

MEETING
STATE OF CALIFORNIA
ENVIRONMENTAL PROTECTION AGENCY
AIR RESOURCES BOARD
2014 LOW CARBON FUEL STANDARD
ADVISORY PANEL

CAL/EPA HEADQUARTERS BUILDING
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A P P E A R A N C E S

ADVISORY PANEL MEMBERS:

Mr. Jack Kitowski, Chairperson, Air Resources Board

Ms. Carolyn Lozo, Co-Chairperson, Air Resources Board

Ms. Edie Chang, Deputy Executive Officer, Air Resources Board

Mr. William Barrett, American Lung Association

Ms. Stephanie Batchelor, Biotechnology Industry Organization(via teleconference)

Mr. Chris Bliley, Growth Energy

Mr. Eric Bowen, Renewable Energy Group

Mr. Stephen Brink, California Forestry Association

Mr. Todd Campbell, Clean Energy

Mr. Geoff Cooper, Renewable Fuels Association
(via teleconference)

Mr. David Cox, Renewable Natural Gas Coalition

Mr. Nick Economides, Chevron Corporation

Mr. Robert Elam, Propel Fuels, Inc.

Mr. Bob Epstein, Entrepreneur
(via teleconference)

Mr. Miles Heller, Tesoro Corporation

Mr. Christopher Hessler, AJW, Inc.

Mr. Henry Hogo, South Coast Air Quality Management District

Mr. James Holland, Kinder Morgan Energy Partners

Ms. Jill Kauffman Johnson, Solazyme

Mr. Adam Langton, California Public Utilities Commission

A P P E A R A N C E S C O N T I N U E D

PANEL MEMBERS:(Continued)

Mr. Christopher Malins, International Council on Clean Transportation(via teleconference)

Mr. Ralph Moran, BP America, Inc.

Mr. Allan Morrison, California Department of Food and Agriculture

Mr. Simon Mui, Natural Resources Defense Council

Mr. Tim Olson, California Energy Commission

Ms. Cathy Reheis-Boyd, Western States Petroleum Association

Mr. Frederick Sciance, General Motors

Mr. John Shears, The Center for Energy Efficiency and Renewable Technologies(via teleconference)

Mr. H. Daniel Sinks, ConocoPhillips, Inc.

Mr. David Stern, ExxonMobil Refining and Supply Company

Mr. Russell Teall, Biodiesel Industries, Inc.

Ms. Eileen Tutt, California Electric Transportation Coalition

Mr. Paul Wuebben, Carbon Recycling International

Ms. Sonia Yeh, University of California, Davis

ALTERNATE PANEL MEMBERS:

Mr. Harrison Clay, Clean Energy, alternate for Todd Campbell

Ms. Stacy Hopkins, ExxonMobil Refining and Supply Company, alternate for David Stern

A P P E A R A N C E S C O N T I N U E D

STAFF:

Mr. Will Brieger, Staff Counsel

Ms. Kirsten King, Low Carbon Fuel Standard Economist

Mr. Jose Saldana, Air Pollution Specialist

Mr. Mike Waugh, Chief, Transportation Fuels Branch

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

2 CO-CHAIRPERSON LOZO: Okay. I think we are ready
3 to get started.

4 Good morning, everyone. I'm Carolyn Lozo, your
5 Co-Chair today. Welcome back to the second meeting of the
6 2014 LCFS Advisory Panel. We're really glad that you're
7 all here today and anxious to hear your input. We always
8 really appreciate the conversations that we have at these
9 meetings. We have a nice full day ahead with a lot to
10 discuss.

11 So we'll get through just a couple of
12 housekeeping items, and then we'll move to some
13 introductions, and then we'll get into discussions. So as
14 usual, I think all of you have been to this building many
15 times, but the restrooms and the drinking fountain are out
16 the door to the left all the way to the end of the hall.
17 The cafe, of course, is downstairs at the bottom of the
18 stairs to your right. And if we do happen to hear a fire
19 drill, go downstairs and out the front entrance, and then
20 straight across the street to the park.

21 Okay. I think we can probably get started with
22 introductions. Again, I'm Carolyn Lozo, and I'm your
23 Co-Chair today for the meeting. And maybe we'll just move
24 directly around this way.

25 Oh, also, one final -- one more reminder that's

1 real important is we do have a transcriber today recording
2 the meeting, so if you could all please be real careful to
3 identify yourself and speak right into the microphone, I
4 think that's extra important today.

5 Thank you.

6 PANEL MEMBER BOWEN: Eric Bowen Renewable Energy
7 Group.

8 PANEL MEMBER YEH: Sonia Yeh, University of
9 California at Davis.

10 PANEL MEMBER JOHNSON: Jill Kauffman Johnson with
11 Solazyme.

12 PANEL MEMBER MUI: Good morning, Simon Mui,
13 Natural Resources Defense Council.

14 PANEL MEMBER MORRISON: Good morning. Allan
15 Morrison with California Department of Food and
16 Agriculture.

17 PANEL MEMBER TEALL: Russ Teall, Biodico and
18 California Biodiesel Alliance.

19 PANEL MEMBER HOLLAND: James Holland,
20 Kinder-Morgan Energy Partners.

21 PANEL MEMBER HELLER: Miles Heller, Tesoro.

22 PANEL MEMBER MORAN: Ralph Moran with BP.

23 PANEL MEMBER WUEBBEN: I'm Paul Wuebben, Carbon
24 Recycling International and the Methanol Institute.

25 PANEL MEMBER REHEIS-BOYD: Kathy Reheis-Boyd

1 WSPA.

2 PANEL MEMBER STERN: David Stern, ExxonMobil

3 ALTERNATE PANEL MEMBER HOPKINS: Stacy Hopkins,
4 ExxonMobil.

5 PANEL MEMBER SINKS: Dan Sinks, Phillips.

6 PANEL MEMBER BLILEY: Chris Bliley, Growth
7 Energy.

8 PANEL MEMBER BARRETT: Will Barrett, American
9 Lung Association of California.

10 PANEL MEMBER HOGO: Henry Hogo, South Coast Air
11 Quality Management District.

12 PANEL MEMBER OLSON: Tim Olson, California Energy
13 Commission.

14 PANEL MEMBER SCIANCE: Fred Sciance, General
15 Motors.

16 PANEL MEMBER ELAM: Rob Elam, Propel Fuels.

17 PANEL MEMBER COX: David Cox, Coalition for
18 Renewal Natural Gas.

19 PANEL MEMBER HESSLER: Chris Hessler with AJW.

20 CHAIRPERSON KITOWSKI: Thank you. And I'm Jack
21 Kitowski, Co-Chair of this Panel, Air Resources Board.

22 A couple of things to start. Yes, Tim, it is a
23 coincidence that your microphone doesn't work. There's no
24 personal commentary on that at this point. I just
25 probably should start off that way.

1 I also want to -- oh, before I go on. Should we
2 go on the phone and see who's on the phone?

3 PANEL MEMBER MALINS: Hi. You've got Chris
4 Malins from the International Council on Clean
5 Transportation.

6 PANEL MEMBER COOPER: This is Geoff Cooper with
7 Renewable Fuels Association.

8 PANEL MEMBER BATCHELOR: Stephanie Batchelor from
9 Bio.

10 PANEL MEMBER EPSTEIN: Bob Epstein with E2.

11 PANEL MEMBER SHEARS: John Shears with CEERT.

12 CHAIRPERSON KITOWSKI: Great. Okay. So thank
13 you for being here. I did want to make a comment. Edie
14 asked me to apologize. She's going to be a few minutes
15 late. She's excited about the day's conversations. She
16 also wanted to make sure she mentioned, if she doesn't get
17 a chance to do it that she has to leave at 10:30 for about
18 an hour, but that's no reflection on whoever happens to be
19 talking at the time. That's a prior commitment, and she
20 will be back in about an hour for the majority of the
21 discussion today.

22 I think Carolyn and I feel a little lonely up at
23 this end of the table, but I know Mike is going to be on
24 the hot seat up here a little bit later, and Edie will be
25 joining us, so it will feel nice and comfortable in a

1 little bit.

2 I wanted to extend my thanks as well for your
3 attendance, for your insight, for your contributions to
4 this Panel. I actually think, you know, at this point,
5 where we're at in our process, as we've talked about
6 before, it's a different process than before. We're in
7 the middle of a regulatory re-adoption process, which was
8 different than the Advisory Panel happened before, so we
9 have a lot of workshops going on. We have a lot of
10 information coming out. And we're using this Panel in
11 that process to provide information to us and to the --
12 and to the Board.

13 At this point -- my thought at this point, and I
14 think the Panel -- the timing for this Panel is really
15 good. We have -- probably 90 percent of the information
16 we're going to have for our regulatory program. The
17 information is all there. We've shared much of it
18 already, GREET and GTAP and iLUC and OPGEE and fuel
19 supply. And we've had these workshops and many of you
20 have attended these workshops and contributed during that
21 workshop. That information is all out there. We've taken
22 that information today and pulled together kind of the key
23 pieces of that to share with you today.

24 And what we're going to be doing over the next
25 couple of weeks, we're going to be getting some additional

1 information in, but largely what we're doing is taking
2 this information, which we've shared out there, pulling it
3 together, and developing compliance strategies, and
4 regulatory proposals from that information. So this
5 timing of this Advisory Panel is really good for us. We
6 want your insight into the information that is out there
7 right now, and your thoughts and ideas on that
8 information. And we want your insight into how we, over
9 the next several weeks, should be analyzing that
10 information, taking that information, and using that to
11 develop our compliance strategies. So the insight of this
12 group will be particularly useful in that way.

13 With that, I don't have any other opening
14 comments, and we are joined by our Deputy Executive
15 Officer.

16 Carolyn.

17 CO-CHAIRPERSON LOZO: Okay. Let's get going.
18 Again, we have a nice full day -- a nice full schedule
19 today, and a lot to talk about, and we really want to make
20 sure that you all have an opportunity to provide us with
21 your comments and have this discussion.

22 We're planning to touch on basically all aspects
23 of the LCFS regulation. We're going to be talking about
24 all of the 13 topics that are in the regulation, but if
25 there's anything that you would like to discuss that we

1 don't happen to touch on, we do have some time towards the
2 end of the day that we can add something in, so keep that
3 in mind.

4 Okay. So we're going to start today --

5 PANEL MEMBER STERN: Just a very quick question
6 about the procedural aspects of satisfying the CEQA and
7 the re-adoption. Can you comment a little bit about what
8 you see the schedule of both going to the Board and
9 satisfying the CEQA?

10 CO-CHAIRPERSON LOZO: We will be talking a little
11 bit later about our approach to CEQA. That is on the
12 agenda. Is that what you're saying, David?

13 PANEL MEMBER STERN: Yes.

14 CO-CHAIRPERSON LOZO: Okay. Yeah, that's on the
15 agenda today.

16 Oh, right. You mean the cards?

17 Yeah. Can everyone make sure that your cards are
18 lifted up a little bit so that everyone knows -- so that
19 we can be identified. And then again just another
20 reminder to make sure that you identify yourself when
21 you're speaking.

22 Thank you.

23 CHAIRPERSON KITOWSKI: What I was actually
24 referring to is if you'd like to talk, please, if you'd
25 put your cards on end, we can see that visibly a lot

1 clearer. And it's a nice indicator for us to know who's
2 next

3 (Thereupon an overhead presentation was
4 presented as follows.)

5 CO-CHAIRPERSON LOZO: Okay. Good reminder.

6 Okay. Today, we're going to start out with just
7 a brief overview, once again of the Bagley-Keene Open
8 Meeting Act. We're going to go briefly over the Panel
9 Charter. We'll talk about the discussions that we had at
10 our May meeting. We'll talk about the current program
11 status, our progress towards targets.

12 --o0o--

13 CO-CHAIRPERSON LOZO: Then we'll go into a
14 discussion advances in lifecycle analysis. We'll spend
15 some time on fuel availability, the compliance schedule,
16 cost containment, and harmonization. And then we'll go
17 into the economic analysis, the environmental analysis.
18 And then that's when we'll have a little bit of time, if
19 there are any discussions that we need to add on to that.

20 We then have a little bit of time for the public
21 to make comments, if necessary, before our closing.
22 Remarks.

23 --o0o--

24 CO-CHAIRPERSON LOZO: Okay. So I believe Will
25 Brieger of our legal team is going to be going over some

1 highlights of the Bagley-Keene Open Meeting Act.

2 STAFF COUNSEL BRIEGER: Yes, good morning. Will
3 Brieger from ARB's Legal. I think everyone was advised
4 last meeting. The same rules still apply, which
5 essentially boil down to do not do the work of this
6 Committee with a majority of this group anywhere but in a
7 public meeting. So I don't think it should be a problem,
8 but if there are questions, obviously feel free to ask.

9 --o0o--

10 CO-CHAIRPERSON LOZO: Okay. Any questions at all
11 on our responsibilities under the Act?

12 All right. All right. Next, we're just going to
13 go over a brief review of the Panel Charter. And I think
14 you're all pretty familiar with it, so I'll just go over a
15 couple of highlights.

16 You're familiar with the fact that convening a
17 panel is a regulatory requirement, and that the list of
18 topics from the regulation we'll be touching on all of
19 those topics. And attached to your agenda is a list of
20 those topics if you want to refer to them.

21 And again, because we are submitting a report to
22 the Board the first of the year, 2015, we have a
23 transcriber here today who is recording our comments and
24 our discussions, and we will be including that in with the
25 report to the Board at the end of this year, first of next

1 year.

2 Okay. Again, just a reminder that our
3 discussions today are, as in the past, generally focused
4 on a higher level. We'll be talking about policies and
5 approaches to the program. We, of course, however, as
6 always invite you to participate in our workshops. We've
7 had many of them since we last met in May, and we have
8 more scheduled over the next couple of months, so please
9 participate and provide comments through that process.

10 We'll talk about our schedule for workshops in
11 just a moment.

12 --o0o--

13 CO-CHAIRPERSON LOZO: And you're familiar with
14 the fact that we have representatives from many different
15 areas on our Panel.

16 --o0o--

17 CO-CHAIRPERSON LOZO: And Jack and I are here to
18 make sure that the discussions remain as focused as
19 possible, to clarify discussions if necessary, to provide
20 you with a meeting summary after the meeting, and then, of
21 course, as I said, to provide that report to the Panel
22 first of the year.

23 --o0o--

24 CO-CHAIRPERSON LOZO: As Panel members, make sure
25 you keep your comments as focused as possible. Very

1 specific comments are very helpful to us, so if we can try
2 to do that as much as possible.

3 --o0o--

4 CO-CHAIRPERSON LOZO: And then, of course, just a
5 reminder to please treat everyone and their opinions with
6 respect. Allow one person to speak at a time. Be
7 courteous and try not to engage in side conversations,
8 and, of course, avoid representing to the public or media
9 any views of another Panel member or the Panel as a whole.

10 --o0o--

11 CO-CHAIRPERSON LOZO: If you're a member of the
12 public in the room and you would like to comment a little
13 bit later today when we have time for public comments,
14 there are some cards at the back of the room on the table,
15 if you could fill one out and then come up to the podium
16 to make your comments.

17 And also, if you're a member of the public and
18 you're on the phone line, we'll be opening up the public
19 lines a little bit later for those comments.

20 --o0o--

21 CO-CHAIRPERSON LOZO: All right. Now, I'd like
22 to provide that short summary of our May meeting.

23 CHAIRPERSON KITOWSKI: Before we go on to that,
24 there's a couple of people who came in just a little late.
25 If we can do introductions of those, I think that would be

1 good thing.

2 PANEL MEMBER ECONOMIDES: Nick Economides with
3 Chevron.

4 PANEL MEMBER TUTT: Eileen Tutt with the
5 California Electric Transportation Coalition.

6 CO-CHAIRPERSON LOZO: I think that was it.
7 Anyone else come in late?

8 Oh, Ralph.

9 PANEL MEMBER MORAN: I'm just wondering if there
10 are copies of the presentation available?

11 CO-CHAIRPERSON LOZO: I did not make copies of
12 the presentation today. We can have some made, if you
13 need one.

14 PANEL MEMBER MORAN: That would be good. Thank
15 you.

16 CO-CHAIRPERSON LOZO: Would you like a copy,
17 Ralph?

18 PANEL MEMBER MORAN: I would.

19 CO-CHAIRPERSON LOZO: Okay. I apologize for
20 that. Trying to save paper, but we'll get some copies for
21 you.

22 Okay. A summary of our May meeting. At the
23 meeting, we spent a significant portion of the meeting
24 discussing our approach to the analysis of fuel
25 availability. We discussed each alternative fuel and the

1 potential for growth for each of those fuels. And we also
2 discussed how the compliance curve included in the reg
3 re-adoption would be based on this expected fuel
4 availability, but it would also be based on a certain
5 degree of market push, or, according to Mr. Mike Waugh, a
6 little bit of giddy-up.

7 --o0o--

8 CO-CHAIRPERSON LOZO: We discussed the GREET
9 model at the last meeting and our reasoning for updating
10 to CA-GREET 2.0 based on Argonne's GREET 201313. We also
11 discussed our approach to the economic analysis for the
12 reg re-adoption, and the factors that would be included in
13 our analysis, and then the model that we would use to
14 estimate impacts on the California economy.

15 --o0o--

16 CO-CHAIRPERSON LOZO: We examined potential
17 approaches to cost containment under the regulation. And
18 we discussed our plan environmental analysis according to
19 CEQA requirements. And finally, we highlighted the
20 Pacific Coast Collaborative and the work being done to
21 move toward an LCFS regulation in nearby states.

22 --o0o--

23 CO-CHAIRPERSON LOZO: All right. Let's move on
24 to the current status of the program, and our progress
25 towards program targets.

1 containment provision.

2 --o0o--

3 CO-CHAIRPERSON LOZO: All right. Let's touch on
4 the specifics regarding the legal cases involving the LCFS
5 regulation. In the federal lawsuit, the Ninth Circuit
6 Court of Appeals ruled that the ethanol provisions in the
7 LCFS were not facially discriminatory, that the 2011 crude
8 oil provisions were not discriminatory, and that the LCFS
9 was not an impermissible extra territorial regulation.

10 Other constitutional issues were remanded to the
11 District court in Fresno for further proceedings. And the
12 UC Supreme Court declined to review the Ninth Circuit's
13 decision.

14 --o0o--

15 CO-CHAIRPERSON LOZO: In the State lawsuit, the
16 Fifth District Court of Appeal found procedural errors in
17 the 2009 LCFS adoption that ARB must address by
18 re-adopting the regulation. The court left the regulation
19 in place, but implementation, as you know, has been frozen
20 at the 2013 level.

21 The Board will consider adoption of the
22 alternative diesel fuel regulation and the re-adoption of
23 the LCFS early in 2015.

24 --o0o--

25 CO-CHAIRPERSON LOZO: Amendments we plan to

1 propose to the Board with the regulation re-adoption are
2 listed here. Several of these amendments were discussed
3 with stakeholders at public workshops starting in 2013.
4 We see this as an opportunity to make improvements to the
5 regulation considering the experience that we have gained
6 over four years of implementation.

7 --o0o--

8 CO-CHAIRPERSON LOZO: Okay. We've been very busy
9 since March working on this process. We began our public
10 workshops for the re-adoption. We presented our concepts
11 for the framework of the regulation, and we also discussed
12 indirect land use change values. Since then, we've had
13 several topic-specific workshops on fuel pathways and
14 producer facility registration, on cost containment
15 provisions, crude and refinery provisions, enhancements to
16 reporting and record keeping requirements, and enforcement
17 provisions.

18 We've also presented draft regulation language
19 for refineries and crude oil provisions and for regulated
20 party provisions. And then in July, we presented to the
21 Board an update on the LCFS program.

22 --o0o--

23 CO-CHAIRPERSON LOZO: And then continuing in
24 August, we had a workshop on the transition to the
25 California modified GREET 2.0 model. Last month, we

1 discussed with stakeholders fuel availability, refinery
2 investment provisions, and indirect land use values. So
3 we've been very busy, a lot of workshops.

4 Our next workshop will take place in about three
5 weeks, where we will discuss compliance scenarios and cost
6 containment provisions. So that's on a Monday, three
7 weeks from today.

8 We have a tentative date of November 18th for our
9 final workshop on the complete re-adoption proposal. And
10 we'll present to the Board a proposal at the February
11 Board hearing scheduled for February 19th and 20th here in
12 Sacramento.

13 --o0o--

14 CO-CHAIRPERSON LOZO: Okay. This is a chart
15 you've all seen many times. We've added a little bit of
16 data to it since -- maybe since the last time you saw it.
17 This bar chart shows the number of credits in blue and the
18 number of deficits in red that have been generated by
19 regulated parties since the implementation of the LCFS.

20 As you can see in aggregate, regulated parties
21 have generated more credits than deficits each quarter,
22 overcomplying with the LCFS, while the CI reduction
23 standards have been modest.

24 --o0o--

25 PANEL MEMBER REHEIS-BOYD: Should we ask

1 questions now or wait till the end?

2 CO-CHAIRPERSON LOZO: You can ask a Question, if
3 you'd like to, Kathy.

4 PANEL MEMBER REHEIS-BOYD: Okay. Thank you. I'm
5 just curious if there's any concern over the decline in
6 the available credits. I know -- I'm looking at the
7 proportion looks close, but is there any concern over
8 future credits as the program ramps up or have you looked
9 at that yet?

10 CHAIRPERSON KITOWSKI: I would say we're not
11 concerned at this point. I think this is -- we're in a
12 fairly anomalous spot with being frozen as we are as long
13 as we have, and so we're interested to see where we go
14 with where the market goes once we re-adopt the proposal.
15 And I think that may be more pertinent data to monitor and
16 look at, but, no I wouldn't -- I wouldn't think -- I'm not
17 concerned at this point.

18 Is there a specific part of that that you think
19 is happening out there that maybe we're not seeing?

20 PANEL MEMBER REHEIS-BOYD: No, I was just
21 curious. I'm sure that obviously those are thoughts that
22 you have going forward in the future, so I can't imagine
23 there's no thinking going on about this. So I was just
24 curious how much at this point in time. And it sounds
25 like not much, given where we are currently, but maybe --

1 I'm assuming there will be other periodic reviews as the
2 low carbon fuel standard goes forward that we would be
3 having conversations about that depending on how things --

4 CHAIRPERSON KITOWSKI: I would expect so.

5 PANEL MEMBER REHEIS-BOYD: Okay.

6 --o0o--

7 CO-CHAIRPERSON LOZO: Okay. So so far the
8 majority of credits have been generated from low CI
9 ethanol. Biodiesel, renewable diesel, and natural gas
10 have also contributed significantly to the credit pool.
11 And electricity is currently a relatively small credit
12 generator compared to other fuels, but we expect
13 significant growth as the number of EVs in the California
14 market increases.

15 --o0o--

16 CO-CHAIRPERSON LOZO: Okay. Any other questions
17 at this point?

18 I think someone else walked into the room. Who
19 walked in?

20 PANEL MEMBER CAMPBELL: (Hand raised.)

21 CO-CHAIRPERSON LOZO: Do you want to go ahead and
22 identify yourself.

23 PANEL MEMBER CAMPBELL: Good morning. Sorry for
24 being late. Todd Campbell with Clean Energy.

25 CO-CHAIRPERSON LOZO: Okay. Thank you, Todd.

1 Did we get copies of the slides to the people?

2 PANEL MEMBER MORAN: (Shakes head.)

3 CO-CHAIRPERSON LOZO: Okay. I'm sure they're
4 coming.

5 All right. We're going to move ahead now and
6 talk about advances in lifecycle analysis. Mike, do you
7 want to come up.

8 --o0o--

9 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Good
10 morning. I'm Mike Waugh. I'm Chief of the Transportation
11 Fuels Branch. Jack said something about me being in the
12 hot seat. That's not true. You are members of the
13 Advisory Panel, so I will solicit your advice. So there
14 are a lot of other hot seats here besides mine.

15 If we can go to slide 33, please.

16 --o0o--

17 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: We've
18 had several workshops, and I'm not going to relive the
19 workshops. But one of the updates that we're going to
20 have is updating GREET, which calculates direct emissions.
21 We've always used GREET. We used to use GREET 1.8b
22 version, and now we're going to update the direct
23 emissions model to GREET 1 2013, which is what Argonne has
24 recently put out.

25 In fact, last week, they posed GREET 2014. So

1 our staff is looking at GREET 2014, and to see if we're
2 going to update that as well.

3 Before I go on, I guess we've got the first
4 question from Kathy.

5 PANEL MEMBER REHEIS-BOYD: Oh, sorry.

6 (Laughter.)

7 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Okay.
8 Alrighty. Well, so much for the hot seat for Kathy.

9 (Laughter.)

10 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: You
11 know, we use GREET because it's considered to be
12 authoritative, it's freely available to the public, and is
13 very flexible. Although I do know my staff says it's very
14 complex and you can't just pick it up and use it like a
15 simple separate sheet. Nevertheless, we had a workshop on
16 GREET update. And there's -- there are some significant
17 revisions with regard to GREET.

18 Slide 34, please.

19 --o0o--

20 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: As I
21 mentioned, we're moving on to -- we're going to make
22 CA-GREET 2.0, which will be based on Argonne's GREET 1 2013.
23 There are a lot of revisions there. There are more
24 pathways and feedstocks that are built in, including
25 biomethane, used cooking oil, to bio- and renewable

1 diesel, and also corn oil biodiesel, a wet distillers
2 grains and solubles associated path.

3 Slide 35

4 --o0o--

5 TRANSPORTATION FUELS BRANCH CHIEF WAUGH:

6 Continuing, the animal waste biomethane pathway.
7 Liquefied compressed natural gas, this is something that
8 we're going to be putting into the regulation actually,
9 where someone takes LNG and then re-gasifies it into CNG,
10 so we didn't have a pathway for that.

11 There are extensive lifecycle inventory updates.
12 Fertilizer production, farming and fuel production energy,
13 emission factors are updated, updated CNG/LNG tailpipe
14 emissions data.

15 Slide 36, please.

16 --o0o--

17 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: One of
18 the more significant parts of the GREET -- CA-GREET 2.0
19 based on GREET 1 2013 is updated natural gas leakage
20 rates. Now, staff told me last week that GREET 2014
21 actually has, I think, a little bit of a lower natural gas
22 leakage rate. So I have colleagues, under Elizabeth
23 Scheehle's Branch, that are looking at methane leakage.
24 This is something that seems like about every week there's
25 another article that comes out about methane leakage. So

1 we -- we would like to keep up to date with what the most
2 recent and definitive studies are. But nevertheless, this
3 is one of the significant updates going to the new GREET
4 model.

5 I'm not going to go through all this. One of the
6 things we're going to do with regard to direct emissions
7 is to use the U.S. EPA aides eGRID database. There's been
8 discussion about different grids and, you know, the GHG
9 emissions associated with grids. U.S. EPA as an eGRID
10 database, and we're going to use that database for
11 estimating the greenhouse gas emissions from electricity
12 used in the country.

13 One of the things I think that you may be aware
14 of is that we're going to bifurcate our fuel pathways.
15 We're going to have a tier 1 and tier 2 process. Tier 1
16 is going to be a simplified GREET calculator, if you will.
17 They're intended for first generation fuels where there's
18 only a handful of basic parameters that will be input into
19 the calculator. You would calculate and it gives a CI.

20 Then for the innovative pathways and the next
21 gen, there will be a tier 2 process that more mimics the
22 method 2 that we have now, where it's a more thorough type
23 of application and a deeper dive into CIs.

24 Ralph, you have a question?

25 PANEL MEMBER MORAN: Yeah, Mike. Can you tell us

1 a little bit about the process going forward to this
2 particular evaluation. As you know, this is very
3 significant. In some cases, you have CIs tripling because
4 of this update. You also mentioned it's sort of a moving
5 target. With what we're finding out about methane
6 emissions some could say the whole science of lifecycle
7 analysis is a moving target.

8 So it's -- I know it's a challenge of how you
9 marry updating science with the certainty of a regulation
10 that people are complying with and investing in. So can
11 you tell us a little bit about how you're going to look at
12 that going forward, how the process will be?

13 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Sure.
14 You know, I think it's important that as the science
15 evolves that we update our models. GREET is one of them.
16 The intention is that we will propose to the Board when we
17 propose a re-adoption of the LCFS that we will update the
18 model to the GREET model. There are differences in CI.
19 We will take some period of time to update the CIs of
20 existing pathways, because now we've got a different
21 model, so there will be a sunset of existing CIs.

22 And over some period of time, and I'm thinking,
23 you know, like a year or so, that we would request that
24 folks with first gen fuel pathways to use the calculator
25 and recalculate the CI. It doesn't -- you know, we can't

1 mix and match the different models, if you will, so we
2 expect that the baseline will be recalculated, the fuel
3 pathways will be recalculated. That should be pretty
4 straightforward with regard to tier 1 fuels. And then
5 again with tier 2 fuels, that we would use the more
6 thorough type of CA-GREET 2.0.

7 So there's a sunsetting, if you will, of existing
8 CIs as we move into the new model, not only GREET but GTAP
9 as well, and OPGEE as well. So again, I think as the
10 understanding and the models improve, we want to go to the
11 updated models, that does have an impact on fuel pathways,
12 and then we will eventually move over to new CIs and new
13 baselines and new curves.

14 DEPUTY EXECUTIVE OFFICER CHANG: I'm actually --
15 I'm sort of curious. I think, Ralph, your question tee's
16 up kind of this broader question about updating because
17 the science has changed versus the certainty on the part
18 of the regulated industry.

19 And it's something that we've been dating
20 internally. And I'm curious to get feedback, and we don't
21 have to do it right here right now, but I think this is an
22 important thing for us to understand, how important is
23 that certainty versus the updating? Should we say that
24 we're going to update models on a regular time frame, so
25 we say, you know, every three years or five years, or is

1 it something that, you know, from a discretion standpoint
2 we just wait and see this is a big enough change that we
3 need to make this change, and we provide enough lead time,
4 you know, through the regulatory process that everybody
5 can plan for that.

6 And I'm curious from all of you from the
7 different perspectives that you have sort of what the
8 preference would be, and I'd be interested in a discussion
9 on that.

10 PANEL MEMBER MORAN: Yeah, that would be a great
11 discussion. Thank you very much for raising that, because
12 it is important. We do want to get the science right, but
13 people have made investments. And I think it's important
14 to give them time to recoup those investments. There's
15 also a lot of other public policy questions that come into
16 play here.

17 On this one specifically, you have -- you're
18 putting a penalty on some use of natural gas from methane
19 leakage. So the outcome of that is that you're going to
20 disincentivize projects that capture methane leakage, if
21 you think that through, because the CI is much higher. So
22 I think there's -- I think it's worth a discussion before
23 we go down this path on the rule-making to make sure we
24 get it right.

25 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Okay.

1 I'm not sure who flipped first, but we'll start with
2 Simon.

3 PANEL MEMBER MUI: All right. I'll go first.
4 Second in line. Simon Mui, NRDC.

5 Mike, you raised some very good points as well as
6 Ralph here. You know, I do think that the GREET model --
7 you know, we do see updates almost every year, so
8 it -- and technically, you know, just as we've done for
9 MFAC and other ARB models, you know, there is that
10 periodic updating.

11 I do think that for a certainty purpose -- from a
12 certainty perspective, we do want to actually have some
13 clarity in terms of the schedule for updating. There is a
14 balance, of course, between that certainty in updating to
15 what the latest science is, but that scientific process
16 can often take, you know, several years. So it does make
17 sense, I think from a regulatory perspective, to maybe put
18 a time frame in terms of when ARB plans to do these types
19 of updates, and then also some clarity in terms of whether
20 those updates will affect the default look-up values or
21 whether those pertain to even the customized values.

22 I'm assuming you know, in terms of some of the
23 customized data, some of the mission factors, if you
24 update it, they may pan out -- you know, they may go over.
25 But I do support -- you know, NRDC does support updating

1 of the lifecycle values for all fuel pathways
2 periodically.

3 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Thank
4 you, Simon. You know and that brings up a point. I know
5 that staff, and I'll mention it here in a little bit with
6 regard to OPGEE model, that staff has recommended that we
7 update it no more frequently than every three years.
8 There's always the tension I think between being nimble
9 and providing certainty. So I can tell you that staff
10 would like to, at some point, set something for a period
11 of time and leave it alone. Otherwise, we're right back
12 at the Board time and time again. And so I think your
13 point is well taken that we need to have a schedule
14 perhaps of saying every three years or periodically that
15 we're going to revisit these models and these CIs that way
16 there is some certainty for a period of time, but at the
17 same time that we recognize advances in science.

18 I think Todd was next. I'm just going to take a
19 shot.

20 PANEL MEMBER CAMPBELL: Thanks, Mike. And I
21 apologize for the frog that's living in my throat. I'm
22 going to be a little bit garbled today, I think. But I
23 think that certainty is important. And I think that it's
24 just as important as getting it right.

25 And Clean Energy certainly supports CI updates,

1 but we also want to avoid something like, you know, when
2 EPA came out with 2011 numbers that were off, the
3 overestimated methane leakage. And I think the science
4 is, you know, continuing to show that not only the
5 industry is active in this space, but is aggressively
6 wrenching down methane leakage. And I think that -- the
7 GREET 2014 model that demonstrates that leakage again is
8 at least, you know, according to Argonne is going down, is
9 reflective of that.

10 Number two, I think that natural gas, for better
11 or for worse, touches many fuels. It doesn't just touch
12 natural gas vehicles. It touches electric vehicles. It
13 touches fell cell vehicles, I'm sure it touches some part
14 of the ethanol industry, on and on and on and on.

15 So for our fairness issue, I think it's going to
16 be really important that a leakage rate is applied to all
17 pathways that are touched by natural gas. I think that's
18 also important.

19 And then I had the same question as Ralph had in
20 terms of what was next. And you filled that out in a
21 sense that, as I understand it, we'll have some sort of
22 sunset placed on the existing CIs that there will be a
23 process. I'm not -- it's not clear to me if that process
24 of working out what the new leakage rate will be is going
25 to conclude in February or if it's going to conclude at

1 some later date where we can at least work with the staff,
2 which obviously we're very interested in doing so, because
3 I think it's -- again, I think it's really important to
4 have strong transparency in terms of what staff's
5 assumptions are, and also in that process being able to
6 give you the best information available at our fingertips
7 to make sure that we make the right calls.

8 CHAIRPERSON KITOWSKI: One of the things that I
9 want to mention as we continue this discussion, which I'm
10 glad we're having, is that we act -- we actually may want
11 to bifurcate this discussion a little bit. The natural
12 gas changes are so significant and the science is evolving
13 so quickly, we may know we need -- we may need to do a one
14 off on that and figure out -- you know, be very nimble,
15 continue to leave the possibility for changes right up
16 through the Board hearing and think through that process
17 may be a little different than the others who have
18 changes, but are maybe not as significant, and whose
19 science is not changing quite as rapidly. So maybe put
20 that in the back of your mind as well, as we're talking
21 about this

22 PANEL MEMBER CAMPBELL: Thank you, Jack. And I
23 just want to add that -- just to kind of illustrate the
24 point for renewable natural gas there was some leakage
25 rate -- at least I think there was some leakage rate

1 application to those numbers. I'm looking to David here
2 for acknowledgement. But I -- well, where I'm going is is
3 that we need to make sure that we don't apply factors to a
4 fuel that actually wouldn't be under the -- wouldn't have
5 the same conditions apply. And in that case, I think that
6 there was an incorrect appliance or application there.

7 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Thank
8 you. We'll go to Eileen next, and then Sonia, and then
9 I'll figure it out from there.

10 PANEL MEMBER TUTT: Thank you, Mike. Kind of --
11 I'll follow up on Todd's question, is when you update
12 the -- and this is just clarification. When you update
13 the natural gas numbers, is that then reflected in GREET
14 for all of the other fuels that have natural gas as a
15 feedstock, in particular electricity?

16 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Yes, I
17 believe so.

18 PANEL MEMBER TUTT: Oh, okay. And then --
19 because we also support updating and reflecting the
20 current science, but I think to Simon's point, there has
21 to be some certainty around how often that's done.
22 Natural gas may be an exception, but I think it would to
23 be almost a one-time exception, and you'd have to have
24 some solid science on your side, which is -- sort of goes
25 without saying.

1 Then I guess one more question on electricity.
2 It says the electrical energy generation mixes are all
3 based on the latest U.S. EPA eGRID database. Does that
4 incorporate the 33 percent renewable requirement in
5 California or the other increasing renewable requirements
6 in other states?

7 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: We've
8 had a discussion about this, and at this point, the
9 thinking of staff is that for the purposes of using
10 electricity for biofuel, you know, production, for
11 example, that we would use the eGRID values, and it would
12 be the average eGRID values. You know, it's nice to have
13 a database that uses that.

14 However, for the purpose of charging EVs in
15 California, we still think that's marginal electricity.
16 And therefore, we will maintain the marginal electricity
17 value, which would be the CI associated with the combined
18 cycle gas turbine with some percentage of renewables. So
19 for the purpose of stationary sources, we'll use eGRID.
20 For the purposes of charging EVs in California, we're
21 going to use a marginal value that would be consistent
22 with what we've had before, but with an increasing
23 percentage of renewables.

24 So those are the two. That's the only exception
25 is charging EVs, because we think that's marginal

1 electricity in California. We think we know what that is.
2 Everybody else will use an eGRID value when it comes to
3 using electricity for production of alternative fuels.

4 PANEL MEMBER TUTT: Thank you.

5 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Sonia.

6 PANEL MEMBER YEH: I have a question. But before
7 I get to the question, it seems like there is a consensus
8 that there needs to be a balance of updating science and
9 certainty. And my personal opinion is probably three
10 years is optimum to -- given the return on investment and
11 so on.

12 But my question -- I know there's exceptions.
13 But my question is more about whether there's a need
14 to -- and this question actually came out in your response
15 earlier, that whether there's a need to synch up the
16 updating of models as well as new values for tier 1 and
17 tier 2 numbers.

18 So there's a slower update process -- can there
19 be a slower update process for tier 1 values and a faster
20 updating process, including models, up to your GREET
21 models for the tier 2 values, because those values -- or
22 those pathways don't have this legacy issue, and the
23 science also involved much faster for tier 2 values.

24 So whether there's a desire to -- or similar
25 constraint for tier 2 pathways, is my question.

1 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Thank
2 you. We'll go with Kathy next.

3 PANEL MEMBER REHEIS-BOYD: Thanks. Just to
4 Edie's point, there's -- this is really good discussion,
5 and I think there's -- you know, everybody is in agreement
6 that science, certainty, and investment are all at play
7 here. And I'm just wondering, Edie, how do we -- you
8 know, I know we've talked in general within our
9 organization about this, but we certainly, I don't think,
10 have given you any input yet, but I think it's a great
11 question and we should jump on it.

12 How would you like us to -- because we'll
13 certainly go back and talk about it. How would you like
14 us to, either as a group or individually or through the
15 advisory or just as stakeholders, sort of communicate to
16 you our thoughts, because this is, I think, really
17 important.

18 DEPUTY EXECUTIVE OFFICER CHANG: I actually think
19 any one of those ways is fine. I think that, you know, in
20 the context of this group, I think this discussion has
21 been helpful just to hear sort of the different points of
22 view. And it actually does seem that folks are saying,
23 yeah, a schedule would be good.

24 But I know that there's tension with folks where
25 if the data shifts and it advantages, you know, your fuel,

1 you're going to want that -- you're going to want that
2 sooner, and I think that makes sense.

3 I think that through comments in the workshop
4 process, meetings with us, you know, lots of you, all of
5 you, come talk with us on a regular basis. I think that
6 this is something that's sort of a fundamental question
7 that sometimes as we get into the detail on kind of what
8 the changes are, we don't look at that, but I think it's a
9 really big deal. So I think any or all of those ways
10 would be good, and I appreciate folks thinking about it.

11 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Okay.
12 Now, we'll go to Tim.

13 PANEL MEMBER OLSON: Yeah, I recognize your
14 dilemma. You have to have a freeze point to go forward on
15 your regulations, and then the time it takes to update
16 this. And I'm kind of wondering if there's any
17 frustration in this -- one of the frustrations in this is
18 that you're deferring to Argonne. It's their model. It's
19 they're updating this. And I'm kind of wondering if a
20 little more facilitation and engaging Argonne that can be
21 used

22 So they're updating things fairly often, but
23 engaging them periodically, maybe it's once a year. And
24 then channeling any of those new findings into a tier 2
25 pathway, and then maybe revisiting it every three years

1 for your own regulation update.

2 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Thank
3 you, Tim, for pointing out frustration. Yes, we have
4 that.

5 (Laughter.)

6 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: We'll
7 go with Jill now.

8 PANEL MEMBER JOHNSON: Thanks. This is Jill
9 Kauffman Johnson with Solazyme. So I guess we're all in
10 violent agreement about the idea of having both certainty
11 as well as updating the scientific basis on some sort of
12 regular basis. I think from an advanced fuel perspective,
13 I think our concern would be that, one, if the updates do
14 happen especially for the tier 2 pathways, how does that
15 happen quickly, and is that -- does that mean we resubmit
16 all the data again, or would it be more like the tier 1
17 where it's more of a default number.

18 So I just think about the staff resources, time
19 it takes to do that, and is there a streamlined way that
20 those updated pathways could happen, if that were the
21 case?

22 And then to Sonia's question around a difference
23 between the pace at which you would update tier 1 and tier
24 2. Inasmuch as GREET supports both of those, at some
25 point, where there's -- if one shifts and the other one

1 doesn't, that could be an issue, because there's
2 overlapping database. And then when you're talking about
3 resetting a new baseline potentially, as long as that's
4 done in a fair way, right, because we're all off the same
5 baseline.

6 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Yeah, I
7 appreciate those comments. It is -- you know, when you go
8 to an update, you have to do it in a way that is fair to
9 everybody, and the timing is right for everybody. So
10 we're working on that particular piece of it, but I
11 appreciate those comments.

12 I'll go with Nick next.

13 PANEL MEMBER ECONOMIDES: Thanks, Mike. I don't
14 want to reiterate what was said. We believe that all this
15 is true, some degree of certainty combining good sound
16 science, timely updates, but also giving the regulated
17 community the certainty we need going forward. And I'm
18 happy to see that we can and will engage, at some point,
19 in a discussion of what the right frequency is and what
20 the one-offs may be. I'm not so interested in diving into
21 the individuals of any one industry, any one product.

22 I want to stay above the fray a little bit and
23 say that's all fine and well, but what do we do about this
24 particular update? That's the first hurdle we have in
25 front us. And yes, we all realize as we approach it that

1 we're going to need to do something.

2 First some differentiating, contrarian viewpoints
3 from Chevron on some of the things that have been said so
4 far. We find the progress through the workshop process to
5 have been painfully slow. We find the amount of material
6 in the table to be overwhelmingly large, in terms of the
7 scope or what is to be done. And we are not therefore
8 surprised that we are seeing delay upon delay, and we
9 would even expect more.

10 I think the second point is that if we say that
11 80 or 90 percent of what will go to the Board ultimately
12 has already been done and has been shared with the
13 community, well, I need to tell you, our community does
14 not feel that we have the necessary information that we
15 would have expected at this late stage in the process.
16 And we have expressed that to staff. That should not come
17 as a surprise.

18 Having said all that, what appears to me to be a
19 reasonable course of action for a steering committee
20 member, exercising their responsibility in that regard, is
21 to recommend to the group that perhaps this is a time for
22 us to think about revising the scope of what we're trying
23 to do.

24 The way we see it, we have certain indisputable
25 axiomatic areas that need to be addressed. They are the

1 areas that the court has asked us to address. That has to
2 be done.

3 There is a second bucket that involves the items
4 that the Board directed staff to consider. And that
5 essentially forms a body that needs to be addressed as we
6 go forward.

7 The rest of it we call nice to have. Nice to
8 have in the name of updating the science, nice to have for
9 a number of different reasons, but nice to have
10 nonetheless.

11 So it might be time for us as a group to start
12 thinking about how much of this nice-to-have bucket we can
13 actually get to and maintain some kind of a reasonable
14 timetable. And thank you, and sorry for being a little
15 long-winded.

16 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Thanks,
17 Nick. I know on a couple of different occasions I sat
18 down with staff as we move forward, and I know I had this
19 discussion with Jack and Edie, is that what might we not
20 get to? And to my staff's credit, they felt like they
21 can -- they can handle all these buckets.

22 At one point, I could tell that they were
23 starting to think, well, maybe I should have taken Mike up
24 on his offer earlier, but I told them it's too late now.
25 We're going with everything.

1 But I think that's still a possibility, that if
2 there's something that's just not ready, that we will not
3 go forward with it. But I've got a pretty gung ho staff,
4 and so we'll see. We'll see how they hold -- holdup.

5
6 PANEL MEMBER ECONOMIDES: At some point, the
7 manager has to take the ball from the starting pitcher,
8 Mike.

9 TRANSPORTATION FUELS BRANCH CHIEF WAUGH:

10 Understood. Understood. Thank you.

11 We'll go with David next, and then I'll start
12 back around. And then I'll go with this David as well.

13 PANEL MEMBER COX: David Cox with the Coalition
14 for Renewable Natural Gas. I think that's a lesson I wish
15 Mike Scioscia would have learned a little bit earlier in
16 the baseball playoffs here.

17 (Laughter.)

18 PANEL MEMBER COX: But I wanted to close the loop
19 on Mr. Campbell's comments. And I think it also relates
20 to Mr. Olson's comments about the reliance on Argonne
21 National Labs.

22 The Coalition for Renewable Natural Gas, I think
23 would support, Jack, your idea of bifurcating the natural
24 gas CI issue. And I think illustrative is really this
25 issue with the methane leakage rate, the two percent being

1 assessed to landfill gas operations. What we're seeing as
2 we look into the studies that Argonne relied on is that
3 they were looking at anaerobic digesters for animal
4 operations in Sweden. And that is the two percent number
5 that they're bringing forward and saying this is what the
6 leakage rate is for biomethane. And now one more step
7 further into the process, we're saying now this applies to
8 landfill operations. It's such an apples to oranges
9 comparison that we just think that it needs maybe a little
10 extra attention.

11 Thank you.

12 CHAIRPERSON KITOWSKI: That would be great, and
13 especially a discussion on is anybody conducting that
14 data, when would that data be available, and trying to
15 feed that into our process would be good.

16 PANEL MEMBER COX: Great. Thank you.

17 CO-CHAIRPERSON LOZO: Okay. Geoff Cooper has
18 been very patient on the phone. Geoff, do you have a
19 comment?

20 PANEL MEMBER COOPER: Yes, thank you. And I hope
21 you can hear me. Mike, I have two quick questions. And I
22 questions the first one kind of pivots off of some of the
23 recent comments about, you know, the Argonne assumptions
24 versus what ends up in the CA-GREET 2.0. And I guess I'm
25 just curious whether CARB intends to very clearly, you

1 know -- I identify very -- in a clear manner which default
2 inputs it took from Argonne, and which ones it is
3 modifying, and explain or justify were there may be some
4 departures, because I understand from Wes and his staff
5 that there may be some factors within the model that CARB
6 staff changes and doesn't just take what Argonne, you
7 know, has provided in its latest version. So that's the
8 first question.

9 And then the second one is I'm still a little
10 confused on what happens after your staff develops the new
11 CI values. Will there still be a look-up table, is there
12 going to be a new look-up table or is the calculator
13 intended to entirely replace the look-up table as we know
14 it today?

15 Thanks.

16 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Yeah,
17 Geoff. We've been talking about -- internally here about
18 the look-up table. And the thought at the moment is the
19 fact that the calculator would replace a lot of the
20 look-up table. There would still be some -- I think some
21 really basic fuel pathways that could be used as defaults.
22 But for the most part, what we're seeing, is that more and
23 more of the fuel pathways are facility specific and not
24 available for use by a wider range of regulated parties.

25 So to answer your question, I think we're going

1 more to the calculator and getting away from the look-up
2 table itself.

3 PANEL MEMBER COOPER: And did you have a comment
4 on the other question of whether you're going to identify
5 places where the CA-GREET diverges from Argonne GREET and
6 explain why?

7 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Yes.
8 Yes, we will. I think -- you know, a lot of the work that
9 we do is -- you know, our staff is very busy, and
10 sometimes, you know, there are revisions on revisions. It
11 depends on whether it's the morning version or the
12 afternoon version or the next day's version of where we
13 are. But we believe in transparency, and we will -- we
14 will show where we may have deviated from Argonne's GREET
15 1 2013 or 2014, whichever one we go to. So to answer that
16 question, Geoff, yes, absolutely. Any time we make any
17 kind of revision, we need to be very transparent about
18 that.

19 PANEL MEMBER COOPER: Thanks, Mike.

20 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Thank
21 you. We'll go with David Stern, please.

22 PANEL MEMBER STERN: Thanks. Dave Stern,
23 ExxonMobil. Just a couple of points. One is I certainly
24 support the concept of moving forward with sound science,
25 and revising what occurs as better science is available.

1 But there are two concerns I have in particular
2 about GREET. One is that it's not clear that information
3 is truly available yet to regulated parties, that it's --
4 that the latest version of GREET or the second to latest
5 version of GREET, at least the 2013 version, has truly
6 been vetted. There have been a number of concerns that
7 have been expressed in other circles, like for example,
8 U.S. DRIVE and other review boards that have had questions
9 about whether it made sense to move forward with the next
10 version of GREET. And, in fact, there have been some
11 publications that have been withheld in relation to that.

12 So I would propose that before CARB move forward
13 with this, that there's ample chance to review the
14 science, provide input, and actually learn from other
15 efforts looking at the latest version of GREET.

16 The second issue is that I'd like to make a
17 proposal here, if CARB would like to move forward on the
18 science, as clearly it has historically, there's a lot of
19 work that has been done in the area of uncertainty
20 analysis. And I would propose that before anything moves
21 forward with adopting another version of GREET or any
22 other updates to the science, that uncertainty analysis is
23 actually included in values.

24 I mean, I notice on your next slide you still
25 have CIs reported to four significant figures. I think we

1 all know that that's, you know, certainly not reflective
2 of the underlying science that goes behind this. And I
3 think the public and the regulators -- you know, the --
4 you know, the effective -- affected industries need to
5 clearly understand what the certainty is of those kinds of
6 productions, particularly if you're talking about changes
7 in CIs of one or one and a half percent.

8 You know, in most cases, the uncertainty actually
9 can -- you know, can be several-fold higher than the
10 concept of making the CI changes that CARB is looking for
11 in the LCFS.

12 So again, a proposal that before the science
13 moves forward with adopting another model, that
14 uncertainty analysis be a critical part, a central part of
15 any efforts to move forward.

16 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Thank
17 you. I've had discussions with staff about significant
18 figures. And, you know, sometimes we have more than we
19 need, because it gives the impression we have more
20 precision than we actually do on some of these estimates.
21 So that's a very good point. Thank you.

22 Let's go with Eric.

23 PANEL MEMBER BOWEN: Thank you, Mike. And thank
24 you, Edie, for raising the topic about frequency of
25 updating. I think this is actually, as has been echoed by

1 everybody here, a big and important topic. And my sense
2 is it has a lot to do with whether you think you're on the
3 winning end or a losing end of a change, how quickly you
4 want it. And the science is evolving. We all know that.

5 I'm concerned that any sort of one-size-fits-all
6 approach would have lots of unintended consequences. So I
7 do think that going into whatever the regular update
8 schedule is, there's an acknowledgement that there needs
9 to be an opportunity for more periodic updates for where
10 the pain points are, and maybe some balancing like that is
11 the most appropriate.

12 I certainly know that on the biodiesel side, the
13 difference in the changes that are being proposed for corn
14 oil based biodiesels and soybean based biodiesels are
15 having significant ripple effects throughout the industry,
16 and, you know, a lot of investments have been made based
17 on -- and decisions are made on earlier CI scores. And
18 I'm not opining here one way or the other about, you know,
19 the specific CI pathway update on either of those things.
20 And we can have that conversation if we need to at a
21 different point in time, but it's just really to emphasize
22 these have real impacts, and there are investment
23 decisions being made.

24 So you hate to get stuck with a bad CI score and
25 not have an opportunity to update it, and you also hate to

1 have what you think is a good CI score, put a bunch of
2 investment into it, and only to see that reversed. So
3 obvious points, but things that are, you know, very much
4 need to be kept in mind as we think about this topic.

5 TRANSPORTATION FUELS BRANCH CHIEF WAUGH:

6 Appreciate that Eric. You know, one of the
7 things that is good about fuel pathways is that we have a
8 certification process that acts more quickly than the
9 regulatory process. You know when we have posted fuel
10 pathways for comments and then we've allowed those fuel
11 pathway CIs to be used, we've got hundreds of those that
12 have not yet appeared in the look-up table, for example.

13 So I just want to remind folks that at least when
14 it comes to fuel pathways, we have a process that's --
15 that reacts more quickly than the regulatory process does.
16 So I appreciate your comments.

17 Yeah, Miles.

18 PANEL MEMBER HELLER: Yeah. Just on a couple
19 points that have been made. One, I would echo David from
20 Exxon, we want to make sure that we have a chance,
21 adequate time, to review the latest model, the latest
22 science. I think it is important to update with the
23 latest science.

24 To be a little contrarian to Nick from Chevron, I
25 guess, you know, I certainly wouldn't want to go forward

1 talk with Wes and his staff to see what -- how we're going
2 to post that, and what we're going to say about that. So
3 appreciate that.

4 Slide 38.

5 --o0o--

6 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: This is
7 something -- this is a table that was put during the
8 workshop. These are preliminary numbers. And like I
9 said, with GREET 2014 coming out, you know, these may
10 change again. If you don't see your fuel up there,
11 there's no intention to offend. So this is just
12 illustrative.

13 --o0o--

14 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Okay.
15 Now, we move to manage that's a lot clearer, which is
16 indirect land use change and GTAP.

17 --o0o--

18 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: I must
19 admit that of all the activities that my staff does, this
20 is the most mysterious to me, but I do have John Curtis
21 and Anil is here as well. So if I get into the weeds
22 here, they're going to rescue me, at least that's --
23 that's what I asked them to do.

24 (Laughter.)

25 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Slide

1 40. You know, I'm not going to go over all these slides
2 point by point. Suffice it to say that Purdue has put out
3 version after version of GTAP. For the most part, you
4 know, everything again is an update.

5 Of the items on this particular slide, I think
6 one of the most significant is introducing cropland
7 pasture into the model. That's a different land category
8 that wasn't there before. Essentially, it says there is
9 some land that is sometimes used for livestock and
10 sometime used for crops. And this is significant both for
11 the United States and Brazil as well.

12 It seems like every time staff has done a
13 thorough job of analyzing a GTAP model, another one comes
14 out, and we start all over again. I think that's fair to
15 say. But nevertheless, there's been a lot of work done on
16 it. And this again is probably more significant than even
17 the GREET update is in direct land-use change.

18 If we can go to slide 41, please.

19 --o0o--

20 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: You
21 know, again, a lot of this is esoteric, but I think the
22 overall message is that inputs of GTAP have become more
23 detailed than ever. That there used to be -- you know,
24 everything was aggregated, and so a lot of things have
25 been disaggregated, and that, you know, more recently

1 they've added irrigation to the model.

2 So as time goes on, it goes from a -- I would say
3 a cruder version of the model to a more detailed part of
4 the model. And I think that is -- that is significant, in
5 the fact that one size doesn't fit all, and that when you
6 look at different regions, there are different emission
7 factors for different parts of the world. There are
8 different yield-price elasticities that one size doesn't
9 fit all.

10 When you look at, you know, disaggregating other
11 oil seeds, for example, you have to look to see what is
12 the marginal oil source. So I think it is suffice to say
13 that the model is getting more and more detailed and
14 therefore more complex.

15 If you take a look at slide 42 --

16 --o0o--

17 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: -- here
18 are some preliminary results that we presented in a
19 workshop last Monday. So I think the feedback is
20 requested to be due, I want to say, 17th. Maybe October
21 17th, something like that. We've got a range here. We've
22 got a couple of approaches, Approach A and B. And those
23 are really reflective of the different nesting the tree
24 structures within the model.

25 Even when I attend my own workshops and Anil is

1 that the low complexity-low energy use refineries, i.e.
2 the small refineries, you know, they can be affected by
3 the California average, but they can't affect the
4 California average because of their throughput. So we're
5 going to propose that they have a one-time opt out from
6 the California average, and the other refineries will
7 maintain the California average.

8 We have a question

9 PANEL MEMBER BLILEY: Oh, I just had a questions
10 that's maybe for John. When is the next iLUC workshop
11 going to be?

12 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: The
13 question was when is the next iLUC workshop going to be?

14 And John is approaching a microphone.

15 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: For
16 those on the phone, I'm giving you a play by play.

17 MR. COURTIS: We are in the middle of doing the
18 analysis and doing an evaluation of this thing to see
19 exactly how we're going to be end up with. And there's a
20 possibility that we're going to have a workshop somewhere
21 in late October or early November.

22 PANEL MEMBER BLILEY: Okay.

23 MR. COURTIS: We haven't decided on the date yet.

24 PANEL MEMBER BLILEY: Okay. Thanks.

25 CO-CHAIRPERSON LOZO: Geoff Cooper on the phone

1 you had another question?

2 PANEL MEMBER COOPER: Yeah. One quick question
3 before we leave the GTAP part of the presentation. I
4 mean, if you go back and look at the ISOR and kind of
5 reflect back to the original GTAP analysis, you know, if
6 you remember, this GTAP shock was meant to simulate
7 changes to the economy that occur between 2001 and 2015.

8 So here we are in 2014, we're 14 years through
9 that 15-year period. We have lots of real world empirical
10 data now that should -- you know, we should be able to
11 look to to instruct us on whether these predicted impacts
12 are occurring or not.

13 And I understand the difficult in teasing out the
14 impact of a biofuel shock versus the impact of other
15 things. But, you know, I was -- I guess I was shocked at
16 the last workshop to hear that CARB staff believes it is
17 quote, "not productive", to look at real world data. And
18 I'm just wondering if there are -- you know, what efforts
19 are being made to maybe back-cast GTAP now that we're --
20 again, now that we're well into this program or validate
21 the model predictions?

22 I mean, to my knowledge, every other CARB
23 rule-making that I've -- certainly, the ones that I've
24 been familiar with, where a model of this sort has been
25 used, there has been some effort to validate the model's

1 predictions or back-cast the model to make sure it's
2 generating reliable results.

3 So I'm just curious -- I mean, I heard a strong
4 amount of feedback from the last workshop that that's
5 something that stakeholders desire, and I'm wondering if
6 that's something that's on CARB's agenda?

7 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Thank
8 you, Geoff. You know, one of the things that we're doing,
9 that staff is doing and one of our contractors is doing is
10 running hundreds, if not thousands, of different runs with
11 the most recent GTAP model to see if the GTAP model is
12 behaving according to what we do see. So there is some
13 ground-truthing going on with the model.

14 As you know, you know, there are other factors
15 that are involved with regard to yield, for example,
16 whether or not there's a drought or there's a bumper year
17 and the like. So, in some cases, modeling is definitely
18 needed to look at indirect land-use change, but I just
19 want to emphasize the fact that as we put the GTAP model
20 through its paces, that we are, in fact, looking to see if
21 it behaves properly with regard to different biofuels and
22 different trading patterns and the like.

23 And occasionally, we find something that doesn't
24 make sense, we talk to Purdue about it and figure out if
25 there's an error or area for improvement in GTAP.

1 So it's not that we're not ground-truthing. We
2 are, as best we can, doing that with the model. So I
3 appreciate your comments, Geoff.

4 PANEL MEMBER COOPER: Thanks.

5 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: We'll
6 start with Kathy. Ladies first.

7 PANEL MEMBER REHEIS-BOYD: Thank you. Just a
8 clarifying question. So when it says the -- obviously,
9 the large complex refiners continue on the California
10 average, what is the approach that's taken for the small
11 refiners if they opt out? Is that -- what approach are
12 they then following?

13 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: They
14 would have their own 2010 baseline, to which they would be
15 subject to the same provision, in the sense that if they
16 exceed their 2010 baseline, then they would receive an
17 incremental deficit for themselves. So that's how that
18 would work.

19 Yeah, David.

20 PANEL MEMBER STERN: Okay. Just a question about
21 what this really means for low complexity-low energy use
22 refineries. I mean, if you look in the EIA data, there's
23 only three refineries that might vaguely, you know,
24 resemble what -- you know, what you may define as a low
25 complexity-low energy use refinery, but they all get

1 intermediate products from elsewhere and blend them.

2 And I'd like to understand if CARB has any clear
3 data to illustrate whether, in fact, any of these -- what
4 any of these refiners actually exist that may actually
5 sell fuel. Is there such data that exists and could CARB
6 share that with us?

7 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: If we
8 can go to slide 45, I think that speaks a little bit more
9 clearly to your point David --

10 --o0o--

11 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: -- that
12 we have been meeting with some of these smaller
13 refineries, and the credit for lower energy embedded in
14 their finished product, that credit would be only applied
15 to finished product made from crude. We've talked about
16 intermediates, and that the finished fuels made from
17 intermediates like TransMix, for example, some other gas
18 oils perhaps would not receive this credit, or blend
19 stocks would not receive this credit.

20 So it's really a matter of how much of the
21 finished product has come from the crude that's been
22 charged to the refinery. That portion would receive
23 credit for less energy embedded and we back out all of the
24 other intermediates that these refineries are running.

25 PANEL MEMBER STERN: I mean, the point is that if

1 fuels are actually being sold, it's not crude that's being
2 sold from these refineries. I mean, I don't -- I'd like
3 to -- I would appreciate if CARB can actually outline what
4 they actually mean by having any fuels being produced from
5 any of these refineries that don't involve some kind of
6 intermediates purchased elsewhere. If these refineries
7 actually do have energy intensive proceeds like cracking,
8 I'd like to understand that too.

9 The bottom-line question I'm asking is can CARB
10 outline what they actually see before you would go ahead
11 and try to adopt a proposal on low complexity-low energy
12 use refineries, what it actually sees as volumes, and some
13 kind of specifics so that the public can understand what
14 it is that's moving forward?

15 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: I
16 think, to the extent we can, we will. I know some of the
17 inputs are confidential business information. So I think
18 staff has outlined that clearly in the graphs that we've
19 supplied at the workshops, that there's a clear
20 delineation of these three or so small refineries in terms
21 of the energy that they use, and in terms of their Nelson
22 complexity value and the more complex refinery.

23 So it's pretty clear that these are different.
24 And to the extent that we can quantify that without giving
25 up confidential business information, we will.

1 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Any
2 other questions in the room?

3 Any questions on the phone?

4 Okay. Let's move on to slide 46 then.

5 --o0o--

6 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Another
7 topic, Innovative Crude Provision. We have had Innovative
8 Crude Provision in the reg since the very beginning. We
9 modified it in 2011. We're proposing to modify it again.
10 What we have in the regulation right now is that the
11 purchaser of crude that has been produced in an innovative
12 manner would receive some credit for purchasing that
13 crude. We decided that that economic signal is weak,
14 weaker than it should be, and that also the crude
15 producer, they're the ones who are, you know, putting
16 forth the funds, the capital expenditure to produce the
17 crude in an innovative manner.

18 So we propose to move the credit from the
19 purchaser of the crude to the producer of the crude. And
20 that is, I think, the most significant change that we're
21 proposing here.

22 Also, we're reducing the emissions reduction
23 threshold, so that a lot of different projects will be
24 eligible. I think right now we've got solar generated
25 steam and carbon capture and sequestration. We're going

1 to expand to solar, wind, and biomass based power, and
2 biomass based steam and heat, and again solar heat as
3 well.

4 So this is something that I think is pretty
5 straightforward. If you're going to produce your crude in
6 an innovative manner, then you should get credit for that.

7 --o0o--

8 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Slide
9 47, please. Once again, we are updating the OPGEE model
10 from 1.0 to 1.1. We have a contract with Stanford, Adam
11 Brandt specifically of Stanford. And as we update the
12 crude CIs using the new OPGEE model, we're going to expand
13 the look-up table to include a lot more crude oils. And
14 this is what I mentioned earlier, we're looking at a
15 three-year cycle for future OPGEE and look-up table
16 revisions. So this is going to be very specific with
17 regard to how frequently we look at the crude CI values.

18 --o0o--

19 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Any
20 questions on updating GREET, GTAP and OPGEE? And for
21 those who might not be familiar with all that, that's how
22 we speak here.

23 (Laughter.)

24 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: In
25 abbreviations.

1 Yes.

2 PANEL MEMBER WUEBBEN: Yes. Thank you, Mike.
3 Paul Wuebben, CRI.

4 First, a comment on the Innovative Crude
5 Provision. Have you considered including in that
6 flexibility the utilization of CO₂?

7 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: At this
8 point, one of the things that we're waiting for is a
9 quantification methodology when it comes to CCS or CO₂,
10 EOR, enhanced oil recovery, again, I go back to CO₂, EOR
11 and CCS.

12 But we are looking at CCS, for example, and that
13 we want to be consistent with what cap and trade does with
14 carbon capture and sequestration and that includes CO₂,
15 enhanced oil recovery as well. At this point, it looks
16 like that the -- we would take to the Board in 2017 a
17 quantification methodology regarding CCS, and that our
18 thinking at this point is giving credit to the entity that
19 actually captures the CO₂ more than the one that ejects
20 the CO₂ for enhanced oil recovery.

21 But nevertheless, we want to move forward with
22 all the programs at once with regard to any kind of CO₂
23 capture and sequestration.

24 PANEL MEMBER WUEBBEN: Yeah, I wasn't talking
25 about EOR or sequestration. Obviously, a ton of CO₂

1 produces two tons of oil, which moves us in the wrong
2 direction in terms of CI. What I was referring to was the
3 actual utilization of CO₂ combined, for example, with
4 renewable hydrogen or other hydrogen sources that will
5 produce liquid fuels. We're doing that in Iceland of
6 course.

7 And, you know, there's a potential there's huge
8 sources of carbon dioxide, you know, to convert that into
9 liquid fuel using hydrogen as an intermediate. So I'd
10 strongly recommend that you include that, at least
11 consider it.

12 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Sure.
13 So, I mean, that would be like a fuel pathway, right?

14 PANEL MEMBER WUEBBEN: Yes. Yeah, right.

15 TRANSPORTATION FUELS BRANCH CHIEF WAUGH:

16 Absolutely. And that would be in the tier 2 fuel
17 pathway for sure, because it's innovative. So to the
18 extent that anybody wants to do that, and that someone
19 applies for a fuel pathway, absolutely, we would look into
20 that.

21 PANEL MEMBER WUEBBEN: The next point I'd like to
22 raise, it gets more to the issue of GTAP and other
23 considerations, even on the GREET question, which has to
24 do with I think there's a fundamental gap, you know, in
25 the science and in the methodologies that you're employing

1 right now, which is namely that there's no recognition so
2 far, formally at least -- I think the community recognizes
3 it -- that there is such a thing as a biofuel limit.
4 There are limits in terms of drought, in terms of topsoil,
5 in terms of erosion, you know, in terms of fertilizer, you
6 know, the yields, et cetera. And so there's -- there are
7 some fundamentals, and there's been reports on this and
8 SAE literature peer reviewed, et cetera, of this notion of
9 a biofuel limit. And I would think that that should be a
10 significant kind of endpoint consideration that would
11 drive, you know, your -- you know, the redesign, if you
12 will.

13 And a big part of that is also, and I'd reinforce
14 what was mentioned by RFA, is the tremendous value. And,
15 in fact, I think it's an imperative to validate as many
16 pathways as you can end to end. Because to my knowledge,
17 there has not been a single pathway that's been end-to-end
18 validated. So a detailed validation and enforcement plan
19 I think is critical to back up the huge investment bets
20 that are being placed on essentially models without, you
21 know, a lot of, you know, definitive data or in-use
22 validation. So I just want to reiterate that point.

23 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Thank
24 you. I just want to remind folks that the LCFS is a fuel
25 neutral performance based reg. And so, you know, we

1 accept all comers, if you will. And that's one of the
2 beauties, I think, of the regulation itself, so -- and to
3 the extent that when people apply for method 2 pathways,
4 for example, we really dig pretty deeply in terms of what
5 they're doing, looking at two years of utility data, and
6 the like, and looking to see exactly, you know, are you
7 following the conditions that are required for you to get
8 that carbon intensity value? And CI is the currency of
9 our program. And I can tell you that Wes and his section
10 are overwhelmed and overworked, because this reg is
11 working so well.

12 And there's so many people thinking outside the
13 box, and there's so many people applying for lower CI
14 pathways. And that's -- I think that's exactly how the
15 LCFS was intended to work.

16 Yeah, Ralph.

17 PANEL MEMBER MORAN: Thanks, Mike. Question on
18 the crude provision. And, you know, we've argued that
19 crude shouldn't be differentiated. But since you are
20 doing that, a question here. I mean, one of the real
21 pleasant surprises about the low carbon fuel standard has
22 been all the incremental innovation in the fuel pathways.
23 Small little changes that have brought reductions in CI.
24 And that's one of the things that has allowed the low
25 carbon fuel standard to continue to be achievable to this

1 point.

2 So my question would be since you allow those,
3 incremental changes, why is it that in a standard that's
4 supposed to be fuel neutral performance based, we hold one
5 part of the life cycle to a much different standard. So
6 for crude oil in order to get credit, you have to do
7 something heroic, it has to be innovative, and it has to
8 be identified by CARB ahead of time. Why is that? Why do
9 we hold different parts of the lifecycle to different
10 standards before you give them credit?

11 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Well,
12 regarding crude oil, Ralph, I mean, there are -- when
13 incremental improvements are made, for example, less
14 flaring, that gets reflected in the CI of the crude. So
15 that's very consistent with lifecycle analysis.

16 With regard to innovative approaches, then you
17 get extra credit above and beyond the CI reduction. So
18 there are two things. One, like I said, if there are
19 incremental improvements on production of crude that's
20 reflected in the CI of that crude and that works its way
21 into the lifecycle analysis, then on top of that, if
22 there's something that's, what we consider, innovative,
23 then that's a sweetener on top of the lower CI as well.

24 So we are responsive to incremental changes in
25 crude oil production that may not be innovative, but could

1 be something like, you know, cogen or reduced flaring and
2 the like and that's reflected in the CI of the crude.

3 Any other questions in the room on GREET, OPGEE,
4 GTAP?

5 No questions.

6 CO-CHAIRPERSON LOZO: Nothing on the phone.

7 --o0o--

8 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Okay.
9 We're going to move on to --

10 PANEL MEMBER MALINS: Sorry. It's Chris from
11 ICCT on the phone. I may not have been concentrating
12 earlier, but could I ask how I'm supposed to register if I
13 want to ask a question? Should I be emailing in or are
14 there buttons that need to be pressed?

15 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: You can
16 either email in or you can ask your questions right now,
17 Chris.

18 PANEL MEMBER MALINS: Sorry, well, I haven't got
19 -- well, that was it. What's the email?

20 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Well,
21 when you feel the urge to ask a question, please do so.

22 PANEL MEMBER MALINS: Okay. Cheers.

23 (Laughter.)

24 PANEL MEMBER MUI: Sorry. I'm going to throw in
25 a question here on the innovative crude provision. For

1 projects that you utilize renewables to produce crude, how
2 is that currently incorporated in the program? Is that
3 through the crude provision or is that actually its own
4 unique pathway?

5 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: For
6 crude production, that would be in the -- OPGEE would be
7 in the innovative crude oil approach.

8 Again, we're adding things to what we consider to
9 be innovative. If that list doesn't seem complete and we
10 know of some other type of innovative crude production, if
11 you can bring that to our attention, we can try to
12 incorporate that, assuming that it's innovative. Like I
13 said, I think we've got solar generated steam and CCS at
14 this point, but we're adding these other items that were
15 on slide 46, solar wind, and biomass based power, and
16 biomass based steam and heat, solar heat.

17 PANEL MEMBER MUI: So you're thinking -- so,
18 sorry renewable crude oils would be in this -- would be
19 captured by this provision, or --

20 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: You
21 know, now that I think about what you're talking about,
22 you're talking about maybe a facility that produces as a
23 product something that would not be a finished fuel or a
24 blend stock would be charged to a refinery.

25 I think what we've talked about this as being is

1 that the refinery investment piece of it is it a fuel
2 pathway or is it innovative crude?

3 I'm not sure? I'll just say I'm not sure about
4 that. Certainly, I think because it would be produced by
5 a facility, I tend to think it would be more along a fuel
6 pathway approach. But if it's charged as a crude, it
7 would have to have its own CI as a crude as well.

8 So that's a good question. It may have a higher
9 CI because of the processing involved, but if it's made
10 from a renewable, there should be some credit for that as
11 well. So that's a good point how we would look at
12 something that may have a higher CI than a crude oil, but
13 being renewable also it deserves some sort of credit.
14 That's a good point, and I'll have to bring that up with
15 staff to figure out how we would handle that.

16 Thank you.

17 CO-CHAIRPERSON LOZO: Just a reminder, before we
18 move on in the schedule. Panel Members, if you'd like to
19 make a comment or have a question after today, we do have
20 a link open on the Advisory Panel webpage for panel
21 members to make comments and that will be open through
22 Friday. There is also a link on there for the public. So
23 either way, if you'd like to make a comment, please do so
24 through the Advisory Panel webpage. Again, that will be
25 open through Friday.

1 So we're pretty close to exactly on time, which
2 is fantastic, but I think we'll move ahead, if we don't
3 have anymore questions to the next section on fuel
4 availability, and the compliance schedule and cost
5 containment, and harmonization.

6 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: I'm
7 back.

8 (Laughter.)

9 --o0o--

10 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Now, we
11 get to talk about something that's very interesting, fuel
12 availability. We had a workshop on September 25th on
13 this, so it was a week and a half ago.

14 Slide 49, we discussed the U.S. availability of
15 fuels, the growth potentials and the hurdles and barriers,
16 and we asserted at that workshop that higher LCFS credit
17 prices will attract significant volumes of available
18 fuels. I mean, we already see that in our reporting tool.
19 We see the types of fuels that are being attracted to
20 California.

21 So what I want to do today is slightly different
22 than what we did the first time, which is when I just -- I
23 would put up an alternative fuel category, and then we
24 would talk about it. We've got some numbers here that
25 staff has put together that says we think this is the

1 availability in the United States of particular fuels and
2 their volumes. And then from there, we will talk about
3 what kind of subsidy, if you will, the LCFS can provide
4 for low CI fuels. And so I expect this to be quite
5 lively. And again, you guys being on the Advisory Panel,
6 please advise.

7 --o0o--

8 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Slide
9 50. Like I said, what we did is that we -- staff looked
10 at statewide national global capacity for different fuels.
11 We looked at the past and current production of fuel by
12 the feedstock and the growth patterns both from nascent
13 fuels and current fuels with limited growth potential.

14 So, you know, what is being produced, what has
15 been the growth rate of these fuels, have some feedstocks
16 peaked or is there room for substantial growth going
17 forward?

18 Slide 51.

19 --o0o--

20 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: I'll
21 start with ethanol. We used several sources of data for
22 ethanol. We looked at FAPRI for Brazilian sugar cane
23 production projections. For corn and sorghum, we looked
24 at EIA data and what's in our reporting tool. And then
25 U.S. cellulosic ethanol productions, we looked at EIA's

1 2014 energy outlook. Then finally, Brazilian cellulosic
2 ethanol projections publicly available announcements from
3 suppliers and discussions with Brazilian cellulosic
4 producers.

5 --o0o--

6 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Slide
7 52. And I'm going to pause on this slide. This is the
8 estimated U.S. ethanol fuel availability for corn and
9 sorghum. You know, it's almost 15 billion gallons, so
10 there's plenty of corn and sorghum ethanol. And I might
11 add that we've seen that CIs for corn and sorghum ethanol
12 continue to decline. That's -- you know, corn and sorghum
13 ethanol still represents the vast majority of ethanol that
14 comes to California for our E10 or reformulated gasoline.

15 So we see a lot of innovation and we've seen the
16 CIs go down. I think the average CI for corn ethanol was
17 something like 84, I think, the last quarter, so there's
18 been quite a lot of progress there.

19 Sugarcane ethanol it's available. Obviously, it
20 needs to be economic to send it to the United States and
21 send it to California. There is molasses in ethanol as
22 well. It's got a lower CI. You know, molasses is a
23 co-product of sugar production. I'm aware that ethanol
24 made from molasses is also called rum.

25 (Laughter.)

1 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Because
2 I did go to Puerto Rico, did go to the Bacardi facility
3 there, and they explained to me where they got their
4 feedstock for making rum.

5 U.S. cellulosic. This is the EIA projections and
6 Brazilian cellulosic. I know we recently posted GranBio's
7 fuel pathway on Brazilian cellulosic. I also know that
8 POET just started up there cellulosic ethanol plant in the
9 midwest. I'm also aware that we have three or four fuel
10 pathway applications in with Wes's group on cellulosic
11 ethanol. So there's definitely an intention on folk's
12 part to send cellulosic ethanol to California.

13 So I'm going to pause here on this particular
14 slide to take any comments with regard to what we consider
15 to be U.S. ethanol fuel availability.

16 David.

17 PANEL MEMBER STERN: Just a general comment. I'm
18 going to bring this up as we go on. I think -- I'm glad
19 that -- of the words that you put up earlier in terms of
20 global demand. And I think we need to keep that in mind,
21 you know, particularly as we talk about renewable diesel,
22 sugarcane ethanol, molasses, cellulosic, all these items
23 are a global commerce trade. And I think it's myopic if
24 we're only looking at California or even just the U.S.

25 Because again, the bottom line is you're looking

1 to reduce global GHG emissions not just what occurs over
2 the borders of California.

3 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Yeah,
4 appreciate that point. Certainly, I think within
5 California, the infrastructure is in place, because we've
6 been making E10 for quite a long time. And as the
7 gasoline demand decreases, both domestically and in
8 California as well, that the infrastructure within
9 California to handle ethanol is already in place.

10 The question would be if we were to see
11 additional say sugarcane ethanol or Brazilian cellulosic
12 ethanol, the infrastructure necessary to, for example, get
13 large quantities of ethanol by ship. You know, we would
14 certainly take any kind of comments regarding that kind of
15 infrastructure.

16 Yeah, Miles.

17 PANEL MEMBER HELLER: Pretty specific question.
18 I was just wondering on the Brazilian cellulosic, are
19 there any pathways that have been approved and CI values
20 assigned, are they in the pipeline?

21 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: I think
22 the GranBio fuel pathway was just recently posted, so
23 that's the first one. I know there's POET, DuPont,
24 Abengoa, GranBio. So in terms of Brazil, I think GranBio
25 is the one that just recently got posted.

1 CO-CHAIRPERSON LOZO: Geoff Cooper, you want to
2 go ahead and ask your question?

3 PANEL MEMBER COOPER: Yeah, a quick question, and
4 it is fairly specific. You know, the slide you showed,
5 Mike, has a billion gallons or more, I think 1.75 is the
6 top end, of potential sugarcane ethanol availability. And
7 I think you referenced FAPRI as the source for that. When
8 I look at the FAPRI projections, I see less than 200
9 million gallons of sugarcane ethanol imports in 2020. So
10 I'm wondering about the discrepancy there, and if you
11 could speak to that.

12 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: I'll
13 have to get back to you on that. We had this workshop on
14 the 25th, and I think the comments are due by October
15 16th. So, you know, if -- we would appreciate it if you
16 submitted comments that we could -- that we could respond
17 to. That's a very good comment, and I'll ask staff to
18 look into that.

19 Thank you.

20 PANEL MEMBER COOPER: Thanks.

21 CHAIRPERSON KITOWSKI: So before we move on,
22 there hasn't been a lot of comment in this category, maybe
23 that's appropriate, but let me just be a little blunt with
24 it. And, you know, this is the whole point of getting
25 feedback here.

1 I think the bottom line, Mike is saying when we
2 looked at ethanol, is there is, and will continue to be, a
3 strong supply of ethanol available for E10. We're not
4 expecting significant volumes beyond E10, but we are
5 expecting that California as a driver will pull in much of
6 the lower CIs that we're seeing here, and that's going to
7 constitute our supply. That's kind of our bottom line. A
8 little blunt.

9 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Thank
10 you, Jack. Yeah, Russ.

11 PANEL MEMBER TEALL: Have you done -- have you
12 done a calculation, Jack, that shows the volumes in
13 relationship to the CI according to the compliance curve?
14 So you can show that there's lots of volume, but, you
15 know, what is the impact on actual compliance?

16 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Yeah,
17 that's a great question. We do have spreadsheets that
18 we're populating with different volumes and CIs. One of
19 the things that has kept us from having compliance curves,
20 at this point, is I go back to OPGEE and GREET and GTAP
21 for -- you know, GTAP. And so just the CIs of all the
22 different fuels are a little bit in flux. And so once we
23 lock those down, then I think then, you know, we are going
24 to look to see what we think reasonably can come to
25 California or be produced in California. And the workshop

1 on October 27th is going to have that kind of information
2 in it.

3 So it will be an important and lively workshop.
4 We're going to have it in Byron Sher, so we think that we
5 need the venue about that size to have that. So I've got
6 a meeting scheduled with staff tomorrow to try to get the
7 CIs nailed down for the purposes of finishing the work on
8 compliance curves.

9 PANEL MEMBER TEALL: So will that be available
10 ahead of time or --

11 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Yes.

12 PANEL MEMBER TEALL: Okay. Great.

13 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: With
14 the workshop on the 27th, which is a Monday, we are hoping
15 that we can have something out the previous Thursday,
16 maybe the 23rd. So I'll tell management that we need it
17 by the 20th and we'll see if we can get it out by the
18 23rd.

19 It's what I used to do with my daughters. You
20 know, I said well you've to get in the car by 8:00
21 o'clock. And, of course, they caught on that I really
22 meant 8:30, and so that didn't work either. But
23 nevertheless, we will have it out, and we're going to have
24 hopefully very specific information that people can digest
25 over several days before the workshop, so that it's not

1 like we just start with the slides. So it's going to be
2 hopefully very specific information in plenty of advance
3 for people to digest it, yes. Good question.

4 Okay. Moving to slide 53.

5 --o0o--

6 TRANSPORTATION FUELS BRANCH CHIEF WAUGH:

7 Renewable gasoline. We've got two facilities
8 that we're aware of. And then staff has said, well, you
9 know, there's room for additional growth.

10 So if we move to slide 54 --

11 --o0o--

12 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: -- this
13 is our low, mid, and high projected 2020 renewable
14 gasoline supplies. We definitely would like some feedback
15 on this. I always tell folks that renewable gasoline is
16 the Holy Grail of the LCFS in a way, because when you look
17 at the gasoline standard, there's only so much you can do
18 with the ten percent ethanol piece of it. So you really
19 need to get into the 90 percent of the petroleum based
20 CARB BOP, if you will, if you're going to make much
21 progress with regard to the gasoline standards.

22 So I throw it out there for folks who may know a
23 little bit more about renewable gasoline volumes.

24 And we'll start with David.

25 PANEL MEMBER STERN: So if you did the same

1 productions back -- if I remember back to 2010 or 2011,
2 productions were even higher than these numbers by 2014.
3 So they haven't materialized, and I think, you know, again
4 it's -- I think the industry is now starting to recognize
5 the challenges of actually scaling these things up.

6 You know, we all know what happened to some
7 notable companies that actually started producing. We're
8 all aware of plants that have been quote unquote starting
9 up now for the last three or four years. Again, I
10 certainly give applause to those who continue to work this
11 angles, because it's very challenging and it's capital
12 intensive. And the challenges of handling solids and the
13 like are only now becoming realized.

14 But, you know, again, I think you need to
15 continue to follow the EIA projections, which continue to
16 be revised. I think that's the only fair basis to go on.
17 I think these look somewhat inflated versus EIA, but I'll
18 leave it, Mike, to your team to figure out what the right
19 numbers are.

20 But one question I do want to ask, which relates
21 to this entire topic, the LCFS -- just in terms of a
22 status check. LCFS has now been in -- you know, in
23 progress since 20 -- basically, 2010, now 2011 for the
24 true compliance. So it's near its mid-term of its initial
25 period. And one might reasonably ask what has the LCFS

1 done to encourage low carbon intensity fuels in a real
2 sense that would not have been done if the LCFS did not
3 exist?

4 You know, I would argue that cellulosic ethanol
5 would be being produced irrespective on based on the draw
6 from RFS2. I would argue also that Brazilian sugarcane
7 ethanol will be produced regardless because of -- of the
8 economics of production in Brazil. I think if CARB wants
9 to really look at the effectiveness of this program, then
10 it should do some kind of analysis to illustrate what the
11 LCFS has actually accomplished in the last almost mid-term
12 of its regulatory lifetime.

13 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: That's
14 a good question. I can definitely say that the average
15 CI, like I said before, the ethanol that's coming to
16 California is lower. I can say that because of all the
17 fuel pathways where people have made improvements to their
18 ethanol plants, for example, that they have done so to get
19 a lower CI, because when it comes to the RFS program, that
20 you're either in a particular bin or not. So you're
21 either advanced or cellulosic or, you know -- once you're
22 in the bin, that's where you are.

23 So I think we've heard a lot of people say that
24 because of challenges with RFS2, that the LCFS is starting
25 to drive the bus now with regard to innovation. I think

1 we've seen more renewable diesel than otherwise we would
2 see. I think we're seeing more biodiesel than otherwise
3 we would see, and I know that we're also seeing more
4 renewable natural gas than we would see as well, because
5 these are the types of method 2 applications and the types
6 of fuels that we're seeing in the reporting tool. So
7 renewable diesel, biodiesel, renewable natural gas, lower
8 CI ethanol, I think these things are actually true and
9 happening because of the LCFS.

10 PANEL MEMBER STERN: Can CARB tabulate that, you
11 know, because it's something that would be beneficial,
12 particularly if the CARB Board wants to re-endorse it.
13 It's information that it should have at its finger tips to
14 try to understand what the progress has been and -- you
15 know, again, when you look at CI reduction overall, you're
16 looking at about one percent, a little bit more than one
17 percent. So the question is what has it actually done? I
18 think it deserves mention. And some calculation in a
19 reasonably robust way.

20 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: I
21 appreciate that.

22 CHAIRPERSON KITOWSKI: Let me add, I thought Mike
23 did a very good job of articulating some of the changes
24 we've seen in California. I actually have almost the
25 opposite view kind of, that I'm amazed at the amount of

1 changes we're seeing, considering all the challenges the
2 program had and that it's worked through it. At the
3 last -- at the first Advisory Panel meeting, we had a lot
4 of discussion that came through about the uncertainty of
5 the program, and that the -- one of the main obstacles
6 that we heard was the uncertainty of the program with the
7 various lawsuits, and the re-adoption and the frozen at
8 one percent has chilled investment.

9 And still, despite being at a one percent level,
10 despite all of the uncertainty of the lawsuits, which
11 we've now mostly worked our way through, we're still
12 seeing significant pathway applications. We're seeing the
13 low CI ethanol coming in. We're seeing significant
14 renewable diesel and renewable natural gas. And so those
15 kinds of changes to me are a strong indicator that when
16 the program is operating in sort of a routine way, that
17 we're going to see much more out of this.

18 And I take what you said, and I think that's
19 useful information that the Board would have. I'm not
20 sure this snapshot today is going to be the most
21 illustrative, but I think it could provide some good
22 information.

23 PANEL MEMBER STERN: Look, the devil is in the
24 details. The bottom line is that if you look at the
25 compliance schedule that was originally set forward, and

1 if you look at what would be obtained without the LCFS,
2 you're looking at -- again, you're looking at about a one,
3 one and a half percent CI reduction to date.

4 Whether those numbers are accurate or not, I
5 still beg to differ about the uncertainty analysis and
6 what you're actually doing for GHGs. So the point is I
7 think there are a number of fuels that would exist
8 regardless. If I look at diesel production -- if I look
9 at diesel blending, how much of that diesel will
10 be blend -- would have been blended in other states
11 besides California? Is that really making an impact? Has
12 the fact that the LCFS existed actually brought more
13 diesel into the U.S. than would have otherwise been
14 blended? I don't -- I'm not so sure that's the case.

15 But I would ask, again, CARB to say, on a global
16 basis, you know, bringing Brazilian sugarcane ethanol to
17 California doesn't change the global GHG emissions. It
18 just means that I shuffled the fuels from one place there
19 it would have been used to some other place.

20 So what I'm asking is without the LCFS on a
21 global basis, what would be different? And I think that's
22 the challenge that CARB you have to try to figure out how
23 to answer that question in a calculable sense.

24 CHAIRPERSON KITOWSKI: Right. And my point was
25 we do need to answer that, but we also need to project

1 that going forward, because that's largely what do we
2 think is going to happen with LCFS moving forward. And
3 the dynamics are different moving forward was the main
4 point of my comments. So I appreciate it.

5 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Yeah,
6 thank you. I think we need to do a better job of singing
7 our own praises. Thank you.

8 (Laughter.)

9 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Tim,
10 you had a comment.

11 PANEL MEMBER OLSON: Yeah. I'd like to, David,
12 invite you to look at some information we have on 30
13 projects that were -- had some level of co-funding from
14 the State of California. And those are in stages from
15 2008 to today. Most of them are in some stage of pilot,
16 early commercial, or expansion of commercial projects.
17 Fourteen are producing commercial operations now. And we
18 interview each one of those companies and they basically
19 say that that money was instrumental in those projects,
20 but the LCFS was a key factor, and they wouldn't be even
21 proposed if the LCFS didn't exist.

22 There are other factors too. RFS is a factor in
23 this too, so that's -- and by the way, the Energy
24 Commission highlights this and goes through a pretty
25 detailed evaluation of each project. You'll see the next

1 update of that in our 2014 integrated energy policy
2 report. It's referred to as a benefits report from the
3 investments.

4 And we're not -- we're not trying to attribute
5 the success of all those projects just to our money. But
6 in our interviews, it was LCFS was the key factor. And
7 that includes biomethane, biodiesel, and a couple gasoline
8 substitute projects.

9 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Thank
10 you, Tim. We'll go to Jill and then miles.

11 PANEL MEMBER JOHNSON: So I have to respectfully
12 disagree with David. I think I'm -- this is Jill Kauffman
13 Johnson from Solazyme. We are a renewable diesel
14 producer. The LCFS is absolutely the most important
15 incentive we could have to bring our fuel to California,
16 hands down.

17 And on three levels, right, for us and
18 probably -- and our other folks in our field, and that is
19 it started to give a place where it had enough certainty
20 to start having investment. And, of course, the second
21 one is to start developing the second generation of
22 renewable diesel, and it will come to California.

23 Also, this has been around five years. The oil
24 industry has been around for more than 100, so this is
25 just the beginning, so that the first generation, you're

1 right, is around. It's going to be -- and it will be
2 diverted here, and hopefully in the lower CI types of
3 fuels, but the second generation still takes time.

4 And having this in place and then the LCFS is
5 inspiring Washington and Oregon to also look at similar
6 types of legislation. It is critical for the growth of
7 this industry.

8 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Thank
9 you.

10 Miles.

11 PANEL MEMBER HELLER: Yeah. A couple questions
12 on the renewable gasoline. Is there a pathway approved
13 yet and what CI do you anticipate? And then secondly, are
14 there any fuel approval impediments that you see within
15 your regulatory structure, like does it have to go through
16 multi-media, are there changes necessary to CARB phase 2
17 regulations to be able to deploy that? Is there any
18 information on that available?

19 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Yeah, I
20 don't think we've got a fuel pathway for renewable
21 diesel -- I mean, renewable gasoline at this point. And
22 you're right, that if it's a new fuel, they would have to
23 undergo a multi-media assessment on that as well.

24 I don't know -- I don't know whether we've got
25 any activity on renewable gasoline from the standpoint of

1 multi-media analysis, but that would be required for this
2 new fuel.

3 PANEL MEMBER HELLER: Okay. So that would be
4 factored into your -- the timing and the compliance curves
5 and all that?

6 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Yes.
7 Yes. You know, when you look at even what our projected
8 volumes may be, when you consider that we're talking about
9 14 billion gallons of gasoline, even, you know, 100
10 million gallons of renewable gasoline is just a drop in
11 the bucket and it's not going to really contribute much
12 towards compliance with the 2020 standard, whatever that
13 might be. So it's still a very, very small piece of the
14 pie. It's a sliver really.

15 Any questions on the phone?

16 All right.

17 PANEL MEMBER EPSTEIN: This is Bob Epstein. I'd
18 just like to reinforce the fact that our own research,
19 which we've done every year now -- that the LCSF is
20 driving investment. It's driving reductions in carbon
21 intensity and, you know, we will release our latest update
22 sometime in the next month. But it just shows -- it shows
23 interest and it shows a general trend and direction. So I
24 strongly disagree that it's effect is minimal.

25 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Thank

1 you, Bob.

2 Simon.

3 PANEL MEMBER MUI: Yeah, Simon Mui with NRDC. I
4 would actually comment kind of the opposite on the EIA.
5 I'm sorry, AEO EIA forecast, you know -- you know, when
6 you look at sort of the credit values provided to
7 facilities, it isn't necessarily from the LCFS perspective
8 something that we see as, you know, if you assume that AEO
9 captures the RFS, the LCFS would build on top of that.
10 You would expect, you know, the value of cellulosic
11 production and other biofuels to actually increase for
12 California and the states that adopt clean fuel standards.
13 So it would actually build upon those volumes.

14 And I think a simple project finance look at, you
15 know, modeling of those values to new projects going
16 forward will demonstrate that, that at certain credit
17 prices you start triggering projects.

18 And I think the main factor that has been,
19 perhaps in terms of slowing down, you know, the impact of
20 LCFS has been the litigation obviously, the uncertainty,
21 and that is reflected in the credit prices today. So I do
22 think going forward we do need to look at the effects of,
23 you know, clarity, certainty, as well as real, you know,
24 stability in the credit prices going forward. We've seen
25 this for the rec -- you know, for the renewables market

1 and electricity side the importance of renewable energy
2 credits in jump starting projects.

3 We've seen the importance of certainty in the
4 clean car standards, you know, even though it was
5 litigated for many years, that once that certainty was
6 provided, that industry did invest, industry does improve.
7 So I think the same will hold for the LCFS as well and is
8 holding.

9 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Thank
10 you.

11 Nick.

12 PANEL MEMBER ECONOMIDES: Thanks. I just wanted
13 to make sure that we didn't lose in the initial gut
14 reaction to David's comments that the two key points that
15 he made. And they were, at least as I received them, that
16 if we believe that, if we believe that there's a drive and
17 an incentive and a increased focus as a result of the
18 existence of this program, then let's do a fairly rigorous
19 job of quantifying its incremental benefits above the RFS.

20 And furthermore, I think the two areas that we
21 could really, really use some further elucidation and
22 granularity is volumes coming to California. And I tell
23 you I'm looking forward to the 27th and I regret the fact
24 that we will not have an Advisory Panel meeting following
25 that event.

1 That's the one thing, volumes coming to
2 California, incremental volumes particularly above what
3 the RFS would have generated, and secondly, greenhouse gas
4 emission improvements on a global basis. I think those
5 two things would help us do some sort of an evaluation of
6 is this program meeting it's intended design and
7 objectives?

8 I mean, the resetting of the targets and the
9 compliance curves will, in and of itself, provide
10 commentary to that effect as to how well we're doing five
11 years in. No doubt. But this additional information
12 certainly would help further clarify it.

13 Thank you.

14 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Thank
15 you. And we'll get to this momentarily, but, you know,
16 there are certain things that we know the LCFS does not
17 drive. And that is, for example, electric vehicles. We
18 don't think people are buying EVs just because of the
19 LCFS. Nevertheless, the LCFS accommodates those vehicles,
20 accommodates that fuel, so -- and then in terms of natural
21 gas, the penetration of natural gas into vehicles, I don't
22 think -- we're not driving that as well, but we are
23 driving is moving more towards renewable natural gas as a
24 larger portion of that.

25 So there are things that we know that LCFS is not

1 driving, and I think that alternative fuel vehicles, for
2 example, that's either a separate mandate or consumer
3 acceptance or economic driving force for those. So we
4 will -- like I said earlier, we'll try to sing our praises
5 a little bit more with data.

6 Sonia.

7 PANEL MEMBER YEH: I just wanted to make a
8 comment about David's comment earlier. I'm sure there are
9 a lot of -- probably half of the -- a lot of people from
10 the Advisory Board will beg to differ, so I won't pile it
11 on. But I would just offer that, you know, the event --
12 the contribution of LCFS is recognized not just in
13 California, but across the U.S. and internationally,
14 across, not just the fuel sector, but also across
15 carbon -- you know, carbon abatement community.

16 And UC Davis has every -- twice a year we put out
17 a report looking at a status review of LCFS. We try our
18 best trying to be extremely objective, and we talk to the
19 supporter of LCFS, as well as critics of LCFS, and try to
20 document its marginal contribution, in addition to the
21 RFS2. So I would encourage you to take a look.

22 And the last point I want to point out is that
23 the last year -- last year, Nature Magazine put out an
24 editorial praising the contribution of LCFS. And I think
25 it's really hard to get any higher praises from the

1 academic community. So that's all I wanted to say.

2 PANEL MEMBER STERN: So I just -- I'm going to
3 steal the floor for one second. What we're looking for --
4 and, Nick, I thank you for re-chiming in about that -- is
5 there's lots of --

6 CHAIRPERSON KITOWSKI: David, could you talk into
7 the microphone a little. Thanks.

8 PANEL MEMBER STERN: I'm sorry.

9 There's lots -- there's lots of qualitative
10 praise. There's lots of examples, you know, Tim, of
11 investments that are being made by California. The
12 question is what has LCFS actually accomplished in terms
13 of real numbers?

14 And, you know, all I'm saying is that it makes
15 sense for CARB to truly do that kind of analysis to
16 illustrate what LCFS -- what actually would be happening
17 on a global basis and a U.S. basis with and without the
18 existence of the LCFS.

19 If you have a program, any program, you should do
20 that kind of analysis. Sonia, I haven't seen that from UC
21 Davis what would happen with and without LCFS versus
22 anything else. I -- you know, when I look at numbers of
23 what's happened on the low CI fuel front, it's not clear.
24 And I think any good analysis, if you're talking about a
25 mid-point in a program's life, should have that kind

1 of -- that kind of -- that kind of detailed number
2 crunching in order to get that to occur. So that's the
3 challenge. I, think, Mike that you might want to consider
4 it.

5 CHAIRPERSON KITOWSKI: No, I'm -- and I think
6 your point is well made, how do we quantify some of the
7 actions that are going on? Is this the right time to do
8 it?

9 The only small point I want to push back on a
10 little bit is that you've twice said the mid-point of the
11 program. The LCFS program goes beyond 2020. It's more
12 the closer to the mid-point of the reductions, but the
13 program continues to go on. We're not at the mid-point of
14 the program.

15 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Yeah.
16 That's what I was going to say, Jack. And I don't think
17 one percent reduction is the mid-point as well, so --
18 Eileen.

19 PANEL MEMBER TUTT: I just wanted to point out,
20 in case, David, you didn't know or others in the room
21 didn't know, the California Electric Transportation
22 Coalition, along with a group of alternative fuel
23 providers, did hire ICF to do an economic assessment using
24 the REMI model of three separate pathways for the low
25 carbon fuel standard, looked at jobs created and the

1 impacts on the economy in California. And so we do have
2 some pretty, I think, robust numbers there. And I don't
3 know if you're aware of that or not. I just want to make
4 sure you were.

5 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Thank
6 you.

7 Eric.

8 PANEL MEMBER BOWEN: So, David, I do appreciate
9 you bringing up the topic. And I do think any regulation
10 should periodically have a pause button where you stop and
11 look and say, you know, is it accomplishing the goals, are
12 we on the right path?

13 I would caution a little bit about trying to not
14 value the qualitative data and only look for quantitative
15 data, which is not to say anything negative about
16 quantitative data. It's absolutely very valuable. But I
17 little it's a little bit of a false choice to say that if
18 we can't put pencil to paper and come up with specific
19 carbon reductions that we can attribute solely to
20 California's LCFS, then by definition, we're not
21 accomplishing our goals.

22 And I do think it's much better to just invert
23 that and say, you know, if California weren't leading on
24 reducing low -- you know, carbon intensity of fuels, if
25 California weren't creating a market-based incentive

1 system to pull fuels, you know, let's talk to the
2 entrepreneurs, let's talk to people that are building
3 those plants and let's ask them whether or not this is a
4 key component of the value proposition that they think
5 about when making an investment decision.

6 And at the end of the day, would the investment
7 have been made or not, would the fuel volumes have been
8 the same or different, would the CI have been the same or
9 different?

10 We'll never know for sure, because we can't have
11 both scenarios. But, you know, as a person who spends
12 every waking day, you know, working on producing renewable
13 fuels and lowering CI scores, it is absolutely, when we're
14 sitting around making investment decisions, when we're
15 sitting around trying to figure out where is the best
16 place to, you know, grow the company, and what things
17 should we bring to the marketplace, LCFS is a huge factor.

18 And it's not just a huge factor for what
19 California is doing, it's a huge factor in what can
20 California's leadership do to tip other markets and
21 continue to grow the marketplace. So I certainly think we
22 should get as much data and support for the success of the
23 program. As Mike says, you know, spend more time tooting
24 our own horns, because it has been a very successful
25 program, but I would caution us to think about that the

1 only way to do that is with quantitative numbers. Because
2 I think at the end of the day that's a fool's choice, and
3 that data does not exist. And no matter how much time
4 people look for it, you'll never satisfactorily be able to
5 say, but for LCFS, here is a ton of carbon that was
6 reduced.

7 CO-CHAIRPERSON LOZO: Let's go to the phone.
8 Chris Malins, do you want to go ahead and make your
9 comment or question?

10 PANEL MEMBER MALINS: Yeah, okay. It's Chris.
11 Thanks for putting me on right after the guy who said what
12 I was going to say.

13 (Laughter.)

14 PANEL MEMBER MALINS: I was going to make a
15 similar point. I think that David's request that there
16 should be a sort of a consideration and a presentation of
17 what the impact of the program has been is fair. But I
18 think that one has to be realistic about how precisely you
19 can get at this, if you look at something like the
20 Brazilian corn -- I'm sorry, the Brazilian sugarcane
21 ethanol question, trying to pass out the extent to which
22 additional demand in California has led to additional
23 production. It's started to look a lot like the same sort
24 of analytical exercise as the iLUC modeling. And I think
25 it's recognized what a challenging exercise that has been,

1 and how much resource has been put into that.

2 You know, similar, I think if you look at
3 cellulosic plants, look at the plants that are coming
4 online, you will be able to -- and you can talk about the
5 credit value. I think the LCFS credit value and expected
6 credit value is really vital. And I look forward to
7 talking about cost containment a little bit later and the
8 potential to use that to help firm up the credit value.

9 We did some work on uncertainty in the cellulosic
10 fuels investment market a couple of years ago. And our
11 feeling was that for a lot of these plants, that extra
12 little bit of value from LCFS credits on top of what's
13 offered by the RFS could really be very important.

14 So you can get at these things. But I think at
15 the end of the day, in five years to say, okay, we have
16 however many dozen plants now operational, let's workout
17 how many would or wouldn't have been unable to succeed
18 with without LCFS. It is difficult. And, at the very
19 least, it's going to have a lot of uncertainty in it.

20 So, you know, very much I think it's appropriate
21 to look for some of these benefits to be laid out, and
22 quantified where quantification is appropriate. But to
23 look for a complete and comprehensive and, you know, very
24 well resolved answer to what fraction of improvements in
25 corn ethanol pathways can you attribute to the LCFS, what

1 fraction of additional sugarcane ethanol represents
2 genuine increased production, what fraction of cellulosic
3 plants would have or wouldn't have been put in place
4 without the LCFS?

5 And if you look at the example LCFS presents for
6 the rest of North America and the rest of the world, and
7 you were to think about trying to sort of characterize
8 that soft power impact, I mean, this is a very, very
9 difficult quantitative question.

10 CHAIRPERSON KITOWSKI: So that discussion has
11 been really interesting. I'm going to pull moderator's
12 prerogative here and ask Mike to go on. And if we still
13 want to tackle this when we get to the end of the fuel
14 availability discussion, we'll pick it up again.

15 --o0o--

16 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Thank
17 you, Jack.

18 Now, we're going to move on to availability of
19 renewable diesel. And this is a very important category.
20 What we looked at was the feedstock availability, the
21 built capacity, the announced capacity, and then perhaps a
22 projection of additional capacity based on recent growth
23 rates. So if we can go to slide 56.

24 --o0o--

25 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Here

1 are the current RD facilities, a couple of them in
2 Louisiana, and then a Neste plants in Singapore, Rotterdam
3 and Porvoo

4 --o0o--

5 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Slide
6 57, these are announced facilities. I understand that
7 announcement doesn't necessarily mean that they're turning
8 soil at this point, but we're going to do a deeper dive in
9 terms of where these particular facilities are. We did
10 talk to AltAir, for example, and they can make renewable
11 jet, which is the sexy thing these days, where they can
12 make renewable diesel. And given the economic signal that
13 may come from the LCFS with higher LCFS credit prices,
14 they may opt to make more renewable diesel than the
15 renewable jet.

16 As you can see, there's quite a bit of announced
17 facilities in the United States, and one over in United
18 Arab Emirates. I don't know that we could get anything
19 from that facility.

20 --o0o--

21

22 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Next
23 slide. This is illustrative of the United States
24 renewable diesel capacity growth. It is an emerging fuel.
25 There's no doubt about it. Much more is being produced

1 than before. It's a -- you know, I think it's a superior
2 product with regard to the fact it's so fungible with
3 regular diesel that a lot more of it is going to be made.
4 The question is how many by when and how will it get here?

5 --o0o--

6 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Slide
7 59, like I said, is we've got built, we've got announced.
8 Now, the other part is what extra growth beyond what's
9 been announced what will that look like?

10 We've got three growth rates here, what we call
11 low, medium, and high. Low would be 200 million gallons
12 between 2017 and 2020 of additional growth that hasn't
13 been announced. Mid would be twice that, and high would
14 be twice that again.

15 --o0o--

16 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: So if
17 we go to slide 60, this is what we presented in our
18 workshop on the 25th. You know, definitely would like to
19 discuss these volumes. I know that renewable diesel
20 requires significant capital expenditure. But as we've
21 scene before that those expenditures have been being made
22 and that there are RD plants that are in place and RD
23 plants that have been announced and will be coming up on
24 stream

25 And then finally, above and beyond that, what is

1 the outlook for additional renewable diesel supply for the
2 United States?

3 Eric.

4 PANEL MEMBER BOWEN: Thank you, Mike. So as one
5 of the renewable diesel producers on the -- your chart
6 there, first off, let me say, you know, thank you. And we
7 do firmly believe renewable diesel is a great fuel for the
8 country and particularly a great fuel for California.

9 And, you know, you and I have gotten to know each
10 other over the years, Mike. I err on the bullish
11 optimistic side. And those numbers feel very aggressive
12 to me. So I can provide some written comment and we can
13 certainly spend some time going through it. I would love
14 nothing more than to see that much renewable diesel. I
15 just don't see anyway we get there under any time frame
16 that matters for this regulation at those types of
17 volumes. So would -- you know, let's have a follow-on
18 conversation with regards to that.

19 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Sure.
20 I appreciate your comments. I guess the question I have
21 is that, you know, built is built. And then the question
22 there is given the current market in which these existing
23 facilities operate, the question would be also to the
24 extent that the LCFS can rest some of these volumes --
25 existing volumes from other markets. And then the other

1 part is the announced RD facilities, if we can -- if you
2 think it would be a conservative approach to certainly
3 perhaps count those towards projections? Any thoughts on
4 that?

5 PANEL MEMBER BOWEN: Yes, I mean, don't hear me
6 incorrectly. There will be growth, and that should be a
7 good thing. And there should be some growth on this
8 growth curve. It was simply these large numbers my
9 initial reaction is it's just a bit shocking.

10 As far as competing the fuel away, you know, I've
11 worked on LCFS and its predecessors now for ten years, and
12 I will be a strong advocate inside my company that every
13 gallon of our renewable diesel that we get can from
14 Louisiana to here that makes at least as much money as we
15 would have made in Louisiana comes here to help support
16 LCFS being successful.

17 And, you know, whether the economics of that will
18 make sense or not, we'll wait and see what credit values
19 are and what the infrastructure elements of doing that
20 are. For the other large renewable diesel plant in the
21 United States, the Diamond Green Diesel, I know they're
22 not really set up to do shipments from that plant
23 currently. All that goes through the pipeline, which is
24 great, but not necessarily good for California.

25 And then I know you've had lots of discussions

1 with Neste, and you probably have more insights on what
2 their plans to serve the global marketplace are and how of
3 the California fits into that. But I would continue to
4 expect we'll see significant volumes of the Neste
5 renewable diesel coming here, and that some portion of the
6 plants on that list will get built at some time over the
7 next, you know, two to seven years.

8 CHAIRPERSON KITOWSKI: Yeah. If I can -- you
9 said you were open to additional dialogue, and you'd
10 submit some comments, and I appreciate that. And for you
11 and as well as others, I think what we tried to do in this
12 area, and so it would be good -- it would be good if your
13 comments could be as targeted as possible, what we tried
14 to do is layout what sort of the North America fuel supply
15 is, not just in here, but this is the specific case in
16 front of us, and what is built, what is anticipated,
17 announcements there that we thought had credibility, and
18 then different growth rate projections.

19 And we tried to be up front about the
20 assumptions. People can make different assumptions.
21 That's the whole point of getting them out there. So two
22 things I would ask for you. If you have different
23 information than we laid out in each of those three areas,
24 then please, you know, let us know where we might have
25 erred or where you think you have better information than

1 what we laid out.

2 And then the second is kind of getting at what
3 you touched on here, is do you see restrictions with some
4 of these making its way to California, as you laid out in
5 the one facility, or is it primarily a price signal that
6 gets it to California?

7 That is really key in us taking this data then
8 and translating it into fuel supply for California. So
9 the two parts, as specific as we can in each of the -- in
10 the areas of what's currently built and what could get to
11 California of that, anticipated and projected, and then
12 overall, are there obstacles that you see?

13 PANEL MEMBER BOWEN: Happy to do that, Jack.

14 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: We'll
15 go to Tim and then Nick.

16 PANEL MEMBER OLSON: Yeah. I wonder if you could
17 clarify in the renewable diesel number the feedstock
18 source. And does that include palm fatty acid distillate,
19 which would be a waste product from palm production.

20 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: That's
21 a very good question. We had posted a PFAD, palm fatty
22 acid distillate, fuel pathway earlier this year and got
23 some feedback on that. We have at least one more fuel
24 pathway with PFAD that we're also looking at.

25 Clearly, the feedstocks that would go into

1 renewable diesel are some of the same feedstocks that
2 would go into biodiesel. So I think they would compete
3 for the very same feedstocks. What we have now for
4 renewable diesel is tallow based, but we -- like I said,
5 we have posted the PFAD, and it's still up there. We
6 haven't certified it yet, and we're looking at additional
7 fuel pathways. I think there's a handful of them for
8 renewable diesel. I think we've got fish oil pathway. I
9 know we've got tallow, and PFAD is still in the hopper.
10 And I can't recall what the others are, but certainly
11 they're the same types of feedstocks as biodiesel would
12 use.

13 And to the extent that the more volume that you
14 may be assuming will be here, you're going to have to have
15 a wide range of feedstocks to get that volume. So we
16 can't assume it's tallow today and it will go up by a
17 factor of four or five and that's all tallow as well. So
18 we are aware of these other feedstocks, and they're going
19 to have to play a role.

20 Thank you.

21 Yeah, Nick.

22 PANEL MEMBER ECONOMIDES: A couple of questions
23 and comments. The questions are straightforward. In
24 terms of the current facilities' slide noting that just
25 about everyone of these is at least a year in operation

1 and some of them approaching a decade, how much of this
2 fuel is coming to California now? That's questions number
3 one.

4 Question number two, on the following slide,
5 announced R&D facilities, in what time frame?

6 And question number three, comment -- slash
7 comment, if one looks at the projected R&D capacity
8 increase, the mid case of 400 million gallons and compares
9 it to the total of the volumes in our announced R&D
10 facilities, that's about 400 there. So basically, all of
11 the announced has to be built, and it all has to come to
12 California. And so when someone who is close, if not at
13 the core of the industry, tells you that they feel that
14 this is overly aggressive, I think there's more than
15 enough reason to believe that, given the numbers that are
16 here.

17 We share that view, but we're obviously nowhere
18 near the level of expertise or proximity to the core of
19 the information you require. But I look at these numbers
20 and my gut tells me -- I know the past can be a very poor
21 predictor of the future, but you've got some information
22 you can draw by looking at how much of that international
23 volume or total volume is coming to California now, and
24 you can look at some of the ratios of what can be
25 anticipated, discounted for probabilities and further

1 discounted for overcoming economic drivers or hurdles to
2 get it to California, and this looks very, very
3 aggressive, Mike.

4 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Thank
5 you. To answer your first question, we're receiving about
6 100 million gallons per year of renewable diesel from
7 Singapore. There's some that's produced here in
8 California, a small amount, but 100 million gallons per
9 year is what we've seen most recently. The second
10 question when you're talking about announced RD
11 facilities, I believe these have been announced to be on
12 line by 2017/2018. I understand that announced doesn't
13 mean that they've turned the shovel on it, but that is the
14 time frame for these announced ones.

15 The third question or comment, I lost. I was
16 thinking about the first two.

17 CHAIRPERSON KITOWSKI: Let me jump in. I
18 actually thought that the announced was through 2016,
19 because that's when the anticipated then takes effect
20 starting in 2017. But if we're wrong, we can adjust that.
21 I think part of your question had referenced coming to
22 California. Just for clarity for everybody else, this is
23 what we think is North America supply, and so coming to
24 California is the next step. We have to figure out what
25 will come to California from this supply. And part of

1 that is the price signal, part of it is logistics, part of
2 it is a variety of other factors that we want your input
3 on.

4 This gets back to the assumptions that went into
5 this. And this is why we would like your feedback on
6 this. Your comment that the past is -- can be used as a
7 predictor exactly how we got the next step of the
8 projected. We, the staff, took a look at this and said,
9 we're at one percent right now. In some of these cases,
10 these facilities are being built for California market and
11 some of them without a strong recognition of the
12 California market, but facilities are being built now at
13 the one percent at a modest credit price.

14 If the credit price goes up, if there is -- so at
15 the very least, you would expect as LCFS continues to grow
16 and expand, that we would at least continue that same
17 projection rate of growth.

18 And then does it grow beyond that? Does it
19 accelerate the growth?

20 And so that's why you have the medium and the
21 high case. The low case is simply saying we're going to
22 continue to grow at the same pace at a low LCFS rate. And
23 then we use that past to predict the other two rates.
24 Now, if people have different assumptions, we would really
25 like to hear it. We'd like that input.

1 PANEL MEMBER ECONOMIDES: Well, I passed those
2 comments along at the last workshop that we heard -- we
3 had on low CI availability, and the two of them -- the two
4 major points were, well, number one, I think you've
5 experienced an unprecedented high rate of growth in this
6 area. We've seen explosive growth already in the
7 renewable diesel area. And your response basically is
8 thank you very much. We'll build that in the base case,
9 and we expect that to continue going in the future and get
10 even bigger. And that may be right, but it probably needs
11 to be tempered a little bit.

12 The second point is, okay, you have workshops.
13 You asked for commentary. We're having an Advisory Board
14 meeting. There may be some degree of frustration here,
15 but there's very little that we can comment on beyond,
16 yeah, these are the global volumes or these are the total
17 U.S. volumes. We need you to get down to brass tacks and
18 tell us what's coming to California and what assumptions
19 you're making in getting there.

20 And now I know we're going to get that on the
21 27th, because you can't get to compliance curves without
22 getting that done. But it would have been nice if we had
23 an opportunity to parse those out, have an opportunity to
24 review the CI volumes, particularly within the context of
25 what's coming to California, and then have the time to

1 digest that and see how it translates to compliance
2 curves.

3 Thanks.

4 CHAIRPERSON KITOWSKI: I appreciate that.
5 Personally, maybe I'm a little sequential on this, I -- my
6 comment -- opening comments when we started, I'm looking
7 forward to, and have appreciated so far, the comments of
8 this Advisory Board in trying to help us get to those
9 compliance curves. We're providing information that we
10 think is the best information out there with our best
11 assumptions on the availability of fuel supply in North
12 America.

13 We definitely want your comments on it. We are
14 getting your comments on it. I think that's useful.
15 We're hearing comments on this particular category that we
16 think we should temper some of this, and we're hearing
17 comments that we will get some more specific comments
18 later on.

19 We have a decision to make on what North America
20 supply we think is viable, and then we have decisions to
21 make on how much we think we get -- we can bring to
22 California. I would rather make those decisions getting
23 your input up front, and then come out with it, rather
24 than sitting in our offices making those decisions and
25 then come out with it. So I hope you can do it in that

1 context.

2 PANEL MEMBER ECONOMIDES: For the record, you
3 have gotten our input back to June.

4 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Anymore
5 questions in the room?

6 ALTERNATE PANEL MEMBER HOPKINS: Stacy Hopkins,
7 not David Stern, from ExxonMobil.

8 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: I saw
9 the tent that was up. It was David's. It was over in
10 front of you, so I was a little confused, but go ahead.

11 ALTERNATE PANEL MEMBER HOPKINS: Yeah, just on
12 slide 60, I think that there needs to be some
13 clarification on that slide. It says U.S. renewable
14 diesel supply. You're saying North America. Canada --
15 the Canadian regulations can largely impact these numbers.
16 So we just want to make sure you take that into account.

17 I mean, so there's renewable diesel mandates
18 throughout Canada, British Columbia has an LCFS program,
19 and there's also no labeling requirements for renewable
20 diesel blending in Canada, which kind of incentivizes the
21 fuel to go there.

22 You know, for example, before the British
23 Columbia LCFS program went into -- went into enactment,
24 you know, they had two times the renewable diesel blended
25 in British Columbia than they did in California. So I

1 think that that just needs to be taken into account in
2 this evaluation.

3 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: I
4 appreciate that comment. I know that Canada received
5 renewable diesel from both Singapore and Europe actually.
6 And I know that they also import a lot of biodiesel as
7 well. I'd like to expand on that comment, in that, you
8 know, there are other programs out there, Canada and
9 Europe. And so these -- even these built facilities were
10 built with a market in mind. And so I always ask my
11 staff, is that even with some of these announced
12 facilities, they're not built on spec, because they're
13 expensive.

14 So there is a market in mind. And if we think
15 that we're going to arrest it from that other market, we
16 need to understand that they have their own programs as
17 well, and they may fight tooth and nail to keep some
18 renewable diesel, for example, in Canada or in Europe.
19 That's something we have to keep in mind, that sometimes
20 these other programs are going to say no that volume is
21 ours, and we're going to keep it here, but that's a very
22 good point.

23 I've got a comment here from Chris Malins and
24 then I'm going to ask a question of him soon enough, so
25 that someone here hasn't already given the comment that he

1 would have given. So he just seems to be a half a step
2 behind. I'll give him an opportunity. One of the things
3 he did say was that since PFADs came up, that he wouldn't
4 characterize a PFAD as a waste. We don't either. It's a
5 co-product. It's not a waste. He wanted to make that
6 point.

7 Chris, if you're on -- if you're still on the
8 phone, the question I have for you, as I was talking to
9 Stacy here, that I know Europe has a program that
10 certainly cherishes their biodiesel/renewable diesel. I
11 think that staff has assumed -- some staff has assumed
12 that we won't be attracting any of the volumes of
13 renewable diesel from Europe. I have other staff that
14 says, well, why not? If the price signal is strong
15 enough, we can, you know, tap into the European renewable
16 diesel market.

17 So I just didn't know whether you had any
18 comments related to the European program and whether or
19 not we could attract any volumes from the European market?

20 PANEL MEMBER MALINS: Well, I think it's probably
21 fair to say that if the price signal is strong enough, you
22 are likely to pull material over to the States.

23 Certainly, at the moment, Europe is -- a couple of the
24 countries, I guess, the UK and probably the Netherlands
25 and maybe Germany and a few others have been putting quite

1 a lot of used cooking oil from all over the world into the
2 European market.

3 The German government, I think, is shortly going
4 to be announcing the roll-out of what is essentially a low
5 carbon fuel standard for Germany. The advantage, or one
6 advantage if you like, that California would have an
7 attracting certainly waste-based fuels compared to the
8 German system, would be that Germany still won't have any
9 iLUC factors. So within the German system, I guess we
10 would probably see less of a value differential between
11 the sort of first gen renewable diesel feedstocks against
12 the second gen.

13 But we can anticipate within maybe a year, as
14 those of you who follow Europe will know, the process of
15 making policy, Europe can sometimes be a little
16 long-winded. And we've all been discussing for quite a
17 few years the opportunity for stronger incentives to what
18 we might call ultra low carbon fuels.

19 So there's certainly the prospect of some
20 European members states putting in place new incentives
21 that could make those markets sort of serious competitors
22 with California LCFS to fuel volumes. But it's a little
23 difficult at this point to predict whether the transport
24 costs are going to be the only difference, whether
25 California will still look very attractive for material

1 coming from Europe or whether, in some cases, Europe might
2 look a lot more attractive than California.

3 Does that sort of get at the question?

4 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: It
5 does. Thank you. Any other questions in the room on
6 renewable diesel? Any questions on the phone, renewable
7 diesel?

8 If not, I'll move on to biodiesel.

9 --o0o--

10 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Slide
11 61 shows current U.S. biodiesel fuel volumes. As I
12 mentioned before, really kind of to your comment, Tim,
13 that there's a wide variety of different feedstocks and
14 these are the same types of feedstocks that renewable
15 diesel would compete with.

16 --o0o--

17 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Slide
18 62. Last year, there's about 1.3 billion gallons of
19 biodiesel produced. There's a large -- much larger
20 capacity than that. Staff expects that the production of
21 biodiesel will approach capacity by 2020, and that there
22 will be as much biodiesel supplies as California's needs
23 would dictate.

24 We would certainly get the lowest CI biodiesel to
25 California. But the bottom line for biodiesel is there's

1 plenty of it, and there's plenty of capacity to make more
2 of it. And so I don't think there's any issue with regard
3 to availability of biodiesel for California.

4 --o0o--

5 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Moving
6 on to natural gas on slide 63. We're talking CNG and LNG.
7 Renewable natural gas, or biomethane, is produced by
8 landfills, wastewater treatment facilities, food and green
9 waste, and dairies, of course.

10 --o0o--

11 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: If we
12 move on to slide 64, our methodology was to look at
13 various, you know, estimates of growth, both from the
14 Energy Commission's 2013 IEPR, Cal ETC, Boston Consulting
15 Group, Bloomberg, Natural Gas Vehicle Coalition, and
16 historic trends.

17 We do think that natural gas, as a transportation
18 fuel, is growing and will continue to grow. We've got a
19 low demand case based on surveys of folks with contracts
20 in place. High demand for renewable natural gas is based
21 on what the RNG providers thought would likely come to
22 California.

23 So again, there's a wide range of estimates at
24 this point. And, you know, this is one of the larger
25 questions that we have in terms of the growth of natural

1 gas as a transportation fuel. There's no doubt in our
2 mind, because we've already seen it, that whatever the
3 natural gas usage is, a larger and larger portion of that
4 is going to be renewable natural gas. We see it today in
5 the reporting tool, and we know that with the lower CIs of
6 renewable natural gas, the LCFS would definitely provide a
7 lot of credits for that.

8 Russ, you've got a question?

9 PANEL MEMBER TEALL: I just wanted to back up to
10 biodiesel for a second. That's okay. We kind of breezed
11 right through that.

12 I've got Todd's frog's brother in my throat, so I
13 apologize for that.

14 You know, I agree with Jack in that it's amazing
15 what's been accomplished in spite of the fact that the low
16 carbon fuel standard is so anemic, and biodiesel is a good
17 example of that. This is -- what did you say, built is
18 built? That's quite an accomplishment to have 2.2 billion
19 gallons of capacity in the United States. In the first
20 round of the LCFS Advisory Panel, the question came up,
21 well, how many gallons does it actually take to meet the
22 2020 standard?

23 And we ran some spreadsheets with staff. And at
24 the time, it was about 540 million gallons of biodiesel
25 with a CI of less than 20. And here we have an industry

1 with a capacity of 2.2 billion gallons. I think we've got
2 a real significant industry that's capable of not only
3 meeting the diesel objectives, but contributing to the
4 gasoline as well.

5 One thing that I would disagree with is that the
6 renewable diesel is somehow competing with the feedstocks
7 for biodiesel. And, you know, you're looking at a global
8 market in terms of the renewable diesel, you know, with
9 facilities in Amsterdam and Singapore, et cetera, but
10 we're looking at a domestic biodiesel industry. So you
11 know, there's not much overlap.

12 I know that our biodiesel plant in Australia,
13 which is based on used cooking oil, a certain company in
14 Singapore wanted to acquire all of our used cooking oil
15 several years ago, and it just didn't make sense.

16 So they're not looking for feedstocks in the
17 United States. They're in the far east basically looking
18 for feedstocks. So there's not necessarily a
19 competition -- direct competition there.

20 Finally, in terms of what is the impact of LCFS,
21 all right, on our industry in particular? We get asked
22 all the time, you know, as an Association, what do you
23 project for the future? How much biodiesel are you going
24 to make? And it's really a hard question to answer,
25 because you can't predict what the conditions are going to

1 be going into the future.

2 So the first step that we took as an industry was
3 to ask our members if you were to put together a low,
4 middle, and high scenario, what are the factors that you
5 would want to include in making that decision? You know,
6 is it the economy? Is it the LCFS? Is it RFS2? Is it,
7 you know, any number of things. And we came up, as a
8 membership, with about 20 different factors.

9 And then we had people make an estimate as to
10 where those factors ranked. And the LCFS was right up
11 there. You know, you can't see, the -- I'm going to
12 torture this analogy, Nick. But, you know -- you know, we
13 all exist in a soup, and all of our decision making occurs
14 with a range of different factors. You know, so if you
15 try to unmake the soup and pull out the salt and pull out
16 the garlic, you know, you're never going to be successful.
17 So I don't think you can actually pull out the LCFS as an
18 independent factor, but you can ask the people that are
19 actually building and making the plants how significant of
20 a factor it is. And they rate it as very significant.
21 And then we came up with projections based on that, and
22 I'll share that study with you.

23 But in terms of looking at real accomplishments,
24 I tend to look at the IEPR reports. You know, they go
25 through and do a good postmortem of all the programs that

1 they've funded, and what the impacts are, and, you know,
2 why people enter into them. So there's a good robust data
3 set going back. And, Tim, what do you -- it's every other
4 year that you do that, and then there's a mid-term one
5 that you do?

6 PANEL MEMBER OLSON: Every year, yeah.

7 PANEL MEMBER TEALL: So anyway, that's a good
8 point, you know, to -- a good reference work to look at
9 for that. Thanks.

10 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Thanks,
11 Russ. Appreciate that.

12 --o0o--

13 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Any
14 questions on biodiesel before I jump back into natural
15 gas?

16 I mean, I didn't mean to plow right over you,
17 but --

18 PANEL MEMBER TEALL: Oh, you did?

19 (Laughter.)

20 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Well, I
21 have to have my head on a swivel to see if anybody's got
22 their card up.

23 CHAIRPERSON KITOWSKI: So just maybe it's worth,
24 since we went back for a minute, to just go back to the
25 bottom line on natural gas. We're projecting the natural

1 gas sector is going to grow substantially. That it's not
2 really a function of LCFS, but more fuel availability, and
3 how many natural gas fuels are out there. But within that
4 context, we think that LCFS will drive the renewable fuels
5 substantially in this sector.

6 TRANSPORTATION FUELS BRANCH CHIEF WAUGH:

7 So -- oh, Nick.

8 PANEL MEMBER ECONOMIDES: And I apologize in
9 advance if you've already -- I had to jump out for a
10 second. But I'm wondering if staff has any comments on
11 the interaction between the current regulatory initiative
12 involving ADF, and ultimate biodiesel use in the State?

13 CHAIRPERSON KITOWSKI: I think it's a little
14 premature for us to do that. The regulatory process for
15 ADF is ongoing. It needs to get resolved, and it will
16 come to the Board at the same time. It has the ability to
17 impact the volumes associated with this. But at this
18 time, it's too early to tell whether it will or not.

19 PANEL MEMBER ECONOMIDES: Thanks.

20 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Okay.
21 Moving quickly to slide 65. This is what we saw on the
22 LRT. At this point, 11 percent of the total was
23 renewable, and that has gone up even in 2014.

24 --o0o--

25 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Moving

1 to slide 66, you know, here's the broad range of natural
2 gas consumption in 2020. It's 600 million diesel gallon
3 equivalents to 1.2 billion, so there is a wide range
4 there. We -- like I said, renewable natural gas is going
5 to play an important part there. The majority of what we
6 see now is from out of state. Although, the PUC is
7 working on a pipeline injection standard for RNG
8 California. And I would like to ask folks if they know
9 the status of that. I'll go with you -- we'll go with
10 David then Todd? Okay.

11 PANEL MEMBER COX: David Cox with the Coalition
12 for Renewable Natural Gas.

13 The pipeline injection standards are complete at
14 the PUC. We're in a phase 2, which is a cost mechanism to
15 determine who bears what costs in the pipeline injection
16 phase. And as of our last conversation with CPUC staff,
17 they were hoping to have that wrapped up by the end of the
18 month. That being the end of October.

19 On that note, I'll just also -- because of that,
20 AB 1900 and those regulations, we expect that the in-State
21 development of biomethane in a five- to ten-year period
22 will probably equal the total available biomethane that we
23 have throughout the country right now just in the
24 development of California resources that have to date been
25 unable to access the pipelines for transportation.

1 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: I
2 appreciate that. We're also bullish on renewable natural
3 gas. I mean, we just think that that's an untapped
4 resource in California. I've given presentations for the
5 sanitation agencies. I know that the U.S. -- I mean, the
6 California Department of Food and Ag has some money to
7 develop dairy digesters. I just think it's untapped
8 potential, and we're also pretty bullish on that. Yeah.

9 PANEL MEMBER CAMPBELL: Thanks, Mike. Todd
10 Campbell, Clean Energy. And I just though I'd put my card
11 up early, so I didn't speak during the electric
12 presentation.

13 (Laughter.)

14 PANEL MEMBER CAMPBELL: Just a couple notes. On
15 your forecast for fossil based natural gas, which I assume
16 incorporates renewable natural gas as well, I think it's
17 fairly low in terms of projections. We actually think
18 we're approaching quickly 300 million gallons in terms of
19 DGEs per year.

20 So, you know, a two to four times growth over the
21 next five years seems somewhat low to us. We're looking
22 at probably more like two to three thousand -- million
23 gallons in terms of that number. In that -- in the
24 endpoint. And so I'm just going to be able to submit more
25 comments on that. But just to give you kind of like a

1 preview of what we're going to submit.

2 In terms of renewable natural gas -- and Harrison
3 Clay has just walked into the room, and he's our president
4 for Clean Energy Renewable Fuels, I think your belief is,
5 is that those numbers are in line, but I would say the
6 500 --

7 ALTERNATE PANEL MEMBER CLAY: It would be higher.
8 We're at 70 million gallon run right now.

9 PANEL MEMBER CAMPBELL: So we're actually very
10 impressed with this industry and the ability for it to
11 grow. You know, we did 14 million gallons in 2013. We're
12 doing 25 million probably this year, and then easily
13 double next year, in terms of growth. And we're just one
14 company. You know, the field is broadening. It's
15 probably one of the most impressive membership -- you
16 know, increase in membership is David's group as well as
17 other renewable natural gas groups that we are actually
18 members of. But it's pretty impressive how many
19 competitors are coming into that field.

20 And I would -- I kind of held my comments back
21 because I just didn't want to be a-me too, but I just
22 wanted to clearly state that the low carbon fuel standard
23 is a clear driver for renewable natural gas. It's coming
24 to California because of the LCFS.

25 The RFS actually got it wrong in terms of RIN

1 valuation for renewable natural gas, and actually has
2 corrected itself as of recently, but we certainly would
3 not have had the running rate, and certainly the okay from
4 senior management to move ahead in this space without the
5 LCFS. So it's -- there's no doubt that this has been a
6 significant driver for this industry.

7 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Thank
8 you Todd.

9 Sonia.

10 PANEL MEMBER YEH: So since we're on renewable
11 diesel, renewable CNG and LNG, I'll just throw in a few
12 numbers just to illustrate how difficult it is to tease
13 out the impact of LCFS in light of all the other
14 regulations.

15 So, you know, for those of us working on LCFS
16 since 2007 have been advocating trying to make RFS2 look
17 more like the LCFS. Last year, RFS finally made changes
18 allowing -- and we see signs of changing. And so, for
19 example, last year, RFS finally aligned renewable biogas
20 to generate cellulosic ring credit.

21 So, you know, whether those changes are due to
22 the people working in this area trying to make RFS look
23 more like LCFS is an open debate. But just a few numbers
24 that the biogas generated under the RFS cellulosic RIN in
25 the month of August was 3.5 million, far exceeding all the

1 cellulose RIN credit generated for the whole -- for
2 the -- throughout July, which was less than a million
3 credits cellulose RIN.

4 So you can say that all those credits are
5 generated because of the RFS2, but there's just a lot of
6 interactions there that make it really hard to make a
7 judgment call.

8 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Than
9 you, Sonia.

10 CO-CHAIRPERSON LOZO: Chris, on the phone, go
11 ahead and make your comment.

12 PANEL MEMBER MALINS: Cheers. Chris from the
13 ICCT again.

14 I was just given a helpful prod across the ocean
15 by one of my colleagues from the Alternative Fuels Task
16 Force at IKO, just to follow up quickly on the comment
17 about aviation versus road diesel as a market for
18 renewable diesel.

19 I think it's -- well, renewable diesel --
20 renewable jet fuel coming from the same plants. I can't
21 remember whether this has been discussed before. I'm sure
22 it has. But I was wondering whether the ARB had been
23 considering whether it would be possible to credit
24 aviation fuel supplied in California under the program? I
25 think that the sort of -- or my general feeling is that

1 there's no strong reason to favor road diesel over
2 aviation jets for crediting. So if it was sort of
3 possible to offer similar treatments and avoid creating
4 perhaps a market distortion that's unnecessary, I think it
5 would be worth looking at.

6 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Yeah.
7 Thanks, Chris. We've had several stakeholders suggest
8 giving credit for renewable jet. You know, we don't
9 regulate jet fuel. The federal aviation folks do that.
10 FAA regulates jet fuel.

11 I think Washington State, for example, as they're
12 developing their LCFS program, they are showing more of an
13 interest in renewable jet generating credits. I don't
14 think we're going to get to it in this rule-making, but I
15 do think that that's something that we want to explore.
16 Also somebody brought up marine fuel as well.

17 So I think this is something for us to explore.
18 I just don't think we'll get there during this
19 rule-making, but it's a great point. And I think it -- I
20 think we want to explore that.

21 Any questions on what we've covered so far? If
22 you want to go all the way back to ethanol, jump around,
23 biodiesel, renewable diesel, natural gas.

24 Okay.

25 Oh, Tim.

1 PANEL MEMBER OLSON: Yeah. I think this will be
2 a good point to make a comment, that the Energy Commission
3 agrees with your assessments that you've come up. We're
4 looking forward to your compliance curves, seeing what you
5 come up with there. And we have similar assessments.
6 They're based on verifying projects, built projects,
7 investments in projects. And our 2013 Integrated Energy
8 Policy Report identified a lot of these.

9 And I'll tell you, we were really short on
10 biomethane in 2013, mainly because we couldn't get people
11 to verify and get -- put in our public record that they
12 had a project. So we've only had four million gallons DGE
13 projected by 2020. Since then, we -- projects we've
14 invested in -- our money in and others have come forward
15 and documented much more, in addition to the pipeline
16 deliveries from Oklahoma, Texas.

17 And what I'd like to do is offer to include in
18 your record -- and the timing might be slightly off, but
19 by October 31st we will have our 2014 Integrated Energy
20 Policy Report out with some updated numbers for all these
21 categories.

22 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Thanks,
23 Tim. We'll be looking forward to that on Halloween.

24 (Laughter.)

25 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: A

1 coincidence, I'm sure.

2 (Laughter.)

3 --o0o--

4 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Okay.
5 We're going to move quickly on to electricity. Quite
6 frankly, there's plenty of electricity for EVs. I think
7 the grid is getting cleaner. As I mentioned earlier, that
8 has we move forward when the grid gets cleaner, I think
9 the carbon intensity of electricity will go down. On the
10 other hand, I think we need to recognize as conventional
11 vehicles get more efficient, the EER of EVs may also go
12 down. But for the time being, I think there's plenty of
13 electricity for EVs. And we see that as a burgeoning
14 transportation fuel.

15 It used to not show up in our amounts, because it
16 was less than one percent. Now it is, and so now it's a
17 piece of the pie that continues to grow.

18 --o0o--

19 TRANSPORTATION FUELS BRANCH CHIEF WAUGH:

20 Hydrogen, slide 68. This has some additional
21 challenges, of course, the cost of the infrastructure,
22 cost of fuel cell vehicles. But our agency is very
23 bullish on fuel cell vehicles and hydrogen that these
24 hydrogen stations are being built.

25 I see that we've got 51 stations expected to be

1 operational by the end of 2015, with another 49. And I
2 don't know that's the precision we have, but 51 plus 49
3 equals 100. That's about as close as we could go as far
4 as being precise on that.

5 And there has been some discussion recently on
6 more renewable hydrogen. There's a requirement from SB
7 1505 that a third of it has to be from renewable sources.
8 And I do know that when we had our workshop on the 25th,
9 there was a stakeholder there that was in the business of
10 making renewable hydrogen. And so I hooked him up with
11 Wes to talk about a fuel pathway for renewable hydrogen.

12 David.

13 PANEL MEMBER STERN: On two --

14 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Please
15 talk into the microphone, please.

16 PANEL MEMBER STERN: Sorry. Again, most people
17 tell me to quiet down, not speak up.

18 (Laughter.)

19 PANEL MEMBER STERN: When it comes to
20 electricity, there are two things that I wanted to bring
21 up. One of them is I'm assuming that CARB is still moving
22 forward with the concept of unmetered electricity
23 generating credits?

24 And, you know, from a regulated party standpoint,
25 I still question -- I question whether it -- you know,

1 whether CARB will stand behind the fact that those credits
2 actually do exist or whether the regulated parties are in
3 lurch and are buying credits that they don't know whether
4 or not they may be held up as being valid? Will CARB
5 certify those credits or is this something that regulated
6 parties need to take a risk on?

7 CO-CHAIRPERSON LOZO: Because the estimation
8 method is very strong and very solid and it is a method
9 that involves both the ARB and the utilities together
10 sharing data, yes, we can certify that those credits are
11 valid.

12 PANEL MEMBER STERN: So the regulated parties
13 will not be held liable if those were not -- if those are
14 invalidated in some way, is that what I'm hearing?

15 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Are you
16 talking about if you buy those credits and then --

17 PANEL MEMBER STERN: -- and then they're not
18 real.

19 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Oh, we
20 do believe they're real. I mean, we use DMV data to
21 supply to the utilities, so we know how many EVs there are
22 in California. We use the data that is known from metered
23 usage and extrapolate that over the number of EVs that are
24 in the particular service areas. And as more data become
25 available, we continue to fine-tune that. We go through

1 this process yearly.

2 So I would say of any of the credits that are in
3 the market because of ARB's involvement in these and this
4 estimation, I would say, yes, we're very confident that
5 these credits are real and --

6 PANEL MEMBER STERN: Okay. I'm making a very
7 direct request. I would ask whether CARB actually is
8 going to hold the obligated parties not liable if it's
9 found that those credits are not valid in the future. If
10 not, you're trying to force CARB to -- for fuel providers
11 to purchase credits, which they can't verify.

12 DEPUTY EXECUTIVE OFFICER CHANG: And I was --
13 this is Edie. I was going to ask a question that I don't
14 know the answer to. But is there a process to invalidate
15 credits in the LCFS, if they're found to be fraudulent or
16 something for some reason?

17 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Yeah,
18 that's one of the proposals that we're putting forward
19 this year is more clarification with regard to
20 enforcement, and a more explicit authority on the part of
21 the Executive Officer to remove credits from the system.

22 As some of you know, we recently went through a
23 data reconciliation project for 2011 and 2012, and now
24 2013 just in terms of volumes. We're still working on
25 some of that. There has been some disagreements as to,

1 you know, the obligation for some of the fuels. Someone
2 said we bought it without obligations. Someone said, no,
3 we bought it with obligation. So we're constantly
4 monitoring the LRT.

5 The beauty about the LCFS is that it's a --
6 because only regulated parties can hold and generate
7 credits, it's a very much smaller universe than say cap
8 and trade would be. I think we have 155 entities in the
9 LRT, and most of the activity occurs among just, you know,
10 maybe 30, 40 of those.

11 So to the extent that if we find that there are
12 some credits that aren't valid, that we will remove them.
13 And in terms of who is liable for making those credits
14 good again, again, we know where people are with regard to
15 credits, because they have to be in our LRT to even
16 generate the credits.

17 So everything is going to be a case-by-case basis
18 with regard to due diligence and the like. But getting
19 back specifically to electricity credits, for example, I
20 think we can -- you know, that is a process that we think
21 is very sound.

22 DEPUTY EXECUTIVE OFFICER CHANG: And I would draw
23 a distinction between a process that follows what we have
24 in the regulation for how the credits are generated versus
25 fraudulent credits, where someone is misrepresenting

1 something.

2 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Yeah, I
3 think -- Edie, I think an example could be someone has a
4 method 2 CI that has special operating conditions on it.
5 And if we find out that those operating conditions have
6 not been met, then that CI that they've been using is an
7 inappropriate CI. And we would investigate that to find
8 out what kind of credits that they have overly reported.
9 If they have the credits themselves, I think the approach
10 would be that we would remove the credits from them. If
11 somebody else bought those credits already, that would be
12 one of those case-by-case investigations that we'd have to
13 figure out where the credits went, and -- but like I said,
14 the fact of the matter is the credit generators are in the
15 LRT, so we know where they live. And that's an advantage
16 in terms of even investigating whether or not credits are
17 invalid.

18 PANEL MEMBER STERN: Renewable diesel producers
19 are also in the RFS reporting. Yet, when those credits
20 were invalidated, obligated parties had to go back and
21 make up those credits. And, you know, in some cases,
22 there were fines in addition to that.

23 So I would ask CARB to seriously consider what it
24 intends to do, since it's not clear that CARB has actually
25 done the analysis to figure out, besides the volume

1 matching, whether there are credits which are valid or not
2 valid.

3 And it becomes particularly important the further
4 you go down. The program has been in place since 2011.
5 So far, there has not been any kind of check on that. The
6 EPA data, which has very few categories compared to the
7 150 or 200 pathways you already have, you know, lends one
8 to think that there may be other issues. And I think it's
9 something that CARB needs to take very seriously.

10 So far it has not acted on that. I know you're
11 trying to clean up the reporting requirements, and I think
12 that's a great step in the right direction. But in a
13 buyer beware marketplace, you're introducing a lot of risk
14 for obligated parties. And so far, you're not -- you
15 know, it's not clear what CARB is really going to do.
16 Now, you're going to introduce yet another one, and
17 additional -- and additional fuel pathways.

18 I think it's something if you're talking about a
19 commercial reality, which LCFS is, I think it seriously
20 needs -- it needs some very serious attention.

21 Another item I wanted to bring up on the -- in
22 the electricity sector had to do with the concept of
23 having rail count as LCFS credits. I want to make three
24 points about that. I object strongly to that, and there
25 are three reasons why.

1 Number one, rail existed long before the LCFS was
2 conceived, and therefore it is not a reduction versus what
3 the base year was. So I don't understand how it can count
4 in the LCFS.

5 Second is if you look at the ISOR for the LCFS
6 talking about road transport, not all transportation
7 modes. And if CARB would like to include rail in that, it
8 needs to go back and re-issue the ISOR and get adoption of
9 that was the intent.

10 And third, again, comes back to the whole
11 question of the credit liability issues that I brought up
12 earlier.

13 So I -- again, I'd like to register a strong
14 protest in terms of even thinking about rail transport
15 adoption. It does nothing to increase the GHG reduction
16 in California that didn't already -- that wasn't already
17 in place. LCFS did not encourage rail.

18 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Thank
19 you. I'll make a comment on the fixed guide way proposal.
20 Simply, electricity is an exempt fuel, because it already
21 meets the 2020 CI, given EERs that are associated with it.
22 So that's why electricity was never part of the baseline.
23 It's an opt-in fuel.

24 And I think that we clearly saw electricity being
25 used in fixed guide way applications, in forklift

1 applications, that is transportation fuel. So we
2 recognize the transportation fuel of this exempt fuel
3 occurs with these types of offroad modes of
4 transportation. And we're merely allowing them to opt in
5 to the LCFS with exempt fuel to generate credits, because
6 quite frankly it's transportation fuel. That's the simple
7 explanation.

8 PANEL MEMBER STERN: So again, it comes back to
9 the point I made earlier, what has the LCFS done to
10 encourage -- you know, you're telling people to buy
11 credits for GHG reductions that already took place, and
12 there's a fundamental -- there's a fundamental issue that
13 needs to be addressed before you consider how to move
14 forward on that, bottom line.

15 TRANSPORTATION FUELS BRANCH CHIEF WAUGH:
16 Understood. Thank you.

17 I'll go to Miles.

18 PANEL MEMBER HELLER: Thanks. Miles with Tesoro.
19 And this question actually may be more for Eileen. I was
20 just wondering of the credits that have been generated so
21 far in the electricity sector, two things. One how much
22 of that is residential versus say workplace or commercial?
23 And then the second thing is at one time, and I don't know
24 if it still exists, there was an impediment toward being
25 able to transact those credits because of the -- at least

1 the residential, because that was a utility issue and they
2 had to have the methodology approved to be able to return
3 that value to the customer. I was just wondering what's
4 the status of that?

5 CO-CHAIRPERSON LOZO: Actually, at Adam Langton
6 from the PUC is here today. So maybe, Adam, would you
7 like to address that.

8 Can you come up to the microphone phone, please.
9 Any microphone.

10 PANEL MEMBER LANGTON: So this is Adam Langton
11 with the California Public Utilities Commission.

12 Regarding the LCFS, the Commission identified we
13 needed to take two steps to be able to return the credits.
14 The first step was authorizing the utilities to be able to
15 sell the credits, and figuring out the treatment of a
16 credit as an asset, which requires the Commission's
17 approval before they can sell them.

18 So we've given them that approval. And what
19 we're working on now is approving the methodology to
20 return that revenue to customers. We've gotten a number
21 of proposals. We -- and we've evaluated those. We should
22 have a decision out in a matter of weeks on that, and it
23 will be approved by the end of the year.

24 So after it's release, parties will have --

25 PANEL MEMBER TUTT: And this is -- let's clarify,

1 Adam. Sorry. This is just for investor-owned utilities.
2 Publicly owned utilities are already selling credits and
3 investing that revenue.

4 PANEL MEMBER LANGTON: Yeah, that's correct. So
5 after a proposal comes out, parties will have a chance to
6 comment on that. And then we will -- the Commission will
7 vote on a final decision.

8 PANEL MEMBER HELLER: Okay. And then just my
9 first question, do you know how much of the credits
10 generated to date are residential versus other?

11 CO-CHAIRPERSON LOZO: I can tell you that the
12 vast majority of credits in the system are from
13 residential. We're just starting to pull in some of the
14 public charging, employer charging, and fleet charging
15 regulated parties. So that's just starting, but the vast
16 majority is from residential.

17 PANEL MEMBER SCIANCE: I don't know if it's
18 specific to California only, but -- this is Fred Sciance
19 from General Motors.

20 We're getting over half to two-thirds of the
21 charging for our electric vehicles is residential. The
22 remainders were almost all workplace and then five percent
23 or less public charging.

24 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Thank
25 you. Eileen.

1 PANEL MEMBER TUTT: And, I'm sorry, I thought we
2 had a lunch at noon, so I had to step out for a second for
3 a quick call. But just to your point, I think in terms
4 of -- I want to make the point that even under the most
5 ambitious projections of electric vehicles, off road and
6 on road, the utilities can easily supply the demand well
7 beyond 2020. So I think that's the key point here. The
8 fuel is available.

9 I really -- I really have a -- I'm struggling
10 with, and I actually find it problematic, that anyone
11 would suggest that electricity sold to vehicles, whether
12 they be on road, off road, or rail are somehow -- is
13 somehow not a transportation fuel and should not count
14 towards LCFS. I mean, the whole point of the LCFS is to
15 spur unanticipated innovation and action to the lowest
16 carbon fuel possible. And electricity right now is one of
17 the -- well, is the lowest carbon fuel available today
18 widely. It's available everywhere. There's no
19 infrastructure barriers.

20 So this idea is kind of -- I struggle with it and
21 I don't -- I think it's somewhat of a Red Herring, but I
22 think it's a discussion maybe we should have offline and
23 not spend a whole lot of time here.

24 In terms of the fixed guideway and forklift
25 credits, and to be honest, it ought to expand beyond that,

1 the whole policy is intended to advance electric vehicles
2 and advance low carbon fuels. And so when you allow low
3 carbon fuel credits for applications like fixed rail and
4 off-road equipment, that's the goal is to encourage wider
5 dissemination of this fuel into those technologies.

6 And I want to sort of clarify something you said
7 earlier, Mike, about the LCFS not being the main market
8 driver for electric vehicles. And I think that's probably
9 true, but I don't want to underestimate the fact that it
10 is a market driver, and it certainly is from the fuel
11 provider's perspective. From the utility's perspective,
12 the LCFS is a very important market driver for electricity
13 as a transportation fuel.

14 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Thank
15 you. I'm going to call on Chris Hessler, who's been
16 hiding in the corner. Patiently hiding.

17 PANEL MEMBER HESSLER: Just a quick additional
18 comment on David's comment related to liability --
19 assigning liability for potentially fraudulent credits.
20 It would enhance the robustness of the LCFS, if that -- if
21 the ARB were to clearly define and assign liability for
22 fraud. And the EPA case that David brought up is a pretty
23 good illustration of why it makes sense to think about
24 that.

25 The more credits acquire value, the greater the

1 temptation to fraud. And worth noting that billions of
2 dollars of commodities are transacted daily in this
3 country, and there are ample private sector mechanisms out
4 there to manage -- efficiently manage assignment of
5 liability in cases of fraud through contract insurance and
6 responsible counterparties, and deal only with responsible
7 counterparties.

8 So it shouldn't be a big chore, and it shouldn't
9 be a job on ARB to validate each of the credits that the
10 private sector can handle that. But simply assigning
11 fraud liability in cases of fraud, I think would greatly
12 enhance the robustness of the program.

13 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Thank
14 you.

15 DEPUTY EXECUTIVE OFFICER CHANG: Can I ask Chris?
16 Is it -- you mentioned that there are mechanisms in the
17 private sector, as you said, through contracts and things.
18 Do you think it's still -- given that, do you think it's
19 still critical that the ARB sort of has a -- like a -- I'm
20 going to call it like a baseline way, because I'm assuming
21 that even if the ARB said, you know, so in so party is
22 liable through a contractual arrangement, you can either
23 protect yourself or you can transfer that liability
24 somehow?

25 PANEL MEMBER HESSLER: It would be important for

1 ARB to learn from the mistake that EPA made, which is they
2 had -- they were silent about liability prior to
3 discovering it. And so that led to some confusion, and a
4 lot of finger pointing. You had a case where a single
5 supplier of phony RINs had RINs that went through the
6 system and multiple regulated parties were affected, in
7 terms of their compliance. And EPA kind of wanted to hold
8 their feet to the fire and say, well, you're still
9 responsible, and they said that's not fair.

10 So simply identifying ahead of time how ARB would
11 react is a good step. EPA went another step and created
12 kind of a two tier approach, where they said if the
13 regulated party is dealing with a supplier of credits that
14 meets a certain threshold of auditing, then even if the --
15 if their fraud is discovered and the credits turn out to
16 be phony, the regulated party won't be held accountable in
17 that circumstance, if they've done -- you know, they met
18 EPA's test of sort of all reasonable measures.

19 So it's worth looking at what EPA did. I don't
20 think it's the only solution. But at a minimum, it would
21 be really smart for ARB to identify who it believes will
22 be on the hook, if fraud is -- if fraud occurs.

23 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Thank
24 you. I think Simon is next.

25 PANEL MEMBER MUI: Simon Mui, NRDC.

1 I just wanted to comment on some of the
2 electricity discussions. Just in terms of data, there
3 are -- you may be already aware and probably are, but just
4 in terms of actual user data, and even though it's not
5 every single user, it is a pretty extensive collection of
6 data from DOE's -- DOE's EV project, as well as now UC
7 Davis developing the data sets that actually demonstrate
8 each model, you know, the average driving, which could
9 provide a lot of bottom-up data to further enhance the
10 methodology as you go forward around crediting under the
11 LCFS.

12 The second point I did want to make is that
13 under -- and this goes to other stakeholders as well who
14 are concerned about, you know, does the LCFS incent new
15 vehicle owners? The LCFS does actually. Unlike any other
16 fuel, it has requirements for utilities to provide value
17 back directly to EV customers. So that is a specific
18 provision I think that was in the discussions, because the
19 initial discussions back in 2009 was well, you know, isn't
20 electricity already produced, and how are EV -- how are EV
21 drivers or electrification further increased?

22 I think that specific provision was very much
23 designed, and we are now seeing utilities, under the PUC
24 application, basically having programs or proposing
25 programs to give the value back directly, in terms of

1 lower EV rates, right, or even rebates back to EV
2 customers.

3 And I think that's a very tangible way of
4 increasing low carbon fuel use, and electric drive. So I
5 just want to note that for the record, that in fact the
6 LCFS does provide those direct incentives.

7 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Thank
8 you.

9 We'll go with Fred, and then Tim.

10 PANEL MEMBER SCIANCE: Well, I just wanted to
11 make some parallel comments. You had indicated earlier
12 that you didn't see this program driving vehicle sales.
13 And I think so far that's true. But we're still in early
14 stages, and I think the cuts will drive increased behavior
15 going forward. And as Eileen and Simon was saying, I
16 think that we are looking, given that California has very
17 ambitious plans, for alternative vehicles, not only EVs,
18 but hydrogen. We're hearing about natural gas more and
19 more, that this -- we're looking to this program as an
20 important source of support to achieve those vehicle
21 sales. So I wouldn't trivialize the role that we're
22 looking for this program to play.

23 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Thank
24 you.

25 Tim.

1 PANEL MEMBER OLSON: Just a quick note going back
2 to hydrogen your last bullet there. We see -- I wanted to
3 emphasize that the LCFS has spurred the renewable natural
4 gas development and that's the source of renewable
5 hydrogen. And as that fuel, that technology matures,
6 you've got -- and you've got the biomethane, renewable,
7 and natural gas projects built, you've got a ready source
8 of fuel, and don't know if any other technology, possibly
9 electrolysis might emerge at some point. But right now,
10 it's almost five to ten times costly.

11 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Thank
12 you. Any other questions in the room?

13 CO-CHAIRPERSON LOZO: Let's go to the phone.
14 Chris, go ahead and make your comment.

15 PANEL MEMBER MALINS: Hi. Thanks. Chris from
16 ICCT just very briefly returning to liability. I wanted
17 to note looking at the UK credit market example under the
18 renewable transport fuel obligation, the UK government did
19 very much, I think what Chris Hessler outlined, sort of
20 set out responsibilities, set out principles for
21 revocation of certificates and how that would work.

22 And my understanding is that that's being fairly
23 satisfactory to everyone. And it's been in operation for
24 quite a few years. So potentially somewhere to look for
25 some other experience.

1 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Thank
2 you. Yes.

3 PANEL MEMBER BRINK: Steve Brink, California
4 Forestry Association. I'm a Panel member. I just don't
5 have my placard. My question is about electric vehicles.
6 And I think most of the charging occurs at night, if I'm
7 right. What makes the electricity? Is that in the
8 equation? Electricity is not necessarily free of
9 emissions. My guess is that at night, since large dam
10 hydro doesn't count as renewable, most of the electricity
11 being put into the grid is natural gas. Is that in the
12 analysis?

13 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: It is.
14 That is the carbon intensity of marginal electricity. It
15 would be combined cycle gas turbines with some percentage
16 of renewables, and that -- we recognize that, you know,
17 electricity is no emission free, so it's built into the
18 carbon intensity of electricity.

19 Thank you.

20 PANEL MEMBER STERN: Two very quick comments I
21 will make. One is I challenge that you -- we have
22 public -- some public service commission people. Marginal
23 electricity at night, as I understand it, is coal based or
24 not gas based, because you're at low capacity, which means
25 that you have long running sources, which includes coal,

1 not natural gas, which is turned on to help satisfy peak
2 requirements. So I would challenge the question that, you
3 know, your assumption that the marginal electricity that's
4 going into recharge EVs truly is renewable and very low
5 CI.

6 The second point I want to make just on the
7 liability front, again, you know, if you're looking to
8 harmonize with British Columbia in particular, keep in
9 mind that the -- and British Columbia for LCFS compliance,
10 British Columbia assumes all liability in the case of
11 fraudulent reporting. And I think CARB really needs to
12 figure out what it intends to do about that, particularly
13 given the proliferation of so many different pathways for
14 fuels.

15 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Thank
16 you.

17 PANEL MEMBER LANGTON: Can I just follow up on
18 the question about electricity.

19 This is Adam Langton from the California Public
20 Utilities Commission.

21 For the investor-owned utilities that the
22 Commission regulates, at night the marginal generator is
23 not coal. There's very little coal that the
24 investor-owned utilities have in their load. At night,
25 it's generally -- it's off renewables, but it's often

1 natural gas as well.

2 PANEL MEMBER STERN: Okay.

3 PANEL MEMBER TUTT: I'm sorry to -- can I -- I
4 think Adam made an excellent point, and I also want to
5 further point out that the beauty of electric vehicles and
6 the reason the LCFS is so important is that the -- in the
7 future I think as we move towards 33 percent renewables,
8 we're going to have significant periods of overgen for
9 renewables, and electric vehicles can provide a storage --
10 storage opportunities and demand response opportunities
11 for that overgen of the very cleanest sources of
12 electricity.

13 So I think that what Mike said about the vehicles
14 getting cleaner and cleaner, in the future they're going
15 to be much cleaner than the margin would indicate, because
16 they probably will be a significant contributor to
17 leveling out the overgen anticipated in the renewables
18 market. And that's why, I mean, all of these policies are
19 linked, but in the electricity sector, the amazing thing
20 is that we're looking at like clean now, getting cleaner,
21 super, super clean in the next 10, 15 years.

22 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Thank
23 you. Anymore questions or comments?

24 Todd.

25 PANEL MEMBER CAMPBELL: I think you just have to

1 check with the munis though too, because when I was the
2 Mayor of Burbank, I think we had 50 percent coal through
3 2028. And SCAP is pretty, you know, substantial, so you
4 have to probably look at that too.

5 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Thank
6 you. Any other comments, questions in the room?

7 PANEL MEMBER TUTT: That's not the case today,
8 Todd. I would -- you can talk to Burbank if you want, but
9 Burbank is actually moving towards renewables faster than
10 the IOUs.

11 PANEL MEMBER CAMPBELL: No, I'm sure that's true,
12 but I don't think that they're moving away from the
13 Intermountain Power sooner than later, but I'll talk to
14 Ron Davis.

15 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Okay.
16 I still stand between you and lunch and I take that
17 responsibility very seriously. So if I can power through
18 a couple more slides just to get this fuel availability
19 piece concluded, I would want to do that.

20 --o0o--

21 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Slide
22 69. This is just a nod to that there are other potential
23 low carbon fuels, Algal fuels, GTL, BTL, DME, biobutanol
24 and the like. If you're fuel is not on here, again, our
25 intention is not to offend. This is just illustrative.

1 --o0o--

2 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Slide
3 70. We do see the low CF fuels are being attracted to
4 California. Ethanol CI values continue to decrease,
5 renewable diesel production is increasing, renewable
6 natural gas production is increasing and moving towards
7 transportation use. The question is -- we know these
8 fuels can come to California. The question is will these
9 fuels come to California?

10 --o0o--

11 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Slide
12 71 is for illustrative purposes only. Illustrative. So
13 again, be not offended. You can see that, depending on
14 the CI of the fuel, and the cost of an LCFS credit price,
15 that low CI fuels are, in fact, subsidized by the LCFS.
16 They offer real value to low CI fuels. That could be
17 substantial depending on your CI, and the credit price.

18 So, in some cases, let's assume that say at \$100
19 per credit price, waste grease biodiesel could be
20 subsidized well over \$1 a gallon. And so some of the
21 questions that may arise with regard to infrastructure,
22 and distribution and the like, we think that, given a
23 strong signal for some of these fuels, some of these
24 obstacles will be overcome, because the market will react
25 in a manner that says I will get this fuel to California

1 for this type of premium price.

2 --o0o--

3 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: So the
4 last slide before lunch is slide 72. Like I said, the
5 LCFS provides real value for low CI fuels. I think once
6 we get back to having a compliance curve that continues to
7 decline and get off the pause button that the court issued
8 us at this point, we will start seeing a lot more of these
9 fuels as well.

10 The last point, and this will be the -- this will
11 be the segue to post-lunch, LCFS programs along the
12 Pacific Coast will encourage additional production of low
13 CI fuels. That will lead into the discussion of the
14 Pacific Coast Collaborative after lunch.

15 So any final comments and questions, because now
16 if there are, you are the one standing in the way of
17 people and their lunch?

18 (Laughter.)

19 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Hearing
20 none.

21 CHAIRPERSON KITOWSKI: Okay. Great. I really
22 appreciate the discussion this morning. Look forward to
23 the afternoon. A couple of the agenda items we had before
24 lunch, we will be bumping to lunch -- after lunch, but I
25 think we have enough cushion in there to do that.

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Meet back at 1:45, please.
(Off record: 12:43 PM)
(Thereupon a lunch break was taken.)

1 A F T E R N O O N S E S S I O N

2 (On record: 1:52 PM time)

3 CO-CHAIRPERSON LOZO: Okay. I think we're about
4 ready to get started. If everyone can take their seats,
5 please. I think we've got most people back from lunch.
6 Hope you enjoyed a little break. And I think we're going
7 to ahead and continue with Mike's discussion of the
8 Pacific Coast Collaborative.

9 --o0o--

10 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Thank
11 you, Carolyn. I just have a couple slides here. I think
12 most of you are aware of the Pacific Coast Collaborative,
13 which was an agreement signed by California, Oregon,
14 Washington and British Columbia.

15 Among the items in the agreement, there -- the
16 low carbon fuel standard was mentioned explicitly, and
17 that Oregon and Washington will consider Adopting LCF
18 program, and that California and British Columbia will
19 consider maintaining their existing programs.

20 And over time, these programs may lead to an
21 integrated west coast market for low carbon fuels. We're
22 not saying there's going to be one unified system yet.
23 Maybe in the long term there might be some sort of
24 unification, but for the time being we've been helping
25 these other jurisdictions.

1 --o0o--

2 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: As you
3 can see from slide 74, we've shared the reporting tool
4 with British Columbia, Washington and Oregon, so they
5 wouldn't have to start from scratch on a reporting tool.

6 We conduct routine conference calls with
7 Washington staff that's biweekly. Also know that there
8 are webinars that are biweekly as well. And there's one
9 this afternoon that we'll miss because we'll be here, but
10 I believe it deals with the economic analysis of the
11 Washington State program.

12 We've met several times to discuss LCFS programs.
13 The most recent time for the entire Pacific Coast
14 Collaborative was last month in Portland. And we had one
15 topic really on the agenda, and that topic was cost
16 containment.

17 So with that segue, I'll turn it over to Kirsten
18 King to talk about cost containment.

19 --o0o--

20 LCFS ECONOMIST KING: Thanks, Mike. Good
21 afternoon. I'm Kirsten King. I'm the lead staff for the
22 cost contain mechanism.

23 It doesn't sound like it's fully on. Is it on?

24 Okay. Good.

25 So I wanted to lead off this topic by quickly

1 reviewing why we need a cost containment provision. As it
2 currently stands, the LCFS requires that regulated parties
3 must meet the carbon intensity standards each year.
4 Because credits and deficits are generated by regulated
5 parties selling transportation fuels into the California
6 market, the quantity of credits and deficits available
7 each year is determined by the action of regulated
8 parties, not by ARB.

9 Given that the LCFS is a market-based policy,
10 uncertainty will always exist when forecasting future
11 supplies of low CI fuels and the availability and price of
12 LCFS credits. ARB staff anticipates that there will be
13 sufficient credits available in the future and sees
14 several promising low CI fuels on the horizon that will
15 enable compliance in later years when the stringency of
16 the program increases.

17 Specifically, implementing a cost containment
18 provision will instill greater confidence in the market by
19 providing certainty that compliance will be feasible under
20 all possible compliance scenarios, strengthen the
21 incentive to invest in low CI fuels by increasing
22 producer's and investor's confidence in the durability of
23 the market.

24 --o0o--

25 LCFS ECONOMIST KING: And provide a price cap

1 which will limit the risk of price spikes and will
2 increase certainty regarding the maximum cost of
3 compliance.

4 --o0o--

5 LCFS ECONOMIST KING: The design of a cost
6 containment provision must send a clear and stable market
7 signal. That the program will operate predictably under
8 all market conditions, even under scenarios of potential
9 price spikes or temporary shortages. Staff has considered
10 two options.

11 The credit window. Under this option, a
12 regulated party could purchase and retire compliance-only
13 credits, which would be sold by ARB at a pre-established
14 price.

15 The credit clearance option would allow a
16 regulated party to carry-over deficits provided they
17 commit to buy their pro rata share of all credits made
18 available at or below a maximum pre-established price.

19 --o0o--

20 LCFS ECONOMIST KING: Digging in a little more
21 deeply to the clearance market, this process would only
22 occur if there are insufficient credits available for
23 compliance. If that's the case, ARB would create a credit
24 clearance period at the end of the compliance year. This
25 is the option we've moved forward with in thinking about a

1 little bit more broadly. Particularly as a result of our
2 discussions with other jurisdictions in the Pacific Coast
3 Collaborative, this is seen as a particular interest to
4 them as well.

5 Under this option, a regulated party would be
6 allowed to carry-over deficits in excess of the ten
7 percent currently allowed for, provided that they commit
8 to buy their pro rata share of all credits made available
9 for sale at or below a maximum pre-established market
10 price.

11 Once a regulated party purchases its pro rata
12 share of credits, it would be able to carry the remaining
13 deficit over and would be considered in compliance for
14 that year. Carried-over deficits will incur interest and
15 the balance will be added to a cumulative compliance
16 obligation to be repaid in future years, once the market
17 is fully supplied with low CI fuels.

18 Credits suppliers can offer unsold credits
19 through a year-end clearance market provided that they
20 voluntarily accept a cap on the maximum selling price of a
21 credit sold in this manner. Credit clearance market
22 transactions would occur between private parties and would
23 take place during the year-end process.

24 --o0o--

25 LCFS ECONOMIST KING: A little bit more about

1 what that process would look like. As a reminder, it
2 would only occur if there are insufficient credits
3 available for compliance. If that's the case, ARB would
4 create a credit clearance period at the end of the
5 compliance year. So the clearance process for year A
6 would actually occur in the duration of year B, once we
7 know where each regulated party's compliance stands.

8 Parties that are short for credits for compliance
9 will report to ARB through the normal reporting process
10 the number of credits they still need to purchase to come
11 into compliance for year A. From this reporting, ARB will
12 determine if a credit clearance process is necessary. If
13 so, ARB will issue a call for excess credits from low CI
14 fuel producers predominantly.

15 Parties with excess credits that they'd like to
16 sell can pledge credits into a pool provided that they
17 agree to sell those credits at or below a pre-established
18 maximum price.

19 ARB will tally up the total number of credits
20 needed by all regulated parties and inform the regulated
21 parties of their pro rata compliance obligation.

22 Private negotiations will then take place between
23 regulated parties seeking to sell and to buy clearance
24 credits. Parties with outstanding obligations will
25 purchase their pro rata share of credits and will be able

1 to carry-over any remaining deficits. The carried over
2 deficits do incur interest and the balance will be added
3 to a cumulative compliance obligation to be repaid in
4 future years once the market is fully supplied.

5 ARB will consider all of the regulated parties
6 participating in the credit clearance market in this
7 manner to be under compliance for that year.

8 --o0o--

9 LCFS ECONOMIST KING: The calculation of the pro
10 rata credit obligation is best exemplified by a few
11 numbers. So in this example, the regulated parties have
12 1,000 fewer credits than they need to meet the standard
13 for year A. Three credit suppliers each offer 250 credits
14 for sale through the year-end credit process. This totals
15 750 credits that are available to purchase.

16 Regulated party A is 700 credits short of
17 compliance, and is responsible for 70 percent of the
18 compliance shortfall. Regulated party A meets compliance
19 buying 525 credits from the credit suppliers and carries
20 over 175 credits -- excuse me, deficits, which are added
21 to their cumulative compliance obligation.

22 Regulated party B has sufficient credits to meet
23 compliance without buying any additional credits from the
24 credit clearance markets. They would not need to
25 participate in the clearance process, and they will not

1 carry any deficits forward this year.

2 Regulated party C is 300 credits short of
3 compliance and is responsible for 30 percent of the
4 compliance shortfall. Regulated party C meets compliance
5 by buying 225 credits from the credit suppliers and
6 carries 75 deficits over, which are also added to their
7 cumulative compliance obligation.

8 --o0o--

9 LCFS ECONOMIST KING: This slide illustrates the
10 flexibility the credit clearance process provides
11 regulated parties to come into compliance via the cost
12 containment provision. Regulated party A has options
13 regarding how they can structure these transactions to
14 purchase the credits they need.

15 In this example, three credit suppliers, X, Y,
16 and Z each pledged 250 credits to the clearance pool.
17 These are parties with excess credits that they'd like to
18 sell, and they have volunteered those credits into the
19 credit clearance pool. They've agreed to sell their
20 credits at or below the predetermined maximum credit
21 price. The total supply as you'll remember is 750 credits.

22 Regulated party A is interested in purchasing
23 their pro rata share. And we can see here that they've
24 got a few options to negotiate mutually beneficial
25 transactions. They can purchase credits at the price cap,

1 which is represented by credit supplier's Y offer. You'll
2 notice that credit supplier X and Z, however, are willing
3 to negotiate.

4 Credit supplier X is willing to accept either the
5 cap price or they will sell credits at a 10 percent
6 discount, if regulated party A agrees to a three-year
7 off-take agreement, for example.

8 Credit supplier Z is willing to accept either the
9 cap price or they will sell credits at a 40 percent
10 discount if regulated party A agrees to an equity
11 investment in a new production facility.

12 These are all just a few hypothetical examples,
13 but the flexibility to negotiate mutually beneficial
14 transactions is unique to the credit clearance process.
15 It's one of the options -- excuse me. It's one of the
16 attributes that has made us determine this is the
17 preferred option, and it has numerous benefits.

18 First, it enables regulated parties with
19 outstanding deficits to achieve compliance by purchasing
20 those credits that were generated by low CI fuels. These
21 regulated parties will also know what the maximum price of
22 clearance credits will. It may be lower, if both parties
23 can come to a mutually beneficial agreement, but they know
24 what their maximum will be.

25 Third, it provides flexibility by allowing buyers

1 and sellers to negotiate during the credit clearance
2 process, so that they can both maximize their benefits
3 from this transaction. Purchasers may be able to purchase
4 at a price below the cap, and credit suppliers may be able
5 to negotiate favorable terms, such as equity investments
6 or off-take agreements.

7 Finally, I want to reiterate that the credit
8 clearance market transactions would be between private
9 parties and take place during the year-end compliance
10 accounting process. We envision allowing a few months for
11 these negotiations to take place.

12 --o0o--

13 LCFS ECONOMIST KING: The credit clearance
14 process delivers benefits to both main types of regulated
15 parties in the LCFS, conventional and low CI fuel
16 producers. A price cap prevents destabilizing increases
17 in credit prices, which benefits both types of regulated
18 parties. It also increases certainty regarding the
19 maximum cost of compliance for conventional fuel
20 suppliers. They will know they can achieve compliance
21 even if there's uncertainty with market programs, like the
22 LCFS, and they can easily predict their maximum cost of
23 the credits.

24 This also translates to benefits to California
25 motorists. By placing reasonable caps on the cost of

1 compliance, this translates into reasonable caps on any
2 impacts at the pump. By ensuring that the credits sold
3 through the credit clearance process represent real CI
4 reductions and were produced from real fuels, it enables
5 conventional fuel suppliers to comply without having to
6 pay for credits or fuels the market has failed to produce.

7 For the low CI fuel producers, a credit clearance
8 process improves market durability. This will increase
9 investor confidence and therefore supply of low carbon
10 fuels. Because producers and investors can more
11 confidently assess the market value for low CI fuels and
12 credits, adding to the LCFS a credit clearance mechanism
13 will stimulate investments.

14 --o0o--

15 LCFS ECONOMIST KING: By setting a price cap, the
16 cost containment provision increases certainty for
17 regulated parties and producers of and investors in low CI
18 fuels. A transparent predictable price cap provides
19 certainty for conventional fuel suppliers regarding their
20 cost of compliance. And the low CI fuel producers benefit
21 from the price signal as it will help them predict the
22 revenues generated from participating in the LCFS credit
23 markets.

24 This graph represents the cost of producing
25 various low CI fuel technologies. These are all clearly

1 very hypothetical. The green bars represent technologies
2 that are being developed for the market now. The goal of
3 the price ceiling is to shore up market confidence via a
4 strong, transparent price signal, but it must be
5 appropriately set so as not to interfere with normal
6 day-to-day market operations.

7 We also know that there are technologies being
8 developed that aren't yet ready for commercial
9 developments, but they will be in future years. These are
10 represented by the blue bars. It's important to know
11 that -- I'm sorry by the light blue bars versus the dark
12 blue bars, which are the fuels that are available and
13 being produced currently.

14 We anticipate the prices of these light blue bar
15 technologies will decrease in future years through
16 technological innovation, investments in research and
17 development, and learning by doing. It's important to
18 notice that the price cap would not be set to reduce fuel
19 prices at the expense of next generation fuel
20 developments.

21 Its purpose is to prevent price spikes and
22 provide a mesh to weather any temporary supply shortages
23 that might occur, which some regulated parties have shared
24 concerns regarding.

25 The question therefore is setting the price cap

1 at the right price. The risk of setting the price cap too
2 low is that it may curtail investments in and production
3 of low -- valuable low CI fuels. A price cap that is too
4 low may reduce the profitability of investing in low CI
5 fuels, which would likely result in lower production of
6 innovative very low CI fuels in future years.

7 ARB has received feedback from many stakeholders
8 who are concerned that a price cap, if set too low, could
9 imperil their profit margin and leave investments in low
10 CI fuels stranded.

11 Staff are aware that setting a price cap too low
12 runs the risk of inducing a supply shortage in future
13 years, when very low CI fuels will be needed to achieve
14 compliance for an increasingly stringent LCFS. This is
15 something we're working carefully to avoid. There's also
16 a risk of a setting the price cap too high. One of the
17 goals of the cost containment provision is to provide
18 regulated parties with certainty that they will have
19 manageable paths to compliance even in the event of a
20 credit shortage.

21 Secondly, very high LCFS credit prices in the
22 future are likely to translate to fuel price increases at
23 the pump. A price cap that is too high, may cause undue
24 economic hardship for California fuel consumers.

25 Staff is currently engaged in a threshold

1 analysis to identify a range of potential price caps and
2 their impacts. We are also consulting various authorities
3 on fuel market prices to inform where an optimal price cap
4 should be set. We invite stakeholders to provide feedback
5 on this important issue. We want you to tell us what
6 price cap would ensure the viability of your production
7 technology while still preventing a price spike.

8 --o0o--

9 LCFS ECONOMIST KING: Although the price cap will
10 be implemented through a cost containment provision, it
11 will improve confidence in the durability of the
12 regulation and increased certainty regarding the price of
13 LCFS credits by acting as a cap on the credit market 365
14 days a year. The price cap curbs volatility, and knowing
15 that the system is in place to manage extremes gives
16 market participants the confidence they need to operate
17 during normal market conditions.

18 This black line represents a theoretical price
19 history for the credit market. And you can see that
20 credit prices have steadily increased over time with some
21 volatility which is to be expected. This graph doesn't
22 accurately represent historic LCFS credit prices, but the
23 idea is the same.

24 At this point, we can't be certain what will
25 happen in the future we're at today, which is the vertical

1 line. Credit prices may continue to increase steadily
2 represented here with the blue line. This scenario
3 represents the market operating smoothly, which we
4 anticipate happening. You'll notice that the credit
5 prices never hit the price cap in the blue scenario. In
6 fact, it doesn't even get very close, which is what we
7 anticipate happening in the future.

8 The goal is for the market to operate smoothly,
9 so that the price cap is never binding. If that's the
10 case, we can see that it's set high enough that it doesn't
11 curtail investments in and production of low CI fuels.

12 However, uncertainties exist in a market-based
13 system like the LCFS. Instead of the blue scenario,
14 there's a chance that credit prices could spike, which is
15 represented by the green solid and dashed lines here.

16 The dashed green line represents how high this
17 hypothetical price spike could drive up credit prices if
18 there's not a cap in place. Is that green?

19 (Noes.)

20 LCFS ECONOMIST KING: I can hear Jack snickering.

21 Clearly, it's not green -- which is represented
22 by the dashed gray line.

23 (Laughter.)

24 LCFS ECONOMIST KING: This gray scenario is far
25 less likely to happen, but the probability is not zero.

1 Therefore, we believe it is important to have a price
2 ceiling in place to protect regulated parties and to
3 prevent the market from destabilizing. The dashed gray
4 line represents how high this hypothetical price spike
5 could drive up credit prices if there's not a cap in
6 place. Because we have a cap through the cost containment
7 provision however, prices will not exceed the
8 predetermined capped credit price.

9 --o0o--

10 LCFS ECONOMIST KING: We've also received
11 feedback from stakeholders that a price floor may
12 stimulate investments in low CI fuel by providing a clear
13 market signal regarding the minimum price for LCFS
14 credits.

15 Stakeholders have provided feedback regarding
16 challenges they face in securing financing, particularly
17 for cap -- excuse me, for capacity expansion. Lenders may
18 be hesitant to finance projects until the value to low CI
19 fuel producers is more clear and stable. Increasing
20 certainty regarding the minimum price for credits may
21 alleviate this risk, making lenders more willing to lend.

22 Proponents have argued that implementing a price
23 floor may also help facilitate long-term business planning
24 for low CI fuel producers, as they will be able to better
25 predict the range of prices for LCFS credits and translate

1 these credit prices into a more predictable revenue
2 stream.

3 Ideally, it would facilitate market liquidity and
4 increase investments without ever actually become binding,
5 because market prices would remain above the floor.
6 Other's have raised concerns that the price floor also has
7 potential drawbacks.

8 For one, it may be difficult to determine where
9 to set the price floor. Ideally, it would not interfere
10 with normal day-to-day market operations, but would
11 provide a price signal that will increase confidence in
12 the value of LCFS credits, and allow that value to
13 translate into investments in low CI fuels.

14 It's a question of getting it right. There's
15 also a risk of setting the price floor too high. If we
16 set it too high, it may interfere with normal market
17 operations, and could prevent some trades from occurring,
18 meaning that credit transactions, which would benefit both
19 low CI fuel producers and conventional fuel suppliers are
20 not allowed to occur.

21 Conversely, we could set the price floor too low
22 if this happens, the price floor may not deliver the
23 intended benefits. Finally, there's a risk that in the
24 future, when the market is fully supplied and companies
25 are producing low CI fuels in sufficient quantities, it

1 may keep credit prices artificially high, meaning that the
2 cost of compliance is inflated and may not deliver
3 additional environmental benefits.

4 If the price floor is set too high, it would not
5 enable competition to drive the market to the lowest cost,
6 most efficient fuel mix. We continue and analyze the
7 price floor. It doesn't look like we'll have it as part
8 of what goes to the Board in early 2015, predominantly
9 because staff has not been able to identify a mechanism
10 that we think would effectively implement a price floor.
11 We've asked a couple of stakeholders and I will reiterate
12 the request. If you guys have some thoughts and are
13 interested in the price floor, we'd really love to hear
14 from you. This is something that we're looking at
15 post-2015 I think. And so it's not to say that we're not
16 interested in implementing this. It's something that
17 we're very much interested in, and could use more feedback
18 on. So I'd appreciate any off-line conversations and
19 input people have regarding that.

20 CHAIRPERSON KITOWSKI: Okay. So we'll open it
21 up. Now, David, I saw your card go up almost at the very
22 beginning. So you've been very patient.

23 PANEL MEMBER STERN: I think you did a wonderful
24 job trying to outline some of the challenges in doing some
25 price setting. One tenet that the LCFS is supposed to be

1 based on is a free-market system. And any kind of price
2 setting actually removes that, and sets the stage for
3 continued floors or ceilings or any other kind of price
4 setting mechanisms. And it's gong to be very hard once
5 you do that to wean yourself off of it.

6 If you look at financial markets, the way
7 financial markets work, is that if commodities actually
8 exist, then sometimes if there's, you know, a temporary
9 spike like, for example, program trading that causes
10 prices to go either way too high or way too low, then the
11 market stop and let's the market readjust, a very short
12 time frame.

13 And here, you're doing the opposite, which is
14 actually you're encouraging the setting of price floors
15 and ceilings in order to have investments take place.

16 So having said that, let me ask a couple of very
17 specific questions. The first one on the price cap, if I
18 have excess credits, why would I want to sell a single
19 excess credit at any price below the price cap?

20 What you're doing is basically you're setting the
21 price for what the credits are going to sell for. And no
22 market is going to do anything but that. And so what
23 you're going to see likely is withholding of credits until
24 such time as somebody knows that they can get that maximum
25 price for their credits that they have. Why would a

1 market do anything but that?

2 The second question on the price floor concept
3 again goes back to the whole question of sustainability of
4 this program. If the program is going to have a lifetime,
5 then it needs to be able to adjust to market forces, not
6 have artificial prices either high or low set on it.

7 If you can't justify an investment, then an
8 investment shouldn't be made. And, you know, it's
9 unfortunate, but that's the way of business. And I think
10 that's -- I think, you know, CARB, if you're looking to
11 set some kind of price control mechanisms, you've now --
12 you're now taking away the market forces that actually I
13 see as one of the positives for the LCFS moving forward.
14 So I don't know if any -- if you have any comments on the
15 above, but --

16 LCFS ECONOMIST KING: Sure. Thank you for those
17 comments. I appreciate that. Regarding your first point,
18 which sounded a lot like if we set a price cap and that
19 will essentially become the overriding market price, I
20 wanted to point out that if in deed there is not a
21 shortage of credits, I -- setting a price cap will not
22 prevent competition from driving the price down to its
23 market equilibrium, which is how markets function right
24 now.

25 So if I'm a low CI fuel producer, and I have

1 credits that I'd like to sell, I will not -- I would like
2 to sell them at the max price. However, if I know that
3 there is more credits out there than are actually
4 demanded, I'd be willing to barter down below that maximum
5 price.

6 A lot of the low CI fuel producers really need
7 the revenues that are generated from these credits.
8 They're new businesses. They have a lot of capital
9 payback that they're making. So the revenues that are
10 generated from these credits are actually really important
11 for them, and it's not something that most of those fuel
12 providers would be able to do without for a long period of
13 time.

14 PANEL MEMBER STERN: So if you're saying that you
15 think that the credits will exist, why do you even need
16 this kind of mechanism? If you think they won't exist,
17 then I can understand why you're trying to head in this
18 direction. But if your convinced, thoroughly convinced,
19 that there will be sufficient credits, then you should let
20 the market perform the way markets perform.

21 LCFS ECONOMIST KING: Yeah. There's sometimes
22 when government interventions in the market can move a
23 market towards efficiency actually, if the market itself
24 isn't efficient as it is. And we think that there will be
25 sufficient credits available for compliance. We're

1 conducting an ongoing review of that particular issue.

2 But markets, like the LCFS and really many other
3 financial markets, have methods in place to deal with
4 undue uncertainty and price spikes. And it's important to
5 set these up ahead of time, so that market players know
6 exactly how the market is likely to respond. For example,
7 it's important for long-term business planning that
8 players know exactly what their total cost of compliance
9 is likely to be, how much their anticipated revenues are
10 going to be from the LCFS credit prices.

11 It's very important that we have these rules set
12 up in place, however, because markets actually move on
13 speculation rather than what the actual fuel volumes may
14 be. So we want to set those up well ahead of time. And
15 if we do it right, which I think we're definitely setting
16 up the incentives correctly here, the market will never
17 hit the price cap. It merely adds an additional layer of
18 security and certainty for investors.

19 CHAIRPERSON KITOWSKI: Let me jump in with one
20 comment that is implied in what you said, but I think it's
21 important to state explicitly. The credit market is not
22 a -- provided by a monolith. It is comprised of
23 electricity providers and biodiesel providers and
24 renewable diesel and renewable natural gas and others.
25 And so, in a sense, these are all competing for this

1 market. And there -- if it were -- if it were a monolith,
2 then I would think they would very much want to just
3 withhold credits until the price got up to the maximum
4 amount and then sell them, but that's not likely the way
5 the market is going to work.

6 CO-CHAIRPERSON LOZO: Nick, you have a question?

7 PANEL MEMBER ECONOMIDES: Yeah. More like a
8 question and some comments. I'm assuming from this
9 discussion it's implicit, although not stated anywhere in
10 the workshops, that the credit price, the clearance price,
11 will be known during year A. So like others, I am
12 wondering how this would work. And I think we need to
13 distinguish between scenarios where credits are plentiful
14 and scenarios where credits are very scarce.

15 That's two different -- two different scenarios,
16 two different sets of realities. So why would a seller
17 commit during the year to sell their credits during a
18 fairly plentiful -- let's take a period, why would they
19 commit to sell their credits if they expect or know that
20 there is a higher price that they would probably get at
21 the end of the year?

22 The flip side of that is why would there be any
23 credits left for any kind of a CARB-sponsored auction at
24 the end of the year, if sellers anticipate lower prices
25 for their credits or know that there will be lower prices

1 from their credits, which obviates the need for the
2 procedure at the end of the year?

3 In other words, you can open up the auction, you
4 can show three potential suppliers each with 250 in your
5 example. If they're not there, they're not there. And
6 so, to me, the first thing that a cost-containment
7 provision needs to do is exactly what it was intended to
8 do, which is to contain costs. That means how does it
9 behave, how does it effectively meet that need during a
10 time when there are no credits to be sold, when the
11 market, for whatever reason, is not generating what the
12 regulated parties require?

13 You can open up the bell and say bring me
14 everything you've got. And you have told them six or nine
15 months earlier what the price will be. They've already
16 known that that price is too low vis-à-vis what they could
17 get in the high market. They've sold everything out by
18 December 31st. You open up your auction at the end of the
19 year and what happens? Nothing.

20 Next point is put yourself in our shoes for a
21 little bit and think about this period -- this process --
22 this provision of accumulated deficits year-in, year-out,
23 especially if your assessment, your being rhetorical your,
24 is that there will be year after year after year of
25 shortages of credits and accumulated deficits. How do we

1 accept, as the regulated community, at continually
2 increasing liability buildup on our books for these
3 carry-over credits when there is no provision and no
4 discussion for ever dealing with them, at some point or
5 another?

6 We have asked these questions since the original
7 workshop on these two provisions. And unfortunately, I
8 can't say I am able to bring home some kind of a concrete
9 answer. I'm afraid that the hubris of believing that you
10 can adjust the price just right, so that all the horrors
11 that you yourself have put up on the Board, that can
12 happen if you don't, is scary to me. You can interfere
13 with the market very easily and have exactly the opposite
14 effect than what you desire to do.

15 So the program needs some more give and take, I
16 think, some more discussion with the regulated community,
17 both sellers and buyers of credits. I'm afraid that we
18 don't view right now the cost containment options, either
19 one of them, including the one you seem to be going away
20 from, as really materially improving the program.

21 LCFS ECONOMIST KING: Thanks, Nick. We
22 appreciate your comments. If I could speak to a couple of
23 those. I have five points down here.

24 The first question you asked was why would
25 suppliers sell in a plentiful year if they know that they

1 can get a higher price at the end of year?

2 I think that this speaks to what you'd said right
3 before that, that it's very fortunate when we're thinking
4 about how this would work to distinguish between years in
5 which we think there will be ample supply, and years in
6 which we're talking about potential shortage. In this
7 scenario, if it's ample supply of credits, you're asking
8 why sellers would sell their credits during the normal
9 market operations? And if that's the case, it would be
10 incorrect to assume that the sellers would withhold their
11 credits assuming that they can achieve the highest
12 possible credit price at the end of a year in which we're
13 fully supplied.

14 When we have a full supply of credits, the market
15 will take over and equilibrium pricing will actually drive
16 us down off the highest credit price. So not only would
17 there not probably be a compliance mechanism at the end of
18 the year, but we also wouldn't be seeing the capped prices
19 really ever during the period of that year when there's
20 full supply.

21 PANEL MEMBER ECONOMIDES: Kristen, the market
22 will take over in the absence of interference. And you
23 have just interfered in that scenario creating the
24 scenario where folks will not sell them.

25 LCFS ECONOMIST KING: It's Kirsten actually.

1 PANEL MEMBER ECONOMIDES: Sorry, I apologize.

2 LCFS ECONOMIST KING: Thanks.

3 And I guess it's unclear to me why low CI fuel
4 producers would not want to achieve revenues from the
5 sales of those credits in years in which they're selling
6 their fuels --

7 PANEL MEMBER ECONOMIDES: Well, they do.

8 LCFS ECONOMIST KING: -- which would be what
9 we're talking about when they're withholding credits.

10 PANEL MEMBER ECONOMIDES: Well, they do. They
11 just perceive that those revenues would be higher at the
12 end of the year, if an artificial shortage is created.
13 Credits exist. They're not being offered for sale, so we
14 will go in and send a note in that says we need 700 more.
15 And you may look at yourself and say why does Chevron need
16 700 more when they're supposed to be plentiful? Well,
17 Chevron needs 700 more because they haven't been offered
18 anything that they can buy, or they haven't been offered
19 anything at a price that is below your pre-announced cap
20 price or clearance price at the end of the year. That's
21 an artificially created market interference.

22 LCFS ECONOMIST KING: Right. Thank you. So I
23 want to move on to the other four points quickly. But in
24 response to that, I think that cap and trade is actually a
25 really interesting sister market that we can look at.

1 There's actually a price cap in cap and trade, and we
2 don't see the allowance prices near that cap price,
3 predominantly because competition is driving the place
4 below that. We anticipate the same thing would happen in
5 the LCFS.

6 Your second point was why would there be any
7 credits left for an ARB-sponsored auction at the end of
8 the year if there is a shortage?

9 I wanted to quickly say this will not be an
10 ARB-sponsored auction. ARB will not be selling any
11 credits via the clearance process. We think that there
12 may be credits left in a year of shortage at the end of
13 the year, because it's a little bit hard to tease out what
14 the real supply of credits is in the LCFS right now.
15 Because a lot of regulated parties are banking their
16 credits for use, we can tell that there is a supply of
17 those credits, but it's not to say that those credits are
18 actually available for sale.

19 So it's really -- it's teasing out those last few
20 remaining credits so we know we don't have any standard --
21 stranded credits in the market, and so that we can ensure
22 that we're really pulling the most CI reduction we can in
23 a year of shortage out of -- if they aren't there also,
24 if, you know, there's only a few credits that are offered
25 in the sale of the clearance market at the end of the

1 year, that's not a big deal. It just means that there is
2 accumulated deficits that are rolled over.

3 What is important in that time frame is that the
4 cap was set, it was binding, consumers are not responding
5 to volatile -- volatility in their fuel prices, the cost
6 of compliance is reasonable, it's well known, and
7 regulated parties are able to achieve compliance even in
8 potentially a year of a shortage.

9 The third point you said was we need to contain
10 costs in a year that there aren't credits available, that
11 if we -- I'm sorry. I'm trying to decipher my notes here.
12 I was writing them quickly as you were asking the
13 questions.

14 I actually cannot interpret that. What was
15 your --

16 PANEL MEMBER ECONOMIDES: I think you already
17 answered that one.

18 LCFS ECONOMIST KING: Okay. Okay.

19 PANEL MEMBER ECONOMIDES: Yeah, I think you dealt
20 with that one.

21 LCFS ECONOMIST KING: Okay. And finally, you
22 mentioned something about accumulated deficits year over
23 year after year. And I wanted to respond that we think
24 the market will respond by increasing the supply of low CI
25 fuels, particularly if we're seeing LCFS credit prices at

1 a really high price. We've seen -- or, excuse me, a
2 higher price than what we've seen previously.

3 We've seen a lot of fuels come on in the initial
4 years of the program when credit prices have been
5 relatively low. And we see that the supply response would
6 be pretty strong to a strong credit signal that would be
7 that price cap.

8 PANEL MEMBER ECONOMIDES: If I may jump in here
9 one last time, I promise. Plan for the best, and prepare
10 for the worst. The cost containment provision is meant to
11 prepare for the worst. So if its defense is that the
12 worst will never happen, I surrender. I have no more
13 argument. But that can't be the defense for the cost
14 containment provision.

15 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: Yeah.
16 This is Mike. A couple things. I think the
17 cost-containment mechanism could be robust enough to
18 handle a short-term systemic scarcity of credits, but I
19 think that, you know, this could also handle a regulated
20 party or two that couldn't get credits because they were
21 tied up, because other people have long-term contracts.

22 So part of it is the fact that if it's not really
23 intended to be a long-term systemic solution to a lack of
24 credits or fuels, it is merely there for people who cannot
25 otherwise get credits during the year or there maybe just

1 one or two regulated parties that need credits, and
2 everybody else is still whole.

3 So I think its robust enough to have -- to handle
4 a systemic -- short-term systemic scarcity, but we would
5 expect either nobody uses it, some people use it, and
6 there may be a short-term time when, you know, everybody
7 needs to use it.

8 So it's not intended to be a long-term solution
9 to a problem. And I would add that the workshop that
10 we're going to have on October 27th is going to be
11 compliance curves and cost containment. And those are
12 necessarily linked. So just keep in mind that we've
13 linked those because they are linked, and that's why the
14 workshop is going to be compliance curves and cost
15 containment.

16 CO-CHAIRPERSON LOZO: Chris.

17 PANEL MEMBER HESSLER: Just a couple of quick
18 comments, mostly in response to the comments that have
19 already been made. First of all, I would say that it's
20 easy to over-complicate this conversation. And it feels
21 like that may be happening here a little bit.

22 ARB, it seems to me, has been challenged
23 repeatedly with the question of gosh this may be too
24 aggressive and we may come to the end of a compliance year
25 and we might not have enough credits. What are you going

1 to do about that, ARB?

2 So you seem to be answering the question. I
3 mean, basically the way this mechanism feels to me is that
4 it sets up and enables a test of that proposition. If at
5 the end of the year a regulated party comes forward and
6 says I don't have enough credits, ARB then says, okay,
7 does anybody have any credits left to sell them, because
8 we'll make them buy those credits, if you have credits to
9 sell.

10 But we're not going to give you unlimited market
11 power. You can't sell those credits for an unlimited
12 price, because we're going to make them buy those credits.
13 So we're going to put a cap on how much you can sell it
14 for. That seems to me a very reasonable way to test the
15 assertion that there's not enough credits in the market.
16 It's no different than a public tender for credits. That
17 would work too.

18 As regards to this issue about market
19 interference, which was repeatedly used, the LCFS is by
20 definition a market intrusion. So it's a little silly to
21 kind of trot that out as an attack on something that is
22 meant to limit the potential for an unmitigated price
23 outcome from this program. This is a -- this is a
24 constriction on the market intrusion of the LCFS. So that
25 seems a little silly.

1 There are definitely going to be different market
2 behaviors and different market conditions. That's normal
3 for every market. So if the market is over-supplied with
4 credits, people are going to behave in a certain way. If
5 the market is under-supplied with credits, people are
6 going to behave in a different way. That's perfectly
7 logical and we should think about the markets that way.

8 But again, it's a little -- it's hard for me to
9 wrap my mind around the concern that in a fully supplied
10 market, there will be a possibility of artificially
11 withholding credits. To me, the logical behavior of the
12 market participant in that case is to maximize his
13 profits. So if there is going to be an over-supplied
14 market, and there's a chance that, you know, I'm not going
15 to get to sell my credit at all at the end of the year,
16 why wouldn't I get in there and get something during the
17 regular year? So the idea that people are going to be
18 withholding credits just doesn't make a heck of a lot of
19 sense.

20 LCFS ECONOMIST KING: Thanks. I'll limit the
21 responses due to our time constraints here and just go on
22 to Tim.

23 PANEL MEMBER OLSON: Yeah. Maybe just a
24 clarification. I didn't quite understand setting the
25 price cap Is that done one time or is it revisited every

1 year?

2 LCFS ECONOMIST KING: Thanks, Tim. That's a good
3 question. We anticipate setting a price cap and holding
4 it steady for the years of the program. So it will be
5 known very well ahead of time this will really help with
6 long-term business planning, and it will prevent the
7 concern the regulated parties might withhold their credits
8 or sort of hoard the supply of credits year over year of
9 the program.

10 I'm going to get a little bit into the econ
11 geekiness. When I say we're going to hold the price of
12 the cap constant year over year, that does take into
13 inflation. So in real terms, we're talking about the same
14 price.

15 PANEL MEMBER OLSON: So one other question about
16 slide 71. You have some illustrative examples, \$50, \$100,
17 \$150, \$200 examples. And to date, the credit values --
18 the highest credit value has been \$85, is that where
19 you've been?

20 LCFS ECONOMIST KING: Yeah, something like that.

21 PANEL MEMBER OLSON: And a low of about 30.

22 LCFS ECONOMIST KING: Um-hmm.

23 PANEL MEMBER OLSON: So -- and this comes down to
24 when you actually have your system in place, but what's
25 your expectation for any one of these levels? And maybe

1 that's not a fair question.

2 LCFS ECONOMIST KING: Yeah, it does come down to
3 where we set it. Because of -- one of the main inputs to
4 determining where the price cap should be set is the
5 stringency of the program, and we've not yet in workshops
6 or compliance curves and settled on where that is. We
7 don't have an answer for you unfortunately today. But we
8 will later this month on the 27th when we're discussing
9 this in a little bit more detail.

10 Sorry. Over here on the left. I'll start with
11 Russ and then move my way down sequentially.

12 PANEL MEMBER TEALL: I want to know what Tim
13 wants to know?

14 I mean, it's the Goldilocks approach here. You
15 know, things are too hot, things are too cold, we're going
16 to do it just right. Well -- and the substance of it is,
17 what is just right and how do you determine it? And it's
18 going to be really big on the 27th. I'm going to have to
19 be there for sure. It sounds like it's going to be very
20 interesting to hear all the details of this program,
21 because in order to evaluate what you've put forward,
22 there needs to be some meat on the bones.

23 It's not a free market. It's a regulated market.
24 And I think that everyone's concerns are that one player
25 versus another, a buyer or a seller, is going to be given

1 an unfair advantage of some sort. And, you know, Nick's
2 comment - I wish he was here - that everyone is going to
3 wait till the end of the year and then sell. As a seller,
4 you know, I see a concern that in order for me to sell my
5 product, which is fuel, you know, and I want to sell that
6 as soon as I make it.

7 All right. A buyer could say, I'm not going to
8 buy your fuel unless you sell me the credits, all right?
9 It's -- you know, that's totally allowable. That's done
10 in the market all the time. So even though I might want
11 to wait until the end of the year, you know, I don't have
12 that option. And that happens in the marketplace right
13 now.

14 So in terms of hedging, you know -- you know, I
15 mean we all do that, right? You know, looking at future
16 markets and looking a highs and lows. And, you know, what
17 would an ideal hedging strategy be for a regulated party
18 here?

19 If I were a regulated party, I'd be making
20 credits. You know, I mean some of the oil companies are.
21 You know, some of the large majors are getting into the
22 alternative fuels market, because then they own the means
23 of generating the credits. And, you know, one of your
24 examples was investing in equity, you know, as a tradeoff
25 for getting the credit.

1 So there's other ways outside of the market
2 mechanism that you've set up for regulated parties to
3 ensure that they're not in compliance.

4 And I think the whole reason we're here that
5 we're talking about cost containment was in the first set
6 of low carbon fuel standard meetings, everyone was talking
7 about off-ramps. You know, if this doesn't work, what's
8 the off-ramp. So you've presented ways of mitigating
9 possible negative effects. And I don't think it's fair
10 for you to be criticized for offering those solutions in
11 response to questions about what the off-ramp was, unless
12 they're accompanied with other alternatives, right?

13 So, you know, is there something that's better
14 than what you've proposed? And, you know, until I see the
15 actual numbers, I don't know.

16 PANEL MEMBER STERN: The alternative is the free
17 market.

18 CHAIRPERSON KITOWSKI: Let me just also jump in
19 and say prior to the workshop, if you have preferences on
20 what that number should be or would like to meet with us
21 individually to discuss a methodology for developing and
22 coming up with that number, we are open to it.

23 PANEL MEMBER MUI: I guess I'm next in line here.
24 Simon Mui, NRDC. So we've been supportive of the cost
25 containment mechanism, and also, as you go through kind of

1 these options, have been supportive in terms of that, you
2 know, the credit window being limited in terms of that
3 ability and use of those funds.

4 We do see the credit clearance mechanism as being
5 a good solution. And one of the reasons is because it is
6 essentially adding, I mean, plain and simple, a reasonable
7 approach to making the program more robust in terms of
8 adding an additional layer, an additional mechanism that
9 can address, you know, not all the scenarios that folks
10 have been taking about, but a good chunk of potential
11 scenarios and critiques that were provided early on in the
12 program. And we do see this as a way to address that in a
13 reasonable manner.

14 One of the things I'd like to just flag that you
15 made a point of, I think, Kirsten, is this -- I'm sorry.
16 I think I just -- Kristen.

17 LCFS ECONOMIST KING: No, you had it right the
18 first time, Kirsten.

19 PANEL MEMBER MUI: Now, I'm all mixed up.
20 Kirsten.

21 LCFS ECONOMIST KING: Yes, Kirsten.

22 (Laughter.)

23 PANEL MEMBER MUI: You're mixing me up.

24 So one of the mechanisms -- one of the advantages
25 is actually relying on the market participants to

1 determine where that price is and where that level of
2 agreement is in terms of, you know, whether it's a deal or
3 with equity stakes. And I think that is a distinct
4 advantage over the credit window approach, because the
5 credit window basically is a payment without necessarily
6 the environmental benefits as well that is struck from a
7 credit clearance perspective.

8 And that's why I think NRDC and several other
9 NGOs have been supportive of the credit clearance approach
10 is that it does preserve the environmental benefits going
11 forward, in terms of, you know, giving more time to comply
12 essentially, but also making sure that we achieve the
13 reduction levels that are necessary.

14 LCFS ECONOMIST KING: Thanks, Simon. Yeah,
15 there's a lot of information to go over here. And I
16 think, you know, some of the major points tend to get
17 buried in the details. But definitely, two of the main
18 reasons, which you just pointed out, that we've identified
19 the clearance market as a preferred approach are because
20 it does maximize the environmental benefits possible in a
21 given year, and it also ensures that the funds from the
22 sale of those credits actually go to the low CI fuel
23 producers. And that was important to us to maintain the
24 existing incentive structure of the program.

25 Go ahead.

1 PANEL MEMBER BOWEN: Thank you, Kirsten. And
2 I'll try to make my comments short, because a lot of these
3 points have already been made.

4 From the beginning when the price cap was
5 introduced, I've always had a fair amount of trepidation
6 about it. And I'll probably feel better or less good
7 about it depending on where that cap is set, but that's
8 another meeting, another day.

9 So from a producer's standpoint, and, you know,
10 just for some context, Renewable Energy Group, my company,
11 is the largest generator of D4 RINs in the country, you
12 know, the biodiesel and renewable diesel RIN. And, you
13 know, even if we wanted to hold back all of those credits
14 to try to drive prices up, you just can't handle the cash
15 flow. So for most producers of LCFS credits, the reality
16 is just from day-to-day cash flow businesses, they need to
17 be selling those credits into the marketplace.

18 And one of the things that we had a lot of
19 discussion about in the beginning of LCFS, which I think
20 is actually implicated in this question, is who can be a
21 buyer or seller of credits? And currently we elected to
22 make it a closed market. You know, we did not allow
23 Goldman Sachs to come and make a market in credits, which
24 can add liquidity to the market on the positive side, but
25 it also can create market distortions and hoarding,

1 because that's the whole point of a market maker.

2 So I think probably in the early days of the
3 program, that was the right decision to make, and I do
4 think that's one that probably should be revisited. As
5 the volume of credits grow, should we allow non-obligated
6 parties and non-producers into the market system.

7 And then, you know, I thought Nick actually made
8 some really good points, and I'll echo, Russ, and that I
9 wish he was still here to participate, but the behavior of
10 hoarding is a legitimate concern. And I don't know if
11 you've looked at specific anti-hoarding provisions. So
12 there are some of those in LCFS -- sorry, in RFS2. You
13 are not allowed to hoard RINs above a certain percentage
14 of your overall maximum amount to avoid this hoarding
15 behavior, which often distorts prices. So I do think an
16 anti-hoarding provision, combined with the cap is
17 something good to look at.

18 And then another thing that we have seen is what
19 Russ was referring to, which is lack of buyer demand. I
20 mean there's nothing to say that if, you know, either
21 coordinated or uncoordinated, if several regulated parties
22 step back from the LCFS credit marketplace, and you've got
23 a bunch of companies that need to be selling credits on a
24 regular basis for cash flow for their own business, you
25 can see prices just collapse really, really quickly.

1 And so in the L -- sorry, in the RFS context, you
2 know, there's no obligation to hold any credits at all
3 until you file your paperwork in February. And one of the
4 things that we've advocated with EPA is, you know, why not
5 require at least quarterly progress. You've got to have,
6 you know, 80 percent of your volume and demonstrate that
7 quarterly to create such a situation where people can't
8 step back from the market and cause prices to collapse.

9 So again, it may be worthwhile, as we're trying
10 to moderate fluctuations in credit prices, which really at
11 the end of the day is what we're talking about here, is to
12 require some sort of no hoarding, as well as require some
13 sort of you've got to have progress along the way. Or at
14 least if you don't have progress along the way, and you
15 ended up short, there's a kicker penalty. You can't say,
16 oh, I waited till the 364th day and, oops, there weren't
17 enough, right?

18 So I just wanted to add those thoughts to the
19 mix.

20 LCFS ECONOMIST KING: Thanks. We talked about
21 holding limits earlier. I'd be interested in speaking
22 with you a little bit more about that.

23 Sonia, you're right in front of me. I didn't see
24 you.

25 PANEL MEMBER YEH: I have a question. Well,

1 maybe first a comment. I thought -- I know we had a lot
2 these questions about cost containment. And I went back
3 and forth about the potential hoarding issue. And I guess
4 I'm convinced that the issue probably likely to be small,
5 except the month of December. That you might have every
6 year at the end of the period, you would have a price
7 that's very close to the cap. So, I don't know, just a
8 thought.

9 Question, is that after 2015 when LCFS is going
10 to be under the cap or the regular -- the roof, fuel
11 providers are going to be subject to both a cap and trade
12 and LCFS, so you have a regulated party, a fuel provider,
13 a fossil fuel provider generate too much deficit and will
14 carry-over their deficits. Do they have to pay LC -- do
15 they have to pay cap and trade credits as well, or are
16 they the same that would carry-over the deficits from the
17 cap and trade to the next year? I don't think that's the
18 case, but I wonder have you thought about these two
19 programs -- the interactions between these two programs?

20 DEPUTY EXECUTIVE OFFICER CHANG: So for cap and
21 trade it's a separate compliance instrument. And in cap
22 and trade, there's a three-year averaging period. So in
23 cap and trade, it actually has some of the elements that
24 we've talked about. There's a three-year compliance
25 period, and you have to provide kind of downpayment every

1 year.

2 So after the first year, you have to provide
3 30 -- allowances for 30 percent of the emissions that you
4 had in the first year. After the second year, you have to
5 provide 30 percent of the allowances for the second year.
6 And at the end of the third year, you have to provide 70
7 percent plus 70 percent plus 100 percent. So it does
8 require you to kind of keep -- make sure that you're
9 making some progress.

10 But it's completely separate, so I think you
11 could have a situation where you were carrying deficits in
12 the low carbon fuel standard, which you are complying in
13 the cap and trade program with whatever the obligation is.
14 They're completely different.

15 CHAIRPERSON KITOWSKI: So thank you for those
16 comments. We are going to quickly go over the next two
17 slides, at least I say quickly go over the next two
18 slides.

19 PANEL MEMBER MALINS: Can I intervene from above?
20 Sorry.

21 (Laughter.)

22 CHAIRPERSON KITOWSKI: Of course.

23 PANEL MEMBER MALINS: I think -- I tried to pop
24 an email in, but maybe it didn't make it. Chris from the
25 ICCT.

1 I was just hoping to say a couple of words before
2 we move on, seeing as I've been sort of paying close
3 attention to this idea ever since the last round of the
4 Advisory Panel, when some of us started talking about it.

5 I continue to think that the idea of a credit
6 clearance mechanism is a good one, and potentially a very
7 useful addition to the regulation. It seems to me that
8 CARB is really making a very constructive effort to
9 present something that minimizes sort of any unnecessary
10 burden on the obligated parties. And I think it would be
11 nice to hear some slightly more constructive suggestion
12 perhaps on how this could be tweaked.

13 I'm a little disappointed that the voices who
14 seem to have so much faith in the free market seem to have
15 so little confidence that the free market can handle one
16 extra data point. And I think at the end of the day, what
17 we are talking about here is adding an extra piece of
18 information to a functioning market.

19 The discussion about people hoarding credits till
20 the end of the year or being unable to buy doesn't quite
21 ring true to me. I think, you know, people have to make
22 decisions about credit purchases based on, you know, quite
23 a lot of variability in the price at the moment. This
24 measure I don't think is going to increase variability. I
25 think it's going to reduce it. That should give people

1 more confidence to make decisions.

2 And what that means is, yes, you might influence
3 the price during the year, but the regulated parties and
4 the credit producers will be able to negotiate set prices,
5 as maybe James or someone was suggesting, potentially
6 attach credits or credit sale obligations to fuel sale
7 obligations come to whichever terms seem appropriate.

8 So, I mean, I think this is a pretty reasonable
9 proposal. I think the details are important, and I would
10 be very interested to see some slightly more detailed
11 analysis of -- to perhaps flesh out some of these concerns
12 that have been expressed, because at the moment, I'm not
13 seeing that.

14 And when I consider this, it seems that -- given
15 that the price is set appropriately, but even that I don't
16 accept as a Goldilocks problem. I think we have clear
17 evidence that the LCFS works with prices in the range
18 we've seen from \$30 to \$80. I would say that clearance
19 price should be set somewhat above that, but I don't think
20 you have to find the exact level, and -- as Kirsten and
21 others have said.

22 The intention in all of this is that the market
23 continues to work without reaching the cap price, but I
24 think that you can follow through, workout what happens,
25 in a year where it becomes clear that the clearance market

1 will be activated. And I await to see anyone present
2 compelling evidence that that scenario is unduly
3 burdensome on them.

4 CHAIRPERSON KITOWSKI: Thank you, Chris.
5 Appreciate the comments.

6 Sonia, real quick.

7 PANEL MEMBER YEH: Sorry.

8 CHAIRPERSON KITOWSKI: Oh it's okay.

9 So we're going to hit slides 84 and 85 fairly
10 fast. We've discussed this conceptually before. This is
11 the point in the presentation where they're actually on
12 slides. But the concept of the compliance schedule, which
13 we will be bringing to this group on October 27th -- well,
14 bringing to having a workshop on October 27th. We
15 appreciate your feedback on this now leading up to it as
16 we're doing this analysis.

17 We've had the CI frozen, the compliance -- the
18 standard frozen at one percent. That's been an
19 opportunity to bank credits. The -- we're going to base
20 these compliance curves on the fuel availability
21 discussion that we've had, the CI changes that we've
22 talked about, and those banked credits, and some level of
23 market push or giddy up, as Mike says. I'm not sure if
24 market push or giddy up is stronger. Whichever one is
25 stronger we'll probably use.

1 LCFS on California's economy.

2 The SRIA is due to the Department of Finance 60
3 days prior to the ISOR, so we will be submitting the SRIA
4 to Finance later this month. DoF requires agencies to use
5 REMI, a macroeconomic model of California's economy to
6 analyze the economic impacts of the regulation.

7 --o0o--

8 LCFS ECONOMIST KING: More about that model.
9 REMI is a computational general equilibrium model, or CGE,
10 of the California economy. CGE models use empirical
11 economic data to estimate how an economy will react to a
12 policy. The LCFS is modeled as a disruption to the
13 various market equilibria in place throughout the economy.

14 Broadly speaking, the LCFS reallocates fuel
15 expenditures towards low CI fuels and away from
16 conventional fuels. REMI then calculates the new
17 equilibria using the map of historic economic flows.

18 REMI provides estimates of how the economy will
19 react to the LCFS and models any resultant changes. The
20 key macroeconomic indicators that we are most interested
21 in are fuel price impacts, impacts on gross state product
22 and job impacts.

23 --o0o--

24 LCFS ECONOMIST KING: As with any model that
25 encompasses the entirety of a large and diverse economy,

1 such as Californians -- sorry, such as California's, we've
2 encountered some challenges in modeling the shifts the
3 LCFS induces within the energy and fuel sectors.

4 Basically, we'd like to model those sectors to a greater
5 degree of specificity than the model really allows for.

6 For example, transportation fuels are highly
7 aggregated in REMI to the point that the conventional
8 transportation fuel industry and the liquid biofuel
9 industry are aggregated into one category.

10 This is going to make it a little bit difficult
11 sometimes to tease out the results of what's exactly going
12 on within that broadly aggregated industry of the model.
13 We've remained conservative in our approach. Costs are
14 assumed to be fully passed on to the consumers. And for
15 the most part, credit generators are assumed to receive
16 the proceeds from the sale of the LCFS credits. The
17 exception here is electricity, because the regulation
18 specifically calls for the revenues from the sale of
19 electricity credits to be sent back to the ratepayers who
20 are using those electric vehicles. But for the most part
21 the credit proceeds are assumed to benefit the producers
22 of those low CI fuels.

23 The preliminary runs indicate that the LCFS and
24 ADF economic impact are in the noise of California's \$2
25 trillion economy. The two regulations, we actually

1 modeled them together, because the fuels market impacts
2 really -- let me say this differently. What fuels we
3 anticipate being consumed for compliance is highly
4 impacted by both programs, so we decided it made more
5 sense to actually model the two, given that they're linked
6 with the court ruling.

7 But as I said, the preliminary runs indicate that
8 it's in the noise. We'll have more information. When we
9 do send the SRIA to the Department of Finance, they post
10 those online. So all that information is publicly
11 available.

12 Short and sweet.

13 Any questions?

14 Tim.

15 PANEL MEMBER OLSON: Yeah. I think it's
16 important, going back to your first bullet there, that
17 transportation fuel is high aggregated. I think it would
18 be really good if you could identify where their might be
19 a shift, in this case, probably away from petroleum and to
20 other sectors. Most logical -- biofuels. We've -- using
21 a previous model prior to REMI, basically the shift was to
22 chemical, agriculture, and electricity utilities.

23 LCFS ECONOMIST KING: Thanks, Tim. Yeah,
24 that's what we anticipate in the real world is getting the
25 model to pick up on all of those nuances sometimes is

1 another question. So that's what we're trying to tackle
2 right now.

3 Thanks.

4 CHAIRPERSON KITOWSKI: Okay. I think we're ready
5 to move on to the environmental analysis.

6 Carolyn.

7 --o0o--

8 CO-CHAIRPERSON LOZO: Okay. We are preparing our
9 environmental analysis for the re-adoption according to
10 CEQA guidelines, and also ARB's certified regulatory
11 program under CEQA.

12 So in this process we're analyzing what are
13 considered reasonably foreseeable compliance responses and
14 evaluating the possibility of potentially significant
15 environmental effects. So the purpose of this analysis is
16 to inform the public and also other decision makers of the
17 environmental effects -- potential environmental effects
18 that might occur with implementation of the LCFS and also
19 the ADF.

20 --o0o--

21 CO-CHAIRPERSON LOZO: We're on slide 92. The
22 evaluation first examines what responses might occur from
23 regulation compliance. And these, of course, might
24 include changes in the California transportation fuel
25 pool, changes in land use, changes in shipment patterns,

1 infrastructure development, facility construction or
2 possibly updating or modification of existing facilities.
3 So all of these will be examined in this analysis.

4 --o0o--

5 CO-CHAIRPERSON LOZO: Then analysis will also
6 include a discussion of the regulation purpose,
7 objectives, and need. A general description of the
8 regulation will be included, an analysis of potential
9 impacts, an analysis of impacts that are growth inducing,
10 and also alternatives to the regulation that might address
11 potential environmental impacts.

12 --o0o--

13 CO-CHAIRPERSON LOZO: Any questions on our
14 approach to CEQA?

15 Yes, Will.

16 PANEL MEMBER BARRETT: Just a quick question. I
17 seem to recall on the last advisory hearing panel, there
18 was a -- more discussion in the actual presentation about
19 the potential benefits of moving forward with the program
20 in the environmental impact assessment. Is that changed
21 or is that just something that wasn't emphasized as much
22 somewhat here?

23 CO-CHAIRPERSON LOZO: No, that hasn't changed at
24 all. We'll definitely be looking at the benefits of the
25 program as well. There will be a full analysis of the

1 benefits.

2 PANEL MEMBER BARRETT: Thank you very much.

3 CO-CHAIRPERSON LOZO: Any other questions at all?
4 Any questions on the phone? Oh, I'm sorry. Tim, go
5 ahead.

6 PANEL MEMBER OLSON: Just see -- I would like to
7 see if you could clarify changes to fuel associated
8 transport or shipment patterns including any additional
9 movement by rail of imported refined product?

10 CO-CHAIRPERSON LOZO: Yes, that will be included
11 as well.

12 Any other questions or comments?

13 Anything on the phone?

14 Sonia, you look like maybe. Yes, maybe now.

15 PANEL MEMBER YEH: So we're just going to publish
16 preliminary analysis looking at the impacts of water use
17 of reduced oil production and water oil consumption. I'll
18 be happy to pass on the study to you.

19 CO-CHAIRPERSON LOZO: Okay. Thank you. Perfect.
20 That would be great. Thank you.

21 CHAIRPERSON KITOWSKI: Okay. So we plowed those
22 two fairly quickly. The agenda actually calls for a break
23 at this time. Considering we are close to the end and
24 we're -- we pushed off lunch and shorted ourselves that
25 way, I would suggest we plow through and see if there are

1 other issues that folks want to bring up for us as we're
2 going in the home stretch of the LCFS, and if there are
3 any comments from the public.

4 So we'll start with the Advisory Panel. And
5 we've talked the major components of the Advisory Panel
6 requirements in the regulation. We've talked about a
7 variety of other factors as well. But are there some
8 specific additional points that you'd like to bring up now
9 or you would like us to continue to look at between now
10 and February?

11 And is there something on the phone -- somebody
12 on the phone?

13 David.

14 PANEL MEMBER STERN: I figured you haven't heard
15 from in a little while, so I'll speak up.

16 (Laughter.)

17 PANEL MEMBER STERN: There are a couple of
18 specific requests that I'd like to -- some of which I've
19 iterated before, some of which are a little bit new. One
20 is a caution on mixing the cap and trade program with the
21 LCFS. It has to do with what are you really trying to
22 drive?

23 When you look at this question of GHG emission
24 reductions at refineries and additional compliance
25 pathways, that's the stationary source CO₂ GHG reduction

1 mechanism. And I kind of question why CARB would want to
2 mix and match cap and trade and LCFS. And, you know,
3 again I'll bring it up, I know it's been brought up
4 before, but I don't -- again, I think it's important --
5 imperative to keep the two programs separate.

6 In relating to that, I know there have been many
7 discussions on fuels under the cap, which I won't go into
8 in great detail, but I would bring that up as another
9 example of mixing and matching.

10 Bottom line is if CARB and the State of
11 California want to encourage particular behaviors in
12 fuels, then it should do so, and not try to mix and match
13 programs and hide behind particular terms in order to
14 encourage those kinds of changes.

15 The second thing I want to bring up is a concern
16 that I voiced earlier, which, you know, again, I think we
17 had some good discussion, both good and bad, but at least
18 it was a very open discussion on what progress has been
19 made in the LCFS to date, given the fact that it's now
20 five years in the running, what CI reductions have taken
21 place.

22 And, you know, there's one thing that, you know,
23 is kind of interesting. I didn't want to butt in more
24 than I did in terms of kicking off the conversation. But
25 one thing I thought was very curious in terms of missing

1 from the conversation is, you know, just like this is a
2 public meeting, there's an obligation that CARB has to the
3 public to report what its citizens are paying for, both in
4 the way of subsidies, and both in the way of increased
5 fuel prices. And if it wants to make -- you know, as it
6 continues forward a progress report I think is imperative.
7 But again, that's a call for the California taxpayers to
8 make, in terms of what it of -- of what progress has been
9 made on GHG reduction as a result of this LCFS program,
10 and how much it costs the California taxpayers to get
11 that.

12 And I think it's certainly a legitimate question.
13 I'll leave it to CARB to answer -- to address, but I would
14 think that, you know, the -- you know, the executive board
15 is not doing due diligence if it hasn't tried to do that,
16 and also gauge that against the effectiveness of other
17 potential programs.

18 So if I have a ten percent reduction from CAFE or
19 something else, and it costs me X dollars per ton of CO₂,
20 and it costs me Y dollars per ton of CO₂ under the LCFS, I
21 think the California taxpayers have a right to know that.

22 But again, I'm not -- since I'm not a California
23 taxpayer or a frequent fuel consumer in California,
24 perhaps you could tell me that -- you know, maybe that's
25 not a statement I'd make. But, you know, nonetheless, I

1 think it's something that's a legitimate question,
2 particularly if you're talking about five years out in a
3 particular program.

4 So, you know, for those items, I think it's
5 important to illustrate what those items are. That's a
6 closing comment. Again, I've said it in various forms
7 throughout this meeting, but, you know, one last repeat I
8 think is warranted, because I'm not sure that message
9 fully got through.

10 Thank you.

11 CHAIRPERSON KITOWSKI: Allan.

12 PANEL MEMBER MORRISON: Yeah. Good afternoon,
13 everybody. I have a couple of comments.

14 One, I would, first of all, like to applaud both
15 ARB and CEC. They've supported our work at CDFA as far as
16 research into some of the needs of some of these
17 alternative fuels.

18 But on that note, I do have a question for the
19 Board I guess to be addressed. What provision is ARB
20 looking at to accommodate the increased cost to both other
21 State agencies and, more importantly, to the county
22 agencies for the enforcement of the -- some of the new
23 fuels coming out. All new fuels need fuel quality
24 specifications. They need, of course, the quantity
25 specification, labeling, and advertising. And they all

1 add cost to both the county and some other State agencies
2 including my own.

3 So I just want to keep that sort of in the mind.
4 Again, ARB and CEC has supported some of our research into
5 some of these -- some of the standards, some of the
6 specifications and the metering and the like. But for our
7 ongoing enforcement work, there currently is no support
8 with that.

9 So that's my comment.

10 CHAIRPERSON KITOWSKI: No. Thank you for that
11 comment. I think that's something we could take offline
12 and discuss. There certainly are a number of issues that
13 we have with regard to -- you talk about costs,
14 enforcement, labeling. There's a number of additional
15 issues that we could be addressing and we need to continue
16 coordinating with other agencies.

17 I think, as you know, there is a formal BCP,
18 budget change proposal, process within the State to
19 address changes, but we're happy to have that discussion
20 with you about what we need to support each other.

21 PANEL MEMBER MORRISON: Correct.

22 CHAIRPERSON KITOWSKI: Other comments?

23 So I understand there are no cards from the room.
24 Were we going to check the phone to see if there are any
25 public comments over the phone?

1 CO-CHAIRPERSON LOZO: Nothing publicly either
2 from the public nothing, no.

3 CHAIRPERSON KITOWSKI: So given that, let me go
4 through --

5 AIR POLLUTION SPECIALIST SALDANA: I'm going to
6 ask the operator to open the lines for everybody.

7 CHAIRPERSON KITOWSKI: Okay. Operator, can you
8 open all the lines and see if there are any additional
9 final comments on the phone?

10 THE OPERATOR: Yes. Thank you. At this time,
11 all lines are open and interactive.

12 CHAIRPERSON KITOWSKI: Okay. Thank you. You can
13 close them.

14 So let me run through a few of the main points I
15 heard today. And I appreciate the feedback, and we're
16 hopeful that we continue to get feedback moving forward.

17 We provided some information. I thought we had a
18 very good discussion -- my boss is good at adjusting my
19 microphone for me.

20 (Laughter.)

21 CHAIRPERSON KITOWSKI: I thought we had a good
22 discussion of the benefits of trying to incorporate the
23 latest science updates versus the certainty we provide to
24 industry. And we certainly had consensus around providing
25 some certainty to industry. And exactly what that time

1 frame is, and how we do it, and how we roll this out,
2 especially in the methane case, seemed to be one of the
3 key areas we need to continue to look at.

4 We've had a good discussion on the impacts of the
5 program and whether we could look at the global impacts,
6 can it be quantified at this time, what's the role of the
7 LCFS program and investments so far.

8 We had a very lengthy discussion of fuel supply,
9 renewable diesel, renewable natural gas, a number of
10 others. We hope that discussion to continue. We laid out
11 what our data is at this point, and our assumptions on how
12 we got to that. We realize there's one more step we need
13 to take, but we would like your feedback between now and
14 our October 27th workshop on what we've got out there at
15 this point, because that is the baseline for that next
16 discussion.

17 The issue of credits and their validity and ways
18 of dealing with uncertainty, I think we got some ideas and
19 feedback on areas for us to look at, whether it's European
20 experienced or the way EPA handles credits in that
21 uncertainty. And then certainly a very good discussion on
22 price caps and its role. As an agency, I think we're
23 committed to moving in the direction of providing a price
24 cap. So it's -- I would look for those folks who had
25 concerns with it to provide some information and feedback

1 on how we can make this work for you the best.

2 Edie, were there points that you had that you'd
3 want to mention at this point? Mike, was there anything?

4 TRANSPORTATION FUELS BRANCH CHIEF WAUGH: No.
5 Except, you know, please participate in the workshop
6 process. We're available for one-on-one discussions or
7 conference calls or any of that kind of stuff. So I think
8 there would be plenty of opportunity for you to get your
9 oar in the water on this. So please keeps those cards and
10 letters and phones calls coming.

11 (Laughter.)

12 CHAIRPERSON KITOWSKI: Thank you very much for
13 your participation.

14 (Thereupon the California Air Resources Board,
15 2014 Low Carbon Fuel Standard Advisory Panel
16 meeting adjourned at 3:14 p.m.)

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1 C E R T I F I C A T E O F R E P O R T E R

2 I, JAMES F. PETERS, a Certified Shorthand
3 Reporter of the State of California, and Registered
4 Professional Reporter, do hereby certify:

5 That I am a disinterested person herein; that the
6 foregoing California Air Resources Board, 2014 Low Carbon
7 Fuel Standard Advisory Panel meeting was reported in
8 shorthand by me, James F. Peters, a Certified Shorthand
9 Reporter of the State of California.

10 That the said proceedings was taken before me, in
11 shorthand writing, and was thereafter transcribed, under
12 my direction, by computer-assisted transcription.

13 I further certify that I am not of counsel or
14 attorney for any of the parties to said meeting nor in any
15 way interested in the outcome of said meeting.

16 IN WITNESS WHEREOF, I have hereunto set my hand
17 this 11th day of October, 2014.

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22
23 JAMES F. PETERS, CSR, RPR
24 Certified Shorthand Reporter
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