MEETING

STATE OF CALIFORNIA

AIR RESOURCES BOARD

JOE SERNA, JR. BUILDING

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

BYRON SHER AUDITORIUM, SECOND FLOOR

1001 I STREET

SACRAMENTO, CALIFORNIA

THURSDAY, APRIL 23, 2009

9:04 A.M.

JAMES F. PETERS, CSR, RPR
CERTIFIED SHORTHAND REPORTER
LICENSE NUMBER 10063

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APPEARANCES

BOARD MEMBERS

Ms. Mary Nichols, Chairperson

Dr. John R. Balmes

Ms. Sandra Berg

Ms. Dorene D'Adamo

Ms. Lydia Kennard

Mrs. Barbara Riordan

Mr. Ron Roberts

Dr. Daniel Sperling

Dr. John Telles

Mr. Ken Yeager

STAFF

Mr. James Goldstene, Executive Officer

Mr. Tom Cackette, Chief Deputy Executive Officer

Ms. Ellen Peter, Chief Counsel

Mr. Michael Scheible, Deputy Executive Officer

Ms. Lynn Terry, Deputy Executive Officer

Mr. John Courtis, Manager, Alternatives Fuels Section

Mr. Bart Croes, Chief, Research Division

Mr. Bob Fletcher, Chief, Stationary Source Division

Ms. Nargis Jareen, Population Studies Section, Research Division

APPEARANCES CONTINUED

STAFF

Mr. Tom Jennings, Senior Staff Counsel

Ms. Annmarie Mora, Manager, Research Planning and Climate Change Outreach Section

Mr. Dean Simeroth, Chief, Criteria Pollutants Branch

ALSO PRESENT

Mr. Will Barrett, American Lung Association

Mr. Eric Bowen, Tellurian

Mr. Altacir Bunde, Popular Movement of Peasants, Brazil

Mr. Jonathan Burke, Westport Innovations, Inc.

Mr. Todd Campbell, Clean Energy

Mr. Julian Canete, California Hispanic Chamber of Commerce

Mr. Frank Caponi, Sanitation Districts of Los Angeles

General Wesley Clark, Growth Energy

Mr. Brooke Coleman, New Fuels Alliance

Mr. Will Coleman, Mohr Davidson Ventures

Mr. Geoff Cooper, Renewable Fuels Association

Mr. Tom Darlington, Air Improvement Resource

Mr. James Duran, CMCC

Mr. Bob Epstein, Environmental Enterprises

Mr. Randal Friedman, United States Navy

Mr. Jerry Frost, Kern Oil & Refining Company

Mr. Martin Fuentes, California Hispanic Chamber of Commerce

APPEARANCES CONTINUED

ALSO PRESENT

Ms. Danielle Fugere, Friends of the Earth

Mr. Claus Fuglsang, Novozymes

Mr. Will Gardenswartz, EdeniQ

Mr. Remy Garderet, Energy Independence Now

Mr. Steve Gondola, Sacramento Hispanic Chamber of Commerce

Mr. Joshua Gruen, Western States Goods Movement

Mr. Gary Grimes, Paramount Petroleum

Mr. Anibal Guerrero, San Fernando Valley of the Mexican-American Political Association

Mr. Tom Fulks, Neste Oil

Mr. Matthew Hargrove, California Business Properties Association

Mr. Thomas Hertel, Global Trade Analysis Project(GTAP)

Mr. Christopher Holly, Alberta Energy

Ms. Bonnie Holmes-Gen American Lung Association

Mr. Rick Hyndman, Canadian Association of Petroleum Producers

Mr. Tom Jacob, DuPont

Mr. Ruben Jauregui, Latino Business Association

Mr. John Kabatack, National Federation of Independent Business

Mr. Greg Karras, Communities for a Better Environment

Ms. Naomi Kim, CalEPA, AB 32 Environmental Justice Advisory Committee

APPEARANCES CONTINUED

ALSO PRESENT

Mr. Jamie Knapp, Environmental Coalition

Mr. Ted Kniesche, Fulcrum

Mr. Tom Koehler, Pacific Ethanol, Inc.

Mr. Nick Lapis, Californians Against Waste

Mr. James Larson, Pacific, Gas & Electric

Mr. Marc LePage, Consul General, Canadian Consulate General

Mr. Edwin Lombard, California Black Chamber of Commerce

Mr. Gregory Luli, Verenium

Mr. James Lutch, Simple Fuels Bio-Diesel

Mr. Kenneth Manaster, Pillsbury, Winthrop, Shaw, Pittman

Mr. Mark Martinez, San Joaquin County Hispanic Chamber of Commerce

Mr. Kelly McKechnie, Western Growers

Mr. Jay McKeeman, California Independent Oil Marketers Association

Dr. Robert Meagher

Mr. Peter Mieras, Jeffer, Mangels, Butler and Marmaro LLP

Mr. Taylor Miller, Sempra Energy

Mr. David Modisette, California Electric Transportation Coalition

Ms. Patricia Monahan, Union of Concerned Scientists

Mr. Ralph Moran, BP

Mr. Craig Moyer, Western Independent Refineries Association

APPEARANCES CONTINUED

ALSO PRESENT

Mr. Simon Mui, Natural Resources Defense Council

Mr. Tim O'Connor, Environmental Defense Fund

Mr. Michael O'Hare, University of California, Berkeley

Mr. Justin Oldfield, California Cattlemen's Association

Mr. Brant Olson, Rainforest Action Network

Mr. Max Ordonez, California Hispanic Chamber of Commerce

Mr. Alan Osofsky, Rogers Trucking, West State Alliance

Ms. Amisha Patel, California Chamber of Commerce

Mr. Charlie Peters, Clean Air Performance Professionals

Mr. Shankar Prasad, Coalition for Clean Air

Mr. Pete Price, California Natural Gas Vehicle Coalition

Mr. Michael Redemer, American Biodiesel

Ms. Cathy Reheis-Boyd, Western States Petroleum Association

Ms. Susan Reid, Conservation Law Foundation, Protecting New England's Environment

Mr. Robert Richards, Kern Oil Refining Co.

Ms. Dorothy Rothrock, California Manufacturers and Technology Association

Ms. Andrea Samulon, Rainforest Action Network

Ms. Sophia Sarabia, Center for Race, Poverty & the Environment

Dr. Robert Sawyer, University of California, Berkeley

Mr. Gary Schoonyan, Southern California Edison

APPEARANCES CONTINUED

Mr. Steve Shaffer, Environmental Consulting for Agriculture

Mr. John Shears, Center for Energy Efficiency and Renewable Technologies

Mr. Matt Solomon, Northeast States for Coordinated Air Use Management (NESCAUM)

Mr. Rick Souza, Weber Distribution

Mr. Dwight Stevenson, Tesoro

Mr. Mark Stowers, POET

Mr. Russell Teall, Bio-Diesel Industries

Mr. Sven Thesen, Better Place

Mr. James Uihlein, Chevron

Mr. Sanjay Varshney, California Small Business

Mr. Joel Velasco, Brazilian Sugarcane

Mr. Larry Weitzman, Mountain Democrat

Mr. Chuck White, Waste Management

Mr. Paul Wuebben, South Coast Air Quality Management District

Dr. Sonia Yeh, University of California, Davis, Institute of Transportation Studies

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PROCEEDINGS

CHAIRPERSON NICHOLS: Good morning, everyone. We're ready to begin. If people will take their seats.

While everybody's getting assembled here, I'm going to make this request. And I will probably reiterate it a few times during the course of the day when we actually get into the hearing.

But several people who watch our proceedings on webcast have complained that both witnesses and Board members and staff don't get close enough to the microphone and they have a hard time understanding us when they're trying to follow our proceedings. So I'd like to remind everyone to please not only put your face right up to the microphone, but also speak loudly and distinctly if you can please.

Good morning. The April 23rd, 2009, public meeting of the Air Resources Board will come to order.

We begin our proceedings with the Pledge of Allegiance, if you'll all please stand and face the flag.

(Thereupon the Pledge of Allegiance was Recited in unison.)

CHAIRPERSON NICHOLS: And the clerk will please call the roll.

BOARD CLERK VEJAR: Dr. Balmes?

BOARD MEMBER BALMES: Here

BOARD CLERK VEJAR: Ms. Berg?

BOARD MEMBER BERG: Here.

BOARD CLERK VEJAR: Ms. D'Adamo?

BOARD MEMBER D'ADAMO: Here.

BOARD CLERK VEJAR: Ms. Kennard?

Mayor Loveridge?

Mrs. Riordan?

BOARD MEMBER RIORDAN: Here.

BOARD CLERK VEJAR: Supervisor Roberts?

BOARD MEMBER ROBERTS: Here.

BOARD CLERK VEJAR: Professor Sperling?

BOARD MEMBER SPERLING: Here.

BOARD CLERK VEJAR: Dr. Telles?

BOARD MEMBER TELLES: Present.

BOARD CLERK VEJAR: Supervisor Yeager?

BOARD MEMBER YEAGER: Here.

BOARD CLERK VEJAR: Chair Nichols?

CHAIRPERSON NICHOLS: Here.

BOARD CLERK VEJAR: Madam Chairman, we have a quorum.

CHAIRPERSON NICHOLS: Thank you.

I have a few announcements before we get started. Just to remind people, that anyone who wishes to testify should sign up with the staff who are outside the auditorium. And we appreciate it if you include your name

on the speaker card. We will be imposing a two-minute time limit today because of the volume of speakers. And we're going to try to be strict about this. We appreciate it if people put their testimony in their own words rather than reading their written testimony, since we read it anyway and it goes into the record.

I want to point out the emergency exits at the rear of the room; and remind people that if there is a fire alarm, you're required to leave the building and go down the stairs and out into the park, and not to return again until there's an all-clear signal.

I'll also be making this announcement again later. But apparently we now have screens available so that people can see where they are in the witness list order. So this ought to minimize confusion and allow people to schedule necessary comfort breaks but still be here when their name is called to come up and testify. And we hope that people will keep their eye on those screens.

Okay. We will now begin with our customary first item on the agenda, which is the health update.

Mr. Goldstene.

EXECUTIVE OFFICER GOLDSTENE: Thank you, Chairman Nichols. Good morning, Board members.

In past health updates, staff has presented

results from studies that show the serious consequences of exposure to air pollution on children's health. These include reduced lung function, increased respiratory symptoms, and worsening of asthma.

Today, staff will report on a recently published study that found an association between traffic-related air pollution exposure and new cases of asthma in children. While impacts on respiratory health are well documented, the association between air pollution exposure and asthma onset is a relatively new finding. These results provide important additional information to validate our concerns about traffic-related pollution and its effects on children's health.

Nargis Jareen, from our health and exposure assessment branch will make the staff presentation.

Nargis.

(Thereupon an overhead presentation was Presented as follows.)

MS. JAREEN: Thank you, Mr. Goldstene. And good morning, Chairman Nichols and members of the Board.

In today's health update, we will be presenting the findings of a recently published on the association between onset of childhood asthma and traffic-related air pollution exposure in southern California communities.

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MS. JAREEN: Asthma is the leading cause of chronic disease in U.S. children, according to the Center of Disease Control's National Health Interview Surveys.

During an asthma attack, the airway constricts, swells, and becomes congested. This leads to tightness in the chest, wheezing, and difficulty in breathing. In severe cases, asthma attacks can be deadly.

In 2005, an estimated 16 percent or 1.5 million children in California had been diagnosed with asthma at some point in their lives. The prevalence is rising - four years earlier it was 14 percent. As a comparison, the rate of attention-deficit/hyperactivity disorder is approximately 6 percent in U.S. children and the rate of childhood diabetes is only .2 percent in the U.S.

The cost of treating children with asthma in California is estimated to be around $500 million per year.

Air pollution plays a well-documented role in asthma. An estimated 280,000 episodes of asthma and lower respiratory symptoms results from fine particulate matter exposure in children 7 to 14 years of age in California each year.

A growing body of evidence indicates that traffic-related pollutant exposure can increase the risk for asthma and worsening of asthma symptoms.

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MS. JAREEN: So a question that remains is: Can ambient air pollution be linked to asthma onset? That is, does air pollution only worsen symptoms in children with existing asthma or can it be linked to new cases of asthma?

This is the topic of our health update today.

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MS. JAREEN: The findings I am going to discuss today are the latest to come from the Southern California Children's Health Study, the longest U.S. investigation into air pollution and children's health.

Originally funded by ARB, this study has tracked children's respiratory health since 1993 and is currently being funded by the National Institute of Environmental Health Sciences.

The study looked at the air pollution impacts on 6,000 children recruited from 12 southern California communities chosen for their different pollution profiles. PM2.5, PM10, constituents of PM, ozone, NO2 and acid vapor were measured in each community during the study period.

Measurements from these children included annual lung function tests and the administration of questionnaires. Several ground-breaking results and over 100 peer-reviewed articles have emerged from this study.

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MS. JAREEN: The study we are presenting today involved a subset of 217 children, 10 to 18 years of age, with no doctor-diagnosed asthma at the beginning of the study, living in 11 communities from the Children's Health Study. New asthma cases were reported annually through questionnaires during the eight-year follow-up of the children. NO2 monitors were placed outside the homes of the children as a marker of traffic for two weeks in the summer and two weeks in the winter season.

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MS. JAREEN: The study found that asthma onset was positively associated with traffic pollution. An approximately 30 percent higher risk of asthma onset was seen in children living in communities with higher NO2 exposure.

The study was limited by the fact that NO2 was monitored at the homes of the children for only two weeks per season. Other limitations include the lack of monitoring data for other pollutants at children's homes, the relatively small number of subjects, and the use of questionnaire rather than direct verification of new asthma cases.

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MS. JAREEN: Additional evidence for the link

between air pollution exposure and the asthma onset comes from an earlier report from the Children's Health Study. In that report researchers found new diagnosis of asthma in exercising children in communities with high ozone concentrations.

Also, two other reports from the Children's Health Study found increased prevalence - that is, children already diagnosed with asthma - in children living near higher traffic roads and freeways.

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MS. JAREEN: In conclusion, evidence is beginning to emerge that exposure to traffic-related pollutants may influence asthma onset. Although, NO2 was the monitored pollutant in this study, NO2 may only be a marker for some other component of traffic pollution that is associated with traffic impacts on asthma. Identifying the actual components of traffic pollution responsible for the health impacts observed is, in fact, the subject of intense study.

However, continued reduction of traffic exposure in children is expected to reduce asthma symptoms and asthma prevalence in this susceptible population.

This concludes the health update. We would be happy to answer any questions.

Thank you.

CHAIRPERSON NICHOLS: Are there any questions or comments from the Board?

Dr. Telles, did you have your hand up?

Sorry. No.

BOARD MEMBER TELLES: I can make a comment.

I think it's very helpful to point out that asthma onset's probably related to air pollution in certain circumstances. However, reviewing this article when you -- I talked to you over phone -- I think unfortunately that it's extremely weakened by the fact that it's done by questionnaire and not by some kind of an objective measurement. I don't know if Dr. Balmes feels that way. But I think this type of article, it obviously wasn't published in one of the big journals, because -- like maybe the Journal of Medicine or something like that, probably because of that type of thing. They may not accept something based upon questionnaires rather than objective measurement.

CHAIRPERSON NICHOLS: Dr. Balmes, do you want to comment?

BOARD MEMBER BALMES: Well, this was published in Environmental Health Perspectives, which is the top environmental health journal. And actually, while I agree with you, it's nice to have physiologic testing to verify that someone truly has airway responsiveness as we see in

asthma, this is actually standard operating procedure to use, a self-report of doctor diagnosis of asthma. It's been pretty well epidemiologically validated. There was actually a very careful study in Italy showing that, if anything, it underestimates asthma, because a number of kids probably really have asthma but they'd never been diagnosed.

So, I don't think that's a particularly serious weakness.

And it's just one of many studies now that are showing effects of traffic on kids. It's important, and this is evidence of new onset asthma.

But actually the bigger burden on health is exacerbations of preexisting asthma in kids. And there's a lot of literature supporting that.

And now there's increasing literature, some of which I've contributed to, with regard to adult asthmatics having exacerbations or lung function decrements related to traffic exposure.

So I think we really know that there's a linkage from all the studies combined. What we need to better understand is what are the specific mechanisms --

There's my hospital beeper going off.

(Laughter.)

BOARD MEMBER BALMES: -- specific mechanisms and

the specific components of traffic that lead to these exacerbations and perhaps onsets so that we can better control the problem.

CHAIRPERSON NICHOLS: Well, I guess my concern about this type of study is more about the exposure data than it is about the accuracy of the health reporting, which is that sticking an NO2 monitor, you know, in the street in front of somebody's house may or may not be a very good measurement of what they're actually being exposed to.

BOARD MEMBER BALMES: I think that since most people use a traffic metric in terms of distance to roadway or average traffic density in a buffer around the home, the fact that they actually had a pollutant marker for traffic, even if it isn't necessarily --

CHAIRPERSON NICHOLS: -- is better than the previous studies moving forward.

BOARD MEMBER BALMES: Exactly.

CHAIRPERSON NICHOLS: Well, that's helpful. But I guess, you know, from the perspective of those of us who actually live in cities and not too far away from heavily traveled areas, you know, what you're trying to hopefully get to is some better measurement of how far away do you need to be? Does it matter if you're elevated or if the roadway is under you? You know, all that sort of thing.

So it would be really neat, I think -- I can't think of a better way to describe this at the moment -- but if our researchers could focus in a little bit more on the -- on how we really get a better picture of what difference it -- I realize the issue right now is just can we link it to onset of asthma. But we've got to get to the point I think where we can tell people something about this exposure issue.

BOARD MEMBER BALMES: I totally agree. And I think a lot of people are putting time and money into trying to figure out how to better measure traffic exposure.

CHAIRPERSON NICHOLS: Great.

Okay. Well, I always have lots of good ideas for our researchers.

Do you have any final comments, Mr. Goldstene?

EXECUTIVE OFFICER GOLDSTENE: No. Clearly we need to continue to keep doing research in this area.

CHAIRPERSON NICHOLS: And speaking of research, I think our next item is four research proposals that are before us for approval.

So we'll shift staff at the table here and move to the next item.

Thank you very much. It was a good presentation.

All right. We'll introduce the next item.

EXECUTIVE OFFICER GOLDSTENE: Thank you, Chairman Nichols.

The research to be covered by the proposals before you today has been developed from the concepts approved by the Board in July as part of the annual research plan. The proposals support the Board's missions of protecting the public from health effects of air pollution and addressing the causes of air pollution.

Specifically, this research will help the Board understand how particles affect cardiovascular and neurological health, how particles are formed from precursor pollutants in the atmosphere, and how to encourage residential energy users to voluntarily conserve energy.

Annmarie Mora from our Research Division will make the presentation.

Annmarie.

(Thereupon an overhead presentation was Presented as follows.)

RESEARCH & CLIMATE CHANGE PLANNING SECTION MANAGER MORA: Thank you, Mr. Goldstene.

Good morning, Chairman Nichols and members of the Board.

We have four research proposals for you to consider this morning.

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RESEARCH & CLIMATE CHANGE PLANNING SECTION MANAGER MORA: As Mr. Goldstene indicated, these proposals were developed from the concepts presented in the Annual Research Plan, which was approved by the Board in July 2008. ARB staff worked with collaborators to develop research concepts into proposals, which were externally reviewed through the Board's Research Screening Committee.

ARB staff continue to look for co-funding opportunities to conserve the State's research dollars. And these studies substantially leverage outside resources, including data and other federal resources, from a $4.1 million National Institute of Environmental Health Sciences' funded study as well as financial support from the South Coast Air Quality Management District.

The overhead rate for these projects is only 9 percent, which is far less than normal government-approved overhead rates of 45 percent.

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RESEARCH & CLIMATE CHANGE PLANNING SECTION MANAGER MORA: The proposed research supports Board priorities related to health, State Implementation Plan support, and climate change.

Now, I'll describe the context and objectives of the four proposed research projects, beginning with Health

and Exposure

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RESEARCH & CLIMATE CHANGE PLANNING SECTION

MANAGER MORA: A $4.1 million study, primarily funded by the National Institute of Environmental Health Sciences, with contributions from ARB and the South Coast Air Quality Management District, is currently underway to investigate how elderly subjects with coronary heart disease are affected by PM2.5 and ultrafine particle exposures at four sites in California.

Proposed research involving exposures to air pollution in elderly subjects will extend ongoing work to include analysis of heart rate variability, one of the strongest predictors of future cardiac events.

Of the $235,000 contract request by Air Board staff, South Coast is expected to contribute $85,000. At relatively low cost, results from this research will shed light on important health outcomes in a vulnerable population in California.

The second health-oriented study investigates effects of ambient particulate matter on the central nervous system. Results should help us understand whether and how ambient aerosol exposures induce neurological effects.

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RESEARCH & CLIMATE CHANGE PLANNING SECTION MANAGER MORA: We recommend one study to support State Implementation Plans for particulate matter.

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RESEARCH & CLIMATE CHANGE PLANNING SECTION MANAGER MORA: To support control of PM, we recommend for funding a project that would use experiments in a well-controlled environmental testing chamber to improve models that predict secondary organic aerosol formation.

Since these compounds can account for more than 70 percent of PM on highly polluted days, accurately predicting SOA formation is essential to developing cost-effective control strategies as well as understanding how ozone control strategies may affect ambient PM concentrations.

This study takes advantage of a unique $3 million testing chamber facility funded by the U.S. EPA.

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RESEARCH & CLIMATE CHANGE PLANNING SECTION MANAGER MORA: We propose to fund one climate-change related research project.

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RESEARCH & CLIMATE CHANGE PLANNING SECTION MANAGER MORA: Residential energy consumption accounts for 14 percent of California's greenhouse gas emissions. And

the Board's recently approved scoping plan identifies voluntary actions as well as residential energy efficiency as key components of the State's strategy to meet a 2020 greenhouse gas emission goal equal to the 1990 baseline.

The proposed research addresses a gap in information regarding the effectiveness of outreach programs by probing the impact and cost effectiveness of programs designed to reduce energy -- to reduce residual energy consumption as well as the role of peer-to-peer networking in motivating conservation efforts.

Study results are expected to help ARB, utilities, and other stakeholders design and evaluate programs to promote voluntary reduction of residential energy consumption. This research will make use of recent and ongoing work regarding behavioral dimensions of energy consumption, including a series of collaborative efforts to investigate consumer behavior and program evaluation under the auspices of the California Public Utilities Commission and the California Institute For Energy Efficiency and the California Energy Commission's recently initiated $1.4 million contract to shed light on what motivates energy-related decision-making.

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RESEARCH & CLIMATE CHANGE PLANNING SECTION MANAGER MORA: These proposals will help ARB fulfill its

mission to understand health impacts of exposures to particles, improve planning that will reduce public health risks from PM, and mitigate greenhouse gas emissions through voluntary measures in the residential sector.

We recommend that you approve these research proposals.

CHAIRPERSON NICHOLS: Thank you, Ms. Mora.

Do we have any questions on any of these project proposals from any of the Board members?

If not, can we vote on them as a group then?

BOARD MEMBER BALMES: Does somebody need to make a motion or --

CHAIRPERSON NICHOLS: Would you please.

BOARD MEMBER BALMES: I move that we accept the research proposals.

BOARD MEMBER RIORDAN: Second.

CHAIRPERSON NICHOLS: Okay. We have a second.

A motion and a second.

All in favor please say aye.

(Ayes.)

CHAIRPERSON NICHOLS: Opposed?

Very good. Thank you very much.

All right. One more research-related item then. And that changes to the Screening Committee.

EXECUTIVE OFFICER GOLDSTENE: The Screening

Committee.

The Board's Research Screening Committee provides crucial guidance to our research program. Today we are recommending that the Board appoint the new member, Dr. Dan Costa, who has expertise in toxicology and physiological impacts of air pollution. He would replace Dr. Bob Devlin, who recently resigned from the Committee.

Annmarie will also present on

Annmarie.

(Thereupon an overhead presentation was

Presented as follows.)

RESEARCH & CLIMATE CHANGE PLANNING SECTION MANAGER MORA: Thank you.

Today I'd like to thank Dr. Robert Devlin for his service on ARB's Research Screening Committee and propose a replacement.

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RESEARCH & CLIMATE CHANGE PLANNING SECTION MANAGER MORA: The Board's legislatively mandated Research Screening Committee consists of scientists, engineers, and others knowledgeable, technically qualified, and experienced in air pollution problems. All of the Air Resources Board's research projects are subject to oversight from the Research Screening Committee, which reviews proposed and completed research projects,

including the annual research plan that is considered by the Board each summer.

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RESEARCH & CLIMATE CHANGE PLANNING SECTION

MANAGER MORA: After six years of service, Dr. Robert Devlin of the U.S. EPA is resigning from the Research Screening Committee. We've prepared a formal resolution to thank Dr. Devlin for his dedication. And I'd like to read a few highlights describing his contributions.

Dr. Devlin has been instrumental in the success of the Board's health effects and exposure research programs, and the Board has substantially benefited from his expertise in toxicology, molecular and cellular biology, and mechanisms of adverse health effects.

He continues to serve at the forefront in synthesizing human exposure and toxicological research needed to address important air quality issues. Among his many distinguished achievements, he has received multiple awards from the United States Environmental Protection Agency for scientific and technological achievement, as well as for commendable service to protection of public health, and was recognized by the American Journal of Respiratory, Cell, and Molecular Biology for authoring one of the most highly cited articles ever published in the journal.

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RESEARCH & CLIMATE CHANGE PLANNING SECTION MANAGER MORA: To replace Dr. Devlin, we recommending Dr. Dan Costa for RSC appointment.

Dr. Costa has four years' experience in his current position as the National Program Director for Clean Air Research at U.S. EPA's Office of Research and Development.

As Program Director, he works to integrate U.S. EPA's air research activities to cohesively address information needs of offices, regions, states, and tribes responsible for protecting air quality.

In previous positions, he has managed U.S. EPA's PM Program and served as a toxicologist with active research in air pollutants' adverse effects on healthy and on susceptible populations, including effects on the lungs, heart, and nervous systems.

He has been recognized 11 times with science and technology achievement awards for outstanding research in toxicology and physiology of health effects induced by PM and ozone.

Dr. Costa also holds professorships at North Carolina State University as well as the University of North Carolina, Chapel Hill.

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RESEARCH & CLIMATE CHANGE PLANNING SECTION MANAGER MORA: In conclusion, staff recommends addition of Dr. Dan Costa to the RSC, with voting status effective at the next RCS meeting. This will allow the RFC to continue to operate with its full contingent of 11 voting members.

CHAIRPERSON NICHOLS: Thank you very much.

I recently had an opportunity to visit with the Research Screening Committee when they were meeting in Sacramento and watched them in action. And I am impressed again - I had not had a chance to meet with the current committee in quite a long time - at how hard these people work and how much service they give us, and particularly at how it brings together a group of people with very divergent backgrounds and expertise who manage to talk across disciplinary lines and actually reach decisions, which is a very challenging thing to do since it's really like people speaking different languages sometimes coming together.

But I do personally want to express my appreciation for Dr. Devlin's service and to recommend Dr. Costa, because I think both their expertise as researchers and their role within U.S. EPA, which has been such an important partner to the Air Resources Board over the years in trying to make sure that we're spending our scarce research dollars as effectively as possible, is

really important.

Any other comments?

Dr. Balmes.

BOARD MEMBER BALMES: Well, just a) I think was a ten-plus year veteran of RSC, so I understand what's involved.

And I also agree that Bob Devlin did a super job.

Dan Costa is a person I've known professionally for 20 years, and he's a superb addition to the Research Screening Committee.

And I think it does allow us better chances to leverage our research dollars if we can be working to some extent in tandem with the EPA. So I'm very supportive of this choice.

CHAIRPERSON NICHOLS: I'll take that as a motion.

BOARD MEMBER BALMES: That's a motion.

CHAIRPERSON NICHOLS: Do we have a second?

BOARD MEMBER RIORDAN: Second.

CHAIRPERSON NICHOLS: All in favor please say aye.

(Ayes.)

CHAIRPERSON NICHOLS: And opposed?

Very good.

All right. With that important work behind us, it's time to move forward on our major activity of the

day, which is the proposed low carbon fuel standard. And I believe we have the staff for that item here, if we can get people moved into position.

We're actually a little ahead of schedule this morning. But I trust there's no problem with us moving this item since it's a staff report that we'll be beginning with today. And I think we will need the time. I'm quite sure we will, yes.

Well, let me just say a few words of introduction here. The Low Carbon Fuel Standard is a program that was actually initiated through an Executive Order in January 2007. And the staff has been working on it for more than two years to bring to us the product that we have today. So we all know the transportation sector is responsible for more greenhouse gas emissions than any other sector in California, not to mention of course its role in causing the health-based air pollution that we've just been talking about for the last hour or so.

The emissions from this sector have traditionally grown in California at a rate that far exceeds even our growth in population. And it has led to a host of environmental problems as well as increasing our dependence on a single energy source, that is, petroleum with a variety of attendant economic and security problems that flow from that dependence.

The Low Carbon Fuel Standard that we're considering today is a key element in California's multi-pronged approach to changing this trend. This effort involves three major areas of work that deal with the three major sources of emissions.

The first of course is the California Clean Cars Program, which will cut global warming emissions from the vehicle fleet by about 20 percent in 2020 when a program is finally in force.

The second is a focus on land use and transportation planning as required by SB 375. A relatively new area for the Air Resources Board, but one which is rapidly becoming a focus of a great deal of our activity.

And then, finally, the focus on fuels through the Low Carbon Fuel Standard that we're considering together today.

These efforts work together to create a paradigm shift, not only in addressing global warming but also in breaking our dependence on petroleum, increasing energy security, improving our economy, and meeting our public health goals at the same time.

Of course today we're considering only the fuel aspect. Standing alone, however, the Low Carbon Fuel Standard will deliver 10 percent of the emissions

reductions that are needed to meet the goals of AB 32.

The Low Carbon Fuel Standard also represents the world's first regulation to comprehensively deal with greenhouse gas emissions from transportation fuels. It establishes a performance-based framework. And using market-based mechanisms, it will achieve emissions reductions while preserving flexibility, driving innovation, and enhancing consumer choices.

The Low Carbon Fuel Standard also is designed to promote greater investment in a wide variety of low carbon fuels, such as electricity, sustainable biofuels, hydrogen, and natural gas.

It's intended to cut dependency on petroleum by 20 percent and reduce our need to import oil by even more than that.

And, finally, the hope in this project is that it will provide a road map for other states and the nation to pursue similar efforts. And, indeed, I'm very pleased to see that the Waxman-Markey bill that's currently under consideration in the House of Representatives does include a provision for a low carbon fuel standard, which I think is clearly based on the approach that California is taking.

By the volume of the comments that we've already received on this item, I can anticipate that today's

hearing is going to be lengthy. And I anticipate that we're going to hear a variety of different points of view on how best to design such a standard. We realize that this proposed regulation is far reaching, that it's innovative, and complicated. And, consequently, I want to make it clear that the Board is going to be paying very close attention not only to today's oral comments but also to the written comments that we have received and to the staff testimony. And I'm sure that Board members will from time to time have questions.

But as we focus on the details, and there are many in this regulation, we also need to keep the big picture in mind; that is, that we are attempting here to set in motion something which is going to take many years to implement. And I want to emphasize that, as well as the point that, although the science basis for this rule is robust - and it is also controversial, we know that, and we will hear many comments about exactly how well formed it is - I think the Board members are all sufficiently experienced in these matters to understand that models are models. They are not the same thing as real-world experience, but that we use models to make decisions on. We also know that we need to keep perfecting those models and to keep improving the science, and that it is the Board's responsibility to do that,

especially with a program as far reaching as this one.

It's also important for us I think to realize that we will as a board be continuing to be involved in this item. We will be setting in motion something that clearly has major consequences, as I've described in these brief remarks. But we will be back repeatedly, this Board and successor boards, in the decade ahead as we learn from and adapt to changes in the real world.

Nevertheless, it's time to start at least the discussion.

So, Mr. Goldstene, I will now ask you to begin the staff's presentation.

EXECUTIVE OFFICER GOLDSTENE: Thank you, Chairman Nichols.

As you stated, staff's been hard at work for the past two years to develop the Low Carbon Fuel Standard. During this time we have built a dedicated and extremely knowledgeable team that has conducted an extensive technical evaluation, advanced the science of life cycle analysis, and engaged in a continuous and wide ranging outreach process with stakeholders from across the spectrum.

Our team has studied the feasibility of meeting the standards on the proposed schedule, estimated the program's costs and environmental impacts, and completed

the scientific peer-review process required by State law.

The proposal we are recommending today is the result of that effort, and it provides the policy framework and the technical elements needed to implement the world's first Low Carbon Fuel Standard.

These efforts have enabled us to create a proposal that will harness market forces and innovation to cut greenhouse gases and set California on the track to use an increasingly large and diverse set of sustainable transportation fuels.

Staff has also been diligent in soliciting, listening to, and responding to a vast number and variety of stakeholder comments throughout the process.

The proposed regulation has been through 16 workshops and several revisions and now reflects many of the more than 200 comments we've received.

Furthermore, staff will continue to work with all those affected by and interested in the Low Carbon Fuel Standard going forward. In fact, today we will be recommending several additional changes in response to stakeholder suggestions, including adding a second formal periodic review of the program and several more carbon intensity values for additional fuel production pathways.

As you know, many other states and nations are looking to follow in California's footsteps. We will be

fully coordinating California's efforts with those of the United States Environmental Protection Agency, the northeast states and European nations as they design programs to further reduce global warming emissions from transportation fuels.

This is an exciting program, one that we believe will continue California's long history of leadership and innovation to improve our environment and sustain our planet.

I'll now ask Wes Ingram from our Stationary Source Division to make the staff presentation.

Thank you.

(Thereupon an overhead presentation was Presented as follows.)

CHAIRPERSON NICHOLS: Well, thank you very much.

And I see, Mr. Ingram, you're surrounded by help.

(Laughter.)

CHAIRPERSON NICHOLS: I want to refer to the effort that went into designing this rule. You can see a small representation of the ARB people who've work on this rule. And some of them had more hair and it was a darker color when they started working on this effort.

So welcome and thank you.

MR. INGRAM: Thank you for the introduction, Mr. Goldstene.

Good morning, Chairman Nichols and members of the Board.

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MR. INGRAM: In today's presentation I will provide you with an overview of the staff's proposal. The general topics I will address are presented on this slide.

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MR. INGRAM: My first topic will cover what the LCFS will accomplish.

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MR. INGRAM: As you all know, AB 32 requires significant greenhouse gas reductions by 2020. The Governor's climate goals require even greater reductions by 2050.

A major - and growing - source of greenhouse gas emissions in California is transportation. The primary factors affecting transportation emissions are:

The amounts and types of transportation fuels in use;

The efficiency of motor vehicles; and

The number of vehicle miles traveled.

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MR. INGRAM: The needed greenhouse gas emissions reductions are shown in this graph. By 2020, emissions must be reduced to 1990 levels, a 40 percent decrease. An

80 percent reduction is required to achieve the 2050 goal.

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MR. INGRAM: These three pie charts show that transportation emissions have been growing in California relative to emissions from other sectors. Unless reductions are achieved in the transportation sector, it will continue to be the largest contributor to total emissions in the State.

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MR. INGRAM: In recognition of the need to reduce transportation emissions, Governor Schwarzenegger established the Low Carbon Fuel Standard in January of 2007. During the spring of summer of 2007, and at the direction of the Governor, the University of California completed a detailed analysis concluded that such a measure was feasible. In June of 2007 the Board approved the LCFS as a discrete early action measure, and staff proceeded with measure development, culminating a two-year effort by releasing the staff's proposal in March of 2009.

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MR. INGRAM: The LCFS establishes a durable framework for transitioning to lower carbon fuels. This transition will be driven by fuel and vehicle technology innovation incentives built into the regulation. The LCFS framework can serve as a model for the creation of similar

standards at the regional and national levels and is designed to be easily extended into the post-2020 period.

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MR. INGRAM: In terms of emissions benefits, the LCFS will achieve a 10 percent reduction in the carbon intensity of transportation fuels by 2020, and a 16 million metric ton decrease in transportation sector emissions by 2020. These emission reductions represent about a 10 percent share of the total reductions needed to meet the AB 32 2020 target.

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MR. INGRAM: The LCFS will also reduce the State's dependence on petroleum. By substantially increasing the use of advanced transportation fuels, the LCFS will displace about 3 billion gallons of petroleum by 2020. Most of the advanced fuels that will be in use in 2020 will be the fuels shown on this slide and that are not used in significant amounts today. Note that crop-based biofuels continue to play a role in the LCFS through 2020.

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MR. INGRAM: One reason we are confident that the LCFS will stimulate the development of advanced low carbon fuels is that venture capital is already flowing to California. This graph shows that between 2005 and 2008

the flow of investment dollars to fuel innovation projects has risen steeply. We expect this trend to continue. In addition to these investments, there was been an almost $1 billion investment by major oil companies for the development of advanced biofuels.

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MR. INGRAM: As shown in this graph, the two primary strategies for reducing transportation sector greenhouse gases, the Pavley Program and the LCFS, will collectively reverse the upward trend in transportation-related greenhouse gas emissions in California.

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MR. INGRAM: So now, hers is how the regulation works.

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MR. INGRAM: The regulation is designed around comparing a given fuel's carbon intensity against a baseline consisting of the carbon intensities of 2010 gasoline and diesel fuel. Carbon intensity expresses a fuel's greenhouse gas emissions per unit of energy, typically expressed as grams of carbon dioxide per megajoule of energy. A 10 percent reduction in the carbon intensities of both gasoline and diesel fuel are required by 2020. As shown in the next slide, the regulation

establishes annual limits which decrease gradually during the first few years, but then accelerate in the last few years.

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MR. INGRAM: The compliance schedule is shown in this animation. As you can see, slow, modest reductions are called for through 2015, followed by an increasingly greater year-to-year reduction between 2015 and 2020. This compliance schedule is designed to give fuel providers the time they need to develop and bring to market the necessary low carbon fuels.

Finally, staff expects that the downward trend that characterizes the out-years can be sustained into the following period.

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MR. INGRAM: The major responsibility for complying with the LCFS rests with refiners and biofuel providers. Providers of certain fuels may choose to opt in in order to earn compliance credits. These fuels, shown on this slide, already meet the 2020 carbon intensity requirement.

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MR. INGRAM: Multiple compliance options, including market mechanisms, are available to fuel providers under the LCFS. They may provide a mix of fuels

with a carbon intensity equal to the current annual LCFS standard. They may provide a mix of fuels with a carbon intensity that is below the current standard. They may provide a fuel mix that exceeds the standard but submit purchased or banked credits sufficient to make up the difference between the carbon intensity of the providers fuel pool and the current annual standard.

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MR. INGRAM: In general, however, the mix of fuels provided in California must contain more lower carbon fuels. These fuels must displace higher carbon petroleum and crop-based biofuels.

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MR. INGRAM: As with any regulation, there are compliance and enforcement provisions, and this regulation is no exception. Some of the key provisions are listed on this slide.

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MR. INGRAM: The next section of the presentation addresses one of the more important and challenging aspects of the regulation - the role of life cycle analysis.

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MR. INGRAM: Life cycle analysis is a process whereby the greenhouse gas emissions associated with all

phases of a fuel's life cycle - production, storage, transport, and use - are combined into a single carbon intensity value. The Governor's Executive Order requires ARB to consider the use of life cycle analysis. The University of California concluded in its feasibility reports that fuel carbon intensities need to be established through life cycle analysis. The following slides illustrate the key features of the life cycle process by showing how it is applied to two fuels - gasoline and corn ethanol.

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MR. INGRAM: The application of life cycle analysis to fossil fuels - gasoline, in this case - begins by quantifying the emissions associated with extracting the crude.

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MR. INGRAM: Next, the emissions associated with refining the crude are quantified. And, finally, the emissions created when gasoline is used to power vehicles are quantified.

The carbon intensities from each of these steps, including all necessary transportation, are then summed to produce gasoline's overall carbon intensity of 96 grams of carbon dioxide per megajoule of fuel energy.

The next slide presents the analysis for the most

common biofuel, ethanol produced from corn.

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MR. INGRAM: Applying life cycle analysis to corn ethanol is similar, but a little more complicated. First, the emissions associated with growing the necessary corn are quantified. Emissions from land use changes, which result from the diversion of food and feed crop acreage to fuel crop production, are also estimated.

Next, biorefinery emissions are quantified, along with a credit to account for the livestock feed which is a co-product of the ethanol production process. Co-products are credited because they meet a demand that would otherwise have to be met by a separate greenhouse-gas-generating process.

After it has been refined, the ethanol is blended with gasoline and used as vehicle fuel. The life cycle analytical frame considers the tailpipe emissions from the ethanol portion of the blended fuel to be offset by the carbon dioxide that was originally extracted from the atmosphere by the corn.

These emissions, including all transportation-related emissions, sum to 97 grams of carbon dioxide equivalent per megajoule of fuel energy, which is the average carbon intensity for corn ethanol used in California today.

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MR. INGRAM: The next series of slides will provide an overview of the critical factors that show why land use must be accounted for in a complete life cycle analysis. In general, using crops for fuel leads to changes in land use, which in turn leads to increases in greenhouse gas emissions. As shown in the next few slides, producing large amounts of fuel from corn requires large amounts of land.

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MR. INGRAM: If the entire American corn crop in 2001 were concentrated into a single area, that area would be about the size of the purple square. The 6 percent of that crop that went to the production of ethanol would fit into an area the size of the blue square.

In 2008, the size of the total corn crop, in purple, grew. But the proportion devoted to ethanol production grew by a greater amount - from 6 to 27 percent.

If the federal volumetric requirements -- if the federal volumetric production mandates for corn ethanol are achieved, this trend continues into 2015 when about 40 percent of the available corn acreage is devoted to ethanol production. The corn formerly devoted to food and livestock feed must be grown elsewhere, leading to land

use change.

As the sizes of these squares indicate, corn is the single largest U.S. crop, accounting for about 30 percent of all cropland in 2007. American corn exports are also extremely important to the rest of the world. The U.S. accounted for about two-thirds of world corn exports in 2007-2008.

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MR. INGRAM: When you disturb land, large quantities of greenhouse gas emissions are released. This is because plants and soil store large amounts of carbon, and this carbon is released during land conversions.

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MR. INGRAM: As shown on this slide, plants and soil store significant amounts of carbon, around two thousand billion metric tons. This is significantly more than is stored in either the atmosphere or in the world's proven petroleum reserves.

Every year land use change around the world releases about half as much carbon to the atmosphere as does the use of petroleum products.

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MR. INGRAM: We now move to the next item on our list of reasons for considering land use change. Carbon is stored in and released from both above- and

below-ground sources.

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MR. INGRAM: Here we see how much carbon dioxide is released when an acre of grassland is converted. About 15 metric tons is released from the above-ground portion of the vegetation. Another 30 metric tons is released when the soil is disturbed through cultivation, for example. The total carbon dioxide released comes to about 45 metric tons.

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MR. INGRAM: Our last point in this series addresses how biofuels affect the carbon cycle. Here, we find that current biofuels take decades before there is a net greenhouse gas benefit.

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MR. INGRAM: When one acre of cropland is diverted from the production of corn for food or livestock feed to corn for ethanol, about 3/10 of an acre of grassland and forest is converted to agriculture to make up for the lost food production. This land use conversion releases about 30 metric tons of carbon dioxide to the atmosphere.

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MR. INGRAM: The original one acre of cropland produces enough corn for about 400 gallons of ethanol,

which saves about one metric ton of carbon dioxide annually relative to the gasoline it displaces.

To pay back the 30 metric ton carbon debt accrued in the top right yellow box, therefore, the ethanol from the original acre of cropland would have to continue saving one metric done a year for a full 30 years.

Modeling showing how we derived this number is described in subsequent slides.

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MR. INGRAM: For our analysis, we used the Global Trade Analysis Project, or GTAP, model to simulate the land use change process. Staff selected the GTAP model -- selected the GTAP to model the land use change process because:

It is both well established and publicly available.

It has been used in thousands of applications since it was completed by researchers at Purdue University in 1993.

It is global in scope. More the 7,500 people from more than 140 countries contribute to the ongoing development of the model.

And it is supported by 26 core institutions, including the USDA and the U.S. EPA.

While ARB coordinated the effort, actual GTAP

analysis was conducted under the auspices of Dr. Tom Hertel, the Purdue researcher who developed the model, along with collaborators from the University of California.

We are pleased to have Dr. Hertel here today, and have asked him to make a short presentation regarding his work with GTAP.

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MR. INGRAM: In running the GTAP, we used the best available data inputs; performed multiple sensitivity runs; presented results at workshops and received and responded to comments on those results; determined the amount, type, and location of land use changes; and calculated the carbon intensity of land use change.

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MR. INGRAM: The GTAP operates by using standard economic principles to determine how many acres of land must be converted to agricultural uses to replace the food commodity shortages created when biofuel crops replace food crops. The model works by starting with the number of acres diverted from food to fuel crops - 2.5 million acres in the slide.

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MR. INGRAM: That total is first reduced because sufficient land is simply not available at an economically

viable price.

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MR. INGRAM: The total land requirement is then reduced to reflect the co-product credit. For example, livestock feed co-products from ethanol production reduces the needed feed from other sources.

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MR. INGRAM: The next land requirement reduction reflects higher food prices caused by the expansion of corn. As more core is demanded, its price will rise. The shortfalls created when corn displaces other crops will also increase food prices. Higher food and livestock feed prices will reduce food consumption.

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MR. INGRAM: The downward trend in the total land requirement is reversed when new land is converted to agricultural uses. Newly converted land is almost always less productive than existing farmland, or else it probably would be existing farmland. To make up for this productivity shortfall, somewhat more land is needed in order for production to meet demand.

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MR. INGRAM: The total land requirement is then further reduced because higher corn prices cause corn to be more intensively cultivated on existing farmland,

resulting in higher yields.

The final result is a total land conversion requirement of about .7 million acres.

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MR. INGRAM: As mentioned in a previous slide, the land use change carbon intensity values were chosen from among a range of sensitivity run results. This slide shows where staff's selected value lies within the range of the most reasonable values obtained from this series of runs.

As you can see, the ARB proposed value of 30 for corn ethanol is somewhat below the midpoint of our series of sensitivity runs. This slide also places staff's GTAP results within a larger range founded by results obtained by the Renewable Fuels Association and by Tim Searchinger in his 2008 science article.

We feel that our recommended value is very reasonable, falling, as it does, somewhat below the midpoint of this wider range.

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MR. INGRAM: This slide shows the results of our analysis. As you can see, the land use change shown in the light blue is a significant part of the total carbon intensity.

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MR. INGRAM: This slide compares today's fuels with the next generation of advanced biofuels and other fuels such as electricity and hydrogen. While lower carbon corn and sugarcane ethanol are able to generate some credits towards achieving the standards represented by the dotted line, advanced biofuels, electricity, and hydrogen have significantly lower overall carbon and have little or no land use change emissions.

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MR. INGRAM: All fuel life cycles were analyzed similarly under the LCFS. That analysis revealed that land use change contributes to carbon intensities of certain biofuels. To date, staff has identified no significant indirect effects from fuels other than biofuels. But the analysis in that area is ongoing. We have shared our assumptions and results openly and have fully considered all the comments and suggestions we have received.

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MR. INGRAM: By way of summarizing this last series of slides, I'd like to point out that life cycle analysis provides the key to identifying and transitioning to truly low carbon fuels. The life cycle analysis must be comprehensive and include all significant effects, including land use change. The GTAP model represents the

best available science for estimating land use changes. As such, we have conducted the requisite comprehensive analysis.

Furthermore, staff's analysis was generally supported by peer reviewers. Even so, staff recognizes that additional study is useful and is proposing to form an expert workgroup to refine the analysis on an ongoing basis.

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MR. INGRAM: I will now summarize the results of the economic and environmental assessments.

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MR. INGRAM: The economic analysis was done on a cost-of-compliance basis. This means that we evaluated what it would cost for fuel producers to meet the standards. Staff estimates that the proposed LCFS will result in overall savings between 2010 and 2020 as alternative fuels displace more expensive petroleum-based fuels.

These estimated savings are dependent on crude prices and production costs of the alternative fuels.

ARB recognizes that there are uncertainties in the analysis. For example, if crude prices stay low and the cost of biofuels are more expensive than estimated, the LCFS may result in a cost of a few cents per gallon.

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MR. INGRAM: Cellulosic ethanol will play a role in meeting program goals. This graph shows that there has been significant progress in this reducing the estimated cost of commercially producing cellulosic ethanol. ARB used estimated production costs that are consistent with these technological advances.

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MR. INGRAM: The environmental analysis confirmed that the LCFS will reduce transportation sector emissions by 16 million metric tons by 2020. This equates to 10 percent of the reductions required under AB 32. The analysis revealed no significant adverse environmental impacts that would not be mitigated.

In addition, criteria pollutant emissions will be reduced if electric and hydrogen-powered vehicles replace conventional vehicles in sufficient numbers.

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MR. INGRAM: Staff is proposing to undertake two additional measures to help ensure that the program doesn't create additional environmental impacts.

First, staff will develop a best practices guidelines document for use in siting new fuel facilities. This document will assist local permitting agencies with the identification of state-of-the-art emissions controls

for new facilities. A completed document is expected by December of 2009.

Second, staff is proposing to develop a workplan and recommendations for addressing the broader issue of sustainability of fuel production. The plan is expected by December 2009, while the recommendations should be completed by December of 2011.

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MR. INGRAM: The Low Carbon Fuel Standard will coexist with federal biofuels requirements. The next few slides will compare the two programs.

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MR. INGRAM: The Federal Renewable Fuels Standard mandates the production of specific volumes of biofuels with lower carbon intensity than those available today. Although the corn ethanol currently in production faces no improvement mandates, new corn ethanol facilities must reduce the carbon intensity of their product by 20 percent. Cellulosic biofuels must show a 60 percent carbon intensity reduction over current fuels. All other new biofuels must demonstrate a 50 percent reduction.

Although these reductions will help reduce greenhouse gases, they will provide only a 3 percent reduction in carbon intensity, roughly about one-third of the benefit of the California program.

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MR. INGRAM: Under the federal program, the amount of advanced biofuels -- the amount of advanced fuels, shown here by the green shaded area, increases significantly by 2020, whereas the amount of conventional corn ethanol remains relatively stable at about 15 billion gallons.

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MR. INGRAM: This is a bar graph representation of the data presented in the previous slide, showing the ramp-up of advanced biofuels.

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MR. INGRAM: Projected LCFS volumes are seen here to be a reasonable proportion of the federally mandated volumes.

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MR. INGRAM: In summary, the California --

CHAIRPERSON NICHOLS: I just want to be clear though, that this regulation that your proposing does not mandate any volume of ethanol or any other fuel.

MR. INGRAM: Correct. In fact, we considered pointing that out.

CHAIRPERSON NICHOLS: Good.

MR. INGRAM: In summary, the California program builds upon the federal program. However, there are

differences. California's program proposes no volumetric requirements; does not exempt existing high carbon intensity fuels; uses a performance-measure approach in which providers are required to meet emissions goals, but are free to pursue the least-cost path to those goals; incorporates more market-based incentives to compliance; and includes all fuels, not just liquid fuels.

As a result, the California program provides a greenhouse gas reduction benefit that exceeds the RFS's benefit by three times.

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MR. INGRAM: To wrap up, staff has proposed a few 15-day changes and identified the next steps for the program.

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MR. INGRAM: The primary staff-proposed changes are the following:

Require a second formal review by 2015.

Define the scope of the two planned periodic program reviews. That scope would include the formation of an advisory committee.

Add several carbon intensity values.

And add a few minor technical amendments.

A complete description of the staff-proposed changes is included in Attachment B of your handout

package.

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MR. INGRAM: As part of our next steps to implement the program, the staff's proposing to:

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MR. INGRAM: Establish the specific requirements for the credit trading program.

Continue to work on the carbon intensities, including the completion of several additional fuel pathways, develop guidelines governing the submission of data and documentation by fuel providers seeking approval of carbon intensity values for new and improved pathways, and identification of pathways that have little or no land use effects.

Finally, staff expects to continue coordinating with regional, national, and international organizations who are considering developing low carbon fuel standards, with the overall objective of harmonizing our efforts.

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MR. INGRAM: We would now like to summarize our presentation and present our recommendations to the Board.

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MR. INGRAM: Today's proposal will reduce emissions from transportation fuels by 10 percent by the year 2020. The analysis shows that land use changes is a

significant and positive contributor to the life cycle greenhouse gas emissions of some biofuels and must be included in the life cycle analysis.

The proposal complements the federal Renewable Fuels program, wile providing greater greenhouse gas reductions. And the program is structured so that it can be extended into the post-2020 period.

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MR. INGRAM: For the reasons we have presented, we recommend that the Board adopt the proposed regulation with staff's suggested modifications.

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MR. INGRAM: At this time, I'd like to turn the presentation over to Dr. Tom Hertel from Purdue University. Dr. Hertel created the GTAP model and currently heads the organization which maintains it.

Dr. Hertel.

DR. HERTEL: Where should I speak from?

(Thereupon an overhead presentation was Presented as follows.)

CHAIRPERSON NICHOLS: It's attached to the proposed resolutions packet, with the yellow cover on top. I think it should be at your desk --

BOARD MEMBER RIORDAN: There is an attachment.

CHAIRPERSON NICHOLS: -- at the very back.

BOARD MEMBER RIORDAN: There is an Attachment B. And that's the one, correct?

CHAIRPERSON NICHOLS: Yes, correct.

Okay. Welcome

DR. HERTEL: Chairman Nichols, thank you for having me here. It's an honor to be addressing the Board on this important issue.

Can you hear me Okay?

CHAIRPERSON NICHOLS: Get a little closer.

DR. HERTEL: A little bit closer?

CHAIRPERSON NICHOLS: Yeah.

DR. HERTEL: Just give me the signal, good.

So could we have -- perhaps the PowerPoint is being ramped up here.

I thought I would make my comments -- well, as have many of you, I've received a lot of comments favorable over the last few months. It's been a hotly debated issue, the land use impacts. And that's what I'll focus on.

And so I thought I would share with you my thinking as an academic who's worked in this area for about 20 years what some of the strengths and limitations are of the framework we're using. And the PowerPoint is geared around that, along those lines.

So, shall I just go ahead and continue, or do you

want me to wait --

CHAIRPERSON NICHOLS: It's up to you.

How are we doing here on getting this thing teed up.

It's not coming up at all. Oh, dear.

DR. HERTEL: Do you have the white thumb drive there?

CHAIRPERSON NICHOLS: We can pause for a moment here while we get our technology in order.

BOARD MEMBER BERG: And then do we have a copy of this presentation?

CHAIRPERSON NICHOLS: I don't think we have it in the slide -- in printed form.

BOARD MEMBER BERG: Okay. Thank you.

CHAIRPERSON NICHOLS: No, we don't.

BOARD MEMBER RIORDAN: Madam Chairman, maybe at some point in time, this morning, we could get a copy of the presentation of the PowerPoint. Do you see that as possible?

CHAIRPERSON NICHOLS: That would be a good idea.

EXECUTIVE OFFICER GOLDSTENE: We'll do that.

CHAIRPERSON NICHOLS: All right. Mr. Goldstene says that could happen. It will be done.

BOARD MEMBER RIORDAN: That's helpful.

CHAIRPERSON NICHOLS: Yes, it is.

Let's see. While we're working on this presentation here, I have a list of 45 witnesses. I assume there's more coming. And I want to make sure that people were told that there was going to be a two-minute limit on oral testimony.

Was that clear to those who signed up?

It's stated in the agenda. Because normally in the past we've given people three minutes. And this a change.

We have the discretion to change the time one way or the other.

All right. Well, we'll see how it goes.

BOARD MEMBER TELLES: Dead time here.

CHAIRPERSON NICHOLS: Yes.

BOARD MEMBER TELLES: Can I just make a comment --

CHAIRPERSON NICHOLS: Please.

BOARD MEMBER TELLES: -- because it's kind of upsetting to me. That when there is a supplement added -- this is a complicated thing to review. I've spent a lot of time reviewing this. And there's lots of sections here this refers to. This would take me about an hour to review, at least. And I really don't appreciate having a supplement added without us having a chance to review it before.

I think the process is not right. And I feel that my duty on this Committee is to review all the documents. And then at the last moment you add a supplement, and it's just very upsetting to me.

EXECUTIVE OFFICER GOLDSTENE: Well, I apologize for that, Dr. Telles. We've been working, I think as you know, very closely --

BOARD MEMBER TELLES: You could Email me, you could fax me. I would have read it last night. I would have reviewed it. But don't give it to me on the day of the hearing.

CHAIRPERSON NICHOLS: Are we ready now?

Okay. Great.

DR. HERTEL: Okay. Great.

So it's a pleasure to be here.

And let's start with the first slide here.

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DR. HERTEL: So I think the overriding strength of the GTAP framework is the database. As can be appreciated by this Board, when it comes down to policy analysis, it's all about the data in terms of being credible. That's where it starts.

So GTAP is, first and foremost, a global database describing bilateral patterns of international trade, production, and consumption for the economy across the

board, for every region of the world.

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DR. HERTEL: Assembling a high quality internally consistent peer-reviewed global database is a tall order. And it's accomplished with the help of leading international agencies and member agencies. There are 26 in all, and they serve on our advisory board. And they review our work every year. And they spend one year vetting the database before it's released to the public.

There are also many national contributors from this large network. We couldn't do it without them as well.

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DR. HERTEL: Another strength of the GTAP framework is its flexibility. Whereas there's one GTAP database, there are actually many GTAP models. So when you say GTAP this, GTAP that, that's not particularly meaningful, because each new policy application requires modifications of the framework.

So you need a flexible framework such that it can be modified, for example, to deal with co-products, a very important part of this debate; to deal with agro-ecological zones, the grouping of land around the world into categories where products compete with one another. It's important to know whether this feedstock,

corn, for example, is competing with soybeans or with orange groves or something else.

So modification of the model for the application in hand.

Estimation of new parameters. A key parameter in this whole debate is the substitution of elasticity -- the elasticity of substitution between ethanol and other fuels, for example, that had to be estimated.

And adding new data. The land use data has been particularly important here.

So each extension needs to be validated. In this case, the model that CARB is using has been peer-reviewed and is forthcoming in the leading agricultural economics journal and the leading energy journal.

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DR. HERTEL: Another strength of the GTAP framework is ease of use. These modifications are facilitated by the careful documentation of the core framework.

The large user community has permitted a whole software industry to evolve that supply tools for people doing GTAP modeling. And it's I think -- personally I think it's pretty remarkable that we were able to provide a version archive that could be loaded on to a computer in Sacramento in short order and run on a computer here with

no particular supervision, just you press the button and get it going. That is remarkable, could not be done for any other model I'm aware of that focuses on global land use impacts.

So we shouldn't underestimate the importance of transparency. And that is due to CARB's very high standard. Not all regulatory agencies have such a high standard.

There's a built-in framework for quantifying the uncertainty associated with uncertainty in the model parameters. We haven't used that heavily here. But it's something I would encourage the Board to think about, think about results in terms of confidence intervals as opposed to point estimates.

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DR. HERTEL: Limitations. Well, this limitation is the same as the last strength, ease of use. Okay. Ease of use is a limitation because a model is just as good as the capabilities of the people using it. So it's just an organizing framework if the person doing the analysis is not trained in this area, doesn't understand the model, or just wants to make a particular point. And we've seen that a lot. People want the results to go in a particular direction, and you can manipulate the model to do that. It will respond.

And so a lot of the critical work that's been done lately has been clearly -- from my point of view, sitting in academia without having a particular agenda one way or the other, it's been interesting to see the different sides play with the different parameters. So there are those who focused on the environmental side who've argued that we're overstating the yield response and that the land area conversion should be larger. And those on the industry side have focused on a different parameter relating to yields, and they emphasize that.

If you'd go to the next slide please.

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DR. HERTEL: So this is this yield response. So if I were King Solomon, I might say "I'll give you both what you wish for." And as it turns out, it doesn't change the results dramatically, because these are offsetting effects.

But the point is that there is uncertainty, fundamentally there will always be uncertainty in these economic parameters. And that can be -- the uncertainty can be reduced by investing over the longer term in research to be done in academia and taking -- you know, taking time, publishing, peer reviewing the work, we can reduce the uncertainty. We'll never eliminate it.

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DR. HERTEL: There's one aspect that's gotten a lot of attention in the media or in the Internet exchanges. And this has to do with the baseline. Everyone would like a baseline somewhere in the future - 2015, 2022 perhaps if you're EPA. Of course we don't know what the world will look like in the future. And projecting the future adds another important source of uncertainty.

The GTAP database is always out of date. Our board members are always complaining that this is out of date. Why is it out of date? Because the national statistics we get from them, the international statistics, are out of date. That's not something we can repair. Once we finalize the base year, we spend a year vetting these data with the board members. So it's a long process.

So inevitably we're going to be working with out-of-date information. We need to come to grips with that, we need to accept it.

The problem is compounded in this case because the special version we're using requires us -- it's very important to know what the corn yields are elsewhere in the world and how that compares to the U.S. If you take land out of the food system in Iowa, do you need five hectares in Africa or two hectares somewhere else to

replace that? This is a critical issue.

There's only one published global database with spatial resolution on harvested area and yields. And that's also out of date.

So we're having to work with this issue. And there are several responses.

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DR. HERTEL: One is to improve the underlying databases. Please invest in this. If you're putting resources in this direction, that has to be done in the long run if you're taking the long-run view.

Recognizing the fact that we face these limitations are -- the approach we've taken has been to work with the authentic older data that's been vetted, everyone understands - better the Devil you know than the Devil you don't - and make adjustments after the fact that are transparent and easy to alter.

That's the approach we've taken.

Another approach would be to take a complicated model, like the dynamic GTAP model, project it forward a decade or two, and do the analysis then. Of course then you don't -- it's not clear what ground you're standing on, because everything's changed. And this is an approach others have taken in this area, and my feeling is they haven't worried enough about what they're changing, what

they're not changing, how their assumptions about the future are flavoring their analysis. So I think -- we've taken a conservative approach. I think it's the right approach.

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DR. HERTEL: The last side.

In summary, models help identify key sources of uncertainty. We need to invest subsequently in research to narrow that range. We won't eliminate uncertainty. That's the nature of the business.

ARB, EPA and others must invest resources in this area, must take a long-term view. Too much -- there's been too much short-term emphasis over the last few years, not enough long-term emphasize in terms of funding.

Models are just models. I think the Chairman said that as well a few minutes ago. In the end, expert use in judgment are required to get sensible outcomes.

ARB must invest in staff capacity in this area. It's a new area. Other GTAP consortium members who use this for decision making, say, the International Trade Commission in Washington, for example, they have a staff of a dozen people who've been to the GTAP course. Half dozen of them are really expert in this area. You need to be thinking about that scale of investment if you're going to take this seriously in the long run. It's not

something one can do overnight. And so just underscoring the importance of long-term investments in this area.

Thank you.

CHAIRPERSON NICHOLS: Just a couple of questions for you. First of all, are you going to be with us for the duration here if we need to ask you questions later?

DR. HERTEL: My pleasure. I'll be here all day.

CHAIRPERSON NICHOLS: Thank you very much.

Well, I just had a couple of initial questions then.

You mentioned entities that are using this model. Is this a model which is also available to nonprofit organizations or to business entities if they want to use it as well?

DR. HERTEL: Absolutely. Indeed, our advisory board includes some -- they're not all public agencies. Some nonprofits. And amongst the user community, there are many private sector users, many consultants using it. And over the last year, say -- well, over the last six months since ARB's been making information available, we've seen an explosion of analyses using GTAP by others, using the version now that's recently been made available on the website.

So this is available. The Europeans are using it heavily for land use analysis as well. We've participated

recently in some conferences there. And so it's being used globally and it's being -- as I say, the model is being modified and evaluated and peer reviewed and hopefully --

CHAIRPERSON NICHOLS: -- constantly.

DR. HERTEL: -- continually improved.

CHAIRPERSON NICHOLS: And there are other models out there you mentioned, and the staff mentioned in their report, that EPA is using two other models that are designed to do similar kinds of analysis.

Can you give us a really brief summary of what the --

DR. HERTEL: Sure. I think a brief summary of what -- they're using -- they've been in this business for a longer period of time, and they had a longstanding relationship with an excellent researcher named Bruce McCarl from Texas A&M. And he has developed something called the FASM model. Over a long period of time he's worked with EPA on that.

The problem for this issue is that it's only a U.S. model. So he can say something about what happens in the U.S. but not the rest of the world.

So when this issue hit the science magazines circuit, they realized they needed to go beyond that. And we weren't working with that group at the time, and they

resorted to another model, which they've tried to put these pieces together as best they could. And I think that no one's really happy with the way those have come together, but it's what they could do. And that's where they are. Once you're well down a path, you don't want to reevaluate. We have been interacting with them. I was at a workshop in January, kind of an in-house workshop, evaluating this. EPA is actually funding these three modeling groups. We'll have a session at the Professional agricultural economics meetings this summer that I'm organizing to try and narrow the differences, to try and identify what each framework has to say about these key areas of uncertainty.

So we're working with them. That's very important. But, you know, they've done the best they can under a high pressure situation.

And so they would not be able to meet the standard -- CARB standard, which is have models here in Sacramento that can be run and can be run by others. At least one of those models, maybe both, take weeks -- one of them takes weeks to run. It takes a group of experts. It's not portable. So it wouldn't meet your standards.

It has other excellent features, but it wouldn't meet your criteria there.

CHAIRPERSON NICHOLS: Okay.

STATIONARY SOURCE DIVISION CHIEF FLETCHER:

Chairman Nichols, we have one more small presentation from Dr. Michael O'Hare when you are ready for that.

CHAIRPERSON NICHOLS: Okay. Are there any questions right at this moment?

Yes.

BOARD MEMBER BALMES: So you mentioned the uncertainty analysis aspect of your work. And I thought I heard a recommendation to CARB to not focus as much on point estimates and consider confidence intervals. And I was wondering -- I'm comfortable with that concept, but I'm not sure about the rest of the Board. And could you expand on that a bit, just briefly.

DR. HERTEL: So, you know, I'm not -- I'm not in the position of having to implement the Low Carbon Fuel Standard. So I'm kind of freeing myself from that for a moment and asking how other people we work with in policy making, in the trade policy area, for example, how have the more sophisticated users, say, at the International Trade Commission, how do they adopt this?

They present their results as confidence intervals. So they say, "Well, you know, we're 95 percent confident that this" -- "that these land use emissions lie between this grams per megajoule and this grams per

megajoule." So I mean if that bound doesn't include zero, that's telling you something right off the bat.

If it, you know -- it may -- you can evaluate that within the context of what you're doing. But that's the kind of statement that I'd like to see users pressing the analysts for.

Our recent publications, no one will publish this stuff without confidence intervals on the results. They say, "Hey, we know these parameters are uncertain. Do the uncertainty analysis and a systematic sensitivity analysis. So I think it's very important. That's the way the science has moved. I think that's the way forward-looking policy -- decision makers such as those at ARB should be moving in that direction too.

CHAIRPERSON NICHOLS: Okay. Thank you.

Yes.

BOARD MEMBER D'ADAMO: I had a question on the international corn yield database that you're using. You indicated that it was outdated. What is the date of that document?

DR. HERTEL: There was a project that took place over ten years' time combining the UN Food and Agricultural Organization, the International Food Policy Research Institution, and a group at University of Wisconsin. They divided the group -- the world up into

three parts and they gathered subnational statistics. So in the U.S. it would be county level data. And they did this around the world. And they built that up to the national level and reconciled it with FAO data. And so this is for a period circa 2000.

Okay. We've adapted that to 2001, a period deemed close enough to be relevant.

That isn't the latest GTAP database, but it's the latest database for which we have all of this information complete and it's published.

The reason we doggedly stick to that old, out-of-date database is that the yield differences across regions and within regions are huge. Whereas the yield growth, for example, since -- from 2001 to 2007 USDA average I think is around 9 percent. So we make this adjustment in the 9 percent afterwards rather than risking getting the difference between, you know, 50 bushels per acre, 20 bushels per acre, and 200 bushels per acre wrong. So that's been our choice and our judgment here, that if we were to just -- if we were to -- well, those are the differences that really matter for this analysis. So after the fact we make an adjustment assuming yield growth worldwide has been at a comparable rate.

CHAIRPERSON NICHOLS: Rather than changing the baseline, you factor in the new data?

DR. HERTEL: Yeah, that's the baseline point. To change the baseline, you need to project the whole world economy forward.

That is something we could undertake given the time. But the timeframe has never been appropriate for that. And that's something I have lots of experience doing. I wouldn't want to undertake in a hurry, because garbage in, garbage out. And you can generate a lot of garbage when you simulate a global model into the future.

So this is a cautious approach, attempted to be a transparent approach, capitalizing on published data.

So it's hard to get data at the subnational level in Africa. Brazil's better. But other parts of the world, it's not trivial. We shouldn't underestimate that. That's an area that could be accelerated as well.

BOARD MEMBER D'ADAMO: And then USDA export data. Do you recall the date of the most recent data?

DR. HERTEL: Well, USDA export data we have almost up-to-date. And in separate analysis, as I say, forthcoming in the Energy Journal, we project forward using our model, from 2001 to 2006, at the time we wrote the paper, that was the most recent data for which these data were available. And we compared model changes to actual changes over the period. There was a bit of validation going on.

But in our analysis for ARB, we're working from the 2001 base and we're feeding this all in. So U.S. exports are changing in the analysis -- over the course of the simulation. But we're not -- you know, any time we undertake such an analysis, people ask, "Well, are you using my latest data on this" or "my latest data on that?" If you changed the U.S. export data in this model, you've got to change China's data, because someone's importing it -- or Japan's data or what Brazil is exporting. So it's a global system. You can't just fool with one thing.

But I recognize that the export response is a very important one here and a very sensitive one. And I think the issue -- key issue really is the sensitivity of exports to price changes as opposed to the level at any point in time.

BOARD MEMBER D'ADAMO: Thank you.

CHAIRPERSON NICHOLS: Thank you.

Mr. Fletcher, did you want to introduce the next --

STATIONARY SOURCE DIVISION CHIEF FLETCHER: Yes, I'd just like to introduce Dr. Michael Hertel -- Michael O'Hare.

(Laughter.)

STATIONARY SOURCE DIVISION CHIEF FLETCHER: Too many H's there.

We've been working in such close collaboration that we scientists merge.

CHAIRPERSON NICHOLS: -- forgotten his last name.

STATIONARY SOURCE DIVISION CHIEF FLETCHER: But Mike has been working with us very closely since the inception of this project, and he has a few comments that he would like to make.

CHAIRPERSON NICHOLS: Thank you.

MR. O'HARE: Oh, I guess we got that to work.

(Thereupon an overhead presentation was Presented as follows.)

MR. O'HARE: So I'd like to make a few remarks on I guess you could call a bigger picture look at the land use change issue especially.

And the general burden of these remarks is to regard the land use change estimates that the staff has given you as being -- I don't want to use the word "conservative," but I would say biofuel favorable in the competition between fuels to satisfy the LCFS requirements.

I do want to say at the beginning that it's not clear what "conservative" means in this context because it is a low carbon fuel standard. And if we make a mistake in one direction in estimating these numbers, we'll use too much of a biofuel that's actually higher carbon than

we thought and will therefore increase global warming. And if we use numbers that are too low, then we'll use too little of a biofuel that's lower carbon than we thought and will therefore increase global warming.

So the cost to the world of being wrong in both directions is fairly symmetrical. And there's no obvious conservative direction as there is, for example, in life and safety regulation.

Next slide please.

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MR. O'HARE: I want to thank a large and growing group of collaborators, including one of your distinguished Board members, at this point, and also remember Alex who set us out on this path a couple of years ago. This has become quite a large group enterprise. And I think it's good for that reason.

Next slide please.

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MR. O'HARE: So let me just quickly recall the history we'd been through and emphasize the policy is forcing the science quite rapidly.

The policy intentions of California and the nation and also other countries is pushing the science forward probably a lot faster than it would otherwise go. On the whole I think this is a good thing.

But your making policy in a dynamic knowledge environment. And I think you have to recognize that.

A couple years ago we published a paper in science where we said it looked like biofuels were not an exciting but a pretty good way to reduce carbon intensity fuels.

Tim Searchinger and Joe Fargione came out with a paper a couple of years later that forced us to recognize the land use change impacts with fairly largest estimates.

And this year we now have more estimates accumulating.

And for the three reasons I've listed at the bottom of the slide, the assumption about the production period of the fuel, the residence time of greenhouse gas in the atmosphere, and the effects on food production, I think the staff is proposing that the Board assume what I'd call biofuel favoring values for this land use change effect.

Next slide please.

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MR. O'HARE: So, I think that the Board is facing three large questions.

The first question is, should we have an LCFS? And you might vote no in the end, having looked at it and -- "we don't want to have an LCFS for a variety of

reasons."

But then you would probably want to ask yourselves, "Well, until when?" And when will the time ever occur when uncertainty, however measured, in these economically consequential estimates is low enough? And I propose that if -- my view of it is that if you didn't think that time was now, then it's not clear that that time would ever arrive.

Second, if we're going to have an LCFS, should it use the best available estimates? And here I think a moral principle applies, is that the practice of government should be honest with citizens. This is -- watch the news tonight and you'll see five more reasons - I don't know what they are yet, but I know they're coming - why this is so important.

And prices and regulatory practices are in fact information provided by government to citizens that affect how they behave.

And the last question is, that coming forward with the numbers in the proposal you have, should the Board make it State policy that these indices will be adjusted in a reasonably steady way - we don't want to have new numbers every week - to reflect the accumulating science? And there I'd propose that the answer also ought to be yes. It's sort of a rhetorical question.

Next slide please.

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MR. O'HARE: This is a quick overview of the land use change process that I think is worth a review. What we're talking about is taking food that would other -- taking cereals that would otherwise be used for food. And I emphasize that this does not apply to biofuels that do not compete for land with food. This is only about biofuels that are grown on land that would otherwise grow food or could otherwise grow food.

So we're going to take the food that could be grown there and we're going to use it for fuel. When we do that, because food demand is fairly inelastic, four responses will occur - and those are the ones in the right-hand side of the slide - they will all occur, and the discussion we're having about land use changes mostly to do with the relative size of these four, which of them occur more? And that's the great contribution of the GTAP model, is to make estimates of these effects.

You could look at this as a picture slide of the bar chart that Wes showed you a few minutes ago.

We're going to eat less food and less meat because the only way cereals can be diverted to fuel is to pay more for them. That raises prices.

We're going to learn how to increase yields to

some degree because now it's worth it to do so.

Land uses will change from standing timber and pasture to food in the United States. And the same thing will happen overseas.

Next slide please.

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MR. O'HARE: What I want to emphasize in this slide is a distinctive and unusual quality that the land use change issue brings to the biofuel carbon estimation problem.

The political jurisdiction in this slide, the blue square with the black border, you could think of as being California. And by law and practice we can control pretty much what happens including the part of the state that's used to grow biofuels. That's the beige square.

And because we can have rules about the biofuels that we bring into the state to comply with the LCFS, we can have a fair amount of control over the actual cultivation practice.

But what recognizing the land use change effect has done is to force our attention to things that happen in many different places all at the same time far away where we don't have that kind of control; that cattle raising practices in Brazil have a lot to do with the land use change effect of corn growing in Iowa.

And there's relatively little that corn and ethanol producers in the United States can do other than raise yields to effect this phenomenon over in the right-hand side of the slide, which, as we've seen, is large and important.

Next slide.

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MR. O'HARE: So the other I should mention is this is a slide from a paper that we've recently published. And the orange -- the solid orange and the solid black lines are the additional carbon dioxide in the atmosphere as a result of growing biofuels for 25 years -- using biofuels for 25 years from corn production and using petroleum fuel. If you like, you can think of the solid lines as being the integral of the dotted lines.

And what's important here is that because of this land use change effect, not only is there carbon discharge that we need to pay attention to, but it occurs at the beginning of the process. And, therefore, that carbon is sitting in the atmosphere warming the planet, until in this case -- and these lines could be moved around by different assumptions. This is using the discharge values that I believe are in the current proposal.

You have to wait for 25 or 30 years before the planet is cooler, before the planet is being cooled less

by the use of a petroleum fuel than by the biofuel.

Next slide please.

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MR. O'HARE: And the timing -- I'm sorry. Go back one slide.

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MR. O'HARE: So the time effect of this discharge, because it isn't uniform, should be included. And at present the staff has decided to use what we call a flat allocation -- or a flat amortization of the initial discharge over the production. If you recognize the time effect of warming as described here and then a paper available to you that the staff has, then you'd look differently, and I think to the disadvantage of any given biofuel, at its relative global warming effect. I think that's pretty important.

So next slide please.

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MR. O'HARE: Let me sum up. I argue that the ARB is well positioned to implement a low carbon fuel standard with the current rule. And I'd furthermore argue that it's going to get even better - and that's the right way to think about it - as the science progresses. And we have plenty more science to do. You can keep us out of trouble with this policy for many years.

That the LCFS, if it properly represents the best science understanding of carbon discharges, is going to provide the right green incentives for new technology and other jurisdictions that are watching us.

I didn't put a bullet up, but I do want to emphasize that there are -- I want to emphasize three important ways in summary that the current land use change estimates that the staff is proposing to use could be regarded as being biofuel favoring. Which may as a policy decision be what you want to do, but you should know it.

So the first one is the time issue that I proposed.

The second is that for corn ethanol in particular the staff is assuming that corn production will continue for 30 years, and dividing that initial discharge over 30 years of corn's direct advantage over petroleum. I think that's deeply unrealistic, that we'll be producing ethanol from corn for that long, because there are too many better competitors coming down the pike. I don't know which of them will win, but there are much -- there are going to be better ways to make ethanol and better ways to make transportation fuels. So that should be 20, about. There's a 50 percent change.

And, finally, we did some runs that CARB chose not to use and -- that the staff chose not to use in their

estimates, in which we held food production constant. So while we're not going to -- we're not going to allow the biofuel production to raise food prices as much as it will in the estimates we have made or to reduce food consumption. And the land use change effect that we observed there is about 50 percent higher than what was observed in the runs and estimates that the staff has put before you.

I think that's worth thinking about. Probably not to change the numbers in your current rule-making. Again, my overall advice is we should move forward and pick up the science as it goes along.

But if you want to capture in global warming carbon terms the food and nutrition effects of 15 billion gallon of ethanol, then you would translate it into a 50 percent higher carbon discharge.

So those strike me as three important corrections to the estimates that we've provided that the staff has chosen not the use, and that you should think of as being ways in which the estimates before you underestimate the real carbon impact of biofuel use, especially in the second case and especially in the subcase for corn.

Thank you for letting me present this material. And I'd be happy to take some questions.

CHAIRPERSON NICHOLS: Thank you.

I'm not sure that I have any questions at this point.

Does anybody on the Board wish to raise questions?

Yes, you do. You didn't like the photo that he used.

(Laughter.)

BOARD MEMBER SPERLING: But that's not what I was going to say.

I think it would be useful here just to, you know, hopefully bring a little more closure to this discussion -- you know, partly Dr. Balmes brought up this issue of uncertainty and bounding it.

There was this -- you know, because this land use change effect really is, you know, probably the most controversial part. There was this slide -- slide 37 in the staff presentation essentially laid out the range of estimates and where the staff has -- where the staff falls in terms of its proposed value, and had the Searchinger number which was over 100 grams at one end and the Renewable Fuels Association at zero at the other end.

And I'd be interested to hear the staff, you know, Mr. Fletcher or whoever else, comment on essentially what Professor O'Hare was saying, that the analysis is biofuel friendly, which he meant to mean that the value

could or might or should be higher than the number used for corn ethanol.

So I guess the -- so it goes back to this uncertainty issue. And I would note -- and when you do the regulation, there's no way we can use an uncertainty algorithm the way it's designed, but it can be used as background for understanding.

So could we just get a short analysis of why the Searchinger number is much higher, the Darlington RFA number is much lower. And, you know, what are the big factors that explain those large differences? And maybe be able to comment on Professor O'Hare's assessment that the number that ARB ended up with is biofuel friendly.

BOARD MEMBER BALMES: We must be commuting too much to these meetings together, because you took those words right out of my mouth.

STATIONARY SOURCE DIVISION CHIEF FLETCHER: Well, I'll take a crack at it and then I'll turn it over to some that may be able to fill it in.

When we did the analysis, we looked at a number of -- as we said in the slide presentation, we did do a number of sensitivity runs. And when we did the first series of analysis, we looked at the input parameters such as the yields, the elasticities that were involved in the analysis, and we had a fairly broad range of results. As

we came down and looked at the values that had more value, then that range basically came down.

There are clearly a number of factors that affect what your numbers are. These include, as Michael mentioned, the time accounting method, which we looked at a 30-year period. As Michael mentioned, that's a 20-year -- you could do a 20-year period, and that would make that 30 go to a 45, for example.

We looked at also the concept of the method of how you account for time. There's two or three different methods that you can use. As he said, there's a flat line, there's other types of time accounting methods that could be used. And we evaluated those as well. And that kind of affects it, although not quite as great.

But, again, you get -- you start running around that 30 to 45 range.

When you look at the -- some of the other issues that we looked at that can cause the numbers to go up, things such as the intensification of farming, the nitrogen cycle, these sorts of things, also came into play.

One of the other critical factors that we deal with is the -- basically the co-product credit we provide for the corn ethanol. And there's some variability around those numbers as well.

So the ranges that we ended up with in that basically 18 to 50 range resulted from running the types of different scenarios. And I might defer here to John Courtis, who can provide a little bit more detail on the specific elasticities and things that are involved in the analysis.

John.

BOARD MEMBER SPERLING: Well, I don't really want details of this. You know, I mean we're -- you know, this is not the time for that. You know, I would -- with my academic hat on, I'd be pleased to hear that.

But I mean just now just an assessment of -- you know, Mr. Fletcher laid out some of the key variables -- but just an assessment of why the RFA number is wrong or way too low, and if you agree with the assessment that in the end this tends to be pro-biofuel in terms giving a relatively low number. And we can get into the details in the next nine months and beyond.

DEPUTY EXECUTIVE OFFICER SCHEIBLE: Let me jump in here.

I don't really think it's pro-biofuel. I think that maybe it's accommodating of the current batch of biofuels.

When we did the assessment and we changed the various numbers that are possible for land use change

effect and indirect land use change effect and then modeled what we thought we would look like in 2000 -- can we go to slide 39 -- I mean in 2020, what happened was that the fuels that got low scores because they were the new generation of fuels and they have low scores for production and they have lower risk or zero risk for land use change dominate. And really what we're talking about is how do we do the transition from where we are now so the current biofuels will get much cleaner and compete with those truly low carbon fuels. Or the low carbon fuels -- other low carbon -- new fuels come in and, under the competition that we set up in the Low Carbon Fuels Standard, so long as they offer economic value in terms of their energy costs, they're going to prevail in the marketplace, because they will be the easiest way of complying with the standard.

So we felt that when we looked at the different factors, some of which are technical and science-oriented, some of which are policy calls, how many years do you allow for an incremental benefit -- an annual benefit to offset an initial discharge? And it was pretty straightforward. We're looking forwards 2050. That's about 30 years away from the 2020 goal. Plants once built tend to operate for about a 30-year period. That seemed to be a reasonable amount of time. We weren't convinced

that in -- these global warming pollutants have impacts over centuries, that a few years, you know, in that time period early on was going to change the overall impact of global warming.

And we handled the range of uncertainty by averaging a number of different runs together. But this is no different than we do when we set a standard or we say, "Well, how much toxic does it take to get to 100 in a million risk?" And then we manage that risk there. We're actually dealing with a range of risks, and we have to shrink it for regulatory effectiveness and convenience to a point number.

So we're doing all those same things here that we did before. It's just a different area of the science.

And in terms of, you know, the different results, you basically -- if you assume that the rest of the world can grow food at rates and yields like the U.S., you don't need a whole lot of land to replace the land that U.S. food has come from. If you assume that the rate's going to be very much lower and there's not going to be much technological improvement and that the price impacts aren't going to -- you know, and make farmers around the world invest and come closer - not equal our productivity but at least come closer - if you assume those things aren't going to happen, then you get very large land use

impacts. And that's what we're seeing.

And we tried to make the inputs reasonable, as reasonable as we could. And then among that, I think mostly the accommodating policy comes from the decision to say allow a 30-year period to make up for any initial increment. And that is a policy call. And it was designed -- and I think -- we think it's okay, because it drives things the right direction. It drives us from fuels today to better fuels in the future. And it, you know, does it in a slow manner so that we don't have a big problem with making the transition.

CHAIRPERSON NICHOLS: If I could just comment here since we're referring to people whose pictures were on the front of that presentation.

The late Dr. Alex Farrell did a briefing for me shortly after I came to the Air Resources Board about this rule. And I remember asking him the question, "Why don't we just ban all grown fuels, let's just stop it now, and insist that nothing that isn't a waste material be put into the California fuel supply."

And his response was that from a technical perspective that was probably the right thing to do; and if we had the courage to do it, he would be happy to support it. But that it didn't seem as though from an economic perspective that was going to be a very

successful strategy. And I've just borne that in mind throughout this whole process. And I'm sure we will continue to hear more debate, not only today, but on into the future about how friendly or unfriendly we are or should be towards the idea that we can grow our way out of our dependence on petroleum.

But I think that -- I think the staff's done a good job of at least explaining why they've taken the path that they did.

Yes, Dr. Balmes.

BOARD MEMBER BALMES: Well, I just wanted to feed off that last sentence.

Though the original staff presentation was elegant and I followed it clearly, having Mr. Scheible sort of lay it all out there in very direct terms I think was very helpful. That kind of information processing makes our decision making easier. So I appreciate that.

CHAIRPERSON NICHOLS: Okay. Thank you.

BOARD MEMBER BERG: Madam Chair, could I just ask one other --

CHAIRPERSON NICHOLS: Yes, please.

BOARD MEMBER BERG: Thank you.

In looking at staff's slide 26 and 27, which is the ethanol land requirement, I'm not sure that I'm connecting the dots as to why the indirect land use

wouldn't be incremental. In other words, we're already in 2008. Corn is dedicated to production. I don't understand why the current production has an indirect land use value. I do understand where by 2015 an additional 10 percent will be needed where that would have an indirect land use. And so if you could connect those dots for me, that'd be helpful.

DEPUTY EXECUTIVE OFFICER SCHEIBLE: Okay. Again let me provide a wider view. As investigating how it all works, you have to put in perspective the world has a growing population and a more affluent population and is eating more. So not only in proportion to population growth, but more people are eating protein from animals and that takes more grain and other feeds to be put into the system. So we have a constant growth and around the world, and we have a choice to make in terms of what do we use our food resources for.

And it is incremental. There's been land use change from the growth in biofuel production between 19 -- the 1990s, when it started, and 2008. And there will be more if we grow to 15 billion gallons.

It's also reversible, if we stop doing it or use less fuel. It's not the land that's been already changed from nonagricultural uses into agricultural use. That may not go back. But other changes won't take place, because

we're -- you know, it's a constant thing. Biofuels production is not the major cause of land use change around the world. It's one of the causes and it contributes to it.

And it really doesn't matter when you start using it or when you stop using it. You're going to have the effect or turn the effect around, either way. So that's kind of the basic premise why it makes sense to go -- to put the program together the way we did and why we didn't want to have a situation where some -- some amount of fuel was somehow grandfathered because changes in using it wouldn't have an effect. We think there is an effect from each time that you either increase or decrease the use of the fuel in terms of the global warming consequences.

CHAIRPERSON NICHOLS: Any other questions at this moment?

Yes, Dr. Telles.

BOARD MEMBER TELLES: You just mentioned something that kind of caught my interest. And that was that biofuels aren't the major cause of land use changes. And what percentage of the land use changes do they really represent? I know it's uncertain, but...

DEPUTY EXECUTIVE OFFICER SCHEIBLE: It's a small percent. There's many other reasons why -- deforestations. And also when you look at what we

projected. Often in the media what you will see is a blanket statement: Biofuel use in the U.S. is causing tropical forests to be deforested. Well, there's only 7 percent of the land use change that our analysis says comes from forest outside the U.S. 80 percent of the land use change we think is more akin to grasslands, because it's land that doesn't have trees on it and maybe uses its grazing land or marginal land and comes into play.

So the need for timber, just poor practices in many nations contributes to the bulk of deforestation. And really ultimately I think we all believe that hopefully we won't need to have a land use element of a fuels policy because we'll have land use -- sustainability land use policies in place around the world that address -- regardless of the reason why the land changes, we will be preventing things from happening we don't want. We'll be preventing tropical forests deforestation. Considering when we do land use change, when we take ag land and we put urban development on it, it doesn't -- you know, the effect is the same regardless of the cause: Why did you lose the land resource.

CHAIRPERSON NICHOLS: There's been a lot of comment, I'm sure - other Board members have heard it - trying to get the Board to take a much more expansive view of this issue. And I'm sure we'll hear more of it today

and there will be more discussion coming forward.

Did you want to follow up?

BOARD MEMBER TELLES: One more question.

On slides 25, 26, and 27, you display kind of a stark gobbling up of the midwest by ethanol. In that same timeframe, what's the change in yield in corn? Is that -- I mean if you estimated it's a static no change in yield, I mean Iowa and Nebraska and all these states are going to be gobbled up by corn ethanol, but --

CHAIRPERSON NICHOLS: It's not really a gobbling up. It's like a salvation --

BOARD MEMBER TELLES: Well, I mean they --

CHAIRPERSON NICHOLS: -- if you look at it from the corn grower's perspective.

BOARD MEMBER TELLES: Well, what I'm getting at is the purple part of the square there actually increasing in yield as it's decreasing in size.

DEPUTY EXECUTIVE OFFICER SCHEIBLE: Yeah, it's about a 10 percent increase, I believe, from 2000 to 2008 or 9.

BOARD MEMBER TELLES: So as you gobble up a little bit of the midwest with corn ethanol, the rest of the yield of corn is still somewhat available; it's not being reduced as much as actually being displayed in these diagrams?

DEPUTY EXECUTIVE OFFICER SCHEIBLE: No, the diagram -- I think -- I hope the diagram is accurate. We've taken into account both the yield increase and the biofuel increase. If we had to make biofuel out of corn without the yield increase, we'd be dedicating a much higher percentage of the corn acreage to biofuel.

BOARD MEMBER TELLES: The diagram here says by area, not by yield -- by surface area.

DEPUTY EXECUTIVE OFFICER SCHEIBLE: Well, can staff clarify that we incorporated both factors, like I hope we did.

STATIONARY SOURCE DIVISION CHIEF FLETCHER: Yes, we did.

BOARD MEMBER TELLES: So is this a yield or an acreage?

DEPUTY EXECUTIVE OFFICER SCHEIBLE: It reflects both things. It reflects yield increases. And then the size of the blue square is the percent of that acreage, which includes the yield increase that has to be devoted to the biofuel crop if we're to get to the goal of 15 billion gallons of corn ethanol.

CHAIRPERSON NICHOLS: Which is -- right.

All right. First of all, I want to apologize for my comment earlier that I was going to limit the testimony to two minutes. That was included in the written

comments, and it wasn't intentional. I hadn't actually had a chance to think about it, to tell you the truth.

And I think given the importance of the issues and the fact that we have a large but not extreme number of people who have asked to testify, that at least in the beginning we'll start off giving everybody three minutes apiece to testify.

I would like though to let you know that we're planning on taking a lunch break at one. And so if you want to plan your time accordingly, that might be a factor.

And I think we should give ourselves a brief break, like five minutes -- will that do? -- a five-minute break right now before we then get to the testimony.

Thank you.

(Thereupon a recess was taken.)

CHAIRPERSON NICHOLS: All right. Ladies and gentlemen, we're ready to begin our testimony this morning.

The first three witnesses, if you could please come forward, Frank Caponi, Matt Solomon, Geoff Cooper.

Okay. Frank Caponi, are you here?

There you are. Okay.

This is the burden of being number one.

And I bet you'e not talking about ethanol either.

I'm just guessing.

Followed by Matt Solomon and Geoff Cooper.

MR. CAPONI: Are we on yet?

There we go.

CHAIRPERSON NICHOLS: There we go.

MR. CAPONI: Good morning, Madam Chair.

CHAIRPERSON NICHOLS: Good morning.

MR. CAPONI: Caught me by surprise. I think I'm going to buy a lottery ticket on the way home.

(Laughter.)

MR. CAPONI: My name is Frank Caponi. I'm representing the L.A. County Sanitation Districts. I'm trying to talk into this mike.

There we go. That's a little better.

CHAIRPERSON NICHOLS: Good. Thank you.

MR. CAPONI: These stands, they don't support tall people.

You're right, I'm not here generally to talk about ethanol, but mainly to talk about waste-derived fuels in transportation. And this has always been one of the goals our agencies, is really to maximize our renewable sources. As I catch my breath here running down the isle.

We've been very successful in this effort. We've generated over 120 megawatts of electricity from biomass

and biofuels. And we were the first in the world probably to take landfill gas and develop a CNG with that. And we also operate CNG in LNG stations.

We're very supportive of the states that's had to incorporate biogas as a low carbon fuel standard.

But we have concerns that the regulation does not fully support enough of the waste-derived fuel that's available today and will be available in the future.

Some examples of this are biosolids to transportation fuels, green waste to cellulosic ethanol - I am going to talk about ethanol - MSW to fisher trope diesel fuel. So there's a lot of possibilities out there for waste-derived fuel. And these fuels typically have extremely low well-to-tank carbon footprints since they're mostly produced locally. And there's limited transportation impacts. And since most can be produced at existing facilities, there's a limited direct and indirect land use impacts. So we're dealing with really an ideal fuel source here.

Now, we've met with staff on this issue. And they assure us that we'll be working on new pathways to take advantage of more waste to alternative fuel options. So we're very appreciate of staff for that.

And we really look forward to working with staff on maximizing potential of waste-derived fuels. And I

just wanted to bring this to the attention of the Board.

Thank you very much.

CHAIRPERSON NICHOLS: Thank you very much. I think you're first because you signed up first. We haven't tried to sort these at all.

MR. CAPONI: Thank you.

CHAIRPERSON NICHOLS: So congratulations.

Matt Solomon, followed by Geoff Cooper and Cathy Reheis-Boyd.

MR. SOLOMON: Good morning. My name's Matt Solomon. I'm here today representing the Northeast States for Coordinated Air Use Management, also known as NESCAUM.

NESCAUM is an association of state air quality agencies in Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island and Vermont.

NESCAUM strongly supports California's proposed approach for a low carbon fuel standard. We believe that the proposed regulation will help to achieve California's greenhouse gas reduction objectives, while serving as a model for other jurisdictions.

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MR. SOLOMON: The NESCAUM states are committed to aggressive action on climate change, and we recognize that a low carbon fuel standard could be an important tool to reduce the greenhouse gas emissions from the

transportation sector. In this light, the NESCAUM states along with Delaware, Maryland, and Pennsylvania have been evaluating the potential for a regional low carbon fuels program, and we've been closely monitoring California's progress.

We strongly support staff's recommendation to include the indirect effects of land use change when calculating fuel carbon intensity. Recent research has shown that significant impacts -- excuse me -- significant emissions might indirectly accompany the conversion of land for biofuels production. The proposed regulation appropriately counters this risk by accounting for these indirect effects.

While additional research might lead to refined estimates of certain life cycle impacts, the regulation as proposed will immediately improve the outlook for low carbon fuels in California by motivating producers of current and future transportation fuels to minimize the emissions associated with their products.

We note that the carbon intensity of gasoline and diesel fuel could increase in future years as greater volumes of oil sand and other nonconventional feedstocks enter the market. Meanwhile efforts to commercialize alternative fuels will continue to move forward with or without a low carbon fuel standard.

The LCFS will signal to producers of the next generation of fuels that life cycle carbon emissions must be counted and controlled. Moreover, the regulation will provide ARB with the tools to keep track of critical information on life cycle emissions, while accommodating future improvements in analytical methods.

In conclusion, NESCAUM thanks ARB and staff for your hard work in developing this proposal, and we urge the Board to expeditiously adopt the proposed regulation.

Thank you.

CHAIRPERSON NICHOLS: Thank you very much.

Kathy -- I'm sorry. Geoff Cooper, followed by Cathy Reheis-Boyd and Ralph Moran.

I guess you can read for yourself on the chart.

MR. COOPER: Good morning. My name is Geoff Cooper and I'm representing the Renewable Fuels Association. We are the nation's largest trade group representing U.S. ethanol producers.

First we'd like to commend the State of California for its vision and leadership in developing energy policies that aspire to reduce greenhouse gas emissions, decrease reliance on fossil fuels, and stimulate the economy.

However, we are greatly concerned that because the regulation creates an unlevel playing field for both

first and second generation biofuels, these goals ultimately may not be reached.

As noted earlier in the presentation from ARB staff, we have performed our own exhaustive analysis of the land use impacts of expanding corn ethanol to 15 billion gallons per year by 2015. Through that process, I think we have, you know, learned that we are certainly not convinced that expansion of ethanol production in the U.S. has caused or will cause indirect land use changes. The empirical data on global land use trends certainly does not support the land use change theory.

At the same time, the world is not eating less food as postulated by one of the presenters this morning. Caloric intake on a per capita basis globally last year was at an all time record high according to FAO.

Further, tremendous increases in grain output per unit of land coupled with growing supplies of animal feed co-products, like distillers grains, have essentially eliminated the need to expand global cropland base in response to increased U.S. biofuels production.

It is also notable that despite the predictions of some supporters of the indirect land use concept, exports of grains and oil seeds from the U.S. have not declined appreciably and, in fact, last year we saw record exports of both corn and soybeans from the United States

even in light of record ethanol production.

So in closing, we'd like to offer several recommendations to the Board.

Number one, we'd like to recommend that the Board go forward and adopt the regulation based on direct greenhouse gas effects only. This is because the greenhouse gas emissions that have been analyzed for all fuels are on a direct basis, whereas only biofuels have been subjected to the enforcement of indirect effects.

We further recommend that the Board direct the staff to refine the modeling framework used for the indirect land use change analysis and strive to reduce the tremendous uncertainty of the analysis. This should include much more sensitivity analysis. And as discussed earlier this morning, the results should be presented in confidence intervals rather than simple point estimates. I know that's problematic in terms of how you assign a number. But the uncertainty of these estimates, you know, dictates that we look at confidence intervals.

Finally, we request that the Board direct the staff to make an earnest attempt to uniformly evaluate all fuels.

Thank you.

CHAIRPERSON NICHOLS: Thank you very much.

Cathy Reheis-Boyd.

MS. REHEIS-BOYD: Good morning, Chairwoman Nichols, members of the Board. I'm Catherine Reheis-Boyd, Executive Vice President of the Western States Petroleum Association.

I think you all know we've been extremely engaged in this process. We have put a lot of resources in and we are invested. We've hosted several collaboratives. So we're here and will continue to be.

But this is the most transforming fuel regulation any of us has ever undertaken. It's certainly a different paradigm. And we're using -- obviously looking at existing fuels and existing vehicles in the past. And now we're looking at fuels in vehicles that haven't even been envisioned in some cases, and certainly not commercialized.

So we are lowering the carbon intensity of the entire pool of fuels. And that's a big undertaking. The success of this obviously will rely on meshing all of that together and making sure that the consumers can accept it.

We remain troubled today that we are adopting this regulation with the many uncertainties that are still within it, and therefore we cannot support its adoption in this form, regardless of how meritorious the goals may be.

We do know that there are lots of carbon intensity values for future fuel pathways that have not

yet been determined, and that's been noted in previous comments. So we're unsure of the availability and cost effectiveness as we go forward meeting these by 2020.

But we are pleased to see that there are in today's resolution and 15 today comment regulation language a recognition of the need to complete this by year-end and bring back to the Board those additions the triennial reviews for 2012 and 2015 and that those be a public process and part of the regulatory program; and that it also include a diverse advisory committee that can help the staff and the Board kind of explore these pathways as we go forward, because there will be new information I'm sure we'll learn in the future.

And we think that will help avoid some of the unintended consequences simply as well as the 2010 reporting year only, which is in the regulation, the backloaded compliance schedule, the inclusion of the enforcement protocols, and the evidence of the physical pathway, which are things we do support in the regulation.

We're not at all convinced that the program will deliver $11 billion in savings. But it doesn't really matter what we think. What matters is what the consumer thinks. And as we go forward, we know one thing: They will be the ultimate judge of the success of this program. And we know that when they want fuel, they want it when

they want it and where they want it and they want it to be affordable. And so if they don't have that, they're usually pretty expressive about how unhappy they may be.

So the reviews are essential. And hope that you as the Board adopt what the staff has put forward in that regard.

Great deal more work needs to be done. It's, frankly, unclear to us how we will comply with this regulation given what's in it today. But we are committed to continue to work with you and the staff to try to make sure we can deliver a successful program that doesn't impact the consumers, the State, or the economy in a negative manner. What I see now, that's a pretty tall order. But we'll be back.

CHAIRPERSON NICHOLS: Yes, you will. Thank you.

Ralph Moran.

MR. MORAN: Madam Chair, members of the Board.

BP shares the goal of reducing greenhouse gas emissions, and we acknowledge the need to and the challenge in addressing emissions from the transport sector, including fuels.

In written comments and in conversations with staff and with some of you, we have discussed our concerns with the regulation as it's currently written. I won't go into the details of those concerns. We'll instead refer

you to our most recent comment letter of April 21st, except to highlight one issue. That is, the role of electricity in the low carbon fuel standard.

We're grateful that staff has acknowledged the importance of getting it right with this pathway, evidenced by the related language in the resolution that we saw this morning. So thank you for that. So I guess I'm here to support that resolution language and to ask you to go further.

Let me explain. In addition to being a major provider of transportation fuel in the State and globally, BP is increasingly a provider of low carbon power. We currently have in place or underway projects in California that include solar, wind, first-of-its-kind hydrogen energy with carbon capture and storage, and highly efficient low carbon combined heat and power.

Every one of these technologies significantly reduces the impact of greenhouse gases versus business as usual.

As a regulated party under the Low Carbon Fuel Standard, we would like the opportunity to provide our low carbon fuel power for transportation as the means of generating credits within the Low Carbon Fuel Standard.

We're not going to be a company that sits back and waits for others to develop and produce alternative

fuels and then purchase what may or may not come on the shelf. We will be participating in the innovation and development of these fuels. We are already doing this in a big way for biofuels, and we'd like the opportunity to do that for all fuel pathways.

Unfortunately, as the regulation is currently written, the only entities that are able to receive Low Carbon Fuel Standard credits for providing electricity are the legally defined load serving entities.

If innovation is the goal, we don't believe it's wise for the regulation to create or perpetuate a closed market. We believe that the electricity pathway, like every other fuel pathway, should be open to competition and to the market. We believe the Low Carbon Fuel Standard regulation and the State would benefit from language that incentivizes and rewards at-risk capital to innovate and invest in incremental low carbon power for the transportation sector beyond that already required by the RPS.

So we urge the Board to direct staff to go further and to identify the barriers to opening up this important pathway and to develop and implement a workplan to address these barriers.

Thank you.

CHAIRPERSON NICHOLS: Thank you.

Greg Karras.

BOARD MEMBER SPERLING: Can I just ask one small thing?

CHAIRPERSON NICHOLS: Yes.

BOARD MEMBER SPERLING: So what you're saying is you're supportive of the resolution as it's been written, you would just like to see an elaboration of that; is that correct?

MR. MORAN: That's correct.

BOARD MEMBER SPERLING: Okay.

CHAIRPERSON NICHOLS: Okay.

MR. KARRAS: Thank you. Greg Karras, Communities for a Better Environment.

In the end, ARB argues that it has to drive this bus and everybody has to be on board.

But we're headed off a cliff and the ARB is asleep at the wheel.

Emissions from gasoline refining are increasing and could double or triple. The cause of this, specifically the properties of cheaper, lower quality oil that make it inherently more polluting to refine, is not addressed by the proposed standard.

Let me give you an example. Sulfur levels in crude going into refineries are thousands of times those in the gasoline that you limit to control pollution, and

they're rising. We have submitted research -- original research from California refineries showing the impacts of that on increasing GHG emissions from one process.

South Coast Air Quality Management District has asked you to look at that research of ours too.

Unfortunately, neither sulfur nor any of the other properties of oil that make it more polluting to refine is limited at the point where it goes into the refinery by this proposal. That allows increasing emissions from refining dirtier oil in the predominant oil refining center of the American West.

Worse, the proposal to sell pollution allowances could protect investments in the equipment for that dirty oil refinery. Worse, that re-entrenchment of oil infrastructure could further block noncombustion alternatives, and that pollution trading could give corn ethanol refiners money to invest.

All this would force the dirtiest of alternatives to today's oil.

Increased emissions from dirtier oil combined with the emissions per barrel of oil replaced by biofuels like ethanol would foreclose would make it virtually impossible to achieve the total emissions reductions widely believed essential if we're going to avoid severe impacts of climate change. Meanwhile, increasing toxic

co-pollutants from existing oil and new biofuel refineries would further poison nearby low income communities of color.

These fundamental flaws must be fixed before the standard is adopted. At a minimum, take the steps set forth and supported in full in our written comments.

Cap each refinery's oil quality where it is now.

Don't sell pollution credits that protect dirty oil investments and violate our rights.

Make room for the noncombustion alternatives we need.

This is reasonable. It's necessary. It's urgent. Please do not adopt the proposal without making these amendments.

CHAIRPERSON NICHOLS: Thank you.

Tom Darlington.

MR. DARLINGTON: Good morning.

Over the past year I've worked with RFA considerably on the corn ethanol carbon intensity, including land use. We've now only published our own report on land use; we've obtained the GTAP model that's been used with Purdue to estimate the land use changes. And I'd like to make three points.

First point is that there is an error in the corn ethanol value in the initial statement of reasons. Our

analysis base on all of CARB's assumptions is that the corn ethanol land use number should be about 28 instead of 30. This is important because with a land use value of 28, it means that the carbon intensity of California RFG with midwest corn ethanol is actually lower than gasoline and that Californians have been enjoying greenhouse gas reductions due to corn ethanol these past five years since the phaseout of MTBE, and will continue to enjoy these greenhouse gas reductions through time when the Low Carbon Fuel Standard is implemented.

The second point is that this good news has occurred even though CARB's analysis of land use effects of corn ethanol has been somewhat slanted against this feedstock. I don't say that it's been slanted intentionally, but it is slanted.

Now, admittedly, to complete an analysis of this type is quite complicated and involves an awful lot of factors. In our written comments on the initial statement of reasons we made a list of all the factors that were either not included in the analysis or not included to the extent they should be.

There are about ten factors that we found that would either increase or decrease that land use estimate. Eight of the ten factors would decrease it and two of the factors might increase the land use estimate. A couple of

those factors were mentioned by Michael O'Hare this morning.

We believe the analysis therefore should be more balanced.

The third point I'd like to make is that in a meeting with CARB staff last week, Professor Hertel from Purdue recommended changes to two elasticities used in the model that are used to estimate land use changes. He talked about those this morning. It was sort of the Solomon solution.

We did implement those changes in the GTAP model. And when we change just those two elasticities, the corn land use value dropped to a range of about 16 to 18 grams per megajoule from 28.

In summary, corn ethanol has been reducing GHG emissions in California for five years. And as time goes on, I think it will be shown that corn ethanol has and will continue to provide increased greenhouse gas emission reductions in the State.

CHAIRPERSON NICHOLS: Okay. Thank you, Mr. Darlington.

Just so it's clear, I have not been calling on my fellow Board members to question each of these or the staff to respond. I'm hoping you're taking notes. And I expect we will have some time for responses to all of

these important inputs and criticisms, as least -- not to every criticism hopefully, but to the major points that are made, of which that's certainly one.

Okay. Thank you.

Paul Wuebben.

MR. WUEBBEN: Good morning, Madam Chair, members of the Board. I'm Paul Wuebben with the South Coast Air Quality Management District.

So I'd like to have my slides brought up.

Would you like me to move the microphone?

CHAIRPERSON NICHOLS: You're going to have to get this microphone up closer to you or we will not hear you.

MR. WUEBBEN: Excuse me. I'll do that. Thank you.

CHAIRPERSON NICHOLS: Sorry.

(Thereupon an overhead presentation was Presented as follows.)

MR. WUEBBEN: Yes, I'm Paul Wuebben with the South Coast Air District. I appreciate the opportunity this morning.

We first want to indicate our strong support for the adoption without delay, and also note that we're certainly strongly endorsing the bifurcation between the diesel and gasoline and also the incorporation of direct and indirect land use.

What I did want to do -- and next slide please --

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MR. WUEBBEN: -- is start with some specific suggestions where we do think that some important improvements we're strengthening could be accomplished.

With respect to the overlap between the Low Carbon Fuel Standard and the RFS, we would suggest that there be a limitation, a prorated, such that the volumes of fuel under the federal standard would only represent 11 percent under the Low Carbon Fuel Standard. That figure was reflected in the staff eyesore, for example.

Next slide please.

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MR. WUEBBEN: We also believe that there's several other important modifications that could be made that would definitely strengthen the regulation. As was noted earlier, the crude API gravity for all batches is very relevant and materially affects the greenhouse gas pathway. And so we would recommend that the specific accounting that is done include each batches of API gravity rather than just an industry average over a ten-year period.

Second, we would strongly urge that the full hydrogen pathway -- or hydrogen production be included, as there's substantial merchant hydrogen that's utilized in

the refining of gasoline, as well as a sulfur reduction in diesel fuel.

And, thirdly, we would urge that the RPS not be double counted, that is, that we prohibit the crediting of PHEV credits under the renewable portfolio standard that the PUC has adopted, just to keep the carbon accounts balanced and fair.

Next slide please.

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MR. WUEBBEN: And, lastly, there are a number of items -- and we want to reflect that the staff have made some really diligent efforts throughout the process, but particularly in the last change -- in the series of changes, that there have been a number of workshops and advisory boards. And we're very appreciative of that.

There's some additional items that we would urge that be considered, namely, perhaps a more focused works process on the indirect land use control quest in annual EER updates since they drive a lot of the analysis; a commitment for pathway validation and auditing, because that's a crucial component here for credible accounting; the monitoring of light-duty dieselization trends; tracking of actual emissions in contrast to the intensity per megajoule; and, finally, a rigorous multimedia process. And I appreciate the reflection of that in the

final resolution.

So we stand here with a monumental regulation on your doorstep and we commend the staff and the Board for acting in this area.

CHAIRPERSON NICHOLS: Thank you.

The next three witnesses appear to me to sort of belong together - Osofsky, Souza, and Gruen - that is, you all sign on the same written comments. So if you want to come up together or at least right after each other, that would be great.

MR. OSOFSKY: Yeah, they're here now.

CHAIRPERSON NICHOLS: Good.

MR. OSOFSKY: Okay. Good morning. I'll try to be brief.

My name is Alan Osofsky with Rogers Trucking in San Leandro, California. And I'm also here representing a group formed at the Port of Oakland, of a group of truckers called West State Alliance, WSA. And I have participated in your workshops in January.

I just have four points I'd like to get across to you.

Although I said "opposed" on our card, I'm not opposed to clean air. We want to do our part. We're retrofitting, we're upgrading our fleet, and we're trying to do everything possible.

But what we don't want is a return to what happened in 1993 when the fuel got reformulated. The State was very gracious in helping us replace our fuel pumps. However, we lost man-hours, service failures to our customers, and downtime of our equipment. So whatever you do, bring me something that is really -- that's been tested and that we can use and be comfortable with. We want to do our part.

And if we do use this new fuel, will we be protected from indemnity if we should -- or if there are any problems with stormwater or Proposition 65 issues arise. We'd like to know the answer to that.

So we ask that you do multimedia review of the fuel that you choose to pass and make us feel comfortable about what we're putting in our trucks.

We also ask you do the proper testing, and wait till around December before you adopt the fuel. And if you do adopt it, we would like to see some kind of a periodic testing or public review of the regulation every six months until 2020 to ensure that the vehicles and equipment are not impacted by this change of fuel.

And, lastly, at the January workshop I offered our fleet as a test fleet, and that offer still stands. We would like to participate in this process.

So thank you very much.

CHAIRPERSON NICHOLS: Thank you.

MR. SOUZA: Good morning. My name is Ricky Souza. I'm with Weber Distribution. We're an association of IWLA.

Weber has 500 trailers, 200 trucks. We have a newer fleet - '06, '07.

The fuel reformulation really makes us nervous as business owners. It doesn't give us the ability to price for new business because we don't know what the additive is that's going into the fuel, we don't know what the end product will be at the price of the pump.

This is also -- we have a lot of customers that strictly warehousing in California with us. And we think this could cause some leakage where they would seek other companies and other outside carriers out of the State of California where they can get lower fuel prices in Nevada and Arizona.

We're also concerned -- we don't know what the fuel will do to our equipment, to our engines. We're just seeking indemnification from the fuel. We just ask for it to be tested before we go forward with it.

Also, we want to know the recipe for the reformulation. We want to know the process on where the product's coming from and how it's being added. And we also want to know how much it's going to be at the pump,

the end users. That's what we are.

And that's all I have. Thank you.

CHAIRPERSON NICHOLS: Thank you.

MR. GRUEN: Good morning. I've had the pleasure of speaking with you in January and March in your workshops. And I appreciate you giving me an opportunity to discuss with you today. My name's Josh Gruen. I'm representing the California Multimodal and their family of companies, one of the largest intermodal drayage providers in the State of California.

I'm also a member of a family of companies of the Western States Goods Alliance, part of the Coalition of Responsible Transportation for Clean Air. We're very much in part and in step with making a better state, making a cleaner state. I have kids. I worked in the port. We all want to have a cleaner state.

We've contributed this year 141 new LNG tractors in our fleet, 254 2009 diesel trucks. We're doing our part. We're doing the right stuff. We don't want to have -- be put in a situation where we're getting another fuel added on top of this right now, as I heard someone say, the commercial aspect of the industry. The commercial aspect of the industry is that it's falling apart right now from the economy in a myriad of ways.

There will be companies that will not be in

existence for sure this coming year. We don't expect -- myself and our company have had layoffs. We don't see it turning any time soon. These additional challenges of cost on things that we haven't been proven as of yet cause a significant concern.

Identifying us of any stormwater or other liabilities from our company is a significant concern. Testing and given the ability to test this new fuel regulation -- formulation is quite important to us to see that it doesn't affect us in a negative, doesn't affect our customers that have run downtime to go work with somebody else.

We have thousands of people that we employ and want to keep employed. We don't want to jeopardize any of these jobs.

We look through just a whole bunch of stuff. I mean, you know, how will these costs be distributed in real cash flow terms; out-of-pocket dollars that must be spent every day from the day of the program, not averaged over a period of many years. And then estimate energy cost savings that may or may not be realized much later.

Again, we'd like to see a public review process every six months to 2020. Again, we'd like to see these -- this fuel once we find out what the formulation to test it before it's put into it.

And in closing, we ask that you stop and develop rule-making in compliance with the Administrative Procedures Act and that can be adopted by the Office of Administrative Law based on completeness. Do the implementation properly and protect California from going down a path with clear scientific record of causing desperate economic harm to every California-domiciled business.

Thank you so much for letting me speak today.

CHAIRPERSON NICHOLS: Thank you.

Since the three of you have all sort of touched on this one area, and I think it's important for consumers or anyone from the general public who might have wandered into listening to this proceeding, I want to try stating something that I think is correct. And then if I'm wrong, I hope staff will correct me.

But as I understand this rule, nothing in it either requires or allows reformulation of gasoline that is being sold. If a lower carbon method for producing, let's say, ethanol as used in gasoline today comes along, the ethanol that's produced from that method is still going to be identical in chemical composition at the end to whatever is being used today, unless they go through some sort of a process to get this approved as a new additive in California. In other words you cannot go

around, even if you're an oil company, dumping new chemicals into your product without it having been approved by the regulatory agency. And we're not suggesting that.

So this is not a reformulation rule per se. And in fact I don't think it really encourages reformulation particularly because of the other pathways that we've talked about. I mean CNG, LNG, fuel cell, electricity, et cetera, et cetera, those are obviously not things that are going to be blended into gasoline or diesel fuel. However, if I'm wrong about that, I think we'd better explain what it is that is going to happen when somebody wants to change the fuel.

DEPUTY EXECUTIVE OFFICER SCHEIBLE: We must have briefed you well, because you're correct on this.

(Laughter.)

CHAIRPERSON NICHOLS: Great. No, I just was worried about this point.

DEPUTY EXECUTIVE OFFICER SCHEIBLE: Most -- I mean the chemicals -- or chemicals in the ethanol has got to meet ethanol specs regardless of the manner in which it's produced.

There are two fuels that we know have promise and need to go through the multimedia analysis, and we're doing that now. One is biodiesel, which hasn't gone --

it's in use today and it's been used quite a bit, and it's now -- could ramp up and become an important component in the Low Carbon Fuel Standard, and we kind of hope it will.

And so that's going through the multimedia analysis.

And the other one is butanol, which could serve as a blending agent.

If someone comes up with a new thing that shows promise and it looks like it might come in, it too -- and it doesn't fit on the current list, it will have to go through. But we don't -- we see little -- you know, it's not a fuel specification. There's no multimedia analysis to do on the overall program. And the components of it where we get new fuels have to go through what's required by State law.

CHAIRPERSON NICHOLS: Okay. You know, I too lived through the reformulated gasoline period. And so I share the concern both about multimedia and about unintended consequences. So this is something we are very -- going to be very alert to.

DEPUTY EXECUTIVE OFFICER SCHEIBLE: Right. And you were breathing cleaner air in Los Angeles because of it.

CHAIRPERSON NICHOLS: And we are, we are.

(Laughter.)

BOARD MEMBER SPERLING: You know, perhaps a little addendum to that is, you know, for biofuels that are chemicals that look very much like gasoline and diesel, would they have to go through any further review? Because that is where much of the R&D is going now, is to make those kinds of biofuels.

DEPUTY EXECUTIVE OFFICER SCHEIBLE: I guess it all depends on how close. You know, you could bring in fisher trope diesel now that's a blending component. And that's just treated as diesel. So it fits under the diesel spec.

I guess if you got too exotic, we'd say, you know what, that could pose some additional problems. And you just can't assume because the things that -- it's no worse than the things it's replacing, it's okay.

CHAIRPERSON NICHOLS: Right. That's the key.

DEPUTY EXECUTIVE OFFICER SCHEIBLE: Yeah, bring us -- so when we see the specifics, we'll have to make our call on that and then follow the law.

CHAIRPERSON NICHOLS: Additional comment?

BOARD MEMBER TELLES: Just a question to the trucking people and the staff.

I think what they're talking about too is not just reformulation but running what is available in their trucks. And the trucks are changing because of our rules.

And one of the issues is -- I think B-20 is available now. But some of the truckers have told me that B-20 doesn't really run too well in the new catalytic converters and it gums it up. And is that -- and some of the trucking industries in the region I come from have switched back from B-20 to B-5, which kind of defeats this purpose because it doesn't run in the trucks that we from another regulation have approved.

CHIEF DEPUTY EXECUTIVE OFFICER CACKETTE: There are a couple things with biodiesel. Most of the trucks manufactured in the past years were not approved by the original truck manufacturer or engine manufacturer to run on anything but very trivial amounts of biodiesel. So there were some warranty issues. Some of them are stepping up to B-20 now.

Our original retrofit verifications for our in-use truck rules also did not allow B-20. The manufacturer of the devise said no to that. But now those are all being tested and upgraded to allow B-20. But B-20's pretty much the cap.

So if there's been problems with it, it's been largely I think around, you know, the lack of good specifications and things like that for the biodiesel. And that's all being worked on too. So I think the picture is more positive towards the future of not being

problems. But there were some in the past.

BOARD MEMBER TELLES: Well, maybe that kind of says what's being -- happened. But it doesn't really answer my question. And, that is, how many trucks out there can burn what we're proposing that we're going to have available, like B-20? And maybe the truckers when they come by can help inform us on that.

Are they going to be able to burn it in their current engines, the ones that they have just purchased to run?

CHAIRPERSON NICHOLS: I think that gets back to the issue that Cathy Reheis-Boyd raised though, Dr. Telles, which is that the industry has to sell what the consumers will buy. And they can't force you to use B-20 in your truck just because they want to sell more B-20. It's not going to work that way. I mean it won't in the real world, because consumers won't buy it and they don't have to. So the industry will have to supply what the consumers are willing to purchase.

CHIEF DEPUTY EXECUTIVE OFFICER CACKETTE: No, I think that's exactly true. They can't put out a product in their diesel pumps that half the vehicles are not authorized to run on because it might void warranty or because the trap they're using wasn't originally verified. And so they're going to have to, you know, produce a fuel

that everyone can use or they're going to have a very niche market for that fuel, which won't give them much carbon credit.

CHAIRPERSON NICHOLS: Well, they'll be buying credits from Southern California Edison for electric chargers.

DEPUTY EXECUTIVE OFFICER SCHEIBLE: And in the beginning years since we have a very gentle ramp-in to the rule, we're talking about small changes -- changes in the nature of the ethanol on the gasoline side, and on the diesel side very small volumes of biodiesel. And hopefully they'll find some -- the customers that want B-20 will get some experience with that. But the rule will be averaging, if biodiesel is used, as B-1 or B-2, some small amount.

And we know right now there are some additional issues. Right now only B-5 can be really moved around and stored in most underground tanks.

CHAIRPERSON NICHOLS: Okay. I guess we'd better move on.

Robert Richards.

MR. RICHARDS: Good afternoon.

CHAIRPERSON NICHOLS: Afternoon?

It is afternoon.

MR. RICHARDS: Just barely.

I'm Robert Richards of Kern Oil Refining Company.

My comments today are presented from the perspective of a small privately held company which has made massive financial investment and commercial commitment to enable it to comply with government mandates to produce cleaner burning gasoline and diesel.

Kern oil is a small independent refiner located in Bakersfield, California. Small refiners are recognized by U.S. EPA, CARB, and the California Energy Commission.

In 1981, there were 13 small refiners in the State of California supplying fuel. Today there are 2. Kern is the only one of those two supplying California reformulated gasoline today.

Small refiners are limited in their capacity. In California they are landlocked without port access. And we don't possess upstream oil and gas or downstream retail marketing.

We're also not as complex or energy intensive as large refiners.

We produce about 8/10 of a percent of the State gasoline supply and about 2 percent of the diesel supply in California for 2008. A small fraction of the supply, but it's a major part of our business. It is our business.

It's difficult to consider the impacts --

economic impacts, so we considered the supply impacts. Using the lowest CI biofuel, by 2020 we would have to replace 12 percent of our supply.

We agree with the Board that carbon intensity values represent the currency upon which the LCFS is based. We can demonstrate that small refiners, just through small changes in the GREET model, account for 2 grams -- less than 2 grams less CI.

I'll get to our considerations.

We're asking the Board to consider for small refineries that we reduce the carbon intensity reduction goal from 10 percent to 8 percent. We would like to increase the shortfall for small refiners from 10 to 20 percent. We'd like to have a four-year exemption for the compliance schedule and also be able to generate LCFS credits.

CHAIRPERSON NICHOLS: Thank you.

MR. RICHARDS: Thank you very much.

CHAIRPERSON NICHOLS: You do have written testimony also?

MR. RICHARDS: I do.

CHAIRPERSON NICHOLS: Thank you.

Okay. Mr. Ruben Jauregui.

MR. JAUREGUI: Good afternoon. Thank you.

My name is Ruben Jauregui and I'm here

representing the Latin Business Association and the Latino Institute for Corporate Inclusion.

Our members support the goals of AB 32, and we're looking forward to exploring the opportunities that the new green economy might offer to our businesses and communities. But we're very concerned that in the rush to get started with real regulations to reduce global warming, a lot of important details are being overlooked.

The fuel standard you are considering today seems to present several open-ended questions:

Will the fuels and vehicles required have been invented, perfected, and tested within the timeframe required?

Will these fuels and -- what will these fuels and vehicles cost?

Will existing vehicles run on the new fuels without damaging their engines, or will businesses and families have to invest in new cars and trucks?

Will the new fuels really reduce greenhouse gas emissions, or will they simply shift them elsewhere?

And will they cause increases in other emissions like the ones that create smog?

It seems you're making a lot of assumptions that are based on optimistic projections of folks who are in the business of making these fuels and vehicles or would

like to and on a sincere desire to do something about global warming.

But if we don't have all the answers to the technical and economic projection -- questions, we can't know if the money that we're spending will make a difference.

What we do know, once the money is spent, it's gone, whether it winds up helping or not. We need more than high hopes and incomplete research to justify the program.

This program, which is Low Carbon Fuel Standard, needs more and deeper research. In the interests of not only our economy but our environment, we need to do this right. Please take the time necessary to come up with a cost effective and environmentally meaningful plan.

Thank you.

CHAIRPERSON NICHOLS: Thank you.

Greg Luli.

MR. LULI: Good afternoon, Madam Chairman and Board members. Thank you for giving me the opportunity to speak to you today, representing the alternative biofuels company. I am Greg Luli from Verenium Corporation, which is commercializing lignocellulosic ethanol technology. And I'm from San Diego.

And I wanted to say that even though my check is

in the opposition side of this column, that we are in favor of a low carbon fuel standard. But it is the indirect land use that has got us concerned. It's a concern from a couple of standpoints:

One, from a business or economic standpoint, in that it sets a precedent for the fact that it's being applied only to ethanol and that right now lignocellulosic ethanol, or advanced biofuels, is not well distinguished in the marketplace from corn ethanol. And so there may be a concern there that investors in this area -- and this is a predictable area for lignocellulosic companies that are now getting the funding to bring this technology to commercialization and be able to produce this advanced biofuel.

The second obviously is the scientific part of it and the assumptions that go into a model. And we've all talked about that. And we have some concerns about the values that go into that model and the values that are coming out. And with respect specifically to lignocellulosic ethanol, that we know that there are some errors in the assumptions of yield per acre, for example, that really affect the land use as it is applied to lignocellulosic ethanol.

And so I guess from the more of a common sense standpoint, if we're saying today that this standard that

the indirect land use change is an important aspect of it and it must be applied, then why not apply it across the board to all fuels.

And so I guess my recommendation would be that because there's so much uncertainty with that aspect of this particular regulation, that you proceed with the direct impacts but hold off on the indirect impacts, so further studies can be done, further work can be done to come up with realistic and -- well, more accurate numbers that then can be applied evenly.

Thank you.

CHAIRPERSON NICHOLS: Thank you.

Michael Redemer.

I really don't need to call your names. I'm just filling the time it takes for people to come up.

MR. REDEMER: Good morning, Chairman Nichols and members of the Board. I'm Michael Redemer, President of Community Fuels.

Community Fuels operates a 10 million gallon per year biodiesel manufacturing plant at the Port of Stockton, about 45 miles south of here. This plant utilizes our own proprietary technology to make sure we're producing the highest quality product.

Our plant's also scalable and can increase its capacity easily as the market demands increase as well.

In addition to our commercial scale plant, we also have active research programs looking at algae-based biodiesel and advanced biodiesel process technologies. We appreciate the chance to come before the Board today.

Community Fuels has several concerns regarding the LCFS and its impact on the California biodiesel industry. These concerns primarily relate to the modest demand for conventional biodiesel that's forecast in the proposal, the lack of credit for biodiesel that could potentially displace low efficiency gasoline powered vehicles, and the preliminary indirect land use impacts that are indicated for vegetable oils.

The proposed LCFS regulation does not provide adequate support for current biodiesel in the early years of implementation. In fact, I think the first three years were 6 million, 12 million, and 24 million gallons. Our plan alone could meet the requirements up through 2012, and I think the current capacity in the State could probably meet the requirements through 2013.

These volumes are so low that the demand could be satisfied by community fuels. And we put some -- forecast the proposed numbers that we think are more realistic in our written comments.

The staff report shows in Table E7 -- favors advanced biofuels and shows much larger projections for

its growth. We think that that's fairly speculative at this point. There's a lot of issues that need to be overcome with the technologies. We're looking forward to hoping to solve some of those problems, but we're not sure we can do it in the next two to three years.

We believe the existing regulations should put a priority on supporting the existing biodiesel industry in California, and then a gradual shift from conventional to advanced biodiesel can occur after these new technologies emerge as viable.

Finally, we would like to see a credit under the EER for biodiesel for the renewable fuel to displace gasoline.

And, finally, with the indirect land use we'd like to see basically those numbers fixed so that they provide more certainty for vegetable-based oils. So we think that's an area that needs some additional attention.

We'd like to thank you for the opportunity to speak. And I'd also like to invite any members of the Board or staff, if you'd like to tour our facility, we'd be happy to host you any time.

Thank you very much.

CHAIRPERSON NICHOLS: Thank you.

Sofia Sarabia.

MS. SARABIA: Good afternoon. My name is Sofia

Sarabia and I am with the Center on Race, Poverty, and the Environment. We submitted written comments yesterday, so I'm just going to briefly highlight our main point of those comments, which is that we do not believe that the Board is in a position today to adopt the regulation. We don't feel that the environmental and the Environmental Justice analysis that were performed for this regulation are adequate for CEQA and AB 32 for those requirements.

Briefly, the -- much of the environmental analysis is deferred to project-specific review. And we feel that this is really -- you're giving up an opportunity to look at the statewide impact of this regulation. And we think it's a requirement to look at the cumulative effects of this regulation as a whole, not just on the individual facilities and individual projects that are going to come from this regulation.

And, in particular, with the Environmental Justice review, we think that there is enough information currently with where proposed sites might be with, you know, what types of facilities might come from this regulation to perform some analysis on the impacts of low income and minority communities; in particular, those communities that are in the Central Valley that are going to receive the greatest burden of this regulation in terms of the localized impacts. And there needs to be a more

in-depth analysis done at this stage on not just a promise to have tools and to have an analysis prepared in the future. That there's something that needs to be done and can be done at this stage. And those types of analysis need to be done before the Board can be in a position to adopt this regulation.

And so we would ask that the Board direct staff to perform this more detailed analysis on Environmental Justice and on the environmental impacts in general before making a decision.

Thank you.

CHAIRPERSON NICHOLS: Thank you.

Tom Jacob.

MR. JACOB: Thank you, Chair.

Tom Jacob with the DuPont Company. We appreciate the opportunity to address you.

We believe biofuels is going to be central to resolving our current challenges. We are deeply involved in several dimensions of biofuels. Our pioneer hybrid subsidiary is a leading provider of fuels for -- or seed for enhanced fuel yield from corn and soy. We have a joint venture with BP to deliver the next generation of biofuels, bio-based butanol.

And we have a joint venture with Genencor to deliver the next great adventure in technology, the

cellulosic conversion. We think that's going to be a revolution on this scene.

And we think that the Low Carbon Fuel Standard will help us deliver more rational choices going forward with respect to the array of fuels that will be available.

We do have concerns with a number of the issues relating to the pathway analyses. We've submitted these in writing. They relate to the treatment of perennial grasses yields, ag practices and productivity, technology timelines. And we share particularly some of the concerns that have been expressed regarding the incorporation at this stage of indirect land use.

We are not challenging the legitimacy of the rule. We do believe, however, that the infant nature of this undertaking, particularly with respect to indirect land use, argues that this exercise be kept open. We very much appreciate the recommendation from staff, and hope you embrace it, to direct them to continue the dialogues on the pathways. We think that they must be open to science as it matures as our understanding and information matures.

In that respect, I just would like to seek a clarification regarding one item in the resolution.

It's on page 16, the second paragraph the "Resolved." It states -- this is the item that

specifically delegates to the Executive Director the authority to amend the pathway values. Part A: To add new or customized fuel pathways and carbon intensity values to the carbon intensity look-up table. B: To revise any existing fuel pathway or carbon intensity value.

And then this is my question: Except values based on land use or other indirect effects that are specified in the carbon intensity look-up table.

I confess that I haven't had time to fully embrace the entirety of this, and there may be connections there that aren't obvious to me. But I'm curious about the rationale for that exception and what it's implications might be.

SENIOR STAFF COUNSEL JENNINGS: Yes. This is a delegation to the Board -- from the Board to the Executive Officer to make various changes regarding pathways. We felt that the policy implications of the indirect land use values were such that the Board would want to itself conduct any rule makings where we were making changes to the values that are already -- would be the beginning values in the regulation.

CHAIRPERSON NICHOLS: Thank you for flagging that. I think we'll want to talk about that. I can see that this is going to be an issue.

MR. JACOB: Thank you. We believe that deserve some discussion.

CHAIRPERSON NICHOLS: Thank you.

Okay. Who -- yes.

Sorry. Mr. Martinez.

MR. MARTINEZ: Good afternoon, Chair Nichols and members of the Board. My name's Mark Martinez. I'm the CEO of the San Joaquin County Hispanic Chamber of Commerce based in Stockton, California. And I applaud you on all the work that you've done on AB 32. I'm a former chair of the planning commission myself. So I've got great compassion for policymakers, as you have a tough job to do.

San Joaquin County has an extremely high unemployment rate. We also have a foreclosure issue as well. I've spent a significant amount of time with many of our businesses to evaluate cash flow, to evaluate how they're doing. Lines of credit have been reduced. Access to capital is very difficult right now. Many of our businesses are in survival mode. It's a scary time. And I don't think we're done.

I'd like to share with you that I think that overall we don't feel that there's been enough research and an independent review have been conducted as required by law.

In particular we're worried. Many of our businesses in San Joaquin County are trucking and agricultural businesses. And the diesel component of this rule will cause far more problems than it might solve.

We're also worried that we're not the only one across the country who are in this -- as a matter of fact that we're doing this alone. And what concerns us is that we might really put ourselves at uncompetitive advantage.

So I want to caution you to really evaluate the concerns of the economy and our small businesses.

Thank you very much.

CHAIRPERSON NICHOLS: Thank you for that.

Rick Hyndman.

MR. HYNDMAN: Thank you, Chairman Nichols. And good afternoon, Chairman and Board members. I'm here representing the Canadian Association of Petroleum Producers.

And while I recognize that your big issues are around biofuels, land use change, and the availability of truly low carbon biofuels, because of your influence on what happens in other parts of the United States and even Canada, I'd like to make three points that are relevant to the proposed treatment of oil sands crude in the proposal.

And the first of these is that LCFS is part of a larger suite of policies that are designed to reduce

greenhouse gas emissions. The proposal of the single basket for crude oil supplies that are used in California focuses the LCFS policy on the choice between petroleum fuels and alternatives to petroleum. And that is totally appropriate.

There are other policies, in particular the carbon pricing to be applied to industrial emissions that will be directed at managing and reducing the emissions in the refining and production stage. And that's the right place to address those kinds of emissions.

Given that perspective, excluding oil sands from the basket of crudes could be viewed as a way of California pressuring Canada, Alberta, to do their part in the international effort to reduce greenhouse gas emissions. I argue that that is inappropriate and unnecessary.

Alberta introduced carbon pricing to large industries in July of 2007. It was a modest start, as are all the policies in place around the world to price emissions, and they're considering stepping it up. The Canadian government is currently developing a policy that it intends to be compatible with and comparable to the carbon pricing system that it gets adopted federally in this country. And so there is no need to pressure Alberta or Canada to do its part. We're there.

So the second point I'd like to make is that -- to point out is that oil-sands-derived transportation fuels are within the range of life cycle intensities of the crudes currently in the basket and currently used in California.

The third point is that -- just an aside on that -- that there are new studies that have been undertaken. And my colleagues in the Alberta government may point out some of the results of these. But they're reinforcing this point that the oil sands life cycle intensity is comparable or at least within the range of the other crudes being used here and elsewhere.

And the third point I want to make is that oil sands, that is upgraded in Alberta, is particularly suited to transportation fuels and has lower refining emissions than other crudes that are used. And you need to take that into account as you look at the oil sands crude if you want to get the right life cycle comparison.

So if I can just take five seconds and recommend that you recognize these three points and remove the exclusion of oil sands crude from the common basket in California.

Thank you very much.

CHAIRPERSON NICHOLS: All right. Thank you.

Just to clarify. The current plan would be to

have the oil sands a separate pathway or a separate type of fuel, is that how that would work?

STATIONARY SOURCE DIVISION CHIEF FLETCHER: This is Bob Fletcher.

The way that it works is there's a specific provision in the regulation that deals with any, what we call, high carbon crude oil that is not currently accounting for at least 2 percent of the crude oil mix within California.

And so we have a level above which any crude has to -- that comes in and is used in California refineries has to account as a deficit for that increase in intensities.

So it doesn't just single out oil sands. It would apply, for example, the Venezuelan crude that's a small part, 2 percent of California's crude base today.

CHAIRPERSON NICHOLS: So Canada is treated as an exotic fuel supply.

STATIONARY SOURCE DIVISION CHIEF FLETCHER: Well, it actually depends on the process. There will be a range of fuels from Canada that have a range in carbon intensities. And we've been working with those folks to try to understand better what the different pathways are. But there will clearly be crudes that will be high carbon intensity crudes.

CHAIRPERSON NICHOLS: Okay. Thank you. I understand. Bye-bye.

Okay. Steve Gondola.

MR. GONDOLA: Hi. Good afternoon. My name is Steve Gondola and I'm the President and CEO of the Sacramento Hispanic Chamber of Commerce. And I'm hopeful that I can ask you to help me help my business community to embrace the implementation of AB 32, rather than adopt a sentiment of resistance toward it.

Our members are predominantly small minority-owned businesses; and, as you can imagine, very much feeling the pinch of the prolonged economic recession right now; and have been doing everything to reduce costs in order to weather the storm.

We've been supportive of the goals of AB 32 all along. But we're growing increasingly concerned about the costs and the methods of developing policies intended to advance those goals.

The scoping plan adopted by the Board in December requires that AB 32 policies are cost effective and deliver global warming emission reductions, while taking into account the impacts on small businesses and low income families.

And the low carbon fuel standards as proposed raise serious doubts about the cost effectiveness of the

program. We understand that the Low Carbon Fuel Standard is meant to be an early action. But given the current circumstances, perhaps focus can be on lower cost, simpler strategies that will encourage energy efficiency and conservation while not risking small businesses and jobs and the economy.

Your leadership in the environmental protection is admirable and the Sacramento Hispanic Chamber of commerce is asking you to demonstrate that same leadership in recognizing and acknowledging the barriers and limitations inherent in the pursuit of LCFS at this particular time and in this manner by working with the public, Legislature and the Governor to develop more realistic priorities and cost effective policies.

Thank you.

CHAIRPERSON NICHOLS: Thank you.

Now it's Mr. LePage.

MR. LePAGE: Good afternoon, bonjour. My name's Mark LePage. I'm the Consul General of Canada in San Francisco, Silicon Valley. So it's a been a pleasure to be here with you this afternoon.

Canada shares the objectives of reducing greenhouse gas emissions. And in fact we've committed to absolute reductions in greenhouse gas emissions of 150 megatons by 2020. So adjusting for the smaller

population, it's actually very close to the AB 32 overall target, surprisingly close, I think within 95 percent confidence intervals.

Now, while we share those common goals, we're concerned that the approach that is proposed in the LCFS regulation may amount to discrimination against Canadian crude petroleum, as was mentioned earlier, which have life cycle greenhouse gas emissions comparable to and in some cases lower than some of the fuels that are proposed in the California baseline crude mix.

Now, the proposed regulation by doing so may unfairly favor other crude sources that have similar GHG emission profiles. So this potentially could be contrary to international trade obligations of the United States and could have potential negative implications for California's long-term energy security.

It may also lead to the so-called crude shuffling effect, which would result in no-net change or possibly even increased GHG emissions on a global scale if we'd leave California.

Now, based on these concerns and other considerations, we would urge that the Board amend the proposed LCFS regulation to assign the same carbon intensity to all mainstream crude oil fuel pathways from light to heavy crudes, including oil sands crude, rather

than only the crudes in the baseline -- the, quote, baseline crudes mix.

Now, these crudes all have similar life cycle intensities within a narrow and continuous range. And most of their life cycle emissions occur at the end -- at the burning phase of the cycle of the sage.

So, before I close I would like to assure the Board that Canadians are concerned about the GHG emissions in the oil sands. We're taking actions at the federal level to control this -- or reduce these. And industry as well has been very active. And since 1990, the average barrel produced in the oil sands now requires 30 percent -- or produces 30 percent less GHG now than it did in 1990. So it's a continuous progress cycle.

Thank you very much. And we look forward to working again and continuously with the CARB Board.

Merci

CHAIRPERSON NICHOLS: Thank you. Merci.

(Laughter.)

BOARD MEMBER RIORDAN: Mr. Miller.

MR. MILLER: Thank you. Good morning -- or actually good afternoon.

I'm Taylor Miller appearing on behalf of Sempra Energy, and am pleased to express our support of the proposed regulation. We previously filed written

comments, so I will just make a brief statement this morning -- still on the morning -- this afternoon. Sorry.

Incidentally, the supplement that was issued today does respond to some of our key comments, and overall we think improves the regulations. So thank you for that.

Sempra Energy commends the ARB and its staff for the inclusive approach it's taken to reducing GHG emissions from transportation fuels. Sempra Energy is working to develop infrastructure in both the electric and natural gas sectors in support of the LCFS program. We will continue working to advance the ARB's efforts to further develop and refine accurate fuel pathways in support of this important effort to reduce GHG emissions in the transportation sector.

That concludes my comments. Thank you very much for the opportunity to speak.

BOARD MEMBER RIORDAN: Thank you, and thank you for being here.

General Wesley Clark.

MR. FUGLSANG: Good afternoon. Just a slight change of order. We go together as a group.

My name is Claus Fuglsang. I'm a Senior Director in R&D representing Novozymes.

Novozymes is the largest -- the world's largest

industrial enzyme provider.

BOARD MEMBER RIORDAN: Thank you.

Yeah, speak right into that microphone.

MR. FUGLSANG: And we are leading in developing key technology -- enzyme technology for both first generation and second generation ethanol.

Second generation ethanol is in fact today our first or largest research endeavor, mainly run out of facilities here in the U.S., mainly in California at Davis where we employ around 100 people in this area.

Novozymes very much appreciate what is intended with a low carbon fuel standard. However, we have serious concerns around the part relating to indirect land use. We recognize the need to include indirect land use in a model for carbon intensity values and acknowledge CARB on its pioneering work in this area.

However, we think it's premature to adopt the model and put it towards legislation until a broader scientific consensus is reached around the model especially for the indirect land use effects, which is based on assumptions that can be challenged and does not fully take into account dynamic effects like acreage yield increases.

And so we instead support that establishment of a panel with both academic and industrial experts to review

a model and prior to an implementation of a legislative framework.

And, by the way, the European Union has postponed inclusion of the renewable -- sorry -- an indirect land use in to the renewable fuel standards emission.

We think that the LCFS in its current form particularly with respect to the indirect land use penalizes the first generation ethanol to an extent that would jeopardize the sale upon logistics developed over many years in the utilization of ethanol in the gasoline, a set of which is absolutely necessary for the second generation ethanol to become a sustainable reality.

And the key drivers for making this happen is actually involved in the first generation ethanol business today.

Second generation ethanol is around the corner, which acknowledge we're ready for implementation in 2010 and going forward to achieve cost efficient conversion of biomass to ethanol. However, we cannot afford a situation where the operation was a success but the patient died in the meantime.

Thank you.

BOARD MEMBER RIORDAN: Thank you very much.

Now, General Clark.

GENERAL CLARK: Well, my name's Wes Clark, and

I'm here as the co-chairman of a group known as Growth Energy. We're a group of corn and cellulosic ethanol producers and stakeholders committed to moving forward from corn-based ethanol into cellulosic.

And this is a very important hearing today. I'm very happy to be here. And I want to compliment the ARB staff on the work they've done in the paper and in wrestling with this model.

It's a very good paper, and it brings a lot of good ideas forward. And we fully are in accord with the desire to move toward lower carbon intensity fuels. And we support the life cycle analysis approach that's been -- the direct life cycle costs that have been laid out in the model.

We appreciate what Chairman Nichols gave us yesterday in the letter to me where she said individual ethanol producers could come in and update the life cycle costs as appropriate.

Where we're concerned is about the indirect land use. There are indirect effects from any fuel. But the only indirect effects that have been looked at are the indirect effects on land use from biofuel. So if we're going to look at indirect effects - and I think we should - you have to take a broader look at the indirect effects and roll in more.

You also have to get the policies and the models right. It's a matter of good policy formulation as well as being fair to all these people who put all this time and effort into advancing ethanol and getting it right.

What do I mean by that? Well, first of all, if you look at the model itself, the model, although it makes perfect logical sense and so much work is done into it - and it was a brilliant presentation this morning - when you actually ask yourself is this the way reality works, the answer's "not quite."

We were putting over 100 million acres into corn in this country in the 1930s. The bad carbon effects come from putting nonagricultural land into agricultural production. So we've been using a hundred million acres for corn on and off. It goes up and down. Sometimes it's 80, sometimes it's 90. When we moved into corn-based ethanol, we did use more corn that was going into other things for ethanol. But corn productivity's gone up. It's about 2 percent per year.

At the same time, farmers have improved their cultivation methods and we're moving more into no-till agriculture, which reduces some of the ancillary impacts of this.

And, finally, then if you track through the model, you would have said by the model, "Gee, you've got

all this extra corn being grown. It must be there whacking down the rain forests in Brazil to grow soy." But, In fact, rain forest deforestation in Brazil has been cut in half despite the fact that ethanol production has been increased by a factor of four or five. So the model doesn't reflect common sense.

And then if you look at other indirect effects, you've got to look at the indirect effects of petroleum. It starts with a movie a couple of years ago. It said -- the title of the moving was "There will be blood." And it finishes with what we're seeing today in Baghdad where 75 people were killed in a suicide bombing. Does that have anything to do as an indirect effect of our fuel usage? And the answer's of course.

And a University of Nebraska study just said that if you look at this, you'll probably double the effects for the indirect impact on air quality and greenhouse gas emissions on oil that you could possibly put on any biofuel.

So we've got to have a fair policy. Thank you very much for the opportunity to be here. Please, we support the life cycle analysis, just suspend the indirect land use, put a 0 to 30 there, put a question mark on it. Don't signal it. Let's get the science right. This is too important to get wrong.

Thank you.

CHAIRPERSON NICHOLS: Thank you, General Clark. Thanks for coming out.

Mark Stowers.

MR. STOWERS: Yes. My name is Mark Stowers. I'm Vice President of Science and Technology of POET. We're a major ethanol producer and developer of cellulosic ethanol. That's my role at POET, is focused on the new developments and new activities related to first and second generation ethanol.

I'm here on behalf of Growth Energy today as we look forward to agriculture and cleaner fuels derived from production of renewable fuels. We do support the Low Carbon Fuel Standard. But there is one problem that undermines the potential success of the Low Carbon Fuel Standard, and that's indirect land use.

The application fails to meet the standards of fairness by selectively penalizing ethanol. Indirect land use change is not an accepted parameter of measure for life cycle greenhouse gas emissions, nor is there a scientific consensus on the application of indirect land use change in greenhouse emission analysis.

ARB has used the GTAP model, which is not a life cycle analysis model.

We agree with a number of the points that was

offered by Chairman Nichols in letters to General Clark and CEO Tom Buis of Growth Energy. This support is good, but it falls short of what's needed and what is fair.

It would be premature to release any data on indirect effects of any fuel until the study of all fuels is complete. This would avoid sending incorrect signals to the marketplace and negatively impacting the industry before the science has been universally accepted.

This point needs to be emphasized due to reports that are showing recent work around indirect effects associated with foreign oil that General Clark highlighted.

It's now time to get the Low Carbon Fuel Standard right, not to development a la carte solutions that lack the robustness that science-based policy requires.

Lastly, I'd like to challenge the assumption that biofuels drive up food and feed prices as a result of -- and results in indirect land use change. That's a premise that's in the conclusion of indirect land use change in the low carbon fuel Standards. That's largely been debunked by a whole host of very serious economic researchers including the USDA Chief Economist, economists at Texas A&M, Nebraska, and even Purdue, private studies and so forth. The linkage of food versus fuel and indirect land use is a false assumption.

What the ARB's about ready to do is vitally important to Growth Energy and its members. We support the low carbon fuel standards. ARB just needs to get it right. The work's not done. We suggest that you adopt the directive extra Low carbon fuel standards now, take time to study the indirect effects, evaluate its impacts across the entire energy spectrum, and apply science fairly across all fuel pathways.

Don't rush to act. You have almost two years to get it right.

Thank you.

CHAIRPERSON NICHOLS: Thank you.

MR. CANETE: Good afternoon, Madam Chair, Board members. My name is Julian Canete representing the California Hispanic Chambers of Commerce.

The California Hispanic Chambers of Commerce is the largest regional Hispanic business organization in the nation. Through our network of over 65 Hispanic chambers and business associations, we represent the interests of over 720,000 Hispanic business owners throughout California.

The State Hispanic Chamber has long been concerned about the cost impacts of AB 32 implementation, especially on our Hispanic-owned businesses and small businesses throughout California. And it is apparent

today that the rule you're considering validates our concerns.

Once again, we're being told that the costs to business will be minimal, if anything at all. But independent research and even one of your own peer reviewers have concluded that your staff report was based on selective or questionable assumptions and that this will indeed will be very expensive. This calls to mine the economic analysis for the AB 32 scoping plan, which the legislative analyst and your own panel of independent reviewers also found to be seriously flawed and to have great underestimated the cost.

Our members are among the hardest working small businesses in California. And they are the ones that are affected first and the hardest during hard times. And hard times are definitely here.

Our small business members are struggling to keep their doors open and to meet payroll without having to lay off their workers. They are concerned about the environment. But at the same time they're also concerned about paying the bills, staying in business, and supporting their families.

Your staffs, they're worried about furloughs. Our members and their employees are worried about losing their businesses, jobs and benefits completely. It seems

to me this very important, very human element has been completely lost as you've rushed to adopt the rule that you haven't fully evaluated. And that could impose unsupportable financial burdens on hundreds of thousands of small businesses and families.

Yes, this developed an effective low carbon fuel standard. But let's also take the time to get all the facts and do it right. Don't overlook the necessary balance between the environment and the economy. If we are going to be effective, we need to do it right. We respectfully ask that you postpone taking action on this item until the true costs are known, considered, and undergo reasonable public scrutiny.

Thank you for your time.

CHAIRPERSON NICHOLS: Thank you.

I've had requests from a couple of people who need to leave Sacramento before we're likely to be done with our lunch break if they could testify before 1. And I know this is always dangerous when you move people around on the list. But I think I'm going to try to accommodate them if that's not going to cause an outbreak or rebellion here.

So -- I don't see any people yet raising pitchforks -- I think maybe I will do this. So I'm going to call on Eric Bowen from Tellurian.

Are you there?

Okay. We'll just call on you now then.

Hi.

MR. BOWEN: Thank you, Chairwoman Nichols. I appreciate everyone's time today.

My name is Eric Bowen, President and CEO of Tellurian Biodiesel. We are California's premier marketer of biodiesel. And I am also am personally and individually a member of Environmental Entrepreneurs.

Tellurian's focus is really on converting waste products like used cooking oil into sustainable biodiesel. We're partnered with fast food companies and their supply chains to really scale up the waste biodiesel opportunity.

I'm also currently serving as the Chairman of the California Biodiesel Alliance, the industry's trade association here in California. We represent all of the major producers in the State as well as biodiesel marketers, feedstock suppliers, and technology developers.

The California Biodiesel Alliance has been working very closely with the National Biodiesel Board, the national trade association, and the too organizations have been working with ARB in support of the Low Carbon Fuel Standard and, in particular, on development of the various pathways for waste biodiesel and soy biodiesel.

I'm here today to urge you to adopt the Low

Carbon Fuel Standard regulations without delay. The California biodiesel industry is ready to provide California with super ultra-low carbon diesel. Biodiesel made from waste feedstocks such as used cooking oil comprises the vast majority of the biodiesel produced in California and can reduce life cycle emissions by up to 90 percent compared with ultra-low sulfur diesel.

I'd like to address some of the concerns that some of the truckers stated earlier about concerns about their vehicles and prices and let them know that biodiesel has been around for a long time, over ten years in California and the United States, longer than that in Europe. It's been probably the most studied alternative fuel, been through Tier 1 and Tier 2 EPA testing, and is currently completing its California multimedia testing.

Equipment manufacturers who have done years and years of testing, as was stated earlier, are increasing their warranty levels on various percentages of biodiesel.

Biodiesel historically was more expensive than petroleum diesel. And this is because it was made primarily from soybean oil, which is a quite expensive raw material. California's biodiesel derived from waste cooking oil, which is also the trend nationally - about 50 percent of biodiesel now is made from waste - is actually able to be priced at or below the price of ultra-low

sulfur diesel. And we're selling biodiesel today in southern California for significantly less than the price of ultra-low sulfur diesel. So this is not a high cost solution. This is potentially a low cost solution in addition to its carbon benefits.

California has excess capacity for production of biodiesel today - over 50 million gallons, and we can quickly get to 100 million gallons shortly thereafter. Nationally there's even more excess capacity - over 2 billion gallons of installed capacity, and 4 billion gallons of raw material which can produce 4 billion gallons of biodiesel. Here in California alone we have 100 million gallons of waste material that can be derived into biodiesel.

I appreciate you letting me jump ahead and be respective of time, and just urge that it is vitally important that you adopt the regulations today to provide incentives and guidance to the industry so the people will continue to make investments and build profitable businesses.

Thank you.

CHAIRPERSON NICHOLS: Thank you.

And I believe you were part of this group that includes Mr. Epstein and Mr. Gardenswartz?

MR. BOWEN: Yes.

CHAIRPERSON NICHOLS: Okay.

MR. EPSTEIN: Thank you, Chairman Nichols, members of the Board. My name is Bob Epstein. We submitted a letter that represents a diverse group of biofuels investors and biofuels producers who strongly support the adoption of the Low Carbon Fuel Standard as it's being presented to you today.

First of all, we think the LCFS is the best way to addressee emissions from fuels. And I will remind you that in the scoping plan it's not till 2015 that you consider any form of cap. So this is your strategy for greenhouse gas reductions. It's one of the top six measures that's identified in the scoping plan.

Also, I've just returned from two days in Washington and I'm delighted to be back in California. They are watching what's happening here, as are the Europeans. This is a standard that will have worldwide implications.

The reason why we like the way it is with the indirect land use is because it provides very clear direction to industry. It says that avoiding the use of land is going to be rewarded. If rewards maximum efficiency. It puts attention to try to avoid any future conflicts with food that would come from a competition for land.

I'm also impressed by the innovation.

Two things I'd like to say that address what's come earlier.

First is, I haven't talked to any fuel producer that wants to make anything except something that will run in an existing vehicle. It's just too hard the make money any other ways.

The second is some of the innovation is pretty amazing. Several companies are researching making the equivalent of Texas sweet crude oil. As a biofuel, you drop it in the refinery, and all products come out lower carbon as a result.

So in our letter we requested three considerations to be added. I'm happy to say that my understanding of the resolutions is those were included in the resolutions. So we strongly urge you to support all of this.

In terms of price. Right now, for me to find affordable fuel I'm 100 percent dependent on the oil industry to do that. And while some of my best friends are in that industry, I would like them to have a little competition. So that's the reason why I believe people like Eric and the others you're going to hear from would like to compete with the oil industry, they'd like to do it through lower carbon, and they're going to do it

through lower prices.

Thank you very much for your time.

CHAIRPERSON NICHOLS: Thank you. And then the --

MR. GARDENSWARTZ: Madam Chairwoman, I'm not in a rush. So if you want to restore order, please do.

CHAIRPERSON NICHOLS: All right. Thank you very much.

Mr. Kniesche, were you also part of that group?

MR. KNIESCHE: Yes.

CHAIRPERSON NICHOLS: Okay. Then we'll get back to the regular --

MR. KNIESCHE: Thanks for the flexibility.

Good afternoon. My name's Ted Kniesche. And I'm Vice President of Business Development at Fulcrum bioenergy. We're a renewable fuels company based in Pleasanton, California.

We support the proposed Low Carbon Fuel Standard regulation as a significant component of the State's plan for reducing greenhouse gas emissions.

We've developed a process that converts post-recycle municipal solid wastes and other waste feedstocks to 100 percent cellulosic ethanol.

The utilization of waste streams for biofuels is a low carbon fuel pathway with no land use impact and should be an important part of any low carbon fuel

standard.

Later this year Fulcrum will break ground on Project Sierra, which is our first commercial scale facility, that will produce ten and a half million gallons of cellulosic ethanol annually from waste material. The project located in Storey County, Nevada, is an important step forward in demonstrating the near-term viability of a low carbon fuel pathway, that turns waste material into ethanol.

Today we have already secured exclusive access to enough MSW feedstock for the annual production of more than 1.3 billion gallons of ethanol. In California, Fulcrum currently has plans to develop several projects throughout the state that will utilize post-recycled MSW to produce an aggregate volume of between 100 and 200 million gallons per year.

And, moreover, across California the 18.3 million tons of landfilled MSW that were identified in the UC technical analysis completed for ARB could produce nearly one and a half billion gallons of low carbon ethanol annually, which seriously contributes to the greenhouse gas reduction goals.

Our progress in the broader emergence of a waste-to-fuels industry demonstrates a clear pathway towards the development of this next generation biofuels,

which are scalable enough to meet California's ethanol demand and sustainable enough to make serious greenhouse gas reductions.

The proposed regulation is an important step forward in creating a market for these scalable and sustainable biofuels. It creates a new and important paradigm for the transportation fuels industry by incentivizing the use of biofuels that will contribute to real greenhouse gas reductions on a complete life cycle basis.

Given the enormous challenges of bringing these fuels to market, we urge the Board to adopt the full proposal without delay so, we can immediately begin putting the proper investments in place to ensure that we have these facilities in production as soon as possible.

While the proposed regulation currently does not list a municipal solid waste to fuels pathway, we encourage the ARB to begin working with Fulcrum and other leading developers to develop such a pathway under Methods 2A and 2B of the regulation. It is important that ARB begin working on the development of this pathway so that the market will clearly recognize that biofuels from waste produce -- from waste products can make a significant contribution to the Low Carbon Fuel Standard.

Thank you again for your time. And we appreciate

the tremendous amount of work that's been done on this regulation, and we look forward to working with ARB in implementing it.

CHAIRPERSON NICHOLS: Thank you very much.

Mr. Fuentes, thank you for waiting.

MR. FUENTES: Thank you very much. Good afternoon. Happy to address you before lunch.

My name is Martin Fuentes. I own an insurance agency in Pico Rivera. I'm also a member of the L.A. County Democratic Central Committee. And I'm active in the California Latino Caucus Institute's Madrinas Padrinos Mentorship Program. But more importantly, I'm here today as a small business owner.

I've made several trips from southern California to address this Board about the cost of AB 32 implementation and how they will affect small businesses like mine. And while I appreciate the opportunity to speak to you for two or three minutes at a time, I must tell you that the AB 32 process has been and continues to be frustrating to me.

As a member of the public, it would be helpful to be able to see the latest information in advance of the meeting at which the Board will vote. But today's report wasn't available until today. That makes it hard to be fully informed when speaking to you.

It's also hard to squeeze everything into a couple minutes. But my feeling is that it's more effective to share my thoughts with you directly rather than have them get lost in a stack of written comments, presumably vetted or summarized by a staff for you.

In any event I've been and remain extremely troubled by the seeming insensitivity to the importance of costs with respect to AB 32 programs like this one.

As a small business person, I've seen my customer base decrease and my costs increase as a result of not only the bad economy, but the State's budget deficit.

People who can't afford it are scaling back or canceling their insurance. And those who can are being careful about how much they carry. The last thing I and my customers need is a program that will probably make our energy costs go up and might even force people to eventually buy a different kind of car sooner than planned.

Having followed the AB 32 process for some time now, I'm not convinced that your staff has completed the analysis required under the State's Health and Safety Code concerning costs, fuel supplies, performance, and environmental impacts. Maybe you can afford to take a chance on these things. But I and my customers can't.

If you can't tell the public what this is going

to cost us and can't assure us there will be a material reduction in global warming for the money, I suggest you hold off on your decision until you can.

I'd also like to know more about the potential for environmental and public health problems associated with fuel additives or new fuels and vehicles required under this rule.

Thank you very much.

CHAIRPERSON NICHOLS: Thank you.

There's a certain trend to -- you know, there's a whole group of folks who represent different Hispanic chambers who've come to speak to us. And you've all raised essentially the same issue in different ways. And I appreciate that fact, because obviously there's a lot of you and you're organized. I think though that, if you don't mind, I'd like to have the staff kind of collectively comment on the cost and the analysis that they did on and why they think, you know, we're ready to do this kind of at the end when we're trying to wrap up, so rather than doing kind of a back and forth. But I do want to say one thing, which is -- well, actually I'll say two things.

First of all, every member of this Board to my knowledge actually reads every document that is sent to them. They're an incredibly conscientious bunch of people

and they take this very seriously.

The second is that although we're not allowed, you know, to engage in sort of subgroupings of meetings - in other words you can't violate the Brown Act by meeting with a smaller group of Board members outside of the public forum - a group less than a quorum is allowed to meet with anybody who wants to meet with us prior to a meeting and to have more direct input. And, you know, I'm going to be -- when we do our ex parte comments here, I'm going to be submitting a list of a dozen meetings that I did with different organizations that wanted to come in and express their concerns to me more directly and with more time. And on every one of these rules I know there's four other Board members who do that as well.

So while I'm sorry for the fact that you don't feel like you had the opportunity leading up to this rule, I do want to make sure you know that this is an opportunity that's available. And I'm quite confident that you would find a group of Board members, you know, those who live nearest to where you're located, depending on which of the groups your with, but in my case southern California, you know, who would be happy to meet with you. So I just wanted to make sure that you knew that.

MR. FUENTES: Thank you.

CHAIRPERSON NICHOLS: Okay. Thank you.

BOARD MEMBER BERG: And, Chairman Nichols, I just wanted to also echo. I'm in Los Angeles -- east Los Angeles, which isn't too far from you. And I do take appointments regularly. And so would be happy to meet with your group any time.

MR. FUENTES: Thank you very much.

CHAIRPERSON NICHOLS: Okay. We have Mr. Ordonez.

MR. ORDONEZ: Good afternoon. My name is Max Ordonez with the California Hispanic Chambers of Commerce. I've had a written speech, but I'll have to change it a bit.

On Tuesday we had a panel of speakers discussing this issue to a lot of small business folks from all over the State of California. And one of the individuals there owns a company and has 60 employees, and he was already being -- I guess -- I'm not sure what the right word would be -- but wooed by other states to go take his company there. Sixty employees, blue collar workers. And after this panel that we had where we were discussing this very issue, I think he's going to make up his mind pretty easily. So it's not really happening -- it's not helping some of the businesses. And I think it's created a lot of -- it will create a disadvantage. I think I disagree with the report that it is not to a disadvantage for businesses. It will be a disadvantage. Maybe -- I'll

concede maybe in the long run it may not be, but in a short run it definitely will be.

Also, in the short run there will be required costs that will come down, not only to the consumers, all of us in this room, but also to the small businesses.

And with that being said, that's why we're of an opinion that if there's any way to postpone this and really look at some of these costs, and also the impact of some of these alternative fuels that may not -- may decrease CO2 but may actually increase other types of pollutants.

Thank you.

CHAIRPERSON NICHOLS: Thank you very much.

That will conclude our pre-lunch lineup of witnesses. We'll break for an hour and be back in this room in an hour's time.

Thank you.

(Thereupon a lunch break was taken.)

AFTERNOON SESSION

CHAIRPERSON NICHOLS: We'd like to get started again please.

The other Board members are either in this room or in the back where they have access to the sound. So we can get started right away.

While we were at lunch the speakers list multiplied dramatically. So I'm going to do two things.

First of all, I'm going to cut the list off now. So anybody who comes in after -- who tries to sign up after Robert Sawyer, the list is closed. We will be the last witness.

The second thing I'm going to have to do is I'm going to have to impose a two-minute rule instead of a three-minute rule, or we will not make it through the hearing. And if anybody wants to trade times or yield their time to somebody else, I think that would be a good idea. If you hear somebody who says what you intended to say, you can just say, "I agree with that person." But I cannot let this go on all night. And that's kind of where we are at the moment.

And I appreciate the fact that more of you got interested, but I wish you had signed up earlier.

All right. We're going to start next with Matthew Hargrove.

And we'll set the timer for two minutes please instead of three.

MR. HARGROVE: Madam Chair and members. Thank you very much. I'll try and beat your two minutes. And I'll try and set the template so a lot of people after me can come up and say, "Me too."

CHAIRPERSON NICHOLS: Good.

And it's also great to see Professor Sperling. I really miss all the work we got to do together at UC Davis while I was there.

MR. HARGROVE: My name is Matthew Hargrove. I'm the Vice President of Government Relations at the California Business Properties Association. We represent commercial, industrial, and retail real estate interests.

During the development of the AB 32 scoping plan I was here a lot and met with many of you. And we were very concerned that the economic analysis understated the costs of AB 32 implementation. As you know, we're still there, and we're there especially on this rule.

The Low Carbon Fuel Standard is the first major regulation after adopting the scoping plan. And we think that the evaluation process is still lacking a bit. And we wish that more economic analysis can be done of this rule.

A recent independent study showed that the LCFS

will result in almost $4 billion a year in higher fuel costs. And again we think that's something that's going to be impactful of many of our members. We're out there building and fuel cost is very important for our members doing business in California.

The economics are clearly important, especially in the context of the current recession. Recent volatility in fuel prices have demonstrated how even small fluctuations can impose a great hardship on businesses and consumers alike.

From a business perspective, the higher fuel cost facility associated with the LCFS will be another expense piled on top of higher taxes, fees and environmental regulations that have made us all increasingly uncompetitive with other states and countries.

It's not at all certain the necessary technologies and fuels that we need to implement this standard have been perfected, produced, or are going to be available in sufficient quantities to meet the standard. Whether or not they will actually have any meaningful impact on global warming is another issue.

These issues would best be resolved before, not after, you adopt this standard.

And we very much appreciate you listening to us today. And thank you very much for your diligent work on

this. I know this is tough. Thank you.

CHAIRPERSON NICHOLS: Thank you.

Amisha Patel.

MS. PATEL: Good afternoon, Madam Chair, members of the Board. My name is Amisha Patel. I'm with the California Chamber of Commerce.

The Cal Chamber is the State's largest business advocate, representing over 16,000 businesses statewide. This is small, medium, and large businesses.

Although the Low Carbon Fuel Standard is up for adoption today, we believe in order to get this right and to meet the LCFS goals, more analysis is needed. While we support the diversification of our fuel technology and supply and driving innovation to reach our AB 32 goals, we must also be sensitive to the current state of the economy.

California depends on a reliable and affordable supply of high quality diesel fuel to build, farm, and move people and goods. Our members' businesses already pay the highest energy and fuel costs in the country. And face increasing competition from out-of-state businesses.

Any shift in California's fuel supplies must be carefully vetted to ensure it does not cause operation problems or have supply or price impacts.

Specifically, we believe the following is needed

to better understand the proposed rule:

1) Determine the critically important carbon intensities for biodiesel, renewable diesel, and advanced renewable diesel;

2) Complete the legally required multimedia analysis for biodiesel; and, finally

3) Revise the economic analysis of the supply and price impacts of the diesel fuel carbon intensity specification reflecting the volume of products necessary for compliance.

Again, it is important to get this right because we want to make sure that other nations and states follow our lead.

Thank you for the chance to comment. And we look forward to working with you further.

CHAIRPERSON NICHOLS: Thank you. Thanks for your involvement.

Dorothy Rothrock.

And, by the way, if I could ask people who are on this side to -- if you see your name coming up, to come up to this side, we'll save time if we use both podiums.

MS. ROTHROCK: Thank you, Madam Chair and members. My name's Dorothy Rothrock. I'm with the California Manufacturers and Technology Association.

We're very concerned that the adoption of the

LCFS today is premature and could result in significant fuel supply cost and quality problems that will harm California's economy and jeopardize success of the program.

We believe the LCFS has not been adequately evaluated in terms of availability of low carbon fuels, the impact on energy prices, and environmental impacts. Those concerns have been reinforced by findings of a recent review of CARB staff analysis by Sierra Research, which concluded that the LCFS would increase fuel costs in California by $3.7 billion a year by 2020 and increase smog-forming emissions by five tons a day.

Sierra characterize the staff's projections as overly optimistic about the number of alternative fuel vehicles that will be on the road and the cost of producing and distributing biofuels such as corn ethanol.

To position LCFS for success and minimize the cost and job losses and any unintended environmental consequences, we ask that you postpone adoption of the rule until we have a complete analysis.

We need three things -- we need at least three things:

Complete -- the incomplete life cycle analyses, notably those for biodiesel or renewable products -- renewable diesel products;

Demonstrate the availability and cost effectiveness of sufficient lower carbon fuels to meet the standard through 2020 using existing technologies based on publicly available information; and

Identify the degree to which the standard will require development and commercialization of materials and technologies that are not yet commercially available.

We think we need to complete the unfinished work related to diesel fuels before adopting a carbon intensity standard for diesel.

And, finally, we also believe it's important for you to provide for a review program every three years through a public process that involves key stakeholders.

We look forward to your further and analysis and review to project jobs in the economy as we proceed on this ambitious program.

Thank you.

CHAIRPERSON NICHOLS: Thank you.

MR. DURAN: Good afternoon. My name is James Duran. I'm Chair of the California Hispanic Chamber of Commerce Legislative Affairs Committee and also a member of the Hispanic Chamber of Commerce of Silicon Valley. I'm sorry Ken Yeager's not here.

I've been here before asking for objective and realistic answers to what AB 32 global warming reduction

policies are going to cost. Each time I've been told the real economic analysis would happen as each individual rule is considered. I don't think we've actually been heard, and that's why I'm here again to repeat myself. I can't just say, "Me too."

Now you're considering the first major rule under AB 32. And it looks like you're still not doing the analysis necessary to truly figure out what the LCFS will cost, whether the technology is or will be available, and what the impacts will be on the environment and public health.

Members of the public like me couldn't even see your staff's report until today. So the process is not only apparently deficient; it's also not in the least bit transparent.

Here's what I know just from reading the papers and checking what is publicly available:

A new study of your staff's analysis says this fuel standard will cost almost 4 billion a year. It says your staff's assumptions were based on theories, not real data or experience. And it also says that because of the plan's heavy reliance on corn ethanol, we'll also get a significant increase in the emissions that cause smog.

Here's what else I know:

Unemployment in California rose to 11.2 percent

in March, a new record. In Silicon Valley, where I'm from, it's doubled in the last year alone.

We're already looking at tax increases, be creases in higher costs all around, but at the same time we're suffering from the recession.

We can't afford higher fuel costs. We can't afford to replace our personal and business vehicles with the ones your plan is counting on to get the emissions reductions, even if they do turn out to be available soon, which is doubtful. And we can't afford to rush into this rule without proper study. Please continue this item until such time as your staff has answered the critical questions about costs and other impacts.

Thank you.

MR. FROST: Madam Chair, members of the Board. My name is Jerry Frost. I work at Kern Oil & Refining Company down in Bakersfield.

I'd like to first thank staff for making themselves accessible and available throughout this process and listening to us.

In 1981, there were 12 small refineries, as recognized by CARB, in the State of California. Today there are only two of us left. Many of these small refineries went out of business or went to making asphalt rather than fuels. We did not. We committed to fuels.

We committed to the reformulated fuels, the ultra-low sulfur diesel fuels. And now we're committed to Low Carbon Standard Fuels.

We've been in business for 70 years and we plan on being in business for another 70, at least. Or at least until I retire.

(Laughter.)

MR. FROST: Small refineries are unique from the large major complex refineries you find in the Bay Area and down in South Coast. We're landlocked. They have coastal access. We're just a white spot in the line. They have upstream oil and gas production and downstream marketing capabilities in retail. We do not. They have large capital and accessible credit lines. We do not.

An example of what the majors can do is they're out there buying up ethanol plants right now securing that feedstock. We cannot. We're not in that position.

They're more complex than we are and they use more energy than we do.

It's not a level playing field, and we will continue our commitment to work with staff to help level that playing field for the small business refiners.

Thank you.

CHAIRPERSON NICHOLS: Thank you.

MR. GARDENSWARTZ: Good afternoon. My name is

Will Gardenswartz and I'm in charge of marketing at EdeniQ, a biotechnology company based in Visalia, California.

We are not a biofuels producer per se but rather supply both first and second generation producers with technologies that help them operate more efficiently.

We're an interesting company because we straddle or, as I like to say, bridge the space between corn and cellulose. We support LCFS and the inclusion of ILUC because, after a lot of healthy and sometimes heated internal debate, we see them as pushing biofuels in the right direction. We see them as stimulating smart, efficiency-oriented technology.

We see the movement from food-based biofuels to non-food biomass as more of a curve than a leap. EdeniQ is commercializing technology that supports the migration of today's multi-billion dollar corn infrastructure toward more efficient and advanced production. That's a direction that makes a lot of sense, not only because corn is and will always be at the foundation of American agriculture, but also because of the painfully tight credit markets. For now and for the foreseeable future it's going to be hard to muster the capital for shiny new built-from-scratch cellulosic plants.

We know that corn can segue into cellulosic

because we're doing it. EdeniQ recently launched a technology called Corn 3 that employs biological and mechanical processes to increase the yield at today's corn plants from an industry average of 2.69 un-denatured gallons per bushel to 3 gallons per bushel. This means that a hundred-million-gallon-per-year plant can make the same amount of ethanol using 10 percent less corn. No matter what your views on corn ethanol, making the same amount of ethanol using 10 percent less corn is a good thing. And it can mean as much as $15 million per year to the producer's bottom line, the difference between bankruptcy and showing a solid profit.

In increasing the yield of ethanol from corn, we actually begin to address some of the lower hanging cellulose in the corn kernel. Indeed, a one hundred million gallon per year plant employing our technology could qualify four to six million gallons of its annual output as cellulosic biofuel.

More ethanol from less corn is in line with LCFS and ILUC. These regulatory incentives will help the producers adopting our technology find an eager market for their low carbon ethanol in California.

The good news is that there are a number of compelling technologies being offered to first-generation producers to help them gain operating efficiencies, which

invariably lower carbon.

CHAIRPERSON NICHOLS: Your time is up.

MR. GARDENSWARTZ: Thank you.

I thought, you know, since I gave my slot -- no, I'm just --

CHAIRPERSON NICHOLS: Oh, you're such a good guy.

MR. GARDENSWARTZ: I had to bargain a minute there.

CHAIRPERSON NICHOLS: Thank you.

MR. GARDENSWARTZ: Thank you.

Okay. Joe Velasco.

MR. VELASCO: Thank you for the opportunity to appear before you. My name is Joe Velasco. I represent the Brazilian Sugarcane Industry Association. So along with my Canadian Friend, bonjour, since we're using our own languages here today.

I'd like to make two brief but substantive requests that were detailed in our written comments to you last week.

We're currently, and as you'll see on the list, I'm currently standing as opposed in the Low Carbon Fuel Standard. And I want to make sure that I don't -- nobody here probably opposes low carbon fuels, I certainly don't oppose the standard broadly defined. Our issue is with the underlying data and the results. And we're happy to

change our position later today if we can get a commitment on these two requests from the ARB.

My first request is that the Board ensure that your green analysis uses accurate data. Though under current green modeling, sugarcane ethanol happens to be the lowest carbon intensity liquid fuel available under the look-up table right now, we believe it is actually significantly lower and the corrections need to be made. It should actually be something closer to less than 20 grams CO2 per megajoule today. Our comments point out the basic errors that were made in the GREET analysis and that failed to capture the process of making sugarcane ethanol in Brazil.

Perhaps more troubling to me is that the analysis ignored the improved low carbon practices ongoing in Brazil today.

The second request I have regards everyone's favorite topic here today - land use changes. And there I request that analysis be done based on the comments we've submitted and all the peer-reviewed data we submitted in our comments that the GTAP model be rerun with accurate and better data.

I think what you will find after that process is that indirect land use changes in Brazil are much smaller than estimated by CARB.

Again, and in order to keep on my time, I just want to leave this clear as possible. Sugarcane ethanol has a verifiable reduction in greenhouse gases of 90 percent compared to yesterday's gasoline. We know we will meet the low carbon standard today as well as in 2020. We just want accurate and realistic data in the models.

Thank you.

CHAIRPERSON NICHOLS: Thank you.

BOARD MEMBER SPERLING: On behalf of the staff and the Board, I'll say we do want accurate numbers and we will review it. So therefore we get your support.

(Laughter.)

CHAIRPERSON NICHOLS: We're going to move your check mark to the "support" column.

Mr. Moyer, are you here?

MR. MOYER: Yes.

CHAIRPERSON NICHOLS: There you are. Okay.

MR. MOYER: Good afternoon. Craig Moyer. I'm here today representing the Western Independent Refineries Association.

The Western Independent Refineries Association is a trade association representing independent refiners; that is, refineries without crude oil supply or gas stations.

There are two WIRA members here today. You've

heard from one of them, and we'll be hearing from another one. These are noncracking refineries; that is, they're simple operations. No coking, no alkylation, and no cracking. And in the past fuels rules, I've been before your Board pointing out that these refineries are at a competitive economic disadvantage, that is, the rules cost more cents per gallon for these smaller refineries than it does for the large complex refiners.

Here, however, less complexity means lower energy use per gallon. Lower energy use in the refining process means a lower carbon intensity per gallon.

The staff proposal, however, sets one baseline for everyone, even though WIRA members are probably about halfway to the endpoint. And this is the one time the simple refining operation can be an advantage, and we're very disappointed that the proposal precludes this opportunity.

The proposal would allow alternatives to the numbers on the alternative fuel side and those can be adjusted, but not the baseline for gasoline and diesel. And we feel that's wrong.

By the way, the WIRA members being in California use locally produced crude oil. So there's no transport across the ocean. That's not necessary to get into that issue at this point. But we'd like the opportunity to

come back.

And the most important point I want to make is not only is the energy efficiency and carbon intensity reduced from the small refiners, but also there are -- it's a double whammy because these refineries are complying with the Low Carbon Fuel Standard from a common baseline with credits and alternative fuels. And because of logistics, scale, and access to capital, they are at a disadvantage in the compliance side as well.

Thank you for your time.

CHAIRPERSON NICHOLS: Thank you.

MR. BURKE: Madam Chair and members of the Board. My name is Jonathon Burke. I am a Vice President of Corporate Development for Westport Innovations. We're a Canadian company with offices and facilities here in California. And we are a supplier of fuel systems and engines that operate on low carbon and low emissions natural gas.

We've been supplying natural gas engines and fuel systems into California for several years now. We have over 4,500 vehicles on the road using our engines principally in the heavy-duty space. So buses, school buses, heavy-duty transport trucks at ports and other operations.

We are in strong support of the Low Carbon Fuel

Standard. And we have -- also want to thank staff and commend staff for their ability to work with industry and to receive our feedback. And they've addressed a number of the issues we've had.

There is, however, one outstanding issue that relates to the low carbon fuel standards, and that is the energy efficiency ratio. And why this is an issue for heavy-duty truckers is that they're looking at what you're doing today as a market signal, and they're going to start making purchase decisions based on this very important market signal.

Heavy-duty trucks consume vast amounts of fuel as compared to passenger cars. Because of that, and the EER that's designated for heavy-duty natural gas vehicles of .9, heavy-duty natural gas vehicles are penalized. And when you're burning 20,000 gallons of fuel per year, if you're not being attributed the efficiency that the engines have demonstrated in CARB and EPA testing, and as their certificates demonstrate, it represents a negative market signal to a purchase decision that could be made by someone in their efforts to achieve the low carbon fuels that we're all trying to seek here.

So with that, I'd like to reiterate that we would like to see either two EERs for heavy-duty natural gas vehicles or a blended EER that accommodates both

spark-ignited and compression-ignition engines.

Thank you.

CHAIRPERSON NICHOLS: Thank you.

I am going to ask the staff to respond to that.

If not, we can raise it later.

STATIONARY SOURCE DIVISION CHIEF FLETCHER: This is Bob Fletcher.

What they're asking for -- the energy economy ratio is essentially the metric that we use for how efficient the motor vehicle is in converting fuel to energy. So for gasoline and diesel fuels, it's 1.0. When we're talking about an energy efficiency ratio and what we're looking at relative to these engines, we have had discussions, and one of resolution "be it further resolveds" is to continue looking at it.

The issues that we have with the natural gas side of it is the availability of data for 2010-compliant diesel engines. So we are comparing, you know, one of their engine types to a 2010. And what we would like to do is to take a comprehensive look at all of the data to come back with a revised value for EER.

DEPUTY EXECUTIVE OFFICER SCHEIBLE: And I'd like to add. I don't see how this affects a buyer's decision to get a new vehicle. They're going to go to the dealer and say, "What's my fuel economy? How many miles do I get

per gallon of LNG or CNG," whatever, and then put that into their economic calculation.

What we're talking about is when someone sells CNG to the vehicle as a motor vehicle fuel, what kind of credit they get for greenhouse gas reductions. And that's got to be a combination of a whole bunch of different vehicles out there and what the fleet average is.

So we want to look at that. But I don't think it's going to -- if it's a good deal to buy LNG and CNG vehicles for the vehicle operator, then they'll see that when they go to the dealer to investigate.

BOARD MEMBER SPERLING: But isn't the principle here that we will be updating these AERs over time as -- if the technology changes, you know, just like we're going to update other numbers -- isn't that built in to the whole process here?

DEPUTY EXECUTIVE OFFICER SCHEIBLE: Yes. And it should be a fairly technical exercise. Because once their real vehicle's on the road, it should be an easy engineering calculation to make.

CHAIRPERSON NICHOLS: Okay thank you.

Todd Campbell. I just saw you there.

MR. CAMPBELL: Good afternoon, Madam Chair and members the Board. Todd Campbell, director of public policy for Clean Energy. And Clean Energy wants to

express strong support for the local carbon fuel standard. And we also want to express strong admiration and support for the staff. The staff has been incredibly helpful. And has worked with us every step of the way. We're also very appreciative of a number of modifications that staff has put in. Actually 2 of my for 4 issues, my little housekeeping issues that I actually spoke with some of you about, which is the LNG opt in. And then also it's the biogas modification of the definition.

One thing I'd like to respond is the EER is incredibly important for us. And I'll tell you why. It's not the issue of whether or not a dealer goes or a purchaser goes to the dealer and asks what their fuel economy is. It's how decision makers policy makers use how that EER in determining what vehicles they fund. And we've seen it already with the pathway comparison of the draft pathway comparison, where staff had put in a low carbon fuel diesel, that actually does not, in my view, exist yet.

And that has been used by the Port of Long Beach to marginalize the benefits of liquefied natural gas in trucking. So that's the policy point that we're trying to make.

Second, we have data that shows equal efficiency for the compression ignition. And so we think that that

should be accounted for. And because the rule only calls for one EER value, the compression-ignition engine and the spark-ignited engine should be blended.

My final point is that I think that there's also a concern about using -- or compensating for legacy fleets in this issue. I think it's a really bad idea to start accounting for legacy fleets when you're accounting for an EER, because then you have to look at the gasoline and diesel legacy fleets. And if you're not too careful Canadian oil sand oil may qualify under the low carbon fueled standard because of the aging diesel and gasoline fleets out there.

So we're asking for fairness. And I really appreciate -- that said, I really appreciate what staff has done. I think staff has done a marvelous job and we're completely supportive of this low carbon fuel standard.

CHAIRPERSON NICHOLS: Thank you.

Brooke Coleman.

MR. COLEMAN: Madam Chair, board members, thank you for the opportunity to speak today. My name is Brooke Coleman. I'm the executive director of the New Fuels Alliance. I want to be clear about who we represent and where we're coming from on this issue.

We represent largely advance biofuel companies,

companies like Mascoma, Verenium, Cutera, companies that are pushing the envelope in that space to make advanced biofuels and they're relying on investments to get that done.

This is a critical time for them and we support the concept of the LCFS. We're very active supporting it at the federal level early on. But at some point, we derivated grossly, I would say, from the vision that Governor Schwarzenegger laid out when he said we were going to establish a level playing field.

And so with all the technical analysis, to me this comes down to a very simple question. And that is, do we enforce indirect effects selectively against biofuels. And I want to be clear about this. We've gotten to the point where we know a lot of things and we all agree on a lot of things.

One is, is that all fuels have indirect effects. So all fuels have ripple effects in the market place.

ARB is proposing to enforce them against biofuels now while they figure them out for other fuels over time. That is going to send a pulse through the marketplace that is going to affect investment.

The published numbers that you've put out so far, increased the biofuel score by percent 40 to 200 percent. And I'd like you to think about that number. That applies

to both advanced biofuels and conventional biofuels.

This reduces the benefits of those fuels significantly relative to other fuels that are not paying for indirect effects.

And you have in your hands an analysis that shows that 30 may not be the right number. Tom Hertel who do the 30 run, said that we should perhaps set the elasticity to one. We've gone ahead and done that and that number shrinks down to 15. So I propose to you this, if the proposal is to enforce indirect effects selectively, that you do it with the most conservative number that is scientifically defensible. And that right now and that has been presented to you and has been presented to you in technical form over the last two weeks, is 15.

That is a very important number for our industry, because what you've done with 30 grams per megajoule is you've taken conventional biofuels out of the carbon equation. And that is disruptive to both conventional biofuel companies, that you rely on and could rely on more in California to produce your fuel, and advanced biofuel companies.

CHAIRPERSON NICHOLS: You're really good at not putting a period at the end of your sentence.

MR. COLEMAN: I know. I see that look. I want to keep going. And it's also full in advanced biofuel

companies.

CHAIRPERSON NICHOLS: We've heard it. Thank you.

MR. COLEMAN: Thank you

CHAIRPERSON NICHOLS: Jesus Vargas.

Mr. Vargas.

Mr. Maldonado.

Mr. Holly from Alberta Energy.

MR. HOLLY: Good afternoon, Madam Chair, Board Members and staff. Since 2 people are missing, I guess I get to speak for 6 minutes.

(Laughter.)

CHAIRPERSON NICHOLS: Nice try.

(Laughter.)

It's like the accounting we've heard.

MR. HOLLY: There's a lot of discussion today about pathways. And one of the things I want to talk to you today about is crude pathways. And, number one, understand Alberta is a global supplier of oil and gas. Canada is the number one source of imported oil into the United States and Canada. We produce 70 percent of the oil in Canada. We supply you with 25 percent of the natural gas that you consume here.

In the CARB report, it talks about high intensive crudes. And it says oil sands is a high intensive crude. We are now seeing pathway studies that we've initiated

with people such as Jacobs Consultancy, Fuel Pathway Associates, that are indicating that carbon intensity of your oil sands product is the same, if not lower, than some of the crudes that you are currently consuming in California.

That includes Mexican crude, that includes Venezuelan crude and that includes your indigenous Kern River crude. If you add the cogeneration component and it's in the slides that I gave to you this morning, you will see that even proves us even better. I also want to add and point out to you, that recall that Alberta has a very strong program looking at carbon capture and sequestration.

Now, why am I talking about crudes? Well, number 1, we believe you've got a stretch policy. We believe you cannot achieve what you want to by 2020. In your own paper, you state that crude has a significant role going forward. We believe it has and you can't forget about that crude industry.

One of the things we find lacking is a discussion of process improvements upstream. And that's another area, although it may not be directly related to this regulation, it should be something focused.

And I want to point out one final thing that's in your report. You actually talk about the transfer of cash

for the petroleum industry to the alternative fuel industry. But you still need to keep the oil industry here for a long time. Thank you.

CHAIRPERSON NICHOLS: Thank you.

MR. LUTCH: Hello. My name is James Lutch. And I appreciate the opportunity to speak before you today.

I'm an owner operator of Simple Fuels Biodiesel, a small biodiesel producer up in northern California. We're focused on production of biodiesel from local waste sources of waste grease. And we export -- we support accelerated implementation of the LCFS as increasing the use of biodiesel has the ability to create immediate and substantial reduction using currently available technology on both production and consumption ends of the spectrum.

We support the complete lifecycle and pathways analysis, so as to promote production and consumption of biofuels from local sources whenever possible. While California has a low potential for native oilseed crops, it offers a substantial resource in the form of waste oil. The local nature of this resource offers maximum carbon reduction due to its inherently efficient pathways and zero land-use.

Lifecycle analysis also will help to encourage support of algae based feed stock, which we expect to comprise a larger portion of the feed stock pool in the

coming decades. California is an ideal climate for algae production as evidenced by NREL's study which was based in California back in the nineties. As well as several of the world's largest algae researchers are located right here in California.

Apart from keeping California as a technological leader, encouraging local production will offer significant benefit to the local and State economy. All fuels are not created equal. And the current technology and acceptance level of biodiesel, coupled with the ability for technological growth from advanced feed stocks, will allow California to remain a competitive innovator in the next generation of the fuel industry.

Thank you for your time.

CHAIRPERSON NICHOLS: Thank you.

Mr. Cortes, are you here?

Mr. Larson.

MR. LARSON: Good afternoon. Jim Larson with PG&E's Clean Air Transportation Program. I'll be brief.

I'm here to express Pacific, Gas & Electric Companies support of the low carbon fuel standard, our appreciation of the staff's open and collaborative process. We are committed to continuing and to engage with the staff as the rule is further refined in hopes that this rule can achieve and even exceed its intended

goals in 2020. In a way, we see this rule as a validation of over 20 years of alternative fuel work that we have done. The alternative fuels that we provide support and aid our customers to make informed decisions as they shift over to alternative fuels, are row being recognized for their carbon benefits as well, as a result of this rule.

We commend the staff for this task and remain committed to continuing to support the effort in the dialogue through the remainder of the year.

In closing, I'd like to tip a hat to a fallen colleague. Last weekend, we lost one of the industry's real pioneers, Tom Alexander, for over 20 years was our manager of our natural gas fuel station infrastructure. Tom also supported our efforts with the natural gas transit -- or natural gas school bus fleets as well. Tom arguably was one of the nation's true experts in field natural gas fueling infrastructure. And he will be missed. But I think the legacy of the work that he's done will live on for a long time and he won't be forgotten.

Thank you.

CHAIRPERSON NICHOLS: Thank you for that tribute.

Mr. Teall?

MR. TEALL: Thank you for this opportunity. It's a pleasure to address the Air Resources Board. My name is Russell Teall. I'm the president of Biodiesel Industries.

I'm the former vice chairman of the national biodiesel board, and currently vice chairman of the California Biodiesel Alliance.

I certainly endorse the earlier comments of Eric Bowen, our chairman. And I would like to add to that in a couple of particulars. Seven years ago, we began working with the U.S. Navy on a research and development center at Port Hueneme with the Naval Facilities Engineering Service Center. The Navy is the largest consumer of diesel fuel in the world. And as a company, we determined early on that they would be a good organization to work with.

Over the last 7 years, we've analyzed hundreds of different feed stocks from around the world. And our current favorites are used cooking oil, Jatropha Curcas, which is grown on wasteland and is an inedible product and also algae.

I had the pleasure of chairing both the algae world conference in Singapore recently and the Jatrapho Conference in Miami. And I think that these are 2 areas that should be looked at more closely as part of the ongoing progress of the staff work that is very commendable that's been going on.

The analysis for algae I'm told by the scientists is that the theoretical maximum is about 5 kilograms per cubic meter per day. If you run the numbers, and just

look at the biomass byproduct that could be used for animal feed, as an example, that would displace over 800 acres of corn and a thousand acres of soybean. And so this is an area that's well worth looking into and using it as a potential offset.

I endorse the work that you're doing and recommend adoption. You have me down as neutral. It should have been neutral with comment.

Thank you very much.

CHAIRPERSON NICHOLS: Thank you.

Tom Koehler.

MR. KOEHLER: Thank you. Tom Koehler. Pacific Ethanol. We operate here in California. And working with corn ethanol. And also have a DOE grant turning cellulose products into ethanol.

I'll say that the way that this current proposal is structured will do nothing to facilitate our transition to cellulose. I have 3 brief comments.

One, the indirect numbers you have for corn ethanol is wrong. And I think you know it's wrong.

Two, staff's proposal selectively is singling out biofuels and not including indirect effects for all other fuels. Therefore the playing field is not level. This is not a true reform standard.

Three, you have the time to get it right. Let me

briefly touch on all 3 points.

Number 1, the indirect for corn is not right. You just heard the -- when the head of GTAP said if he was King Solomon he would just these numbers. That's 17 not 30.

Secondly, DG component, the distiller's grain is another huge lever on this. There were no distiller grain experts who peer reviewed this report. The ones that have said -- and I'm just going to summarize one, because there's about 12 of them on the record. "I've no interest in the merits of ethanol use. What I believe is relevant is the truth regarding the nutritional value of distiller's grain. As the report now exists, the truth is not recorded."

My assessment of the report is that it's almost inaccurate from the beginning to the end.

We need to get it right. You have the time to get it right. The regulation does not take effect until 2011, why would the Board want to put out a number you know is wrong, for one. Fuel, leaving the other fuels out when you know you have the time to get it right. I am asking the Board to revise the resolution to take the time to look at all fuels and make sure we get the indirect numbers correct on all of them before 2011.

Thank you.

CHAIRPERSON NICHOLS: Thank you.

Jamie Knapp.

MS. KNAPP: Good afternoon, Madam Chair, and members of the Board. I'm Jamie Knapp and I manage the Coalition of Environmental Advocates who have been tracking the low carbon fuel standard since Governor Schwarzenegger issued his executive order back in 2007. You have these groups' strong support. I'm holding in my hand my hand here 5 different groups letters, all of which have been submitted for the record previously I'm also holding a list of several hundred supporting organizations, individual scientists, businesses all of whom support this regulation.

Now, with that support, of course, we have a few concerns. And you will hear some of those concerns over the course of the afternoon. You've heard them over the last few months -- last few years as we have testified.

In addition to our support of your indirect land-use approach, we believe it is based on sound science. We do think some groups think it could be stronger. We believe that you need to ensure a significant quantity of the ultra low carbon fuels and ensure that they enter the marketplace in the 2010 to 2015 timeframe. You need to ensure that we protect air quality and public health across the State, so that we don't

produce fuels in neighborhoods that end up increasing pollution in those neighborhoods.

The need for land safeguards so that the regulation doesn't perversely incentivize practices that damage sensitive lands and ecosystems. The need for sustainability provisions to ensure that our rules don't create havoc halfway around the world. You're also going to hear some concerns about proposed treatment of biogas. And you're going to hear a little bit about the need to ensure credit transparency, as you develop the credit tracking and framework for the rest of the regulation.

So while you have our strong support, we believe the low carbon fuel standard does need strengthening to be a model for other states for the nation and the world and to be the ground-breaking regulation that the world has come to expect from you, the preeminent air quality agency in the world.

With that, I know it's after lunch, but I thought I would offer a little afternoon snack. And that is these bags of popcorn represent what we think is a better use for corn and that would be food not fuel.

(Laughter.)

CHAIRPERSON NICHOLS: Thank you. You can leave those with the clerk.

I suspect they'll find their way to us somehow.

Thank you.

MR. OLDFIELD: I picked the right person to follow.

Good afternoon, Chairman Nichols and members of the Board. My name is Justin Oldfield and I'm the director of industry affairs for the California Cattlemen's Association, representing all California beef industry sectors from pasture to harvest.

First, I want to offer a different perspective on a few points that have been made this morning, regarding ethanol's impact on the price of livestock feed or the lack thereof.

I'm not going to debate ethanol's impact on food prices. To say increased corn ethanol production has had no impact on the price of corn is simply false. Ethanol production now accounts for over 25 percent of our nation's corn crop and will likely continue to increase. While ethanol producers argue that increased production levels have no impact on the price of corn, the industry argues fervently to leave federal subsidies in place.

Like the ethanol industry, livestock producers received zero government subsidies. During last year's surge in gas prices, when corn ethanol was at record production, because it was more attractive to fuel blenders, the price of corn rose from $2 to $8. To give

you an example, a CCA member in Imperial county lost almost $25,000 while marketing 200 steers at the time of harvest. Their choices were either to reduce heard size, go out of business or continue to lose money hoping that losses could be offset by better days to come.

Corn production has increased in the U.S. along with yield rates but nowhere near the amount needed to offset gap in supply. Secondly, it was mentioned earlier on that the use of distiller's grain by livestock producers offsets the corn used in ethanol that could have otherwise been fed to cattle.

I want to clarify this point. Corn and DDG do not have a one-to-one production ratio. While livestock producers can use DDG as a protein supplement, it lacks the essential starts that corn provides, so livestock producers still are required to feed a ration primarily of flake corn, even, if DDG is readily available.

That being said, CCA does not oppose biofuel production, but would urge future biofuel products to be derived from things currently being unused, such as waste rather than feed crops.

We do have concerns about the secondary land-use portion. This use of a secondary land-use or indirect land-use model is highly controversial. We have some experience with ourselves. There was a report that was

produced basically saying that livestock production, because of a secondary land use component, accounts for more greenhouse gas emissions than anywhere in the world. And I can tell you here in the U.S., we do not produce livestock like they do in Brazil, and like they do in other countries.

And so we certainly would urge you to take a step back, look at this number, and come back with some better science. So thank you very much.

CHAIRPERSON NICHOLS: Thank you.

Mr. Uihlein.

MR. UIHLEIN: Hi. I'm Jim Uihlein speaking on behalf of Chevron.

Chevron supports the goal of the low carbon fuel standard to reduce the carbon intensity of California's transportation fuels. We recognize that this is a very ambitious program. Achievement of the 2020 goal will require that commercial skill implementation of fuel and vehicle technologies do not currently exist. And a key element of this program is the incentivization of those technologies to enable the achievement of the 2020 goal.

The proposed -- excuse me.

Sorry.

Regular mandatory program reviews are going to have a key role in this program to ensure that the pace of

technology introduction remains matched up with the pace of implementation of the requirements.

Chevron is very pleased to see that the proposed modifications strengthen the commitment to these reviews. As part of these reviews, there should be a rigorous assessment of the capabilities for reducing carbon intensity over the next several-year interval of the program that should be based on concrete plans and actual plants and a minimum of speculation.

Chevron also agrees with staff's proposal to include their best estimate for the effective indirect land-use change in the calculation of carbon intensity values for biofuels. Indirect land-use change is a real significant effect. Only the magnitude of this effect is uncertain.

Inclusion of indirect land-use change from the start of the program avoids several potential negative outcomes and sends the right market signal to the innovators that could produce technologies that avoid this effect.

In summary, we do support the goal of the program, and we stand ready to be a constructive partner in the evolution of the low carbon fuel standard through time.

CHAIRPERSON NICHOLS: Thank you, Mr. Uihlein. We

appreciate that.

Susan Reid.

MS. REID: Good afternoon. My name is Susan Reid. I'm senior attorney at Conservation Law Foundation, which is a New England-based nonprofit environmental advocacy organization. And for the record, my carbon footprint for today is not as bad as it looks, because I'm telecommuting during the academic year from Berkeley, California.

(Laughter.)

MS. REID: But I would like to highlight the importance of the Board's low carbon fuel standard work in terms of the recently launched northeast and mid-Atlantic states similar low carbon fuel standard initiative.

Following California's lead, what I'll call, the northeast initiative was launched earlier this year with the expectation of bringing a regional program to fruition on the east coast by the end of this year. And so the work of the Board is incredibly important for several reasons. I'll highlight just a couple.

One is the precedential value. And I would like to point the Board to the letter dated April 17th from the Environmental Commissioners of each of the 11 states in the northeast involved in this effort, highlighting the important as a precedent, because we're really grateful

we're not going to have to reinvent the wheel and that this program has largely been developed here in California through thoughtful and extensive work. It also means the market will be much larger, so now we're talking about California, all of the northeast and shortly hopefully the nation for cleaner transportation fuels.

And it's also very important, because it will lead to or it's designed to lead to actual greenhouse gas emissions reductions. And, of course, those pollutants do not know State and regional boundaries.

There are several key design framework principles that I do want to highlight that are critically important. One is performance based standards that don't specifically pick winners. Although, we hope that loser in terms of carbon intensity will not be able to successfully compete. That is based on best available science and that it takes into account full lifecycle greenhouse gas emissions including from direct and indirect land-use change impacts. And that is again something that is highlighted in the April 17th letter from the northeast environmental commissioners.

Thank you very much for this opportunity to testify today.

CHAIRPERSON NICHOLS: Thank you.

Sonia Yeh.

DR. YEH: Madam Chair and members of the Board, my name is Sonia Yeh. I'm a Research Engineer at the Institute of Transportation Studies at the University of California at Davis. Over the past 2 years, I've collected a team of 20 plus UC researchers studying the implementation of low carbon fuel standard covering issues ranging from implementation, compliance pathways and costs, lifecycle analysis and sustainability.

I'm here as a signatory on the letter to the Board signed by more than 175 scientists. The letter urges the Board to account for greenhouse gas emissions from indirect land-use change, as part of the lifecycle emissions accounting for all fuels, including biofuels. It also urges CARB to consider other major sources of emissions from fuels, both direct and indirect, under the proposed low carbon fuel standard.

The signers are independent experts in the fields that directly relate to the topic, including climate scientists, line use and economics. Signatories to the letter include 9 members of the National Academy of Sciences and 2 Nobel laureates.

The letter authors include Pam Matson, the Dean of Earth Sciences at Stanford University; Michael Hanemann a professor of agriculture in Resource Economics at the University of California, Berkeley; Stewart Pimm a

professor of Ecology at Duke University and William Schlesinger, President of the Cary Institute of Ecosystem that is in Millbrook.

I'm going to read a few excerpts from the letter. My time is running up, but I will just highlight that. The work you're doing in California sets an important precedent for transportation fuel policy, nationally and internationally, as well as action to confront climate change more broadly. We urge you to consider indirect land-use change as part of the low carbon fuel regulation.

Thank you.

CHAIRPERSON NICHOLS: Thank you. And we did receive copies of the ad earlier.

Patricia Monahan.

MS. MONAHAN: Good afternoon, Chairman Nichols and members of the Board. My name is Patricia Monahan. And I am the Director of the California Office of the Union Concerned Scientists.

UCS strongly supports passage of the low carbon fuel standard. This regulation will help move us away from conventional petroleum towards cleaner more sustainable fuels of the future.

We support the staff resolutions and regulatory amendments, which would help promote ultra low carbon fuel usage, sustainability and clean air. We also support the

recommendations that will be coming up from the American Lung Association through Bonnie Holmes-Gen to strengthen the air quality protections.

We commend staff for their hard work on this ambitious and groundbreaking regulation. A lot of blood, sweat and maybe even some tears went into making this process. I've been wholly impressed with the caliber and the dedication of the staff working on this issue. And would particularly like to congratulate them for tackling the challenging task of quantifying emissions associated with indirect changes in land-use.

The science indicates that some biofuels cause deforestation and other land-use change resulting global warming pollution. As a letter to CARB from over 175 scientists highlights, sound science dictates that we must include these indirect land-use change effects for the standard to be effective.

I would like to respond directly to Dr. Sperling's question about the value that CARB has derived for the emissions from conventional biofuels. UCS and other researchers find that the value that CARB is proposing is conservative. A proper accounting could push up the value even higher.

As I note in our formal written testimony, there are 3 reasons for this -- for why we say the value is

conservative, but I can't go into, because I'm running out of time.

I think that it's important for CARB, as they move forward with this regulation, to warn convention biofuel producers that they should be aware that the number could go higher in the regulatory review of the program. Biofuel investors should put their money on truly low carbon fuels of the future, like those made from waste and cellulosic.

In conclusion, thank you to the Board for your leadership on this important issue and we support -- we urge you to adopt the low carbon fuel standard.

Thank you.

CHAIRPERSON NICHOLS: Thank you.

(Thereupon an overhead presentation was Presented as follows.)

MR. MUI: Good afternoon members of the Board, Chairwoman Mary Nichols. I'm Simon Mui, clean vehicles and fuels scientist with NRDC.

And NRDC has been working on the LCFS for several years now, since its inception. Staff was given a very challenging task, particularly in addressing land-use change from biofuels and developing a best estimate for land-use change.

And all of them are standing here today after all

their hard work. Although, I've heard that some of them are retiring, which may reflect the intensity of this process.

(Laughter.)

MR. MUI: But I would like to turn -- to the next slide.

--o0o--

MR. MUI: -- basically highlight and ask a question, has ARB staff been reasonable in developing a best estimate of ILUC. Have they conducted the sound science necessary to take into account the best estimates, peer review of models, to come up with a number, a best estimate.

And the verdict is in. The peer-review process has found, in all 4 cases, that inclusion of indirect land-use change is based on sound science and it should be included and not discarded because of uncertainty.

Next supplied, please.

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MR. MUI: The second question I ask is, has CARB addressed and incorporated many of industries' and stakeholder's concerns in a fair and reasonable manner? And here before you is a table that lists really the main ethanol industries' concerns -- there's been 9 of them --

and the responses that CARB has given throughout 16 workshops as well as the ISOR. And I think the verdict is again CARB has conducted due diligence in their process.

Last -- if you could forward 2 slides.

--o0o--

--o0o--

MR. MUI: -- I'd like to address this indirect land-use change. Why land-use impacts -- indirect land-use change impacts for other fuels isn't as significant. Well, here you can clearly see the amount of lands required for corn ethanol. And I'd like to just conclude on the third slide. Here's the impact -- one more please.

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MR. MUI: Here's the impact from other fuels compared to corn ethanol. And, again, I think the story on indirect impacts for other fuels is that there isn't a story so far. And I think the best approach is to allow CARB to continue looking to see if there are significant effects. But as far as our analysis has shown, we are unable to find a very significant effect.

Thank you very much.

CHAIRPERSON NICHOLS: Thank you. That's a useful chart.

MR. GARDERET: Good afternoon, Madam Chair and

members of the Board. My name is Remy Garderet. I represent Energy Independence Now. And I'm also a member of the environmental coalition from who you've been hearing.

I wanted to highlight today one of the concerns that we have. First, I want to say, of course, that we do support whole-heartedly the adoption of the LCFS, including the indirect land-use changes.

But one of our concerns is around the ultra low carbon fuels, and whether the LCFS will provide a sufficient incentive for the development of ultra low carbon fuels, and in particular the nonliquid ones. We've heard a lot about biofuels today and those can be blended into our existing fuel supplies. But the hydrogen and the electricity and the natural gas that we're all hoping to see come on line to be able to meet our 2050 goals.

They need a strong incentive too. And currently, the way it's structured, that incentive depends very heavily on somebody willing to buy the credits that we will be issuing these fuel producers.

So our concern is that the LCFS, the way it's structured right now, does not really provide a guarantee that sellers of those credits will find buyers and that this will really translate into a revenue stream that they can bank on.

We have seen with pleasure that some of that has been addressed as part of the review that's projected for the future, but we'd urge you to see if some of those mechanisms that we propose can be incorporated within the timeframe up to December 2009.

There's 2 other issues that relate to ultra low carbon fuels. One is regulatory alignment with the electricity sector regs. And I'm sure you'll be hearing more about that from other members. Also, the waste sector has a lot of overlapping interests here. And there are many standards and codes, safety codes, fire codes, certifications that impede these nonliquid fuels. Everything has been set up around liquids. And so we would urge you to take a look at that.

And also include the option of using your existing authority under the clean fuels outlet to perhaps force, if necessary, the initial start-up and ramp-up of these fuels.

Thanks again for your time.

CHAIRPERSON NICHOLS: Thank you.

MS. HOLMES-GEN: Okay. Good afternoon. Madam Chair and members, Bonnie Holmes-Gen. I'm Senior Policy Director with the American Lung Association of California.

And I'd first like to underscore the American Lung Association's position in strong support of the low

carbon fuel standard. It's a giant step forward toward meeting our global warming goals in California.

And not just the American Lung Association, but many of our colleagues in the public health community are solidly behind this regulation. And you'll be hearing from other speakers presenting a petition and a letter from public health professionals and organizations today.

California simply must transform the transportation sector to use ultra low carbon and especially zero emission fuels and technologies.

Three points. Number one CARB's inclusion of indirect land-use is essential to the scientific integrity of the regulation.

Number 2, we support the former speaker's comments -- the speaker before me, comments. The standard should do everything possible to promote cleanest or the ultra low carbon fuels like electricity, hydrogen from renewables. And especially in the early years of the standard, we need to get started with that.

And third, we strongly believe this regulation is essential to the State's air quality and global warming strategy. But the Board needs to remain very vigilant and watching over the criteria air pollutant and toxicant emission impacts, and ensure the standard does not result in any hot spots of pollution.

But this standard will spur the development of new biorefineries and local infrastructure. And these refiners will be using new technologies and the emission impacts are net yet fully understood. So to address these issues, we support the proposed resolution and regulatory language; develop a framework for evaluating these impacts, air quality public health impacts, as we move forward; including direction to develop guidelines for local review of air quality emission impacts; direction to conduct a comprehensive public health analysis of the low carbon fuel standard; and direction to review and assess the air quality impacts of the standard on a statewide basis. And we think it would be helpful to clarify further, number one, that CARB will evaluate the air quality impact of each fuel pathway used to comply with the LCFS, considering the air quality impacts over the entire fuel cycle.

So looking at each fuel pathway. And number 2, that CARB will work with the local air districts to develop mitigation strategies that will benefit, as much as possible, the local communities that are impacted by facilities.

CHAIRPERSON NICHOLS: Thank you. We do have your letter also. Thank you.

MR. BARRETT: Good afternoon. My name is Will

Barrett. I'm the air quality and global warming policy coordinator for the American Lung Association.

I'd like to thank the Board and staff for your leadership on the low carbon fuel standard and for the opportunity to voice our support for the adoption of this important measure today.

As Bonnie noted, I'm here to present a petition signed by over 100 doctors, nurses, respiratory therapists and other healthcare providers practicing throughout California who understand that public health has suffered greatly from your dependence on dirty petroleum fuels.

They've seen the negative effects of poor air quality on their patients and are particularly concerned by the effects of air quality on children, elderly, those living with asthma and other respiratory illnesses and other vulnerable populations in our communities.

By CARB's own estimates, public exposure to unhealthy air contributes to nearly 10,000 hospitalizations for respiratory and cardio vascular illnesses, 280,000 asthma attacks and other respiratory symptoms, millions of lost school and work days and 19,000 premature deaths each year in California.

These healthcare providers signed onto this petition, because they believe the LCFS is a vital strategy to address these serious public health impacts.

On their behalf, I again urge you to adopt the low carbon fuel standard without delay.

Thank you very much.

CHAIRPERSON NICHOLS: Thank you.

Shankar.

MR. PRASAD: Good afternoon, Madam Chair and members of the Board. It's a pleasure to be here before you. I'm an executive fellow at the Coalition for Clean Air and we are strongly in support of this low carbon fuel standard and urge you to adopt it as recommended by the staff.

Here again, you have an opportunity to lead the world in the direction and establish this credibility continuing of this organization, which has been the leader of the world for a long time.

Two comments. We know that biofuels will play a significant role in order to meet the goals of this standard. And this will automatically result in building new facilities, which may get situated or built in cross proximity. Though each of those could be meeting the requirement of the permit conditions, there is a potential jointly they could be creating some problems for the nearby residents.

So in order to avoid the creation of another Wilmington or some similar community, we urge the staff to

issue some guidance document for best practices of the siting. And they kindly agreed and we thank the staff. And they will be bringing that item to the Board later this year or early next year.

This will also give an opportunity to put more rigor because it comes before you into it and also the due public process that is necessary

And another point that we want to say is that I think the issues that was brought regarding the CNG, needs to be considered and looked more carefully. And we recommend that you direct the staff to look into this issue brought forth by the Westport and Clean Energy and see if there is a need for the modification that can be brought before the Board when the staff comes back to you in December.

Thank you.

CHAIRPERSON NICHOLS: Thank you very much.

DR. MEAGHER: Good afternoon. I'm Robert Meagher a Sacramento pediatrician and a participant in the American Lung Association's Health Network for Clean Air.

I'm please to present a letter from 16 state and local public health organizations in support of the low carbon fuel standard as a key step towards meeting the State's greenhouse gas reduction goals and reducing the health impacts of petroleum dependence.

The organization signed onto this letter, include the American Lung Association, the Academy of Pediatrics, the American Cancer Society, Breathe California, the California Pan-Ethnic Health Network, the California Nurses Association, the California Thoracic Society, the Breast Cancer Fund, the Long Beach Alliance for Children with Asthma, Medical Advocates for Healthy Air in Fresno, Physicians for Social Responsibility, the Prevention Institute, Public Health and Law Policy, the Public Health Institute, the Sonoma County Asthma Coalition and the Regional Asthma Management and Prevention.

I would like to present a short extract from our letter.

As health and medical organizations, we are alarmed by the public health crisis caused by air pollution in California and consider the LCFS as an important step towards improving air quality and reducing serious health threats in our communities. Californians are exposed to some of the nation's worst air and suffers serious health impacts, including lung cancer, asthma, chronic obstructive pulmonary disease, heart attacks, strokes and premature death.

As temperatures rise from global warming, California faces serious challenges to protect its air quality and the health of its residents. We urge you to

proceed with the adoption of a strong effective LCFS without delay to help California achieve its ambitious greenhouse gas reduction goals while protecting public health.

Thank you.

CHAIRPERSON NICHOLS: Thank you Dr. Meagher.

John Kabatack.

MR. KABATACK: Good afternoon, Madam Chair and board members. Thank you for having me today.

My name is John Kabatack and I'm the executive director of the National Federation of Independent Business California. We represent about 22,000 small and independent business owners throughout California about 350000 nationwide.

When major environmental rules are initiated, there's a misconception that they're aimed at big business. And that's with a Capital B. There's a tendency for advocates of those rules to think that somehow big business can afford it. So, in essence, it really doesn't cost anything.

The members of the NFIB know better. Our members, among the millions of small businesses that provide most of the jobs in California, know that when big business has to make huge investments, and incur enormous costs for new green policies, those costs are going to

find their way down to their customers, small businesses like ours. And then we'll try to pass those costs along to our customers, California's families.

But sometimes you can't pass those costs along and stay competitive. This is especially true when the rules only apply to California businesses, but not to companies based in other states or other countries.

It becomes difficult, if not impossible, to compete with companies that offer the same product or service, but do not have to play by the same rules that we have to play by in our state.

That's why we are so very concerned about the low carbon fuel standard. Without doing the economic, the environmental and the technical analyses, as required by law, CARB staff is asking you to believe that the goals of the LCFS can be achieved at minimal cost, and that by commanding various fuel additives or new fuels to be introduced, that they'll actually be available, practical and affordable.

What's more likely, as independent evaluations have concluded, is that this rule will mean billions of dollars a year in higher fuel costs for small businesses and consumers.

And it's unlikely it will materially reduce global warming, since California will be the only place in

the country or even on the planet to pursue such an aggressive program, during this time of international recession and when California is experiencing an unemployment rate of 11.2 percent, record unemployment rate.

So that's why we urge you to postpone taking action on this item, until the necessary analysis has been fully completed. And that the rule can be fine-tuned to reflect economic and technical reality.

Thank you very much

CHAIRPERSON NICHOLS: Pete Price.

MR. PRICE: Thank you, Madam Chair and members of the Board. I'm Pete Price with the California Natural Gas Vehicle Coalition, representing the natural gas vehicle industry, which marries a fuel that's been determined by this rule already, in several of its forms, to be LCFS compliant with vehicles that are commercially available today.

You've heard from several members of our coalition already, so I will summarize. We, first of all, on behalf of all of our members want to express our strong support for the rule and also express our thanks to the staff. They've been unfailingly available and have listened to our suggestions and taken almost all of them into account in this final rule.

Several of the changes that have actually been suggested in the 15-day modifications have been mentioned by others. So I'll just mention 2 that are particularly important for us.

First of all, the recommendation or the direction to finish the fuel pathway analysis for the liquefied natural gas for north American sources and from biogas. We very much appreciate. We're confident that when that's done, LNG from north American sources, will be shown to be a compliant fuel. That's why we're happy to see also that the executive officer will be able to quickly incorporate newly identified compliant fuels into the opt-in provision.

The last thing I'll mention is something you've heard before. Its about this EER. I'll be brief with 2 different engines with 2 different energy economy ratio values. What we certainly don't want to see happen is for an engine with superior GHG reduction capacity to be under-valued. The only way to really do that is to adopt 2 different numbers. I understand there's a challenge doing that. But at a minimum then we'd like to see a blended number that takes into account both of the engines. And it's ARB's own certification data that shows that the compression ignition suffers no fuel penalty. And we don't want to be punished because we have a 2010

compliant engine and others don't.

But with that one suggestion, once again, we strongly support the rule and thank you for your work.

CHAIRPERSON NICHOLS: Thank you.

Anibal Guerrero.

MR. GUERRERO: Good afternoon. Buenos tardes.

CHAIRPERSON NICHOLS: Buenos tardes.

MR. GUERRERO: Anibal Guerrero with the San Fernando Valley of the Mexican-American Political Association.

At the March meeting I indicated that while we worry about the environment, we also worry about economic issues. AB 32 scoping plan acknowledged that higher energy costs associated with carbon reductions would disproportionately impact low-income communities.

At that time, the unemployment rate was over 10 and a half percent and it's now at about 11.2. That means even more of us are struggling to pay rent and to feed families. If the low carbon fuel standard means even a small increase in gas prices, public transportation fees or higher costs of food and other things that are fuel dependent, it's going to hurt our communities even more.

Can you tell us more today than you could last month about what this will cost our communities in terms of annual energy bills, costs per gallon of gas, and how

those numbers were calculated.

The last time CARB adopted a new gasoline formula, there were unintended, but serious water quality problems from the new fuel additive MTBE. It was expensive and dangerous.

Because of that experience, the State now requires extensive environmental impact analysis before a new fuel standard is proposed. It's imperative that you do as much research and testing as possible before moving forward with this rule to protect not only the environment but public health.

Has staff completed and have you reviewed the analysis required under the Health and Safety Code?

We want the low carbon fuel standard to succeed, but we don't want it so badly that we're willing to accept the policy that has pushed through without responsible research and evaluation.

Por favor, take the time to do this responsibly.

I thank you for your time.

CHAIRPERSON NICHOLS: Thank you.

Jay McKeeman.

MR. McKEEMAN: Good afternoon. I'm Jay McKeeman with the California Independent Oil Marketers Association.

We've submitted written comments, but let me just summarize those very briefly.

There is a particular problem, from our perspective, with this regulation. And we suggest that the regulation not be adopted until that problem is worked out.

Right now, the State has a problem, in that many thought leaders have suggested that biodiesel is a good product. However, the State Water Board will not allow storage of biodiesel above 5 percent blend in underground storage tanks.

There is a disconnect between the certification of a fuel for its readiness in the stream of commerce and the time that it gets introduced by a marketer or by a supplier. It's a simple check list. It just requires looking at several issues. Have appropriate certifications been finalized with independent parties, so that the underground storage tanks, the nozzles, the trucks are all certified to use it?

Have appropriate public noticing issues been resolved, such as in the Department Division of Measurement Standards?

Are insurance companies willing to ensure the liability of handling these fuels?

And will the fuel harm any vehicle or engine that it's intended to be put into. It's a simple checklist. We think that needs to be in the regulation and it needs

to be clearly set up, so that when a fuel is even incentivized for introduction into the stream of commerce, that it's set up and ready to go.

Thank you.

CHAIRPERSON NICHOLS: Thank you.

Dave Modisette.

MR. MODISETTE: Thank you, Madam Chair and members of the Board. I'm Dave Modisette. I'm the Executive Director of the California Electric Transportation Coalition.

We represent the 5 largest electric utilities in California on issues related to electric transportation. So that's Southern California Edison, the Sacramento Municipal Utility District, Pacific Gas and Electric Company. The Los Angeles Department of Water and Power and San Diego Gas and Electric Company.

We strongly support the low carbon fuel standard that's before you today and we urge your adoption. I also want to thank Bob Fletcher and his very capable staff for bringing you this landmark regulation and for the time they spent addressing our issues.

Electricity is a very low carbon fuel. According to the staff, it reduces greenhouse gases by 64 percent, in comparison to conventional fuels. And we think that that number is conservative. We're willing to work with

the staff in the coming years to see if we can't better refine that number.

Electricity is also significantly less expensive than conventional fuels. So as a fuel provider for electricity used in transportation, we're going to be generating carbon reduction credits. And those credits will become compliance options for petroleum fuel providers and other regulated entities under the low carbon fuel standard. We did ask staff for some additional time to address 3 issues, which were in our letter that we sent on April 14th. And staff has agreed to work with us on these issues. And language to that effect is included in the Board resolution.

So we would urge your adoption today of both the board resolution and the regulatory language that's before you.

Thank you very much.

CHAIRPERSON NICHOLS: Thank you.

Thank you.

Gary Schoonyan.

MR. SCHOONYAN: Thank you, Madam Chair. Gary Schoonyan, Director of Regulatory Affairs for the Southern California Edison Company.

Edison is very supportive of the State's efforts to adopt a low carbon fuel standard, as well as a proposed

resolution and regulation before the Board today.

In providing this support, we would like to commend the staff for their very good work, particularly in the efforts of addressing the use of electricity as a clean transportation fuel.

Thank you.

CHAIRPERSON NICHOLS: Thank you.

James Brady.

MR. VARSHNEY: Good afternoon. I'm replacing James Brady.

I'm Sanjay Varshney, Dean for the College of Business at Sac State.

I've taken a look at the economic analysis on behalf of the California Small Business Roundtable. And I had a few concerns on the economic analysis. And I want to list a few which I think, if the study incorporates, is going to make LCFS study really robust and good.

The first one. It's unclear what the outcomes are likely to be if other states in the United States and other countries do not -- either delay or completely withdraw from the implementation of the low-emission standards, similar to the LCFS, in their respective jurisdictions. Staff does not account for costs or disruptions to price of crops arising due to changes in land-use. Although, they attempt to include the resulting

changes in actual emissions.

Staff does not consider future availability of alternative fuels or any major fluctuations or disruptions in the demand supply equation, leading -- and maybe the resulting prices.

Staff assumes that there will be adequate availability of vehicles utilizing alternative fuels. And there will be no costs associated with technology advancements needed to make the vehicles commercially affordable and reasonably priced.

Staff also does not account for the possibility that consumers will have to pay substantially higher prices as they already do for those more fuel efficient and advanced technology vehicles and the associated economic costs and impacts.

It appears that the cost of production of alternative fuels is artificially lowered due to the associated tax incentives offered for their use.

And finally, staff claims that LCFS will not adversely impact the competitiveness of California businesses, and that LCFS will not result in any leakages of business to other states. But as long as other states do not implement a similar standard, California businesses will automatically be rendered less competitive.

So those are my views.

Thank you.

CHAIRPERSON NICHOLS: Thank you. Have you prepared a written analysis?

MR. VARSHNEY: Yes.

CHAIRPERSON NICHOLS: If you would submit that, we would appreciate it.

Thank you.

Edwin Lombard

MR. LOMBARD: Thank you, Madam Chair, Committee Members and staff. My name is Edwin Lombard. I'm here representing the California Black Chamber of Commerce. We are disappointed that, as was in the case with the approval of the scoping plan last year, you are prepared to adopt a rule based on incomplete economic analysis, which is required by law.

Once again, independent researchers and reviewers have concluded that your staff report is based on incomplete and inadequate assumptions resulting in grossly underestimated costs for this program. Once again, your staff theories -- your staff theorizes that costs will be minimal.

Last month, I attended the meeting of this board and observed your adoption of the new tire inflation rule. That entire rule required that vehicle maintenance shops check the tire pressure of their customer's cars. And

even that had a price tag of $100 million, which staff acknowledged would be passed along to consumers.

One hundred million dollars just for checking your tire pressure?

But the low carbon fuel standard won't cost much?

Something is very wrong with this picture. One independent study estimated that the cost of 3.7 billion a year and actually increased smog emissions is possible. The Sacramento and California Black Chambers of Commerce still supports the goal of AB 32, but we cannot support rules like the low carbon fuel standard that is insufficiently researched. It will impose higher fuel costs that we can't afford and put our air quality at risk.

We are also disappointed that you seem so willing to invest billions of our dollars in programs that cannot possibly slow down global warming unless the rest of the world comes alongside with us.

Aubrey Stone will be not here. He's on the list later. Mr. Stone felt so strong about this -- he is the president of the Black Chamber -- that he proposed a bill, SB 295, that would slow down the implementation of AB 32 until proper studies are done and an economic analysis was done properly.

Thank you very much.

CHAIRPERSON NICHOLS: Thank you.

Danielle Fugere.

MR. FUGERE: Good afternoon. My name is Danielle Fugere and I'm regional program director for Friends of the Earth.

First I wanted to commend the CARB Board for its innovative leadership on the issue of global warming, from the clean cars law to AB 32 and now the low carbon fuel standard. CARB has taken early and significant action.

And the importance of this leadership can't be overemphasized. I was recently reminded of this in a presentation by a representative of the City of Marin in a meeting regarding how to facilitate electric drive technology. And his presentation was a stark reminder of how -- of the precipice of global warming on which we're currently standing and how close we are to the edge of run away feedback loops and of how little time we have to act.

I therefore offer Friends of the Earth's support for the low carbon fuel standard, which will both incentivize the use of low carbon fuels and disincentivize the use of high carbon fuels. We also support CARB staff and their commitment to measure the fuel lifecycle impact of fuels, including indirect land-use.

Accounting for the entire range of carbon impacts of fuel is a bedrock of an effective low carbon fuel

standard. With regard to sustainability, we appreciate and support the sustainability resolution offered by staff today. As CARB promotes the development of alternative fuels under the low carbon fueled standards, it is important to ensure that this does not result in unintended negative consequences to the environment. The resolution language presents a reasonable and appropriate way of proceeding.

However, we are very concerned that CARB is proposing to move forward with the low carbon fuel standard and incentivize the production of biofuels with no minimum land-based protections in place at all.

We ask the Board to adopt the federal renewable fuel standard protections that were put in place by Congress and signed into law by President Bush. These sourcing limitations were carefully crafted by a broad stakeholder group and provide minimum protections for wildlife habitat, natural forests, native grasslands and important public lands, while allowing biofuels production to move forward.

And finally, I wanted to address the issue of transparency on credit. It's not clear from the document from this -- well, let me just say, in the last ZEV review, there were -- industry took the position that credits and the information on which credits were built

were not publicly available information. And I don't think that this current regulation clarifies that that information should be public.

And I would suggest that we --

CHAIRPERSON NICHOLS: We'll take a look at that issue. You did comment on that also at a previous session. So that's a question that we will ask.

MR. FUGERE: Great. Thank you.

CHAIRPERSON NICHOLS: Dwight Stevenson.

MR. STEVENSON: Hello. My name is Dwight Stevenson with Tesoro.

First of all, thank you for reading and considering our written comments, expressing our serious concern, the foremost being the lack of complete economic analysis and several other technical issues.

And we appreciate the opportunity to give some comments today briefly on one of them.

For background, we support a full analysis of cause and effect, and that includes land-use change. However, another factor that was not properly and completely considered is farming intensity. This is a name that for what happens when farming intensity increases and more food is grown on less land.

Dr. O'Hare and Mr. Fletcher mentioned the direct effect of farming intensity that results from increased

ethanol demand. It seems clear that this increase in farming intensity will be achieved primarily with increases in water and fertilizer use.

And I want to point out that this intensification of farming occurs on the entire world's farming system. And so even a small increase in the greenhouse gas intensity on the entire world' farming will be significant.

So we offer this factor as an example of important issues that have not been fully analyzed. And we urge you to direct staff to complete the analysis on this and other issues before moving to adopt.

Thank you.

CHAIRPERSON NICHOLS: Thank you.

Could whoever is next, please move forward.

Sven Thesen and then Will Coleman.

MR. THESEN: Good afternoon. My name is Sven Thesen. I'm from Better Place. Our company's objective is to end our oil addiction starting in the light-duty transportation sector first.

We install and operate electric vehicle infrastructure, including charge spots, battery exchange stations to enable fully functional, electric vehicles with unlimited range and powered by renewable energy. We fully support the low carbon fuel standard and

congratulate CARB on their vision. CARB is not only setting precedence here in California, here in the U.S. but on a global scale. Good work guys. It's been a long 2 years.

We're particularly pleased with the equitable way that ARB has devised to divvy up the carbon credits generated from electricity as a fuel. That is, CARB does or gives the credits to those entities who do the heavy lifting, who solve that last 1 meter, 1 yard to get the electricity out of the grid and into the vehicle.

New businesses are being created and those new businesses are creating jobs.

In my case, I buy wind power. When I put that wind power into my vehicle, I can get the credits, keeping my vehicle travel carbon free and sustainable. My vehicle blows along with the wind but at 60 miles an hour.

There were a number of entities competing for these credits and ARB did a fair and equitable job of divvying them up. Obviously, there's always arguments about who gets the cake and how much.

If we had any squabble -- and I mean this tongue in cheek, it would be to include electricity's of fuel in the carbon intensity chart for electricity, when it's generated from 100 percent renewables. And I mean that tongue in check, because obviously the value would be 0.

CHAIRPERSON NICHOLS: Okay, but your time is up.

Thank you.

MR. THESEN: Thank you again. Good work. We support the low carbon fuel standard.

CHAIRPERSON NICHOLS: We appreciate your support. Thank you.

Will Coleman.

Randal Friedman.

MR. FRIEDMAN: Madam Chairman and members, Randal Friedman on behalf of the U.S. Navy.

As an earlier speaker noted, unsolicited I might add, the Navy has been an early pioneer and dedicated to the advancement of using biodiesel and biofuels in California. We've had a number of obstacles along the way. And fortunately, we've been able to navigate those. And it's very gratifying to be here before you today, where you are going to recognize the critical role biofuels will play in the future of California.

I also want to thank the staff and sort of a bit of irony to -- for the exemption of us from the standards, both for vehicles and equipment. The reason we asked for this exemption, and I've been before you with this message before, is we must have national and international consistency amongst fuels and the vehicles that we use in our emission.

Having said that, and I've been before you a number of times saying that, I did want to leave with your staff a message from the Chief of Naval Operation that was release yesterday, that talks about some of the many things we're doing to do our part in this equation.

So, for example, in ships, we're looking at stern flaps, new hull and propeller coatings, new HVAC systems all designed to significantly reduce energy. In tactical vehicles, we've had a joint research program that's evaluated a hundred different technology concepts, including hybrid electric drives, compact mobile fuel cells, composite materials and again new HVAC equipment

Again, these are a few of the things we're doing. I just want to let you know that, yes, I'm here asking for exemptions for these things, but we understand we have a significant role to play and a part to do and we're busy trying to do on the national and international level adaptations to our equipment to meet California's needs. Thank you. And I'll leave this with the staff.

CHAIRPERSON NICHOLS: Thank you, Mr. Friedman.

Peter Mieras followed by Naomi Kim.

MR. MIERAS: Chairman Nichols, members of the Board, good afternoon. My name is Peter Mieras and I'm a lawyer with Jeffer, Mangels, Butler and Marmaro LLP. And recently on staff with the South Coast Air Quality

Management District for many years.

I've been following the development of the low carbon fuel standard for sometime. I represent producers of biofuels. I also represent Growth Energy who testified earlier. I support the low carbon fuel standard and the clean fuels goals it advances. But I cannot support the carbon intensity penalty imposed on ethanol fuel.

This penalty is highly controversial and not well supported from a number of perspectives, for example, good science, good public policy, fair treatment, national security.

Such a penalty rests upon a very questionable theory and a very questionable immature methodology for identifying and quantifying the indirect land-use effect changes from the production and use of ethanol fuel. Not all fuels, not all indirect effects of all fuels, but one fuel, one indirect effect, one industry singled out.

If this fuel standard is added to, adopted with this penalty included, here is what likely to happen to the ethanol industry in this country.

First, you won't be able to compete in the California market. When ethanol is on parody with gasoline, it virtually eliminates the competitive advantage, the clean fuel advantage that ethanol has. There will be a loss of thousands of jobs, existing jobs

and even more future jobs after that.

And essentially, what this will do is to impose a stop work order on all future ethanol-related research and development that could lead to the production of lower direct intensity carbon fuels and also could lead the way toward an expansion of this important advanced fuels market.

CHAIRPERSON NICHOLS: Thank you. Your time is up --

MR. MIERAS: Thank you

CHAIRPERSON NICHOLS: -- but we have heard this comment also from others.

Naomi Kim.

MS. KIM: Good afternoon. My name is Naomi Kim. And I serve as an assistant to the AB 32 Environmental Justice Advisory Committee.

And I'm here to summarize the EJAC's recommendations on the low carbon fuel standard that they passed on April 13th, where they conclude that the recommendation is that the LCFS is not ready for Board adoption at this time, because the proposed regulation will disproportionately impact low income communities in violation of the AB 32 statute.

And the proposed regulation, the recommendations outline at least 6 different ways that this could happen,

through the disproportionate siting of biorefineries in traditionally overburdened communities. We also note that ARB staff did not due a cumulative impacts analysis as legally required. And we also note that the guidance document would be merely advisory. And so it would not necessarily mitigate impacts.

Also, the ISOR's expectation that criteria pollutants will not be increased is unsupported, because the EPA test program hasn't even started yet. Therefore, we do not believe that staff can conclude with the requisite level of certainty that there will be no increases in toxic and criteria pollutants.

In addition, the increased food prices will have a direct disproportionate impact on low-income people causing hunger. And for this reason alone, the EJAC recommends to exclude all biofuels -- I'll agrofuels, I'm sorry, especially corn.

Also, the creation of hot spots is a danger, considering that it is a credit trading program. And the staff is proposing to allow the export of LCFS credits.

CHAIRPERSON NICHOLS: Thank you, Ms. Kim. Your time is up but we do have the letter from the EJAC. We appreciated that.

Larry Weitzman.

MR. WEITZMAN: Yes. My name is Larry Weitzman.

I'm a journalist and I'd like to think of myself as a student of critical thinking. I've read your report, staff report. And the economic analysis on the executive summary page 26 says it's going to save Californians $11 billion through 2020 and 3.4 billion annually after that.

The studies here quoted today say it's going to cost Californians $4 billion a year. But I want to quote a person who's been quoted before, John Reilly of the Sloan School of Management from MIT, who was asked to peer review your study, who said, and I quote this, in broader issues in his conclusion, "I am concerned that California proposes this inefficiency approach as a model for other jurisdictions and that the analysis in this report fails to demonstrate the inefficient nature of this proposed policy. The economic analysis was done incorrectly. It does not meet technical standards of economics. The baseline assumptions are mutually inconsistent. And if these assumptions were executed in a proper model, it would show that the LCS was unnecessary."

And point of fact on that, the staff says that cellulosic ethanol should cost about $2.70 per gallon gasoline equivalent, when a recent study by the National Renewable Energy Laboratory says that it will cost, at the cheapest, $5.14 a gallon equivalent. And I know the Board thinks they're going to get a dollar and one subsidy, but

that subsidy doesn't live forever.

Finally, this Board has not modeled the benefits of what this reduction in greenhouse gas is going to be. But somebody has as a meteorological scientist. And the benefit will be one -- from California alone one, one-thousandths of a degree over a hundred years. One one-thousandths of a degree. If everybody in the United States did it, it would be one, one-hundredths of a degree. That's immeasurable. It's ridiculous.

So to spend $4 billion annually for this is ridiculous. And by the way, France is changing its tune on global warming as Claude Allégre will be appointed the minister at the center now -- former proponent but now a dissenter. You'll find that they're going to be not supporting this issue.

CHAIRPERSON NICHOLS: Okay, Mr. Weitzman. Mr. Fulks.

MR. FULKS: Madam Chairman and Board members. My name is Tom Fulks. I'm here today representing Neste Oil. Neste Oil is one of the largest users of vegetable oils in the world. It's next generation renewable diesel fuel is used widely throughout Europe. And Neste is very interested in bringing this product to the California market.

Since I have only 2 minutes, I'm just going to

get right down to it. We've been through the workshops. We've been through -- we've talked to your staff extensively, and we're sort of over the philosophical argument discussion portion of this low carbon fuel standard. So now we're sort of into the brass tacks and just sort of accepting the inevitable. And so we have some very specific things we'd like to talk about.

We have submitted these comments in writing and so you've got them. But I did want to bring to your attention a couple of things. We would like to see a more specific compliance pathway that allows responsible feedstock users to account for their existing low-carbon practices. Whether it's called direct crediting or mitigation allowances or whatever you want to call it, this needs to be spelled out more specifically in the indirect land-use language.

We also need to account for creative practices, such as some of the things Neste does in South America by replacing coca fields with palm plantations. Now, you can't exactly say coca is a food. It certainly isn't fiber. And so replacing some of those land uses with fuels may not necessarily reduce your carbon content, but it certainly doesn't have any negative consequences.

The draft resolution that we looked at today was some of the whereases and wherefores does head in this

direction. And we're very grateful for your staff accommodating some of the concerns of Neste Oil in this regard. But we would like to see a little bit more specific language.

Darn, I'm running out of time.

We need to see an annual 12-month review period, periodic review, rather than 3 years. And I know I'm out of time, but the 3-year period is too long for investment purposes. We'd like to see a 12-month review, primarily because people, like Neste, who are thinking of investing can't wait 3 years for the science of indirect land-use to catch up with the technology.

So, again, we've got them in writing. And if you don't mind, take a look at those. But Neste is saying okay let's just get on it.

Thank you.

CHAIRPERSON NICHOLS: Thank you.

You referred to the resolution. And I do want to make sure that everybody has the resolution. I know it was made available early this morning.

Are there still copies of it out there?

Okay, thank you.

MR. GRIMES: Madam Chair and Board, my name is Gary Grimes. I'm to present comments on behalf of Paramount Petroleum. Paramount Petroleum is a small

subsidiary refinery of Elan U.S.A. We have 2 refineries in southern California.

And although Paramount is small in the California gasoline manufacturing business, we are very large in the asphalt business. We're the largest manufacturer of asphalt in the western United States we or certainly in the west coast region of the United States.

I have a couple slides.

Here's the first slide.

(Thereupon an overhead presentation was Presented as follows.)

MR. GRIMES: I want to differentiate a little bit between us and the other refineries here. We're the green one that you can't see there, down in the lower left-hand corner that has black labeling. Unfortunately, I didn't realize it was going to come out black. Anyway, you can see as relative to the size of the other refineries, there's a considerable difference.

The scale here -- the wide scale is complexity. The big differentiating factor -- not all oil refineries are the same. To make gasoline, it requires 2 things, complexity and size. We have neither of the 2. So that's why we're down in the lower corner or quadrant.

Let's go to the next slide.

--o0o--

MR. GRIMES: Paramount's processes is very simple. We just take the naturally occurring gasoline that's in a barrel of crude oil and convert it to gasoline. We don't do anything fancy. We don't crack it. All the major refiners make about 4 times as much gasoline per barrel that they run through their refineries by cracking these large molecules to much smaller molecules. It's a very heat high energy intensive process. And as a result, they can consume a heck of a lot more energy than we do.

And we feel like we're being penalized by using an average that's currently being used just cause we're so small. We may have nothing to do with the average. As you can see up there, we think we're already half way to the target for the 2020 LCFS standard without even doing anything.

Let's go to the next slide.

--o0o--

MR. GRIMES: So what does this mean to us?

We have a number of disadvantages relative to the measure of companies. As you can see the size of those other companies out there, the next closest refinery to us in size is owned by Exxon-Mobil which made $44 billion last year. You know, they measure their profit in billions. We measure it in millions, so they're like a

thousand times bigger. And they have much more capability in terms of market power, capital equipment for investing into biofuels, those economies of scale, and much better logistics than we have. We're an inland refine and don't have access to water-born docks like all the majors on the west coast have.

CHAIRPERSON NICHOLS: Thanks, Mr. Grimes. I'm familiar with Paramount. I'm not sure, but I suspect anybody in southern California at least knows, you know, where your refinery is.

Did you submit written comments?

MR. GRIMES: We did.

CHAIRPERSON NICHOLS: We will make sure we take a look at them.

MR. GRIMES: Thank you.

CHAIRPERSON NICHOLS: Thank you. Okay.

Kelly McKechnie.

MR. McKECHNIE: Good afternoon, Chairman and Board members. My name is Kelly McKechnie representing Western Growers. Western Growers is an agricultural trade association whose members grow, ship and pack 90 percent of the fresh fruits vegetables and nuts grown in California and 75 percent of the fresh fruits vegetables and nuts in Arizona. Our members produce approximately half of the nation's fresh produce. California already

has the highest price of diesel fuel in the nation.

And the economic impacts of this regulation in front of you are nonabsorbable. Growing regulatory pressure is a source of major concern for California agriculture producers. California growers have been saddled with regulatory fees from all departments at local and State levels, putting California agriculture at a disadvantage with other states and countries.

To give you a quick snapshot of this, in 2006, Cal Poly institute for the study of specialty crops put forth a study. And it was found that California citrus growers bear a regulatory cost burden of $347.12 per acre, compared with a Texas citrus grower who's estimated regulatory cost is $31.71 per acre.

The agriculture production industry is not in the position to pass along the potential higher diesel costs or any other costs, for that matter, onto consumers.

California farmers are already suffering from the cost of the cumulative regulations placed on them and a downward spiral of the economy. California production farmers are either leaving California to farm elsewhere or are closing down their farms completely.

We would like to see the Board complete its work on the diesel portion of the regulation before adopting it, so that the performance, supply and price impacts can

be realistically assessed.

Thank you.

CHAIRPERSON NICHOLS: Thank you.

Charlie Peters.

MR. PETERS: Hello, Mary.

(Laughter.)

MR. PETERS: Madam Chairwoman and board. I'm Charlie Peters, Clean Air Performance Professionals.

CHAIRPERSON NICHOLS: You need to get a little closer. Sorry, you can of just have to pick it up -- or is it on?

Oops!

MR. PETERS: Is that better?

CHAIRPERSON NICHOLS: That's much better.

MR. PETERS: I'm Charlie Peters, Clean Air Performance Professionals. We're a coalition of motorists. And we're kind of confused today, because there's some things that we think might be important that haven't been considered. And so maybe you can take a look at them and see if they could be important. One of the factors is that it's been recently reported that in California, it seemingly is taking 2,000 gallons of water to grow enough corn to make a gallon of ethanol. We don't know if we have excessive water in California and whether this should be an issue in this process or not, but I want

to throw that out there.

Another thing that we've looked at over time is it appears to us as though every policy requiring corn ethanol seems to increase the amount of oil we use and the profit of the oil companies. It's being promoted as a debate between the 2 and it seems to be a partnership from our perspective.

That is costing the people of California additional monies for food, for gasoline and we seem to be using up a lot of water, whether these should be taken into consideration or not, we're not sure, but we'll look upon the expertise of the chair and this committee to possibly look a little further before we go forward.

Thank you.

CHAIRPERSON NICHOLS: Thank you.

John Shears.

Hi.

MR. SHEARS: Good afternoon, Chair Nichols.

Oops, I accidentally turned off the mike there.

Good afternoon Chair Nichols and members of the Board. My name is John Shears. I'm a research coordinator with the Center for Energy Efficiency and Renewable Technologies.

I had some prepared comments, which I'll quickly just touch on, but then I want to respond to some of the

concerns of some of the other speakers.

CEERT strongly supports the low carbon fuel standard, recognizing that climate change -- recent research indicates that climate change is much worse than previously projected. The impacts are much worse and NOAA research indicates it's going to be irreversible. And with 50 percent of the increase in global warming emissions since 1990 in the U.S. Coming from transportation, we need to deal with an integrated strategy, which is what the ARB is implementing.

There have been several speakers who voiced concerns over the cost exposure that they feel they might be exposed to with this regulation. But what I would like to remind people about is only last July we were looking at nearly $150 a barrel oil.

That situation has backed off because of the current financial crisis. Exploration and development has also drawn back and once the economy recovers, we are going to see an exponential -- return to exponential increases in oil prices, along with a super-spike scenario overlaid on top of that. And at some point, we have to move away from petroleum to other alternatives. If we don't start now, when will we start?

So for both our battle against the emissions associated with fossil fuels for transportation and to get

us to other alternatives that are more economically sustainable, this standard is very important.

So thank you.

CHAIRPERSON NICHOLS: Thank you.

Kenneth Manaster.

MR. MANASTER: Good afternoon, Chair Nichols and members of the Board. My name is Kenneth Manaster of the Pillsbury Winthrop Shaw Pittman firm appearing on behalf of the Western States Petroleum Association.

We have submitted a letter from our firm today on behalf of WSPA as well. WSPA has advised the Board already of its main point. CARB should finish writing the LCFS before it adopting it. Certainly, common sense dictates the rule should be finished before it is adopted. This rule has crucial gaps in it. And it makes limited sense, if any, to adopt it with those gaps. As WSPA has emphatically pointed out as one example. And I quote, "Without carbon intensity determinations for 5 critical alternative fuels, there's no way of knowing how much of them will be required."

WSPA has also said with respect to the diesel silo, 3 fuels are supposed to provide 94 to 100 percent of the diesel CI reductions, but we have no currency with which to formulate our plans for the program.

Further more, CARB, of course, must comply with

the provisions of the Health and Safety Code and the Administrative Procedure Act with respect to a rule-making such as this. The law requires CARB to finish the rule before adopting it.

As you know, the Administrative Procedure Act defines clarity, one of the criteria for a regulation that must be satisfied, so that the meaning of the regulations will easily understood by those persons directly affected by them. WSPA members certainly are directly affected and cannot easily understand the regulations until these gaps are filled.

In the interest of time, I'll skip explaining the Health and Safety Code Provisions.

CHAIRPERSON NICHOLS: We have your letters, so we understand --

MR. MANASTER: Thank you.

If I might say, ideally, it seems the postponement would be the wisest course of action. But assuming that the Board does propose -- or will adopt the proposal today, we've indicated in our letter that we think full 45-day notice and comment rule-making is called for, including consideration of amendment or re-adoption of provisions you may adopt today.

Thank you.

CHAIRPERSON NICHOLS: Thank you.

I think we have been at this for 2 hours.

We have 10 more people to hear from. My goal is to be completely finished with testimony by 5 o'clock and to then have discussion by the Board for as long as it takes before we're ready to make a decision this evening.

But I think we could take a 5 minute stretch break, if people are amenable to doing that. That might be a good idea for all. So we'll be back in 5 minutes.

(Thereupon a recess was taken.)

CHAIRPERSON NICHOLS: All right, ladies and gentlemen, let's get back to work.

We're going to hear next from Nick Lapis from Californians Against Waste. Hi there.

The Board members are trickling in, but those that aren't here can you hear in the back, so it's all wired back there.

MR. LAPIS: Okay. Good afternoon, Chair Nichols and board members. My name is Nick Lapis. I'm with an environmental advocacy group, Californians Against Waste. We're the State's leading advocacy group on recycling and waste reduction issues.

I'm here today in strong support of this rule-making. We believe that the LCFS is a huge part of meeting the AB 32 goals and we're proud of the way your staff has been handling it, in terms of working with

stakeholders and looking at the -- not only the direct impacts, but also the indirect land use and the other indirect impacts as well.

We do have a couple of concerns about the treatment of waste in the LCFS. I'm going to summarize them quickly. I know I only have 2 minutes. Our first concern is that there has been no pathway added for dedicated anaerobic digesters. We see anaerobic digesters as a key for moving forward with diversion of organic materials in California and moving forward.

We understand that the staff has limited resources. But the sector is a fledgling sector, especially in the waste side. And it really doesn't have the resources to develop the pathway by itself. We are encouraged to hear the staff say that they're interested in moving along and developing this pathway for dedicated digesters.

We would just encourage you to ask staff to prioritize this and expedite the process and really move this pathway to the very top of the list.

Secondly, we have some serious concerns about the landfill gas pathway. Specifically, we're concerned that the carbon intensity assigned to landfill gas does not take into account any fugitive emissions from landfills. Organic material and landfills decomposes anaerobically

and releases methane, some of which is captured, but much of which is not.

Methane has a global warming potential, somewhere between 21 and 25. So every ounce of methane that gets released from a landfill has a huge, huge impact in terms of pushing us closer to a tipping point for global warming.

The amount of gas generated and captured varies different -- varies greatly if -- depending on how the landfill is managed and whether it's managed for gas generation or for fugitive emission reduction. So we would just ask you to incorporate the fugitive emissions, either in the landfill gas protocol and the pathway or in the future anaerobic digestion protocol in terms of an avoided emission, but we look forward to working with your staff on this.

Thank you

CHAIRPERSON NICHOLS: To make sure that it's accounted for.

Thank you very much, Mr. Lapis.

Julio Alvarado.

Mr. Alvarado?

Tim O'Connor.

MR. O'CONNOR: Good afternoon, Chair Nichols distinguished board members. My name is Tim O'Connor.

I'm an attorney with the Environmental Defense Fund here in Sacramento. I'd like to speak today in strong support for the California low carbon fuel standard.

Moving California to reduce the carbon intensity of our transportation fuel mix as well as our vehicle pool is a critical component towards getting our state to reduce its overall emissions of greenhouse gases.

However, reducing our carbon footprint will require Both a significant undertaking and undoubtedly require both initial and sustained capital investments. While achieving the 2020 goal will require some expenditures, the LCFS should be seen as an investment. That investment will yield returns through fuel diversification, increasing resilience to fuel price shocks and swings, independence from foreign fuel sources, development of new businesses and general economic growth.

EDF, like many environmental advocates, has already -- who have already spoken today, we understand the concerns and the questions being offered by businesses who have talked to us about their inability to understand how the fuel price swings will be moderated by the LCFS or who have concerns about increasing prices overall.

Counter to some of the claims that we've heard though, we believe that the LCFS is an important hedge against higher fuel prices. That is likely increases in

long-term crude prices coupled with even better and cheaper alternative production methods will make carbon fuels more affordable than gasoline.

One of the core benefits of the LCFS is that it's a system of tradable and bankable credits to provide compliance flexibility, cost containment and robust incentives for early action. By creating market incentives early, by back-loading the compliance obligations and providing early incentives for people to innovate, we should be seeing longer term smoothing of cost burdens and positive pressure on innovation.

We support -- we've analyzed a lot of the economics of the LCFS. We see it as a cost-effective approach. We see that the staff has, where possible, gone conservative with some of the benefits and we really appreciate that and we thank the staff for all their hard effort and we strongly support the low carbon fuel standard.

CHAIRPERSON NICHOLS: Thank you Mr. O'Connor.

Altacir Bunde.

You're part of the rain forest group? Are there three of you. I have 3 names.

THE INTERPRETER: Actually, Altacir Bunde represents the Movement of popular Peasants in Brazil. So he's going to speak Portuguese and I'm going to translate

into English for him

CHAIRPERSON NICHOLS: Oh, I see. Okay. Fine. Thank you.

MR. BUNDE:(THROUGH INTERPRETER) Ethanol, as was described earlier, is not clean energy. Ethanol brings many negative environmental and social problems. So ethanol brings burning of the land to clear and also to produce the product. It brings intensive use of petrochemicals. It also destroys biodiversity and it also substitutes land that could otherwise be used for growing food.

So if we consider all of this, ethanol actually brings many social environmental problems to our country. So the use of this sort of energy will aggravate the food crisis, not only in Brazil and -- not to mention the climate crisis, not only Brazil but in the entire world.

For this reason, we are here in support of life and not in support of large corporations.

Thank you.

CHAIRPERSON NICHOLS: Thank you. Could I just ask a question, please. You mentioned the name of an organization. Can you just give us the organization name and the location and any other information.

MR. BUNDE:(THROUGH INTERPRETER) He mentioned that they are located in the Savanna Region in Brazil.

And where there is the most expansion of cane cultivation. And the name of their organization is the Movement -- the Popular Movement of Peasants.

CHAIRPERSON NICHOLS: Thank you. I had an opportunity to visit Brazil this summer and meet with a few organizations, so that was why I was curious.

Thank you.

Okay. Jennifer Krill from the Rainforest Action Network.

MR. OLSON: My name is Brant Olson. Jennifer has asked that I step in in her place briefly.

My name is Brant Olson with the Rainforest Action Network.

And you know we've heard briefly from pretty well established people in California on why the low carbon fuel standard will be a hardship.

You know, in summary it's a big change. Change is hard. Change is expensive. And we understand that. But I want to thank the Air Resources Board and the staff for looking past this cynical view of interests that are vested in the status quo and really taking concrete steps towards a view of the future that embraces sustainable energy for the state in a way that I think is going to set a very strong example for the rest of the nation and indeed the rest of the world.

You know, we're really at a cross-roads with our energy future. And we've got about $200 billion in our pockets collectively over the next 10 years. And the cross-roads lead in a couple of different directions. You know, one, is the well-worn path of business as usual. And one example -- we've already heard from, you know, the agrofuel side. And we had some speakers this morning at a rally outside.

But another example I want to bring up is the tar sands. The tar sands industry is pushing to dramatically expand access to the United States markets over the next decade with more than $140 billion planned in U.S. pipeline infrastructure over the next 20 years, including Trans-Canada's Keystone Pipeline that's now under construction and other proposed pipelines that would bring tar sands crude directly into the State of California.

$30 billion is also planned for expansion of refineries, including those here in our home state -- the Martinez refinery and also the Richmond refinery, explicitly to take tar sands crude. Federal low carbon fuel stand, along the lines of what was being considered here today in California, would dramatically alter the market fundamentals that make these projects happen and dramatically increase the incentives for developing the type of energy infrastructure that we're going to need to

beat the climate challenge.

So I want to thank again CARB and the Air Resources Board for changing the market to provide real incentives for a real step in the right direction and encourage you to go further by imposing stiffer penalties on tar sands and industrial agrofuels.

Thank you.

Is Andrea Samulon planning to speak?

Yes.

MS. SAMULON: Good afternoon. Andrea Samulon from Rainforest Action Network. We endorse the principle of the low carbon fuel standard. However, we believe that changes to the draft language are needed to ensure that it will actually mitigated climate change.

Specifically, the inclusion of agrofuels, industrial biofuels threatens to undermine the impact of the LCFS and could lead to it actually exacerbating global warming. Provided that agrofuels are excluded, the LCFS could substantially reduce California's carbon emissions by penalizing oil companies for refining raw materials that have a higher carbon footprint than that of conventional oil.

The dirtiest of these raw materials include synthetic crude oil made from sticky bitumen mined from Canada's tar sands. We encourage CARB to adopt a

precautionary approach and to exclude agrofuels from the LCFS, given current evidence of serious negative impacts on forests, climate and food security.

All standard methodologies for calculation of carbon intensity of biofuels actually presume major indirect greenhouse gas savings from the use of biofuel co-products. This is not full accounting of the lifecycle of agrofuel production. Evidence provided by Paul Crutzen, Howarth et el., Searchinger et al. among others that indirect nitrous oxide emissions from agrofuels linked to the use of nitrogen fertilizer or from legume monocultures are far higher than suggested by IPCC methodology has not been fully accessed nor has it been address in any way by the IPCC.

This alone means that there's no scientifically credible way of calculating lifecycle greenhouse gas emissions from agrofuels. We know from peer-reviewed studies that every industrial agrofuel feedstock is more greenhouse gas emitting than petroleum.

When all impacts are assessed, agrofuel production not only does not deliver reductions in greenhouse gases, but actually increases global warming emissions particularly when forests, peat lands and wetlands are converted as a direct or indirect impact of biofuels and they often are.

We can not substitute one liquid fuel petroleum with another agrofuel which is just as destructive.

Please exclude agrofuels.

Thank you.

CHAIRPERSON NICHOLS: Thank you for your testimony.

We have a gentlemen who drove all the way from Palo Alto and missed his turn and has asked to speak. And since he wants to speak against the rule, I guess we should hear from him too.

Mr. Coleman

MR. COLEMAN: Thank you. And I very much appreciate you allowing me to comment. I apologize for being late. My name is Will Coleman. I'm a partner at Morh Davidow Ventures. We are a 25 year old venture fund. We have about $2 billion under management. And we have invested across the Board in advanced technologies from advanced biofuels to vehicle technologies to electrification of vehicle technologies.

And I'm one of the signers on a broader investor letter that was submitted to the Board that generally supports the low carbon fuel standard. We think it's an important piece of legislation, but has some very deep concerns about the current approach to the indirect land-use change component of it.

Our concern is that the selective application of indirect effects to just land-use change and to just biofuels is something that will end up undermining the value of the legislation and the regulation.

Our concern is that indirect effects are present in all sorts of different fuels. And we need to make sure that in order to apply them to one fuel, we need to apply them consistently to all.

The other concern is that people have stated that this would be good for advanced biofuels. We, as investors in advanced biofuels, are actually concerned about that. We don't necessarily think it would be good for advanced biofuels, because it creates an undue burden of proof that's placed just on biofuel companies to prove how they stand in the context of other indirect effects. And it's a very complicated thing for any given company to try and navigate.

We also think it undermines investment in infrastructure, which is critically important for advanced biofuels to progress. The science on this is incredibly complex. And having studied in the energy resources group where a lot of this has been developed, you know, I can appreciate how complex it is. But it's about 10 times more complex than what the average hedge fund tries to deal with on a daily basis. And we all know where that's

gotten us in the last few years.

So I think we need to take the time to do this right and apply evenly across all fuels options before we put it into the regulation.

CHAIRPERSON NICHOLS: Thank you. Two minutes goes by really fast, but your comments were well stated.

Steve Shaffer.

MR. SHAFFER: Than you, all. A daunting task. I appreciate all the hard work.

I've spent 35 years trying to do my part to improve the environmental performance of agriculture. I echo the comments of the previous speaker, so I want to leave you just with a little story and hopefully I can get it done.

There's a researcher at Colorado State University, Temple Grandin, who focuses her research on the humane treatment of animals and especially as they're going to slaughter. It maybe ironic, but anyhow.

In her recent book which I was reading last night, which prompted me to come and make these comments, she coined a term called "abstractification". And because she's autistic, she gets down to the level of the animal and can perceive things that others may not. Therefore, she's very successful in her research.

Well, I submit that this process right now is

"abstractifying" market-mediated effects. We need to take that step back. We need to, as Temple Grandin does, understand the animal. We do not yet understand the animal.

Thank you.

CHAIRPERSON NICHOLS: You've been spending time with A.G. Kawamura, I can tell.

(Laughter.)

CHAIRPERSON NICHOLS: That's an inside joke.

Mr. Hwang.

MR. HWANG: Good afternoon, Madam Chair, members of the Board. I appreciate the opportunity to speak in front of you today. I'm Roland Hwang with the Natural Resources Defense Council.

Needless to say, we've been working on this program for the last 2 years. We are strongly supportive of adoption today without the delay and the indirect land-use change factor.

I did want to speak to something which one of the previous speakers just spoke about, which is that apparently not all investors and biofuel producers and second generation speak with one voice. I do want to remind the Board that this morning there were 4 members of this letter but there 16 signers, environmental entrepreneurs, Bob Epstein and others, investors and

producers of second generation biofuels, supporting the adoption of low carbon fuel standards and the indirect land-use change factor because they want regulatory certainty.

And I want to make a couple of points here why it's so important to their investments and why I believe that they signed this letter, which is, first of all, the pace of what we need to do in order to make this program successful is that in 5 year's time, there needs to be about 4 to 7 cellulosic plants being built per year until 2020. No time for delay regulatory certainty. Absolutely critical in order for us to have a chance to succeed.

Any delay, any delay in the indirect land-use change factor sets us up for a greater probability of failure to meet the 10 percent. Let's not kill our chances for success before we get started.

Second issue I wanted to raise on this issue of the review of the program, indirect land-use change in particular, we have experience with the zero emission vehicle program. We should learn from that experience, which is too frequent of reviews will kill this program, because we'll be locked in a regulatory debate. Regulatory debate -- continuous regulatory debate means that second-generation biofuel investments will be stifled.

So thank you for your attention. I really appreciate this opportunity in speaking in front of you. Important decision, momentous decision, complex decision, but very key. We have to have that regulatory certainty in place, the signal -- including indirect land-use change in order for us to set ourselves up for success to obtain that very challenging 10 percent by 2020.

Thank you.

CHAIRPERSON NICHOLS: Thank you.

Chuck White

MR. WHITE: Thank you very much Madam Chair and members of the Board. Chuck White with Waste Management.

Waste Management is the largest provider of comprehensive solid waste recycling services in North America. We are one of the first Fortune 500 companies to support AB 32 and we continue to support the great work you're doing in implementing that landmark piece of legislation, including the low carbon fuel standard.

Waste Management is becoming more of a resources and energy company than a waste company. We're the largest processor and collector of recycled materials in North America. And we generate energy from waste to power over a million homes in North America today and we're going to be continuing this direction. And we think the low carbon standard will really help.

We operate about 3,000 heavy-duty trucks in California about 2,400 of which are diesel, while 600 are natural gas. We want to continue expanding our natural gas fleet, which we think will be supported by the low carbon fuel standard. And we want to transition natural gas to biogas controls. We were implementing a number of projects, one of which that's starting next month at our Altamont landfill will produce very low carbon fuel from landfill gas. We are supporting the pathways that the staff has used to develop that. We're real excited about other possibilities to produce fuel from waste. And we're very -- we're looking forward to this low carbon fuel standard to provide the incentives necessary to make this a reality.

We're really -- I had a few comments. We're not going to go into those today. Most of them have been addressed or have been addressed by other commenters today. The staff has been great to work with, very accessible. And we really appreciate their diligence and we look forward to working with them as they continue to drop to develop the pathways. We wish there was more pathways in front of you today related to energy from -- fuel from waste. But we're confident that you're heading in the right direction and we look forward to continue to working with you and your staff as those pathways continue

to be developed in the near future.

Thank you very much and we urge to go ahead and adopt this low carbon fuel standard.

Thank you.

CHAIRPERSON NICHOLS: Thank you, sir.

Our final witness is Robert Sawyer, who's listed university as University of California at Berkeley. But he's also a distinguished former occupant of this chair.

DR. SAWYER: Madam Chairman and Board members. I'm delighted to be here. I brought Robbie Brunes a student in my freshman seminar on the politics of California air pollution --

(Laughter.)

DR. SAWYER: -- to Sacramento with me today to see how it all works.

When I first discussed the concept of a carbon standard for fuels 3 years ago with your staff, they were, to be generous, less than enthusiastic. They obviously understood the complexities of what was being considered much better than I did.

Thanks to the work of the environmental community, to Governor Schwarzenegger's leadership in issuing the Executive Order for a low carbon fuel standard, the seminal work of my University of California colleagues, Professor Farrell and Professor Sperling and

their associates, the passage of AB 32, the putting of the low carbon fuel standard on the Early Action List, we are where we are today. And I congratulate you all for that, especially for your superb staff and what they've produced.

You have a science based regulation, a performance standard using the right gram per megajoule metric -- only an engineer could love a quantity like that.

(Laughter.)

DR. SAWYER: -- and flexible compliance mechanisms.

This is one of the most important regulations to be considered in the long history of environmental leadership of the Air Resources Board.

I strongly endorse the staff proposal and encourage your adoption.

Thank you.

CHAIRPERSON NICHOLS: Thank you.

All right. At this point, I am going to close the public hearing and turn the discussion back to the staff and the Board. I think we should probably start with asking the staff to at least respond to some of the comments that have been made. I have a list, and I suspect others do too. And maybe I'll just start, because

I think there's sort of obvious that there's some big generic kinds of questions.

And I think you addressed them, to some degree, in the opening presentation. But having now heard a lot, one thing I can certainly say is that we've had -- anybody who is watching this and had not been involved before, got a really good short course in why nothing has been done to change the fuel supply in this country effectively for many, many years, because of the dissidence and the division couldn't have been more clearly illustrated.

But I think one whole area of critique of the way that the staff has approached biofuels and the indirect land-use issue is this question of whether the model is right or wrong, whether the numbers were wrong, whether we picked the right numbers to look at, and whether there was some kind of fundamental error in the assessment of the impact of corn ethanol there.

And I just want to kind of revisit that issue a little bit and maybe different board members will have different specific questions that they'd like to get at.

But from my perspective, I think the basic question is, you know, why you chose what you chose? Why that seems like the right set of numbers? What happens, you know, if you cut the number in half, if you cut it in quarters? Is it reasonable?

I mean, it sounds to me as though basically you could put in any set of numbers that you want and come out with a, you know, an answer if you have a predetermined result that you'd like to see, ranging from a very high impact to no impact. And obviously the decision has a huge affect on how corn ethanol or any other fuel would score as against a baseline fuel.

So there's -- you sort of have to ask the question, how did you choose the baseline fuel in the first place. And were those -- was that done right and we heard from the tar sands or the oil sands people that they don't think we and others that we were unfair in how we defined the baseline fuel. And then we've heard that we were unfair in the way that we defined the indirect land uses.

So let's just start with, you know, the model and the numbers that go into it and maybe you can comment on what you've heard.

DEPUTY EXECUTIVE OFFICER SCHEIBLE: Okay. I'll give it a try as I've been living this for a couple of years and pushing the staff and watching them develop greatly and that's been the joy of all of this.

We did have a predetermined number. We wanted the right answer.

(Laughter.)

DEPUTY EXECUTIVE OFFICER SCHEIBLE: And we knew that we probably couldn't get that in terms of with great precision. And we knew we were dealing in an area of uncertainty in pushing the science limits. Now, those are not things that are new to Air Resources Board or to the staff here.

So we've done this many times. The only thing that was new was it was a new area of science, a new area of investigation. We looked at the tools that are available. We found out that they were limited in number, selected the GTAP model at Purdue, because it seemed to have the capabilities to assess the major factors and it was in the public domain. Therefore, when we used it, we could be public about it. People could look at our assumptions. If they wanted to, they could run it themselves. And those are all very attractive attributes, because we knew we were going to be involved in something that was going to be of great concern to many people and we wanted all of those things.

We did a very careful analysis, an open process. So the first things that we did once we got the model so we could get it up and running was to do sensitivity analysis to learn what factors were most important. And several came out, so we knew that how you handled yields around the world was very important; how we input

co-product benefits was very important; the price response, in terms of demand, was very important. And so we identified in the first half of the effort the things -- the assumptions that would make the model provide different numbers.

After that, working with the experts that understood which numbers were more plausible than others, which effects were elasticity or other things, we ran a group of analysis and tightened up from, you know, going from 20 to 1000 grams per megajoule in the initial runs down to a very narrow range. We knew that we didn't have distinct uncertainty bounds. And so the final number is really an average of those runs that all had sensible inputs.

Then I think the policy side came in when I talked a little earlier about -- or a lot earlier --

(Laughter.)

CHAIRPERSON NICHOLS: Hours ago.

DEPUTY EXECUTIVE OFFICER SCHEIBLE: It was today, wasn't it?

-- that how do you -- how much time do you allow for the fact the model is saying there's land-use change that occurs shortly after you start using the crop for the biofuels. And it's going to a take a long time for -- you know, you get back a small benefit each year. And we

decided a relatively long time that would moderate the response.

And so in the end, you know, and given we've got a lot of experience here in terms of the types of uncertainty that we've dealt with. And I think the science is very much used in the context how we've used it in this rule for a slow transition from today's fuels to better fuels suffices.

Then into the process, we were criticized because we were doing this very detailed analysis of land-use change for biofuels and we weren't doing the same level analysis for other things.

Now, we were doing that because it had been very clear identified to us by experts at UC and others that for biofuels it's not the emissions out of the car or the biorefinery that's the most important thing, it's the emissions that occur when you grow the crop or any indirect effects that you have. So we searched for indirect effects for the other fuels. And I can tell you that we looked for them. We did land-use analysis related to petroleum.

We looked at what happens with natural gas and if we use natural gas where would it come from. At first we thought it would be imported LNG and it would have a big upstream energy signature. Then as we studied we've

learned that, you know, there are not LNG tankers coming anymore, because we found more domestic supply.

We looked at electricity and did a good job of assuring ourselves that with all the programs in place that the marginal electricity is going to be natural gas and renewables. And the charts that Simon showed earlier, basically our same analysis, is that they're probably -- there's some effects there buy they're not very large and they're not going to change the program or change the policy.

And so our response now is the science is adequate to construct the regulation. We're going to work with U.S. EPA and work with others in this hopefully in less adversarial more technical forum, because our goal is not only to have numbers in a California regulation, but have similar numbers in regulations that are used in the rest of the U.S., in New England or in the EU, because it makes little sense for us to value fuels differently for a lifecycle analysis.

CHAIRPERSON NICHOLS: Well, just to follow-up a little bit though on this indirect effects issues, because you're right, it's not just indirect land use, that applies more to the biofuels. It could be other kinds of indirect effects that you might be looking at as well.

And people who value, above all, energy

independence or who believe that, you know, growing your own is the way to get to energy independence would want us to take into account, and I think they're serious about this, the full range of costs associated with our current dependence on petroleum, which are certainly huge. And we didn't try to do that. You did not factor in all of the costs associated with our current practices of importing petroleum.

DEPUTY EXECUTIVE OFFICER SCHEIBLE: No, but the numbers that we've seen would suggest that the overall petroleum -- remember 75 percent of the emissions come from burning the fuel in the car. So we know a lot -- it's harder to move the petroleum number up or down with indirect effects.

And secondly, no matter what the petroleum number is, that's the starting point. And we're going to reduce that by at least 10 percent, if it were feasible, and more if we can do more than that. So we've been accused that some how corn ethanol was the target. Really, our target is reducing reliance on high carbon fuels and petroleum is the one that's going to be reduced the most.

In fact, under our proposal as designed, corn ethanol in California we expect to grow from about 900 million gallons last year to almost 1.5 billion gallons by 2010, as the federal renewable fuels program ramps up.

And our program was designed to allow that.

Much of the corn ethanol today will have lower carbon intensities than the standard. When it's used in California, it will generate credit.

The better of the corn ethanol used today generates credit all the way through 2020 and thereafter. And therefore, it does play. It has to compete. And there's many opportunities to improve it. So we don't see what we've proposed as being anti-corn ethanol or having some sort of dramatic push of the commodity out of the market.

It signals that we need better alternatives. We need better alternatives to something that's at the same level of gasoline or close to gasoline. And that's the only way the program is going to work in the long term.

And I think the uncertainty about the land-use effect has been probably over-magnified greater than what it needs to be with the overall program. Because again, like I said this morning, by 2020 the fuels that will benefit most from the low carbon fuel program are going to be ones that are much below all of the fuels that we see out there today, both direct effects. And if they're biofuels, hopefully they will be designed in a way so they either have no indirect land-use effect, they don't take up crop land or they take up the type of land that doesn't

compete very much and have the potential for the effects.

CHAIRPERSON NICHOLS: I'm just going to touch, as I said before, on a couple of the big issues that I know other board members are going to have and want to drill down on some of the specifics we get to looking at the resolution.

But let me just now point your attention to the issue of the economic analysis and the quotation from Mr. Reilly and so forth about the staff's looking at that.

DEPUTY EXECUTIVE OFFICER SCHEIBLE: Okay. A quick recap, of our economic analysis. Again, we tried to use the reasonable assumptions and projections into the future, which we means we can't guarantee they're right. They're projections.

We use the same projection of oil prices that we used in the AB 32 scoping plan, which, at that time, was actually the high end of the forecast. Now, it happens to be a little bit below the prices that the EIA, Energy Information Agency, projects. And their preliminary projection they came out with early this year. And it's in the middle of the range of the draft projection put out by the Energy Commission. So I'm thinking that we made a reasonable estimate of that. And oil prices we project will go -- once the worldwide economy comes back, there's no magical source of oil out there that's all of a

sudden going to go, we're going to see a repeat of what happens last year in terms of the demand is going to outstrip supply and we're going to see high prices.

High prices means that when you displace petroleum with something else, there's a lot of savings to be had there. And so if the something else doesn't cost too much, you're going to, on net, save money. And that's what we projected. We used projections from NREL, I believe, on what the future biofuel price would be. Again, we don't know that. And there's a difference.

But the net difference in California was that there would be a savings for fuel. We may get that anyway under RFS, under the federal program, but we didn't see a situation where, because we switched these fuels, we would have to be buying more expensive fuels.

The alternative analysis that's been quoted several times today. It's one study that was done by Sierra Research. They froze the oil price at 66 barrels -- $66 dollars per barrel. They said biofuels would cost quite a bit more and they said that the subsidy that's provided for biofuels under RFS, which is scheduled to -- it has to be renewed in, I think, 2012 if it's to continue, will go away.

We kept that in because we thought that 2 and a half decades of history, where once established, these

subsidies have continued would be maintained. And the circumstances where it might not be maintained would be one where you didn't need it anymore because the fuels are self-sustaining and economically competitive.

So we felt that we were doing a reasonable estimate that way. We did say we could be wrong. Not that our assumptions weren't reasonable. And if so, we're probably talking about a few cents a gallon. One thing we didn't focus on -- we focused on kind of the overall costs of the program and what it would look like in the years when it was having a big effect. In the start, there would probably a small cost, but that's less than a penny a gallon just to get the small volumes of slightly better fuels here and the factual that you'll loose access to some of the fuels around the world.

There is one area where I think we didn't do a proper cost analysis, which is when we stopped pending money on oil, where did the money on oil go? It went out of the country. It went to places that produced that oil. And we're importing less foreign oil. So most of that money is lost to our economy. And with biofuels or other domestic fuels, a fair amount --

CHAIRPERSON NICHOLS: Waste-derived fuels.

DEPUTY EXECUTIVE OFFICER SCHEIBLE: -- a fair amount of the money will be spent in the U.S. And there's

potential to spend a fair amount of it in California. And we really didn't do the kind of analysis that would -- what does that do for us or our economy? We were just trying to say what was the cost of compliance. So we think that we've done a solid job. We've clearly met the requirements of the law and have laid out, you know, an analysis. And this program is not going to be a costly program. And, you know, we have a long history of where there have been costs in fuels programs, we've been pretty upfront in saying yes, we're going to have cleaner burning gasoline that's going to cost 5 or 10 cents more a gallon, but we need to do it for health reasons. We didn't find those circumstances and so we told the story like we saw it.

CHAIRPERSON NICHOLS: Okay, thank you. Are there other statements that came up during the hearing that you feel a special need that you want to respond to? I'll give you the time to do that, if there are. If not, I'll just turn to the other Board members who may have questions and then we'll get to discussion.

DEPUTY EXECUTIVE OFFICER SCHEIBLE: I would like to address some of the comments about we failed to do an adequate environmental assessment.

CHAIRPERSON NICHOLS: Yes, thank you.

DEPUTY EXECUTIVE OFFICER SCHEIBLE: Because we've

heard that several times.

CHAIRPERSON NICHOLS: About the health effects.

DEPUTY EXECUTIVE OFFICER SCHEIBLE: About the health effects.

And so we did an assessment of a program where, you know, we have flexibility in the program. We have scenarios on how people might comply. We don't know exactly how they're going to do it. So we have to create what might happen. And so we did a pretty extensive job of modeling the shipment of biofuels into and around the State. We said there's some potential to buildup to 2 dozen additional facilities in the state. We modeled then. We put 3 of the facilities together at the same spot, which we think was unlikely. Modeled that to determine is that going to create a local health risk. Found out that the risk was low we've promised to do guidelines to help guide the siting of the facility.

And we've committed to say when facilities come -- are proposed, that would provide fuels to meet this and they're in California, ARB is going to be much more active in reviewing those, because we want to do several things. One, we want to guide them to be good facilities, to mitigate environmental impacts that use the best controls.

And, second, we want to see them get built. And

if they're good facilities and the don't have environmental impacts and they have economic values, then they should be built. So we want to work with them.

So we think we have dealt with the issue, as well as it could have been dealt with. We can't really go to a community and say there's no potential at all for a facility being built in your community. But the same, we can't go to a community and model a facility that we don't know is going to be there.

CHAIRPERSON NICHOLS: Okay. Ms. D'Adamo, I'll start with you.

BOARD MEMBER D'ADAMO: Well, I do have some questions. But before getting into that them, I just really want to compliment staff that you've done a tremendous job. And also Professor Sperling and the Chair under your leadership. This is -- I think we've heard a lot of testimony, in particular on the indirect land-use effects. And the day seems to be focused on that perhaps overly so and I just want to say that, you know, just to reiterate. This is huge. A 10 percent reduction toward our goal. A very cost effective regulation. Reduces our carbon footprint. Leads us in the direction of even cleaner fuels, consumer choice, reduction in dependence on foreign oil. So this is just a big day for us. And I want compliment you for that.

Having said that, I have been in discussion with staff over the last few days, in particular on the issue of indirect land-use impacts. And directing everyone to page 15 of the resolution, I like the language in the resolution. I just have one concern about it.

Looking at the third, "Be it resolved". I think it's clear here that this science is in its infancy. In fact, looking at some of the peer-review comments, one of them says that, "ARB investigation in this area is at the State-of-art, but this field is in its infancy."

I think that the -- I'm looking for your name, I'm sorry Dr. Hartnel --

STATIONARY SOURCE DIVISION CHIEF FLETCHER: Hertel.

BOARD MEMBER D'ADAMO: I'm sorry.

Also, in your comments, just the uncertainty of where we are here. But with further refinement, those uncertainties can be mitigated. And so I just think that we need to get some more information on this. There have been concerns raised on both sides. I don't really have an opinion whether that number goes up or down. I just think we need to do more investigating on it, more analysis.

And the date in the resolution of coming back 2012. I think, we need to come back before the regulation

takes effect. So I'd feel more comfortable with an early date of 2011. But other than that, I think that we're ready to go and looking forward to hopefully adopting this regulation.

I do have a couple of minor points, hopefully minor points, unrelated to the land-use issues.

Biodiesel. I know that staff is going to be coming back in the 15-day change period. Just curious if you're going to be able to resolve the State Water Board issue relative to the underground tanks.

And then also, any in-use applications of some of the concerns raised about whether or not there may be problems with some of the biodiesel fuels. Public disclosure of credits. I feel strongly that we need public disclosure. I just want to make sure we have that.

And then Nick Lapis in his testimony, just curious about anaerobic digesters, and then the fugitive emissions with landfills and whether or not those can be addressed or have been addressed already?

CHAIRPERSON NICHOLS: Do you want to respond to those.

Mr. Fletcher.

STATIONARY SOURCE DIVISION CHIEF FLETCHER: I'll take a crack at them. On first, the expert workgroup does come back at the end of January 1st, 2011 -- or the end of

2001. Did you want us to come back at the end of 2010 then?

We can do that.

The second issue related to the Water Board issues is a broader issue associated with work that we have going on with, not only the Water Board, but also with researchers looking at the multi-media impacts of biodiesel and renewable diesel. We also have a pretty extensive test program going on for biodiesel and renewable diesel to look at the air quality impacts of the use of that fuel in vehicles.

That is testing going on and is in support of specifications that we expect to come back with -- to the Board at either the end of this year or the first part of next year. If we find that there is specifications beyond what ASTM has that are necessary to ensure that we're not getting any increase in air quality impacts from that fuel.

There is no -- the B-5 levels are pretty routinely accepted. ASTM has specifications for that. I think part of the issue and the lack of confidence that folks have in biodiesel is, I think historically there has not been those quality specifications. And some of the fuel that has gotten out has caused some problems. I think with the ASTM specifications that are in place now,

and I think they even have specifications for B-20 even, that we are continuing our work on that.

Also, on that sort of the biodiesel renewable diesel area, some of the comments that you've heard today is that we shouldn't proceed with the regulation, because there is no carbon intensity specified for biodiesel and renewable diesel. And as part of the resolution -- well, actually as part of the 15-day notice, we are proposing to complete those pathways and include that as part of this regulation. So that will really tie up the remaining substantial quantity of fuel that is not covered.

On the issue associated with anaerobic digesters, that is one of the sort of specialized pathways that we've identified that we do not necessarily have carbon intensity for a lot of those niche pathways. And one of the other resolution provisions has states that the Board should work with these folks to identify and prioritize those pathways that are of most interest. There's a lot of folks that are coming in with a lot of different types of pathways right now. Some of them are more real than others. And what we want to do is to come back to the Board at the end of this year with a list of which once that we will go ahead and work on as the Air Resources Board.

Companies always have the options of coming to us

with the data needed to certify a pathway. And there's a process specifically in the regulation to handle both modifications to existing pathways, as well as new pathways. So that one is sort of in place.

And the last comment you had was on public disclosure of credits. One of the areas that we have to clean up -- or actually just have to add to the regulation is the entire credit trading program. And the issue of public disclosure of the credits will be addressed as part of that. And we're proposing -- that's one of the kind of the 2 issues coming back to the Board at the end of the year, specifically regulatory to address is the credit trading program.

CHAIRPERSON NICHOLS: Do you feel -- and maybe I should ask our lawyers this question as well, but do you feel comfortable going forward with a rule that is dependent on having a credit trading program without being able to specify what the credit trading program is going to be?

STATIONARY SOURCE DIVISION CHIEF FLETCHER: Well, we don't need the credit-training program until June 1st 2011. So if we're coming back at the end of this year --

CHAIRPERSON NICHOLS: Because no one can bank any credits before that.

STATIONARY SOURCE DIVISION CHIEF Fletcher: Yeah,

that's right. There's no bank or anything that occurs until January 1st, 2011. So we have enough time to come back at the end of the year. And that means it will be effective of -- likely somewhere around the middle of 2010, the full 6 months before. So, yes, the answer is we're very confident that we can come back and that's just not that critical of a part

On the transparency, it will be a controversial issue, I'm quite certain. And we know what the Board's direction is and we'll be working to structure it in that -- at least, we think we know what the board's direction is.

CHAIRPERSON NICHOLS: I think you've heard from us pretty clear.

DEPUTY EXECUTIVE OFFICER SCHEIBLE: We were at the ZEV hearing when that issues was discussed.

CHAIRPERSON NICHOLS: Right. Okay, Ms. Riordan.

BOARD MEMBER RIORDAN: Just a point of clarification, because there may be others that have questions and I have some questions. But I was reading while the question was asked about this review and the dates. And I wanted to be sure that I understand what the response was. I didn't see the response from the dais back to the staff.

And, Mr. Fletcher, just can you repeat that and

can I understand what --

STATIONARY SOURCE DIVISION CHIEF FLETCHER: My understanding of Ms. D'Adamo's request was, is that we accelerate the effort of the expert workgroup for looking at land-use and indirect effects to come back to the Board by January 1st, 2011 instead of January 1st, 2012. And that is a little bit different than what we have proposed, in terms of the formal review, which we will be coming back at the end of 2011 and 2012.

CHAIRPERSON NICHOLS: And I think we're going to want to have a broader review. I mean, I think there was a little head nodding here. But the whole question of how and when reviews are going to be done included of what is going to be included, when changes can be made in the reg, when changes can be made in somebody's individual allocation or number assigned to them. This is going to require a little more conversation, because I think many of us have views about this topic, and they may not be exactly the same. So I think you should note that, but don't take that as a -- don't be rewriting the rule just yet.

BOARD MEMBER RIORDAN: All right. Good. Then I didn't miss that. Because that is an area that I do want to discuss. But again, there may have been other people in front of me before I asked my questions.

CHAIRPERSON NICHOLS: Well, actually I was going to turn in your direction, just to be fair, because I always tend to go one side all the way and then the other, but this time I'm trying to be more even-handed.

BOARD MEMBER RIORDAN: Madam Chair, I want to say certainly to the staff, it is a Herculean effort that you've made and I appreciate very much the work that you've done.

Having said that, I can't stress enough my support of a continual review. Unlike one of the speakers, I really appreciate review, because I think we sometimes make a assumptions that certain things are going to happen and they just don't happen. And I think that review is very critical so that we can adjust, we can refine, we can alter some of our early assumptions and make it part of the real world, where the actual work is being done.

So I'm for that review. I like the idea of review. And I really can't commit to support unless we have this review.

Now, having said that, the only thing that came to my attention and I wasn't real clear on what our response might be, and that was to the small refiners. I didn't know whether or not there was something that they brought up that we should be thinking about, or whether we

feel that that has been covered and that there are things that, you know, would not necessarily work to disadvantage them tremendously because of their size.

DEPUTY EXECUTIVE OFFICER SCHEIBLE: When we've had fuel regulations before that have split out small refiners, it has been on very defined grounds, where we could say their cost of compliance, because investment is much higher, their access to capital is much more difficult, and the cost per ton reduced of pollution. And it would put them in a severe financial disadvantage, because we like the idea of a flat playing field.

Quite frankly, in this regulation, I can't see that that occurs, because, they by blending -- I mean, they're in a similar situation with large refiners, that they can't go upstream and create their own fuels, but there's going to be a trading market, there's going to be lots of independent people creating fuels. There's biodiesel out there that they can blend and get credits. So they didn't make a persuasive case. Why? Because they were small. They were so different.

One of the arguments they made is they naturally, because they are simpler refiners or because of the crude they use, they might, as an individual refiner, happen to have a lower level. And earlier in the program, we tried to decide how are we going to treat refiners and imports.

And we decided, for practical reasons, and to avoid shuffling and other things, that it was just going to be more straightforward to have singular values. Otherwise, we'd have to go through each and every refiner, each and every crude load that came in on the ship or got pumped out of an oil field would have to be tracked and would become incredibly complex.

And so we're not convinced that it makes sense to do a refinery specific analysis for some, because we'll see the winners. We won't see any of the losers coming in and applying.

I think the is the type of thing where if they want to -- you know, the program might evolve over time. And we have planned in 3 year reviews. The first couple of years of the program should be pretty modest for everyone to meet. So it's something we can look at as time goes on. But we're not willing to say from what we know today, that they've made a convincing case why they should be treated differently.

BOARD MEMBER RIORDAN: Thank you.

CHAIRPERSON NICHOLS: Okay. I'm going to -- all right, I'll take people in the order. I was actually going to just go to everybody, figuring all the Board members might have comments or questions at this point. So do you want to speak at this point or would you rather

wait.

BOARD MEMBER SPERLING: I'll wait.

CHAIRPERSON NICHOLS: You'll wait. All right.

You had your hand in the air.

BOARD MEMBER ROBERTS: Thank you, Madam Chairwoman.

Wow, what a day.

Let me start. Earlier today there was a comment made that models are just models. I think you may have made that.

CHAIRPERSON NICHOLS: I did?

(Laughter.)

BOARD MEMBER ROBERTS: And it bothered me. And it still bothers me, because it sort of lumps all models into one category. And Some models are a lot better than other models.

And our success ultimately depends on us having a pretty good model. It doesn't mean we need a perfect model. But we definitely need a good model. And we need something that works. And I sense that part of this is a confidence maybe that a better model is going to evolve over time as we get the inputs. And I think that's the need for having these periodic meetings with a little greater frequency than maybe staff was thinking, to have the reviews. You're kind of checking in.

And especially on some of these issues with land-use, that I think leave a lot of questions still unanswered. One of the concerns I have, I'm still not -- it's not clear to me. One of the last speakers who spoke of indirect impacts on some of the other nonbiofuels. And I wasn't quite sure what he had in mind, but we've kind of dismissed that as being inconsequential. And, you know, as I kind of think through it, it just seems like we did that very quickly. I don't know the gentleman's name. He wasn't on the list and you recognized him. And I was just wondering what are examples of the things that he might have had in mind that we've so quickly dismissed here as not being all that critical.

Mr. Scheible.

DEPUTY EXECUTIVE OFFICER SCHEIBLE: Actually, we looked for them. I thought before it was kind of like the search for the weapons of mass destruction that went along a few years ago.

Here's an example of a scenario. We use more natural gas in our vehicles in California. That's going to have an impact on natural gas -- that's going to -- for something to happen upstream from that.

And one thing was postulated well, because we muse more natural gas, less natural gas is going to be available for other uses, some powerplants are going to

use coal. That transfer will use the natural gas and it will result in coal being burned. So we have to assess that. Is that a plausible scenario? Is that likely to happen.

So when we look at it, it turns out that -- our assessment is that when we use more natural gas, we might have a slight price impact on natural gas, but that there's ample -- looks like there's ample supply, so that more will be taken out of the ground, so that the secondary effect didn't look to be very large.

The same thing happens with electricity --

BOARD MEMBER ROBERTS: Well, let me go back, Because on that you said that we were not going -- you know, it's all coming, sort of toe mess particularly. And yet we know that, at least in San Diego, we're seeing a major effort from Sempra who has invested a lot of money now and bringing in internationally, which kind of goes -- flies in the face of what you were describing. So I'm trying to take my own experience and --

DEPUTY EXECUTIVE OFFICER SCHEIBLE: Well, there's no natural has. That facility is basically sitting there now as far as we know.

BOARD MEMBER ROBERTS: Yeah, but it won't be for long. Well, we'll see.

DEPUTY EXECUTIVE OFFICER SCHEIBLE: We'll see.

Well, we did investigate the issue and --

BOARD MEMBER ROBERTS: They bet a lot of money that it won't be. And they're doing a lot of work to an anticipate that at some point

BOARD MEMBER ROBERTS: Now, for -- you know, the economy has slowed things down clearly.

DEPUTY EXECUTIVE OFFICER SCHEIBLE: But that's type of thing that we would put into our analysis, where does that swing supply come from, where does it come from for electricity.

There's a whole area of economic modeling that we would have to get into and we can investigate as time goes on.

BOARD MEMBER ROBERTS: So that's again I guess that's --

DEPUTY EXECUTIVE OFFICER SCHEIBLE: And that's part of the ongoing effort.

BOARD MEMBER ROBERTS: There's a point at which we can start to bring factors like that in, even though they're not on the table today.

DEPUTY EXECUTIVE OFFICER SCHEIBLE: That's correct. Once, you know, the factor is identified, you decide its real, you do enough analysis quantify it, and I think the policy that the staff is pursuing, is once quantified, we will be proposing it for all fuels, even if

it's a small number.

BOARD MEMBER ROBERTS: So we're not foreclosed on that.

DEPUTY EXECUTIVE OFFICER SCHEIBLE: No. We think that's the appropriate way to go. But what we will say is that we know it had the potential and we believe it is very large for some of the crop-based biofuels. And from what we know today, it is not very large for the other fuels. If we find out it is large or even if it's small, and we can quantify it, we think the right policy is to include it.

CHAIRPERSON NICHOLS: If I could just say a word in response to that comment about the model. I don't think I heard criticism of the model. I think I heard criticism about the data that was going into the model and whether it was up to date or correct, or whether it had somehow -- if you had choices, whether we had used the, you know, wrong assumptions or within a band of results that we picked the right ones to use.

And I found that actually quite reassuring. Normally, you'd hear lots of attacks on models. And, you know, that they're just -- they work wrong or that they come out -- they weight things incorrectly or they wrong assumptions built into them. I didn't hear any of that actually, which was extremely reassuring.

BOARD MEMBER ROBERTS: Well, maybe we're saying the same thing in a different way.

CHAIRPERSON NICHOLS: It definitely is hungry for data, though. And we do need a way to feed more accurate data and get responses.

Yes, Dr. Balmes.

BOARD MEMBER BALMES: Well, just as an academic, I can't help from commenting about models. But I just would point out to the group and the entire room that the GTAP model that Dr. Hertel presented is an extremely well vetted model compared to many that are used. And, I mean, as he correctly pointed out, the data -- because of that vetting process and because the data have to come international sources, the data are always a little bit out of date. And, you know, that's a reality.

But I think once the data are vetted by this, you know, there's a very extensive advisory board validation for vetting of the data. That's a pretty good model as far as models go.

CHAIRPERSON NICHOLS: A good model for models.

BOARD MEMBER ROBERTS: Could I -- I'm not down yet.

CHAIRPERSON NICHOLS: Yes. All right, finish up.

BOARD MEMBER ROBERTS: And I didn't mean to get everybody so defensive over that.

(Laughter.)

CHAIRPERSON NICHOLS: That's okay.

BOARD MEMBER ROBERTS: Quite a few years ago, we had a situation where we were regulating 2-stroke engines in watercraft. Some of the staff will remember it. And there was not too many board members who were there then. And it was interesting, because while we were going at it from a clean air perspective, the real benefit was water. And we couldn't regulate water, but that was an outcome.

And I mention it, because it seems like our efforts today in going and trying to bring about air quality result is really got another benefit and it's only been touched on here a couple times, the whole notion of a petroleum-independent economy, which is -- it's like -- this is like the 900-pound gorilla moving through all of this. And it has been mentioned, but it hasn't -- you know, there's no way -- I guess I can't say the model doesn't account for it, because we'll get off into a tangent again.

(Laughter.)

BOARD MEMBER BALMES: I'll be quiet.

BOARD MEMBER ROBERTS: But it's something that's not evaluated or valued and not brought into this that to me it almost overshadows so much of what we heard today. And while that isn't the goal, I just have to tell you for

me personally, it's an awfully important --

CHAIRPERSON LLOYD: Value.

BOARD MEMBER ROBERTS: -- thing that's going to result from this.

Having said that, probably one of the only countries outside of the U.S. where we seem to maintain reasonably good relationships is with Canada. And the Canadians were here today. And I'm wondering how the staff sees their requests and how they see that unfolding with respect to the oil shale or sand or whatever it might be.

DEPUTY EXECUTIVE OFFICER SCHEIBLE: They vastly prefer oil sands.

BOARD MEMBER ROBERTS: Okay.

DEPUTY EXECUTIVE OFFICER SCHEIBLE: Well, I think it's basically a challenge. I mean, we've heard testimony and gotten input how they are going to develop this resource, responsibly and capture the emissions, get the emissions low. And basically we've set up a program where say make it as clean as the conventional basket of petroleum and it comes into the program, but you have to show how you do that. That's not a plan on paper to investigate carbon capture and sequestration. That's a plan that's demonstrated and have it working.

BOARD MEMBER ROBERTS: So the studies that

they're currently doing and that are, I guess, about to be before you will be analyzed at that time and then hopefully that will give you the information that they do qualify as part of the, I think it was referred to, California Basket.

DEPUTY EXECUTIVE OFFICER SCHEIBLE: Right. And we have some high-intensity crudes in California. But we also have an AB 32 program where we're saying we're going to cap their emissions. We're going to put controls on them, make them over time buy carbon credits or reduce emissions.

So we think that we, you know -- we have a very sound basis for saying we're treating our emission sources. Our refineries have to do the same thing. They're going to be living under a cap when we get that regulation in place.

CHAIRPERSON NICHOLS: Well, I just can't help but observe that while it's true that Canada is our largest training partner and fortunately we haven't been at war with them for many, many years, they don't hesitate to charge us whatever they can get for their product either.

And so if you're concerned about petroleum dependence, which it's just as dependent if it's come from Canada as it is if it's coming from someplace farther away. So I mean we are balancing a lot of different

factors here, I guess, in our thinking about this.

BOARD MEMBER ROBERTS: Well, I think it's more than a cost issue though. Somehow, I feel even at the same price, I'd rather get it there than have to go to Venezuela or any one of a number of other places, but that's just a personal feeling.

DEPUTY EXECUTIVE OFFICER SCHEIBLE: And I think the technical information shows pretty clearly that unless they take extraordinary efforts to extract that very carefully and minimize the carbon emissions, that it will be a high-carbon source of petroleum, and we will have actually more carbon in our transportation system if we use that here rather than less.

BOARD MEMBER ROBERTS: Yeah, but the studies are going to give you that information.

DEPUTY EXECUTIVE OFFICER SCHEIBLE: It's prove it to us.

BOARD MEMBER ROBERTS: Okay, so that's what I was concerned about.

Madam Chairman, first Of all I compliment the staff. This is an incredibly complex issue. Probably the most complex that I've seen in all the years that I've been here. And I think today is probably the end of the start.

(Laughter.)

BOARD MEMBER ROBERTS: It's not the end of the end, and it's not even the beginning of the end. But it may be the end of the start. And that would have probably Winston Churchill rolling over.

But I think we need a start. I mean, we should have been starting decades ago for other reasons. And I think irrespective of what the reasons are, this is incredibly important. And I think even though I may have some criticisms and whether it's the model or the data or whatever, it's good. It's not perfect, but it's good. And good is not the enemy of the perfect.

So there's every reason for us to proceeding on this today, inspite of the editorials I'll have to read tomorrow --

(Laughter.)

BOARD MEMBER ROBERTS: -- in my own home town. But I do want to thank the staff for the work that they have put in. And by that extension all of the people in the science community and elsewhere that have helped us with this. It should have been done sooner, but that's only more reason for going at it today.

And I than you for giving me a chance to --

CHAIRPERSON NICHOLS: I'll look down at the other side and see if anybody wants to speak at this moment.

BOARD MEMBER KENNARD: I'm next.

CHAIRPERSON NICHOLS: Okay, you're next.

BOARD MEMBER KENNARD: We'll, first of all, I'd to thank Dr. Sawyer, our former colleague, not only for coming here today, but for planting the initial seed that this was even a possibility, so thank you.

And also to the staff and the public who spent untold hours getting to this point, which is, I think, to Supervisor Roberts' point just the beginning.

We heard a lot about kind of the uncertainty of the methodology, the uncertainty of the future. And my own sense is that that's not a reason not to try to shape the future, and I think this is what we're doing.

What gives me comfort in all of this uncertainty is that this is a fluid process, that we have lots of opportunities to make changes. And I would also like to support Ms. D'Adamo's recommendation that we move up the indirect impacts analysis, so that we have a little bit more knowledge before this goes into effect.

I did have some specific concerns, most of which Mike, I think, did address. The claim from the EJ community that the cumulative impacts have not been fully vetted. And I think that's probably -- there's more work to be done as we go forward, because this is an evolutionary process.

The refineries, I had some concerns about that.

And I'm not a hundred percent confident that there is not distinction between the small refineries and the larger ones. And I hope that we continue to monitor that and look at that. And then finally, I was particularly impressed by the magnitude of comments from the Hispanic and African-American Chambers and the concern about secondary and tertiary financial impacts. And I hope that we continue to monitor that and remain sensitive to those issues, because there's a real economic distinction between small businesses and their capacity to share this kind of burden.

And finally, just congratulations. This is historic and I'm very happy to be part of it and you've -- you know where my vote is.

Thank you.

CHAIRPERSON NICHOLS: All right. Yes, Ms. Berg.

BOARD MEMBER BERG: Thank you Madam Chairman. Well I, too, want to congratulate staff. I know this is an amazing effort to be at this place, because I'm very overwhelmed from time to time. And so I do appreciate all the efforts that staff has personally given me to understand this issue and to work with the stakeholders. I, like my other colleagues, would just encourage -- in fact, in order to go forward, would have to know, and I feel like we do know, that we're ferocious learners. And

that we are just absolutely going after the next level of science and information that is, in fact, going to make that data even more relevant and give us the next knew numbers.

I'm not totally comfortable with where the numbers are on the land-use issue. Given that, notwithstanding that information, I would be able to move forward knowing that supporting Ms. D'Adamo's motion or suggestion that we move up the review to 2010 and that this working group do a lot of work between now and then, because I do understand that there is not debating the number. At this point, I wouldn't even know where to start with that. But we do need to come back and I do need to have a sense that ultimately where we end up is a fair number that we feel is the way and the path to go forward. So I'm in favor of moving that up.

I also agree that I do think we need to take a look at the independent refiners. I think that there is a difference between a refiner that does cracking and coke processing versus a refiner that does blending. And so I do hope that we will continue to get that information. That doesn't need necessarily to come back at the end of the 2010, but we need to get that information and learn more about that process.

The other thing that really struck me was the

amount of moving parts. Like it was a surprise to me that the Water Board currently did not -- we didn't have the ability to store in underground tanks biofuels with greater than 5 percent blends. And so we've got to keep these moving parts all in front of us or we have to have ways that when we discover them and people can't comply, that we can respond to that. And so I also would very much encourage that.

It's still disconcerting to me on things like the economic model, when we have our U.S. Secretary of Energy testify yesterday in Washington D.C. that, in his opinion, a low carbon fuel standard will, in fact, increase the price at the pump. So there is a diverse amount of information out there. And I can see where the small businesses are very, very concerned at the end of the day how is this going to affect them.

They're trying to survive and get through this current economic crisis. And they just don't want to have other looming economic issues that we unintendedly might be creating. And so I agree with my other colleagues that that also has to stay in the forefront.

So I'd like to close with the fact that I am very much in favor of the language that was brought into the resolution to create an expert workgroup. I agree with the chair that we need to be very specific as to what our

expectations are going to be to come back with a report. I agree that we need to move that up.

And I would like to remind, of a conversation that we had when we started the AB 32 process, and that is that we knew this regulatory process would not be the same as the last 40 years. We knew that it would have different moving parts and different relationships with stakeholders and we were going to be leaders and on the cutting edge.

And if you're going to lead with disruptive technologies in business, you have to be very careful and very intuitive in order to make it to the next part of the technology, so you're around, not that you're disruptive and then you lose leadership because you lose your focus.

So, again, congratulations. I really appreciate all the effort and I agree with Supervisor Roberts, I think it's just the beginning.

BOARD MEMBER BALMES: Point of information?

CHAIRPERSON NICHOLS: Thank you.

Yes.

BOARD MEMBER BALMES: I don't want to get out of order, but I think Ms. D'Adamo's suggestion was for the year 2011.

CHAIRPERSON NICHOLS: January 1, 2011.

BOARD MEMBER BERG: And then the conversation

came back, even a year earlier, but we're at 2011?

CHAIRPERSON NICHOLS: I think we're at 2011 in terms of the proposal --

BOARD MEMBER BERG: Okay, thank you.

CHAIRPERSON NICHOLS: -- that we're dealing with here.

Okay, next in line. Supervisor Yeager.

BOARD MEMBER YEAGER: Yes. Thank you. I, too, feel like we are making history today. And I'm very honored to be apart of that.

It does show that this board and staff and our Governor and our state are taking global warming very seriously. We all know that to be able to reduce the impact of our carbon footprint on this planet, we do need to begin changing individual behavior and also we need to have the changes in the transportation fuel industry. And this is just a huge step in that direction.

In the past, we haven't taken into consideration the full cost of carbon-intense fuels. And it really is the very first time that we are going to be doing this. And I think as consumers, as the public and as scientists look at getting more at the overall costs of carbon intense fuels, that we will see more of these type of discussions and other regulations in the future.

But this really is the first. And we all know

that the other states in this nation and countries around the globe are sort of looking at what we are doing. And I think again we will see a lot more public input and a lot more research done in this area.

We've had a lot of speakers. I think we had about 95. And it was quite a few, and it was good to listen to them all. It seems like, in some ways, we can divide the speakers into 2 groups: Some who just don't really believe that there should be a low carbon fuel standard. And I'm not sure anything that this Board or staff could say would ever really change their opinion.

But thankfully the majority of this speakers I believe felt that we do need such a standard. And for those speakers we appreciated all the comments that you made. Clearly, we can do better at what we are attempting. And staff, even though they spent a lot of years on this already, know that it needs to be tweaked, that they appreciate the input that they are receiving. And I think staff really did listen.

We all saw it the first thing this morning, but in that Attachment B, and I hope people were able to see it, that there are going to be many things that are going to be included in the review. And I won't list all 13 of them, but they are here, but they really did, I think, address many of the concerns that the speakers had.

Looking at -- I'll just mention five, because I think they're important. Looking at advances in full fuel lifecycle assessments, the availability and use of ultra low carbon fuels, the LCFS program's impact on State fuel supplies. Analysis of the public health impacts. And identification of hurdles or barriers, such as permitting issues, infrastructure, adequacy and research funds and recommendations for addressing such hurdles or barriers.

So even though that there is, again, a lot more work that needs to be done, I think that by the time we're ready to go forth, all of the areas that we don't understand enough about will be addressed. And that the final product will be something that will be effective, and that we're looking at all the things. And I also agree that it is important to have the review earlier, but also important, and it's been good to listen to my colleagues that we're sending a very strong signal to industry, that there will be a change in the marketplace. That now is the time to begin investing. Now, is the time to do the research. Now, is the time to sort of get on board and be part of this very exciting time in our State.

That we're not going to go backwards. We're not going to change it. This is something that you can bank on. And that again, we can always tweak it, but we're certainly headed in the right direction.

And I know that there is some concerns about some of the new facilities that will be built. My hope is that we can work with the local air districts throughout the state on making sure that the issues that the environmental justice advocates mentioned are taken into consideration. We certainly know a lot of them are going to be covered by CEQA. But I think it's going to be a very good role for the air districts. And I think the Air Board can help them trying to figure out what that overall impact is and how it will affect public health in those areas because I don't they wouldn't all of them in particular area or not understanding the impact, because certainly the idea isn't to reduce one problem area with public health only to create another.

So, again, my congratulations to everybody that's been involved in this. It's really a very exciting time.

CHAIRPERSON NICHOLS: Thank you very much.

Dr. Balmes.

BOARD MEMBER BALMES: Well, I'll try to be uncharacteristically brief, given the time. And I sort of get the vibe from the chairman that she would appreciate that.

So, I want to compliment the staff along with my colleagues. And to the point where, you know, detailed suggestions that I was about to make in terms of

resolution showed up in the package of additional changes -- and I really want to compliment the staff for listening to the same stakeholders that talked to me, and were responsive to their concerns.

Specifically with regard to public health impact analysis of the LCFS at the State and local level with regard to especially local impacts. I really like that addition. The same with regard to air quality impacts, in terms of criteria pollutants.

One other public health impact analysis that I would like to see incorporated into our future work on this would be on the pathway analysis. Because, as I mentioned last month, I think that toxicities of emissions from both new fuels and the production facilities has to be thought about. So I would just add that.

But overall, I was very impressed with the addition of these things.

With regard to pathway analysis a couple other points. One is that, well, I guess it's -- as I read the language on page 16, we'd be delegating authority to the executive officer. And as much as I respect him, this is what the pathway analysis -- as much as I respect him, given the complexity, the concerns expressed by stakeholders, you know, I think I'd sort of like --

CHAIRPERSON NICHOLS: I'm sorry go ahead.

BOARD MEMBER BALMES: I'd sort of like to see the Board have a continued role in this. You know, I see that on top of page 16 that there would be a progress report. But I don't know and I don't want to overly burden the staff. But I'm curious about how my other colleagues would feel that we need to sort of monitor -- we, the Board, need to monitor the pathway analysis.

CHAIRPERSON NICHOLS: The last sentence of that paragraph, it talks about the executive officer says, the Board directs the executive officer to notify the Board of the initiation and results of any rule-makings conducted pursuant to this delegation.

So my understanding of this was that whenever the executive officer initiated a new pathway, he would notify all the Board. And if a sufficient number of Board members, which would be any of you, felt that you really wanted to bring that back to the Board, we would ask the Executive Officer to do that.

So I don't feel like we had to spell it out. Although, I suppose it could be spelled out further. But the idea here is that we could be getting huge volumes of these things. And they could be really routine and technical and we wouldn't want to be involved.

On the other hand, there could be some real issues.

BOARD MEMBER BALMES: Is there a way to periodically have the Board review these, so it didn't require us to be monitoring?

CHAIRPERSON NICHOLS: Yes. Well, he needs to give us a little list of any that he's working on. And he needs, under this language, I believe, to tell us what he did. So the question is, would we want to be informed sort of before he made the decision on any of these pathways or at some midpoint, I guess, as to how that was all going. Certainly, we could do that.

DEPUTY EXECUTIVE OFFICER SCHEIBLE: And these are going to be rule-makings. So there's going to be

CHAIRPERSON NICHOLS: They actually are --

DEPUTY EXECUTIVE OFFICER SCHEIBLE: Yes. After listening to our legal staff, we decided that it was necessary to make these rule-makings. We do have a goal coming back in December with criteria. And if we are really successful, we'll turn those into a certification regulation.

But many of these are going to be engineering analysis. Show us the plant. Show us the technique. Give us the energy balance and we can figure it out. When you get something complicated like a new indirect land-use effect or for some significant crop, I think that's going to have additional policy elements that the executive

officer will likely decide that the Board should make.

CHAIRPERSON NICHOLS: Well, the land-use funds are exempted from this delegation anyway.

DEPUTY EXECUTIVE OFFICER SCHEIBLE: Modifying them. But there may be some aspects of some new biofuel pathways that have a small land-use element.

CHAIRPERSON NICHOLS: Are you comfortable with leaving it as it is at the moment with the understanding that the executive officer is going to have keep us thoroughly informed and we're going to get to look at the criteria in December for him to do it.

BOARD MEMBER BALMES: Okay.

CHAIRPERSON NICHOLS: Is that okay?

BOARD MEMBER RIORDAN: Yes.

CHAIRPERSON NICHOLS: All right.

BOARD MEMBER BALMES: And then in terms of fairness, we've heard a lot about fairness today from testimony. But I have to say -- and again this is not my area of expertise, but I'd maybe like to hear a little bit more discussion from staff about this CNG, LNG domestically produced, whether they need to be treated equally? And the same with the combustion technologies. I'm at the, what EER --

CHAIRPERSON NICHOLS: There's language on that in the --

BOARD MEMBER BALMES: Yeah. And is there new language?

CHAIRPERSON NICHOLS: On page 16, it just says we direct the executive officer to specifically evaluate -- reevaluate the EER for heavy-duty vehicles, fueled by compression and liquefied natural gas, and if appropriate to update the EER as soon as practical.

BOARD MEMBER BALMES: Okay, yeah. So thank you.

So, I guess I would --

CHAIRPERSON NICHOLS: We anticipated this

BOARD MEMBER BALMES: Yes. I'm actually sort of amazed.

(Laughter.)

BOARD MEMBER BALMES: There was another specific thing about the siting of facilities that said, I think the original language was, "if appropriate", that it would be brought to the Board, a guidance document. And now it doesn't say "if appropriate" anymore. It's going to be brought to the Board. So you've really taken care of all my concerns.

(Laughter.)

BOARD MEMBER BALMES: So I would just add my echo to my colleagues who have already spoken. I think the effort was described as Herculean. And I think it is. And I'm especially impressed that given how big of an

effort it was in total, that a lot of specifics have been addressed in the modified document.

So my thanks and pride in the staff's work.

CHAIRPERSON NICHOLS: Thank you. Do you want to say anything at this point, Dr. Telles.

BOARD MEMBER TELLES: Yeah. I'm going to be a little less favorable than the rest in my analysis of this. And I'm going to base my view of this on the same view that I spoke up when we passed AB 32, and that's basically on health and also the truck rule based on health.

Whereas, I expressed before, I think the economy is extremely important, not just for economic purposes, but also for health. And we're experiencing that in San Joaquin valley at a degree that nobody else is in the State. Fresno county has 17.9 percent unemployment. Merced County 20 percent unemployment. We have cities in the valley which are 42 percent unemployment.

As result of this, our hospitals are being filled up with patients that can't pay, and it's putting a big burden on our healthcare system.

Having said that, I think the economic analysis is crucial, especially in our area where almost everything that we create or grow is put on a truck and transported someplace. And if the economic analysis is wrong, and the

fuel prices actually do increase, that the valley is going to be in extremely -- not only more depressed, but also worse off as far as health goes.

Earlier, we had a little discussion on the biodiesel. And well, if it's not available, you only make fuel that is available for a truck that can burn it. You know, in other words, nobody is going to make it.

But if the fuel is not available -- or if the fuel is available, but we're imposing on the company that's making the fuel a restriction that they have to buy credits from someplace else to make that fuel for that truck that can burn it, I can't think that -- can't help but think that those credits are going to somehow translate into a higher fuel cost for that trucker who's going to be buying that fuel.

I think the economics -- I really have a hard time believing that this is going to be neutral for California.

In the environmental justice part of this, also when I mentioned in AB 32, I don't think we should pass anything that's going to make anybody's lives worse in the State of California.

There weren't a lot of environmental justice people testifying today. But I think they're saying more than just, you know, doing a site analysis of a bioplant

in Pasadena or wherever it might end up being. They're also talking about the fact that the price of fuel and the price of food may go up. And that will have an adverse impact on the people in the environmental justice communities who can afford it the least.

And no place in this document does it say what we're going to do if that were to occur. And I thought that that was my understanding of what we were going to do with AB 32. And we're just kind of kicking this farther down the road. And I don't think it should be not spelled out exactly in there what's going to happen. And I think your own Environmental Justice Advisory Committee made the same recommendation. I think you should listen to their recommendation.

Health impacts. Direct health impacts. The criteria pollutants maybe it's not going to make any difference. I tried to find out what happens with a larger use of ethanol products, trying to get on some websites in Brazil. And my understanding that there may be a problem as far as some of the biodiesels and just criteria pollutants.

And then there's a concern for formaldehyde and acetaldehyde which were not even addressed in this document at all. And to go forward and not addressing something that hasn't even been looked at makes no sense

to me which could be a potential extreme health hazard, but we don't know.

Everybody is talking about how that California can lead the way here. I'm going to have -- if this is the document to lead the way, I have some criticisms, and I mentioned this to Mr. Goldstene earlier, on the document itself.

It's very difficult to read. I've spent the last 30 years reading scientific documents and I find this one extremely difficult to read. A lot of the graphs are not -- and a lot of the tables are not explained well enough to be able to read it in a fashion that you can go to the initial source and really figure out what's going on here. I think it's very difficult to read and I think some of the people, maybe not in the peer reviewed, but other scientific community felt the same thing.

On the modeling issue, it is a model. And maybe it's the best model that's out there. Although, we received a letter from 125 scientists that say it's not the best model. I mean, not that it's the best model, but the models are not good enough to proceed with indirect land use. And I have a hard -- the indirect land use part of this document, I have a hard time accepting the fact that we're going to ignore the comments of 125 scientists. And I actually called a couple of these guys to see why

they're against this.

And they basically said that the model is not good enough, even though it's probably best out there to really figure out how to do this. And that's the reason why the European community is not proceeding with this.

So I have a lot of concerns that are not addressed. And I would have a hard time voting for this.

CHAIRPERSON NICHOLS: Thank you.

Okay. I think we've heard now from everybody, except from Dr. Sperling who gets the next to the last word.

(Laughter.)

BOARD MEMBER SPERLING: I knew Chairman Nichols you would have plenty to say.

(Laughter.)

BOARD MEMBER SPERLING: So let me just start off by kind of elevating this a little bit. You know, people have mentioned that this is historic. And it really is. This is -- you know, I've spent decades studying alternative fuels, writing books and papers and being -- observing the policy process. And it's been a very painful history. There have been, what some of us have referred to as the fuel du jour phenomenon. We've jumped from one to another.

And what's happened is we've finally ended up, in

my mind, with a policy framework that is durable. It's not ad hoc. It sends clear signals and really is the mechanism that can be used to orchestrate this transition to low-carbon nonpetroleum fuels.

And, you know, I signed on a couple years ago to participate in this project, because I believed, at the time, that this was the right way to go. And all of my -- the last 2 years have only confirmed that, have reinforced that.

And just to -- you know, Bob Sawyer kind of just very quickly -- it was a very nice eloquent last statement that he made. But similar to what he said, just to summarize the attributes of this, why this is so important and why this is such good policy. This, in my mind, is an example of government at its best, doing good policy, that's responsible, and responsive.

It's science based. You know, we have that scientific measure of grams of CO2 equivalent per megajoule. So we have a single metric that we're using. And all of the arguments here that we've been going through are really the details of how to get those numbers right.

And what reassures me is the staff has, you know, I'm going to thank them even more in a second. But what the staff has done is create, not only a good analysis and

structure, but a good process. And that's what reassured me. You know when we started this process, I also had a lot of misgivings. And even, you know, up until fairly recently.

But seeing how the resolutions were put in place, the review processes that are here, I think we've got something that really will work. And if there's problems, there's a mechanism for making adjustments along the way.

So it's science based. It doesn't pick winners. It's performance based. It provides an incentive for innovation. And there's one point I want to make on that. And there was this discussion tar sands. And what the low carbon fuel standard does is it provides an incentive to the tar sands manufacturers/producers to be more efficient on how they produce the fuel, and to find ways of reducing the carbon foot print.

And I was talking to a senior oil executive just a few days ago. And he was saying, you know, it's possible to produce gasoline from tar sands with smaller -- less carbon than gasoline from conventional oil. It won't be easy. You're talking about cogeneration. You're talking about carbon capture, about reducing the amount of natural gas that's used in it. But that is the point of this. This is providing an incentive to improve efficiency and to reduce the carbon footprint.

And the tar sands can stay in the mix, but it can get better. And the same thing, if companies want to invest in oil shale, the same thing can happen and will happen.

So, you know, this -- so I've been involved with the staff, I guess, more than anyone on this Board, on this project. You know, Mike Scheible was involved in it right from the very beginning. And the staff -- I mean, everyone has said the staff -- you know, many have said the staff did a good job. But it's more than doing a good job. This was a tremendously challenging policy rule.

No one has ever done this before. You know, this is not like most ARB rules where there's a cutting -- a cookie-cutter template that you work with. There was no template for this. And so it took a lot of creativity. It took a lot of engagement with all the stakeholders. And it was, you know -- and so it was Mike Scheible. It was Bob Fletcher, Dean Simeroth, John Courtis, you know, managing it with a large staff. And they've done a fabulous job.

And so that's the big picture part of it. And, you know, I think I'm very comfortable with this, because of the -- all of the -- I have had many -- will do the ex parte. And, you know, like Chairman Nichols, I've talked to an awful lot of people in the last 45 days about this. And I think the resolutions respond in a respectful, fair

way to just about all of the concerns.

And having said that though, there are 2 or 3 little things I did want to mention.

(Laughter.)

BOARD MEMBER SPERLING: Actually just 2.

CHAIRPERSON NICHOLS: Sharpen your pencil.

BOARD MEMBER SPERLING: You know, perhaps the only place where I've had even just a little bit of difference with the staff is on the electric vehicle part. And where the staff has been working very hard to get the rule exactly right about which vehicles and which electric forklifts should get credit and which ones shouldn't. And I differ a little bit with the staff. And I just leave this because as these rules are finalized at least think about it a little more.

And that is, the big picture is we want to incentivize the use of electricity for vehicles. And if we don't get it exactly right and we give a little too credit somewhere, that's okay with me.

Because the problem is if you try to cut it up too much, be too precise, you end up with a whole bunch of red tape trying to, you know, partition different kinds of electric forklifts, for instance, in terms of getting credit. I'm not sure that's where we want to go.

So that's probably the only one.

CHAIRPERSON NICHOLS: I thought I saw some language that fixed that issue.

BOARD MEMBER SPERLING: They made some adjustment to it, but it --

CHAIRPERSON NICHOLS: But it wasn't enough for you?

DEPUTY EXECUTIVE OFFICER SCHEIBLE: No. We propose to make it very clear that new applications would generate credits. But there's a sizable inventory out there of vehicles -- or not vehicles or devices that could have used diesel fuel, but now use electricity. And quite frankly our analysis is if we included that, there would be a lot of free credits in the early years that might stimey other fuels coming in and competing, so that was the problem.

CHAIRPERSON NICHOLS: Okay.

BOARD MEMBER SPERLING: I'd agree, except for the use of that word stimey.

CHAIRPERSON NICHOLS: So is this an agree to disagree issue or --

BOARD MEMBER SPERLING: They're going to be working out the details over the next 9 months, so I guess, you know, I'll respect where they end up. But my feeling is if there's a place where you bend, you know, you go in the direction of being a little more open in

terms of providing credits to stimulate the use of electric propulsion. And the last thing is actually, I don't know if it's substantive or not, but it's central to a lot of what we've been talking about.

There was, in the resolution, one of the resolutions has to do with giving credits to companies for better farming -- better land practices. And it's not -- you know, this is something that's just come up in the last few weeks. And so the question is, you know, with the indirect land-use charge, the way the staff has put it together, is that there's a single number that you add to each fuel path, corn ethanol, sugar, Brazilian sugar.

And the question is -- you know, the issue is, do you give credits for the land part of that fuel path to companies that do something to improve the land practices, whether it's no-till practices, or higher yields or any of the kind of things that would mitigate or -- would mitigate that indirect land-use charge?

So there's a paragraph on it here. And this is the one question I have is, it's not clear to me, either the thinking behind it or the actual -- how that's likely to be implemented. I'll just say for my part, I would support providing credits to companies that can document practices, that will essentially -- I'll use the word "offset". It's not in the technical sense, but that will

offset that land-use charge.

CHAIRPERSON NICHOLS: Are you referring to the paragraph at the top of -- the first full paragraph on 15?

BOARD MEMBER SPERLING: Yes.

CHAIRPERSON NICHOLS: Yeah.

BOARD MEMBER SPERLING: And we had said early in our discussions we were going to come back to this.

CHAIRPERSON NICHOLS: Yes, and we did.

DEPUTY EXECUTIVE OFFICER SCHEIBLE: I think the easiest example would be someone who's going to actually control their crop -- it's a biocrop. And it's not -- they're not using a generic crop like number 2 yellow corn. So it's a fuel crop, not a food crop that's being -- that has those market effects.

And they could demonstrate that their method of growing it actually built carbon up in the soil. And there should be a credit done for that. So philosophically our response was, if you can prove it, and it actually does that, as part of the lifecycle emissions, you're taking carbon out of the air, that that's something that we think ought to be credited.

CHAIRPERSON NICHOLS: Okay, but here's my example, and this will come back maybe in the context of the sustainability guidelines. Brazilian sugar cane grower, who produces ethanol, hires guards to go work in

the Amazon to prevent illegal logging.

DEPUTY EXECUTIVE OFFICER SCHEIBLE: That's an offset.

CHAIRPERSON NICHOLS: Sustainability -- it's a big sustainability, plus it saves rain forests, carbon. They've clearly done it. They can prove they did it.

DEPUTY EXECUTIVE OFFICER SCHEIBLE: Yeah, I think that's one we'd have to look at and bring back. That's not what we're thinking about here.

(Laughter.)

DEPUTY EXECUTIVE OFFICER SCHEIBLE: That's definitely a board type of decision.

CHAIRPERSON NICHOLS: This is why I want to law school was just to be able to come up to those kinds of things

STATIONARY SOURCE DIVISION CHIEF FLETCHER: If I could comment on that one. That's actually the second -- the first full resolution on page 17, where we talk about we're going to come back with a workplan for sustainability provisions. And then look at what we can do to try to ensure that the fuels are being produced sustainably. So that is part of that larger issue, I think.

CHAIRPERSON NICHOLS: I mean, this is a big thing that we're being asked to do here. And it's obviously

well beyond any kind of responsibility that the ARB has had before. But given the size of our market for fuels, our appetite for automotive fuels and what we're doing with this market, it's something that behooves us to take seriously.

BOARD MEMBER SPERLING: Yeah. So I think that we want to go beyond that. I feel pretty strongly about it. And I think the example that chairman Nichols gave -- you know, there are, I think, a lot more examples -- you know, it might be the country of Brazil could even adopt a policy that will do something to restrain, you know, the destruction of the rain forest. That's a big example, but there can be little examples. And I think that we want to keep open the opportunity for those kinds of improvement. Because in the end, we want to incentivize those kinds of changes and innovation and we want to do everything we can, you know, and not get caught up in, you know, the specifics of it.

But keep it open that, you know, I talked to one of the oil companies and I said to them, you know, okay you're in Brazil and, you know, using Brazil again as an example. I said, "Are you willing to take responsibility that, you know, if a particular farm adopts certain kinds of practices, that you'll document it and support it and be responsible for it. And they said yes. And so I think

that's the kind of thing -- and it's not just Brazil. It's in the U.S. It's in California as well. I don't know how to word it, but --

STATIONARY SOURCE DIVISION CHIEF FLETCHER: Yeah, I think that that objective is really more the sustainability. And that's -- we know that there's going to be sort of this national and international component to the sustainability, because much of it may go beyond the authority that we have, but to the extent that we can reach agreements or that we can establish protocols for agreements, like you mentioned, that are, in essence, enforceable through voluntary -- you know, voluntary actions that are then, in turn, enforceable, that's sort of what we were thinking about the sustainability.

On the guidelines themselves was a little bit more of parochial than what you're referring to. This was things like no till practices and things that can be relatively easily documented. And so this was guidance to people who were coming into us that says, you know, here's our carbon intensity of the pathways.

But in either case, we recognize it's an important consideration and we'd like to try to incorporate those sorts of things.

BOARD MEMBER SPERLING: So in just closing, I have to fly out tonight and I can't help -- I'm hoping

we're going to be celebrating in a few minutes here. And I will be testifying to Congress on the national LCFS. So I'm very proud and pleased to be able to carry our message forth to Washington, because in the end, as many have indicated, you know, we really need, you know, the national government. And hopefully others to also adopt the LCFS to make it most effective. And so I want to thank again the staff and it's been a wonderful experience.

Thank you.

CHAIRPERSON NICHOLS: Thank you very much, Dr. Sperling.

I can't possibly claim to be one of the fathers or the mothers of the low carbon fuel standard, because it was already under way, when I got here in July of 2007. And I will admit, and I have said publicly, that I had a lot of concerns about it. Even though it already had been announced in the Executive Order, it was one of the Governor's major initiatives, so I knew that it was something that he was very committed to, as were many other people.

But I spent many hours with Dan, with Alex, with the staff here going through my concerns, because over my years of involvement in air quality regulation, the hardest things I have been involved with have been fuel

issues, where we tried to change the composition of the fuel supply. Because it is so tied up in everybody's livelihood and in the economy and in the political process, there is nothing gets the attention of politicians faster than a rise in the price of gasoline. There is nothing that causes heads to role faster in many places than concerns about the quality or the quantity of the fuel supply.

So I've been deeply involved in asking hard questions. And I was not easy to convince that this was something that we could do and that actually made sense.

I am persuaded that the policy construct here is a solid one. I think if we were doing this action today a year ago in a context of an economy that people did not think would crash, this would be a very different discussion.

The tenor of the comments that we got would have been very different they are today, because we could just be unabashedly optimistic about the new businesses that would be coming to California, about the tremendous incentives that we would have here for people to bring us the very best of the new fuels. And we could be comfortable that we would be creating a lot of new businesses and jobs here.

I think that we have to be a little sober about

that. I do. And I think that part of the monitoring that I want to see done here is to make sure that we aren't ahead of ourselves in our assumptions about what's going to be available in the near term. Because given what's actually going on right now, in the way of new businesses starting up and investments being made, I don't know that we'll see the kind of rapid ramp up in availability of very good, advanced biofuels that we believe is what should happen as a result of this rule.

However, I think that if we don't, and we obviously hope we will. We know the economy will turn around. We know the price of gasoline is going to go up. It's just question of when not whether. We do have the ability to stretch out deadlines or change the numbers in terms of the dates, when certain things actually have to occur under this rule.

And I think that's one of the important reasons for keeping an eye on it. I am just congenitally an optimist, but I do think that this is one where it behooves us to be very, very careful and to be open to adaptive management as new science comes along.

You know, that said, you can't keep changing the numbers every month or even every year without running a risk of unsettling things even further. So I think that giving ourselves until the end of 2010 to do the kind of

review with the very specific elements in it that we've talked about is a good way to go. And I do believe that at the end of the day, we will not only be vindicated that we will be a model, as was hoped from the very beginning, for others that are looking to do something.

Because short of this kind of dramatic shift in the paradigm for what kinds of fuels we're going to be demanding, I don't think we will ever make any significant progress whatsoever. We'll just keep increasing the emissions from transportation from this part of the sector at least.

So my view is that the Board, the staff both, but particularly the staff in recent weeks and going back to the surfacing of the proposal, have really listened. They've made significant changes in the regulation itself. It's not, you know, just talk. It's really embedded in what we're going to be doing going forward.

But at the same time, we haven't sacrificed our commitment to make sure that we are bringing, not just new fuels or better fuels, but the very best fuels here to California. So I'm going to be very pleased to vote for this rule.

Before we do that however, we are required to disclose our ex parte communications. And I suspect that there's a lot. My question is do we have to actually read

them allowed or can we just enter them into the record. I don't know if there's a -- I think it's just a practice that we read them as opposed to --

CHIEF COUNSEL PETER: Actually, it is a practice not a requirement. What we've done before, and I don't know how many there are, is people had done one and they tend to repeat. So I don't know if there's one way that you can do it and people can just add new ones on.

CHAIRPERSON NICHOLS: Okay. Well, maybe I'll just start then. I think I'm going to have more than most people do.

Going back to March the 12th, I met with BP in person. On the 18th I met with Chevron by phone. On the 31st I met with former Governor Davis by phone. I met with Pacific Ethanol by phone. Actually, I visited the Pacific Ethanol plant personally. I've met with Vinod Khosla of Khosla Ventures and Bob Epstein in person. I met with the U.S. Renewables Group on April 17th. Lee Bailey and Tim Newell. I met with a whole coalition of environmental groups that Jamie Knapp represents by phone.

I met with the California Biodiesel Alliance in person. I met with the California Natural Gas Vehicle Coalition by phone. Met with General Wesley Clark by phone. Met with Californians Against Waste in person. A couple of these, I think I've talked to more than once,

but those would be the major -- those would be the major contacts. And, again, I don't think there's anything I learned as a result of those meetings that wasn't repeated here today.

But just the breadth of the interest and concern was very helpful, I think, in putting this all in context.

BOARD MEMBER RIORDAN: Madam Chairman, on April 8th I met with Pacific Ethanol and that would have been Bill Jones, Tom Koehler, Dr. Mark Stowers, Kristy Malm, Geoff Cooper, Roger Salazar and John Dunlap.

On the 13th through the 20th, I had the following calls:

One with an environmental organization, Friends of the Earth, Energy Independence Now, organized by Jamie Knapp. A call with Dave Smith, BP along with their representative in Sacramento.

A call with Kathy Reheis-Boyd Western States Petroleum Association. A call with Todd Campbell, Mike Eaves, Clean Energy Fuels Corporation and a representative from Westport. A call with Bob Epstein representing 2. A Call with Dave Modisette representing California Electric Transportation Coalition.

The conversations that I had were mirrored very much in today's testimony and in the letters that we received over the last 2 or 3 weeks.

CHAIRPERSON NICHOLS: Anything that hasn't been mentioned that anybody would like to add to this, go ahead.

Well, I mean you just go on. I mean you can just say ditto if you met with the same people, I think.

BOARD MEMBER BALMES: Actually, they were different people.

CHAIRPERSON NICHOLS: Okay.

BOARD MEMBER BALMES: On March 24th, I met with Bonnie Holmes-Gen, American Lung Association, and Patty Monahan, Union of Concerned Scientists.

On April 16th, I had a call with Growth Energy, and that included Steve McNinch, Nathan Schock, Roger Salazar, John Dunlap.

April 20th, I had a call with Todd Campbell and Mike Eaves representing Clean Energy Fuels Corporation.

And on April 22nd Shankar Prasad, phone call, representing Coalition for Clean Air.

BOARD MEMBER BERG: I had 9 meetings. And they have all been mentioned here. And I'll give a list with the dates to the reporter, but I met with the people that have been discussed.

BOARD MEMBER ROBERTS: I don't know if you mentioned, but I had a meeting on April 16th with members of representatives of the Canadian Consulate, including

Sue Garbowitz, a Sean Barr. And the discussion was in pretty much in keeping with what was the presentation they made here today.

CHAIRPERSON NICHOLS: Thank you.

BOARD MEMBER BERG: Madam Chair, I do have one. I did meet or had a phone call on April 22nd with Henry Hogo from South Coast Air Quality Management District.

CHAIRPERSON NICHOLS: Great.

BOARD MEMBER D'ADAMO: Well, I met with a lot of the same individuals. The ones that appear to be different, April 13th telephone call with Cynthia Corey with the California Farm Bureau. Let's see, April 17th call with Todd Campbell and Mike Eaves, Clean Energy Fuels Corporation. April 21st, I met with representatives from the Manufacturers Council of the Central Valley. And then today, brief conversations with Bob Epstein and Eric Bowen.

And that's it.

BOARD MEMBER SPERLING: It's a long list also. A subset of all those you've heard, plus some others I don't think I heard. I had a series of Emails with Tom Koehler from Pacific Ethanol. A large conference call with a group headed up by Glover Park Group, Lindsay Paternak, a large organization of people -- of organizations concerned about the food versus fuel issue.

Tim Searchinger conversations. The California Biomass Energy Alliance. Gregg Morris, Julee Malinowski-Ball. Some contractors for Sierra Club. And I think on the only other one that was -- or 2 other people, Pete Price from Natural Gas Vehicle Coalition and Nick Lapis who testified for Californians Against Waste plus many others that were already mentioned.

CHAIRPERSON NICHOLS: All right. Others?

BOARD MEMBER YEAGER: All the ones that I met with mentioned, but I'll be turning in my sheet.

Any others

BOARD MEMBER TELLES: Not many people go to the San Joaquin valley.

(Laughter.)

BOARD MEMBER TELLES: I didn't meet with anybody.

So I had to make my own phone calls.

(Laughter.)

BOARD MEMBER TELLES: It's true.

So I called --

CHAIRPERSON NICHOLS: We could fix this.

(Laughter.)

BOARD MEMBER BALMES: I'm Going to Fresno on May 7th if you want to get together.

BOARD MEMBER TELLES: I'm a lone soul here.

These were unsolicited phone calls. I made them

myself. I called Ken Cassman of the University of Nebraska who's one of the -- he's an agronomist who was -- I heard on Itunes U.

(Laughter.)

BOARD MEMBER TELLES: It's a very good program with the Stanford Institute on Energy.

And then I also talked to a friend of mine who I've been talking to about ethanol for the last 20 years and that's Bill Jones who was a neighbor of ours.

CHAIRPERSON NICHOLS: All right. I think that's it then.

BOARD MEMBER TELLES: Mary, can I --

CHAIRPERSON NICHOLS: Yes, please.

BOARD MEMBER TELLES: I know -- I just have one basic question that I think maybe all of us are thinking about that maybe not willing to ask. And I seem to be willing to ask it.

If I read the politics that are happening in the United States correctly, I'm a little concerned that the low carbon fuel standard will pass, despite -- which I'm sure we'll have excellent testimony with Professor Sperling. But I'm still a little concerned if it will pass, especially watching what's happening with the Western Climate Initiative kind a falling apart a little bit. And my basic question is what does California do,

what do we do as a board if there is no national low carbon fuel standard and what will the impact of this be economically and environmentally and health wise in this State if we are the lone wolf out there for 5 or 6 years before anybody tags on behind us?

CHAIRPERSON NICHOLS: You know, in some areas, this issue -- and the technical people always talk about it as leakage, you know, as sort of do you get the benefit -- or do you pay the price but other people get the benefit of what you've done?

I think that would be a bigger concern for me. And I'll ask Dan to comment on this, because he's probably through about it more than I have. But we have advocated for other states to adopt a low carbon fuel standard because we believe in it and because we do think that expanding the market for the cleanest fuels brings the price down for everybody. I mean that's just sort of common sense.

And so the fact that we heard today from NESCAUM, you know the northeast states group, that has also been joined by Maryland and Delaware and I forget there was one other state that joined with them -- Pennsylvania -- that they were planning to also adopt a low carbon fuel standard was very encouraging. And, clearly, I think it would be generally in our interests to see this happen,

you know, for the county as a whole. But we are a very big market in and of ourselves here in California for gasoline. And we have a lot of the refining industry here.

We certainly have the investors here and we have a lot of agricultural products, as well as a lot of waste, which, I mean, I persist in thinking is going to be in the future -- the major, major source of lower carbon fuels is going to be either municipal solid waste or waste from agricultural processes, that now is just sitting around and turning into methane and is creating huge problems atmospherically, but which could be used as an economically valuable product and would really help us out.

So, at the levels that we're talking about here and for the next decade, which is really what this rule covers, I feel comfortable that this is something that we could do that would actually be a net benefit for the State of California.

But again, I made the sort of grave remarks that I made earlier, because we aren't sure about that and we do have to be prepared to act if we're wrong.

Dan, so you want to add to that?

BOARD MEMBER SPERLING: I guess the only thought I have is that if in 10 years we, the U.S., haven't

decided that oil security is a serious enough problem to do something about it, and that climate change isn't serious enough to do anything about it, then okay, maybe we can ease up on the LCFS. But it's very hard for me to imagine that scenario.

In other words, I mean, what we're talking about is reducing carbon and reducing oil use. And it seems --

CHAIRPERSON LLOYD: The world has to do it. It's going to happen.

BOARD MEMBER SPERLING: It's an inevitable as anything I can imagine is. And so, you know, yeah, there might be a delay in Washington, but you know in Washington they have done the renewable fuel standard. They have a massive program for the biofuels. They have major incentives for electric vehicles, you know, through the new stimulus package and others. So, you know, there is a national policy already to do something that's not so different from what we're doing here. We're just doing it in a smarter -- I would just characterize it, we're doing it in a smarter better way and we're going to as partly a result of that we're going to do it more efficiently and we're going to bring more economic benefits to California sooner

CHAIRPERSON NICHOLS: I think that's right.

All right. I detect there's a needs for

finishing up here.

BOARD MEMBER BERG: Yes. And just as s point of clarification. Can we just review, the expert workgroup will consist of diverse points of view and what our expectation of the report that we're going to get back on January 1st.

CHAIRPERSON NICHOLS: Yes.

BOARD MEMBER BERG: Because I think that would calm my concerns.

CHAIRPERSON NICHOLS: Sure. Well, I think the language in the resolution that was presented to us today in terms of what's going to be in the report is a good start, because it's very specific about the elements. That's the one on page 16.

I would like to add to that, just by way of clarification, I think it's the intent, but that the expert workgroup would be comprised of staff from other agencies of California and the federal government, as well as private sector experts. And they could be from universities or from nonprofit organizations or from the corporate sector. But it would be diverse, in the sense that it would represent all those different view points.

And then I believe that it probably needs to be stated that they would be looking, not only at new science, but also assessing how we're doing in terms of

new fuels actually being developed and keeping track of how we're coming on that process.

BOARD MEMBER BERG: And I'd really like to see them assess the current gap, that currently exists between very competent scientists on this indirect land use, to come back to us to give us maybe a better benchmarking and a little more comfort.

CHAIRPERSON NICHOLS: I think that --

BOARD MEMBER SPERLING: Let me add just one little thought. And that, you know, we want the right number and we want it soon. You know, the science of this - and I'm sure my colleagues here are going to support this - this is -- we're not going to know the exact right number in 1 year, in 2 years. We're going to keep getting better. It's going to keep improving, but, you know, we shouldn't have this expectation that presto we've done this review and now, you know, we have the answer

BOARD MEMBER BERG: And I agree with you, Professor Sperling. I'm not looking for just the right number, but I am looking at -- it's 18 months down the road. I would expect that this group would be able to come back and it wouldn't be so polarized as it is today.

And the polarization does give me anxiety. And I would hope that -- and maybe 18 months won't bee soon enough and I'll still have to deal with my own anxiety,

but so be it.

(Laughter.)

CHAIRPERSON NICHOLS: Well, I think by it's very nature --

BOARD MEMBER BERG: That's my wish list.

CHAIRPERSON NICHOLS: -- a group is likely to be able to at least put some boundaries around the areas where they disagree. So I think that's a reasonable thing to hope for.

BOARD MEMBER BALMES: Just one last point of information.

CHAIRPERSON NICHOLS: Yes.

BOARD MEMBER BALMES: So we're going to have the first review in --

CHAIRPERSON NICHOLS: Formal review.

BOARD MEMBER BALMES: -- in 2011?

CHAIRPERSON NICHOLS: Yes.

BOARD MEMBER BALMES: And then we're still talking 3 years?

CHAIRPERSON NICHOLS: Every 3 years.

BOARD MEMBER BALMES: Yeah, I'm fine with that. I didn't want it to be more frequent than that.

STATIONARY SOURCE DIVISION CHIEF FLETCHER: Might I get just a little clarification on that. The expert workgroup is a focus workgroup specifically on land use

and that was the one that was coming back originally January 1st, 2012.

CHAIRPERSON NICHOLS: Now 2011.

STATIONARY SOURCE DIVISION CHIEF FLETCHER: That one we have moved up to January 1st, 2011. In the Attachment B, we had coming back for the first formal review of the entire regulation January 1st, 2012. And that has a whole lot of elements associated with it and I don't want to -- I want to just make sure its clear that --

CHAIRPERSON NICHOLS: You're right, it's 2 different things.

STATIONARY SOURCE DIVISION CHIEF FLETCHER: -- they're 2 different things.

BOARD MEMBER BALMES: I'm fine with that clarification.

CHAIRPERSON NICHOLS: All right. I think we can live with that.

DEPUTY EXECUTIVE OFFICER SCHEIBLE: And also to be clear, what we can promise and deliver by the 2011 date, January 1st, 2011, is if we have a better number brining that to you and proposing it as a better number. But we may be in the situation where we have a progress report and we can tell you, you know, where we're at. We can't guarantee that the science will move that fast and

the process will do it. But we will design it so that we attempt to do that and try to achieve that goal of an improved number or a ratification that the current number was rights. That somehow --

CHAIRPERSON NICHOLS: But in the mean time, between now and the end of this year, you're going to be working on the sustainability guidelines or --

STATIONARY SOURCE DIVISION CHIEF FLETCHER: Workplan

CHAIRPERSON NICHOLS: -- workplan. Okay, workplan. Sorry.

And on getting pathways certified. So we'll have lots more of them to look at and that will help with some of the fairness concerns that people have, because they will see that we've treated other pathways just as rigorously as we did the ones that they were involved in and so forth.

Okay.

DEPUTY EXECUTIVE OFFICER SCHEIBLE: And we have to get. And it's going to be a large task to get the regulation adopted and through the formal process. So that will consume our effort in the near term.

STATIONARY SOURCE DIVISION CHIEF FLETCHER: And just one other point of clarification. We are, as part of this rule-making, directing the staff to complete several

major pathways. So those should be in regulation by the time we meet again. But we might have additional pathways that we would propose in December for approval.

BOARD MEMBER D'ADAMO: Madam Chair, do you want to entertain a motion?

CHAIRPERSON NICHOLS: I would love to entertain a motion. Yes, I would.

BOARD MEMBER D'ADAMO: Move adoption of Resolution 09-31 with the change on page 15 regarding indirect land use date of 2011.

BOARD MEMBER BALMES: Second.

CHAIRPERSON NICHOLS: Seconded.

All right. I think we can do this by a voice vote. I'll ask all those who are in favor to signify by saying?

(Ayes.)

CHAIRPERSON NICHOLS: Those who are opposed say no?

(No.)

CHAIRPERSON NICHOLS: Okay. The motion carries then with one no vote.

Thank you.

(Applause.)

(Thereupon the California Air Resources Board meeting adjourned at 6:26 p.m.)

CERTIFICATE OF REPORTER

I, JAMES F. PETERS, a Certified Shorthand Reporter of the State of California, and Registered Professional Reporter, do hereby certify:

That I am a disinterested person herein; that the foregoing California Air Resources Board meeting was reported in shorthand by me, James F. Peters, a Certified Shorthand Reporter of the State of California, and thereafter transcribed into typewriting.

I further certify that I am not of counsel or attorney for any of the parties to said meeting nor in any way interested in the outcome of said meeting.

IN WITNESS WHEREOF, I have hereunto set my hand this 1st day of May, 2009.

JAMES F. PETERS, CSR, RPR
Certified Shorthand Reporter

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