor Sperling the question that since
17 there had been so much discussion about needing to
18 take into account the consequences of biofuels if
19 you get into land conversions, land use and what
20 have you, I asked him if therefore the idea of
21 using our waste stream as the input to, our
22 cellulosic waste stream as the input to fuel-
23 making would significantly reduce, will eliminate
24 the land conversion concern if can assure people
25 that taking material out of the forest isn't the

1 first step towards logging old growth or something
2 like that. If we put up all the protective
3 barriers for our national parks, monuments,
4 forests, et cetera, et cetera, but still get all
5 that material out in concert with all the ag
6 waste. I would presume the Full Fuel Cycle
7 Analysis would show an extremely positive benefit
8 in that it doesn't touch this arena at all.

9 MR. JACKSON: That's correct,
10 Commissioner Boyd. This is an issue of mostly the
11 commercial crops or crops that you would grow,
12 energy crops so to speak, that you would grow
13 compared to what is existing or what the land is
14 currently being used for. Waste products tend to
15 bypass this whole issue.

16 COMMISSIONER BOYD: I keep making this
17 point because California is kind of unique in
18 relation to other states and other nations in the
19 massive size of this waste stream but it is not
20 confined as to California. But in any event, in
21 concert with this whole effort the bioenergy
22 working group keeps trying to push this point up
23 to the top of the state's agenda. Thanks.

24 MR. JACKSON: The second point here is
25 that I want to make sure everybody understands

1 that these kind of results and the pathways that
2 were selected -- the assumptions assumed in the
3 pathways is really an average sort of pathway that
4 we've selected here. And you really, if you're
5 going to do more than just policy. If you were
6 going to credit a pathway you would have to
7 specifically look at that pathway and exactly
8 where the energy is going. So that's just another
9 caveat.

10 Our recommendation here is that we think
11 that this methodology is very powerful. It gives
12 you some insights into what's happening from the
13 perspective of various feed stocks and how the
14 feed stocks are processed and in how they're used.

15 So we would recommend that you continue
16 to improve this methodology, not only from
17 revising and updating the inputs but also
18 continuing to monitor the land conversion type
19 studies and see how those come into effect.

20 And then finally I would say we would
21 recommend using this methodology to provide
22 guidance on lowering carbon emissions from the
23 transportation sector. And I say that as a system
24 from a fuel and vehicle perspective.

25 Let me just --

1 COMMISSIONER BOYD: Mike, another
2 interruption, excuse me. On that point you just
3 made, to continue to improve the methodology. I
4 am reminded, and there's probably people in this
5 audience who were here and maybe several who
6 weren't. But at our last Commission meeting this
7 Commission approved a fairly healthy amount of
8 money for a contract to continue to improve the
9 GREET California model, recognizing that as a
10 result of the work of the ARB staff and our staff.

11 And in the context of the discussions
12 about GREET versus LEM versus other models it was
13 necessary to move this issue on into the future.
14 So we have made that commitment as a Commission
15 here. Hopefully others can contribute to this
16 effort.

17 MR. JACKSON: Okay, what I wanted to do
18 in the last sort of closing slides here is kind of
19 give you an idea of how you would use this
20 methodology. You might think about some of the
21 options.

22 And just to put it in perspective what I
23 have shown here is California fuel demand. And
24 you guys, the Commission is really going to look
25 at this in more detail relative to the upcoming

1 IEPR. So I have -- I think these numbers actually
2 came out of the 2005 IEPR. But it shows diesel
3 demand and gasoline demand. And this is on-road
4 only. We need to be thinking about off-road
5 applications here too relative to alternative
6 fuels but this is on-road only.

7 And I put a couple of targets on here.
8 The 20 percent reduction in 2020 of this
9 particular demand would be about four billion
10 gallons. In 2030 you would be, about six billion
11 gallons would be what you would be trying to
12 achieve in terms of the AB 1007 goals, anyway. So
13 just sort of keep the four and the six in mind.

14 Then what I am showing here is for the
15 light duty sector here's some blend strategies.
16 And I am showing two things on the blend
17 strategies. There are different blend strategies
18 shown on the X-axis and this is percent reduction
19 from the baseline, which would be an RFG baseline.
20 And this is in 2020.

21 So I am showing the GHG reductions
22 relative to that well-to-wheel greenhouse gas
23 emission reduction percentage and I am also
24 showing the amount of petroleum displaced using
25 these strategies. So let's pick an example.

1 Let's pick the example of ethanol in an
2 E10 blend. So ten percent ethanol blended in with
3 gasoline would provide from 5.7, the difference
4 between 5.7 blend. It would provide about a six
5 percent GHG benefit in about a say three percent
6 petroleum displacement benefit. That would equal
7 to somewhere on the order of 1.4 billion gallons
8 displacement. And in terms of GHG reductions it's
9 comparable to about six million metric tons. Just
10 from that strategy.

11 If you go to a cellulosic option you
12 might, you might do much better. Or if you
13 increase the amount of ethanol into the fuel you
14 would do much better.

15 The point here is that the strategies,
16 different strategies give you different answers
17 relative to GHG and petroleum dependency. On the
18 far right is an example that gets you a lot of
19 petroleum independence but goes backwards relative
20 to greenhouse gas emissions. All right. So you
21 have to keep in mind, you know, what goals you're
22 going after.

23 If you look at it from the perspective
24 -- now this one gets a little more because I've
25 included more options in here. This is not a

1 blend now, this is new vehicles entering the
2 marketplace. And this is showing compressed
3 natural to ethanol, say at a 30 percent blend, to
4 an E85 blend to hydrogen vehicles, either from
5 biomass, hydrogen derived from biomass or from
6 steam-reforming natural gas.

7 Again you sort of see the same thing.
8 You can have a strategy. Natural gas does a great
9 job at displacing petroleum but won't have nearly
10 as high greenhouse gas emission reductions as some
11 of these other options would be. Now that said,
12 maybe natural gas doesn't work as good in the
13 light duty sector but worked really good in the
14 heavy duty sector. You've got to be able to put
15 all this stuff together but it kind of gives you a
16 good idea of what you could achieve.

17 In the case of let's say a 2050 GHG
18 impact. You could have plug-in hybrids on the
19 other of 20 million metric tons reduction in terms
20 of GHG. An E30 might give you somewhere between
21 10 and 40 metric tons. These get to be pretty big
22 numbers if you think about what the goal is for
23 partitioning the GHG reductions in the state. I
24 think AB 32 has something like a 75 metric tons
25 goal reduction. So you can see these are fairly,

1 get to be fairly large numbers.

2 Now, does it take a lot to get there?
3 Absolutely. We're talking about, you know, in an
4 E85 case you might be talking, you know, a huge
5 number of vehicles. All your vehicles might have
6 to be operating on E85 in order to achieve these
7 kind of, these kind of goals.

8 But this is the type of work that is now
9 going on, that has gone on relative to the story
10 line development and looking at what's possible.
11 And then you look back and say, well what's the
12 cost of getting there? That's the next part.

13 Let me just say and put it in context,
14 in one other light. And that is, I sort of ask
15 the question here. What is required of these
16 different fuels to meet the current low-carbon
17 fuel standard? Well, the proposed low-carbon fuel
18 standard requiring at least ten percent reduction
19 in carbon and gasoline and diesel fuels by 2020.

20 So what this is showing you is how much
21 fuel consumption is needed for various options and
22 what the penetration would have to be in the
23 marketplace to do this. So let's take, for
24 example, diesel. You could meet the low-carbon
25 fuel standard using diesel in light duty vehicles

1 at an implementation rate of about 52 percent.
2 You would be displacing some six billion gallons
3 of gasoline. How much petroleum would you
4 displace? Zero.

5 You could go to an option like a plug-in
6 electric vehicle. Sort of architecture assuming
7 like 20 miles all-electric or some sort of mix.
8 You could achieve the standard in this example
9 with 38 percent of the light duty fleet. And your
10 displacement here, although not shown, it is going
11 to be a lot bigger than just the displacement of
12 the fuel because you have efficiency improvements.

13 If I jump all the way over to hydrogen,
14 for example, again it takes less, probably even
15 less, not surprising, because the fuel has much
16 less carbon grade to it. It takes much less to
17 get it into the marketplace and it takes a lot
18 less fuel. But it is going to displace, because
19 of the efficiency improvement of the vehicle
20 itself, it is going to displace some six billion
21 gallons.

22 Okay. I'm going to just conclude with
23 this last slide here. Hopefully I have been able
24 to demonstrate that the Full Fuel Cycle Analysis
25 is a useful tool to judge these various

1 alternative strategies for reducing GHG as well as
2 petroleum displacement in the transportation
3 sector. There's a couple of things that sort of
4 stand out to you when you do this and one is
5 improved efficiency is very important, not only
6 from a production point of view but distribution
7 as well as end-use.

8 There's a variety of alternative fuel
9 pathways that reduce both GHG emissions and
10 petroleum consumption. My personal feeling is you
11 need to focus on those pathways that provide both
12 benefits.

13 Electricity, depending on the generation
14 mix provides the lowest overall impact on GHG
15 criteria, toxic emissions and water pollution.
16 Now there's technology issues in terms of getting
17 some of that technology in the marketplace but we
18 are identifying those hurdles, we are identifying
19 those barriers, and we're looking at ways to
20 overcome them.

21 And when I say electricity here I should
22 really say electric drive. That's probably more
23 accurate.

24 Biofuels can be very effective at
25 recycling carbon and providing lower GHG

1 emissions. But the caveats, right. Make sure
2 that we understand what land conversion is, make
3 sure we understand harvesting, make sure we
4 understand collection, production, co-products.
5 Those things are important. Fertilizing the crop.
6 All that affects the potential benefit of GHG from
7 biofuels.

8 And then finally, alternative fuel
9 blends with existing fuels have been the most
10 successful way that we have gotten alternative
11 fuels into the marketplace and could continue to
12 be an effective strategy in terms of displacing as
13 well as reducing GHG emissions.

14 Thank you for your attention.

15 CHAIRPERSON PFANNENSTIEL: Thank you,
16 Mike. Questions from Commissioners?

17 COMMISSIONER BOYD: Perhaps more in the
18 form of a couple of comments following on with
19 Mike's presentation. I am kind of gratified to
20 see that the work that Commissioner Geesman and I
21 did when we were the Transportation Committee and
22 the IEPR Committee in pushing forward the plug-in
23 hybrid electric vehicle, which this Commission
24 ultimately ratified, has proven to be perhaps a
25 wise strategy with regard to California's future

1 more than a wrong thing to pursue.

2 And I guess a reaction I have to your
3 presentation, Mike, and from our workshop before
4 is, I guess when we did the scoping order for this
5 effort, and that Transportation Committee was
6 Chairman Pfannenstiel and I. Now it's
7 Commissioner Byron and I. I hang in there but my
8 partners keep changing. In any event, we've
9 trained them all.

10 In any event, the scoping order that we
11 did quite some time ago we were thinking of the
12 fact and saying pretty clearly, there are no
13 silver bullets. And we've striven very mightily
14 to not, you know, not point us in the direction of
15 a single strategy in order to have a level playing
16 field and let the market and competition work.

17 But during the course of our discussions
18 I have heard the term silver buckshot multiple
19 times and I am beginning to believe that perhaps
20 when we get done with this plan we will have to
21 point people in certain directions over a certain
22 time of you can do this now, and then you can
23 maybe do this in the mid-term and you can do
24 something different in the long-term. But we have
25 two more months to digest that.

1 But having referenced the scoping order
2 I would recommend everybody go back in their
3 historical records and take a look at it because
4 it was written at a time when the major thrust of
5 the legislation and gubernatorial direction was to
6 address fuel price volatility, transportation fuel
7 price volatility, which was a product of supply
8 versus demand.

9 And the recognition by policy makers in
10 the executive and legislative branches finally
11 that it truly was pure market that the supply of
12 fuels just couldn't keep up with the demand and
13 that's proven to be uncomfortably true for quite
14 some time.

15 So the alternative fuel plan is going to
16 have to recognize that commitment, the biofuels
17 commitment and the low-carbon fuel commitment. So
18 nesting all those together is going to be
19 difficult. And all of us here, particularly our
20 partners at the ARB -- And we're going to have to
21 push that. And it is certainly exemplified by the
22 presentation that you just made. So our work is
23 still cut out for us.

24 And lastly I'm reminded historically of
25 the work Commissioner Geesman and I did on AB 2076

1 with our friends at the Air Board, which kind of
2 pointed out the need to reduce our dependance on
3 petroleum, number one. The need to inject
4 efficiency, efficient technologies.

5 And I believe we called for and probably
6 still hang together on the idea of doubling CAFE
7 in the United States, which debate is finally
8 being added in the Congress, although they are not
9 quite that courageous. And of course secondly,
10 alternative fuels, and thirdly, land use
11 transportation and what have you, i.e. VMT
12 reduction, which this agency is addressing. The
13 Chairman spent an entire day yesterday in this
14 room on that subject in a workshop for the 2007
15 IEPR.

16 So all these things are coming together
17 and it just points out the complexity of this
18 issue. And it really points out to me the
19 incredible importance that the Full Fuel Cycle
20 Analysis has become in terms of us dealing with
21 this issue. Which while it compounds all of our
22 jobs up here and frustrates many of us it
23 certainly fulfills the concern that a lot of us
24 have had for a long, long time that you need to
25 look at the entire, bloody system before you make

1 decisions on where you're going. And I think
2 climate change has finally forced that upon us.

3 Anyway, that's more of a comment instead
4 of a question but thanks for your work and your
5 presentation.

6 CHAIRPERSON PFANNENSTIEL: Mike, I just
7 wanted to say that I thought it was really
8 interesting work as I plowed through the various
9 graphs and tried to make sure I understood what
10 was there and what it was telling me. So I really
11 appreciate your presentation this morning. I
12 think it crystallized a lot of that.

13 In going through the various metrics of
14 analyses that you ended up doing did you find
15 anything surprising? I went through and I'm
16 learning a lot and there was a lot that didn't
17 seem obvious to me until I started peeling it back
18 and tried to understand it. Any a-has in there?
19 Anything that struck you as something that was a
20 new finding to this study? Or is it largely
21 confirming and documenting what we would have
22 expected to find?

23 MR. JACKSON: That's somewhat of a
24 difficult question for me because I have been
25 doing this now for probably 20 years so I'm not

1 sure anything is new.

2 CHAIRPERSON PFANNENSTIEL: Oh, come on.

3 MR. JACKSON: No, I think it is more of
4 the latter. It really confirms our thoughts about
5 how, you know, various combinations of fuels and
6 energy systems come together. But really to me
7 the important part is looking at, sort of dividing
8 it up between the upstream parts and what happens
9 on the upstream and what happens on the downstream
10 parts.

11 And you can see with some of these
12 technologies that the downstream, the vehicle end-
13 use, you know, you can have some very efficient,
14 you can have extremely low emissions or no
15 emissions of greenhouse gas emissions but, you
16 know, it all gets generated in the upstream. It
17 just reemphasizes to me the system part of this.
18 And I think Commissioner Boyd said this. In the
19 transportation sector it's a fuel vehicle system.

20 And, you know, we have tended in the
21 past for good reasons to look at them separately.
22 I think as we move forward in the future we can't
23 look at them separately anymore. This needs to be
24 something that we really pay attention to. And
25 hopefully policies will pay attention to it so

1 that we consider it as a system and not
2 necessarily divided. That's sort of one of my
3 major take-aways.

4 CHAIRPERSON PFANNENSTIEL: Thank you.
5 One of my take-aways, I have to say, is that there
6 is no obvious path to resolving the simultaneous
7 equations of lower GHG and lower petroleum
8 consumption and lower pollutants. We have a lot
9 of choices yet to make.

10 MR. JACKSON: That's a very good point.
11 There's lots of choices and there's lots of stages
12 of development of where the technologies are. So
13 it is going to require, you know, some finesse in
14 terms of encouraging the right response out of
15 industry.

16 CHAIRPERSON PFANNENSTIEL: Thank you.
17 Other questions? Yes, Commissioner Geesman and
18 then Commissioner Byron.

19 COMMISSIONER GEESMAN: Mike, I was
20 struck on your last slide, and also I think one of
21 the comments that you made when you were
22 discussing I think natural gas. Your belief that
23 it is important that we look for pathways with
24 dual benefits. And I wonder if you would expand
25 on your thinking there.

1 It would seem to me that it is at least
2 hypothetically possible that we could assemble a
3 suite of different pathways that served single
4 benefits and in combination accomplish the same
5 thing. That might carry with it too much
6 complexity. But if you could explain your logic.

7 MR. JACKSON: I was somewhat simplistic
8 in showing you the examples I showed you. It gets
9 more complicated when you try to bring it together
10 in terms of, you know, sort of the silver bullets
11 acting in a strategy.

12 My comment on natural gas was one where
13 it's a near-term technology, for example, that
14 works quite well in some of the heavy duty
15 applications. Transit busses is one of those.
16 Where you're not going to be able to -- the best
17 you're going to be able to do is maybe a 20 to 30
18 percent benefit in GHG but you can get a
19 tremendous benefit in terms of reducing the
20 petroleum consumption.

21 So I think you're right, Commissioner
22 Geesman. This becomes -- When you start putting
23 together the pieces you're going to have to pay
24 attention. There can't be just one rule, so to
25 speak. You're going to have to pay attention to

1 what works, in what time frame does it work, and
2 how do you put those pieces together. Well, I'll
3 leave it at that.

4 COMMISSIONER GEESMAN: Thank you.

5 CHAIRPERSON PFANNENSTIEL: Commissioner
6 Byron.

7 COMMISSIONER BYRON: Thank you.

8 Mr. Jackson, I think this is extraordinarily good
9 work. I think it is going to be helpful for
10 policy makers. I wanted to get a sense from you,
11 and perhaps Commissioner Boyd, how unique is this
12 work and how unique is it to California or
13 applicable to outside the state?

14 MR. JACKSON: Uniqueness. A lot of
15 people, including European countries for example,
16 the European Union for example, has taken on the
17 goal of looking at what are the impacts of various
18 fuels and fuel combinations relative to a Full
19 Fuel Cycle Analysis. So the analysis uniqueness,
20 I don't think it is all that unique. It has been
21 done, it has been for a number of years.

22 To be unique is how you use it as a way
23 of complying with California future regulations
24 here. In putting together all the things that
25 California wants to do in terms of reduced

1 greenhouse gas emissions. That is not being done
2 anywhere, to my knowledge. Commissioner Boyd, do
3 you want to add to this?

4 COMMISSIONER BOYD: No, I would agree
5 with Mike. What has been interesting to me, as he
6 indicated, that peopled talked about this for a
7 long, long time. People have talked about the
8 need to do something like this and models have
9 been developed for a long, long time and lightly
10 applied.

11 I think I used the crude analogy early
12 on that we realized when we started this job that
13 we were taking maybe a deeper dive into the
14 subject because we had to really start getting
15 practical about applications. And then when the
16 low-carbon fuel standard arrived on the scene it
17 became painfully evident that that work was
18 heavily dependant on a good, full fuel cycle
19 analysis and we tried to dive a little deeper.

20 But as you do that you look around to
21 the rest of the world. And as Mike said,
22 application of the academic theory hasn't been too
23 extensive. This is a fairly in-depth application
24 of heretofore academic theory and I think a lot of
25 us have realized that while this is really good

1 work a lot more needs to be done as tough
2 decisions are made.

3 At least the Air Board has got 18
4 months, more or less to deal with their task of a
5 low-carbon fuel standard. We are blessed or
6 cursed with the responsibility to come up with an
7 alternative fuels plan by the end of this process,
8 which is a couple of months.

9 And Mike's earlier comments in response
10 to Commissioner Geesman made me think of when I
11 analogized silver buckshot. We talk about what
12 fuels would be good to use based on their
13 footprint, environmental footprint.

14 But actually if you get them into use
15 you start thinking about, where is there and can
16 there be adequate supply of fuel X, Y and Z in the
17 various time frames. Is there -- and that
18 includes therefore, is there infrastructure to
19 deliver that fuel to the consuming public. And
20 then, is there vehicle technology in existence
21 and/or in adequate numbers out there such that it
22 can utilize the fuels that we're talking about.

23 I guess the marvelous example of how
24 this isn't simple and doesn't work is the long-
25 held recognition that the flexible fuel vehicle is

1 a wonderful thing. It can consume E85, which
2 would be good for us. And one of my pet peeves,
3 after the auto industry for years has gotten CAFE
4 credits for these vehicles, when it comes to
5 California there's zip infrastructure. A lot of
6 talk about needing to do it but it's not
7 happening.

8 So we have to make recommendations that
9 take into account what's feasible to get done.
10 Whereas is there going to be the industrial
11 community and the business community willing to
12 provide infrastructure and provide the fuels and
13 see a business case for them, vis-...-vis, you know,
14 what it is we're trying to accomplish. That's no
15 -- That's a tall order as we are beginning to see.

16 COMMISSIONER BYRON: But it's a good
17 tool. Thank you for the report.

18 MR. JACKSON: Thank you.

19 CHAIRPERSON PFANNENSTIEL: Thank you,
20 Mike.

21 I think now unless there are further
22 questions from the Commissioners we will go to
23 public comments. I have here three cards and I
24 understand there is somebody on the line besides.
25 We'll start with people in the room. Richard

1 Epplet.

2 MR. EPPLET: Good morning. I am the
3 sole proprietor from a company called Quality
4 Transport Services. I have been in the taxi
5 business, the airport shuttle business. Small-
6 type vehicles. And there is a lot of concern
7 amongst us in regard to these new fuels that are
8 coming up.

9 Commissioner Boyd, you kind of brought
10 one of these up and that is, what fuels can we use
11 in our vehicles that they're not going to break
12 down on the highway with a load of passengers or
13 whatever. So that is something that has to be
14 considered and studied.

15 Also availability. I attended a
16 bioenergy meeting in Napa here a month or two ago
17 and I met with a fellow from Frito-Lay. And he
18 says, as far as availability they are very
19 concerned about it. They'll go to it but they've
20 got 1,000 vehicles. And where are they going to
21 get it, you know, if they are on the road? You
22 need a place for them to stop.

23 For that reason, those problems that I
24 came up with in my analysis, I decided to set up a
25 company called Echo Fuel and 100 percent synthetic

1 lubricants. What I am wanting to do is set up the
2 retail centers, particularly in the Northern
3 California area for all the different fuels that
4 are available. Of course I will be very careful
5 as to which ones I offer.

6 On the 100 percent synthetic lubricants
7 it's very low polluting. I can go 25,000 miles
8 between oil changes. I can go 75,000 miles
9 between transmission services. So that there will
10 eliminate a lot of the pollution that goes on
11 because of fuels and oils.

12 And also we have a fuel additive that
13 you can put in the cars right now. It's called
14 Performance Improver. It will go 4,000 miles and
15 will give you practically zero emissions from the
16 gasoline. At most you would realize -- I saw a
17 smog report from one of my colleagues. They had a
18 450,000 mile vehicle, a vehicle with 450,000 miles
19 on it. It showed .05 COs from it. Your smog
20 test, if you go over .64 you are a polluter.

21 So these are some of the things that I'm
22 looking at. I'm kind of seeking some seed money
23 from either a grant or from investors in order to
24 get the Echo Fuel situation going. Because I
25 checked with BP and they can set me up with a gas

1 station but they want a million bucks.

2 That's basically all I had in mind at
3 this point.

4 CHAIRPERSON PFANNENSTIEL: Thank you
5 very much.

6 Joe Sparano.

7 MR. SPARANO: Good morning. For the
8 record my name is Joe Sparano. I am president of
9 the Western States Petroleum Association, or WSPA.
10 WSPA represents 26 companies that explore for,
11 produce, refine, transport and market petroleum,
12 petroleum products, natural gas and alternative
13 and renewable fuel supplies.

14 WSPA appreciates all the work that CEC
15 and TIAX have done and put into developing the
16 Full Fuel Cycle Analysis tool. However, we also
17 believe that TIAX's Fuel Cycle Analysis or FCA
18 illustrates the uncertainty that exists in this
19 fundamental and necessary tool for measuring
20 carbon intensities of various fuels.

21 Most experts agree that there is no
22 widely accepted FCA method for measuring all
23 global warming impacts of transportation fuels.
24 The FCA does set a good foundation. While WSPA
25 and our contractor, ERM, provided input to TIAX

1 we're disappointed TIAX only made minor changes to
2 their analysis.

3 As noted in our letter of June 19 to the
4 docket, we believe the FCA needs more work to
5 become a valid analysis tool for the difficult
6 policy decision making that must occur under the
7 low-carbon fuel standard or LCFS. The majority of
8 recommended WSPA and ERM revisions were not
9 addressed in our view in any substantive way. A
10 few assumptions were changed and a small-scale
11 sensitivity analysis was done. That represented
12 only five or six parameters that were run out of
13 about 100 in the model. We believe the
14 sensitivity analysis should be more robust.

15 CEC staff responded that they felt the
16 select elements in their sensitivity analysis only
17 would have made small percentage changes to the
18 results. But adding all those small changes
19 together may create a significant response.

20 Most of WSPA's and ERM's comments were
21 also consolidated with other third-party
22 reviewers. A generic response was given but this
23 is not sufficient in our view, given the
24 complexity and importance of these issues we're
25 dealing with. WSPA requests that all third-party

1 comments be included in their entirety as an
2 appendix to the report and that the TIAX/CEC
3 responses should be specific to the comments that
4 were provided.

5 The FCA is certainly a critical part of
6 many, current California climate change activities
7 and that includes perhaps first and foremost the
8 LCFS. So we'd like to feel confident that the
9 model is accurately reflecting how different
10 transportation fuels will impact the state,
11 including their reliability and affordability for
12 consumers.

13 Obviously the model is only as good as
14 its inputs. If one element is inaccurate or
15 missing, as in the case of land use impacts, which
16 Mike did address during his presentation, it can
17 significantly change the results. Also ERM and
18 Argonne Laboratories recommended use of a
19 substitution method rather than the allocation
20 method TIAX used to determine impacts of co-
21 products from ethanol production. Despite our
22 input TIAX did not make changes to the final
23 report to address this different approach.

24 Uncertainties exist. So WSPA recommends
25 biennial milestones be scheduled over the

1 implementation period for the LCFS. This should
2 assist in ongoing improvements to the FCA
3 methodology.

4 We understand that development of the
5 LCFS is now under the purview of the Air Resources
6 Board. However, the CEC has the expertise needed
7 to look at the trends in the marketplace and
8 identify any problems that may arise from
9 transportation fuel policies.

10 WSPA requests that when you provide the
11 FCA to CARB that the CEC communicate in the
12 transmittal that the rules should contain
13 regularly scheduled milestones and meaningful
14 review to ensure that the following issues are
15 examined and measured. The availability of
16 reliable and affordable transportation fuels, the
17 cost and cost-effectiveness of the rule, and the
18 technological and infrastructure progress needed
19 to achieve the goals in the contemplated time
20 frames.

21 We recommend the CEC review every two
22 years, consistent with your excellent updates of
23 the Integrated Energy Policy Report, or IEPR.
24 Those look at among other things transportation
25 fuel marketplace trends.

1 There is an additional concept that we
2 believe needs consideration and further
3 development. Uncertainties exist, as I have said,
4 and the modeling tools available to conduct the
5 Full Fuel Cycle Analysis of greenhouse gas
6 emissions from various transportation fuel options
7 that will be compared against gasoline and diesel
8 fuel.

9 WSPA suggests forming a public/private
10 collaborative with CARB as a host to continue
11 improvement of the modeling tools needed to make
12 informed decisions. The collaborative would
13 assemble a broad-based, representative and
14 technically competent team of individuals to
15 provide input into the upcoming state fuels policy
16 actions and into development of an accepted and
17 accurate FCA.

18 We envision the CEC and the UC
19 professors who wrote Parts 1 and 2 of the LCFS
20 technical and policy analysis using the CEC's FCA
21 as the basis would be partners in the
22 collaborative along with other interested
23 stakeholders. There is also interest federally
24 and internationally for improving these essential
25 tools. We have two specific efforts in mind for

1 this collaborative. The two are the Full Fuel
2 Cycle Analysis and what is referred to as a
3 Dynamic Energy Simulation Model or DynaSim.

4 WSPA would be pleased to discuss our
5 concepts for a collaborative approach with the
6 Commission and the staff.

7 In the meantime if the TIAX FCA work
8 gets adopted today and forwarded to CARB we ask
9 you include a written acknowledgement that the
10 maturity of the science is uncertain and needs to
11 be improved to support California's future policy
12 decisions. We also encourage you to highlight the
13 collaborative and milestone concepts in the
14 transmittal letter.

15 The CEC might offer to the collaborative
16 the additional TIAX work that Commissioner Boyd
17 mentioned earlier that you recently commissioned
18 to make improvements to the model. You might also
19 include the CEC program manager recently hired to
20 oversee the DynaSim model development as another
21 contribution to this collaborative process.

22 It is our hope that we can work together
23 on vastly improving the situation before major
24 policy decisions have to be made. Thank you for
25 giving me an opportunity to share our input and

1 would be happy to take your questions.

2 CHAIRPERSON PFANNENSTIEL: Commissioner
3 Geesman.

4 COMMISSIONER GEESMAN: Joe, this
5 milestones concept. Is the low-carbon fuel
6 standard envisioned as one that will have interim
7 requirements before it hits the ten percent target
8 in 2020?

9 MR. SPARANO: The concept here,
10 Commissioner Geesman, is that we are concerned,
11 and I think others as well, not just the petroleum
12 industry, that this is such an enormous
13 undertaking. It involves a degree of complexity
14 perhaps beyond anything we have all done before,
15 that there ought to be some very specific periods
16 during which we examine the impact of what we are
17 doing on the marketplace, on fuel supply. It
18 won't do any of us any good if we reduce
19 greenhouse gases and don't have any fuel to run
20 whatever transportation --

21 COMMISSIONER GEESMAN: I don't think I
22 disagree with any of that.

23 MR. SPARANO: So we're looking at
24 something shorter. Dan Sperling was here and we
25 talked about this a couple of weeks ago when I was

1 at the podium suggesting that five years was a
2 good, interim period for examining how things are
3 going. We just think it should be shorter.

4 COMMISSIONER GEESMAN: But should there
5 be some target --

6 MR. SPARANO: Like off-ramps so we
7 should delay it? No.

8 COMMISSIONER GEESMAN: Should there be
9 some target short of ten percent earlier than --

10 MR. SPARANO: I don't know, we should
11 talk about. In a fair, honest answer, I don't
12 know. We're concerned that we shouldn't
13 backslide. We shouldn't go backwards or have some
14 off-ramp that diverts us from the ultimate goal.
15 But rather we ought to have some thoughtful
16 contemplation of how we're getting there and what
17 other impacts it's having.

18 COMMISSIONER GEESMAN: I don't think I
19 disagree with that but I think there's a certain
20 symmetry to your argument that ought to be applied
21 on really both sides of the equation.

22 MR. SPARANO: Okay.

23 CHAIRPERSON PFANNENSTIEL: Thank you,
24 Joe.

25 MR. SPARANO: Thank you.

1 COMMISSIONER BOYD: Joe, if I might. I
2 just wanted to remind you of a couple of things.
3 And you did make reference to IEPR and the
4 question of that's a two year cycle.

5 So this agency is kind of automatically
6 in looking at the three legs of the energies tools
7 looks at electricity, natural gas and
8 transportation fuels. So it provides a forum for
9 discussion of what's new and what are the policy
10 issues in the transportation fuel arena.

11 Another thing I would commend to you and
12 to any in the audience who are interested in this
13 subject, the staff has put a suggested Energy
14 Commission resolution on the table in the foyer
15 out there.

16 And I note in it that the staff is
17 suggesting that we approve a resolution that says,
18 among other things, that it acknowledges the need
19 for ongoing updates of the full fuel cycle
20 analysis and methodology to gather verifiable data
21 and to improve elements, such as land use impacts,
22 and directs the staff do to so in an open and
23 transparent manner.

24 I think, coincidentally, that the staff
25 is recommending to us the need for, as we in the

1 dialogue with Mike Jackson probably already said,
2 to just continue looking at this subject area.

3 I don't know if that meets your need.
4 But I just wanted to point it out as something
5 that, obviously, the staff is recommending to this
6 Commission that we acknowledge the need for.

7 MR. SPARANO: Okay, thank you.

8 CHAIRPERSON PFANNENSTIEL: Thank you.

9 Catherine Dunwoody.

10 MS. DUNWOODY: Good morning, thank you
11 for the opportunity to comment this morning. My
12 name is Catherine Dunwoody. I'm Executive
13 Director of the California Fuel Cell Partnership.

14 And I'd like to start to say that I
15 recognizes the very comprehensive and complex
16 report that has taken a tremendous amount of
17 effort of the CEC staff and consultants.

18 My comments primarily revolve around
19 issues of consistency in the final report between
20 the tables and chart and the text of the document.

21 And as I only had a few days to review
22 the report and I didn't have access to the more
23 detailed well-to-tank and tank-to-wheels
24 documents, we were unable as a an organization to
25 do a detailed review or to develop any kind of

1 consensus comments on, as an organization.

2 So I'd like you to consider my comments
3 today as those of just an individual. I can
4 provide these detailed comments to the staff but
5 primarily again they have to do with consistency.

6 For example, conclusions on page 17 that
7 hydrogen produced from natural gas using steam
8 reforming provides a 45 percent reduction in
9 greenhouse gas emissions compared to gasoline.
10 But the tables and charts indicate approximately
11 55 percent reductions.

12 So just looking for those to be
13 consistent. I think that if, with the attention
14 of this report will get and the fact that most
15 people won't go into the details of looking at the
16 charts and the tables. They'll just look at the
17 text.

18 Similarly there was an error between the
19 text and the charts and tables with regards to
20 hydrogen produced from electrolysis.

21 I'd also like to point out that that
22 same conclusion regarding natural gas does not
23 clarify that it applies to fuel-cell vehicles.
24 And that's a very important distinction as
25 internal combustion engine, hydrogen vehicles do

1 not provide the same kind of emission reduction
2 benefits. So that should be clarified.

3 And then the other point that I've
4 noticed as a change from the draft report without
5 any explanation that I can understand is the well-
6 to-wheel energy use for fuel-cell buses.

7 It's in the draft report showed a
8 reduction in energy use. In this report it shows
9 approximately the same amount of energy use. And,
10 in fact, both of these seem inconsistent with
11 recent results demonstrated by NREL for fuel-cell,
12 hybrid buses.

13 And those are operated by Sun Line
14 Transit and AC Transit where they're getting
15 double the fuel economy of diesel buses.

16 So it's difficult for me to understand
17 the different assumptions that went into this
18 report but I think that needs some extra
19 attention.

20 And finally, I'd just like to say that,
21 well actually one other point, there's a
22 conclusion on page 74, number 5 that talks about
23 benefits of electric-drive vehicles.

24 And I think this is an excellent
25 opportunity for the Commission to highlight the

1 similarities and common of all electric-drive
2 vehicles whether they're powered by batteries or
3 fuel cells. That all electric-drive technologies
4 can significantly reduce energy use and emissions.

5 So I'd like to suggest that fuel-cell
6 vehicles are also referenced in that conclusion.

7 So in conclusion I recognize the
8 Herculean effort that the staff and the
9 consultants have gone through and the fact that
10 this project has significantly expanded in scope
11 and attention given recent policy initiatives such
12 as a low-carbon fuel standard.

13 But I'd like to suggest that the CEC
14 needs to provide some more transparency regarding
15 the proposals that are being considered in this
16 process, better public notice and more opportunity
17 to review the draft and proposed reports in
18 advance of meetings and workshops.

19 So thank you very much for the
20 opportunity to comment today.

21 CHAIRPERSON PFANNENSTIEL: Thank you for
22 your comments. Let me just ask whether TIAX wants
23 to respond now or would rather meet later and go
24 through the specific comments.

25 MR. JACKSON: Let me just say a couple

1 of things. The analysis that was done was we made
2 some in working with ARB and other stakeholders
3 especially on the EERs or the efficiency numbers
4 in there were changed quite late in the game.

5 Like I think it was probably early or
6 mid, last week so it's not surprising to me there
7 might be some inconsistencies on the text compared
8 to the tables. But we believe that the tables and
9 the charts are the right numbers at this point.
10 And there may need to be some minor clean up on
11 the text but --

12 CHAIRPERSON PFANNENSTIEL: Staff will go
13 through and check out the changes.

14 MR. JACKSON: We apologize for that
15 inconsistency.

16 CHAIRPERSON PFANNENSTIEL: Thank you for
17 raising them.

18 MS. DUNWOODY: Thank you.

19 CHAIRPERSON PFANNENSTIEL: Jamie Knapp.

20 MS. KNAPP: Good morning Commissioners,
21 Chairwoman Pfannenstiel. I'm Jamie Knapp. I work
22 with the environmental community. I'm an
23 independent consultant. And you have heard from a
24 number of our individual groups and will today and
25 over the last several months of this process.

1 Among the organizations that I'm working
2 with, not necessarily representing specifically
3 today, but are American Lung Association of
4 California, Coalition for Clean Air, Center for
5 Energy Efficiencies and Renewable Technologies,
6 Friends of the Earth, Blue Water Network, Energy
7 Independence Now, National Resources Defense
8 Council and Union of Concerned Scientists.

9 You've heard from many of these groups
10 in group letters along the way. I'd like to
11 commend the staff for your hard work and your
12 effort today. Acknowledge that it has been a very
13 long and complex process. And we are pleased that
14 you are extending the second part of this report
15 getting more time for stakeholder input. That is
16 something that we had asked for. And we think it
17 is important.

18 I'd like to concur briefly with
19 Ms. Dunwoody's comments regarding consistency. We
20 have commented in similar fashion over the last
21 few months.

22 I can't speak to the specifics that she
23 identified but I know there have been similar
24 kinds of errors that we have noted in other draft
25 reports.

1 But mostly I'd like to talk a little bit
2 about the recommended adoption statement. And I
3 started first by looking at what was on the agenda
4 today. The recommendations and noticed that you
5 didn't have, did in fact have a more detailed
6 resolution.

7 But I note that in recommending approval
8 of the full fuel-cycle analysis methodology and
9 the other recommendations there's no comment here,
10 there's no recommendation that any of these that
11 the state move forward, that as the state is
12 moving forward that there is an acknowledgement
13 that we cannot backslide on air quality or
14 environmental impacts.

15 And so I'd like to suggest that in this
16 last recommendation that the California Air
17 Resources Board include regulations to establish a
18 low-carbon fuel standard, goals to reduce
19 petroleum by increasing alternative transportation
20 fuels and increased state biofuels production.

21 And that any activities within those
22 goals to increase the use of alternative fuels
23 result preferably in improved air quality. And
24 certainly not in any backsliding on air quality or
25 other negative environmental impacts.

1 I just think that that, and it doesn't
2 have to be exactly that language but I think we
3 want to capture that sentiment in the resolution.

4 Thank you very much.

5 CHAIRPERSON PFANNENSTIEL: Thank you.

6 Danielle Fugere.

7 MS. FUGERE: Good morning Commissioners.
8 My name is Danielle Fugere. I'm the Regional
9 Program Director for Friends of the Earth. And I
10 would echo what Jamie just discussed.

11 And I also only looked at the agenda.
12 So I'm glad to see, first of all to hear the
13 discussion of land use impacts and the importance
14 of getting that issue right in this analysis.

15 I'm so pleased to see that there's a
16 recommendation that the staff conduct a program to
17 do this.

18 And we'd like within that program to see
19 time frames, milestones and then plans for funding
20 additional studies where necessary so that you're
21 not dependent just on what's out there in the
22 community.

23 So we appreciate all of that. And we
24 also echo the need to have adequate time to
25 discuss the policy planning as it moves forward.

1 So we appreciate the delay in that, recognizing
2 that that's something that needs to be done.

3 So we appreciate all of your work and
4 also the fact that this is being done now in a
5 comprehensive manner in bringing together the
6 various policies and various agencies. So we
7 support that as well and all of your efforts. So
8 thank you.

9 CHAIRPERSON PFANNENSTIEL: Thank you for
10 being here. Francisco Gutierrez.

11 MR. GUTIERREZ: Good morning
12 Commissioner. My name is Francisco Gutierrez and
13 I'm with Caltrans, Equipment Division.

14 And I just want to express the viewpoint
15 that we highly encourage the Energy Commission to
16 include the yellow grease in the biodiesel fuel
17 feed stock.

18 We are especially interested in that
19 probably because we use yellow grease biodiesel
20 for our fuel. And we would like, if possible, to
21 have that included in this particular report so
22 that we would probably want to know how yellow
23 grease measures up with the other grease.

24 And also we do not want to be in a
25 position to justify and also to defend the impact,

1 the environmental impact, the greenhouse gas
2 emission and also the energy use and so on.

3 So if it would be possible we would like
4 that to be included in this report. Thank you.

5 CHAIRPERSON PFANNENSTIEL: Thank you.

6 COMMISSIONER BOYD: Madame Chair I'd
7 like ask the staff or Mr. Jackson if yellow
8 grease, per se, isn't, in effect, in the analysis
9 and in the arena of biodiesel.

10 MR. JACKSON: We certainly recognize
11 that that was one of the options Commissioner
12 Boyd. But it was not included in the current set
13 or one of the pathways. It could be.

14 COMMISSIONER BOYD: Okay, we've had
15 enough testimony on that subject in the past that
16 I presume it'll be on the agenda for discussion of
17 the biodiesel issue, particularly within the
18 framework of the bioenergy, interagency, working
19 group who had extensive discussion on that
20 subject.

21 I won't get into details of, we got into
22 sewer grease and everything else (laughter). But
23 nonetheless I know it's on the table but a point
24 well made.

25 CHAIRPERSON PFANNENSTIEL: Sorry, this

1 is either Joan Shears or John Shears.

2 MR. SHEARS: It's Jonathan.

3 CHAIRPERSON PFANNENSTIEL: It's John
4 (laughter). I knew I gave detail (laughter).

5 MR. SHEARS: We're thankful for that.

6 Good morning Commissioners. My name is John
7 Shears. I'm the research coordinator with the
8 Center for Energy Efficiency and Renewable
9 Technologies.

10 I would just like to speak in support of
11 the comments that Catherine Dunwoody and Jamie
12 Knapp had made regarding these issues around some
13 of the challenges the staff has had with their, as
14 Catherine put it, Herculean effort to pull this
15 lifecycle analysis report together given some of
16 the hiccups stuff to deal with along the way.

17 And to see to the letter that a lot of
18 the organizations that Jamie already listed. But
19 we did submit a letter in support of seeking the
20 extension for staff in order for them to have some
21 breathing room.

22 Because I know that they and the
23 consultants have had a challenging time trying to
24 get all the work product done given the scope of
25 the work and some of the policy and course

1 corrections that are sort of happened along the
2 way.

3 So I just want to speak in support of
4 the extension and also to remind the Commission
5 that, of course, if they need any assistance in
6 discussions with leadership regarding that issue
7 that we're willing to help with.

8 As far as the resolution goes I just
9 want to ask specifically that we, it's not clear
10 to me when we're talking about land use impacts if
11 we're just talking about potential climate
12 foreseen related issues on land use impacts or if
13 the intent in the use of the term in the
14 resolution is referring to the challenge of trying
15 to get our hands around sustainability.

16 So I just want to raise the issue that
17 one of the big challenges going forward whether
18 under the context of AB 1007 or the Low Carbon
19 Fuel Standard, going forward for all of these low-
20 carbon fuels is determining how to produce these
21 in a sustainable manner.

22 And of course the first big issue, the
23 first big challenge in that discussion is actually
24 defining what we mean by sustainability let alone
25 then helping provide guidance to staff in terms of

1 what work would need to be done in order for us to
2 start crafting a system for collecting data,
3 monitoring and regulating sustainable practices.

4 And there are also a lot of challenges
5 in terms of what happens inside California versus
6 what happens outside of California.

7 So I would just ask if we could get
8 some, see some clarification on or I would ask
9 that maybe we be a little more explicit in that we
10 should be looking more broadly at sustainability
11 when we're talking about wineries impacts. Thank
12 you.

13 CHAIRPERSON PFANNENSTIEL: Thank you.
14 Dwight Stevenson.

15 MR. STEVENSON: Good morning
16 Commissioners. My name is Dwight Stevenson. I'm
17 with Tesoro Petroleum.

18 And I have some questions for TIAX if I
19 could ask them. The issue of land use was that
20 considered for corn ethanol for instance, was
21 there a land use factor put in there for what that
22 land could have been doing for carbon capture?

23 MR. JACKSON: GREET has the current
24 version of GREET that we used has a small factor
25 in there for land use. But it does not account

1 for things, for example, of taking expanding,
2 vastly expanding corn to ethanol production by
3 going to non-ag lands or non-crop lands right now.

4 That kind of switch is not there. Or,
5 for example, in the case, the one case that has
6 been in the papers a lot is palm oil production
7 from Indonesia is a good example.

8 That is not in, those kinds of
9 corrections are not in the model. That's why it's
10 very important that land conversion has to be
11 thought of in the future.

12 MR. STEVENSON: Did the Commissioners
13 believe that there should be some estimate of that
14 included in this.

15 CHAIRPERSON PFANNENSTIEL: Maybe in the
16 resolution that we are considering it does point
17 out that we should consider that issue.

18 MR. STEVENSON: I believe the resolution
19 approves the work as is without the estimate
20 though.

21 CHAIRPERSON PFANNENSTIEL: But we are
22 considering acknowledging the need for updates
23 such as land use index.

24 MR. STEVENSON: But it approves as is
25 right now.

1 CHAIRPERSON PFANNENSTIEL: The
2 resolution is that we are considering is actually
3 out there so you can read what we would be
4 approving.

5 MR. STEVENSON: One other comment, I
6 would support Commissioner Boyd's point to include
7 a biostream that is not encumbered by similar
8 kinds of land use and that is agricultural waste.
9 Is there, and that is also going to be resolved to
10 consider doing that?

11 COMMISSIONER BOYD: Well I think within
12 the context of finishing the plan we are offered
13 an opportunity to address a lot of the points that
14 are being made here today in the overall push to
15 define our alternative fuels futures.

16 I think you've sat through some of the
17 other workshops. And for those of us who followed
18 all the public discussion of this subject and the
19 low-carbon fuel standard development have
20 recognized and now we're getting into the model
21 debate.

22 And as I indicated earlier while I think
23 this is a big bite and a deep dive into the
24 subject area we recognize and everybody
25 recognizes, academia and otherwise that more needs

1 to be done.

2 One of the driving forces for this
3 agency putting more money into the next phase of
4 the GREET model is to address some of the issues
5 that you've raised.

6 And I know the ARB is interested in the
7 GREET model and other models that have been tossed
8 into the arena in the recent debate. However
9 models that have not had nearly the amount of peer
10 review that GREET has, what we're dealing with
11 here is typical but society has to deal with the
12 absolute best there is to deal with at a point in
13 time when you have to make these decisions.

14 And the GREET California Model as it's
15 known is the best there is in our opinion. And
16 with its limitations we'll move forward on the
17 subject.

18 And we've all acknowledged the need and
19 I think the University of California folks have
20 also indicated the need to just continuously
21 improve and update what the knowledge we have and
22 the comprehensiveness of models that are used by
23 decision makers in making recommendations.

24 Fortunately I think we have enough time
25 in both in terms of implementing any alternative

1 fuel plans, short term, mid term, and I think the
2 ARB has plenty of time in its 18 month time frame
3 to recognize, acknowledge and provide input on
4 some of the questions that I hear being raised
5 today.

6 So they're good questions and they will
7 be dealt with. Some of them aren't dealt with to
8 the satisfaction of all and at this moment in time
9 I mean today.

10 MR. STEVENSON: One other comment. As a
11 modeler myself, I'm --

12 COMMISSIONER BOYD: Ah, seeking
13 perfection, excuse me.

14 MR. STEVENSON: -- very willing to, well
15 it's a continual process but at all times it seems
16 like it's prudent to make a best estimate.

17 And I would ask that we do make a best
18 estimate on the land use impacts.

19 CHAIRPERSON PFANNENSTIEL: Thank you.
20 Do we have someone on the phone? Please go ahead.
21 She's not there?

22 MS. JUNQUERA: (Via phone) Can you hear
23 me?

24 CHAIRPERSON PFANNENSTIEL: Yes we can.
25 Please identify yourself for the record.

1 MS. JUNQUERA: Hi this is Victoria
2 Junquera with ERM. We're an environmental
3 consulting firm that was commissioned by the
4 Western States Petroleum Association to perform a
5 review of the TIAX model.

6 ERM reviewed the February draft and the
7 final June report and submitted comments on both
8 reports.

9 And I just wanted to reiterate your
10 general opinion of the final plan model. We
11 believe that performing more about sensitivity
12 analysis of the model is very important in order
13 to be able to use the model for regulatory
14 purposes.

15 In other words we would like to see the
16 final result with a plus, minus associated with it
17 so that it is understood what kind of
18 uncertainties associated with the final results.

19 And just a quick comment on other
20 technical issues that we brought up that TIAX
21 agreed needed further study.

22 Of course, the much discussed land use
23 issue as well as agricultural runoff and water use
24 which were not taken into account in the model.

25 And finally nitrogen oxide, nitrous

1 oxide rather emissions pathways are treated in a
2 simplistic way in the final TIAX model where other
3 fuel cycle models treat it in a much more
4 sophisticated manner and look at many different
5 nitrous oxide emission pathways. That was another
6 one of ERM's comments. Thank you very much.

7 CHAIRPERSON PFANNENSTIEL: Thank you
8 very much. Barbara Fry.

9 MS. FRY: Good morning Commissioners.
10 I'm Barbara Fry. I'm Chief of the Measures
11 Assessment Branch of the Air Resources Board.

12 And on behalf of the Air Resources Board
13 we recommend that you adopt the full fuel cycle
14 analysis today that was prepared in response to
15 the legislation.

16 And we acknowledge that based on
17 previous comments from the fuel cell collaborative
18 we did ask TIAX to increase the efficiency of the
19 hydrogen. And they did do that.

20 And that may have resulted in some inconsistencies
21 in tables, but the numbers reflect better energy
22 efficiency for hydrogen vehicles. So that issue
23 was addressed.

24 And we do acknowledge that there's going
25 to be updates needed. As part of this process

1 we'll have to update it to reflect land use and
2 other issues as they arise. But we think it's
3 important that you proceed today to adopt this
4 fuel cycle analysis as the best available to date
5 with the knowledge that it will be updated later.

6 And then we'll use it to develop the
7 plan and refine it as we proceed with the low-
8 carbon fuel standard, thank you.

9 CHAIRPERSON PFANNENSTIEL: Thank you.
10 Any other comments, anybody else in the room or on
11 the phone who'd like to comment to us on the
12 subject?

13 If not, Commissioners we have in front
14 of us a resolution, and I know there are some on
15 the table outside. There are also two changes
16 that we have heard, suggested for this resolution.

17 One would be to add and I would suggest
18 it's probably in the next to the last bullet, some
19 recommendation to the Air Resources Board that
20 they don't allow a degradation of other pollutants
21 and somebody might want to work on the language.

22 COMMISSIONER GEESMAN: Madame Chair.

23 CHAIRPERSON PFANNENSTIEL: Commissioner
24 Geesman.

25 COMMISSIONER GEESMAN: Let me try on

1 that one. Looking at that bullet and at the very
2 beginning of the litany of goals where it
3 currently starts out with, to reduce petroleum
4 use, I would suggest that we insert, to improve
5 air quality, comma.

6 CHAIRPERSON PFANNENSTIEL: Excellent.
7 Are there other? There was a suggestion that we
8 change the description of ongoing updates for land
9 use impacts. I don't know whether anybody wants
10 to suggest some wording changes there. I think
11 that the language that is there is sufficient for
12 my comfort level.

13 COMMISSIONER BOYD: I would think within
14 the context of the discussion we've had, this
15 resolution and the work that your committee is
16 doing on the 2007 Integrate Energy Policy Report,
17 and the strong recommendations in the 2005 report
18 which guided the discussion in the 2006 update,
19 which are guiding your work, pretty well send a
20 strong signal to everyone that we're deep into
21 land use. And I don't see John Shears anymore but
22 I think it's both tracks that he's concerned
23 about.

24 Just the general VMT reduction concepts
25 of land use, if I may use that, and then the land

1 use aspects associated with the production of
2 various fuels I think are intended in the work of
3 all -- our agency and I know with regard to the
4 ARB. So I for one think the language is, it would
5 be hard to make it so comprehensive that we make
6 everybody feel like they're satisfied.

7 Again, that's a long way around saying
8 that the language here is pretty good. But I'm
9 certainly open to any thoughts any other
10 Commissioners might have.

11 CHAIRPERSON PFANNENSTIEL: Well with
12 that is there a motion for approving the
13 resolution as modified by Commissioner Geesman's
14 addition as we have in front of us now. I'm not
15 intending to read the entire resolution.

16 COMMISSIONER BOYD: I'd like to make a
17 motion to approve the resolution but I want to
18 bring up two additional points.

19 That one, Mr. Jackson indicated in his
20 opening remarks that there were minor errors and
21 at that time we clarified that they were non-
22 substantive. They were pagination, grammatical,
23 et cetera errors that need to be taken into
24 account before we actually pass the report on to
25 the ARB. And I think it just goes without saying.

1 And I guess secondly as a result of
2 Ms. Dunwoody's testimony the idea of also assuring
3 internal consistency between language and tables.
4 And I think Mr. Jackson acknowledged that that can
5 be handled. So I would move approval of this
6 resolution and this report, taking into account
7 those facts and Commissioner Geesman's suggested
8 modification.

9 CHAIRPERSON PFANNENSTIEL: Is there a
10 second?

11 COMMISSIONER BYRON: As associate member
12 of the Transportation Committee I'd like to also
13 provide my support for this resolution.

14 Although I think we're probably all a
15 little bit disappointed that we can't be providing
16 more at this point. I am also convinced and very
17 supportive of the approach that the additional
18 time will produce a much more valuable report and
19 also I think give us a little more time for the
20 necessary review of the stakeholders that we're
21 looking for. So I second the motion.

22 CHAIRPERSON PFANNENSTIEL: Thank you.
23 Further discussion? Commissioner Geesman? No.

24 COMMISSIONER BOYD: I would just like to
25 thank all the stakeholders.

1 CHAIRPERSON PFANNENSTIEL: I would like
2 to -- and the staff. A lot of extra efforts went
3 into this.

4 COMMISSIONER BOYD: Those who went out
5 on the limb with us to acknowledge the need to
6 delay this approval. It is with great trepidation
7 that bureaucratic agency suggest not meeting a
8 legislative deadline. And I appreciate the
9 support we've had from everyone else in
10 recognizing that and conveying that fact to all
11 the policy makers and leaders. Otherwise it would
12 be very lonely out there.

13 CHAIRPERSON PFANNENSTIEL: With that
14 I'll call for a vote. All in favor.

15 (Ayes.)

16 CHAIRPERSON PFANNENSTIEL: Any opposed?
17 It's approved. Thank you all.

18 COMMISSIONER BOYD: Good job by all.

19 CHAIRPERSON PFANNENSTIEL: We'll be
20 adjourned.

21 (Whereupon, at 11:00 a.m., the
22 special business meeting was
23 adjourned.)

24 --o0o--

25

CERTIFICATE OF REPORTER

I, RAMONA COTA, an Electronic Reporter, do hereby certify that I am a disinterested person herein; that I recorded the foregoing California Energy Commission Special Business Meeting; 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 meeting, nor in any way interested in outcome of said meeting.

IN WITNESS WHEREOF, I have hereunto set my hand this 10th day of July, 2007.

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