MEETING

STATE OF CALIFORNIA

AIR RESOURCES BOARD

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1001 I STREET

SACRAMENTO, CALIFORNIA

THURSDAY, NOVEMBER 19, 2015

9:14 A.M.

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

A P P E A R A N C E S

BOARD MEMBERS:

Ms. Mary Nichols, Chair

Ms. Sandra Berg, Vice Chair

Dr. John Balmes

Mr. Hector De La Torre

Supervisor John Gioia

Mr. John Eisenhut

Ms. Judy Mitchell

Mrs. Barbara Riordan

Supervisor Ron Roberts

Supervisor Phil Serna

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Mr. Richard Corey, Executive Officer

Dr. Alberto Ayala, Deputy Executive Officer

Ms. Edie Chang, Deputy Executive Officer

Mr. Kurt Karperos, Deputy Executive Officer

Ms. Ellen Peter, Chief Counsel

Ms. La Ronda Bowen, Ombudsman

Ms. Marijke Bekken, Staff Air Pollution Specialist, Strategic Planning and Development Section, Mobile Source Control Division (MSCD)

Mr. Michael Carter, Assistant Chief, Mobile Source Control Division

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

STAFF:

Ms. Mary Jane Coombs, Manager, Program Development Section, ISD

Mr. Chris Gallenstein, Staff Air Pollution Specialist, Project Assessment Branch, ISD

Mr. Kyle Graham, Senior Attorney, Legal Office

Mr. Jason Gray, Manager, Market Monitoring Section, ISD

Ms. Jennifer Gress, Legislative Director, Office of Legislative Affairs

Ms. Kim Heroy-Rogalski, Manager, Strategic Planning and Development Section, (MSCD)

Mr. David Hultz, Senior Attorney, Legal Office

Mr. Larry Hunsaker, Staff Air Pollution Specialist, Greenhouse Gas Emission Inventory Branch, Air Quality Planning and Science Division

Ms. Stephanie Kato, Staff Air Pollution Specialist, Energy Section, ISD

Ms. Margret Kim, Senior Attorney, Legal Office

Mr. David Mallory, Manager, Climate Change Policy Section, ISD

Mr. Tung Le, Manager, Regulatory Assistance Section, ISD

Ms. Sara Nichols, Staff Air Pollution Specialist, Program Development Section, Industrial Strategies Division (ISD)

Mr. Johnnie Raymond, Staff Air Pollution Specialist, Climate Change Policy Section, ISD

Ms. Rajinder Sahota, Chief, Climate Change Program Evaluation Branch, ISD

Mr. Craig Holt Segall, Senior Attorney, Legal Office

Mr. Mark Sippola, Program Development Section, ISD

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

STAFF:

Mr. Mike Tollstrup, Chief, Project Assessment Branch, ISD

Mr. Floyd Vergara, Chief, Industrial Strategies Division

Mr. Erik White, Chief, Mobile Source Control Division

Mr. Daniel Whitney, Attorney, Legal Office

Dr. Emily Wimberger, Chief Economist, Executive Officer

Ms. Jakub Zielkiewicz, Staff Air Pollution Specialist, Market Monitoring Section, ISD

ALSO PRESENT:

Mr. Alan Abbs, California Air Pollution Control Officers Association (CAPCOA)

Mr. Jason Barbose, Union of Concerned Scientists

Mr. Brian Biering, ACE Cogeneration

Mr. Jon Costantino, Southern California Public Power Authority (SCPPA)

Mr. Sean Edgar, CleanFleets.net

Ms. Hannah Goldsmith, California Electric Transportation Coalition (CalETC)

Mr. Shams Hasan, E&B Natural Resources

Mr. Alex Jackson, Natural Resources Defense Council (NRDC)

Mr. Ryan Kenny, Clean Energy

Mr. John Larrea, California League of Food Processors

Mr. Kent Leacock, Proterra

Mr. Bill Magavern, Coalition for Clean Air

Mr. Jesse Marquez, Coalition for a Safe Environment

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

ALSO PRESENT:

Ms. Jerilyn Lopez Mendoza, SoCalGas Company

Mr. Chris Peeples, AC Transit

Mr. Chris Shimoda, California Trucking Association (CTA)

Ms. Robin Shropshire, Panoche Energy Center

Mr. Mike Tunnell, American Trucking Association

Mr. Vincent Wiraatmadja, BYD Motors, Inc.

I N D E X

I N D E X C O N T I N U E D

P R O C E E D I N G S

CHAIR NICHOLS: All right. Are we on?

Good morning, everyone. Welcome to the November 19th, 2015 public meeting of the Air Resources Board. People are assembled here. So I think we can begin with the Pledge of Allegiance

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

CHAIR NICHOLS: Madam Clerk, would you please call the roll.

BOARD CLERK JENSEN: Dr. Balmes?

BOARD MEMBER BALMES: Here.

BOARD CLERK JENSEN: Mr. De La Torre?

Mr. Eisenhut?

BOARD MEMBER EISENHUT: Here.

BOARD CLERK JENSEN: Supervisor Gioia?

BOARD MEMBER GIOIA: Here.

BOARD CLERK JENSEN: Ms. Mitchell?

BOARD MEMBER MITCHELL: Here.

BOARD CLERK JENSEN: Mrs. Riordan?

BOARD MEMBER RIORDAN: Here.

BOARD CLERK JENSEN: Supervisor Roberts?

BOARD MEMBER ROBERTS: Here.

BOARD CLERK JENSEN: Supervisor Serna?

BOARD MEMBER SERNA: Here.

BOARD CLERK JENSEN: Dr. Sherriffs?
Professor Sperling?
Vice Chair Berg?
VICE CHAIR BERG: Here.
BOARD CLERK JENSEN: Chair Nichols?
CHAIR NICHOLS: Here.
BOARD CLERK JENSEN: Madam Chair, we have a quorum.
CHAIR NICHOLS: Great. Welcome, everyone. I know that many of you got up early this morning to catch planes or get in cars to drive here. And I know at least one of our Board members was up very early this morning, because when I opened up my smartphone Twitter App, I had photo waiting for me from Supervisor Roberts, a beautiful morning shot of downtown Sacramento.
(Laughter.)
CHAIR NICHOLS: So the Capitol looked beautiful and I felt very welcomed. So beginning with a few announcements. Anyone here who is visiting us for the first time and may not be familiar with our procedures, we have cards outside or available from the clerk. If you want to testify on any item that's on today's agenda, we would appreciate it if you would fill out a card and give it to the clerk. It helps us to know how much time we need to allocate and to put a list together, so we can

move forward more quickly. We do have a full day of items ahead of us. We will be imposing a three minute limit on oral testimony. So we'd appreciate it if when you get up to speak, you summarize your comments and don't just read them, because we can understand and follow them as well as looking at the written material as well.

I have to point out the emergency exits at the rear of the room, and at the two sides of the dais here. In the even of a fire alarm, we are required to exit the building quickly and go out in the front and assemble in the park until we get an all-clear sign. I don't think I have any other official comments, in terms of the meeting as the whole, so I'll just move right into our opening item here, which is a report from Jennifer Gress, our legislative liaison on this year's air quality and climate change legislation. She and her team had a big year. There was a lot activity around climate and air quality. Probably the two most important issues were relating to budget and to the -- specifically, the money from the Greenhouse Gas Reduction Fund that is created as a result of the allowances that are auctioned for the Cap-and-Trade Program, and also then efforts to enact into law Governor Brown's 2013 climate goals and objectives.

So we had a lot of interest in our programs this year, and a tremendous amount of support and enthusiasm

for the program, particularly coming from the leadership's, Senate President Pro Tem Kevin de León, Speaker -- Assembly Speaker Toni Atkins, as well as our long time friend Senator Fran Pavley, who is the author of so many of our important bills, but many others as well, stepping up to get involved.

And we certainly saw that the Governor's executive order and the statements that he made in January as part of his inauguration and State of the State remarks then were translated into specific legislative enactments and moved forward that now will come back to be implemented by a number of agencies including ours, so this is kind of a civics lesson model, you know, in how things are actually supposed to work.

One of the other important pieces of legislation that passed at the end, but was not noticed much was Speaker Atkins 1288, which adds two new members to our Board. These two individuals are designated to be people who have experience working with communities that are most significantly burdened by pollution. So both the Assembly and the Senate will have an appointment, and this will surely help to reinforce our commitment to environmental justice. So we're very pleased about that.

Mr. Corey, would you introduce the item?

EXECUTIVE OFFICER COREY: Thank you, Chair

Nichols. As noted, the passage of SB 350, which codified two of the governor's climate goals to increase renewable energy and energy efficiency by 2030, as well as thought to promote the electrification of transportation, really quite notable. The bill reinforces support for climate action in furtherance of the Governor's 2030 greenhouse gas target, and underscores California's leadership on climate.

So indeed, it was a busy year. And our Legislative Director, as noted, Jennifer Gress, will now go over key legislation and events and highlight potential areas of legislative interest this next year.

So with that, Jen.

(Thereupon an overhead presentation was presented as follows.)

LEGISLATIVE DIRECTOR GRESS: Thank you.

Good morning, Madam Chair and members. It's a pleasure to be here today to present the 2015 legislative update.

I like to start each update with an adjective or two that sums up the year. And this year has been tougher to summarize. We saw bold and exciting on climate with Senate a Pro Tem Kevin de León's SB 350 to codify the Governor's 2030 climate objectives, but it was also a bit deflating at times.

Some key measures didn't make it to the finish line and concerns about ARB's broad authority under AB 32 were used as a justification to delay or oppose climate action by some. But when I take stock of all that happened, it was an overwhelmingly positive year for air quality and climate.

Everything that survived the legislative process was positive. And the effects of some measures, such as SB 350, and the approval of ARB's new laboratory will be felt for years to come. And nothing passed that we didn't like. We agreed with every air quality and climate bill that went to the Governor. Over the next several minutes, I will provide an overview of significant measures and legislative activities that defined the year and will influence ARB's work in the coming months and years.

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LEGISLATIVE DIRECTOR GRESS: Overall, members of the legislature introduced more than 2,400 bills in 2015. 808 ultimately became law. ARB's Office of Legislative affairs tracked 359 bills and resolutions related to air quality, climate change, and other topics relevant to ARB and 97 were signed into law.

Some of these bills prescribe specific responsibilities for ARB. Your packet includes a table summarizing these new responsibilities. In addition to

tracking and analyzing legislation, ARB participated in 16 hears and special events concerning such topics as transportation fuels, cap-and-trade auction proceeds, goods movement and the Salton Sea.

Among these activities were two Congressional events. Chair Nichols testified at a United States Senate hearing on U.S. EPA's clean Power Plan rule, which you will hear about more later today, and she briefed members of California's Congressional delegation on the State's clean fuels policies and a proposed amendments to the federal Clean Air Act that the automakers were advocating for and that we opposed.

Finally, we also devoted a significant effort to reaching out to new members. Of particular note, Chair Nichols, Board Member De La Torre, Executive Officer Corey, and I hosted a number of informal get-togethers with newer members. Our goal was simple: Get to know the members and help to ensure that the lines of communication are open.

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LEGISLATIVE DIRECTOR GRESS: This slide depicts the number of bills we tracked by major subject area. As you can see, the greatest number of bills were related to energy and fuels, followed by climate, government administration including CEQA, motor vehicles and

transportation, and so on.

The mix of bills was a bit different from last year. Last year, land use and transportation comprised a larger percentage of bills and was the largest category followed by energy and fuels.

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LEGISLATIVE DIRECTOR GRESS: There were five themes or hot topics that percolated throughout ARB's legislative activity this year.

These included: Post-2020 climate action, such as setting energy efficiency, renewable energy, and greenhouse gas reduction goals for 2030; the expenditure of cap-and-trade auction proceeds; environmental justice; ensuring that rural areas benefit from incentive funding; and, two efforts ARB initiated to address mobile source initiatives -- emissions.

In the next several slides I'll highlight some of the most significant efforts in each of these areas.

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LEGISLATIVE DIRECTOR GRESS: Pro tem De León's SB 350 proved to be the defining bill this year. The bill originally sought to codify three of Governor Brown's 2030 climate goals, including increasing the amount of electricity generated from renewable sources from 33 to 750 percent, doubling the energy efficiency savings of

excite buildings, and reducing California's petroleum use by cars and trucks by up to 50 percent.

The Western States Petroleum Association launched a campaign focused on both members of the legislature and the public at large opposing the petroleum reduction provide of SB 350. In opposing this provision, members raised concerns about ARB's broad authority under AB 32 and called for increased oversight.

There was a firestorm of proposals to require legislative review and approval of ARB's plan to reduce petroleum or to narrow ARB's scope of authority altogether. Petroleum reduction had become a sideshow that unnecessarily jeopardized the greater goals of SB 350 and ARB's authority. That provision was removed from the bill, but California will continue to move forward. The next update to the scoping plan will establish the path for achieving the Governor's 2030 greenhouse gas target, and ARB will ensure that measures included in the scoping plan meet the 50 percent petroleum reduction goal.

In service to this effort, SB 350 includes provisions calling on the California Public Utilities Commission to do more to support transportation electrification.

Setting aside the opposition to petroleum reduction, SB 350 was important not just for its policy

objectives, but also for the support it galvanized from a large and diverse coalition of stakeholders and legislators for climate action post-2020. This support will be crucial as ARB and other agencies move forward to achieve the Governor's 2030 greenhouse gas reduction target.

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LEGISLATIVE DIRECTOR GRESS: SB 32, authored by Senator Pavley was intended to codify the Governor's 2030 and 2050 greenhouse gas reduction targets. However, the bill garnered substantial opposition with members expressing the same concerns for SB 32 as they did for SB 350. In the end, the bill did not have sufficient votes for passage, but I do expect this issue to be revisited next year.

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LEGISLATIVE DIRECTOR GRESS: The expenditure of cap-and-trade auction proceeds was another major area of activity this year. There were a total of 42 bills related to auction proceeds up from 22 last year. Twenty-eight of these bills either created a new funding program or amended an existing one. The programs identified in these bills ranged from agricultural practices to energy efficiency, to infrastructure for low carbon fuels. Although there were a large number of

bills, they were all held in the Appropriations Committees and did not move forward.

With regard to the budget, cap-and-trade expenditures were removed from the Budget Act in June with the expectation that a separate cap-and-trade budget would be taken up in August. At the end, it was not possible to adopt a budget on auction proceeds this year. While this was one of those deflating moments I mentioned earlier, the legislature did pass SB 101, which was a stopgap measure to keep key programs solvent through early 2016. ARB received 90 million, which the Board allocated to the Clean Vehicle Rebate Project, the Hybrid and Zero Emission Voucher Incentive Project, and the Enhanced Fleet Modernization Program at the October Board meeting.

In addition to spending proposals contained in legislation and in the budget, Governor Brown called a special session on funding for the maintenance and repair of California's transportation infrastructure. The Governor released a plan that includes a road improvement charge for all vehicles, increase in gasoline and diesel fuel taxes, and 500 million in auction proceeds annually for transit and a new program called low carbon roads.

Agreement was not reached by the time the legislature recessed for the year, and discussions regarding transportation funding will continue when the

members return in January.

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LEGISLATIVE DIRECTOR GRESS: A third major theme throughout the year was environmental justice. Concern about environmental justice and disadvantage communities was raised in many different contexts, including legislation and the budget. The legislature considered a number of bills to help protect and empower California's most vulnerable communities, which remain the most susceptible to the impacts of air pollution and climate change.

The first bill is AB 1288 by Speaker Toni Atkins. AB 1288 adds two new members to the Board. One member will be appointed by the Senate Rules Committee and one by the Assembly Speaker. And both members must have direct experience working with environmental justice communities that are significantly impacted by and vulnerable to high levels of pollution.

The desire for legislative appointees with environmental justice experience arose from two distinct forces. As I mentioned, SB 350 SB 32 were met with concerns that ARB had too much authority, did not adequately consider legislative input, and could adopt measures that might harm the economy. Many in the legislature called for more legislative oversight, and

adding legislative appointees to the Board was one way to address these concerns.

At the same time, environmental justice advocates wanted a stronger voice in Board decision making, particularly on post-2020 climate policies and were lobbying members of the legislature to include Board appointments in their bills.

SB 350 also includes numerous provisions to ensure that low income households and residents living in disadvantaged communities benefit from the State's clean energy and pollution reduction policies. For example, the bill requires the California Energy Commission and the Public Utilities Commission to review programs and make recommendations to provide benefits to disadvantaged communities, as well as to establishing an advisory group comprising representatives from disadvantaged communities to review and advise them on proposed programs to achieve clean energy and pollution reduction in these communities.

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LEGISLATIVE DIRECTOR GRESS: Continuing with the environmental justice theme, AB 1059 by Eduardo Garcia requires the Office of Environmental Health Hazard to include -- to update the CalEnviroScreen tool to more accurately reflect pollution in the California/Mexico border region. Given the fundamental role CalEnviroScreen

plays in identifying communities for priority investment of cap-and-trade auction proceeds, it is critical that it be as robust as possible.

AB 1071 by Speaker Atkins benefits disadvantaged communities by requiring ARB and other CalEPA agencies to establish a policy on supplemental environmental projects or SEPs. The intent is to benefit such communities. And the bill increases the total fraction of penalties that can be diverted to a SEP from 25 percent to 50 percent. A SEP can be part of a penalty settlement whereby a violator directs a portion of his or her penalty to a specified project intended to mitigate the impact of the violation on public health and the environment.

ARB will be convening a public process in 2016 to identify potential SEP projects that provide a nexus to air quality and benefit advantaged communities and to update its SEP policy.

AB 156 by Assembly Member Perea, and SB 398 by Senator Leyva, would establish outreach and technical assistance programs to assist disadvantaged and lower income communities in accessing cap-and-trade proceeds. Both bills were held in the Appropriations committees.

The need to provide greater outreach and technical assistance has been consistently raised by stakeholders over the past couple of years. In response,

the administration proposed funding for, and the legislature approved, several positions in 500,000 in contract funds in the 2015-16 budget. ARB received two positions, one to serve as a liaison providing technical assistance for ARB's Low Carbon Transportation Program and one to coordinate with community advocates and the liaisons at each administering State agency.

ARB will use the contract funds to hire a contractor to conduct outreach to disadvantaged communities and improve the availability of assistance.

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LEGISLATIVE DIRECTOR GRESS: Ensuring that rural areas benefit from incentive programs was another theme. This topic was not as prominent in legislation, but rather was the subject of discussions with members and was also reflected in stakeholder comments on the draft investment plan for cap-and-trade auction proceeds. ARB made a number of commitments to increase funding for rural areas to address specific issues raised by members of the legislature.

To address concerns that Lake County and other small rural air districts do not have sufficient funds to provide incentives for the replacement or retrofit of trucks subject to ARB's truck and bus regulation, ARB agreed to provide multi-district funds under its control

through the Carl Moyer program for this purpose. ARB will be working with CAPCOA to determine how best to accomplish this objective.

In addition, Senator McGuire raised concerns about inadequate funding for new school buses in small rural communities. The Senator introduced a bill to provide cap-and-trade funds for this purpose, but the bill was held. To address this need, ARB staff proposed, and the Board approved, five million in low carbon transportation funds for school bus projects that reduce greenhouse gas emissions in these areas. Staff has been working with Senator McGuire's staff and other stakeholders to develop this new project category.

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LEGISLATIVE DIRECTOR GRESS: The next two sides focus on efforts ARB initiated regarding mobile source emissions. The first was a bill to modernize the Carl Moyer Program. As you may recall, in 2013, AB 8 by Assembly Member Perea required ARB and the air districts to establish a working group to evaluate the Carl Moyer Program.

With Board Member Berg's leadership, ARB convened working groups to solicit input on potential changes to the Carl Moyer and AB 923 local air district programs, which culminated in a final report to the Board in

December last year. ARB and CAPCOA developed legislative language to implement the recommendations in that report, which Senator Jim Beall championed in SB 513.

SB 513 makes a number of changes, including giving ARB more flexibility to establish appropriate cost effectiveness limits to allow for the cleanest technologies, better enabling the leveraging of multiple funding sources to encourage the deployment of advanced technologies, as well as large or complex projects, expanding the types of projects eligible for funding, and streamlining and improving administration of the program. This bill was an important success for ARB, and an example of strong partnership between ARB and CAPCOA.

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LEGISLATIVE DIRECTOR GRESS: A second major success in the mobile source arena was securing approval in the budget for 5.9 million to start work on a new laboratory in Southern California. We originally requested this funding to assess the suitability of a proposed site on State-owned land in Pomona, and develop detailed design guidelines and performance criteria for the proposed facility. When completed, the total costs to build the new lab are estimated to be about 366 million.

The legislature approved the 5.9 million for the project, but there were a few changes to the proposal

based on concerns that the proposal didn't consider other viable sites. As a result, ARB had access to three million starting July 1, and has expanded its evaluation to include sites in both Pomona and Riverside.

Budget bill language specifies that ARB must allow Pomona and Riverside representatives to make on-site presentations to our site evaluation team and that ARB must support a report -- submit a report to the Legislative Budget Committee for a 30 day review on the action taken by the Board on selecting a site. Upon completion of these actions, the remaining 2.9 million will be available to ARB.

The on-site presentations occurred about three weeks ago and staff is preparing a draft report on the site assessment. Board consideration is expected to occur in February.

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LEGISLATIVE DIRECTOR GRESS: The new lab was our most significant budget success, but it was by no means the only one. This year, ARB presented nine other budget proposals to the legislature, all of which were approved with only a few modifications for a total of 26 additional positions in 2.6 million for contracts and equipment.

The proposal's increased resources for a range of programs, including implementing Low Carbon Transportation

projects, quantifying the greenhouse gas benefits cap-and-trade investments, and strengthening monitoring and enforcement of the Low Carbon Fuel Standard, among others things.

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LEGISLATIVE DIRECTOR GRESS: As you can see, there are a number of significant issues that were not fully resolved this year and will continue after the new year. The first is appropriation of cap-and-trade auction proceeds for the 2015-16 fiscal year. There is no concrete timeline for concluding this item. A budget could be taken up in the early part of the year or the remaining funds for 2015-16 could get rolled into the 2016/17 budget. Transportation funding will continue to be discussed, and the Governor's proposal has implications for the cap-and-trade budget, as I mentioned earlier.

Conversations on post-2020 climate action will continue next year, particularly as ARB develops the next scoping plan update and proposes amendments to the cap-and-trade regulation that extend the program beyond 2020.

Outreach to new members and their staff will continue. ARB is spearheading many important and high profile initiatives that members will care about. So it will be important for us to continue getting to know them

and engage them to the extent possible.

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LEGISLATIVE DIRECTOR GRESS: Before concluding, I want to acknowledge my great staff. Marci Nystrom, who is new to the Legislative Office this year and doing an outstanding job managing the office; Robin Neese, who keeps my calendar in order; Ken Arnold; Dominic Bulone, Natalya Eagan, who is another newcomer. Natalya's primary subject area is cap-and-trade auction proceeds, which means that she really has about 10 primary subject areas.

(Laughter.)

LEGISLATIVE DIRECTOR GRESS: Danny Roberts, and our two veterans Nicole Sotak and Steve Trumbly.

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LEGISLATIVE DIRECTOR GRESS: Copies of the 2015 legislative summary are in your pocket and can also be accessed on our website. The legislative summary contains brief descriptions of the most pertinent legislation tracked by the Legislative Office, listed by subject, author and bill number.

That concludes my presentation. I would be happy to answer any questions.

CHAIR NICHOLS: Thank you, Jen. We do have two people who have asked to speak on this item. So why don't we give them an opportunity to speak, and then maybe if

Board members have any additional comments, we can entertain those. Starting with Ryan Kenny of Clean Energy.

MR. KENNY: Good morning, Madam Chair. Is that better?

CHAIR NICHOLS: Yes.

MR. KENNY: Good morning, Madam Chair, members of the Board. My

Ron name is Ryan Kenny. I'm with Clean Energy. We are the nation's largest provider of natural gas and natural gas transportation fuel. And we -- it was obviously a productive year for the environment and for ARB's goals. But we do believe that under unfinished business that there should be for 2016 a mention of Class 7 and 8 alternate fuel vehicle incentives.

That was one of the glaring omissions that we had back in 2016 -- or 2015, and we would appreciate ARB supporting such an endeavor for the next year. As you know, there are several robust and admirable environmental goals by both Governor Brown and ARB and the State. And we don't believe that those goals can be met without alternate fuel heavy-duty vehicles. Those goals, especially for greenhouse gas emission reductions, short-lived climate pollutants, sustainable freight, and of course, federal attainment goals, we don't think any of

those can be met without the introduction of alternate fuel vehicles in the heavy-duty space.

As you know, ARB recently certified the 0.02 NOx engine by Cummins Westport. We believe it's a game changer for both the environment and public health. And those engines are due to be deployed in the first quarter of 2016. And unlike what ARB has mentioned with both electric vehicle and fuel cells, which may not be ready for 15 to 35 years. So these are ready to go and they could be a game changer for the environment and public health. So again, we would appreciate ARB's support in 2016.

Thank you.

CHAIR NICHOLS: Before you leave, do you have any reason to believe that those are programs that could not be funded without legislation? Is legislation required to fund the trucks that you're interested in?

MR. KENNY: That's a good question. Right now, with the Low Carbon Transportation Fund, there isn't any funding for heavy-duty alternative fuel vehicles. That's something that we would appreciate with cap-and-trade funds or any other funding mechanism. But we do believe because of the scope and as many heavy-duty vehicles as there are right now using both diesel fuels or petroleum fuels that a substantial amount of funding is required to

get these vehicles deployed and on the road.

CHAIR NICHOLS: I understand your interest in funding. And I wasn't challenging that. I was just asking the question about whether there was a legal requirement that we lacked authority in some way to do that.

MR. KENNY: No. No lack of authority.

CHAIR NICHOLS: Okay. Thank you.

MR. KENNY: Thank you.

CHAIR NICHOLS: Alan Abbs from CAPCOA.

MR. ABBS: Good morning, Chairperson Nichols and members of the Board. My name is Alan Abbs. I'm the Executive Director for the California Air Pollution Control Officers Association, or CAPCOA.

First off, I wanted to express appreciation for the acknowledgement of the rural issues that Ms. Gress had in her presentation. I've tried to get the rural air districts to be more active in the process. And I think we're having some pretty good success in getting them to identify their concerns, and in turn, it's great that ARB is acknowledging those concerns and offering to work with the rural districts. And I think the establishment of this rural school bus pilot project is going to be a great example of how rural districts can get things accomplished. And I think that program is going to be

oversubscribed, and it's going to be a success. That's my prediction.

CHAIR NICHOLS: Good.

(Laughter.)

CHAIR NICHOLS: That's what we like.

MR. ABBS: The second thing I'd like to mention is the SB 513 legislation, and to express our appreciation for ARB's partnership in that -- getting that bill to the goal line. It was a CAPCOA sponsored bill. We couldn't have done it without the help of ARB and their various staff members with meetings that we had with them, going over potential changes to legislation, the work group process that we had. And we thought it was going to be an easy bill because everyone loves the Carl Moyer program, but no bill is an easy bill, and we couldn't have done it without ARB support. So we'd like to thank staff for helping us get that to the finish line.

CHAIR NICHOLS: That's great. May I ask whether you have a -- as of yet, a list of legislation that CAPCOA is planning to pursue in the next session?

MR. ABBS: We're hoping to take a break.

(Laughter.)

CHAIR NICHOLS: Okay. Thanks. All right.

Any comments questions or questions for Ms. Gress from Board members?

If not, we'll just thank you for a great year.

Oh, we do have one.

BOARD MEMBER RIORDAN: Well, it's more of a comment. And the efforts by Jennifer and staff I think were wonderful, because this was not an easy year. I don't care what anyone says. There are some critical issues in financing. And we do need partnerships and assistance, particularly on the cap-and-trade auction proceeds. Those of you in the audience and those who might be watching know that those are really critical components of projects that really need to move forward. And so whatever we can do together will be very much appreciated.

And then I just want to put a footnote in for the rural funding for school buses. That's really a very helpful thing for all of the mid-size and small districts, and those who are, you know, part of very small school districts that just don't have funds for new school buses, but drive very old buses. So thank you very much.

CHAIR NICHOLS: And places where they really need the school buses too. They're used.

BOARD MEMBER RIORDAN: Absolutely, yeah.

BOARD MEMBER GIOIA: Madam Chair, question?

CHAIR NICHOLS: Thank you.

Yes, Mr. Gioia.

BOARD MEMBER GIOIA: Thanks for the report, Jennifer. I just had a question. There have been a lot of discussion, as you know, on the CalEnviroScreen maps from various regions of the state. And you mentioned AB 1059, which requires OEHHA to update CalEnviroScreen for the California-Mexico border region. In the context of this discussion about this bill, did it come up that there were concerns about the map from other parts of the State and just how did that play out?

LEGISLATIVE DIRECTOR GRESS: Well, on the -- with regard to the California border region, it had been -- in -- as CalEnviroScreen was being discussed a year ago when the Bay Area and other areas started first raising concerns about whether or not there communities were represented, there were some data challenges at the border region that needed to be addressed, missing data and such. And so, you know, we've been working to provide data to OEHHA and get additional monitors set up near the border region. So it was -- that bill really arose out of a concern of lack of data at the border.

BOARD MEMBER GIOIA: I see. So it was more focused on that issue, not the other issues that came up with regard to the map?

LEGISLATIVE DIRECTOR GRESS: Um-hmm.

BOARD MEMBER BALMES: Supervisor Gioia, I just

wanted to add that I'm aware that OEHHA is actually considering revisions to CalEnviroScreen. You know, they're at 2.0 at this point. I don't know what they're going to call the next version, but -- because I've been contacted, because I expressed some concerns formally in a letter --

BOARD MEMBER GIOIA: Right.

BOARD MEMBER BALMES: -- about the mapping. So they are looking at changing it. I don't actually know how it's going to come out, but -- so that would affect other areas aside from the Mexico border.

BOARD MEMBER GIOIA: Right. That would. Thanks.

CHAIR NICHOLS: All right. Thank you very much. Our next item is response to the Board's request that we made in July for more information about the current status of advanced technologies for heavy-duty vehicles. So this builds nicely on the last discussion. These technologies, including hybrids, batteries, fuel cells, advanced technologies of all kinds, including natural gas, are needed to be near- and long-term criteria and greenhouse gas reduction goals.

Last month, the Board heard about the Air Resources Board's mobile source strategy, which outlines our control measures that we're either currently or contemplating which outlines ARB ideas that are going to

go into the 2016 SIP submittals.

In July, the staff briefed the Board on the U.S. EPA's proposed phase 2 greenhouse gas standards for medium- and heavy-duty vehicles. And at the time, we talked about the fact that staff believes strongly that the proposal is not stringent enough to drive development of advanced technologies, including hybrids and battery and fuel cell electric vehicles.

These types of advanced technologies clearly are needed to support the planning and regulatory efforts that we have underway. Development of these advanced technologies supports key measures in the mobile source strategy and will help the State meet 2030 greenhouse gas and petroleum reduction targets, as well as make an important contribution to the sustainable freight action plan. So we need these EPA standards to be stronger and we need them to specifically be developed in a way that will encourage development of more advanced technology vehicles.

So in July, we asked the staff to return with more information to give us an update on the status of these vehicles. And this report is based on findings of several technology assessments that the staff has completed over the past year.

So, Mr. Corey, would you please introduce this

item?

EXECUTIVE OFFICER COREY: Yes. Thanks, Chair Nichols.

One of ARB's objectives is to transform the on- and off-road mobile source fleet into one utilizing zero and near zero emission technologies. To support this subjective, in early 2014, staff began a series of technology assessments for a variety of source categories including trucks and buses. The assessments evaluate the current state and projected development of technologies.

Staff presented an overview of the assessments to the Board in December 2014. Since then, staff has released a number of draft assessments, including two in September, one for lower NOx, heavy-duty diesel engines, and one for low emission natural gas low NOx emission natural gas and other alternative fuel heavy-duty engines.

The two assessments concluded that NOx emissions from diesel and natural gas trucks can be reduced significantly, significantly from today's levels. More recently, staff has released draft assessments for medium- and heavy-duty hybrid vehicles, battery electric vehicles, and fuel cell electric vehicles. These three technology assessments provide a comprehensive assessment of the current state and projected development of technologies over the next five to 10 years, suitability for different

applications, and current and anticipated costs and emission levels.

Today, staff will share key findings with the Board. These assessments will provide support for ARB's planning and regulatory development efforts, including the 2030 scoping plan, which the Board will hear about a little bit later today, and California's Sustainable Freight Action Plan, which the Board will hear about next month.

Marijke Bekken of the Mobile Source Control Division will provide a summary of these three technologies assessments.

Marijke.

(Thereupon an overhead presentation was presented as follows.)

AIR POLLUTION SPECIALIST BEKKEN: Thank you, Mr. Corey. Good morning, Chair Nichols, members of the Board.

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AIR POLLUTION SPECIALIST BEKKEN: As the Board is well aware --

BOARD MEMBER GIOIA: Clearly, the mic, yeah.

AIR POLLUTION SPECIALIST BEKKEN: Can we have the next slide, please?

As the Board is well aware, California needs dramatic NOx reductions to meet air quality standards,

especially in the South Coast, and faces aggressive targets for reducing greenhouse gas emissions.

To meet those goals, particularly the long-term climate mitigation goals, California's medium- and heavy-duty trucks will need to become significantly lower emitting than today. As the Board heard last month, staff is developing a mobile source strategy intended to support multi planning efforts.

Supporting this, ARB staff undertook the technology assessments as a comprehensive examination of the current status of, and 5 to 10 year outlook for, technologies to support ARB's long-term objective of a zero and near zero emission mobile source fleet. The hybrid, battery electric, and fuel cell electric assessments evaluate technologies for medium- and heavy-duty vehicles, those with gross vehicle weights over 8,500 pounds. They're intended to provide the technical foundation for the mobile source strategy and other upcoming planning and rule-making work.

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AIR POLLUTION SPECIALIST BEKKEN: In developing the mobile source strategy, it is clear that a portfolio of technologies will be needed. This strategy recognizes that we anticipate needed lower NOx emissions from conventional trucks and commits staff to bring a proposal

for mandatory lower NOx standards to the Board within the next few years.

It also identifies the need for increased use of a suite of renewable fuels, and in the long term robust deployment of zero emission technologies like battery electric and fuel cell electric. As you will hear, these technologies are either currently commercially available or under demonstration and include low NOx combustion engines, hybrids, fuel cell, battery electric vehicles. These technologies are capable of delivering very low or zero tailpipe emissions. However, to achieve even greater GHG reductions, extensive utilization of renewable fuels is also needed, especially for technologies that rely on combustion engines. Use of advanced technologies, coupled with renewable fuels, will result in lower -- will result in maximum well-to-wheel GHG reductions from the mobile sector.

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AIR POLLUTION SPECIALIST BEKKEN: The technology assessments that ARB staff has undertaken provide a forward look that will help provide the technical foundation for future ARB efforts, including potential new regulations, development of renewable fuel requirements, infrastructure investments, and demonstration and deployment efforts for advanced technologies.

The technology assessments will provide input as well to other California State programs already investing in advanced technologies, such as ARB's Low Carbon Fuel Standard, and air quality improvement program, and the Energy Commission's Alternative and Renewable Fuel and Vehicle Technology Program.

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AIR POLLUTION SPECIALIST BEKKEN: Over the past two years, staff has been working on a variety of assessments of the status of various technologies that might be pursued to reduce criteria pollutant and GHG emissions from the medium- and heavy-duty fleet. Nearly, a dozen reports have been released thus far, including recent releases of assessments for low NOx diesel and natural gas, as well as the three reports that are the primary focus of this Board update, namely the status of hybrid, battery electric, and fuel cell electric technology for use in medium- and heavy-duty trucks. Other assessments, including aviation and fuels are in the works and scheduled to be released over the next year.

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AIR POLLUTION SPECIALIST BEKKEN: Overall, the technology assessments are yielding key findings for both near-term and longer-term technologies providing a pathway to 2030 climate reduction targets and beyond. In the near

term, there is a strong focus on deployment of clean combustion technologies coupled with the use of renewable fuels. This will maximize the NOx emission reductions that are needed for air quality attainment goals and will increase the use of renewable fuels needed to ensure progress toward the 2030 goals.

At the same time, continued progress on the demonstration and deployment of zero emission vehicles is still necessary to support increased commercialization of these technologies and to provide a way to continue reducing localized exposure risk. In the longer term, the focus is on supporting continued growth for zero emission technology and its associated infrastructure. At the same time, clean combustion technologies will continue to play a key role, and increasing renewable fuels needs will continue.

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AIR POLLUTION SPECIALIST BEKKEN: Before I turn to the three advanced technology assessments though, let me talk a bit more about the two assessments that we released in September, both looking at the potential for achieving lower NOx emissions from diesel and natural gas truck engines.

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AIR POLLUTION SPECIALIST BEKKEN: Overall, the

diesel and natural gas engine technology assessments found that NOx emissions from both diesel and natural gas heavy-duty engines can be significantly reduced even while keeping greenhouse gas emissions low. For diesel engines, reducing NOx emissions far below today's 0.2 gram NOx engines will require significant emission reductions during cold start and during low temperature low speed operations, while maintaining high selective catalytic reduction conversion efficiency at high speed high temperature operation.

For natural gas engines, emissions can be significantly reduced using a system's approach, combining advanced three-way catalysts with engine management strategies. In fact, Cummins Westport recently certified its 8.9 liter spark-ignited natural gas engine to ARB's 0.02 gram per brake horsepower-hour optional NOx standard. ARB is currently contracting with Southwest Research Institute to demonstrate a 13 liter diesel and a 12 liter natural gas engine with an emission target rate of 0.02 gram per brake horsepower-hour NOx and minimal or no GHG emissions increase.

Other organizations, such as the South Coast Air Quality Management District, in partnership with the Energy Commission, SoCalGas and Cummins Westport are currently funding low-NOx natural gas engine development

projects on a number of other engine sizes as well.

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AIR POLLUTION SPECIALIST BEKKEN: Last month, when staff updated the Board about the mobile source strategy, a number of stakeholders raised concerns regarding the extent to which some potential measures rely on advanced technologies. They questioned whether our air quality goals might be met more cost effectively via the use of low NOx technologies, such as natural gas.

The natural gas technology assessment confirms that natural gas engines do hold promise in many applications, are likely to be available in lower NOx models more quickly than diesel engines, and are certainly part of the future vehicle landscape. However, to meet the State's long-term goals, because NOx tailpipe and well-to-wheel GHG emissions from heavy-duty natural gas and diesel vehicles are expected to be higher than those from fuel cell and battery electric vehicles, staff believes there is a critical need for advanced zero emission technologies as well. Simply relying on a shift in natural gas powered, low NOx, heavy-duty trucks alone will not be sufficient to meet California's air quality challenges in the long term, as they will need to be powered by renewable fuels to keep deep -- to provide deep GHG reductions, and there are concerns that the available

quantities of such feels could be limited.

On the next slide, I'll talk more about how staff plans to continue to work with the natural gas industry and other interested stakeholders as we continue our planning and rule-making work.

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AIR POLLUTION SPECIALIST BEKKEN: In May, ARB staff released a concept for the advanced clean transit regulation, which is scheduled for consideration next year. With deployments of commercialized zero emission buses already occurring, staff sees transit fleets as an ideal early application for advanced technologies like electric and fuel cell buses.

Given that low emission natural gas engines are also being developed, and that fueling infrastructure already exists, there has been much discussion recently with the natural gas and transit industries about the role of buses using such engines in the advanced clean transit regulation.

Staff's concept would result in a mix of cleaner combustion buses and zero emission buses. It is expected to drive use of low NOx technologies and renewable fuels, and the phase-in of zero electric -- zero emission technologies. Any phase-in requirements would be at normal turnover rates, and the overall requirements would

be structured so as not to impact service frequency routes or fares.

To address concerns from the natural gas and transit industry that were articulated at last month's Board meeting, staff is increasing its engagement with stakeholders. We are forming a transit work group and plan to hold additional technology and regulatory proposal workshops. We expect the work group and workshops will explore the economics and business case for various forms of cleaner buses, as well as funding and incentives. We plan to return to the Board to brief you on our progress in early 2016.

Now, I will shift the focus to the purpose of this presentation, namely the report on the technology assessments for hybrid, battery electric, and fuel cell electric medium- and heavy-duty vehicles.

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AIR POLLUTION SPECIALIST BEKKEN: The first technology assessment to be discussed in depth today is for medium- and heavy-duty hybrid vehicles.

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AIR POLLUTION SPECIALIST BEKKEN: A hybrid vehicle is a vehicle that uses two distinct power sources to move the vehicle, an internal combustion engine and an alternative power source, such as an electric or hydraulic

motor. Most hybrid vehicles currently are hybrid electric, but hydraulic hybrids are making inroads.

Hybrids come in various degrees of hybridization ranging from micro hybrids, which can increase fuel economy up to 10 percent to full and plug-in hybrids, which have an all-electric range and which can improve fuel economy by more than 50 percent. All hybrids offer start-stop technology and regenerative braking.

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AIR POLLUTION SPECIALIST BEKKEN: The optimal duty cycle for hybrid vehicles includes lots of start and stop operation, aggressive acceleration and deceleration events, and significant idle time. This duty cycle is typically seen in refuse haulers, transit buses, and package and delivery trucks. Hybridization can also be ideal for vehicles with electric power take-off.

In such vehicles, they hybrid system enables the internal combustion engine to be shut off, and electric power provided from the energy storage system for uses such as utility, bucket, and tree trimming services.

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AIR POLLUTION SPECIALIST BEKKEN: Hybrids are commercially available. There are over 2,500 hybrids on the road in California in application such as parcel delivery, uniform and linen delivery, beverage delivery,

transit, shuttle, and school buses, and food distribution and refuse trucks. These vehicles tend to operate in or near the optimal hybrid vehicle duty cycle. There are also ongoing demonstrations for utility and budget truck applications, as well as drayage applications for goods movement from the ports.

Many more hybrids are in use overseas primarily in China, South America, Europe and India. Currently, there are about 12,000 medium- and heavy-duty hybrid vehicles in the United States, including the 2,500 here in California.

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AIR POLLUTION SPECIALIST BEKKEN: In the future, staff expects that hybrid vehicles will see increased use in class 3 through 8 rural, intra-city, and regional delivery. Plug-in hybrid use for utility and bucket truck and drayage applications is also expected to increase. Finally, line-haul trucks may adopt mild hybridization as a response to tighter fuel economy and greenhouse gas standards.

The proposed phase 2 greenhouse gas standards for medium- and heavy-duty trucks expected in 2021 and beyond, may push faster adoption of hybrid technologies because hybrid vehicles have a fuel economy benefit. Higher diesel fuel prices in the future could also spur market

demand for hybrids.

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AIR POLLUTION SPECIALIST BEKKEN: There remain a number of challenges to full market acceptance of hybrid vehicles. First, the vehicles still cost somewhat more than a comparable conventionally fueled vehicle. Part of this cost is offset by operation and maintenance savings and would decline with increasing volumes. It's worth pointing out that all the advanced technologies discussed today face the issue of relatively high incremental costs compared to conventional technologies, at least while initial volumes remain low.

Advanced technologies are made by a disaggregate diffuse industry and are currently produced in low volumes, so they cannot take advantage of the economies of scale available for conventional technologies.

However, as demand for these vehicles increases, greater production volumes will begin to lower prices. Incentives, such as vouchers, under the HVIP program, can be offered to help offset these costs.

Second, for high power demand applications, the performance of the energy storage system may not yet be sufficient. Reaching performance goals for these high demand applications will require battery improvements and system optimization.

Third, the heavier-duty hybrid vehicles currently face a weight penalty, potentially up to 4,500 pounds. This can be addressed by light weighting and by selecting routes where the weight penalty for acceptable performance is small.

Fourth, there are remaining issues with certification, OBD and NOx emissions, which will need to be addressed through improved engineering designs and system integration. ARB's innovative technologies regulation, currently scheduled for Board consideration next year, is intended to help ease certification for advanced technologies, including hybrids.

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AIR POLLUTION SPECIALIST BEKKEN: This slide of a case study for a hybrid beverage delivery truck shows that the operating and maintenance cost savings are expected to be fully offset from the increased purchase price in five years, assuming no incentive funds are available. This is shown as the light green line; and when packaged with incentives, this can be reduced to as little as two years, as shown with the light blue line.

Although, the payback periods shown in this slide are specific for this fleet, add not true for every fleet, this slide nevertheless demonstrates that despite the higher initial cost, the purchase of hybrid vehicles may

still make economic sense if complete life-cycle costs and savings are considered.

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AIR POLLUTION SPECIALIST BEKKEN: The second technology assessment to be presented today is for medium- and heavy-duty battery electric vehicles.

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AIR POLLUTION SPECIALIST BEKKEN: A battery electric vehicle is a vehicle that uses batteries as the sole source of power for vehicle movement and vehicle auxiliaries, such as heat and air. BEVs use an electric motor instead of an engine and a battery pack instead of a fuel tank. BEVs have zero tailpipe emissions, regenerative braking, reduced petroleum consumption, excellent fuel efficiency, in terms of diesel gallon equivalents used, reduced operation and maintenance costs, and smooth quiet acceleration.

In addition, because a variety of approaches can be taken to generate the power that's used to recharge the batteries, the use of BEVs ultimately increases fuel flexibility.

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AIR POLLUTION SPECIALIST BEKKEN: The optimal duty cycle for BEVs is similar to that for hybrids. The main difference is that in addition to the start/stop and

idling characteristics desirable for hybrids, routes for BEVs currently must have a daily range of no more than about 100 miles, though fast charge technology can extend this range substantially. This duty cycle makes BEVs particularly suitable for buses, delivery trucks, drayage and refuse vehicles.

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AIR POLLUTION SPECIALIST BEKKEN: There are hundreds of medium- and heavy-duty BEVs on the road in California, primarily transit buses and medium-duty vehicles like delivery trucks. BEV transit buses are commercially available from several companies. Worldwide there are over 2,500 battery electric transit buses, mostly in China.

BEV school buses have limited commercial availability with one manufacturer offering new buses for sale. Currently, there are four electric school buses carrying students in California, and three more new buses are on order, as well as six repowers that offer vehicle to grid power.

Medium-duty BEVs are also in limited commercial availability with over 300 on California's roads. Heavy-duty truck BEVs are generally a more challenging opportunity due to vehicle weight, payload demands, and other issues. Nonetheless, there are currently three

heavy-duty BEVs being demonstrated, including two drayage trucks at the Ports of Los Angeles and Long Beach, and one refuse truck. The Energy Commission recently approved funding to demonstrate two BEV refuse trucks in Sacramento County. Another dozen or so class 8 BEV trucks are under construction and will be deployed to California for demonstrations.

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AIR POLLUTION SPECIALIST BEKKEN: The challenges to market acceptance of medium- and heavy-duty BEVs include range, cost, weight, and charging infrastructure. Range can be increased with improvements in battery chemistry or effectively increased through approaches such as fast charge technology. BEVs will likely remain more of a challenge for long distance heavy-duty applications, such as line haul trucks.

The cost of BEVs is currently driven by the cost of batteries. Costs should decline with improvements in battery chemistry and economies of scale with increasing volumes. As this graph shows, the cost for a 40-foot battery electric transit bus has been declining quickly since 2010 when the first commercial models were released, dropping from around $1.2 million to around $750,000 today. Even at current cost levels, much of the increased purchase cost is offset by operation and maintenance

savings and incentives help as well.

The increased weight from the battery pack can affect payload. Weight can be reduced through battery improvement and light weighting. In addition, fast charging for vehicles that frequently return to base allows a reduction in the size and therefore the weight of the battery pack.

Lastly, charging infrastructure must be addressed. Even with a slow charge -- even a slow charge system requires high amperage power to be delivered to the desired charging location, which incurs site-specific costs that may be substantial. Standardization of vehicle charging, as has been largely accomplished in the light-duty sector, will increase accessibility. Incentives should be made available to help fund the charging infrastructure.

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AIR POLLUTION SPECIALIST BEKKEN: The last technology I'll discuss today is heavy-duty fuel cell electric vehicles.

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AIR POLLUTION SPECIALIST BEKKEN: A fuel cell electric vehicle is an electric vehicle that uses a fuel cell to provide power for the electric motor. The fuel cell generates electricity to propel the vehicle and to

operate auxiliary equipment. This technology generally requires the same components as a battery electric vehicle, but with the addition of a fuel cell stack and hydrogen storage tanks. Fuel cell electric vehicles generally also contain batteries to help with short-term power demands and to accept regenerated energy. The fuel cell vehicle can be fuel cell dominant where the battery system is small, or battery dominant, where the fuel cell may act largely as a range extender.

Fuel cell electric vehicles have zero tailpipe emissions, regenerative braking, high fuel efficiency, good range and performance, and a quite operation with smooth acceleration. They have a refueling time similar to conventional vehicles.

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AIR POLLUTION SPECIALIST BEKKEN: There are dozens of medium- and heavy-duty fuel cell electric vehicles on the road. Most of these are currently transit buses, which were one of the first mobile source demonstrations of fuel cell technology. Fuel cell electric transit buses can be ordered from two manufacturers, but have not completed the Altoona testing required to access federal transit administration funds, which can cover a significant portion of the purchase price of a new transit bus.

In the interim, there are currently about 45 active and planned demonstrations in the United States. Other fuel cell applications are still in demonstration stages. UPS and FedEx are participating in large demonstration projects for delivery vehicles.

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AIR POLLUTION SPECIALIST BEKKEN: Fuel cells solve the range issues that battery electric vehicles currently have, and they have good reliability overall. However, additional maintenance staff training is needed to increase familiarity with the service needs that may arise with the vehicles.

Second, vehicle availability is slightly lower than diesel, because there is not an established parts inventory, so extended downtimes may occur while waiting for parts. As familiarity with the technology grows and parts become more readily available, this issue should be resolved. Cost is an issue with fuel cell electric transit buses currently costing over a million dollars, more than double a conventional bus, but this cost will decline with increasing volumes. The fueling infrastructure remains a significant challenge. Hydrogen fueling infrastructure needs are discussed further on the next slide.

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AIR POLLUTION SPECIALIST BEKKEN: Extensive work has been done to plan and fund the light-duty hydrogen fueling infrastructure. ARB has developed sophisticated tracking and modeling tools to project station needs. And the Energy Commission has been providing $20 million per year in station funding.

As of November 2015, California had 13 open hydrogen stations mostly located at existing gasoline stations. By the end of 2016, 51 stations are expected to be operational. However, the light-duty stations generally cannot be used by medium- and heavy-duty vehicles, because the light-duty vehicles are fueled at too high a pressure, and because of physical constraints. There are three hydrogen fueling stations in California for transit vehicles, but they are not accessible to other heavy-duty vehicles. Siting a hydrogen fueling station is it costly. Incentives will be needed to offset some of this cost.

As heavy-duty fuel cell electric vehicles move toward commercialization, a similar effort will be needed for medium- and heavy-duty hydrogen fueling infrastructure as has been taken for the light-duty fueling infrastructure. Staff will work with stakeholders to identify the necessary steps to ensure heavy-duty hydrogen infrastructure needs are met as the technology continues

towards commercialization.

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AIR POLLUTION SPECIALIST BEKKEN: While we anticipate a continued need for clean combustion technologies moving forward, the growing use of clean advanced technologies will remain a key component to meeting California's greenhouse gas and air quality goals.

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AIR POLLUTION SPECIALIST BEKKEN: The three advanced technologies discussed today provide critical emissions benefits for both greenhouse gases and criteria pollutants. In fact, BEVs and fuel cell electric vehicles both have zero tailpipe emissions. Well-to-wheel emissions for BEVs depend on the power plant mix, since most use power from the grid. Recent analyses by the Union of Concerned Scientists conclude that life cycle emissions for BEVs, which include emissions from the raw materials to make the vehicle through manufacturing, driving, and disposal of recycling, are less than comparable emissions from conventional vehicles, even for parts of the country with a much dirtier power grid than California.

As part of its fuels assessment, staff is determining total well-to-wheel emissions for a variety of technologies. Preliminary results indicate that

substantial well-to-wheel GHG emission reductions can be gained from all three advanced technologies when compared to conventional vehicles.

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AIR POLLUTION SPECIALIST BEKKEN: There are a variety of operation and maintenance costs and savings associated with the advanced technologies, such as reduced brake wear from regenerative braking and reduced fuel use associated with increased efficiency. These savings allow the increased incremental costs of advanced technologies to be paid back over time. As incremental costs decline and as the incentives are leveraged to address higher capital costs, payback periods also decline.

Current incremental costs associated with hybrid technology can be paid back in as little as three years for some vehicle types and costs. For medium-duty BEVs in some applications, payback of the incremental cost can be achieved in as little as four years. For BEV transit buses, the payback period is longer but can be offset federal transit funding as well.

It is expected that fuel cell electric vehicles would also provide operation and maintenance savings. However, there is not yet sufficient data available from fuel cell electric vehicles to quantify these savings nor to determine a payback period.

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AIR POLLUTION SPECIALIST BEKKEN: We intend to pursue a number of comprehensive strategies to expand the use of advanced technologies. Our planning efforts highlight the need for a diverse technology portfolio, which will include clean combustion technologies, zero emission technologies, and the use of renewable fuels. Public investments are being made to support technology development and deployment with incentives available for both clean combustion and zero emission technologies. These incentives target multiple applications, where demonstration project funding is intended to broaden the field of suitable applications.

ARB should further spur the use of these technologies by developing and adopting regulations that promote their use. There are a number of proposals that staff intends to bring to the Board in the next few years that will encourage clean medium- and heavy-duty advanced technologies.

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AIR POLLUTION SPECIALIST BEKKEN: These measures include the Innovative Technologies Regulation, intended to address certification an OBD challenges for hybrid vehicles, the advanced clean transit regulation to promote zero and near zero transit fleets, the California

heavy-duty phase 2 greenhouse gas requirements, which will be considered in the 2016 to 2017 time frame, a proposal for last mile delivery vehicles anticipated for 2017, and an airport shuttle bus measure expected by the end of 2018.

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AIR POLLUTION SPECIALIST BEKKEN: Moving forward, staff will continue to work with stakeholders on ARB planning and measure development for both near- and long-term scenarios using both clean combustion and zero emission approaches. The technology assessments, including the three I discussed in detail today are available as drafts, and we are accepting comments from interested stakeholders.

The technology information in these assessments will continue to support the development of ARB's mobile source strategy.

There are two main take-away messages I would like to leave you with. The three advanced technologies we've discussed today are out there, demonstrated, and in many cases commercially available. And while these technologies do have challenges, there are solutions.

Thank you. I'd be pleased to answer any questions you have at this time.

CHAIR NICHOLS: I just want to clarify the

context in which we're having this discussion, because as I mentioned at the beginning, we put this report on the agenda actually in response to a request from our absent Board Member Dan Sperling, who wanted the Board to get an update on how things were going with these various technologies. And it is important that we're hear from the staff about your assessment of the technologies, and where they are, and what they can do. That's kind of the baseline.

But there's always a policy context here, because obviously we're a government agency and we exist for the purpose of doing things to make the air better and the climate better. And I think, although I see on the witness list, most, if not all, of the people who are going to be testifying are representing organizations that either have or use some of these technologies and want to encourage us to move forward, preferably with more funding and other policies that will encourage much wider use of these technologies.

But we also heard recently, and if I didn't say this I know Supervisor Roberts would, from, you know, at least one, and probably more than one, transit agency that is very nervous that ARB is about to start requiring them to purchase vehicles that they don't feel will meet their needs.

And so I guess what I would like to hear from staff is sort of how you see these two issues. I mean, one, is sort of is the market ready for it? Is it really there now? Do they really meet all the needs the people have? And the other is, assuming that we're trying to push the market in that direction, you know, how are we going to do that in a way that doesn't just create problems that, at the end of the day, will end up either costing more money or otherwise giving these new technologies that we think are very promising a bad name?

Who wants to answer that question?

(Laughter.)

CHAIR NICHOLS: Mr. White is designated for this one.

(Laughter.)

MOBILE SOURCE CONTROL DIVISION CHIEF WHITE:

Well, with that -- yes. That was -- I mean that's a very good question. And I think we certainly heard loud and clear last month about the concerns that transit agencies have. And as we've thought through the concepts of how to move these forward. And certainly I think we've been -- we've recognized for a very long time that transit agencies, as we talk about new technologies, really are an ideal place to start. In a lot of cases whether we were talking about diesel risk reduction, low

NOx and other things, it's kind of where many of our programs where the rubber hits the road.

But recognizing that, we understand that, you know -- and it a lot of ways, they have somewhat different priorities for us. Their priorities are to get buses out on the road and to move people from point A to point B as they have done effectively for a very long time, and so we're sensitive to that.

And so we want to make sure that as we find that right nexus between advanced technologies and their operations and their priorities, we think there's a lot synergies. And we've seen that with a number of agencies, whether it's AC Transit and SunLine, if we're talking about fuel cell buses, if we're talking about battery electrics, with what Foothill Transit down in Southern California has done.

What we want to make sure though is we understand the concerns that the transit agencies have, and we fully engage them, not just individually, but collectively as an organization. And so based on the concerns that we heard last month, as you heard, we are going to initiate a number of additional steps as we develop that to make sure that the proposal that we bring to you later next year is balanced, is implementable on the transit agency side, and most importantly is not going to impact both the level of

service that they provide, and the expansions that they would like to do, and the costs to those who depend on that transit service for their day-to-day activities.

CHAIR NICHOLS: Okay. Well, I think that's a good beginning anyhow. Let's hear from the witnesses. We have a list of up here, so people can read it for themselves. And we'll start with Hannah Goldsmith.

MS. GOLDSMITH: Good morning, Chair Nichols and members of the Board. My name is Hannah Goldsmith, and I'm a project manager with California Electric Transportation Coalition, or known as CalETC. Thank you for the opportunity to comment on the draft technology assessment for medium- and heavy-duty battery electric trucks and buses.

CalETC is a nonprofit trade association promoting economic growth, clean air, fuel diversity, and energy independence, as well as combating climate change through the use of electric transportation. We are committed to the successful introduction and large scale deployment of all forms of electric transportation. Our board of directors is made up of the five largest utilities in California. Our membership also includes major automakers, manufacturers of zero emission trucks and buses, and other industry leaders supporting transportation electrification.

CalETC supports staff's draft technology assessment. As this assessment shows, companies are already investing in the goods and people movement sectors. Medium- and heavy-duty battery electric vehicles are available now. We do not have to wait 15 years, as was previously suggested during the comment portion of the last agenda item.

In addition, the support of the State outlined clearly in this assessment, encourages continued and growing private sector investment in medium- and heavy-duty battery electric trucks and buses. Vehicles using electricity as a fuel reduce criteria and GHG pollutants by 75 to 90 percent. And these vehicles get cleaner over time as more renewables are incorporated into the grid.

Combustion engine vehicles will play an important role for some time to come, but traditional combustion engine vehicles deteriorate causing emissions to increase over time. Battery electric vehicles only get cleaner as the grid gets cleaner.

We also appreciate staff's recognition of the vital role incentives will play in market success. The level of market transformation necessary to accomplish the air quality, climate change, and economic goals of this State is unprecedented.

This administration and the Air Resources Board have shown consistent leadership. As the Board is aware, this State has stalled in its commitment to incentives for low carbon transportation this year. We hope this assessment will further help our efforts to un-stall the State's investment in low carbon transportation, especially as relating to zero emission goods and people movement technologies.

Thank you.

CHAIR NICHOLS: Very good. Thank you.

Mr. Shimoda.

MR. SHIMODA: Good morning. Chris Shimoda, California Trucking Association. And thank you Chair Nichols for the opportunity to address you today on the tech assessments.

So we're working to submit some more substantial comments on the whole range of tech assessments, but I did just want to share some very preliminary observations today. And we'd largely like to echo the staff's presentation regarding the very real market barriers to entry for more or less all medium- and heavy-duty ZEV technologies. Some of this was already covered in the staff presentation, but the multiple issues that we've identified just in our preliminary assessment are upfront costs, largely inadequate performance to service all the

doubt cycles -- and that's even specific to the medium-duty last mile delivery, which was largely been our focus in our analysis, which is one of the more friendly duty cycles for this technology.

The commercial limitations of existing ZEV vendors to adequately build and service the vehicles on the road; limited infrastructure, and also the cost to upgrade existing infrastructure that exists. And then also there's an unknown total cost of operation because we're in such an early stage of development. So it's a little bit difficult to adequately examine how these technologies are going to integrate into business models.

And so overcoming these barriers, I think staff has acknowledged, is a longer term project. This isn't something that we're going to figure out in the next five to 10 years. It's going to require a lot of both agency and industry collaboration working through these barriers to make sure that there is a successful program moving forward. And as was mentioned by the previous speaker and in the presentation, incentives are going to be a huge key. Figuring out how we secure those incentives moving into the future is going to be very important for the development of the technology.

And also, as I think was alluded in the transit presentation, having a strong technology development

process that includes all the major stakeholders, OEMs, end-users, the agencies, utilities are obviously going to play a strong role in this is going to be key. And we look forward to working with your staff on creating a workable framework in the coming years, so thank you.

CHAIR NICHOLS: Go ahead.

MR. WIRAATMADJA: Good morning, Chair Nichols and members of the Board. My name is Vincent Wiraatmadja. I'm here from Weideman Group on behalf of BYD Motors, Inc. BYD Motors is a North American based headquarters in Los Angeles, and manufacturers battery electric trucks, buses, and also batteries. We have manufacturing facilities located in Lancaster as well.

We're here to say that the technology is here, it's mature, and it's ready for prime time. But as pointed out by the previous speaker, it does need support, and that's why BYD is so bullish on California. That's why we chose to locate so many of our assets here. As a battery manufacturer and an electric vehicle manufacturer, BYD is uniquely vertically integrated. As a result, we're able -- as a result of controlling the supply chain and manufacturing and assembly and sales, we're able to drive down the cost of our battery electric buses, and we are, with the inclusion of incentives, close to hitting parity with alternative fuel transit buses.

The technology has advanced in an incredibly short amount of time. Our buses have a range of at least 155 miles and have 75 million vehicle miles traveled across the world. We have 23 buses deployed within the U.S., 3,000 globally, and 6,000 orders. Many of those buses are located in California, and are used by organizations like Stanford, the Antelope Valley Transit Authority, LA Metro and Gardena Transit.

To help bridge that time as cost goes down, BYD offers a variety of creative financing solutions to reduce the upfront capital costs necessary to make the transit to completely zero emission transit.

We offer leasing options for the most expensive component, the battery, that reduce the upfront cost. In addition, we also offer 12 year warranties on our batteries as a standard part of any bus sale. This shifts the liability of battery failing from the transit agency back onto us. That's how confident we are in our technology.

In conclusion, BEVs are here. We're ready to do our part. We also manufacture electric trucks, so we're ready to play our part in the Governor's freight strategy plan.

And thank you for your support in all of this.

CHAIR NICHOLS: Thank you. BYD has made an

impressive investment in California.

Mr. Costantino.

MR. COSTANTINO: Good morning, Chairman, and members of the Board. John Costantino on behalf of the Southern California Public Power Authority. And we pleased to see the draft reports come out, especially the one on hybrid utility trucks, and the benefits they can provide, both GHG, criteria pollutants, and something that was acknowledged in the report, the fact that they're quieter when they do the boom operations and when they're sitting in neighborhoods for hours on end.

So short and sweet is that we support the promotion of these technologies, and we actually think it, Chairman, goes along with your policy objective that it adds to the variety of options. And you wouldn't have to have as many mandates directly for alternative fuels. So we appreciate that and look forward to working with this.

MR. TUNNELL: Good morning, Chair and members of the Board. My name is Mike Tunnell. I'm with the American Trucking Association. And I appreciate you having this item on the agenda. I would like to just echo some of the comments of my colleague, Chris Shimoda of the California Trucking Association. And also say, you know, the question you asked, Chair Nichols, at the beginning, I think, really succinctly summed up the questions we have

really is where do -- how do you go from where you're at today on a more incentive based approach to something that's beyond that with more widespread use?

And it's a lot of scary implications in some ways. So I would just -- you know, looking at the tech assessments I think they're a starting point in identifying some of the issues that we've talked about in moving this technology forward. And just to highlight a few of our concerns is, you know, reliability I think of the technology. When you go from a 10 truck demonstration, you can -- you know, your reliability can be -- have a little margin for error in backups and things like that, than when you get into more widespread development.

And infrastructure same types of issues, you know, lining up limited infrastructure versus more widespread infrastructure.

And then range with the trucks as well. If you limit the range, you can get into issues of needing more trucks, and having more trucks on the road. So, you know, a whole number of issues that I think we'll all be getting into. And it seems like the staff is very amenable to discussing those.

And, you know, I'll just close on a nostalgic moment I was having thinking about this issue was 20 years

ago we were in a much dingier Board room in the basement of a building.

(Laughter.)

MR. TUNNELL: And the issues we were talking about then was whether advanced battery technology would be available to meet the State's ZEV mandate.

And, you know, flash forward to today, we're talking about that very same issue. And my hope is that we've learned from these past efforts and we'll, you know, approach them appropriately, and not just repeat what we did before. So thank you very much.

CHAIR NICHOLS: Thank you. I just came from the L.A. auto show yesterday, where I saw an array of incredibly hot electric vehicles. So I'm feeling pretty good about where we are on that.

(Laughter.)

CHAIR NICHOLS: All right. Mr. Magavern.

MR. MAGAVERN: Good morning. Bill Magavern with the Coalition for Clean Air.

And I appreciate the attention that the Board is giving to this topic, because cleaning up really transforming the fleet of medium- and heavy-duty vehicles is essential for California to meet our air quality, as well as our climate objectives.

And I thought the staff report was excellent.

And we agree with the approach that's outlined there pursuing aggressively NOx reductions from clean combustion combined with renewable fuels, because it's essential to get to the ozone standard attainment in both the South Coast and the San Joaquin Valley, that we reduce NOx rapidly.

And then also to continue developing the zero emission vehicle technologies with an eye towards overcoming the challenges that were identified in the report. And one thing that was talked about additionally in the legislative report is the need for funding. And we do have the unfinished business that Jen Gress identified in the need to appropriate the 2015-16 money in the 40 percent category for the climate investments.

And I'm hoping actually that the Governor and the Speaker and the Pro Tem could get together. I understand they're all going to be in Paris soon, and maybe they could actually work out a deal -- a plan for spending this money that the legislature could adopt when it returns in January, because it's already long overdue to budget that money.

Also, in the area of fuel cell vehicles, which we see as promising, particularly in the buses that are already on the road and more are planned. We need to soon get the hydrogen that's being used to fuel those vehicles

to be renewable hydrogen. So we hope that that will be an area of focus also.

And we'll be talking more about some of these issues next month in the context of the freight strategy. So I promise to be back then and maybe bring some friends.

(Laughter.)

CHAIR NICHOLS: Thanks. Okay.

MR. LEACOCK: Good morning, Chair Nichols, Board members and staff. My name is Kent Leacock. And I'm the director of government relations for Proterra, a leading U.S. manufacturer of zero emission battery electric buses that are commercially operating in the U.S. right now with over 60 buses on the road in such diverse places as Kentucky, Massachusetts, South Carolina, Texas, and Tennessee.

We are significantly reducing mobile source emissions, and we'd like to thank the Board and ARB staff, specifically Marijke Bekken, Yachun Chow, and Tony Brasil for their extensive work on this draft heavy-duty technology assessment.

The report helps provide key information to implement policies and programs to accelerate the deployment of Heavy-duty zero emission transportation technologies. This will help implement the goals of AB 32, the Governor's ZEV Action Plan, and clean transit

rule, the Low Carbon Fuel Standard and the Governor's goal to reduce petroleum usage by up to 50 percent in 2030.

Transit buses have consistently been able to be a forerunner in advancing heavy-duty technology and transferring lower emission technology throughout the Heavy-duty sectors. There's an opportunity now to accelerate electrification of the entire transit industry, including goods movement in and around the ports and congested goods movement throughout the corridor.

As an aside -- I know there was a mention of the transit agencies. As an aside, if most of you know or don't know where Porterville, it's a very small town northeast of Bakersfield. They are going with electrification of transit buses. And so I would argue that if Porterville can find the way to afford transit buses due to their lower total cost of ownership, then everybody can.

By combining this performance, efficiency, and design, our battery electric buses offer the lowest cost per passenger mile with any transit technology. In addition to the cost savings that I mentioned, the other benefits for transit operators and their riders, our fast charge technology offers immediate and lasting air quality. And as BYD mentioned, range has -- is rapidly losing itself as an issue. We've achieved 258 miles on a

test track and roughly 160 miles in the real world with our long range battery electric bus.

You know, make no mistake, near zero emission is not zero emission. And as has been mentioned over time, with the renewable portfolio standard, our fuel source will get cleaner and the other forms of fuel will not, as engines degrade. I'd like to thank you for the opportunity to provide these comments, and we look forward to the continuing -- to work with the Board and the staff to help accelerate the deployment of Heavy-duty battery electric technology that help reduce mobile source emissions.

Thank you.

CHAIR NICHOLS: Thanks, Mr. Leacock.

Chris Peeples.

MR. PEEPLES: Chair Nichols, members of the Board, my name is Chris Peeples. I'm an elected at-large director of the Alameda Contra Costa Transit District. And this year I'm serving as its President. I was unable to take this matter to the Board and get official permission to speak, so I'm really speaking for myself. I want to say a few things about our program and then talk a little bit about what is zero emission and what is near zero emission. And then refer to a couple of documents I've given you about what's happening in the world.

Most of you know our program, most of you have ridden on our buses. Pictures of our buses are on the front of your report. We've been doing this for about 10 years. Our current fleet has been there for about five years. It's got about a million and a half miles on it. We've carried about five million people.

It works now, today. There are no range issues. With the current tanks that we've got, we can do 200 miles. The earlier version went 400 miles, and we decided that was too much, but adding additional range is not a problem.

I would really urge you to continue a true zero emission program. In our case, we make some of our hydrogen from solar cells that we've covered all our buildings with. PG&E wheels it to one of our yards, and we put it into a proton electrolyzer. And so it's zero emission well-to-wheel.

The rest of it comes from methane, some biomethane, some petroleum methane. But in either case, it's about 40 percent more efficient than if we burned it in an ICE engine. And even more importantly, we use the methane much earlier in the well-to-wheel cycle, so that in terms of short-term criteria pollutant -- or short-term GHG pollutants, it's much more controlled, because it's used in a much more controlled fashion converted into

hydrogen, and it's much less diffuse. We're not loading 600 buses with individual load -- fuelings of methane, which then leaks and goes all over the place. So that's there. It's there now.

The two documents I've brought you, one is a press release from Ballard saying that they've sold 600 -- or, I'm sorry, 300, P7 heavy-duty fuel cells for bus use in China. That's not 30 years from now, that's now.

The second one is an EU report that the EU program says that they're going to have between 300 and 600 fuel cell buses on the road in addition to what they have now by 2020. That's not 30 years from now, that's five years from now. I think that's realistic.

One more second. They also think that by 2020 fuel cell buses will cost the same as a hybrid diesel. I don't think that's realistic, but the prices have come down 85 percent since we bought our first fuel cell buses some 10 years ago.

Thank you.

CHAIR NICHOLS: Thank you for taking the time.

BOARD MEMBER GIOIA: A couple question, madam Chair.

CHAIR NICHOLS: Mr. Edgar.

BOARD MEMBER GIOIA: Madam Chair, can I have a quick question?

CHAIR NICHOLS: Oh, sorry. Yes, go ahead.

BOARD MEMBER GIOIA: First, Chris, thanks for coming up from the Bay Area.

MR. PEEPLES: And I came on the train.

BOARD MEMBER GIOIA: I know you took the train like I did.

First let me say every time AC transit is out there on this issue, we always acknowledge that you have the largest fleet of hydrogen fuel cell buses in the country, which is great, great leadership. I wanted you to --

MR. PEEPLES: And we're trying to get grant money for 10 more.

BOARD MEMBER GIOIA: Right. And I wanted just to have you, as a representative of a very large bus agency, to respond to the issue that came up at the last meeting we had. You may have heard some reference. There was some transit agencies that were concerned about the cost of being forced to buy zero emission vehicles after a particular date. Can you address it from the standpoint of your experience of -- with AC Transit and your knowledge of it?

MR. PEEPLES: Yes, it is a concern. You, the CARB Board, the California Energy Commission the FTA, Federal Transit Authority administration, and the federal

Department of Energy has been very generous in funding both our infrastructure and our buses. And I don't -- I have no concerns about performance when it comes to fuel cell buses. They're still pretty expensive. We have put together an order -- assuming everybody gets the grants they want to get, we're hoping to put together an order of 30 buses to the largest bus manufacturer in America, who is actually going to make and guarantee the buses, rather than having an integrator do that. That will drop the price substantially. It's still considerably more expensive than a diesel bus or a CNG bus. So performance is not an issue, but the funding is an issue --

BOARD MEMBER GIOIA: Right. I'm just -- just -- right, just the issue was raised generally about how we think about requirements for transit agencies. And we were hearing just concern about moving along or having these very specific requirements of purchasing zero emission vehicles after a particular date, but --

MR. PEEPLES: The concern is real. I don't think it should discourage you from the requirements, but it should make you even more -- even stronger in your advocacy with the legislature and the Governor for cap-and-trade funding or other funding to make up the delta between the roughly $700,000 that a hybrid diesel costs and now hopefully one 1.1 to 1.2 million that a fuel

cell bus would cost or the -- roughly the same -- the battery buses are about the same price as a hybrid diesel but they've got a whole lot more infrastructure.

BOARD MEMBER GIOIA: Thank you. Thanks.

CHAIR NICHOLS: Thanks. Seeing no other comments. Mr. Edgar.

MR. EDGAR: Chair Nichols, and Board members. Sean Edgar. I'm the director of cleanfleets.net here in Sacramento. And I only claim 16 years since the dingy basement, so --

(Laughter.)

MR. EDGAR: -- thank you for changing the decor a little bit.

CHAIR NICHOLS: It was dingy basement.

(Laughter.)

MR. EDGAR: It was a dingy basement.

Having had that wonderful experience with you all, I promise today not to throw anybody under the truck or the bus.

(Laughter.)

MR. EDGAR: And what I'll talk about is my own frame of reference as it relates to sacrificing what I think we might be headed down a road of sacrificing the great in pursuit of the perfect. And I've seen that happen a lot here over the last 16 years.

So I'll just reference a couple cases, not so much to talk down any particular technology, but to talk up what the waste and resources industry is doing. Borrowing on my testimony from last December on this same item, I'll touch upon a few of those items and then update you since that time.

Our members operate in excess of 2,500 natural gas vehicles throughout the State of California. It was definitely a chicken and egg conversation 15 years ago when natural gas technology was new. The good news is the near zero engines are here today, and those engines are making their way into commerce. Your Board is certifying those engines. U.S. EPA is doing the same.

There remains no long-term solution to what is an increased cost of that natural gas vehicle. So this -- some of the same high barriers that existed for several of the technologies your Board reviewed still existed 15 years ago for natural. And a lot of those barriers have been overcome.

So I'll just touch a little bit on what's here and now, and what -- you know, I'm always for looking way out into the future, but we presented your Board with a plan to off -- I guess that's the best terminology I can think of. There are about 7,000 diesel powered solid waste collection vehicles running out around California

today. And we think with some sustained funding for a lot of good reasons we can clip away at thousands of trucks a year, as opposed to the hundreds of trucks a year under existing resources.

So Chair Nichols asked the question about legislative items, you have some direction from AB 118 on what you can spend money on as it's appropriated by the legislature and advanced in hybrid technologies and natural gas technologies I think would be part of that. The Energy Commission spends some of that money, about $12 million a year of AB 118 money. And that's great for doing hundreds of vehicles a year. And I think what we're promoting is to do thousands of vehicles a year.

So in the time I have left, I'll just touch on the near zero engines are here now, natural gas vehicles. You get the trifecta with the waste and resources industry, especially pipeline gas is good, renewable natural gas is better. And I've laid out a strategy, including Energy Commission projects that are underway for that, so carbon negative fleets can roll out today.

And I guess the key thing is using the status goes, hundreds of natural gas vehicles will go out. Using new creative sources of funds, we can do thousands of vehicles. So thank you for your time.

CHAIR NICHOLS: Thank you.

Mr. Barbose.

MR. BARBOSE: Good morning. I just wanted to speak very briefly and make a couple quick points. One is just to overall support ARB's approach here of moving forward on multiple zero emission tailpipe emission technologies. At the same time, recognizing their importance to our climate, our oil, and our air quality goals. And I really appreciate the work that went into the report today in the presentation.

I think it's starting to paint a picture for everyone of how the various technologies will move forward in different applications at different speeds over the coming decades. And that's really important for us all to see how the pieces fit together.

So since the advanced clean transit, the bus rule, came up, just thought I'd make one point on that, which is we see the value of this rule really being greater than the reductions that it will generate from the bus sector, right, from reducing emissions from buses. And sort of as was discussed today, you know, we need advanced zero emission technologies in a whole range of heavy-duty applications in coming years to reach our climate and air quality goals.

And so this is really an important opportunity as we see it to advance zero emissions in the short-term in a

way that creates these positive spill-overs to other heavy-duty applications, so the technology is available there when we need it down the road.

And so we look forward to working with the Board and with staff in the coming year on the advanced clean transit rule and other opportunities to advance zero emission technologies.

Thanks

CHAIR NICHOLS: Thank you.

That concludes the list of witnesses.

Do any Board members have any questions at this point?

Yes, Supervisor and then Ms. Mitchell.

BOARD MEMBER ROBERTS: First of all, in spite of Dan not being here, I enjoyed this.

(Laughter.)

BOARD MEMBER ROBERTS: And I'm sure he would have. And Erik, I like your closing comments about we're going to find out what's going on. It seems to me that we have the -- probably the potential to solve this in a way that will be good -- a win-win for everybody.

Transit is our partner. Underscore that. And some transit districts are different than others. I'm not just what Porterville does, but I would guess they have very little in common with what the bigger cities are

doing who are -- believe it or not, we're talking about buses. A lot of the systems are electrified with rail systems and other things going on. And we talk about buses, buses in hills and other things aren't the same as a test track.

We need to work -- unlike maybe hydrogen, and even the car technologies in electricity, where the infrastructure can be used over multiple brands, buses can't be. You buy a bus, you buy the infrastructure. And if you decide that's not the bus, you've got to go buy a different bus with a different infrastructure, and the infrastructure, not only is the bus more expensive, the infrastructure is expensive.

And I think what we need is some really objective study and work on this. The State with the money we have for greenhouse gas has the capability of coming up and looking at this in a very rational, scientific way and figuring out where these things are appropriate and maybe helping people and transit systems to get there.

And, you know, what I think the fear I have is that we just say go do it, here's how many you've got to buy type of approach, when we have asked people, okay, we want you to clean up your act. And I'll tell you this, I've been in public transit for now almost 30 years. We have -- we will shortly have 100 percent CNG buses. I

know what those cost. I know what the operational expense is. I know how we keep our drivers moving. It's not just the bus and it's the charging, you've got to keep them moving. That's your operational expense. If you have to sit and charge up, you've got an issue. And I know there may be solutions coming, and people are working on the technologies for dynamic charging, but they're not there yet. And when they're going to be there, I don't know.

I sat through hearings years ago we were told that the advanced batteries were going to be here years and years and years ago at a level. They're still not. So we really -- I think we need to get a handle on this, but I think your willingness to go and talk to the agencies and work with the agencies and find out which agencies these might work, and what the contexts are, I think will help us.

But I think we're in a position to maybe be able to develop information that could be of use to agencies in making these financial decisions. The last thing I want to see is service reductions because we're putting more money into operations and equipment. And you're seeing, you know, among advocates, I think a very distorted picture of what the true costs are in this type of program.

I want to know what the real costs are when I

make those decisions. We've done a good job complying with cleaning up the air. We've moved a lot of people, and we're moving a lot of people around that might otherwise be driving non-electric vehicles. There are a few left. And if we can put them into transit, sobeit. And, you know, zero is nice, but we can get a lot done maybe without being completely zero.

CHAIR NICHOLS: Thanks.

Ms. Mitchell.

BOARD MEMBER MITCHELL: Thank you. And getting -- it went off again -- moving from transit to freight movement in the heavy-duty trucks, I heard yesterday -- I was also at the auto show, and I heard yesterday from one of the persons in our meeting that one of the terminals at the port is interested in buying 60 electric vehicles or clean vehicles, and they're not available right now in that category, in the drayage category.

So I'm a bit alarmed when I hear it's going to take us five to ten years to move in that direction. I hope we can do it sooner, but I also recognize the policies issue that we face, which is balancing the economy with the need for public health and to move to cleaner air. And we've gone through a lot of battles with our trucking stakeholders, and -- but it seems to me there

is a way to transition. As that technology becomes more available and as truck fleets are seeking replacement, that we urge them to get the newest and the best.

I also think it's probably a mistake to require a choice among the technologies. I think we should look at the performance of each of those technologies and allow the market to develop in the way that best suits the stakeholders and the economy, so -- but I'm so encouraged with where we are today, and I wasn't here when we were in the dingy basement --

(Laughter.)

BOARD MEMBER MITCHELL: -- but I --

CHAIR NICHOLS: You didn't miss much. Well, I don't know. We had some good times.

(Laughter.)

BOARD MEMBER MITCHELL: But we're certainly moving forward. And I think everybody sitting here would not have believed five years ago that we would be where we are today. So I'm very encouraged by where we're going, and what we've accomplished.

Thank you.

CHAIR NICHOLS: Thanks.

Mr. De La Torre.

BOARD MEMBER DE LA TORRE: It's great that we're promoting getting these vehicles out. And obviously,

we're not going to have wholesale swapping out of fleets. It's going to happen gradually as we introduce these vehicles into the various transit districts.

My main concern with transit agencies getting the latest and best is that they put those vehicles in the fanciest places in their districts. I've seen this in my region in Southern California. And the whole point of everything we're doing, whether it's the GGRF with our mandate to mitigate pollution is to target the areas that are most impacted.

And so the whole point, if we're going to be putting money into this, and be supportive of it, is to get these newer cleaner vehicles into those communities that most need them for air quality reasons, not the fancy places where you're going to get political support or you're going to take care of, you know, the nicer neighborhoods in your region.

The whole point is that we have to get these as we're bringing them on line into the lower income polluted communities because they need it more.

And so I want to make that point, that as we move forward on this, to me, this is part of the 25 percent. This is part of the mandate that we have that we have to put these vehicles in those communities first, and not in the beach communities, et cetera, et cetera, as I've seen

in Southern California.

Thank you.

CHAIR NICHOLS: Dr. Balmes.

BOARD MEMBER BALMES: Just a short addendum to that. I think those communities also use public transit more, so that's another reason why they should have these vehicles.

BOARD MEMBER GIOIA: Madam Chair.

CHAIR NICHOLS: Yes, Mr. Gioia.

BOARD MEMBER GIOIA: So let me just say a couple comments. One is I agree with Hector's comment. Although let me note in the AC Transit service area, I've seen them across the board in all communities. So it seems that maybe some agencies are better than others, so I want to make sure --

(Laughter.)

BOARD MEMBER GIOIA: -- that we're not --

CHAIR NICHOLS: Give a plug to AC.

BOARD MEMBER GIOIA: -- we're not casting a broad brush on all, because I want to acknowledge I've seen the fuel cell electric buses in disadvantaged, lower income communities in the East Bay to their credit. So that education needs to occur in those districts you're talking about, Hector.

But just to note, always a useful presentation.

And I mean it focuses a lot on technology and -- however, to me, it's always important to continue to raise the -- I know it's not technically part of this discussion, the education effort that needs to go on to the public, and specifically also with dealers on informing potential purchasers about the advantages of these low emission -- or zero emission vehicles. Even with the best technology, right? We still have a gap at the point sale at least for -- on the -- on more of the light-duty vehicles. And I know we're addressing in a different context, but I want to continue to highlight that, because I think we need to search for ways to be more vigorous and more aggressive about getting that point of sale to be a more effective -- a more effective approach to getting would-be buyers to actually go through and purchase the vehicles. Again, we just don't have the mechanisms in place.

So I'd like for us to think about that and to be more aggressive, and to see where, in our strategies, we can develop some initiatives to be more successful there.

CHAIR NICHOLS: There was reference made earlier to the Energy Commission's funding, which has been directed to some of these clean fuel heavy duty types of vehicles and getting infrastructure out there for them, as well as to the ARB's way to limited funding. There's also a very large amount of funding that goes to State

transportation agency and Caltrans that goes for buses, including, for the first time, through the Greenhouse Gas Reduction Fund the cap-and-trade money funding going to local transit districts for operation and maintenance, which has always been a great problem where there was money for capital expenditures, but not to support the actual programs.

So while it's still short of what's needed, there is a much larger commitment at the State level than there's ever been before to really making transit a viable way of life and a viable alternative for commuters, people living in cities, not just a service for low income people. And we're seeing more interest in transit on the part of all economic classes as cities get to be more congested, driving and parking become more expensive. So there's a lot of reasons why we should be promoting the success of transit. There's also a lot of other applications as we've heard just a little bit about some of them in this report.

I think this has been very useful kind of laying the groundwork in terms of the technology work that the staff does and continues to do, it's very helpful that we continue to keep our eye on developments that are happening, because this is not a static field. There's a huge amount going on that we've barely really touched the

surface of right now, new companies emerging.

And probably at least a big part of what's going to drive that is our air quality demands, the regulations, and now, I think increasingly we're seeing a global interest in reducing greenhouse gas emissions, which is going to free up, I believe, a large pool of private sector investment that may move into some of these areas as well.

So we have important responsibilities in this area, but we are not alone. And I think one of the things that is important for us to think about, and I was thinking about this when Ms. Miller was making her comment, is that we clearly are a factor, we send signals, we -- you know, we deploy some resources, and we also have some important regulatory power, but we need to make sure that we're engaging all these other elements at the same time.

And thinking as I think we are now really doing, both immediate term, medium term and long term, because we've got current problems. We've got things that we have to be doing in the next few years as the world is changing very quickly, and we've also got our 2030 goals. And I think it is important that we keep all promising technologies in our sites and keep evaluating them on a regular basis.

You know, the comment about the dim dingy basement, that was a long time ago. Things are moving much faster than that now on every front. So I think we will be hearing more of these kinds of updates. And probably, you know, not just down a few years basis, but really at least every year we're going to have to kind of be coming back and assessing where things are.

With that, I think I'd like to turn to the next item which is really a set of interlocking staff presentations -- at least related staff presentations on what the Board is up to.

The next item on the list is the public meeting for a status report on the 2030 target scoping plan update. And maybe just to kind of give some general comments about all of this while the staff is changing personnel and all of that, the passage of AB 32 in 2006, which was not very long ago, but seems like we've been at this for a long time now already, really was the first time that any place in the United States had taken a comprehensive approach to dealing with climate change.

We've known about climate change for decades. We've had a focus on trying to get action on it maybe at least for, you know, two decades or so, the scientific community. And California really started working on this a little less than ten years ago in a very serious way.

And now we're being joined by many others as well.

Our approach to implementing the goals of AB 32 has always been, and the legislation I think really compels this, one of trying to make sure that we're both improving the state of our environment and our natural resources, and at the same time promoting California's economic development, not just maintaining or protecting, but actually enhancing the state of our economy, while we're trying to meet all these other goals.

So the major thrust in doing this, of course, has been promoting California as a place for clean energy, looking at ways at which we can promote investments and create jobs through clean energy policies targeting advantages -- targeting the investments at disadvantaged communities as well, so as to not only build support among the public at large, but also to make sure that our example that we're setting here is one that can be looked at by others, where lifting their populations out of poverty and helping people to begin to enjoy a kind of standard of living that most of us take for granted is something that's absolutely on the top of their agenda.

So we're kind of looking here now at a couple of different chapters of all of this. But the first one I think that we should be considering is the work that's going on to do a new scoping plan this time addressed at

the 2030 goal that the Governor set forth in his January 2015 inaugural address, where he identified five key climate strategy pillars. These have become known as the pillars. I guess it's holding up a roof. I'm not quite sure what the image actually conveys, but pillars sends solid, sounds kind of classical, you know, Greek or Roman. Anyway, we have pillars. And we are looking at these pillars as a way to reach a very ambitious climate change goal.

So the Governor followed up on his speech with an executive order, order B30-15, which established the greenhouse gas reduction target of 40 percent below 1990 levels by 2030.

Obviously, that's well beyond the target that we have in our current scoping plan, which is getting to 2020 levels -- I mean, to 1990 levels by 2020. Sorry.

So this new 2030 target represents the most aggressive benchmark that's as yet been enacted by anybody in North America, but it is in line with what is clearly necessary in order to stabilize climate levels of greenhouse gases in a place where we could hope to avoid the most harmful effects of global warming, which is to keep us at a limit of below two degrees celsius of increase, which is one that we're already quite dangerously close to.

So in order to develop a plan of action and building on work that ARB has already done, the Governor called on the Air Resources Board to update our scoping plan and to incorporate this new target and then layout what the strategies would be what the State's priorities would be for roughly the next 15 years and beyond.

This idea of a scoping plan has turned out to be, I think, a very powerful one in allowing us to lay out for everyone all stakeholders, interested parties to see on the multiple objectives that we're trying to solve for it at once, building on the principles that we are addressing both sustainability as an economic matter and as an environmental matter at the same time. And certainly, we now can look at what we've done based on our initial scoping plan and take a lot of pride in the success of what we've done so far. But this new target presents some very significant new challenges as well.

So I think I'm going to turn this over now to Mr. Corey for an introduction and then the staff presentation.

EXECUTIVE OFFICER COREY: Very good. And as you mentioned, Chair Nichols, today, we're presenting a series of updates on California's climate change program moving from the broad policy direction to be developed in the scoping plan to the Cap-and-Trade Program. We'll also provide a status report on California's plans to implement

the federal clean power plan. And finally, we'll present an update on the adaptive management program, which is designed to ensure that the Cap-and-Trade Program does not result in disproportionate air quality impacts.

California's current climate change strategy is designed to drive down statewide greenhouse gas emissions and is helping to move us forward steadily in the direction of a cleaner energy economy.

California is on track to meet the near term 2020 greenhouse gas limit and is well positioned to maintain and continue reductions beyond 2020 as required by AB 32. Collectively, these actions are evidence of California's ability to show that it's possible to break the historical connection between economic growth and associated increases in energy demand, combustion of carbon intensive resources, and pollution.

We've shown it's possible to break this chain by relying on cleaner technologies, more efficiency, and more renewable energy sources. We also know that preventing the worst impacts of climate change will require continued accelerated development and diffusion of these technologies, not just in California, but across the world.

The 2030 target scoping plan update will ultimately present a suite of stable, flexible, yet

durable policies like those currently under AB 32 in order to help ensure California meats its ambitious climate change goals over the next 15 years and beyond.

The recommendations continued -- or rather contained in the 2030 target scoping plan update will be developed through a robust public process with input from State and local agencies, community and environmental justice organizations, industry representatives, the legislature, and other interested stakeholders

I'll now ask Sara Nichols to provide an update on our current progress on the development of the 2030 target scoping plan.

Sara.

(Thereupon an overhead presentation was presented as follows.)

AIR POLLUTION SPECIALIST NICHOLS: Thank you, Mr. Corey. Good morning, Chair Nichols and members of the Board. This presentation will focus on providing an update on the process and schedule for developing the 2030 target update to the AB 32 climate change scoping plan.

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AIR POLLUTION SPECIALIST NICHOLS: But before I begin this presentation, I would like to provide some context for today's Board hearing by providing an overview of how this item and the next three items are related to

each other.

As you know, AB 32 scoping plan lays out the larger vision for the State's near- and long-term strategy for addressing and mitigating the impacts of climate change. The next three items on today's agenda provide specific details of distinct actions at the State and federal level to address climate change.

Following this presentation on the 2030 target scoping plan update, staff will present the annual update on the California Cap-and-Trade Program. The economy-wide Cap-and-Trade Program serves as the backstop to ensure the State's emissions targets are achieved.

The next item is an update on California's development of the compliance plan for addressing the U.S. EPA's Clean Power Plan Rules for reducing CO_2 emissions from new and existing power plants. This is the first national effort to address greenhouse gas emissions from large stationary sources.

Lastly, staff will present an update on the cap-and-trade adaptive management plan, which is designed to ensure there are no disproportionate air quality impacts resulting from implementation of the Cap-and-Trade Program.

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AIR POLLUTION SPECIALIST NICHOLS: For this

presentation, I will begin by providing information on California's overall climate strategy, including recent executive orders and the Governor's climate pillars framework. I will discuss the background requirements and the goals of the Global Warming Solutions Act of 2006, also referred to as AB 32. I will provide an overview of the process for developing the 2030 target scoping plan update, including progress to date, engagement with our sister agencies, and how the scoping plan aligns and interacts with existing State programs.

I will provide background on the advisory groups to be consulted, as well as provide an overview of the proposed approach to the economic analysis that will be a key element of the scoping plan update.

Finally, I will share a tentative schedule for regional workshops, technical working groups, as well as future Board hearings for consideration of the draft and final scoping plans.

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AIR POLLUTION SPECIALIST NICHOLS: In April 2015, Governor Brown signed Executive Order B-30-15 establishing a new California GHG reduction target of 40 percent below 1990 levels by 2030. The pathway to achieve the 40 percent reduction target is based on five key climate change strategy pillars that the Governor first identified

in his advertise January 2015 inaugural address, some of which were included in recent legislation.

These pillars recognize that several major areas of the State's economy will need to reduce their emissions to meet California's ambitious goals. The five pillars are: Reducing petroleum use in cars and trucks by up to 50 percent; increasing from one-third to 50 percent our electricity derived from renewable sources; doubling the efficiency savings achieved at existing buildings and making heating fuels cleaner; reducing the release of methane, black carbon, and other short-lived climate pollutants; and, managing farm and rangelands, forests and wetlands so that they can store carbon.

While these efforts will reduce the magnitude and impact of climate change, they will not prevent it from occurring. Many impacts, such as increased fires, floods, severe storms and heat waves are occurring and will only become more frequent. But there are many things that we can do to protect against the impacts of climate change. Therefore a sixth key element of the State's strategy involves taking steps now to adapt to climate change to protect public health and safety, our economy, and our future.

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AIR POLLUTION SPECIALIST NICHOLS: The primary

guiding principles of the State's climate change strategy are to transform California to a clean energy economy with focused efforts on several fronts, including reducing GHG emissions through cost effective policies and programs that promote clean energy industries and green jobs, targeting clean energy investments and other efforts to support disadvantaged communities and vulnerable populations, providing consumers with more clean energy choices, conserving precious natural resources, highlighting the need to conserve water in light of the ongoing drought, and preparing guidance for adapting to climate change by linking adaptation and emission mitigation efforts.

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AIR POLLUTION SPECIALIST NICHOLS: The State's climate change strategy is developed and implemented through the scoping plan process and legislation. There are numerous efforts planned and underway at various State agencies to address climate change that stem from legislative directives, the original AB 32 scoping plan, and the subsequent 2014 update.

A snapshot of some of the major plans and regulations that support GHG reductions is shown here. These plans and regulations are being developed through an integrated approach which is critical to ensure that we

meet our climate goals alongside other priorities, being mindful of the need for a robust economy.

The plans and regulatory measures are drawing from several fundamental building blocks to deliver strategies with the most sustainable outcomes. These include: Regional and international partnership initiatives to expand emission reduction programs and to enable effective adaptation; ongoing research to support our understanding of the impacts of climate change in California to inform policy making; incentive and grant programs to identify opportunities to leverage existing and new funds to further drive GHG emission reductions; voluntary actions that allow companies to set targets at their own pace and in their own way; regulations that ensure the effectiveness of the State's approach in light of the deep reductions that are needed to stabilize climate change; and importantly, the critical role that local governments play in reducing and mitigating climate change.

All of these implementation activities are committed to incorporating a robust public process, with input from State and local agencies, community and environmental justice organizations, and other interested stakeholders.

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AIR POLLUTION SPECIALIST NICHOLS: In 2006, the legislature passed AB 32, which provided guidance and direction for addressing climate change. In addition to reducing emissions, the objectives of AB 32 are to develop a balanced approach to addressing climate change that improves air quality and public health, while also providing a consistent policy approach to drive investment in clean technology.

The suite of policies developed under AB 32 has been designed to provide a model for future national and international climate change efforts. AB 22 provides long-term authority to reduce greenhouse gases. In order to continue progress towards meeting the 2020 goal, and maintain and continue reductions passed 2020, a primary objective of AB 32 is to continue to coordinate efforts across State government agencies to ensure effective and synergistic policy approaches.

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AIR POLLUTION SPECIALIST NICHOLS: AB 32 required ARB to develop and approve a scoping plan that describes the State's strategy for achieving the 2020 emission reduction goal and update the scoping plan at least once every five years. To date, ARB has prepared one update to the original scoping plan, which was first approved by the Board in 2008.

The original 2008 scoping plan presented the first economy-wide approach to reducing emissions, and highlighted the value of combining both carbon pricing with other complementary command and control programs to achieve the most cost effective emission reduction strategy for the State.

The first update to the scoping plan approved in 2012 presented an update on the program and its progress towards meeting the 2020 target, as well as develop the first vision for the long-term progress that the State endeavors to achieve. The first update laid the groundwork to start the transition to post-2020 goals set forth in Executive Orders S-3-05 and B-16-2012.

The first update also recommended the need for a 2030 mid-term target to establish a continuum of actions to reduce emissions, not just for stated limits in 2020 or 2050, but also every year in between. Both the original scoping plan and the first update were accompanied by a robust public process to ensure active participation in plan development by stakeholders, the public, and other interested community groups.

And so with this context, we turn to updating the scoping plan to incorporate the State's new 2030 mid-term GHG target.

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AIR POLLUTION SPECIALIST NICHOLS: As previously mentioned, Governor Brown signed Executive Order B-30-15 establishing a new California GHG reduction target of 40 percent below 1990 levels by 2030. This interim target will ensure that California is on the path to meet its target of reducing emissions to 80 percent below 1990 levels by 2050.

This Executive Order calls on ARB to update the scoping plan to incorporate this new target, and calls upon the State to update the climate adaptation strategy. Finally, the Executive Order also calls on all State agencies to factor climate change into their future planning and investment decisions.

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AIR POLLUTION SPECIALIST NICHOLS: Similar to previous efforts, the 2030 target scoping plan update will be developed in an open and transparent manner involving coordination with State agencies, engagement with the legislature, and the opportunity for stakeholders and the public in general to engage in the process through workshops and other meetings. ARB will prepare and present an environmental analysis, as required under the California Environmental Quality Act, as well as a public health analysis.

We will also be availing ourselves of the review,

insights, and advice of two advisory groups, which we will discuss later in this presentation. I also want to emphasize that the 2030 target scoping plan update will be coordinated closely with other State agency plans, including the clean power plan, the cap-and-trade regulation, the State implementation plan, the sustainable freight strategy, and the short-lived climate pollutant reduction plan among others.

The relationship around these efforts highlights the integrated process the updated scoping plan will take to achieve the 2030 emission reduction target.

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AIR POLLUTION SPECIALIST NICHOLS: The following graph shows potential pathways for setting the 2030 emission reduction target as set forth by the Governor's Executive Order and for achieving the State's long-term goals for 2050.

On the left side of the graph, we see California's actual emissions for the years 2000 through 2013 based on ARB's emission inventory. As you can see, the emissions oscillate up and down slightly over this period. Moving right, we see the emissions begin to trend toward the State's 2020 emission reduction goal, which is approximately 431 million metric tons of CO_2 equivalent.

From 2020 to 2050, we see two different lines

projecting towards the State's long-term goal of reaching an 80 percent reduction in emissions below 1990 levels by 2050. The straight red line represents a linear path to achieving this 2050 target. The dashed blue line shows a constant percentage reduction in emissions rather than a straight line reduction.

In 2030, we see the blue dashed line almost intersects with the blue dot, which is approximately 260 million metric tons of CO_2 equivalent. This number represents the 2030 emission reduction target announced by our Governor earlier this year.

As you can see, achieving the 2030 goal is most consistent with a constant percentage reduction pathway, as opposed to a linear emission reduction pathway. This also gives us an indication of the challenge we have in the scoping plan process to develop a set of emission reduction measures that can contribute to and achieve the 2030 goal, while ensuring the State is on its path towards achieving the 2050 target.

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CHAIR NICHOLS: Excuse me. Can I interrupt you for just a second as I'm looking back at that chart. Have you factored into this or are you thinking about what you could achieve with an earlier commitment to addressing the short-lived climate pollutants how that would -- how that

would affect the curve? Is that another chart somewhere?

CLIMATE CHANGE PROGRAM EVALUATION BRANCH CHIEF SAHOTA: So Chair Nichols. It's Rajinder here. This chart is from the last scoping plan update. And at the time, the SLCP was not being developed and we didn't have an idea of the potential measures or potential reductions. So this chart does not factor into that SLCP potential reductions.

CHAIR NICHOLS: Okay. It probably doesn't change the flow of the rest of the presentation, but I hope that is something that you're looking at. Okay. Great.

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AIR POLLUTION SPECIALIST NICHOLS: Next slide. Thank you.

ARB and our sister agencies are using a set of guiding principles to direct our work in developing the 2030 target scoping plan update. The first is, of course, to develop an approach that achieves the 2030 emission reduction goal. In addition, others include creating jobs and supporting a robust workforce, conserving water and continuing to direct investments towards projects that support disadvantaged and vulnerable communities.

The update will support a more resilient California, as well as transform California into a clean energy economy that ultimately gives consumers more clean

energy choices.

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AIR POLLUTION SPECIALIST NICHOLS: While we have not yet defined the exact measures that will be included in the 2030 target scoping plan update, we do recognize that we are not starting from a blank slate. In reality, we want to build on the strong foundation of programs and policies that have already been put into place to achieve the existing 2020 target established under AB 32.

The main programs are listed here and include the Cap-and-Trade Program, the Low Carbon Fuel Standard, Renewable Portfolio Standard, and the Advanced Clean Cars Program among others. For each of these existing programs, we will be examining the potential role that each could play in moving towards the 2030 target, including continuation, expansion, and strengthening of programs

The Cap-and-Trade Program is one that received several comments after the October 1st workshop. As we consider the role of the Cap-and-Trade Program in a post-2020 landscape, a program with declining caps is the referred option. However, as part of the development of the scoping plan update, staff will be evaluating the potential role of alternatives, such as a carbon tax and/or prescriptive regulations.

We will also be examining the role of new efforts that are needed to achieve the 2030 emission reductions goal, such as the short-lived climate pollutant reduction plan currently under development, as well as the new RPS requirement of 50 percent by 2030.

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AIR POLLUTION SPECIALIST NICHOLS: Another way to consider the measures that will be developed for the 2030 target scoping plan update is through this list of focus areas or specific areas of policy development that are worthy of consideration, but are not immediately identified in the Governor's pillars. Among them include agriculture, waste management, and water, which themselves present a unique set of circumstances that provide both opportunities as well as challenges for developing the scoping plan. In all cases, the measures included in the scoping plan will recognize and maximize synergies across all sectors of the economy.

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AIR POLLUTION SPECIALIST NICHOLS: AB 32 directed ARB to convene an Environmental Justice Advisory Committee, or EJAC, to advise the Board in developing the scoping plan and any other pertinent matters in implementing the Act.

The first EJAC was approved in 2007 to advise

development of the original scoping plan. The current committee was appointed by the Board in 2013 to advise on the first update to the scoping plan. The Committee consists of 13 members representing all regions of the State. Four new remembers were appointed to the Committee at the September 2015 Board hearing in order to fill vacancies.

A Committee meeting is tentatively planned for early December, and a meeting notice will be posted to the Committee's webpage at least 10 days in advance of the meeting. The Committee will be publicly discussing the development of the 2030 target scoping plan update, and the status of existing climate programs. All EJAC meetings accompanied by a robust public process, including a comment period.

The legislature and ARB have also taken steps to ensure more direct coordination on EJ issues. This includes the addition of two new Board members with background on issues pertaining to disadvantaged communities who will be approved next year. In addition, one existing Board member, Board Member Serna, will serve as liaison between the Board and EJAC to ensure effective coordination.

For the first scoping plan update, the EJAC provided recommendations for each key sector, as well as

overarching environmental justice policy. Recommendations on the 2030 target scoping plan update will be discussed at future EJAC meetings. At these meetings, the EJAC will discuss the various AB 32 programs, including the upcoming draft short-lived climate pollutant reduction strategy, the cap-and-trade adaptive management plan, and California's compliance with the Clean Power Plan among others.

As previously mentioned, all EJAC meetings will be accompanied by a full and robust public process, including the opportunity for interested stakeholders to provide comments and ask questions.

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AIR POLLUTION SPECIALIST NICHOLS: The 2030 target scoping plan update will include an economic analysis, which will evaluate the economic impact to California of achieving the 2030 emissions reduction target. Specifically, the analysis will evaluate the economic impact of the various technology pathways and technologies included in the scoping plan, as well as their use and adoption in the State, their costs, and the potential savings they may produce.

The economic analysis will also include the economy-wide interactions of carbon pricing, as well as an assessment of the potential impacts to California

businesses and residents. It should be noted that the economic analysis is not an exercise that is completed at the end of the scoping plan once all emission reduction measures have been finalized, rather the economic analysis is integrated through all phases of scoping plan development.

In this way, the analysis actually helps us to inform the development of the measures included in the scoping plan, thereby helping to shape the plan itself.

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AIR POLLUTION SPECIALIST NICHOLS: In order to conduct a robust economic analysis, we are in the process of establishing a group of expert peer reviewers who will serve in an advisory capacity in the assessment of the economic impacts of the 2030 target scoping plan.

This group will consist of three to five core expert reviewers who will call on the insights of additional experts as needed during scoping plan development. We have not yet finalized the members of this group. Once members have been invited and they accept, we will publicly announce the group, as well as their first public meeting.

The purpose of the expert review group is to assist ARB by providing expert advice, review and input on various topics, including economic and macroeconomic

impacts, and the technology pathways that will be considered. This task will be coordinated by ARB's Chief Economist Emily Wimberger, who is sitting to my right, as well as Assistant Execute Officer Michael Gibbs. With their oversight, this group will serve in an advisory capacity, coordinate with State agencies, and conduct all activities in a public forum.

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AIR POLLUTION SPECIALIST NICHOLS: We began the public process for the 2030 target scoping plan update at the first kick-off workshop, which was held in Sacramento on October 1st of this year. This multi-agency meeting was co-hosted by the California Environmental Protection Agency, California State Transportation Agency, California Energy Commission, California Public Utilities Commission, California Natural Resources Agency, the California Department of Food and Agriculture, the Air Resources Board, as well as the Governor's Office of Planning and Research.

In doing so, it provided our sister agencies with the opportunity to share their near and long-term visions for the State and also provided an additional opportunity for public engagement, comments and questions.

ARB received over 30 written comments in addition to oral comments heard at the workshop, which will be

considered as we continue to develop the scoping plan. This workshop was just one of the opportunities for public and stakeholder engagement during scoping plan development.

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AIR POLLUTION SPECIALIST NICHOLS: In the coming months, ARB staff will hold regional workshops in the Bay Area, Los Angeles, and the Central Valley to continue the process for scoping plan development. Each of these public workshops will be noticed in ARB's website and through the climate change listserve at least 10 days in advance of the meeting.

Augmenting these regional workshops, staff will also be holding technical workshops in early 2016 on the environmental analysis and economic analysis. These meetings will also be noticed at least ten days in advance.

ARB anticipates the draft 2030 target scoping plan will be ready for Board consideration in spring 2016. The draft scoping plan will be accompanied by an informal 45-day public comment period. Staff will also provide formal written responses to comments received on the draft and final environmental assessments that accompany the scoping plan.

Finally, staff anticipates that the final 2030

target scoping plan will be ready for Board consideration in fall 2016.

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AIR POLLUTION SPECIALIST NICHOLS: And with that, I would like to thank you for your consideration. We would be happy to answer any questions you may have at this time.

CHAIR NICHOLS: Well, in case anybody missed it, this is a very ambitious undertaking --

(Laughter.)

CHAIR NICHOLS: -- on a quite ambitious time schedule. But the Governor has given us the challenge and the opportunity to do something that frankly very few entities in the world get to undertake this kind of a comprehensive plan. And so I'm really pleased that we're in a position to take up the challenge, and that this Board will have an opportunity to have input into it in a number of different ways. I know many of you are already working on pieces of it. Some of the particular areas of review I'm expecting different Board members who have special expertise and interest will be very actively engaged in.

He had to leave for a minute, but I wanted to mention that I've asked Phil Serna to take a role with respect to working with the Environmental Justice Advisory

Committee to help make sure that we're fully utilizing the people that have been named to serve on that Committee and that they are getting what they need to really be effective with us as well.

Of course, we anticipate that our two new Board members will also want to particularly engage in that area. But if you see items in this report that seem particularly interesting, don't hesitate to speak up and volunteer, because you will be put to work.

Any -- we do have two people who have signed up to speak. Maybe we should hear from them now. Jerilyn Lopez Mendoza and then Alex Jackson

MS. MENDOZA: Good morning. I was just checking to see if it was still morning.

Good morning, everyone and thank you for the opportunity to speak. The scoping plan update is something that we're taking great interest in, especially because of the accelerated timeline. The last update was just completed in 2014, and here we are tackling it again. And so we're taking great interest in how this moves forward.

We did submit written comments. I wanted to just highlight two things. One is earlier today, and also in the scoping plan update, there's mention of the use of combustion engines -- low NOx combustion engines in

cooperation with renewable natural gas. The renewable natural gas I think is where all of us need to work together, because there are sources of renewable natural gas in the state that are not being utilized yet to pipeline quality. So I think the more that we can work together and collaborate and figure out how to make that work, how to generate that renewable natural gas in state, utilize it in state, as well as reduce that naturally occurring emissions of methane from organic sources, I think, it's all to our benefit.

So I just wanted to underscore that as something in the scoping plan as well as several other plans that we all, I think, need to work on. And SoCalGas is ready. We have other technical experts who aren't lawyers like me, but who actually know an awful lot about renewable natural gas and are willing to work with you as best we can.

Also, I just wanted to point out, earlier we had a very robust discussion about the advanced clean transit rules and all the different technologies. And I learned from my colleagues during that discussion that the Porterville example, which is a small rural city in part of California, I actually have family there. And they are getting ready to order electric buses. They're also ordering four refuse vehicles and a street sweeper that will run on CNG.

So they are a multi-fuel, multi-technology fuel neutral fleet as a city. So although they are pursuing electric vehicles in the bus sector, they're also pursuing natural gas vehicles in other sectors. So I think this is just a reminder that I've been trying to underscore. The utility of using natural gas where it's appropriate, where it makes sense in terms of funding and in terms of reductions of emissions and in furtherance of our health goals. So thank you very much for your time today.

CHAIR NICHOLS: Well, I'm going to have to look into Porterville, but it sounds like a place that has some officials that are really on the ball.

(Laughter.)

CHAIR NICHOLS: That's great.

MR. JACKSON: Good morning, Chair Nichols, members of the Board and staff. Alex Jackson with the Natural Resources Defense Council. This is the first of a few trips to the podium, principally just to express our sincere thanks and appreciation for the heroic work of the Board and staff over the past decade to get our climate programs to the point where they are today. It's truly been a beacon for the rest of the world, and our leadership is really now more important than ever.

On this item, I simply want to just express my support for the conception of the scoping plan update to

achieve the goals that the Governor announced for 2030. I think we have the right framework in place, the right guiding principles. And we can really benefit from the hard work we've done over the past decade to build this foundation, which can serve as the basis for achieving our much more aggressive targets.

But I want to just echo what Chair Nichols said is that this is ambitious, and we very much want to support the full range of ambition that we see potential here for, because we know there still are gaps, there still are room for improvements, as certain areas in our economy emissions are growing. I don't think we've seen progress in all areas as much as we would have liked. And the scoping plan is really a unique forum that brings together all of the agencies we know are going to have to get engaged. I think particularly in the area of agriculture and forestry to achieve the Governor's pillar on natural working lands to turn our -- those lands into an actual sequesters of carbon and not emitters of carbon.

So we need to be bold. And I'd like to encourage staff to think of new measures like have been proposed through the short-lived climate pollutant strategy, and new processes. And even if we're going to be inviting some additional controversy and battles ahead, know that your supporters are with you every step of the way.

Lastly, on the economic assessment, I think as it was presented, it seems like it's only going to be looking prospectively forward out to 2030. And I'd encourage perhaps the staff maybe in partnership with an academic institution to also look backwards. And I think that's probably a refrain you most often hear from some of the discontents from the scoping plan, but I think it's a great story we have to tell about how far we've come implementing the scoping plan, that we've essentially decoupled economic growth from emissions.

And as we look to set new targets, develop new programs to achieve those targets, I think that's a story we can and should tell. And I think that's an area I'd encourage additional investigation into.

Thank you.

CHAIR NICHOLS: Thank you. I want to Emily Wimberger, because it seems to me that several years ago we had a conference with a bunch of academic economists, where we talked about exactly this issue of kind of being in a position to be able to look back, and what kind of metrics they were hoping for from us, so that they could do this kind of a backward look at what had been achieved at what cost. And I'm wondering if you have any further information about that?

CHIEF ECONOMIST WIMBERGER: I do. I think that

was a great conference. We brought together a lot of really well-known economists that have thought about this a lot. And I think at the end of the day was this is a really hard problem, and this is a really hard question to answer. It's really hard in the whole scope of the California economy to parse the impact of all of our environmental regulations, let alone AB 32 and let alone some -- a one set-alone measure like cap-and-trade.

So I think Alex is right, there is a desire to look back, and to be able to say what we've done and what we've achieved, and maybe to learn from -- to learn lessons from implementation. That is still a goal that we have. I think this expedited timeline has muddied the waters a little bit. There was initially a greater intent to have sort ex-post analysis in the next scoping plan update. With this expedited time frame, we want to make sure that we're doing due diligence and looking forward, and to sort of incorporate, where we can, the lessons we've learned through implementation.

CHAIR NICHOLS: Well, aside from our interests, which obviously are paramount to the State, it would seem to me that this would be a great topic for some ambitious Ph.D. students. And I'm just wondering where they are?

(Laughter.)

CHIEF ECONOMIST WIMBERGER: Agreed. I think

they're waiting for data. So this is something we've been working on is how we can really reach out to universities and to grad students, who are very cheap labor, and really get some new minds thinking about these topics and get addition work done.

CHAIR NICHOLS: I'm sure they appreciate that reference.

(Laughter.)

CHAIR NICHOLS: Thanks. Okay. Thank you. We're at an odd point here, where we're a little bit early for our lunch break, but I don't how much time was planned for the cap-and-trade item. So, Mr. Corey, what's your advice on this? Should we --

EXECUTIVE OFFICER COREY: Let me ask how many folks have signed up to testify on -- to speak to that item.

MR. ANDREONI: Two on this item.

EXECUTIVE OFFICER COREY: Two. Actually, I think we've got about a 20-minute presentation, two people that want to comment. We could get through and --

CHAIR NICHOLS: Well, why don't we just do that then and then we'll take our break.

Okay. Great.

On to cap-and-trade.

Thank you, Ms. Nichols. Very exciting to be able

to say that. No relation, at least as far as I know.

The next item on the agenda for today is an update on the Cap-and-Trade Program, which obviously is a big part of our overall climate strategy. The Board first considered the Cap-and-Trade Regulation in 2010. Since then, the regulation has been updated several times, and many implementation milestones have come to pass including two compliance deadlines and several successful joint auctions with our linked partner Quebec.

Staff has continued to meet with stakeholders to ensure efficient implementation of the program, while sharing the lessons learned with other jurisdictions considering options for climate change mitigation. I would have to say our phones have never been silent since we first started working on this program. There's great interest around the world in how it's all working.

The program is establishing an important mechanism for reducing greenhouse gas emissions that can continue past 2020 to meet newly established emissions targets. As such, the program is considered a key component of the State's climate change mitigation strategy. And as ARB develops the scoping plan, we will continue to be looking at what role it will play as well.

Because the Cap-and-Trade Program is a key element of California's existing strategy to meet

emissions reduction goals, it was subject to an ongoing request by the Board for an annual update. So this, I believe, constitutes the annual update that the Board asked for. It just happens to be a nice coincidence that it fits with the scoping plan discussion as well.

Mr. Corey.

EXECUTIVE OFFICER COREY: Yes. Thank you, Chair Nichols. So the Cap-and-Trade Program is an economy-wide measure that places a price on greenhouse gas emissions to incentivize emission reduction. The program has functioned as intended in its first three years of operation.

In early October, staff held a kick-off workshop to commence the public process to develop amendments to the Cap-and-Trade Regulation. Key elements of these amendments will include setting the post-2020 cap on emissions, defining the program's role for compliance with the U.S. EPA's Clean Power Plan, establishing linkage with other organizations, and updating levels of allowance allocation for leakage prevention for the third compliance period and beyond.

Coordination with our linked partner, Quebec, and potential new linked partners will be critical to ensure continued smooth operation of a linked program post-2020. And just earlier this month, the program passed a major

milestone, the compliance event for the first compliance period you'll be hearing about.

So with that, now Mark Sippola from the Climate Change Program Evaluation Branch will begin the staff presentation.

Mark.

(Thereupon an overhead presentation was presented as follows.)

MR. SIPPOLA: Thank you, Mr. Corey. Good morning, Chair Nichols, and members of the Board.

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MR. SIPPOLA: This slide provides an overview of today's presentation to bring you up-to-date on California's Cap-and-Trade Program.

I'll first provide information on the background and goals of the program. I'll then go over recent major milestones and general statistics of the Program, including data on the reporting and verification program, and the first compliance period.

I'll also provide information on the compliance offsets program, and an update on linking California's Cap-and-Trade Program with other jurisdictions. I'll close by discussing staff's proposal for the scope and schedule for 2016 amendments to the regulation and the next steps for the program.

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MR. SIPPOLA: The Cap-and-Trade Regulation is one of a suite of measures to reduce greenhouse gas emissions and meet the goals set by AB 32. The cap limits total annual GHG emissions from all regulated sources. And this cap declines each year to reduce emissions.

Regulated parties must acquire and retire one GHG emissions allowance for each ton of emissions. Participants my trade these State-issued allowances, and this trading creates compliance flexibility and allows entities to find the lowest cost means for meeting their obligations.

The Cap-and-Trade Program works together with traditional command and control measures; a GHG emission reduction to satisfy a command and control regulation, such as procurement of renewable power for the RPS program also reduces the compliance obligation in the Cap-and-Trade Program.

The program is designed to provide flexibility, so that the lowest cost reduction in the economy can be targeted. And it does not mandate any reductions by specific facilities. It's a backstop to traditional regulations and it provides a guarantee that we will meet our statewide reduction goals.

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MR. SIPPOLA: The main goal of the program is to reduce greenhouse gas emissions. This is accomplished by putting a price on GHG emissions to incentivize change. This price signal spurs innovation in low-emissions and energy efficient technologies.

The Cap-and-Trade Program complements existing programs to reduce smog and air toxics. And it serves as a backstop to ensure that the AB 32 emission goals for GHG are realized through a strict limit. Again, it provides flexibility by allowing covered entities to find the most cost effective reductions in the market as a whole to find the cheapest means of compliance.

And the goals of the program extend beyond California's borders. The program is designed to integrate with other GHG reduction programs.

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MR. SIPPOLA: The Cap-and-Trade Program relies on the mandatory greenhouse gas reporting regulation for data. MRR was adopted in 2007 and took effect in January 1st, 2008. Entities with over 10,000 metrics sons of emissions are required to report emissions. And entities with over 25,00 metric tons of emissions are covered by the Cap-and-Trade Program and must annually report emissions and have them verified by a third party.

There about 775 entities that report under MRR.

This includes large industrial emitters, importers and retail providers of electricity, and suppliers of transportation fuels and natural gas.

The Cap-and-Trade Regulation took effect January 1st, 2012 and now covers 85 percent of statewide GHG emissions. Entities that are covered must acquire and surrender allowances and offsets to match their GHG emissions for each compliance period, and they must also comply with record keeping, market rules, verification, and other requirements in the regulation.

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MR. SIPPOLA: The next slide provides the major milestones achieved to date for the program. The first auction and first free allowance allocation were in November 2012. Compliance obligations began on January 1st, 2013. The program linked with Quebec in January 2014. The first annual compliance obligations were due in November 2014. Covered entities were required to surrender compliance instruments, either allowances or offsets, equal to 30 percent of their 2013 covered emissions. And all covered entities successfully did that in the first year. The first joint auction with Quebec was held November 2014.

Emissions associated with transportation fuels and natural gas supplied to residential and commercial

outlets began being covered by the cap in January 2015. And the compliance event for the first compliance period was three weeks ago. Covered entities needed to surrender compliance instruments equal to the remainder of their obligation for 2013 covered emissions, plus all 2014 covered emissions. Compliance instruments were surrendered for 99.8 percent of emissions covered by the program in the first compliance period.

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MR. SIPPOLA: This slide provides general statistics to give a sense of the size and scope of the program. There are about 450 facilities that are covered by the program. These facilities account for 85 percent of statewide emissions.

In addition, there are 260 voluntary entities. These include offset project developers, brokers, and traders. There are currently 625 million compliance instruments held in private accounts. And the most recent auction settlement price was $12.52 per allowance. The approximate market value of compliance instruments in circulation is $7.56 billion.

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MR. SIPPOLA: As I mentioned, the Cap-and-Trade Program relies on the mandatory reporting regulation for its data. This slide provides an overview of GHG

emissions reporting and verification program. For 2014 data reported in 2015, 775 reports were submitted to ARB. Of these, 530 required verification and 528 reports were verified, for a 99.6 percent compliance rate with no adverse verification statements.

Regarding enforcement, staff works proactively with stakeholders to prevent non-conformance with the regulation, and formal enforcement is consistent and effective.

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MR. SIPPOLA: The first compliance period covered 2013 and 2014. Total covered emissions over that time were about 291 million metric tons, and compliance instruments were surrendered for over 99.8 percent of covered emissions. Of the instruments surrendered, 95.5 percent were allowances, and 4.5 percent were offsets. You may recall that the offset usage limit is eight percent.

During the first compliance period, the market has functioned smoothly, and covered entities have successfully met their obligations. The program is operating as intended and is viable for the future. Staff has received feedback from covered entities that their long-term financial planning includes consideration of a costs of GHG emissions.

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MR. SIPPOLA: Offset credits are tradable compliance instruments that represent verified GHG emission reductions or removal enhancements made in sectors and sources not covered by the Cap-and-Trade Program. Entities may use ARB offset credits to fulfill up to eight percent of their compliance obligation.

There are currently six offset protocols that have been adopted by ARB: U.S. Forestry, urban forestry, livestock digesters, ozone depleting substances, mine methane capture, and rice cultivation.

These programs are only applicable in the U.S. Reductions from offsets must meet AB 32 criteria of being real, permanent, quantifiable, verifiable, enforceable, and additional. Additional means beyond any regulation and beyond what would otherwise occur.

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MR. SIPPOLA: This next slide provides information on the status of the offsets program. The first offsets were issued September 2013. Seventy compliance projects and 90 early action projects have received ARB offset credits, and nearly 34 million offsets have been issued to date. 111 offset project verifiers have been accredited by ARB.

The types of offsets that have been issued are

summarized in the table, which shows that the majority are derived from U.S. Forestry projects and projects reducing ozone depleting substances.

Again, entities may use ARB offset credits to fulfill up to eight percent of their compliance obligation. There were about 291 million metric tons of covered emissions over the first compliance period. And eight percent of that is just over 23 million metric tons. So the nearly 34 million offset credits that have been issued are more than enough to satisfy the maximum allowable demand in the first compliance period.

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MR. SIPPOLA: California's program linked with Quebec beginning January 2014. California and Quebec have held five joint auctions to date. Quebec is developing offset protocols for mine methane capture. And in the first compliance period, the 55 reporting facilities in Quebec achieved 100 percent compliance, a positive indication of strong commitment to the program by both the regulatory teams and covered entities there.

Earlier this year, Ontario announced intentions to develop a Cap-and-Trade Program with a launch in 2017. Ontario is proposing to link their program with California and Quebec. And there is ongoing collaboration on reporting, market rules, offset protocols, and other areas

to support potential linkage.

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MR. SIPPOLA: Staff is proposing to amend the Cap-and-Trade Regulation in 2016. One main goal of this rulemaking is to continue the Cap-and-Trade Program beyond 2020. The last scoping plan update identified the Cap-and-Trade Program as an important measure to ensure that California GHG emissions continue to decline.

Another goal is to make the program more efficient. Staff has implemented the program for several years and has identified opportunities to make the process more efficient. This will be done by streamlining regulation requirements, streamlining implementation, and removing requirements where possible. We also want the program to be based on the latest data and information, including recent leakage studies, global warming potentials and experiences from other emissions trading programs. And we just do this while maintaining the environmental integrity of the program, as well as the integrity of the carbon market.

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MR. SIPPOLA: Some proposed amendments to the Cap-and-Trade Regulation would take effect prior to the third compliance period, which will be the years 2018 through 2020. These amendments would streamline the

offsets program, auctions, and management of information. Some amendments would potentially incorporate sector based offset credits into the program, and others would incorporate results of leakage studies for third compliance period allowance allocation.

Program linkage with Ontario is another area that could be addressed by proposed amendments for the third compliance period.

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MR. SIPPOLA: Some amendments will affect the program after the third compliance period beginning in the year 2020. This slide represents the staff proposal for some of the potential amendments. Areas for change could include the continuation of the program after 2020, including the post-2020 caps on emissions and discussions about which sectors will be included in the cap.

Other changes will consider revised or additional provisions for cost containment and market oversight, the program's role for compliance with the U.S. EPA's Clean Power Plan, allowance allocation, and continuation of our linkage with Quebec and potentially Ontario.

It is important to note that the scoping plan update item that you heard earlier today and the next item on the federal Clean Power Plan are both related to any potential post-2020 Cap-and-Trade Program. Staff believes

that it is important to start the discussion on a post-2020 program sooner rather than later as covered entities need regulatory certainty, and any State submittal of a compliance plan for the federal 111(d) rule that includes a trading mechanism must have that mechanism identified and drafted next year.

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MR. SIPPOLA: Here is the tentative schedule for the Cap-and-Trade Regulation amendment process. Staff expects to continue holding public workshops on specific regulation topics over the next several months. We anticipate releasing draft regulation language along with an Initial Statement of Reasons in spring 2016. There will be a 45-day comment period leading up to the first Board hearing on the amendments in summer 2016.

A second Board hearing will take place around spring 2017, and that will be followed by the submission of the final regulation language and Final Statement of Reasons to the Office of Administrative Law by summer 2017. The schedule would allow for the newly adopted regulation to be in effect by October 2017 prior to the start of the third compliance period.

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MR. SIPPOLA: Staff will conduct several public workshops on specific topics related to the amendments.

Some workshops have already taken place. A kick-off workshop for the amendment process was held on October 2nd, the same day that staff also held workshops on cost and containment and market oversight, and on the Cap-and-Trade Program's role for compliance with the federal Clean Power Plan. Sector based offsets were the topic of a workshop held October 28th.

The results of leakage studies conducted by UC Berkeley, Cal Poly, and Resources for the Future will be presented and discussed at a workshop in January 2016. And the implications of the leakage study for allowance allocation will be discussed in February. This schedule is not comprehensive or complete, and additional workshops will be added as needed.

Staff is committed to a robust public process with ample opportunity for public and stakeholder review and comment. Each workshop will be followed by an informal comment period where all comments received will be posted to the ARB website.

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MR. SIPPOLA: Looking to the future, staff will continue to implement the program, continue the process for developing the 2016 amendments, and continue coordination among the amendment process, the development of the scoping plan update and the development of the

approach for compliance with the federal Clean Power Plan.

This concludes staff's update on the Cap-and-Trade Program, and we're happy to answer any questions that you may have at this time.

CHAIR NICHOLS: Okay. Great. Why don't we take our three commenters then we can turn to some discussion.

So Robin Shropshire, Alex Jackson, and John Larrea

MS. SHROPSHIRE: Good afternoon. This my first time in front of the Board, so thanks for giving me the opportunity to address you.

Good afternoon, Chair Nichols and Board members. I'm Robin Shropshire and I'm happy to be here today on behalf of the Panoche Energy Center, a 400 megawatt gas fired peaking plant located in the San Joaquin Valley.

As you're aware, peaking power plants play a unique role in allowing for integration of renewables into the energy mix, providing for reliable energy and contributing to the success of AB 32.

The PEC facility operates under a long-term tolling agreement, which essentially means it's our job to be available to generate reliable electricity when instructed to do so. We have no control over when the facility runs and in turn no control over the facility's resulting CO_2 emissions.

Another important and interesting element of this story is that we have a legacy contract, which means, as I'm sure you're aware, that our contract predates AB 32, and therefore was unable to contemplate how responsibility by carbon dioxide emissions would be handled in the contract. As a result of this ambiguity and in working with CARB, we received interim relief in the form of legacy contract allowances.

We've been working with our utility counterparty and ARB staff on the issue of legacy contracts for several years, and unfortunately despite prolonged good faith attempts at negotiations, we've not been able to successfully resolve the issue of greenhouse gas compliance costs.

The reason I'm here testifying before you today is I want to inform you of some of the unintended consequences that have resulted. Soon after we were notified by CARB that PEC qualified for legacy contract allowances, we received a letter from our utility counterparty telling us that the price of carbon would be removed from the facilities dispatch price. At first glance, that might seem like a logical outcome, but we understand now that the removal of the price of carbon from the dispatch price has resulted in outcomes that are in direct conflict with the goals of AB 32.

The removal of carbon costs from the dispatch price has resulted in an inaccurate carbon price signal that has resulted in significantly higher net generation, which equates to significant increases in emissions and increased demand on water supply when compared to similar plants. In fact, PEC's generations and emissions have more than doubled since the 2012 base year and have resulted in millions of dollars in unnecessary increased cost to ratepayers.

The good news is we believe that these issues are solvable. At this point, although we're only a few years in, we've moved beyond the unicorn and puppy phase. We have real data that we're learning from, which is great. We really need to take advantage of that, and learn from this meaningful information to make a program that works.

As the Cap-and-Trade Program has opened up to make adjustments, PEC sincerely looks forward to working with your staff, sharing lessons learned, and our observations to help create a permanent and efficient solution that is consistent with the goals of AB 32. So I'd be happy to answer any questions if you have any.

Thank you.

CHAIR NICHOLS: Thanks. Good job.

Staff, do you have any comment on the response to this situation?

CLIMATE CHANGE PROGRAM EVALUATION BRANCH CHIEF SAHOTA: And the commenter is correct. We've been working with them for several years and their counterparty to better understand the situation. As the commenter stated, we do have the legacy contract provisions in the Cap-and-Trade regulation to address concerns of contracts that did not, at some point, contemplate a carbon cost.

So that applies to several generators, not just this situation. There has been a protracted disagreement between the counterparties, the utility, and this generator. And we have had several discussions between CAISO, CEC, CPUC, and FERC to better understand if there are any legal issues that are resulting from the way that the plant is being dispatched. We have not identified any legal issues.

And in the context of increased emissions from peaker plants, I think that we're seeing that in several peaker plants because of the prolonged drought, and the reduction in hydropower in the State overall. So we're not seeing something that looks like it's untowards here from an environmental perspective or an outcome, based on the drought conditions.

We're still continuing to look at data that the generator is providing, but it's going to be a bit difficult for us to get involved in the contract, because

this really is a contractual issue between two parties.

CHAIR NICHOLS: I remember this issue. It's all coming back to me now.

(Laughter.)

VICE CHAIR BERG: Madam Chair?

CHAIR NICHOLS: Yeah. But I do think this point that you just alluded to that some of our projections of a few years ago about what the energy mix was going to look like have turned out not to be correct, mainly because of the drought. And so that does need to be factored into our thinking as we go forward for sure.

Well, I appreciate your coming back and updating us. I'm sorry, it's not -- did not turn out simply or well and that it's still an issue. But it's something we need to be aware of. So thank you for your coming by, and I wish I had some something to report to you, but we'll and aware of it. That's the best I can say.

MS. SHROPSHIRE: Thanks for your attention. Thanks.

CHAIR NICHOLS: Thank you.

VICE CHAIR BERG: Madam Chair, may I ask just a follow-up question --

CHAIR NICHOLS: Yes. Yeah, sure go ahead.

VICE CHAIR BERG: -- since I was pretty involved in this --

CHAIR NICHOLS: Sorry, before you leave. Yes.

VICE CHAIR BERG: -- issue. But mainly of staff is my recollection correct that the allowances -- the legacy allowances that we did give they have a sunset date, 2017?

ISD PROGRAM DEVELOPMENT SECTION MANAGER COOMBS: That's correct. They're legacy contract generators without an industrial counterparty, do have a sunset date. They will last be provided free allowances in vintage 2017s. Those legacy contract generators who have an industrial counterparty, that assistance will go through the life of the legacy contract.

VICE CHAIR BERG: And what does this facility follow under, which --

CLIMATE CHANGE PROGRAM EVALUATION BRANCH CHIEF SAHOTA: Because their counterparty is a utility and not an industrial counterparty, we do not take allowances away from the utility to give to this generator. They are under the sunset provisions for 2017.

VICE CHAIR BERG: So that's going to have to be one of the things that we will have to take a look at if, in fact, the assumptions that we made were different, because of the drought. And so I really encourage staff to continue working with the parties. And anything that any of us can do to help, we're happy to do that.

Thank you.

MS. SHROPSHIRE: Chair Nichols, would it be appropriate for me to respond to the drought issue?

CHAIR NICHOLS: Yes.

MS. SHROPSHIRE: And it's a question we asked ourselves, because it seems like an obvious response, in that we -- we're seeing increased dispatch because of the drought. And one of the things -- we had the exact same question that we looked at was similar facilities that are adjacent to us that have similar pricing. And we're not -- you know, there is some increase in dispatch with almost identical facilities that are within the same vicinity, but our increase in dispatch is significantly more than those.

So I think the increase that we're seeing is beyond what you're seeing for identical facilities next to us. So I do think that some of these trends are not attributed to the drought, at least that's what our data show.

CHAIR NICHOLS: Understood.

MS. SHROPSHIRE: Thank you.

CHAIR NICHOLS: Okay. Thank you.

Next, Mr. Jackson.

MR. JACKSON: Hello, again. And I think in the -- well, Alex Jackson, Natural Resources Defense

Council. And, you know, with the official end of the first compliance period in our rear-view mirror now, I think it's an appropriate moment to really just reflect and step back a bit on the amazing achievement of this Board and this staff in developing this rule, which has got to be one of the most comprehensive pieces of regulation anywhere in the United States. All the public workshops, all the effort that went into it, and look at the results, so far. You know, emissions are down, the economy is up, and the sky hasn't fallen, and the leadership of California is proving to be important in pushing forward a model that now every state, under the Clean Power Plan, is increasingly going to be looking for as they all have to come up with a program to reduce carbon in the power sector using most likely carbon trading that looks a lot like what California has done now for going on two years.

Moving forward, I think with the increased scrutiny and attention and opportunity for other states that have historically not been as keen to move forward on carbon reduction policy, getting in the game, just put my thumb on the scale to really emphasize the design decisions on our post-2020 program are going to be very important.

I think particularly in the areas of allowance

allocation and the use of allowance value in the electric sector, how are we going to look to prevent leakage as we move to these aggressive 2030 and hopefully targets beyond that. And also I'll just that understanding matters. And I was very supportive and encouraged to hear of all the outreach that the Chair did that Board Member Hector De La Torre and staff to the new members that are inhabiting the legislature that largely weren't around when the AB 32 was debated and initial debates over the program were happening. We know we need to maintain that robust support base and help explain and de-mystify some of the program as still the opponents that don't want to see California succeed in this endeavor will attempt to seize on that whenever they get a chance.

And continue to work with other jurisdictions as California has done so successfully, both domestically and abroad to share our lessons learned. As now hopefully as we build towards Paris here in a couple weeks, and build towards more robust carbon trading programs throughout North America, we have a great story to tell and this Board should be proud.

Thank you.

CHAIR NICHOLS: Thank you.

Mr. Larrea.

MR. LARREA: Thank you, Madam Chair. John Larrea

with the California League of Food Processors. Thank you for allowing me to be here and comment on this.

First of all, the food processors have been subject to the cap-and-trade since the very beginning. And I've been informed by staff that we were in 100 percent compliance at the end of this very first compliance period. And I think that, you know, despite the fact that we were forced to change from an energy based benchmark into a product based benchmark in the middle of the stream, we were still able to do this. And our industry was very diverse because some of us only have one product, some of us have 500 products all mixed and matched, and we were still able to get a benchmark that worked for us.

So I think that kind of shows our commitment to not only complying with the requirements of the regulation, but also our commitment to this program. As long as the State continues to administer it, we will be there and try to make sure we do that.

However, as we're moving through the second compliance period and looking at the third. We still have some unresolved issues that we really want to see resolved before we get to 2020.

Number one is 100 percent leakage risk. This is the number one issue for our members right now. And

considering that they are in disadvantaged community areas for the most part, as identified by the CalEnviroScreen, we are also subject to a number of issues and factors that do not impact other facilities, such as seasonality, crops, water, pesticides, and weather, you know, not just markets. You know, these factors need to be brought into this in order to determine whether or not we need to get the high leakage risk. It's not just whether or not we are -- our markets are going to be affected. It's a number of things that affect us every year.

Secondly, as we're moving forward, we would really like to see the offset limits and both geographically and on the percentages. You know, as you've said yourself, it's quite ambitious going into post-2020, and we'd like to get all this resolved well before 2020. So we know exactly where we're going. We need the type of certainty that this Board can supply us because we are businesses, and we do have to meet our -- not only our markets, but our customers' issues.

Finally, even though it's kind of one-off, I'm going to talk about the auction funds, because the cap-and-trade is the source of those auction funds for the most part. And we have two very big draws from those, one is the Governor's high-speed rail, which takes quite a bit. And, you know, I don't need to point out that that

will not result in a single emissions reduction, not only in the compliance periods in which the money was collected, but for many years afterwards. And so CLFP kind of questions whether or not that's the best and highest use for this money at this particular time.

Secondly, we have the disadvantaged communities, and we have 25 percent going there. But what's missing out of this is that there's no dedicated stream for facilities who are under the cap-and-trade to receive auction funds.

And may I continue or do you want me to --

CHAIR NICHOLS: Go ahead and finish up.

MR. LARREA: Thank you. There should be an exclusive dedicated percentage of the auction funds for the exclusive use of facilities under the cap-and-trade itself, because who can deny that if a facility, such as ours -- anyone of our food processors receives money to be able to upgrade its system and to become more energy efficient and reduce emissions as a result of that, that it not only benefits us, but also benefits a disadvantaged community in which it may actually be operating in.

So I would really urge you to look at the idea of setting aside some money, so that we don't have to compete with others who are not contributing into this fund for the exclusive use of that money for facilities that are

subject to the cap-and-trade.

Thank you.

CHAIR NICHOLS: Thank you.

As I'm sure you know, cap-and-trade funds, although they're -- there's a proposal in the Governor's budget, the legislature has to actually act to appropriate them. And this has been an issue that's been discussed before without any success from your perspective. But I think it's really part of a bigger discussion that we're going to be having in the scoping plan context about agriculture and its role in being both a contributor to, and, in some important instances, also one of the entities that can really help with dealing with the greenhouse gas problem, so -- and benefit from it from a business perspective as well. So this is going to be a broader discussion, I think.

That concludes the list of witnesses we had on this item. Any Board member questions or comments about the way that the cap-and-trade discussion is going?

Dr. Balmes

BOARD MEMBER BALMES: I just had one question about offsets. I saw that there was no urban forestation offset activity. Can somebody explain that to me a bit?

CLIMATE CHANGE PROGRAM EVALUATION BRANCH CHIEF SAHOTA: Sure. When you think about investing in an

offset project, you look at the cost to implement the project and the potential rate of return. When you look at urban forestry, there's a really high cost to implement those projects relative to the other project types. I think in 2009 or '10, we had estimated that it probably cost about $80 per metric ton to generate a credit for urban forestry.

And so at the prices we're seeing in the market today, we're just not seeing the financial incentive to do those projects. That doesn't mean they're not good projects and they don't have other benefits.

DEPUTY EXECUTIVE OFFICER CHANG: And I think it's also important to point out that as part of the Greenhouse Gas Reduction Funds that are being funded with the auction proceeds, there are urban forestry projects proceeding.

CHAIR NICHOLS: Good point. Yes, Sandy.

VICE CHAIR BERG: I just had a quick couple of questions, and -- but first of all, thank you, staff. The cap-and-trade as well as the scoping plan, I remember sitting here thinking, oh, my gosh, we're starting with this clean slate and a lot of times that's a lot of fun, but feeling very, very overwhelmed. I still feel overwhelmed, but extremely --

(Laughter.)

VICE CHAIR BERG: -- excited because of the work

that staff and all the stakeholders have put together has been quite remarkable. And you all should take the opportunity as you can with an update like this to feel really, really proud of what you have accomplished. And I want to say congratulations on that.

I just had a -- just a couple of questions under your offset program. The early action items, have we resolved all of those early action items to the satisfaction of all parties?

CLIMATE CHANGE PROGRAM EVALUATION BRANCH CHIEF SAHOTA: I think at the last Board meeting on the Cap-and-Trade Program in June, there was concern about early action forestry projects. There were about 16 or 17 of those in the pipeline. I think we only have two that are remaining. At the time, we had identified additional staff to help get through that backlog, and we are doing that. We expect to be completely done in the next month or so.

VICE CHAIR BERG: Okay. That will be great. And then, you know, there's always -- at these updates, there's just been a small laundry list of carry-over items --

(Laughter.)

CHAIR NICHOLS: Yes.

VICE CHAIR BERG: -- and you know, they don't

quite --

CHAIR NICHOLS: They squeeze it, but they still --

VICE CHAIR BERG: They don't quite make it into the update. But my memory is serving me that, you know, there's been discussion of purchasing and holding limits by the largest regulated entities. We heard a little bit about the legacy contracts, although I think we had an interim fix on that. You know, are we -- I don't need to go over, and I don't need an update on those right now, but I think it would be really helpful if staff would kind of pull those out, take a temperature. We have some history behind now of what's happening. And I think that would be extremely helpful before we came back to really addressing as to what the amendment should look like.

Okay. That's it. Thank you very much.

CHAIR NICHOLS: All right. I think at this point, we should take a lunch break then, and we'll return at 1:30.

(Off record: 12:27 PM)

(Thereupon a lunch break was taken.)

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

(On record: 1:48 PM)

CHAIR NICHOLS: We're going to get back into session, but they have access to the information. So the members have access to what's going on, even when they're not sitting up here on the dais.

So I would like to move on to the next report that was on our schedule. They're drifting in yes.

Let's do the Clean Power Plan next, since it was next on the agenda. We've already made reference to the fact that we're looking at the Cap-and-Trade Program in California as our means to compliance with the new greenhouse gas emissions guidelines that are now in effect that require states to submit plans limiting their greenhouse gas emissions from existing power plants. This has been probably the most significant, or at least one of the most significant steps that the federal government has taken on climate change, perhaps second only to the vehicle standards.

And we have been big supporters of this effort from the beginning. The Clean Power Plan puts all states on a course to develop emissions reductions for the electricity sector. It has some really major features that are new at the federal level. Probably the most important in the one that is being challenged the most is

the question of whether the states have to take into account emissions that occur outside the fence line of a power plant when they look at the responsibilities of the electricity sector. Once implemented, this regulation will reduce overall emissions from power plants nationally by 32 percent below 2005 levels.

In California, we've worked together, the ARB, the Public Utilities Commission, the California Energy Commission, as well as the air districts for years with EPA in developing our approach. And I'm happy to say that EPA has paid a lot of attention to the programs that we developed when they put their rule together.

Our plan builds on 40 years or more of work that we've been doing under the Clean Air Act, in which states have lead the way to deliver on the federal air quality standards. So we believe that our existing AB 32 programs will enforce the federal effort. We believe that we have the ability to comply with these new regulations based on what we're doing, but we would like to make sure that the Board understands a little bit more in detail what's actually involved here.

So with that, I will turn it over to our Executive Officer.

EXECUTIVE OFFICER COREY: Thanks, Chair Nichols. Staff is focusing on ensuring that the new federal Clean

Power Plan and California's programs are mutually supportive. U.S. EPA has offered us many potential State plan design options that will aid us in that process. And so far, staff and stakeholders have focused on exploring plans that rely in part on our cap-and-trade regulation to ensure federal compliance. And we're confident that as we move forward with our post-2020 programs, ARB is building on a strong emission reduction structure that will also serve the federal goals.

So with that, I'll ask Craig Segall, Senior Attorney, to provide the staff presentation.

Craig.

SENIOR ATTORNEY SEGALL: Thank you, Mr. Corey.

Can we get the slides up.

(Thereupon an overhead presentation was presented as follows.)

SENIOR ATTORNEY SEGALL: Thank you. Chair Nichols, members of the Board, thank you for your time today.

My presentation will have two major parts. First, an overview of how the Clean Power Plan works to date, and second an overview of the key issues and challenges we face as we assemble California's compliance plan. I'll close with a description of our current thinking and schedule and some of the next steps we'll be

undertaking.

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SENIOR ATTORNEY SEGALL: I the think place to begin is with the overall significance and structure of the plan. As the Chair indicated, this is among the most significant steps the federal government has ever taken on climate change. And that is a story that reflects both major federal efforts and California's own efforts to date.

Indeed, when the plan appeared this August, the Sacramento Bee's headline was national greenhouse plan follows California's model. And that's a tribute to our efforts and also the efforts of many of the other states that have focused on developing cleaner, more renewable sources of energy and to the many stakeholders along the way.

The rule is based upon the long-standing federal State partnership under the federal Clean Air Act, and specifically on Section 111 of the Act. That's 42 USC 7411 for those of you following along in the code books, and reflects the structure that has already been so successful for criteria pollutant.

It establishes federal standards for existing power plants while relying on the states to apply their innovative approaches to meet those standards based on the

unique circumstances in each state. There is also very significant -- the U.S. EPA projects a 32 percent reduction in CO_2 from the covered units by 2030 from 2005 levels. And that is reflected not only in estimated $45 billion in net climate and public health benefits monetized, but it as many as 3,600 avoided premature deaths, tens of thousands avoided cases of asthma, hundreds of thousands of days where folks who might have been too sick to go to work can now go, as a result of moving away from more polluting sources of power and toward cleaner energy.

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SENIOR ATTORNEY SEGALL: So how was this plan devised? It relies on the Clean Air Act's direction to set ambitious but achievable standards consistent with the best system of emission reduction that has been achieved and adequately demonstrated by the State's and by industry.

In setting that standard here, U.S. EPA focused on the unique and important characteristics of the power sector, the only sector in which each source is linked together in a national power grid, meaning that asking the question, how can existing power plants and especially the most inefficient and most polluting of those plants to reduce their emissions requires a look at how the grid can

support those reductions.

Accordingly, U.S. EPA based its standards on three critical building blocks. It looked first to the ability of plant engineers and owners and operators to make heat rate improvements, efficiency improvements in the boilers in those units.

Second, it asked what are the options, what are the possibilities for substituting lower emitting fossil sources for higher emitting fossil sources. There's significant, for instance, natural gas resources in many parts of the country that are underused relative to coal fired power plants. EPA took that into account.

Finally, U.S. EPA observed that the utilities and owner/operators of the grid have options to expand on their use of renewable zero emissions energy to replace fossil power entirely, and added that as their third building block.

They then considered the effects of these building blocks across the grid taking the most conservative values for each of the three national grid connections to build a system of uniform emission rates in 2030 for existing coal-fired and gas units that reflects the ability of owners and operators working with the states to use the flexibilities of the grid to reduce those emissions.

It's important to emphasize that these building blocks are indicative, not prescriptive. The states have a wide range of flexibility as to how they can comply with the plan. These are merely how the targets were calculated.

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SENIOR ATTORNEY SEGALL: So what does this mean for California? Well, the news, in short, is good largely as a result of the efforts we've already undertaken. And by we here, I mean not simply ARB, but the State as a whole. We've been working with our energy agency partners throughout on this plan, and their efforts to in terms of the renewable power efforts we've led, and the energy efficiency programs they put into place have put California in the an extraordinarily good position to comply with the Clean Power Plan. So good, in fact, that U.S. EPA estimates that our mass target -- and I should say targets are expressed in both mass and rate, but mass I think is more straightforward to deal with for this comparison.

It's roughly 48.4 million short tons of CO_2 in 2030. Well, U.S. EPA estimated that our covered units were emitting 46 million short tons of CO_2 in 2012. So if what you're thinking is that the federal cap looks more like a ceiling, you're right. What we're being asked to

do is continue our successful efforts, yes, as the economy grows and de-carbonizes, but we're already essentially implementing the best system of emission reduction here in California.

I should note that these mass limits are illustrative. They depend on the covered units, and we're working with those unit owner/operators to finalize the list. So these may shift slightly, but not very much. We have about 210 affected units so far, about 36,000 megawatts of capacity. I should note those are units, in other words, individual boilers, not power plants.

So there's a slightly smaller number of plants. Those units are divided, much as you would think they would be between our population centers and the valley, the San Joaquin Valley where folks are generating significant amounts of power.

One of the implications of that is that as the Clean Power Plan and other power sector measures go into force through to 2030, we'll see reductions not just in greenhouse gases, but in criteria pollutants in many areas of the State that are already wrestling with significant attainment issues.

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SENIOR ATTORNEY SEGALL: So when are we delivering?

Well, U.S. EPA has set us several deadlines, the first of which is an ambitious one. State plans are due September 6th, 2016. However, that is a soft deadline. We have -- it is possible to take an optional extension to as long as 2018 provided we make an initial submission, which essentially a short letter describing our progress to date in 2016.

That said, our intention at this point is to move forward as expeditiously as we can. There's value in California being a leader on this issue, and there's value in presenting our stakeholders with a unified post-2020 program of which federal compliance is a part.

Once we have put the plan in place, compliance occurs in a glide path, beginning with an interim target starting in '22 -- 2022, and moving forward with a series of compliance periods to 2030. After that, the stringency must be maintained.

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SENIOR ATTORNEY SEGALL: So what have we done so far?

One of the major efforts across the State agency family has been involved in developing the CPP. We have spent the last several years engaged in U.S. EPA's truly extraordinary public process, bringing in states from across the country to ensure that the final rule was

implementable and strong.

And we saw notable strengths as a result of our efforts. We saw more State plan options, and we actually saw an increase in the ambition of rule from proposed rule to final, at the same time, as flexibilities to achieve that ambition were increased.

That work has been done by an interagency work group within ARB, the PUC, and the Energy Commission. We've also be consulting closely with the independent system operator, and many of our stakeholders and reliability entities, and we'll continue to do so.

We are coordinating this work, of course, with the other post-2020 processes you're hearing about today. And we've already begun to put ideas to paper and seek stakeholder feedback. We held our first workshop October 2nd, putting out a white paper with that and soliciting comments.

I'm sure you'll hear from folks today, but our stakeholders so far have been proudly supportive of the ideas that we'll be presenting, raising some important issues regarding our timing and our relationship to the larger western region as it develops its own progress.

We've also reached out to all the covered power plants to test whether or not they're properly covered by the plan. And finally, with Attorney General Harris and

Governor Brown, we are standing up in the D.C. Circuit Court of Appeals to defend U.S. EPA with a large coalition of other states and entities. It's worth noting that California companies are also involved in that litigation, including PG&E and Calpine, which have intervened to support the Clean Power Plan, and we greatly appreciate that.

It's also worth noting that although some of our other utilities have not yet intervened, they have issued support statements and have been very involved in this process. So we've seen good support across the California community for finding a way forward in power plant emissions.

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SENIOR ATTORNEY SEGALL: So what questions do we face?

The first and most critical of the questions is what our compliance plan should look like. We have several options. Because U.S. EPA has expressed its targets in terms of rate or mass, and allowed them to be applied at various levels, in principle we have available to us plans that could set a rate limit, either each plant or statewide, a plan that could set a mass limit plant by plant or statewide. We could include trading in those plants.

And critically, we have the option to use plans based on State measures which I'll discuss in detail, because we see it as one of the strong options for our compliance. In essence, that is the option of using existing programs that sweep more broadly than just the limited universe of power plants covered by U.S. EPA, and thereby build on economy-wide or other programs while integrating federal compliance.

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SENIOR ATTORNEY SEGALL: These State measures plans, which we are probably investigating most closely -- although, I should emphasize, of course, that at this early stage all options need to be on the table, and we'll be considering them with stakeholders -- are, we think, a program and plan particularly well designed for our efforts. U.S. EPA indicates in the final rule that these are programs intended explicitly for states with economy-wide programs that include affected electric generating units, EGUs, but are not limited to them.

In other words, they work with states that are looking for reductions, including but beyond the power sector. To use such a plan, a state would identify state measures, state enforceable rules that will collectively achieve the emissions targets. They can include a federally enforceable component, to the extent they apply

to power plants, but need not do so. So flexibility at the front end to use what we've already built.

On the back end, to ensure that what we deliver does in fact deliver, U.S. EPA requires us to put a federally enforceable automatic backstop into place. And it's just what it sounds like, a true-up mechanism, so that if we get off track on the road to 2030, the covered units must come into force with the federal emissions requirements.

We think it is very unlikely, for reasons that we'll discuss in a bit, that that backstop will be used, but it's an important tool for accountability, both here and in other states that may use it.

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SENIOR ATTORNEY SEGALL: What measures might we use?

Well, reducing a power sector emissions has been an across-the-board effort, of course, as I noted, across the energy agencies and ARB. But the Cap-and-Trade Program presents unique strengths as an integrating measure for this effort as well. Because the Cap-and-Trade Regulation necessarily reflects the operation of complementary programs both in terms of cap setting and in terms of market prices, it is a way of integrating all these other efforts while focusing

directly on the covered units and delivering accountability and a clear carbon price to the entities that are ultimately responsible to U.S. EPA and to us.

We therefore investigate it most closely. There are further reasons for this, including that in the final plan, U.S. EPA itself emphasized that trading would be an especially attractive options for many states. This is, in other words, a strong opportunity to turn -- go from our program as a national model to our program as an important part of a national system rooted in carbon pricing and appropriate training.

What would we have to do to manage that? Well, first, we would need to consider how to appropriately bring in parts of our regulation, although not all of it, into federal enforceability for covered units, a matter in which we're working with the air districts to ensure that permitting workload and enforceability work well on that issue. We'll also need to include a backstop for a true-up, as I've mentioned.

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SENIOR ATTORNEY SEGALL: That means that as we continue this integrated effort moving forward, we'll be reviewing what regulatory steps need to be taken should we pursue this approach to integrate clean power plan compliance into the cap-and-trade regulation, and into the

regulation for the mandatory reporting of greenhouse gases.

In brief, these issues are largely logistical. We need to consider how best to align timing and compliance period requirements to ensure that we can report on an appropriate schedule reflecting both the needs of our market, our linked partners, and the federal program, and ensure that all the data we need to collect is being collected with appropriate enforceability and transparency.

We also, again, will need to ensure that there's a clearer backstop sub-routine that will kick in should we need it.

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SENIOR ATTORNEY SEGALL: But as our analysis strongly suggests and which we'll be sharing more over the coming months, it is very unlikely that we will have any trouble complying with those federal targets. Again, because the federal targets reflect our success to date, staying the course is a good way to meet them. We are working with our partners in the Energy Commission and the Public Utility Commission to conduct analysis demonstrating this across a wide range of policy scenarios, looking both at business as usual, at stress cases, testing, for instance, whether under drought

conditions, there was loss of lower energy capacity we'd have -- or lower emitting capacity, we'd have problems, and beginning to think through policy cases that are appropriate to test as well.

Now, the Energy Commission has been working with us with their production cost model tool, essentially a way modeling the performance of the power fleet to test these emissions. And we'll be working with all of our stakeholders going forward to make sure that the scenarios we test are realistic and robust to a range of conditions.

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SENIOR ATTORNEY SEGALL: There are important conversations that have to take place even as we design the plan. One of the most important is with the environmental justice community. Environmental justice is, in many ways, a priority for the Agency, of course. And it's one that we pressed for as U.S. EPA moved from its proposed Clean Power Plan to its final plan.

The final Clean Power Plan, in part, as result of suggestions from us and from various advocacy groups, contains an explicit requirement that every State develop the Clean Power Plan must meaningfully engage with vulnerable communities ensuring that those folks have a clear voice in the nation's energy and climate future.

We, of course, embrace that opportunity, and will

be working with a range of potential issues, and with our Environmental Justice Advisory Committee, and the best ways to reach out procedurally and ask to ensure substantively how this program works for those communities.

I'd note, as I think will also be noted later, that the adaptive management program is likely to play a role in that conversation, especially as we move forward with the State measures based program on the cap-and-trade system. It is a small feather in our cap that in the Clean Power Plan's final rule U.S. EPA identified that the adaptive management program is a national model that should be investigated by other states as well.

Finally, I should note one other opportunity that we'll be exploring for and with these communities, U.S. EPA has proposed a clean energy incentives program, essentially a way of transferring various federal Clean Power Plan compliance instruments to favor investments in clean energy, both energy efficiency and renewable energy in disadvantaged communities.

That program is relatively small in size, but, of course, it's important. It would be applicable for investments in projects operated in the 2020 to 2022 period. Thus far, details in that program are still being developed. So to participate at all, U.S. EPA asks only

of us that we provide a nonbinding statement of interest in it by the end of 2016.

Our view at the staff level is that there's no reason not to be nonbindingly interested in something at this point, especially something that could provide these benefits.

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SENIOR ATTORNEY SEGALL: The other consultation that is of considerable importance is on electrical system reliability. As I've indicated earlier, because of the nature of the California target, we don't expect the Clean Power Plant on its own to change reliability considerations very much in the State, but we aren't taking that on faith.

We already meet regularly with both federal and State reliability regulators and balancing authorities from FERC to the CAISO to the various public power entities, and we're continuing to do that with this as part of the conversation.

Indeed, we've already convened working groups of all the State level balancing authorities and briefed them on these issues, so they're engaged already.

As part of that consultation, ultimately we'll demonstrate not only that we consulted, but that reliability has been fully considered, including any

additional analyses that might be necessary upon further conversations with those folks.

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SENIOR ATTORNEY SEGALL: The last issues that I want to highlight in depth are regional issues. As I indicated at the beginning, the Clean Power Plan in many ways is a chance for other states to take lessons learned in our system and in other similarly progressive jurisdictions and apply them to serious pollution problems across the west. And that very much is happening. We're already seeing a significant conversation amongst all our western states as to how they will comply and the right path forward.

Parts of those conversations have focused on whether or not it is possible for us to trade with those entities throughout our market or through some sort of federal system, and how we may handle imported power, which currently carries a compliance obligation in our State system from plants that are regulated under the Clean Power Plan. And I've seen that in stakeholder comments and are taking those issues seriously.

We'll be exploring them with an eye to the important policy and legal safeguards that we have within our system already and within the federal system. AB 32's emphasize on accounting for all the power consumed in

California, and ensuring that the carbon price associated with it is accurate, the emphasis on avoiding emissions leakage from our system and resource shuffling, and requirements to ensure that if markets are linked they're linked with considerable stringency and integrity.

The federal system also provides important sigh posts both setting up accounting systems that could be used for linkage under important -- under appropriate circumstances, and beginning to lay out the sorts of demonstrations we'd need to make sure those connections are effective.

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SENIOR ATTORNEY SEGALL: Thus far, whether or not we pursue direct linkage and simply look to coordination and other options, it is clear that many states in the west are exploring their own trading systems. And this I think is really positive news.

If one reads only the newspapers or the court filings, you might think that this was a highly controversial program that is monolithically opposed by some states, but that just isn't the case. To my knowledge, every State in the west is at least beginning to explore serious compliance planning, even as some also litigate issues of importance to them. And the compliance program that thus far has been the most talked about at

those western state meetings has been a mass based trading ready plan, in other words, programs that resemble an important regards to systems that we have pioneered.

This is true not just in the west, but in regions across the country, meaning the Clean Power Plan is, it appears, serving its intended purpose of bringing together environmental and energy regulators to pursue ways to clean the system efficiently and effectively.

We'll be tracking these trends carefully considering how they bear on our own plans. We'll also be tracking related trends in the power market, including efforts to expand the California Independent System Operator, which is now looking at joining the PacifiCorp system as well, and other efforts that would begin to integrate power procurement and dispatch across the west.

Those conversations are all ongoing, but I think are truly exciting seeing so many states reengage and go deep on these issues.

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SENIOR ATTORNEY SEGALL: One last substantive note, U.S. EPA has also proposed federal and model plans for states that either do not want to develop their own plan or that want to guide as to how to plan. Many of these plans contain market based elements, an area in which we can offer considerable expertise.

I'm please to say that the climate change program branch, among others, are looking carefully at those plans to offer what comments we can to ensure that they're strong, effective, and if implemented would relate in sensible ways to the systems we're operating. Those comments are due in January. We'll be vetting them with stakeholders and trying to provide what help we can to the federal regulators as they move toward finalization.

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SENIOR ATTORNEY SEGALL: Schedule finally. The schedule is an ambitious one to get to the current date. We are looking at workshops throughout winter and spring in a coordinated way -- ah, there we are -- with our stakeholders and with the other post-2020 processes. If we stay on track throughout those processes, we hope to be back before you all in June discussing a draft plan, and submit either an initial submission or a draft plan, if we make it a bit further, to U.S. EPA by the September 2016 deadline.

And I should say, EPA Region 9 has been very helpful throughout this process. They've been happy to answer our questions and to learn with us as we think through the right way to integrate these systems. That's been a very positive conversation.

On that timetable we'll be finalizing the plan in

2017 and moving forward toward compliance.

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SENIOR ATTORNEY SEGALL: So our next steps are essentially as I've indicated. We're in a good position. The final Clean Power Plan reflects what we need to integrate our system in the federal system. It puts the nation on a path towards significant reductions. To best utilize it, we'll be building now conversations around plan design, ensuring that we have the right data and right affected units, working with the EJ community and with electrical reliability regulators to attend to important considerations, work to improve and strengthen the existing proposed federal plans, and continuing to participate in the ongoing regional and national conversations around how this initiative can go from the federal guidelines that it is, into a fully implemented and working system.

That concludes the present. Thank you for any questions.

CHAIR NICHOLS: Thank you, Craig.

Questions anybody?

Yes. Dr. Balmes.

BOARD MEMBER BALMES: Well, thanks, Craig, for really an excellent overview. And I noticed you weren't reading. So that was especially appreciated after lunch.

(Laughter.)

SENIOR ATTORNEY SEGALL: Yeah, carbohydrate comas are a problem for me too.

BOARD MEMBER BALMES: I just wanted a comment from someone on the staff or Mary about the way the current litigation would impact the Clean Power Plan. I realize that half the states are -- have lined up against EPA's proposal. I guess the other half of the states are supporting it. But just -- could we just have like an overview of where we stand as far as litigation?

SENIOR ATTORNEY SEGALL: Sure. So states litigating this issue are, I believe, 0 for 3 so far. There were several premature cases filed that were thrown out of various courts. The litigation in earnest was joined, as you've noted, by about half the states in the D.C. Circuit in October, but the other half, along with many communities and companies have intervened on the other side.

The first step in that litigation is a stay motion. Several of the litigants have moved the court to stay to be -- threw on hold essentially through the litigation. That's a disfavored extraordinary motion. To win it, they'd have to show irreparable harm simply from the existence of rule, seven years before plans go into effect and several years before plans are due. As a

result, most of their claims of harm have to do with owner's duty to think about these things.

It is possible, of course, that the motion will be granted. I think it is not -- I think it's without merit. We'll find out what the court thinks sometime in early spring of next year. From there, a merit's ruling will proceed probably sometime in later 2016. It seems not impossible that this would be appealed to the Supreme Court no matter how that court rules, which will be another year or so of litigation.

CHAIR NICHOLS: And I think there's been quite a bit of press coverage recently to the effect that even in states where the attorney general is suing EPA, that the agencies and the governor are actually moving to develop plans. So the farther down the road -- and, of course, this is what's so frustrating I know to the opponents, but as states begin to actually work with the rule and discover ways that they can comply with it, then the urgency of their case dissipates.

So in that sense, I think time is on our side on EPA's side, but I really want to make sure that the Board understands that we have been very active, working not just with EPA and back and forth communicating about how to make this rule strong. EPA did a -- I think a really remarkably good job of listening and outreaching. I've

never seen top level EPA people out as actively as they have been on this rule trying to make sure that they had talked to everybody that they needed to talk to.

And one of the things that that led to was a sense I think on the part of the electrical utilities that EPA was serious, and that there could be benefits to them from having a national rule. Generally speaking, they would much prefer to have a level playing field to operate on nationally than to take their chances state by state.

So while there's still plenty of critics and opponents out there, I think, in general, there's been quite a gratifying amount of acceptance that this rule can work and that people can live with it. But, of course, the plans aren't done yet, and there's a lot of detail that goes into actually producing a good plan.

One of the things that I think California has been good at, and we're not always good at this, is figuring out how to be good regional players, so that, you know, as the big dogs in the western electricity market, and the ones that buy from other people, we have been very quietly, but I think persuasively, talking to many of our neighboring states about why it's in their interest to work on a regional plan, or at least a regional approach, even if people aren't ready to, you know, all sign up to be part of our market or to, you know, be part of our

Cap-and-Trade Program. They can at least begin to see the benefits of this kind of program.

And so one of the first things that happened that I think has been helpful is that a number of the states with Republican governors said, well, if we've got to do something about climate, we want it to be a market based program. And then that led them to thinking about going with a mass based approach, rather than a rate based approach, which is really essential if you're going to have an ability to trade units across jurisdictional lines.

And so each one of these building blocks sort of comes into place and people start to think about it. And it's just -- it's sort of been gratifying to meet to see the extent to which the logic that impelled us to the position that we took has applicability in other places as well, you know, that other people have seen it and said, yeah, we think that probably is the right way to do a plan.

So, I mean, for some states, of course, there's very little that they have to do, and for other states there's a lot. And for those who are heavily reliant on coal, the idea that they could help -- be helped by us to pay for cleaning up their system or complying with this rule is beginning to seem more attractive. So it's

just -- it's been a very healthy conversation, I think, and our folks have been very active on this front. So it's been -- it's been a good process overall.

Any other questions, comments?

I don't think so. Thanks very much.

CHAIR NICHOLS: Good work.

Yes.

CHIEF COUNSEL PETER: We comments.

CHAIR NICHOLS: Oh, sorry, we have two witness. Pardon me. Yes, we have -- we are lucky today that U.S. -- the University of -- let say this again, Union of Concerned Scientists and NRDC have both decided to spend the day with us. So we'll start with UCS, Jason Barbose. Sorry, I couldn't get the words out. Thanks.

MR. BARBOSE: No problem. It's post-lunch for all of us. Yes. Jason Barbose with Union of Concerned Scientists.

And just a couple thoughts. I mean, one is the fact that it will be so easy for California to comply with the requirements of this regulation is obviously a testament to the progress we've already made reducing greenhouse gas emissions from the electricity sector, both from a Cap-and-Trade Program and a renewables portfolio standard program and others.

A few just sort of thoughts loosely tied

together. One is that we tend to support the state measures plan that was discussed based on the Cap-and-Trade Regulation and supported as well by the State's energy efficiency and RPS programs.

Related to issues of collaboration and linkage with other states, we do recognize that there's a lot of important details there. And, you know, Craig called out a few of them issued round imported power, around emissions leakage, resource shuffling. One issue to just put a pin in today is that we feel it's important that ARB make sure there's a robust carbon accounting for imported power on a real-time basis as much as possible. And that's probably an area for some work.

Another thought was just that implementation of the Clean Power Plan should not create disincentives for electric utilities in California to promote vehicle electrification. I'm not sure that that will be an issue, but I just want to -- I think it's something that we should do due diligence on.

And then the last thought is just around the environmental justice pieces. Appreciative of ARB's work advocating for the inclusion of those elements in the rule. It was something that our organization advocated for as well, and appreciate your work seeing that they're effectively followed and implemented as well.

So look forward to working with you over the next few months.

CHAIR NICHOLS: Thank you. I know UCS has also been working hard on this at the national level.

Alex.

MR. JACKSON: Good afternoon, Chair Nichols and members of the Board. Rounding out the theme of my comments today, I find myself in vigorous agreement with the direction of the staff presentation on a number of the key issues. But adhering to Chair Nichols' admonition at the top of the program, we will be developing much more comprehensive written comments. I'll simply summarize a few points that we think warrant additional attention or support today.

First, just on the basic framework and structure of the plan, I think the State measures approach is really tailor-made for California, recognizing just the different scope of our program, including different sectors and including territories even beyond the United States with Quebec and hopeful Ontario soon.

While it does require staff to develop a policy backstop in the event the emissions from the power sector exceed the EPA requirements targets, I think that's at such a low probability that it shouldn't deter us from moving through that with a State measures approach. And

there's opportunities, including potentially with using credits available through the Clean Energy Incentive Program allowing those to be available for purchase to meet that backstop requirement that needn't go us down a rabbit hole of a very thorny policy and design issues.

I would also echo the encouragement to move early. I think California really does have an opportunity to leverage our size, our clout, our buying power to influence the design of the mass based trading ready plans that a lot of the states in the west seem to be moving towards.

And while, you know, additional time has its upside. I think we've largely figured out a lot of the issues that other states are starting with from scratch. And if we could move forward, we might be able to exert some additional influence to get important design details right like from our perspective including new sources within the mass based cap, so we're not simply leaking generation to those sources that are not subject to an absolute limit on emissions.

And finally, we are supportive of ARB looking at developing a trading ready platform. You know, we want to encourage enabling other states to have more cost effective pathways to be part of this rule. We do think that that could help align this program better to

accommodate the expansion of the California Independent System Operator in recognizing that our power mix is not -- doesn't stop at our State borders, but subject to some important considerations and limitations.

And I think, first and foremost, that our allowance budgets should be set based on our own ambition, and meeting our own State level targets. And that under a State measures approach that would mean we only issue cap-and-trade allowances up to our cap-and-trade budgets which would hopefully be set to meet our 2030 Executive Order and beyond, and avoid having a huge excess where we're simply trading away our surplus to other states and not achieving any net emission reductions.

And second, recognizing -- if I can have just five more seconds.

CHAIR NICHOLS: You may finish up.

MR. JACKSON: The implications that AB 32 requires ARB to put a compliance requirement on imports again in the spirit of addressing leakage. With states that don't end up under trading ready platform with California that still import power to California, one thought potentially would be to look at the differential between the target stringencies between California's program and that program, and simply assign a compliance requirement on that import to recognize that delta. One

option to consider. Again, we will go further into these in our written comments. But thanks to staff and the Board for your leadership on this issue.

CHAIR NICHOLS: Thanks. Those are both good reminders. We're not going into the business of generating credits to sell, that's for sure. I don't think that's -- I don't think we ever have had that intention, but it's important that people understand that we do have to comply with our own regulations before we start figuring out what to do for the entire west. And we really appreciate the support and leadership of both of these organizations who have been very active, again not just here in California but nationally, in trying to move the United States towards a real climate program. So it's an exciting time.

Okay. I believe that is it for this item.

And then we can move to our final item, which is also cap-and-trade related, but this time looking at the issue of what we know about and what we need to know about and what we will do with the plan if we find that there are implications that have localized -- create localized air quality problems. This has been something that we've been concerned about from the very beginning when the program first began to be developed. We heard a lot of concern from many advocates at the local level about the

potential that the Cap-and-Trade Program could lead to distortions in the way that electricity generators operate their systems, and others, that could have negative impacts in communities that already are overburdened with air pollution.

But before we hear an update on how we're doing with the adaptive management plan, I am unfortunately -- am going to have to say a few words about the person who's going to be presenting this to us today, or one of the people. Mike Tollstrup, who before I say anything nice about him, I have to say --

(Laughter.)

CHAIR NICHOLS: I have to say that I'm really disappointed that I have to read this statement.

(Laughter.)

CHAIR NICHOLS: So -- but I will anyway.

So Mike Tollstrup has had a long and very distinguished -- rich and diverse career in air pollution first beginning in the San Joaquin Valley Air District for 10 years and then at the Air Resources Board for the last 26 years.

I can personally attest to the fact that he hasn't ever really left the valley, because he still drives a truck to work.

(Laughter.)

CHAIR NICHOLS: It's one of the few pick-up trucks you're going to see in the garage across the street from ARB.

Mike has, in his time with us, led a variety of groundbreaking and important diesel regulatory programs including the drayage truck rule and the portable equipment rule. Building on the relationships that he's developed with districts, Mike has been a critical part of ARB's collaboration with the districts and the California Air Pollution Control Officers Association working on new source review programs, deployment of best available control technologies, and emissions reduction credits.

And he's been a leader for ARB in the energy sector as well. I have seen him at work in a number of these forum, and I can personally attest to the fact that he has a really wonderful way of just making his points without getting other people's hackles up and generally helping to establish ARB as a player in ways that have been very beneficial to us in many different contentious situations.

So he's also served as the co-chair of the Stationary Fuel Cell Collaborative, which is one of those efforts that kind of quietly has moved along for a long time, but has become a really important place in which work has occurred, which has led to the status of fuel

cells, both stationary and mobile, as viable energy sources we were hearing earlier this morning.

So he was with us earlier this year when we had the scoping plan update. And in all of these different roles, he's amassed an incredible amount of knowledge and information in all the policy areas that we work on, but he seems to have decided to retire. I don't understand why.

(Laughter.)

CHAIR NICHOLS: And he's probably not eligible. I don't think he's really old enough yet. We need to check the records here, but I think the word is in that he's going to do this.

So we are assured by his division management and the Executive Office that they've tried everything that they could think of to get him to reconsider, and that he's sticking to his retirement plans.

So, Mike, on behalf of the Board, I just really want to thank you for an amazing career, and to wish you the best in your well deserved retirement.

(Applause.)

CHAIR NICHOLS: Now, he's --

BOARD MEMBER GIOIA: Madam Chair, can I make a comment?

BOARD MEMBER BALMES: He's turning red.

CHAIR NICHOLS: I know.

BOARD MEMBER GIOIA: Can I make a comment?

Over here. So I had a chance to listen to Mike, Floyd their whole team at an adaptive management workshop over in Contra Costa county, actually in my district. It was their Bay Area workshop. And I have to say, I was -- you know, and I don't say this lightly, I was very impressed with their -- not just their presentation, but the interaction with a public that often is very skeptical about cap-and-trade. And these were many advocates from organizations who are -- follow the issue of refinery emissions.

It was a very knowledgeable group, and there was a lot of discussion. And I want to say the whole team did a great job. And I want to acknowledge all of you publicly, because it was really well done. You weren't defensive. And, Floyd, you know, you responded to a few things in ways to put people, I think, at ease and develop trust, and, Michael, the whole team.

So I just wanted to acknowledge that, and just want to thank you, because I was truly impressed with that. And I know many of the folks that were there, I know how tough they can be on government agencies, but I thought it was really positive.

CHAIR NICHOLS: All right. Thank you for that

validation. That's great.

I sometimes wonder if maybe, you know, they have hearing aids that they just turn off during meetings -- at critical points during meetings. Sometimes I think that might be the best way to get through some of these sessions.

But all joking aside, the Cap-and-Trade Program has concluded its first compliance period. And as you've heard before, one of the concerns that we had was that there could be disproportionate impacts. So although before we adopted it, we had done prospective analysis that convinced us that this was highly unlikely. Nevertheless, we made the commitment to monitor emissions in the real world from cap-and-trade covered facilities, and to take action if we found any unanticipated adverse impacts that could be attributed to the implementation of the program.

So we adopted, at the time, an adaptive management plan. Now, as we're looking at extending cap-and-trade beyond 2020, and looking at the plan that we adopted -- looking back at the plan that we did adopt, we need to ensure that we, in fact, have met the standards that we set for ourselves.

So this has been an issue where ARB needed to work very closely with the local districts, because they

are the permitting authorities, the ones that directly regulate the facilities that we're talking about. So this was ARB coming in really on their turf with this new Cap-and-Trade Program.

And so they were major stakeholders as well as the public and citizen groups. And they have been working together to develop a process for annual emissions review looking at the key cap-and-trade facilities around the State, and then to identify potential adverse impacts.

And again, I think part of the challenge here is that these facilities are not just located in one air district. They're spread out across the state, and so you've got issues about differential requirements and processes in our various different air districts.

So it has been a complicated -- a complicated program to implement, but it's time that we caught up with what's been going on. So, Mr. Corey, would you please introduce this item?

EXECUTIVE OFFICER COREY: Yes. Thanks, Chair. And I also actually wanted to acknowledge Mike for his contribution to ARB, and also his friendship. He's been a great friend for a long time, and one unscripted comment. You were commenting about the work he's done with the air districts. This illustrates the kind of guy that Mike is. Years ago we talked our need to continue to build our

relationships with the air districts and strengthen that relationship, Mike goes the extra mile and he marries Bridgette who's with Sacramento Air District. I'm telling you.

(Laughter.)

CHAIR NICHOLS: That is definitely -- it's not a requirement, but it's --

(Laughter.)

EXECUTIVE OFFICER COREY: Very impressive. Very impressive.

All right. Let's get back to the issue at hand. For this last item, staff is providing an update on the Cap-and-Trade adaptive management plan as noted. And you'll recall the potential for disproportionate localized air quality impacts were identified as an area of concern in the original Cap-and-Trade rule-making in 2011.

In response to the concerns raised, staff repaired and the Board approved an adaptive management plan to closely monitor for localized air quality impacts from the implementation of the Cap-and-Trade Program.

The Board further directed staff to work with the air districts on the implementation of the adaptive management plan. So in the presentation staff is providing and update on the adaptive management process, including suggested improvements to the process which were

developed in collaboration with the air districts, community groups, and other interested stakeholders.

The draft process would track emissions, identify potential adverse impacts, and make recommendations for addressing any additional adverse impacts identified.

Staff is proposing to evaluate emissions annually from the cap-and-trade facilities located in California. And if potential adverse impacts are identified, staff would work with stakeholders, the air districts, and others to develop recommended responses and present those recommendations to the Board.

I'll now ask Johnnie Raymond to begin the staff presentation.

Johnnie.

(Thereupon an overhead presentation was Presented as follows.)

STAFF AIR POLLUTION SPECIALIST RAYMOND: Good afternoon, Chair Nichols, Vice Chair Berg and members of the Board. Thank you for the opportunity to update you on our progress in further developing a Cap-and-Trade Adaptive Management Program.

We are developing this process as a formal mechanism for identifying, tracking, and responding to any changes in emission trends that may occur under the implementation of the Cap-and-Trade Regulation.

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STAFF AIR POLLUTION SPECIALIST RAYMOND: An overview of today's presentation is provided on this slide. I'd like to take this opportunity to explain what we mean by the term adaptive management. Adaptive management is the ongoing process we use to assess the implementation of our regulations. As issues arise, we will propose any necessary actions or policies to improve the effectiveness of the regulation.

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STAFF AIR POLLUTION SPECIALIST RAYMOND: Since I just defined the term adaptive management, I'd now like to discuss it in the context of cap and trade.

Adaptive management is the process for identifying, tracking, and responding to the emission trends occurring under the Cap-and-Trade Regulation. When the Cap-and-Trade Regulation was first considered by the Board in 2011, the Board concluded that cap-and-trade is unlikely to contribute to increased localized emission impacts.

The Cap-and-Trade Program works alongside the existing air pollution control programs. ARB works closely with the local air districts to enforce air pollution regulations, monitor air pollution, and ensure that emission reductions are occurring as intended, so

that all Californians, especially those in disadvantaged communities, are experiencing the benefits of clean air. The Board approved the adaptive management plan in 2011 to closely track the effects of the Cap-and-Trade Program on localized air quality.

In adopting the plan, the Board sought to ensure that the Cap-and-Trade Program identifies, tracks, and responds to any localized air quality impacts under cap-and-trade. Accordingly, we are committed to implementing the adaptive management program.

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STAFF AIR POLLUTION SPECIALIST RAYMOND: Adaptive management provides the tools alongside a transparent and public process for tracking emission trends from facilities subject to cap-and-trade. The proposed process, an interactive greenhouse gas mapping tool, allows anyone to follow and replicate staff's analysis. We will have a demo of this tool later in the presentation.

On an annual basis, the proposed process will monitor for changes at individual facilities and in California communities with multiple facilities. The proposed process will also evaluate emission trends over multiple years at individual facilities, California communities, and industrial sectors.

The U.S. EPA in its final Clean Power Plan identified California's cap-and-trade adaptive management program as a potential model for other states to use in considering implications of their plans to comply with the program.

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STAFF AIR POLLUTION SPECIALIST RAYMOND: We've identified the process. Now, we will discuss it as it relates to California's existing regulatory framework.

At the federal, State, and local level, air pollution control programs are designed to reduce greenhouse gas, smog forming criteria pollutant, and toxic air contaminants throughout California, improving the health of all residents. The local air districts have the primary authority to develop rules to reduce toxic and criteria emissions from stationary sources.

California's Cap-and-Trade Program places a price on carbon that incentivizes facilities to reduce emissions from their operations. The Cap-and-Trade Regulation sets a cap on greenhouse gas emissions, which is lowered over time to reduce the amount of pollutants released into the atmosphere.

The cap has been in place since 2013, and reduces greenhouse gas emissions from large industrial sources. The Cap-and-Trade Program, along with other complementary

emission reduction measures will reduce greenhouse gas emissions in California. Emission reductions are expected to come from cars and trucks, fuels, industrial facilities, and many others.

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STAFF AIR POLLUTION SPECIALIST RAYMOND: On this slide, we're exploring key questions related to adaptive management. Has a facility or group of facilities changed their emissions and will that change likely continue?

Does the change merit a more detailed analysis?

Is that change a direct result from the implementation of the cap-and-trade?

What is the process and potential outcomes?

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STAFF AIR POLLUTION SPECIALIST RAYMOND: The draft adaptive management process was developed in coordination with the local air districts through CAPCOA. Staff held four regional public meetings to provide opportunities for the public to comment on the draft process.

We will continue to work with our local air district partners and interested stakeholders to further develop the adaptive management process. We will also be revising the draft process early next year and hold additional public meetings. Finally, we will present the

final process to the Board next year.

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STAFF AIR POLLUTION SPECIALIST RAYMOND: Earlier in the presentation we teed up a number of key questions related to adaptive management, and we are proposing to assemble a working group that will provide us input on a number of key aspects of adaptive management analytics. The proposed work group will consist of representatives from key EJ, environmental health, public health, air districts, industry, and other stakeholders.

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STAFF AIR POLLUTION SPECIALIST RAYMOND: We've developed a detailed adaptive management process to track emissions at individual facilities in communities and amongst industrial sectors. At the end of this presentation, any resulting recommendation will be presented to the Board after going through public vetting.

In the next slides, I'll go over staff's proposal for: Data collection and screening, data analysis, review, and decision making.

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STAFF AIR POLLUTION SPECIALIST RAYMOND: In the draft process, we will use the publicly available updated GHG mapping tool. ARB's Air Quality Planning and Science Division staff developed the updated tool that we are

using for this process.

The tool uses GHG emissions data reported directly to ARB by over 500 facilities as required by the mandatory reporting regulation, or MRR. The general reporting threshold for facilities is 10,000 metric tons of GHGs per year. These data are verified by a third-party verifier and reviewed by ARB staff.

Now, staff will show you a short demo of the tool.

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(Thereupon a video was played.)

MODERATOR: ARB has recently made an update to its existing greenhouse gas mandatory reporting interactive mapping tool originally released in 2012

This web-based tool displays the locations of mandatory reporting facilities in California and their greenhouse gas emissions.

This updated tool provides the same information, mandatory reporting facilities and greenhouse gas emissions, but this version included many new features, better usability, and reported data through the year 2013. Note that this tool does not include emissions from transportation fuel or natural gas suppliers or electricity importers.

Let's take a look at the new user interface and

features. The updated web tool plots the locations of mandatory reporting facilities on a map just as before. Users are able to pan and zoom the map, and facilities are color coded based on the primary sector. The tool now includes left and right sidebars to help identify facilities.

One major new feature is the ability to search for a facility by name. Menus also allow you to filter by geographic region, primary sector, and whether a facility participates in the Cap-and-Trade Program. The right side bar displays a list of facilities along with their greenhouse gas emissions. This list and the map respond to what filters are selected in the left side menu.

Now, let's take a look at what information the tool can provide. Let's click on Anheuser-Busch in the list of facilities. Notice the facility bouncing on the map. Let's zoom in, which can be done using the zoom and pan controls or by using the mouse wheel.

Notice the tabs on the facility pop up. The first tab shows information about the facility. The greenhouse gas tab shows greenhouse gas emissions for this facility reported for 2013. The trend tab shows emissions for each year reported, and the chart tab shows this emission trend visually. We can use Google Maps satellite image view. Zooming in we can see satellite imagery of

the facility. We can also use Google street view.

Now, let's exit and reset the map. Next, let's use the search feature. We'll search Tesoro. The list on the right shows facilities matching the name Tesoro. As before, we can see facility information, greenhouse gas emissions reporting for 2013, a trend of all emissions reported, and a chart showing the visual representation.

Using the greenhouse gas visualization mapping tool a user can draw a buffer of any size and shape around a group of facilities and the tool will sum the greenhouse gas emissions within the shape.

The user can also see the greenhouse gas emission trend over time for the selected facilities. A user can locate the drawing tool in the upper right corner of the map. It contains the following icons for drawing different shapes: Circle, rectangle, and polygon.

To draw a shape on the map, a user needs to select a shape from the drawing tool. For this example, a circle, then click on the map to start drawing the shape on the map. Once a shape is drawn, users can color, move, resize, edit, and delete the shape. Using the color palette and the delete buttons, users can change the color of the shape or remove the shape from the map. When a shape is clicked, an information window will also pop up. The information window contains several tabs that include

location and geometry of the area and parameters of the shape, a list of facilities in the shape, and the sum of greenhouse gas emissions and trends for all facilities included in the shape.

Let's look at other filters. The Cap-and-Trade filter allows you to display only facilities participating in the Cap-and-Trade Program for 2013. The map and the list on the right display only facilities participating in cap-and-trade.

Now, let's demonstrate the threshold function at the bottom left. By increasing the threshold, we can limit the map to display only facilities emitting above the defined threshold. This is useful for seeing the largest emitters.

Using the list on the right, we can also sort by the amount of emissions. At any time, users can export all the information displayed on the right list by clicking get data.

(Thereupon the video concluded.)

STAFF AIR POLLUTION SPECIALIST RAYMOND: In the next couple slides, I'll go over our proposal to review emission changes at individual facilities in California communities and across industrial sectors. These reviews and analyses will be conducted both annually and over multiple years to track emissions. This information will

be used as a first order screening that may lead to further investigation.

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STAFF AIR POLLUTION SPECIALIST RAYMOND: First, I'll start with the individual facility analysis. We will track emissions at all California cap-and-trade facilities. Staff will compare the most recently reported GHG data to previous years. For the community analyses, we will use the GHG mapping tool to look at multiple communities with more than one cap-and-trade facility.

Just as I mentioned, for the individual facility analysis, we will compile and compare current emissions with prior years. The process will be repeated for each California community with multiple cap-and-trade facilities. Using the GHG mapping tool, anyone can follow our analysis or conduct their own.

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STAFF AIR POLLUTION SPECIALIST RAYMOND: Staff will use the collected data to calculate a trend line or slope trajectory or each series of reports to track changes of emissions over multiple years. The image on this slide is a example of a facility's GHG trend over six years.

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STAFF AIR POLLUTION SPECIALIST RAYMOND: In this

process, changes in GHGs will serve as a surrogate to indicate potential changes in criteria and toxic emissions. Staff is proposing to work with the local air districts to track changes in these pollutants and further identify reasons for the emission changes.

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STAFF AIR POLLUTION SPECIALIST RAYMOND: The interactive GHG mapping tool allows anyone to conduct their own analysis and work with ARB to track GHG changes at individual facilities in California communities and across industrial sectors. In this process, we will release our analyses annually and present them to the Board. We will also consider public comments received and continue to seek input from the local air districts.

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STAFF AIR POLLUTION SPECIALIST RAYMOND: ARB's long-standing approach to implementing its programs, policies, and regulations includes periodic reviews to ensure that the goals of the respective action are being met. For adaptive management, we're following that established approach may consider: Additional air monitoring or research, health risk assessments, amendments to State regulations, or local air districts rules or other actions.

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STAFF AIR POLLUTION SPECIALIST RAYMOND: Some of the public comments we've received include:

Questions about where to access information for the Cap-and-Trade Program. Stakeholders and members of the public inquired about facilities use of offsets for cap-and-trade and more information about where the offsets were generated. In response, we intend to link to available Cap-and-Trade information from the cap-and-trade adaptive management webpage.

We've also heard that the tool does not contain enough information. For example, it should include criteria and toxic emissions and whether allowances or offsets were used for Cap-and-Trade compliance. Staff is considering these comments and will work with CAPCOA to evaluate incorporating more information into the tool.

We've heard that the tool may miss opportunities. Commenters have stated that the tool may not capture any disparities in the rate of emission reductions in disadvantaged communities as compared to other areas. In the analysis, staff will compile emission changes and closely examine trends particularly those that do not demonstrate reductions as expected from the implementation of cap-and-trade.

In addition, a concern was raised that the tool may not capture potential criteria or toxic increases that

could result from sources not covered under cap-and-trade. An example would be a dairy installing a digester to generate offsets and use -- and electricity resulting in an increase in NOx. Staff is concerned about this potential as well. Because this issue will be addressed in the development of the upcoming scoping plan and short-lived climate pollutant strategy, we are proposing to work with the local air districts and holistically look at this issue to ensure we have policies in place to minimize the potential for increases. As noted previously, any recommendations would be presented to the Board after a full public process.

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STAFF AIR POLLUTION SPECIALIST RAYMOND: On this last slide, I'll go over next steps for moving this process forward. This will include considering any comments received at the public meetings, including this Board meeting and incorporating them into the revised draft process.

We are planning to release the revised draft adaptive management process in early 2016. Next year, we will hold additional public meetings in different communities from those held this month to provide additional opportunities for the public to comment on the process.

We are also proposing to follow next year's regional meetings with a presentation of the final adaptive management process at a Board hearing in 2016.

Thank you. This completes our presentation and we'd be happy to answer any questions you have.

VICE CHAIR BERG: Thank you very much, staff for that great presentation. Board, we have two -- or actually three public comments. So why don't we go ahead and take those public comments and then I'm going to ask for Dr. Balmes to open this up. This has absolutely been his passion, and we'll have you lead off with comments, John, before we go to the rest of the Board members, okay?

Hi, Alan.

MR. ABBS: Good afternoon, Madam Vice Chair and members of the Board. My name is Alan Abbs with and CAPCOA. And I can't -- for starters, I can't say it as well as Chair Nichols said at the start of this presentation, that this was a process that was going to benefit by incorporating the local air districts in the process from the beginning, and working with them throughout to come up with a tool that was going to be as useful as possible to stakeholders in California. So we appreciate the opportunity to be involved with that, to provide feedback, and to be part of the process to determine if there were any impacts due to cap-and-trade

through the adaptive management.

And we also appreciate identifying that there could be some issues associated with projects designed to get offset credits that could have negative impacts in terms of increased criteria pollutants. And so we're pleased to see that those -- that that comment was noted and that ARB staff will be working with the districts to further look at that issue and refine any answers to that.

So thank you again for letting us be part of the process and we look forward to continuing that.

VICE CHAIR BERG: Well, before you go, I would just like to thank you and CAPCOA. You're being very modest. You are our partners in this. And without CAPCOA, we would not have been able to move this forward and incorporate it like we have. I was involved from the very beginning of putting this together, and it was critical that CAPCOA was a leader with us, and we want to thank you for that. And if you'd please pass that on to all of your CAPCOA partners, we'd really appreciate that. Thank you very much for your leadership.

MR. ABBS: I will do that. Thank you.

MR. MAGAVERN: Vice Chair Berg and Board members, I'm Bill Magavern with the Coalition for Clean Air. And really appreciate the fact that the staff listened to the comments that I made at the workshop and responded to them

in the presentation.

Clearly, if we see that emissions are going up at a cap facility, then that should cause further inquiry. What I think is not so obvious is there might be some situations where emissions actually went down, but we still might want to look into it further. And I think that's counterintuitive, so let me explain a little bit.

First, we have to place this in the context of environmental injustices that have occurred over a long time at many communities in our State, places like Richmond and Southgate and other communities that many of you know very well. And so these areas need to have reduced emissions of criteria and toxic air pollutants at a faster rate than other communities do. And we certainly have an overall trend of emission decline. So you could have a small decline that would mask the fact that we've missed opportunities to have more rapid declines that are really essential for the health of these neighborhoods.

And that could happen because facilities could choose to purchase allowances and/or offsets instead of updating their machinery and reducing emissions on site. And historically, we may see a pattern that the best equipment is going into certain areas, while the dirtier outmoded equipment is left in those areas like Richmond or Southgate.

And so we need to make sure that we're looking for all those possibilities for those potential missed opportunities, so that we're not seeing a situation where purchases of allowances and/or offsets are perpetuating the environmental injustices that have plagued these communities for a long time already.

Thank you.

VICE CHAIR BERG: Good afternoon.

MR. HASAN: Good afternoon, Madam Chair and members of the Board. My name is Shams Hasan. I'm the HSE manager for E&B Natural Resources and Oil Production Facility, in -- based in Bakersfield, but we are in California, Wyoming, Kansas, and Louisiana.

While I appreciate staff's work on this, and it's a very beneficial thing what they're doing. Knowledge is good, providing knowledge is beneficial, but providing knowledge -- partial knowledge is dangerous and also misleading.

As a way of background, as I said E&B is an oil producer. Second largest independent producer in California. And we are part of cap-and-trade for the 2013 year emissions year, 2014 emissions year. We've been audited both years by an independent third-party auditor as mandated by State and we got a positive grade in both, which is the highest grade achievable.

With that, I want my, you know statement was on, for example, the slide number 15, which shows a trend of decreasing emissions. And obviously, when you're talking about cap-and-trade, you're talking about the effectiveness of cap-and-trade reducing the emissions in the State. However, when, you know, you look at an individual facility, like E&B, our emissions have gone up, and that's why we are in cap-and-trade, because our production has gone up.

And as I said, we are in compliance with cap-and-trade. We got positive qualifications, but our emissions have gone up. So if someone is looking at a graph like that, at an individual facility, they would see that E&B is really gross polluter of GHG pollutants, when -- unless it is also overlaid with the production of that facility, which would show that, okay, the emissions have gone up, but so has the production, and the facility is still positively qualified to be in compliance.

So I would strongly suggest that staff take that into consideration when they make a graph or they post a graph like that, they have also the production numbers showing the cause of that, because we have -- you know, we have activists and other people in the public, and especially activists in general, in particular, who, you know, create that hysteria about a particular facility

being a gross emitter when they actually are not considering the production.

Thank you.

VICE CHAIR BERG: Jesse Marquez.

Good afternoon, Jesse. I haven't seen you for a while. Nice to see you.

MR. MARQUEZ: Thank you so much. Jesse Marquez, executive director of the Coalition for a Safe Environment. We're an environmental justice organization headquartered in Wilmington. And I first really want to thank the staff developing an excellent tool, because it's rare that we can find good tools, but to find a tool where the public can also use that trending analysis data to facilitate, you know, our research, and being able to track and follow and provide public comments.

And, you know, this is my first time to see it, and it's just an excellent thing that I'm really proud of the staff for doing it.

I do have a couple of concerns here is that how will the system track new facilities? Because there are new facility being -- even though right now the trend has been going down, the fact of the matter is there's major projects on the books right now where they're going to start construction next year. So while we need to be tracking things, 2016 is going to be a year new facilities

are going to be getting construction and be coming on-line. So that's one concern there. How do we update it with the new facilities?

And then we have facilities, which will be kind of similar to what the gentleman just stated right now, that are expanding their capacity or doing new construction. Since I only had a -- since I wasn't able to get a copy of the presentation, I think you had it under resources, things that you could do, then I wanted to see categories there where you might recommend new technology updates for that facility as an option. For example, if they don't have a vapor recovery system, well, that's something that's off-the-shelf. You know, you could recommend, hey, you've gone up, now here's our recommendation. You have an opportunity here now to update the technology that's being used.

In other cases like a refinery, they have power outages, so it's not necessarily a new technology, it's a matter of requiring them to have a backup power system there, so it does not have a power failure later on. Now, in some cases like ConocoPhillips, they do have a cogen backup system, but it's a small cogen backup system, so that it doesn't work 75 percent of the time. So when you have a big power failure, it does no good to have a little backup cogen system, but that would be a recommendation

that would be a quick simple fix for it.

There are also coming on-line new emission capture technologies that might be applied to certain industries. CARB just certified the advance maritime emissions control system for ships. Well, it's basically a vacuum cleaner with a big hose that goes over the exhaust pipe. Well, there might be industries that could use that technology, because it can built, not only on a barge, but landside or at a facility. So that would be another type of recommendation saying, hey, here's a new emerging technology. It just got certified, let's now do a pilot project for now transferring that technology to a new application for a new manufacturing facility.

And then one thing that was not mentioned is that what if you do have a bad guy out there, then what would be penalties and sanctions for the bad guy who refuses?

And thank you for my time.

VICE CHAIR BERG: Staff, before we call on Dr. Balmes, do you have any comments on some of the things that we've heard from the presenters about how we're going to move forward and take these suggestions?

Then we'll have Dr. Balmes lead us off.

EXECUTIVE OFFICER COREY: Sure. I'll provide a response. And I think this is kind of a key element of the adaptive management process that was described. And

that really is what was characterized in terms of that tool is an initial filter. And an initial filter is one of looking at GHG emissions as a surrogate for what facilities merit a closer look. You have a few hundred facilities under cap-and-trade. And the fundamental question was is cap-and-trade leading to potential, potential near source related issues, be it criteria or toxics.

And there is a relationship between GHG emissions, and from a filter standpoint, and because we have verified GHG emissions reported under the cap-and-trade under our mandatory reporting program, it becomes a very, we think, effective surrogate. But as we move forward, I think the point is going to be kind of the proof is in the pudding, and the process we go forward, basically start running pilots through this thing based on mandatory reported data, see basically the kind of trends that we may be seeing, or is it a trend for an individual sector?

Does it get to the point that the gentleman made? There may be very good explanatory power in terms of why you see emissions trend. There may actually be increased production. That's an important explanation that would necessarily -- that would be needed as part of that follow-on assessment.

So as a filter, we actually think it would be a very useful tool, but it's the kind of implementation area that we want to continue to work with on our environmental justice advisory folks, other folks in the community that are looking at as we work through and really test drive the process and really look to how we can improve on it.

We think by putting the tool out there and really empowering folks to really do the same kind of screen that we're doing, actually, we think it will lead to even more effective application and something that is more effective in terms of getting information out to folks.

So I'd characterize it as we are not done. I'd characterize it as an initial -- I think it's an important step, but it's an initial step as it can be a useful screen as to what merits a closer look and a closer evaluation. And our conversations with the air districts have been really focused on after you apply this initial screen, and you have that subset you want -- need to take a closer look at, it clearly is predicated on a close working relationship with the districts, because they're permitting the local sources, they have local emissions and equipment information by technology that's permitted on-site.

VICE CHAIR BERG: Great. Thank you.

Dr. Balmes.

BOARD MEMBER BALMES: Thank you, Vice Chair Berg. Well, first off, I want to thank the staff for what I think is a good step forward with regard to adaptive management. I guess we called it some kind of audit originally. I can't remember. But I do remember insisting when we were thinking about cap-and-trade in the initial scoping plan and thereafter that facilities that were high greenhouse gas emitters also were likely to be high emitters of criteria pollutants and toxic pollutants, which are separate.

And, you know, it's been a long time coming, but I'm very pleased with the progress that has been presented today. So I've -- oh, and I also want to say, or add my thanks to that of Vice Chair Berg in terms of CAPCOA. I do think this is the kind of partnership that is good for the people of California when the State agency and the local districts are working together efficiently.

So I did take the opportunity to playing around with the mapping tool after my briefing on Monday. It was suggested I do that. And Supervisor Gioia might be interested in when you look at Chevron, it's not doing all that great, in my view. There's been some decrease in CO_2 emissions, but it's not that impressive. Though I guess if you talk about the total amount because they're such big emitters, there's been, you know, a decent improvement

in CO_2 emissions. But if you look at methane or N_20 -- is that supposed to be N_2O or -- it is N_2O. Okay. Just being clear.

You know, it's not so good the last few years, and this is, you know '11, '12, '13, there's a significant amount of NO_2, significantly more than in previous years. And the methane is also up, which leads me to be concerned about toxic emissions that would go along with these.

So this is exactly the kind of data that I think will be helpful for all parties, CARB, the local district, and citizens. And I'm pleased that Jesse is pleased with the tool, because I think it is --

(Laughter.)

BOARD MEMBER BALMES: It is pretty user-friendly. If I can make it work, almost anybody can.

And I do want to -- well, while I'm on Chevron, because we have an example of where preventive maintenance wasn't really implemented and we had a major fire due to a corroded pipe, I do think facilities like Chevron need to be monitored, and I'm glad we're doing this now.

And I want to take issue a little bit with the gentleman from E&B. I have no problem with overlaying production data. I'm a data person. I like to see data. That's an explanation, but it doesn't mean it's a good one. If we're trying to reduce greenhouse gas emissions

and other emissions related to criteria pollutants, toxic pollutants, then even if it's cleaner percentage-wise, but you're still producing a lot of emissions, then that's a problem for the climate and it's problem for the environment.

You know, our -- we need -- if we want to really make a difference for climate change mitigation, as well as improving air quality, then we need to move away from a fossil fuel infrastructure as fast as we can, and that's what we're trying to do. So producing more oil doesn't, you know, impress me, as a particularly good thing.

So with all that said, I look forward to hearing subsequent progress reports in 2016, but I'm pleased with what I see so far. So I want to thank everyone involved.

VICE CHAIR BERG: Thank you, Dr. Balmes.

Ms. Mitchell.

BOARD MEMBER MITCHELL: Thank you. And thank you to staff for working on this. It really is a very promising tool that we're looking at. I just want to mention that, because it's very important in the South Coast District as all of our staff knows, one of our priorities in the past couple of years has been to pursue programs and legislation that has the co-benefits of reducing both GHG and the criteria pollutants and toxic contaminants. And so a tool like this can be a great help

as we go forward to see what is actually happening out there. Are we accomplishing what we need to accomplish with reductions in both categories?

And so I encourage our staff to keep working on this and to see how we can use this tool as we move toward that objective.

Thank you.

VICE CHAIR BERG: Supervisor Gioia.

BOARD MEMBER GIOIA: Again, thanks for the presentation today, and thanks for being out there in the community on this. In fact, there was some really good questions from the community on the issue of the maps dealing with production, Professor, Dr. Balmes. The more titles, the better, right?

(Laughter.)

BOARD MEMBER GIOIA: And I think there was a recognition that when you have an accident at a facility, for example, where then the facility ramps down its production, you may have less GHGs in a given year, so it may not truly reflect the true annualized level of GHG emissions, because either there was a turn-around, maintenance, or the facility was closed due to an accident, so -- and I think you pointed out in that presentation to the community that what you're going to be doing is you're going to look at the data year to year,

but you're going to try to get behind the data. That real people are going to be investigating, asking questions. You can't just rely on this data alone.

For example, if production is down, GHGs will be down, but that may not be a real trend, because of -- again, because it was an abnormality in that facility. So you're going to be looking at those kinds of things.

The question I have -- it was unclear to me. So does the data -- the GHG emissions data reflect the actual hard level of emissions coming from that facility. It does not take into account offsets and other things like that. So it's -- it is the actual GH -- real GHG emissions from a facility? I just want to make sure I understand.

STAFF AIR POLLUTION SPECIALIST RAYMOND: Yes, Supervisor Gioia. That's correct. So it's the total annual greenhouse gas emissions reported to us and verified.

BOARD MEMBER GIOIA: Right, which is a separate issue than, you know, how they're dealing with the cap-and-trade market, right? So that's good. I just wanted to be really clear. It's the GHG data.

Thanks.

VICE CHAIR BERG: Thank you very much.

I had a couple of questions. One, when we look

at criteria pollutants and we have other measurements like the toxic hot spots, AB 2588, and I think there's some interactive maps on that by facility as well or at least some sort of reporting, are we going to see any integration of this data, so that we're getting kind of a complete picture rather than piecemeal?

STAFF AIR POLLUTION SPECIALIST RAYMOND: So what we plan to do is to work with the local air districts and find the best way to get that data set, just because the local air districts collect the toxic and criteria inventory, and plan to integrate that into the tool at -- during a later release. They're just -- there's a lot of work that's involved with matching facilities, because we -- for greenhouse gases, we collect the data, and to match the facilities in greenhouse gases with what's in the toxic criteria takes some time. And so once that's done, the facilities are matched, then it can get added to the tool. But again, it's working with the local air districts to get the data.

VICE CHAIR BERG: Thank you very much for that.

I do have a sensitivity to information and then the responsibility we have of educating people how to interpret this data.

And from running a hazardous waste facility, I have a lot of my data posted, available. And I often go

out into my community to work with various groups to help them interpret what they're looking at, because there's different pieces of that data.

I think there also has been a very credible argument that we need to educate and bring together what we're asking regulated parties to accomplish, and what they are accomplishing, and then what the challenges are, and then absolutely respond. I'm very excited that we are moving ahead strongly with the adaptive management piece.

And no question, this is very, very important. But in that, there's a lot of pieces that we can't assume we can point to one thing and say it's a great success or it's a great failure. And how we bring this together and really help people truly utilize it as a tool, like Jesse was talking about, I think that's where it's greatest opportunity is.

And I really would like to encourage that we take all of the comments that we have heard from our commenters, along with the Board, and really look holistically what language we're using, how we're communicating this, so that people really get a sense from the difference between communities and the businesses within those communities that are stepping up and looking at including improving the economy. I'd think that improving the economy is kind of high on our list of good

things.

Yes, we want to transition absolutely to a clean economy, but that's going to take over time. So how we put this together and continually talking to all of our partners I think is really a critical piece.

And thank you for bringing this. You know, we look at this as an update, but this is a very complicated piece as well. It has a lot of moving parts, a lot of data. It talks about a lot of different things and we can a see -- now, we're starting to really give data specifically on facilities. And any time data goes out, it makes people nervous. And how we bring that all about so we all work together, I think is a really important key.

Congratulations, and thanks for bring that back to us.

Any further?

So that is --

BOARD MEMBER GIOIA: I did have one comment.

VICE CHAIR BERG: Please.

BOARD MEMBER GIOIA: There was some discussion about collecting this data for toxics, criteria pollutants, things like that. Where does that stand from a -- for facilities that -- for a subset of these facilities, having the data be as transparent and visible

as we have here for GHGs?

ISD PROJECT ASSESSMENT BRANCH CHIEF TOLLSTRUP: So I'll take this one. So what we plan to do with the criteria and toxic data is we talked about doing this annual report. So we use the GHG data as the first screening part of it. We kind dig down where we see, you know, trends going up or, you know, we don't see reductions, work with the local districts to come up with that analyses and put it together in a report that we would use annually before the Board to kind of report what the progress is. And then we'd go through a public vetting as well.

So eventually, though, what we hope to do in the longer run is to work with the districts and actually incorporate it into the tool itself, but we're not there yet. So at least the next round when we come back to the Board, we'll have a couple years of data that we can show what we found. It will include toxics and criteria, but it will be in that report.

BOARD MEMBER GIOIA: Thank you.

VICE CHAIR BERG: That did spur on one additional thought, and also by Dr. Balmes. You know, we have benchmarking and we benchmarked facilities within their industry types. And my recollection was that Chevron was pretty efficient in their use of energy for their product

line, according to our data.

So again, our expectation of really their gains would be less in this first compliance three year period, than some of the people that were not as energy efficient.

That would be an example of education to let people know what -- where people are and what we have them doing, because otherwise a very large company, like Exxon -- I'm sorry, like Chevron, who does have to do some other things, no question about it. But information is important and complete information is important or at least transparent.

Okay. Great. Thanks.

So that -- oops, I turned myself off.

So that concludes our agenda. We do have one person that is signed up for public comment. And I'm going to have Brian Biering from ACE Cogeneration come up. And we have three minutes for you to bring your topic up.

Hi, Brian. Nice to see you.

MR. BIERING: Thank you. Nice to see you too, Vice Chair Berg. And thank you, members of the Board for this opportunity to speak.

I'm here on behalf of the ACE Cogeneration Company, which was a 120-megawatt coal-fired power plant located in Trona, California. And the reason I'm providing comment during the public comment period is

because of the issue we wanted to raise. It's not on the public agenda -- not on the agenda.

And it's really an issue that has come up in regards to the implementation of the AB 32 cost of implementation fee. A fee that essentially looks back two years at an entities submissions and uses that as a basis to calculate the entity's share of the costs associated with the implementation of AB 32 in the current considerations.

ACE shut down in September of 2014. And during their 25 years of operation, they really were a model citizen. They complied with all of their environmental requirements. They never had any Cal/OSHA issues. And to date, they have retired all of their cap-and-trade allowances associated with all of the GHG emissions during their operations.

In the process of winding down, we've had a significant issue in relation to the AB 32 cost of implementation fee. And that is the staff has determined that the facility is required to pay the -- not only the 2015-2016 fee but also the 2016-2017 fee.

The facility has shut down and there really aren't any costs outside of checking the compliance account in November of this year. We don't feel that this fee that's assessed against ACE is fair, and we would

request the Board's consideration of the issue and any assistance that you may be able to provide in finding a fair resolution to this issue.

VICE CHAIR BERG: Thank you very much. I'd like to remind the Board in the case of public comment that it's not our position to comment on that, but I'm going to ask Ellen Peter just to let us know and refer it to you, because I'm sure it's part of the legal statute, and that's where it is. And if you could just advise the Board within the appropriate scope as to how we're going to proceed, that would be great.

CHIEF COUNSEL PETER: Will do.

BOARD MEMBER RIORDAN: May I ask though just a question of the speaker?

Have you had an opportunity, since our discussion, and I would go on record as saying I have discussed this with the speaker, has anyone contacted you for a meeting?

MR. BIERING: No, we have not received an invitation. We have discussed the issue, at least at the staff level, and specifically requested meetings with management. But the staff has indicated to us, prior to our previous discussions, that the final determination from their perspective at least, is that the company is --

THE COURT REPORTER: Could you get closer to the

mic?

MR. BIERING: Sorry, is that any better?

THE COURT REPORTER: Yes.

MR. BIERING: The final determination that the staff made was that the company is required to pay the fee for the 2015-2016, 2016-2017 fiscal years.

CHIEF COUNSEL PETER: Ms. Berg, I know that this issue has been presented before. I don't feel like I want to address it right now, because I don't have all the facts. And we will look into it and give Mr. Biering a written response and provide it to the Board.

VICE CHAIR BERG: Thank you very much. So I'll go ahead and take the lead on that and get it back, make sure that we are kept up-to-date, and thank you very much for coming before us today.

MR. BIERING: Thank you.

VICE CHAIR BERG: So with that, is there any other comments from the Board?

Well, I close the meeting and everybody have a wonderful Thanksgiving. We'll see you in December.

(Thereupon the Air Resources Board meeting adjourned at 3:31 PM)

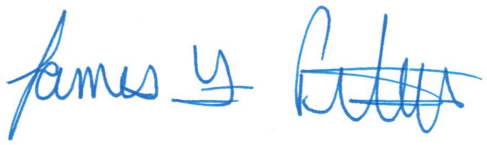
C E R T I F I C A T E OF R E P O R T E R

I, JAMES F. PETERS, a Certified Shorthand Reporter of the State of California, 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 was thereafter transcribed, under my direction, by computer-assisted transcription;

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 7th day of December, 2015.



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