BOARD MEMBERS:
Ms. Mary Nichols, Chair (via video conference) 
(9:03 a.m. to 11:35 a.m.)
Ms. Sandra Berg, Vice Chair
Dr. John Balmes
Supervisor John Gioia
Mr. John Eisenhut
Ms. Judy Mitchell
Mrs. Barbara Riordan
Supervisor Ron Roberts
Supervisor Phil Serna
Dr. Alexander Sherriffs
Professor Daniel Sperling (via video conference) 
(12:40 p.m. to 3:00 p.m.)

STAFF:
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. Kirsten Cayabyab, Air Pollution Specialist, Air Quality Planning and Science Division (AQPSD)
APPEARANCES CONTINUED

STAFF:

Mr. Oliver Chang, Manager AAMES, ECARS

Ms. Inna Dzhema, Air Resources Engineer, Aerosol Analysis and Methods Evaluation Section (AAMES), ECARS

Ms. Graciela Garcia, Air Pollution Specialist, Innovative Light-Duty Strategies Section, MSCD

Ms. Annette Hebert, Chief, ECARS Division

Ms. Deborah Kerns, Senior Attorney, Legal Office

Ms. Lisa Macumber, Manager, Innovative Light-Duty Strategies Section, MSCD

Ms. Karen Magliano, Division Chief, AQPSD

Mr. Mike McCarthy, Vehicle Program Specialist, ECARS

Ms. Lucina Negrete, Chief, Innovative Strategies Branch, MSCD

Mr. Andrew Panson, Staff Air Pollution Specialist, Innovative Light-Duty Strategies Section, MSCD

Ms. Carol Sutkus, Manager, AQPSD

Mr. Jonathan Taylor, Assistant Chief, AQPSD

Ms. Sylvia Vanderspek, Chief, Air Quality Planning Branch, AQPSD

Ms. Anna Wong, Staff Air Pollution Specialist, Emissions Compliance, Automotive Regulations and Science Division (ECARS)

ALSO PRESENT:

Mr. Will Barrett, American Lung Association (via video conference)

Mr. Todd Campbell, Clean Energy

Ms. Sharon Cooney, San Diego Metropolitan Transit System
ALSO PRESENT:

Mr. Wade Crowfoot, Deputy Cabinet Secretary, Governor's Office (via video conference)

Mr. Steven Douglas, Auto Alliance

Mr. Todd Eckerle, Governor's Office of Business and Economic Development

Mr. Bill Elrick, California Fuel Cell Partnership

Mr. Anthony Fournier, Bay Area Air Quality Management District (video conference)

Ms. Corie Goldman, American Lung Association in California

Mr. Mike Hartrick, Fiat Chrysler Automobiles

Mr. Henry Hogo, South Coast Air Quality Management District

Ms. Bonnie Holmes-Gen, American Lung Association in California (via video conference)

Ms. Christine Kehoe, California Plug-In Electric Vehicle Collaborative

Ms. Azita Khalili, BMW Group

Ms. Michelle Kinman, Environment California

Ms. Christine Kirby, Massachusetts Department of Environmental Protection

Mr. Rob Klee, Connecticut Department of Energy and Environmental Protection

Mr. Tom Knox, Valley Clean Air Now (via video conference)

Mr. Joel Levin, Plug In America

Ms. Amy Lilly, Hyundai Motor Group

Ms. Jerilyn Lopez Mendoza, SoCalGas
APPEARANCES CONTINUED

ALSO PRESENT:

Mr. Michael Lord, Toyota

Mr. Joe Lyou, Coalition for Clean Air

Mr. Bill Magavern, Coalition for Clean Air (via video conference)

Mr. Elliott Martin, UC Berkeley

Mr. George Minter, SoCalGas

Mr. Simon Mui, Natural Resources Defense Council

Mr. Dave Nordberg, Oregon Department of Environmental Quality

Mr. Diarmuid O'Connell

Mr. Michael Pimentel, California Transit Association (via video teleconference)

Mr. David Puzey, Natural Resources Defense Council

Ms. Julie Rege, Global Automakers

Mr. David Reichmuth, Union of Concerned Scientists

Mr. David Rothbart, Los Angeles County Sanitation District

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

Mr. Chris Shimoda, California Trucking

Mr. John Tillman, Mercedez-Benz

Ms. Eileen Tutt, CalETC

Ms. Diana Vasquez, Sierra Club California (via video conference)

Dr. Barry Wallerstein, South Coast Air Quality Management District
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PROCEDINGS

VICE CHAIR BERG: Good morning. This is going to be an exciting meeting today. It is the first meeting that we have held in two separate places. And so we're not only here in South Coast Air Quality Management District's beautiful facility, but we also are live and have Chair Nichols participating, along with other stakeholders. And a little bit later, I understand that Professor Sperling will be joining us in Sacramento. And so it is a dual location meeting.

And with that, I'd like to call to order the October 22nd, 2015 public meeting of the Air Resources Board.

Would you please stand with me and -- for the Pledge of Allegiance.

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

VICE CHAIR BERG: And if the clerk of the Board would 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?

BOARD MEMBER SHERIFFS:  Here.

BOARD CLERK JENSEN:  Professor Sperling?

VICE CHAIR BERG:

VICE CHAIR BERG:  Here.

BOARD CLERK JENSEN:  Chair Nichols?

CHAIR NICHOLS:  Here.

BOARD CLERK JENSEN:  Madam Vice Chair, we have a quorum.

VICE CHAIR BERG:  Thank you very much. So as I stated, we are going to have our meeting today in two separate locations. And as you can imagine, this does require some logistics. So, for example, Chair Nichols will be participating in our vote. Our one item that will have a Board vote. And so I will call for a voice vote here on our dais, and then I will turn to Chair Nichols
for her vote.

That will ensure that our record is clear. We'd like to encourage both locations, anyone who wishes to testify, should fill out a request to speak card, which is available in both of these lobbies, and then return it to the Board Clerk as soon as possible, but certainly before the commencement of the item.

On our agenda today, three last three items are information update. I'd like to explain to my fellow Board members, that because they all tie together, I have requested staff to give all of the presentations. We will do clarifying questions, but we'll keep them very specific. And then we will have testimony and Board discussion at the end of all three items. I think that will allow us to get all the staff's information out on the table and allow us then to react -- respond holistically rather than cutting it up in three different spots.

And so we would like to tell our stakeholder we will be doing testimony for the afternoon in one -- at one point at the end of all three presentations. You can absolutely identify on your speaker card if you have a specific focus for your comments or you can join all of your comments together. But we think this is really a more efficient way for us to be able to take a look at the
exciting updates for this afternoon.

Also, please, speakers, be aware that there will be a three minute time limit. And when you come up, please state your first and last name. Because we don't have the ability here at South Coast to post the speakers on the wall, I have asked the clerk of the Board to be my timekeeper as well as an announce who will be the next speaker.

Please put your testimony in your own words. If you've submitted something in writing, we will get that, but we really appreciate if you can summarize, rather than read your comment. It gives us a little bit more connection with you.

And then for safety reasons, we really want to recognize both in Sacramento for those stakeholders that are there, as well as here in South Coast, the emergency exits. And they are at the rear of the room, fortunately in both locations. And in the event of fire alarm, we're required to evacuate the buildings and immediately go outside. We will then hear and all-clear signal and return to the hearing room and resume the hearing.

Now I think we have enough going on today with two locations so I'm rather hoping a fire drill is not on the agenda.

(Laughter.)
VICE CHAIR BERG: So I'm keeping my fingers crossed.

And so with that, I believe I've covered all the opening comments, and so we'll jump right into our first four agenda items are consent. And we will take them one at a time.

And starting with our first consent item, which is 15-8-1, greenhouse gas quantification determination for the Shasta region transportation agency -- Regional Transportation Agency sustainable plan and their communities strategy. I'd like to ask the Board clerk, are there any witnesses who have signed up to testify?

BOARD CLERK JENSEN: (Shakes head.)

CHAIR NICHOLS: Any there any Board members that would like to move this from the consent agenda?

BOARD MEMBER RIORDAN: Madam Chair, then let me move then approval of Agenda Item 15-8-1.

BOARD MEMBER BALMES: Second.

VICE CHAIR BERG: Great. I will now close the record on this agenda item. And with the record closed, and a motion and a second, all in favor?

(Ayes.)

CHAIR NICHOLS: Any opposed?

Chair Nichols?

CHAIR NICHOLS: I'm in favor.
VICE CHAIR BERG: Thank you.

Motion approved.

The next item on the consent calendar is number 15-8-2, the greenhouse gas quantification determination for Tulare County Association of Governments Regional Transportation Plan and Sustainability Communities Strategy. I'd like to ask the Board Clerk if any witnesses have signed up to testify?

BOARD CLERK JENSEN: No.

VICE CHAIR BERG: Seeing none. Are there any Board members who would like to remove this from the consent calendar?

I will now close the record on this agenda. Can I have a motion and a second to adopt?

BOARD MEMBER GIOIA: So moved.

BOARD MEMBER BALMES: Second.

VICE CHAIR BERG: And seeing a first and a second. All in favor?

Chair Nichols?

CHAIR NICHOLS: Aye.

(Uniform aye vote.)

(Professor Sperling not present)

VICE CHAIR BERG: Motion passed.
And our third consent item is 15-8-3, also a greenhouse gas quantification determination for Kings County Association of Governments Regional Transportation Plan and Sustainability Communities Strategy. I'd like to ask the Board Clerk if any witnesses have signed up?

BOARD CLERK JENSEN: (Shakes head.)

VICE CHAIR BERG: Would there be any Board members who would like to remove this from the consent calendar?

Seeing none. I will now close the record on this agenda item.

Having a chance to review the resolution, can we have a motion and a second for Resolution 15-47?

BOARD MEMBER MITCHELL: I move approval of Resolution 15.

BOARD MEMBER SHERRIFFS: Second.

VICE CHAIR BERG: Thank you.

All in favor?

Chair Nichols?

CHAIR NICHOLS: Aye.

(Unanimous aye vote.)

(Professor Sperling not present.)

VICE CHAIR BERG: Motion passed.

Our final consent item is number 15-8-4, an update transportation conformity budget of the San Joaquin
Valley ozone PM2.5 and PM10 State Implementation Plans.

I'd like to ask the Board Clerk if any witnesses have signed up to testify on this?

BOARD CLERK JENSEN:  (Shakes head.)

VICE CHAIR BERG:  Seeing none. Are there any Board members who would like this item to be removed from the consent calendar?

Seeing none. I will now close the record on this agenda item. Having reviewed the resolution, can I have a motion to move this resolution forward?

BOARD MEMBER SHERRIFFS:  Motion to approve.

BOARD MEMBER MITCHELL:  Second.

VICE CHAIR BERG:  Hearing a first and second. All in favor?

Chair Nichols.

CHAIR NICHOLS:  Aye.

(Unanimous aye vote.)

(Professor Sperling not present.)

VICE CHAIR BERG:  Motion approved.

So our first agenda item for discussion is a proposed modification to the fiscal year 2015-16 funding plan for the Low Carbon Transportation investment from the cap-and-trade auction proceeds, and the Air Quality Improvement Program.

When the Board approves this plan -- approved
this plan in June of this year, $350 million in auction proceed funding for Low Carbon Transportation was still pending before the legislature. So the plan was contingent on the approval of these funds. Last month, the legislature appropriated 90 million of the 350 to ARB while they continue to consider the rest of the administration auction proceeds expenditure for. The proposal we have today, we will hear staff's recommendation for how to spend this first $90 million.

Mr. Corey, will you please introduce this item?

EXECUTIVE OFFICER COREY: Yes. Thank you, Vice Chair Berg. As you heard at the June Board meeting, there's considerable demand for this advanced technology incentive funding. So we realized allocating 90 million of the anticipated 350 million will leave unmet demands. We understand the intent of this initial appropriation of auction proceeds funding is to allow continuing implementation of existing programs.

Based on this, we recommending that the Board direct this limited funding to our three projects operating in an ongoing first-come first-served basis for consumers and delays starting other projects until additional funds are available.

Gracie Garcia of the Innovative Strategies Branch will now give the staff presentation.
Gracie.

(Thereupon an overhead presentation was
Presented as follows.)

AIR POLLUTION SPECIALIST GARCIA: Thank you, Mr.
Core. Good morning, Vice Chair Berg and members of the
Board. Today, I will present a proposed modification to
the funding plan for Low Carbon Transportation investments
and the air quality improvement program that will allocate
ARB's partial appropriation for Low Carbon Transportation
funds.

-o0o-

AIR POLLUTION SPECIALIST GARCIA: As the Vice
Chair noted in her introduction, the 350 million in
proposed Low Carbon Transportation funding was contingent
upon appropriation of funds to ARB when the Board approved
this year's funding plan in June. These funds were for
several light- and heavy-duty vehicle and equipment
projects. However, these funds were not ultimately
appropriated as part of the State's overall budget in
June.

The funding plan also identified 23 million in
AQIP funding that was included in the final State budget.
Today's proposal does not modify the Board's direction
related to AQIP project funds. As a reminder, the
majority of AQIP funds support the truck loan assistance
program, which provides loans to small business truckers. This program is proceeding without interruption.

--o0o--

AIR POLLUTION SPECIALIST GARCIA: In September, the legislature passed and the Governor signed Senate Bill 101, which made appropriations to several State agencies to prevent some programs from halting while budget discussions continue on the remainder of the cap-and-trade auction proceeds. With the legislature currently in recess, staff does not expect action on the remaining Low Carbon Transportation funds until after the first of the year.

As a part of SB 101, ARB received 90 million for Low Carbon Transportation. This initial appropriation is intended to provide bridge funding for existing rebate and voucher projects to avoid implementation disruptions through spring. Today we are presenting our proposal for how to allocate this funding.

--o0o--

AIR POLLUTION SPECIALIST GARCIA: Based on the legislative intent of SB 101, we propose allocating funding to our three ongoing vehicle rebate and voucher projects in order to meet consumer demand. These projects are the Clean Vehicle Rebate Project or CVRP, the Enhanced Fleet Modernization Program or EFMP Plus-Up Pilot Projects...
to benefit disadvantaged communities, and the Hybrid and Zero Emission Truck and Bus Voucher Incentive Project, or HVIP.

CVRP and HVIP have been operating for about five years. Consumer demand remains strong, particularly for CVRP. So this bridge funding is essential to keeping these projects up and running.

The EFMP Plus-Up programs were launched in the South Coast and San Joaquin Valley earlier this year. These programs provide extra incentives to lower income consumers in and near disadvantaged communities who scrap and older vehicle and replace it with a newer or used hybrid, plug-in hybrid, or zero mission vehicle.

Both programs have seen strong consumer interest, and we believe it is important to avoid funding disruptions to build on this initial momentum. The proposed funding total shown on this slide represent a proportional share of each project's full allocation from the Board approved funding plan. These allocations should enable each of the projects to continue through early spring.

We are proposing to delay implementation of the nine other Low Carbon Transportation projects included in the funding plan, pending additional legislative appropriations.
AIR POLLUTION SPECIALIST GARCIA: These next two slides provide an illustration of what would be newly funded and what would be delayed under staff's proposal. As you can see on the light-duty side, we will be able to partially fund CVRP and only one of our disadvantaged community pilots. However, despite the lack of current funding, staff will continue to build upon last year's projects and work with stakeholders to develop solicitations in preparation for additional funding should the legislature act with the subsequent appropriation.

AIR POLLUTION SPECIALIST GARCIA: The story is similar on the heavy duty and freight side, with all projects, other than HVIP, being delayed. While this delayed will result in unmet project demand, implementation of our heavy-duty demonstration and pilot projects from last year's funding plan are moving forward and staff will continue development on the deferred projects in preparation for additional funding being appropriated.

For example, our zero emission drayage truck and multi-source demonstration solicitations recently closed in September and we should be awarding grant shortly. We also have a solicitation open for last year's truck and
bus pilot funding. We expect that solicitation to be significantly oversubscribed, but it includes provisions to fold in additional funds shown on this slide, if the legislature ultimately appropriates that money.

Next, I will go over our proposed implementation schedule for expending the funds.

--o0o--

AIR POLLUTION SPECIALIST GARCIA: In addition to appropriating 90 million, the State Budget Act of 2015 contains a provision that limits State agencies from committing more than 75 percent of their appropriations prior to the fourth cap-and-trade auction of the fiscal year, which will take place in May 2016.

So even though this funding provides a short-term bridge, we cannot access the full amount until seven or eight months from now. We are proposing to apply the 75 percent limit across each project, so initial grants will be for the amount shown on this slide, totaling 67.5 million out of the 90 million.

To better manage the EFMP Plus-Up Program, we propose to limit grants to the two districts with existing programs, the South Coast and San Joaquin Valley. The approved funding plan included provisions to expand the project to other air districts, but we propose to defer this expansion until additional funds are available.
Next, I'll provide a brief status update on CVRP.

--o0o--

AIR POLLUTION SPECIALIST GARCIA: Last year's funding for CVRP was exhausted the first week of October. In order to avoid a waiting list and a delay in rebate processing, the Executive Officer executed a partial CVRP grant with a small portion of CVRP's share of the 90 million earlier this month, using contingency provisions in the funding plan you approved in June.

The three-month delay in Low Carbon Transportation funding will result in an implementation delay of the income cap and higher rebates for low and moderate income consumers.

However, implementation of these new provisions remain a priority, and we will work with our grantee to minimize any delay. With Board approval for today's proposal, we will amend the grant to include the full proportional share of the available funding for CVRP.

--o0o--

AIR POLLUTION SPECIALIST GARCIA: We hope that the 90 million is just an initial appropriation and that we receive additional funds. If the legislature ultimately approves the full 350 million, we will implement the funding plan as approved in June, albeit on a delayed schedule.
However, in the event we receive another partial appropriation, we propose to add a contingency provision that would give the Executive Officer the option to add funding to just the three projects proposed for funding today up to the amounts in the funding plan to meet consumer demand.

If we receive an amount appreciably less than 350 million, we believe this approach is more appropriate than directing small allocations to each of the 12 projects where those amounts would be less than needed for a project to be viable.

Should this occur, we anticipate we would include any deferred projects in next year's funding plan. We will return to the Board for further direction if the best course of action doesn't fall within the funding plan's contingency provisions.

--o0o--

AIR POLLUTION SPECIALIST GARCIA: In closing, we recommend the Board approve the proposed modification to the funding plan to allocate the 90 million appropriated by the legislature last month.

Thank you.

VICE CHAIR BERG: Thank you.

I'll first turn to the Board to see if there's any clarifying questions on staff's...
BOARD MEMBER GIOIA: Just a question. And I'm sure we'll hear from speakers about it. On the EFMP Plus-Up, I understand, in looking at the light-duty project chart, the total funding plan for the program was originally to be 20 million. The partial allocation of 10 million is going to the existing districts, San Joaquin and South Coast.

Given that there's been -- there'd been previous discussion and -- or an intention to expand this program to other districts, I just wanted to make clear and have an understanding that hopefully when the -- we get the full allocation of cap-and-trade funding, that the additional 10 million will be used for the expansion into other air districts, who are anxiously waiting this fund to ramp up their own programs. So, Richard, if you can just sort of --

EXECUTIVE OFFICER COREY: Yeah, that's correct, Supervisor Gioia. In fact, those conversations with the districts are happening now.

BOARD MEMBER GIOIA: Right.

EXECUTIVE OFFICER COREY: So in the event that those monies become available, we'll be able to move forward efficiently.

BOARD MEMBER GIOIA: Right. So the commitment is that 10 million then gets used for the expansions?
EXECUTIVE OFFICER COREY: Correct.

VICE CHAIR BERG: And I would just like to add that in my discussions with staff was to really encourage the districts to continue developing their plans with staff, and be in the position to be shovel ready when those funds become available.

Any other questions?

Then let's go to testimony.

BARCU MANAGER ANDREONI: I'll call the first two, Henry Hogo and Eileen Tutt.

MR. HOGO: Good morning, Vice Chair Berg, members of the Board, and Chair Nichols. So I'll turn my head one way or the other.

(Laughter.)

MR. HOGO: Good morning again. I'm Henry Hogo, Assistant Deputy Executive Officer in the Mobile Source Division here at the South Coast Air Quality Management District. The low-carbon transportation investments and Air Quality Improvement Program are two incentive programs that enable the deployment of advanced zero and near zero mobile source technologies that are critically needed to not only meet long-term climate goals, but more importantly local air quality standards and reduce air toxics exposure.

The South Coast AQMD has been successful in
implementing many of the programs under the Air Quality Improvement Program. And more recently, we have received significant interest in the Enhanced Fleet Modernization Program Plus-Up, or EFMP Plus-Up, element of the low-carbon transportation funds.

To continue this momentum, we need to have sustained levels of funding. It is understandable that your staff is proposing a reallocation of funds given the amount of funding received to date. However, there is a need to inform the State Legislature that attainment of federal air quality standards in meeting SIP obligations are of the utmost importance, and more funding will be needed if non-attainment areas in California are to meet federal air quality standards by their applicable deadlines.

The next item on your agenda, the Draft Mobile Source Control Strategy discussion document will require the fortitude of all stakeholders to make informed decisions to meet air quality standards and climate goals. If we are to succeed, we must educate all levels of government, the private sector, and the public on what will be needed to attain air quality standards for California.

As I mentioned earlier, we have seen a tremendous interest in the EFMP Plus-Up Program. Of the vouchers
that we have issued to date, 75 percent are for the -- are
for either a dedicated battery electric or plug-in hybrid
electric vehicle for residents living in disadvantaged
communities in our region.

There's a strong need to identify sufficient
funding to cover the over 2,000 applications that we have
received to date. If everyone took the $5,000, that's $10
million we already have ready to go.

The SCAQMD alone with our funding partner, the
MSRC, have already approved up to an additional $12
million of local funding to complement up to $20 million
from ARB for the EFMP. We urge the Board consideration of
the funding levels that we currently need to continue this
successful program.

We're not -- we believe you need more than $20
million in total to do this program. So thank you for
allowing us to comment today.

MS. TUTT: Hi. Eileen Tutt with the California
Electric Transportation Coalition. I want to say that
today I'm here representing a much larger group of folks
that you've met that have been before this Board many,
many times, including the auto industry, the utility
industry, the folks that are trying to build the products
that we need to be on the road to meet the State's goals,
as well as consumer groups and trade associations.
I want to first say that I like the size of my head on this split screen much better --

(Laughter.)

MS. TUTT: -- than at your own site. So thank you to the AQMD for allowing this.

BOARD MEMBER GIOIA: But you're in the cross hairs, as Supervisor Roberts pointed this out.

(Laughter.)

BOARD MEMBER GIOIA: He's pointed this out.

(Laughter.)

MS. TUTT: That's okay. I'm used to that.

(Laughter.)

MS. TUTT: So I want to say first to thank you to the staff and to the Board, because you have consistently recognized the importance of incentive programs. You are not the challenge here. We support the staff's proposal, support everything that you've done, you know, in support of these incentive programs. So we wanted to let you know is that we are all with you, and we will work with the legislature to ensure that you get the 260 million that is desperately needed to support the -- all of the goals of the State, the ZEV program, the numerous Executive Orders, the ZEV Action Plan. There's just a lot of different State goals that are supported by this incentive money.

And it's just very unfortunate that the
legislature has not acted on this issue, which was, by the way, in all three budgets, both sides of the legislature and the Governor's budget originally.

So it is extremely harmful to the market that we have this delay. It sends the wrong signal to all those making investments, and all of us trying to meet our regulatory obligations. What it does say to me is that we need to get a continuous appropriation for these programs.

I mean, it's just -- we cannot continue this way. We thought we had it in the bag when we had the support of the legislature and the Governor, but this year has proven that we have to have a lot more certainty, if we're really going to double down, and like Henry Hogo said, meet all of the obligations of the State and of our very important local air districts.

So anyway, thank you. We're here in support. We will continue to work with you, although you're the easy part, but we will continue to advocate strongly in the legislature, and very much appreciate the recognition and hopefully adoption of the staff's recommendation today.

BARCU MANAGER ANDREONI: Julia Rege, then Steven Douglas

MR. REGE: Good morning. I'm Julie Rege with the Association of Global Automakers. Global Automakers represents 12 international automobile manufacturers as
well as suppliers. And in 2014, we represented 57 percent of the California new vehicle market, and 72 percent of the green vehicle sales in the state.

We'd like to thank staff for their proposal today, and just generally recognize the State for its ongoing commitment to supporting zero emission vehicle technology. The Clean Vehicle Rebate Program is critical to California's plans to grow and build the zero mission program, and it's all the more needed now when we are seeing some fluctuations in ZEV sales in this current year.

We support the proposal that the staff has put forward, and we are willing to work and take additional steps as necessary with the legislature to help support additional funding going for. We believe that the staff's proposal does show the ongoing commitment that I mentioned, and we look forward to continuing our work with the staff on this proposal. We recommend that the Board approve the proposal as presented.

Thank you.

MR. DOUGLAS: Good morning. I'm Steve Douglas with the Alliance of Automobile Manufacturers. And first, we'd also like to thank the staff for all their hard work, not just on being flexible and putting together this proposal, but also on the June 30th -- or the June
proposal, which was a comprehensive proposal. We also work in the legislature. We also support the entire program.

And second, I'd like to thank the Board for your continued commitment to this program to zero emission vehicle technology. I've said this before, but California leads the nation. And you've developed and sustained a comprehensive program to support what's a brand new technology, so we're kind of all new here, and this is really important that comprehensive program.

Today we offer 23 different zero emission vehicle technology models, from battery electric, to fuel cells, and plug-in hybrid electric vehicles. And -- but we still have a long, long way to go, and this program is critical in demonstrating the State's support and in building a sustainable market.

Again, we support the staff's proposal and we recommend the Board approve it.

Thank you.

BARCU MANAGER ANDREONI: David Reichmuth, then David Puzey.

DR. REICHMUTH: Good morning, Chair Nichols, Vice Chair Berg, and members of the Board. My name is David Reichmuth, and I'm speaking on behalf of the Union of Concerned Scientists. We fully support the proposed
allocation of the available GGRF funds as -- to keep these viable incentive programs operational. And I agree with the comments of the previous speakers that these funds are vital for programs that are -- that have put over 150,000 electric vehicles on the road in California, thousands of hybrid and electric trucks on the road.

And we also recognize the need for the full $350 million allocation to support all of the programs in the Low Carbon Transportation Program authorized by the Board earlier this year.

UCS is committed to advocate for this funding and will be reaching out to our supporters to contact the legislature and the Governor to make sure they know the need to have these programs fully funded.

We've been making incredible progress in the State and -- to reduce emissions and reduce air pollution, and we don't want to jeopardize this product -- progress.

Thank you.

VICE CHAIR BERG: Thank you. David, before you get started, can I please let our Sacramento contingency we have three speakers that would like to speak on this item. And so after David testifies, we'll be calling on those three speakers in Sacramento. So David, you want to close us up here, please.

MR. PUZEY: Sure. Good morning, Chairman Nichols
in Sacramento and respective members of the Board here.

Dave Puzey on behalf of NRDC.

We support the staff bridge funding proposal. It is a sensible, fair, proportional plan to continue the three ongoing projects without interruption. And NRDC appreciates the efforts staff have made to incorporate stakeholder input.

Of course, the bigger issue that we all recognize is that CARB shouldn't even be facing this budget shortfall. As everyone here knows, and today's draft mobile source strategy will once highlight, accelerating the transition to zero mission vehicles is one of the cornerstones of reaching our climate and air quality goals, as well as protecting the health of millions of Californians especially in disadvantaged communities, many of which are just down the road from here, breathing very polluted air.

These projects, including CVRP Plus-Up, HVIP, and those on hold are the means of making that transition, and are far too important to be left in the lurch. And, of course, I'm preaching to the choir here, but suffice to say, NRDC and our Charge Ahead partners, will continue to support CARB however we can to secure the balance of the 350 million and hope that the legislature will act as soon as possible to fully fund these vital programs.
Thank you.

VICE CHAIR BERG: Thank you. Now, we get to test out this technology. So we're going to turn to Sacramento and we have three people testifying on this item.

MR. MUFFETT: The first speaker is Anthony Fournier.

MR. FOURNIER: Good morning, Madam Chair, members of the Board down in Diamond Bar. My name is Anthony Fournier. I'm with the Bay Area Air Quality Management District. And this morning I'm here to speak in favor of the proposed modifications to 2015/2016 funding plan for Low Carbon Transportation investments.

I'd like to first thank Mr. Corey and his staff for their hard work to make the best out of this challenging situation, given that there's not enough funding to meet the original goals of the 2015/2016 plan.

Now, we support the prioritization of the HVIP funding and the CVRP funding. These programs have proven to be reliable sources of incentive funding for California residents and businesses, and are significantly responsible for the accelerated transition of California's fleet to zero and near zero emission vehicles. I would believe that it's essential that these programs be maintained to help all Californian communities meet their air quality, toxic, risk reduction, and climate goals.
Now, we also support the prioritization of the remaining funding for the continuation of Enhanced Fleet Modernization Plus-Up Program. Now the EFMP Plus-Up Program provides additional incentives to low-income residents in disadvantaged communities that help them replace their older polluting vehicles with significantly cleaner vehicles.

While we recognize that there's currently insufficient funding to build maintain the two existing EFMP programs in the San Joaquin Valley and the South Coast districts, and expand the program into the other districts as outlined in the approved 2015/2016 plan, we'd like to request the Board prioritize a portion of the next available Low Carbon Transportation plan funding to expand the program beyond the initial pilot areas and allow more disadvantaged communities across the state to access EFMP Plus-Up incentive funding.

Now, in the Bay Area, we've been working for more than 20 years to help residents and businesses transition their vehicles to -- over to cleaner technologies. And we've done this through incentives, policies, our education and outreach efforts. Now, we run the largest -- one of the largest scrap programs in the State, having retired over 60,000 vehicles over the last 10 years and have one of the densest electric vehicle charging
networks in California.

Now, we're very interested in partnering with ARB to offer the EFMP Plus-Up to eligible Bay Area residents and are ready to provide local match funding to further leverage the State's EFMP funding. Now, we look forward to continuing our partnership with your staff and support the successful implementation of the Low Carbon Transportation plan investments and the effective allocation of future State funds.

Thank you for your time.

MS. HOLMES-GEN: Good morning, Chairman Nichols and Vice Chair Berg. Bonnie Holmes-Gen, Senior Director for Air Quality and Climate Change American Lung Association in California. Glad to be here to support this initial funding allocation now, so that we can get clean air vehicles and trucks and hybrid and electric vehicles on the road now, but we need to get the remainder of that funding allocation. We're committed to work with you and work with the legislature as soon as they get back.

And I wanted to highlight the broad support, not just from the American Lung Association, but from the broader health community for this GGRF funding as a critical tool to move us forward to our 2030 and 2050 goals, and to get those clean air health benefits.
And we support the whole mix of programs, including the EFMP Plus-Up and the other pilot programs. And I wanted to also say how important it is to get that EFMP Plus-Up expanded to other air districts. So I wanted to add on to those comments. And we would be happy to work with you on educating legislators on the critical importance of all these programs to meeting our immediate health and air quality goals, but also getting us on the road to our long-term climate stand -- climate targets.

We'd like to join the chorus of those who are saying again that it is so important to get a continuous appropriation of Cap-and-Trade funds for Low Carbon Transportation.

So in closing, we support your staff proposal today, and putting the emphasis on the consumer programs and ensuring that there's no lapse in funding and look forward to working with you for -- to get the rest of that 350 million out.

MR. MAGAVERN: Good morning, Vice Chair Berg and Members, Chair Nichols. Bill Magavern with the Coalition for Clean Air. And we support the staff proposal as the best that could be done under the circumstances. We join with the previous speakers in going to the legislature and the Governor and asking them to, as soon as possible, appropriate the remainder of $350 million that ARB has in
its funding plan, and which the Governor and the Assembly
and the Senate all have in their budget proposals.

So it's very disappointing and frustrating that
so little of the money has actually been appropriated so
far. We support all of the projects within this Low
Carbon Transportation category. And of the programs that
are now deferred, most of them are in heavy duty, where we
had a crying need to provide the incentive funding.
That's a key part of the sustainable freight strategy, and
we're looking at grant programs for trucks and buses that
really need the funding that is in ARB's funding plan.

It's also very important as previous speakers
have said to continue the momentum of the enhanced fleet
modernization program. We've seen that demand is strong
in both the South Coast and San Joaquin Air Districts, and
we want to make sure that the drivers who are interested
in those programs actually see the promise of the programs
fulfilled with funding, and also as Supervisor Gioia has
said, that that funding be expanded as soon as possible to
additional air districts.

So we look forward to seeing the full complement
of funding as soon as possible. I hope early next year.
Thank you.

VICE CHAIR BERG: Thank you. Well, that
technology worked great. I want to let the people in
Sacramento know you came across loud and clear as if you were sitting here in the room. So thank you very much for your participation.

And with the witnesses completed, I will now close the record on this agenda item. Turn to my fellow Board members to see if there's any closing comments.

Ms. Mitchell.

BOARD MEMBER MITCHELL: Thank you. I want to say -- talk about the EFMP Plus-Up Program. We rolled it out here in the South Coast, and with a fairly robust response. And it's too bad now to see the pull back on the money that was available for this. The policy, as we recall when we enacted this program a year ago, was to improve the EFMP Program, but also to introduce low carbon vehicles and electric vehicles to lower income communities.

And I'm happy to say we've been extremely successful as Henry Hogo mentioned. Seventy-five percent of the vouchers we issued are for electric vehicles or hybrid electric vehicles or plug-ins.

So -- and we're oversubscribed. You know, we don't have even -- we don't have enough money to actually carry out the full impact of the applications we received. But also recognizing that with the allocation that we thought, that we need to spread that money over these
three important programs. And so I think it's important that we work with the legislature to let them know how important this program is and how successful it's been. I'm mean the legislature had, in fact, asked us to look at spreading these low carbon vehicles, electric vehicles into the low income market. And we are working on it, and we are succeeding at it.

And so I think it's important that we work with the legislature to let them know the success of this, and how important it is to our goals. As you know, South Coast is nonattainment. And so this project is a project that is directed toward cleaning the air, lowering our carbon footprint and also public health over the overriding principle of improving public health. So we have a job in front of us and we need to keep working to achieve it.

VICE CHAIR BERG: Thank you. Very well said. Any other comments? With that, I'd ask the Board to turn their attention to Resolution 15-52.

CHAIR NICHOLS: Ms. Berg?

Chair Berg, may I comment at this time?

VICE CHAIR BERG: Oh, absolutely, Chair Nichols.

CHAIR NICHOLS: I just want to -- thank you. I just wanted to -- I don't know how to wave my hand. Well,
maybe, I should just wave my hand.

(Laughter.)

CHAIR NICHOLS: I just wanted to follow on with Ms. Mitchell's comment and add something, which I think was said, but perhaps not clearly enough at the beginning, which is that the legislature is holding the vast majority of the funds that were a part of the Governor's budget this year to be appropriated from the Greenhouse Gas Reduction Fund.

They, at the end of the session, agreed to forward a portion of those monies, of which the ones that we're talking about here, were a big share. We have no reason to think that they have any policy or political concerns about the program overall. I definitely agree that we should continue to inform them about what a great part we're doing with the funds that we got, and the importance of getting the rest of them.

But I did want to just make sure that people understand that we're not redoing the budget at this point. We are also looking at our investment plan for future years and have some ideas along the lines of the things that several of the witnesses commented on for possibly changing some of the allocations to different programs.

But it seems to me that this use of the monies
that we have now is the lowest risk way to make use of what we have right now to keep these critical programs moving forward.

Thanks.

VICE CHAIR BERG: Thank you. And so Chairman Nichols, so am I correct in understanding that you see this as a timing issue with the Legislature?

CHAIR NICHOLS: Yes. Now, of course, when the -- there are many truisms about what can happen if the legislature is in session. You know, they could do what they want. But, in fact, the proposal that stands is in front of them. And again, we have no reason to believe that it's going to be changed from what was in the budget.

So that's really just meant to say that the proposal that's before us to vote on, which I hope we will pass, is probably the best solution to what we can do in the interim, while we're waiting for the rest of that appropriation to come through. And there's no reason, at this point, to believe that it's in jeopardy.

VICE CHAIR BERG: And it seems to me that from the testimony we've heard today, we have quite a coalition of support to help continue to educate and remind all of us how important these programs are, and how we are spending the money. And with that concerted effort, encouraging the legislature to resolve the timing and put
these funds in work, it seems that we're on the right path.

CHAIR NICHOLS: I absolutely agree.
VICE CHAIR BERG: Great. So with that --
BOARD MEMBER RIORDAN: Madam Chair, if I might, I would just like to say thank you to all of those who have indicated their support today in their testimony.
And I'd like to move forward and approve Resolution 15-52.
VICE CHAIR BERG: May I have second?
BOARD MEMBER BALMES: Second.
VICE CHAIR BERG: All in favor?
Chairman Nichols.
CHAIR NICHOLS: Aye.
(Unanimous aye vote.)
(Professor Sperling not present.)
VICE CHAIR BERG: Motion passed. And thank you, everyone, for your support on this unwavering support. And we'll look forward to working with everybody as we go after the balance due.

Our next agenda item is Item number 15-8-6. It's an informational update on a discussion draft for the mobile source strategy that staff released last month. Over the next 15 years, California will need to build upon its successful efforts to meet not only criteria air --
critical air quality, but also climate goals.

Achieving those goals will provide much needed public health protection for millions of Californians that still breathe unhealthy air and reduce exposure to toxic air contaminants. Meeting California's greenhouse gas reduction targets is an essential part of a global action needed to slow down global warming, reducing our dependence on petroleum, and establishing a more secure energy future.

Given the significance of the mobile source emissions along with the interconnected nature of these goals, staff has developed an approach -- an integrated approach to the mobile source strategy. This is an important effort that will be a foundation for much of ARB's work over the next coming years, and I look forward to the Board's discussion here today.

I can also say that this strategy is also very important for establishing investments and certainty in the marketplace, as certain as one can be when you're asking for lots of innovation. But certainly direction and having understanding as to what we are thinking is really great in the marketplace.

Mr. Corey, will you please introduce this item?

EXECUTIVE OFFICER COREY: Yes. Thank you, Vice Chair Berg. Today's presentation will describe the draft
mobile source strategy which is designed to simultaneously meet air quality standards, achieve greenhouse gas reduction targets, reduce petroleum consumption, and reduce health risk.

Mobile sources are the largest contributor to the formation of ozone, PM 2.5, diesel particulate matter, and GHG emissions in California, and ARB's current mobile source emission reduction programs will reduce NOx and diesel PM emissions over 60 percent from today's levels by 2030, position California to meet the 2020 GHG target, and reduce petroleum consumption. However, large reductions will still be needed beyond these programs to meet air quality and climate goals by 2030.

The draft strategy sets out a vision for transformation of the mobile sector. The strategy will support multiple planning efforts, including upcoming State Implementation Plans. ARB staff has worked closely with the South Coast Air Quality Management District on specific measure concepts that are needed for ozone attainment. Over the next year, additional elements of the strategy will be incorporated into other planning efforts, including the scoping plan update, and the California sustainable Freight Action Plan.

All of these plans will provide continuing opportunity for review and comment by the Board and the
I'll now ask Kirsten Cayabyab of the Air Quality Planning and Science Division to begin the staff presentation.

Kirsten.

AIR POLLUTION SPECIALIST CAYABYAB: Thank you, Mr. Corey.

(Thereupon an overhead presentation was presented as follows.)

AIR POLLUTION SPECIALIST CAYABYAB: Good morning, Vice Chair Berg, and members of the Board.

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AIR POLLUTION SPECIALIST CAYABYAB: In today's presentation, I will provide you with an update of -- I will provide you with an overview of the integrated mobile source strategy for meeting California's air quality and climate goals.

After describing the strategy development process, I will set out the mobile source transformation that will be needed to meet these goals. Finally, I will describe the measure concepts that implement specific elements of the strategy required for State Implementation Plans.

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AIR POLLUTION SPECIALIST CAYABYAB: As you have
heard, California will need to meet multiple air quality and climate goals over the next 15 years, including attaining federal air quality standards for ozone in the South Coast and San Joaquin Valley in 2023 and 2031, and fine particulate matter standards in the next decade; reducing the greenhouse emissions 40 percent below 1990 levels, and petroleum use by up to 50 percent; minimizing health risk from exposure to toxic air contaminants; and, deriving 50 percent of our electricity from renewable sources, all by 2030.

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AIR POLLUTION SPECIALIST CAYABYAB: Mobile sources, and the fossil fuels that power them, are the largest contributors to the formation of ozone, PM2.5, diesel particulate matter, and greenhouse gas emissions. They're responsible for approximately 80 percent of smog forming nitrogen oxide emissions, 50 percent of greenhouse gas emissions, and over 95 percent of diesel particulate matter emissions.

Consequently, significant cuts in pollution for mobile sources will be needed from a combination of cleaner vehicle technologies, fuels and energy sources, and increased efficiency in how people and freight move throughout the State.

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AIR POLLUTION SPECIALIST CAYABYAB: Given the importance of mobile source reductions and the interconnected nature of California's goals, staff took an integrated approach to developing the draft mobile source strategy. This allows us to evaluate how strategies to meet both air quality and climate goals can best complement each other.

Using scenarios, staff evaluated the scope and timing of needed advances in technologies, fuels, and energy sources, and the interplay between measures. This helps guide long-term policy developments and maximize program effectiveness.

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AIR POLLUTION SPECIALIST CAYABYAB: The integrated strategy supports multiple planning efforts that are currently underway. While appropriate elements of the draft strategy will be incorporated into individual plans as they come forward, the strategy provides a framework to link these programs in a coordinated manner.

SIPs for federal ozone and PM2.5 standards are due to EPA next year. The South Coast Air District expects to release a first draft of its SIP later this year. Initial planning is underway for California's scoping plan update to meet the 2030 greenhouse gas reduction goal. The first draft of the scoping plan
update is anticipated in spring 2016 with adoption of the final plan targeted for fall.

Building upon ARB's Freight Pathways Document that was released this past spring, development of the multi-agency California Sustainable Freight Action Plan is underway.

Finally, the Short-Lived Climate Plan Reduction Strategy was released last month and will be considered by the Board in November. This plan, which addresses methane, fluorinated gases, and black carbon relies on black carbon emission reductions achieved from ARB's mobile source program.

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AIR POLLUTION SPECIALIST CAYABYAB: The estimated benefits of this strategy from today's levels are highlighted in this graphic. The strategy would achieve the 80 percent reduction in smog forming NOx emissions required in the south coast by 2031.

Statewide, the strategy would also reduce greenhouse gas emissions from mobile sources by 45 percent and cut the consumption of petroleum based fuels in half by 2030. It will also reduce regional risk through a 45 percent reduction in diesel PM emissions in the south coast.

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AIR POLLUTION SPECIALIST CAYABYAB: Development of SIPs is an immediate focus of ARB's planning efforts, with regional plans for ozone and PM2.5 nonattainment areas due in 2016. Meeting the ozone standards in the south coast drives the scope and timing of emission reduction needs. This includes attaining the 80 parts per billion, 8-hour ozone standard in 2023, and the 75 ppb ozone standard in 2031.

ARB has been coordinating with South Coast staff to conduct air quality modeling, define emission reduction needs and develop mobile source measures for inclusion in the SIP.

Meeting PM2.5 standards in the San Joaquin Valley is also a significant challenge. They attainment strategy for the valley will need to consider the diversity of sources that contribute to PM, as well as the specific time frames for measuring both the annual and 24-hour standards. Air quality modeling efforts are underway, and the further region-specific strategies will be defined through this process.

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AIR POLLUTION SPECIALIST CAYABYAB: As shown in the slide, in addition to achieving an 80 percent reduction of NOx emissions in 2031, the mobile source strategy is designed to achieve 70 percent reduction from
today's levels in 2023.

Implementation of current mobile source control programs will provide a substantial downpayment, accounting for approximately two-thirds of the needed reductions as shown by the height of the gray bars.

New actions in the strategy are designed to provide the remaining reductions necessary for attainment. The height of the blue bars represents an equal share reduction meeting the 70 percent and 80 percent reduction levels respectively in 2023 and 2031.

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AIR POLLUTION SPECIALIST CAYABYAB: With this as background, I'll now move on to describing the technical foundation supporting the strategy developments.

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AIR POLLUTION SPECIALIST CAYABYAB: Development of the integrated strategy relies on three elements. First, the success of current programs provides a blueprint for future policies and approaches.

Second, detailed technology assessments evaluate the capabilities of technologies and fuels that are becoming available today, and advancements that are expected to occur in the near future.

Third, scenario analysis provides the framework for coordinated air quality and climate assessments by
analyzing the types of technologies, fuels, and energy sources that will ultimately need to make up our vehicle and equipment fleets by the end of the next decade.

In the next three slides, I will expand on each of these elements.

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AIR POLLUTION SPECIALIST CAYABYAB: The success of ARB's long-standing programs have relied on a portfolio approach, which combines technology forcing fleet average standards for new vehicles along with cleaner burning fuels, durability requirements and inspection programs to ensure in-use performance, sale requirements for advanced technologies, pilot programs, and incentives to accelerate technology deployments.

This approach has resulted in significant progress in deploying clean passenger vehicle technologies, while setting the stage to transition to zero emission vehicles. This is a model for next steps in the heavy-duty sector, and developments in light-duty zero emission technologies continue to foster advancements that benefit heavy-duty applications.

In all cases, successful strategies rely on actions at the State, local, and, federal level.

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AIR POLLUTION SPECIALIST CAYABYAB: ARB staff, in
collaboration with South Coast, is writing a series of technology and fuel assessment reports for heavy-duty applications to understand technology options. In addition, ARB is partnering with EPA and the National Highway Traffic Safety Administration on review of advanced light-duty vehicle technologies as part of the mid-term review, which you will hear an update on later today.

The assessments identify technology performance and necessary fuels, as well as an evaluation of market readiness, costs, environmental benefits, and current deployment challenges.

The basic conclusion of the technology assessments is that the technologies needed to meet the State's goals are available. Light-duty ZEVs are gaining market share and low NOx heavy-duty natural gas engines in some sizes are being certified. Heavy-duty ZEV technologies are also available in a number of applications, including forklifts and transit buses.

Similar improvements in new engine standards are also feasible for large off-road equipment. And Coupled these technology advancements, cleaner renewable fuels can provide significant greenhouse gas and petroleum reductions.

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AIR POLLUTION SPECIALIST CAYABYAB: Staff used the ARB developed vision model, a multi-pollutant scenario planning tool, to examine the scope and timing of technology penetration along with interactions between technologies, fuels, and efficiency improvements.

The vision model is built from ARB's official inventories and informed by the results of the technology assessments. Scenario modeling is an iterative process, reflecting different combinations of assumptions that change over time and build from the benefits of the existing programs.

The vision model provides unique capability to understand the intertwined nature of different policies. For example, deployment of light-duty battery electric vehicles provides co-benefits across all pollutants, decreases petroleum use, and frees up use of renewable fuels for other sectors.

At the same time, the associated increase in electricity demand must be met with greater use of renewable energy generation. Similarly, deployment of cleaner combustion technologies for trucks provides significant NOx reductions but requires use of renewable fuels to achieve the greenhouse gas and petroleum reductions.

The vision model provides the ability to look at
all of these factors at the same time, including the examples I just described of interactions across car and truck sectors. The vision scenario tool is available on our website to support these efforts.

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AIR POLLUTION SPECIALIST CAYABYAB: So what does the strategic vision for transformation of the mobile sector look like and what will it take to get us there? The next few slides show one possible view. They're not intended to be a specific forecast of the future, but instead one possible mix that meets the State's multiple goals.

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AIR POLLUTION SPECIALIST CAYABYAB: For passenger vehicles, the strategy relies on increased penetration of plug-in hybrid electric vehicles and ZEVs by over 50 percent compared to current programs. As a result, the number of PHEVs and ZEVs on the road would need to increase from just over 100,000 today to over four million by 2030. The amount of renewable energy generation would increase from 27 percent to 50 percent and fuel efficiency would double reaching over 50 miles per gallon.

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AIR POLLUTION SPECIALIST CAYABYAB: For heavy-duty vehicles, combustion technology will continue
to dominate through 2030. The strategy therefore calls for engine technology that is effectively 90 percent cleaner than today's standards. While these technologies are just now being introduced, by 2030 over one million cleaner low NOx trucks will be on the road. Clean renewable fuels would comprise half the fuels burned compared to only eight percent today, and fuel efficiency would increase by over 30 percent.

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AIR POLLUTION SPECIALIST CAYABYAB: Regional population of 4.3 million ZEVs and PHEVs by 2030 will require that these technologies make up 40 percent of new cars sold in 2013. The electrical grade and hydrogen supply supporting these vehicles will need to include an energy portfolio consisting of 50 percent renewable generation.

At the same time, the stringency of fleet-wide emission standards will need to increase to ensure the remaining combustion vehicles are as clean as possible.

For trucks, new engine performance standards that are effectively 90 percent cleaner than today's engine standards need to be implemented no later than 2024. Fuel efficiency standards, such as the phase 2 greenhouse gas regulations, will need to ramp up beginning in 2018. And zero emission technologies will need to be introduced in
targeted applications that are suited for early adoption to foster broader development in the future.

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AIR POLLUTION SPECIALIST CAYABYAB: Along with the widespread use of cleaner technologies and fuels, the strategy relies on ongoing improvements in community design and efficiency improvements in the freight transport system. These efforts will make our communities and cities more sustainable and enhance the benefits of investments in cleaner technologies by reducing growth in vehicle miles traveled through a range of mobility choices and improved land use.

Increased freight system efficiencies are currently being discussed as part of the California Sustainable Freight Action Plan with consideration of new technologies, such as connected vehicles, operational efficiencies, and smart logistics.

In the longer term, advanced transportation systems and new approaches to personal mobility, such as shared vehicles and autonomous vehicles, have the potential to be a transformative element of cleaner, safer, and more efficient transportation system.

Coordination will be needed amongst agencies to position California to take advantage of these emerging technologies.
AIR POLLUTION SPECIALIST CAYABYAB: For the off-road sector, similar transformative actions will also be necessary, including requirements for more stringent engine standards, deployment of zero emission technologies, and increased system efficiencies. Although zero emission technologies are now feasible for some applications, in others, the technologies lag behind the on-road sector. Ultimately, success in on-road technologies will transfer to off-road sectors.

AIR POLLUTION SPECIALIST CAYABYAB: As I described earlier, appropriate elements of this strategy will be incorporated in the various plans for each of the State's environmental goals. The next plans are the SIPs. So I will focus on the mechanisms needed to implement the strategy as part of the State Implementation Plans in the remainder of the presentation.

AIR POLLUTION SPECIALIST CAYABYAB: The federal Clean Air Act outlines specific requirements for SIP control strategies. Under the Act, SIPs must contain enforceable actions and identified emission reductions to
demonstrate attainment of federal air quality standards. ARB staff had been working in close coordination with the South Coast to identify initial measure concepts, implementing agencies, and adoption and implementation time frames.

In addition to these measure concepts, South Coast will identify local mechanisms to achieve complementary reductions from mobile sources. The collaboration with the South Coast has been key to developing a detailed set of measure concepts that lay out a complete set of actions necessary to achieve all the needed reductions from mobile sources in both 2023 and 2031.

The following slides highlight the key SIP measure concepts in each mobile sector.

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AIR POLLUTION SPECIALIST CAYABYAB: For passenger vehicles, staff will evaluate policy mechanisms to ensure the ZEV market continues to expand in conjunction with increasing the stringency of fleet wide emission standards. This will incorporate updates to the Advanced Clean Cars likely compliance scenario as part of the mid-term review.

In addition, ARB and the Bureau of Automotive Repair would continue ongoing evaluations of the Smog
Check program to ensure that vehicles continue to operate as cleanly as possible. Incentives will also be essential to ensure early deployment of the cleanest technologies available.

As you heard earlier, the Clean Vehicle Rebate Program, along with the Enhanced Fleet Modernization Program are mechanisms to increase the penetration of cleaner vehicles in the fleet.

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AIR POLLUTION SPECIALIST CAYABYAB: For trucks, staff is proposing a low NOx standard coupled with in-use performance requirements to reduce engine emissions by 90 percent compared to today's standards. While ARB will move forward on a California only standard, out-of-state trucks comprise over 30 percent of truck activity in the South Coast. Thus, the need for federal action in parallel with California efforts is essential.

ARB staff is preparing a petition to request a new federal standard implemented no later than 2024. Early implementation is needed to deploy the technology through natural turnover. Additional measure concepts would establish requirements to introduce ZEVs in targeted applications where the technology is now becoming available. This includes transit buses, airport shuttle buses, and last mile delivery.
As with passenger cars, incentives will be critical to accelerating the penetration of cleaner technology in the heavy-duty sector. Additional funding beyond that currently authorized will be required to accomplish the scale of transformation needed to meet air quality standards.

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AIR POLLUTION SPECIALIST CAYABYAB: For off-road equipment zero-emission technologies are becoming increasingly available in certain applications. Thus, measured concepts will establish requirements for use of ZEV technologies for forklifts, transport refrigeration units, and airport ground support equipment. An additional measure would develop new engine standards and increase the penetration of electric lawn and garden equipment.

Finally, as with other categories, funding will continue to be essential to incentivize early deployment of these cleaner technologies.

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AIR POLLUTION SPECIALIST CAYABYAB: As with other sectors, continued development of more stringent engine standards will be necessary for ships, locomotive, and aircraft, as they represent an increasing share of emissions in the South Coast. Because these sources are
primarily regulated under federal and international regulatory authority, actions by these agencies are critical, and measure concepts include petitions to EPA to adopt more stringent performance standards for locomotives, as well as provide ARB with authority to regulate non-new locomotives.

ARB would also advocate with international partners for new international maritime organization standards and efficiency targets for ocean going vessels.

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AIR POLLUTION SPECIALIST CAYABYAB: In addition to the concepts that focus on deployment of advanced technologies, measures that account for the benefits of greater efficiencies and require cleaner fuels are further elements of the SIP strategy. ARB staff will assess technology options for increased work-site efficiencies, and advanced technologies, such as connected vehicles, automation, and intelligent transportation systems.

Finally, the proposed fuel measure would establish standards for low emission diesel fuels and require them to comprise a steadily increasing percent of the diesel pool.

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AIR POLLUTION SPECIALIST CAYABYAB: Meeting the 2023 attainment target in the South Coast is an important
public health milestone. Implementation of current programs will provide over 60 percent of the needed reductions. Building from these efforts, measure concepts for each sector outline a pathway for further deployment of cleaner technologies to achieve the remaining reductions.

The 2023 time frame is short, which will require focus on incentive funding to achieve early deployment of these technologies. Over the next few months, ARB will be working with South Coast to identify the needed resources and potential funding strategies. These efforts will need to ensure that investments for 2023 are supportive of technologies for 2031 attainment.

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AIR POLLUTION SPECIALIST CAYABYAB: Implementing the strategy is predicated on early and sustained action. Early regulatory action will help drive the introduction of cleaner technologies and fuels and take maximum advantage of natural turnover. At the same time, as noted a moment ago, identification of funding needs and mechanisms will be an important next step, as well as consideration of the economics of individual sectors. This will require partnerships across all levels of governments and with the private sector to coordinate and align investments to maximize effectiveness.
Multi-state and international alliances can also help build market share for advanced technologies. Efforts to continue to increase consumer acceptance of ZEV technologies and address market barriers will be necessary along with establishing charging and refueling infrastructure.

Finally, we will need to ensure the availability of renewable fuel and energy sources to power the cleaner technologies that will make up future fleets.

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AIR POLLUTION SPECIALIST CAYABYAB: Release of the draft mobile source strategy last month was the start of the public discussion on the strategy. In addition to today's Board meeting, staff held a public workshop in Sacramento last week. Both the workshop and the Board meeting provide the public an opportunity to comment on the strategy and propose measure concepts.

ARB staff will continue to work with the South Coast and San Joaquin Valley to refine the measure concepts. Development of detailed measures for inclusion in the SIP will include identification of specific implementation mechanisms, review of inventory growth assumptions and assessment of funding needs.

The environmental and economic assessments will be completed in parallel with the development of regional...
SIPs. And workshops on the mobile source strategy for the SIP will be held in conjunction with workshops for the SIPs themselves.

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AIR POLLUTION SPECIALIST CAYABYAB: These regional SIPs will be considered by the Board next spring and summer along with final SIP measures. The South Coast anticipates releasing its draft SIP at the end of this year followed by release of SIPs for the San Joaquin Valley early next year. Ozone SIPs are due to EPA in July 2016 and PM2.5 SIPs in October.

In addition to work on the SIP, the mobile source strategy will also be integrated into other planning efforts. Subsequent work by ARB and other State agencies will refine and expand on the needed actions as part of these planning efforts, including the scoping plan update and California's Sustainable Freight Action Plan.

This concludes the presentation today. Staff will be happy to answer any questions from the Board.

VICE CHAIR BERG: Thank you very much for that great presentation. So we do have people signed up here, as well as in Sacramento. Before we go to testimony, I'd like to turn to my fellow Board members to see if they have any comments and also to Chair Nichols to see if she has any opening comments on this item.
CHAIR NICHOLS: Madam Chair, I would like to just perhaps add a little bit of framing to this discussion. First of all, it's been a terrific process so far developing this mobile source strategy and has included many different groups in the discussion, as well as the local districts that are involved here with a need to update the SIP.

Clearly, once again, we are presented with the necessity, as well as the opportunity, to do something beyond what we've ever challenged ourselves to do before in order to address our air quality needs, as well as our desire and the legal obligations to meet both federal air standards and our commitments and standards and requirements for greenhouse gases.

I think it's hard sometimes to keep all the different moving pieces together, because there are so many parts to this. And I think the mobile source strategy is a useful vehicle for allowing people to see how the various different elements fit together, but there may be things that we're missing or there may be new kind of cross-cutting ideas that we haven't factored into this plan.

And so I do think it's important that it be looked at as a document that is open to revision based on both new information from a technical perspective, and
also different ways of framing some of these questions
that may take us beyond what ARB has ever done before. So
I'm just looking forward to the discussion.

Thank you.

VICE CHAIR BERG: And thank you for that framing.
This is cutting edge in all ways. And it is a living
document. And participation from all stakeholders and
being open to the fact that today none of us have a
crystal ball, and we aren't able to definitively say what
we know to be a fact for 2030. And so but without us
being brave and moving forward and collectively looking at
these strategies, we leave people to guess as to where
we're going.

So we do walk a very fine line. And I really
appreciate Chair Nichols framing it up for us as we get
ready for the discussion.

So my fellow Board members, if there's any
clarifying questions, then we could proceed with that.
Otherwise, why don't we proceed to testimony and then
we'll come back for discussion, is that good?

Great. Thank you, Lori.

BARCU MANAGER ANDREONI: Okay. Barry Wallerstein
and Joe Lyou.

DR. WALLERSTEIN: Good morning. It's a pleasure
to be here. I'm Dr. Barry Wallerstein. I'm the Executive
Officer of the South Coast Air Quality Management District. And I want to start by acknowledging the efforts of your staff, Richard, Kurt, and Alberto and the rest of the staff.

This is absolutely, without question, the best coordination we've had on a SIP in the last three decades. And I've been working on them for three decades, so I know what I'm talking about in that regard.

The staff has laid out all the kind of key points from the technical side. We have a series of attainment dates. Several of them near term, 2019, 2021, 2023. So time truly is of the essence.

As highlighted in your staff's presentation, funding is absolutely critical relative to those near-term dates. We have to be able to phase out more of the legacy fleets and move in more of the advanced technologies. And as I've mentioned to your Board on previous occasions, you simply do not get back enough of the GGRF funds for your agency to get, not only reductions in greenhouse gases, but also the co-benefits for local air pollution problems, such as particulates, ozone, or air toxics.

For this plan to be successful, we are going to have to work together with a large number of other stakeholders to inform the legislature about the need for that funding to go to these purposes. And I think
sometimes we are actually a victim of our success. People can see the mountains on more days. Their lungs don't hurt as much on smoggy days, and we tend to lose sight of the fact that your staff, for example, estimates that in our air basin over 4,000 individuals die prematurely each year due to current air pollution levels. And, of course, the thousands of other health endpoints that our neighbors and friends and communities suffer. So it's important that we put together a funding plan and go to the legislature with that.

It's also very important, as your staff was highlighting, the federal sources that are under the sole jurisdiction of the federal government, and where the federal government has most influence on the international sources.

A long, long time ago, when I was on the CARB staff in 1983, I was privileged to help write what I think at the time was the first CARB mobile source control plan. I just asked the director of EPA's mobile source program whether they had a mobile source control plan? And the answer was no.

So we would ask CARB to join us in really requesting firmly that U.S. EPA put together a strategic plan for the sources under its jurisdiction. And as highlighted by your staff, we also need EPA to move
forward on a 0.02 NOx standard for heavy-duty trucks. We need that at the earliest possible date from the federal government as well as here in the state.

So I'd like to just conclude by once again thanking Richard and the staff for all the work that they've put in. We have a few things to iron out between us, but I'm sure we'll get there. And I'm hopeful for the 2016 SIP.

So thank you.

VICE CHAIR BERG: Thank you, Dr. Wallerstein.

And thank you very much for the use of this fabulous facility and your great staff. I know I can speak on behalf of ARB staff, we really, really appreciate this partnership.

Hi, Joe.

MR. LYOU: Hi. Joe Lyou with the Coalition for Clean Air. I'm also one of Barry's 13 bosses, be he covered all the bases for South Coast AQMD, so I don't need to repeat all of that. He did a very good job.

I would really like to compliment the Air Resources Board on stepping up on this measure and really showing the leadership and the responsibility and the commitment to solving the problems that we face with mobile sources. You need to be complimented for other reasons too, including coming up with an integrated plan
that takes a look at all these diverse needs and responsibilities, not only integrated internally within your own planning process, but on an interagency standpoint to and working with South Coast staff and working to figure out how this fits in with, for example, the Governor's Executive Order on heavy-duty freight and the action plan.

These scenarios that you've proposed show again that, you know, our criteria pollutant priorities are pushing us faster and in a more aggressive manner than even our greenhouse gas goals and the requirements that are, of course, very difficult to achieve in and of themselves. But this message that we really need to attain these standards for the national ambient air quality standards in a timely and very quick fashion needs to be pushed and emphasized again and again, so that everyone understands that message.

I would ask that you take a look at this document and this commitment in a way that would prioritize the roll-out of these mobile source emission reductions in our most heavily burdened communities. One way to do that, of course, is to focus on the heavy-duty trucks and emission reductions that can happen, also the off-road emission reductions. But also, you can increase the zero emission miles for that last mile delivery, which you're proposing,
which is a great measure. But you could also focus that in the most heavily burdened communities initially too.

With regard to the ultra low NOx standard, it's great that you're proposing to move forward with that. We know that you are considering petitioning U.S. EPA on that item. I would like to express our support for that and the offer to assist in any way, shape, or form possible to get EPA to work on that. We don't get to attainment without EPA getting trucks from a federal level.

I do have a question, I think, that has to do with the facility cap measure that was in the sustainable freight pathways report, because it's not incorporated into this in any way, shape, or form. Although I would like to see that it is compatible, and it is part of the plan process. So I know that you have data needs to be met when it comes to facility cap issues with regard to port and freight sources, but I was wondering how this mobile source mitigation measure will fit in with that proposed facility cap concept.

And the last thing, I mean, just please urge your staff to carry on with this. They're doing a wonderful job. Thank you.

BARCU MANAGER ANDREONI: Corie Goldman and Julia Rege.

MS. GOLDMAN: Good morning. I'm Corie Goldman
with American Lung Association in California. The American Lung Association in California appreciates the solid analysis given throughout the document. We can clearly see the scope of the challenge we face to cut the harm cause by -- thank you -- by our transportation sector and reliance on fossil fuels.

Transportation emissions place significant public health burdens on California residents, and especially our children and other vulnerable communities. Pollution from our cars, trucks, buses, and other mobile sources contribute to delayed lung development in children, asthma attacks, lost work and school days, hospitalizations, and early deaths.

Fortunately, we believe this document can move us on a pathway to a clean air future. We have a few comments on the document for you today and will continue to work with you and the staff going forward.

First, we appreciate the focus on increasing zero emission technologies to reduce NOx emissions greenhouse gases, and petroleum dependency. We support planning now to expand zero emission technologies across the passenger fleet freight systems and off-road applications. Electrification is key to our clean air goals and should remain the focus of our -- ARB's planning efforts.

Along with new engine technologies to clean our
air, we know we must also maintain a focus on reducing the miles we drive, expand healthier mix of fuel choices, and achieve our renewable energy goals.

While ARB is driving the discussion, we know that all sectors of the government need to mobilize to ensure a clean air future. ARB State agency partners and the legislature need to coordinate to move the vision forward with strong policies, investments in electric drive technologies.

Local elected officials should be leading their communities to be more sustainable, walkable, transit friendly, and ZEV ready. The federal government needs to support California's effort with a national low NOx standard for trucks and other policies that move us forward to our clean air goals.

The Lung Association is ready to partner with you to make this happen and believe that our outreach is a key to this effort. We look forward to working with you as this discussions moves forward. Thank you for the opportunity to speak today.

MS. REGE: Hi. Good morning again. Julia Rege with Global Automakers. So I actually want to start today by outlining three sort of overall themes that relate to this document as well as some of our other comments today.

First, that Global Automakers and our members
are invested in the market and in the long-term goals of improving greenhouse gases, fuel economy and air quality.

Second, that the regulations that are already in place through 2025 under the Advanced Clean Car Program are challenging.

And third, targets alone don't create markets. Flexibility in the regulations and market enablers are necessary as we strive for these near- and long-term goals.

In regards to the draft mobile source strategy document, we'd like to thank staff for all of the work -- hard work they've done on it. We found the document to be helpful in understanding the impact of the current regulations we're complying with, as well as the potential for future rule-makings. We really appreciate ARB's effort to involve automakers in the discussion and the long-term planning process. And we believe the document shows the future is no less challenging for today as -- or compared to today as well, and that ongoing flexibility and many technology options, including gasoline, hybrids, and zero emission vehicles will be a necessary part of the future going forward.

While we understand this document is only a draft, we do have two points we want to highlight. And the first is we believe it's really important to note it's
early in the process for setting post-2025 regulations. And this document is not intended to do that, but we do want to just caution that we have a mid-term review coming up in the next year that is going to look at the feasibility of 2025, and that this document shouldn't inadvertently make any assumptions about the outcomes of the mid-term review.

And then the second is that the modeling represents some potential scenarios, but it doesn't represent all scenarios. So, at this time, the work doesn't consider feasibility and it's not a regulatory road map, but instead the modeling exercise is based on a long-term goal and then looking back at what those goals are that are needed to reach it in the long term.

So we don't want the standard -- the document to be misinterpreted as standards or what vehicle volumes may be in the long term. There's a lot of additional work that has to go into the regulatory process for looking at that.

Just, for example, the document shows a jump from an 18 percent ZEV market in 2025 to 40 percent in 2030. And again, this is back calculated from a long-term goal, and it hasn't yet looked at feasibility as part of that process.

So the document notes that regulations would --
you know, regulatory processes would begin in 2020. And so we're certainly committed to working through that process. And we note that feasibility costs, market acceptance, and all of those other factors that are really important in setting standards are going to be an important part of that discussion in 2020.

We understand this document is going to evolve over time, and that our ongoing input and collaboration is going to be necessary to making sure the document is as good as it can be. And we look forward to working with the agency.

Thank you.

BARCU MANAGER ANDREONI: George Minter and Jerilyn Lopez Mendoza.

MR. MINTER: Thank you. Madam Vice Chair and Madam Chair, members of the Board, my name is George Minter. I'm VP at SoCalGas. And we'd really like to thank the agency, the staff, as well as the regional agencies that we've also been working with. And we really appreciate the focus on public health on addressing air pollution, and specifically the challenges of NOx reduction here in Southern California, and not just L.A., but also the Central Valley, that we see reflected in the mobile source strategy document.

At SoCalGas we focus on emissions. We see that
as our goal. We see those goals embodied in law. And whether it's reducing ozone or particulate matter for public health or whether it's reducing GHGs for global health, that's our focus. Nobody is asking about a compromise or a change in those goals, but we do think that CARB should take advantage of the best that innovation can deliver. And it shouldn't limit options, but instead it really should welcome the options and the technology advancement that can occur and that can move us to the goals -- to the emission goals.

We note that the CARB mobile source strategy that's focused on NOx control is kind of divided in two periods, now to 2030, and then from 2031 to 2050. For the largest NOx contributor, the heavy-duty sector, CARB relies on a low NOx engine strategy in the first period, but then that strategy pivots to a zero emission tailpipe standard for the second.

We believe that the strategy that relies on a zero tailpipe vehicle that's expected to be implemented a decade before the technology assessment by that same agency, that that's perhaps a significant technological risk, and we think an economic risk. We think that the time frame that's being proposed here really undercuts the investment return that we need to pursue the low carbon and the low NOx half way in the first phase. And then
that would jeopardize the entire low NOx strategy overall.

We see the same kind of problem in the alternative clean transit rule. A mandate for an all electronic or a fuel cell bus by 2040 really means that no 0.02 or near zero natural gas engine, for example, running on renewable natural gas that's cleaner than an electric bus would actually be able to be purchased after 2028, if you account for the capital life of the vehicle.

We think that this then frustrates the development of renewable natural gas, and its deployment in transportation. It also frustrates the return needed from the investment in the 0.02 of engine.

Essentially, it means that the 0.02 engine that's already developed and certified by Cummins for the transit sector and the one that we expect in the next year for the heavy-duty truck sector will become a stranded investment. We think the more prudent plan, one that has lower risk, would be to consider an addition to an electrification pathway, a low carbon gas pathway. A pathway that extends the low carbon strategy -- excuse me, the low NOx strategy from the first period into the second period, moving natural gas into transportation immediately reduces NOx, creates market pool for the development of renewable natural gas that displaces fossil gas, that then achieves the same or even a lower carbon intensity than
VICE CHAIR BERG: And, Mr. Minter, could you go ahead and wrap-up, because your --

MR. MINTER: In sum, I think it's really important that we focus on this low carbon strategy, that a low carbon pathway join the electrification pathway, so that we are able to provide a pathway for NOx reductions through 2023 and continue those NOx reductions through 2032, as well as achieve the GHG reductions we need in 2030, and also in 2050.

Thank you.

VICE CHAIR BERG: Thank you.

MS. MENDOZA: Good morning, Chair Nichols, Vice Chair Berg, members of the Board.

(Timer buzzer sounded.)

MS. MENDOZA: I just got started.

(Laughter.)

MS. MENDOZA: That's not fair.

VICE CHAIR BERG: That's what happens when your colleague goes over, you know.

(Laughter.)

VICE CHAIR BERG: It's a deduction thing.

(Laughter.)

MS. MENDOZA: Oh, wow. I'm going to have to speak really fast.
Thank you. He's Got Duncan Donuts coffee. Lucky guy.

So Board members, Executive Officer, and staff, I want to welcome you to Southern California for those of you who are visiting. It's a beautiful day to be here.

I have two main points I want to share with you regarding the mobile source strategy that's under discussion this morning.

Firstly, the California Office of the Environmental Health Hazard Assessment, or OEHHA, issued a revised guidance for calculating cancer risk in March of 2015. Cancer risk estimates for residential exposures increase and higher cancer risk estimates affect public noticing, CEQA significant determinations, permitting, et cetera.

In the freight sector, switching from natural gas -- switching to natural gas provides opportunity to lower cancer risk from non-road sources. For example, in analysis that we completed using the new OEHHA cancer risk calculations, we found a hypothetical locomotive example, that natural gas substituted for diesel results in 107 times lower cancer risk, and in a hypothetical ocean-going vessel example, natural gas substituted for diesel resulted in 314 times lower cancer risk.

We hope you take these findings into

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consideration when evaluating the off-road reduction measures for locomotives and ocean-going vessels located at the pages 79, 81, and 83 of your draft document.

I also want to quickly address the Advanced Clean Transit, or ACT, proposal, which is also included as part of your draft mobile source strategy, details at page 66.

The objective of ACT is to require 100 percent purchase of zero emission tailpipe transit buses by 2030, and full zero emission transit fleets by 2040. We've submitted comments where we have expressed concern about the lack of cost estimates for the capital to purchase the buses, as well as the infrastructure to fuel and charge those buses.

But we're also concerned that such a strong technology mandate for the transit because sector is a source of only two percent of statewide NOx emissions from mobile sources. And it is sector that contributes less than one percent of greenhouse gases statewide for mobile sources. So we would like the staff and the Board to provide us with a rigorous economic and cost benefit analysis to this particular mobile source strategy to determine if it indeed is the correct place to what be -- to invest what may be millions or even billions of dollars for such a small reduction of NOx and GHG emissions.

I have brought copies of our written ACT
comments, which we previously submitted, but this is to share with the Board and the executive team who may not have seen them. And I thank you very much for your time.

BARCU MANAGER ANDREONI: Todd Campbell, David Reichmuth.

MR. CAMPBELL: Good morning, Madam Vice Chair and Madam Chair in Sacramento. My name is Todd Campbell representing Clean Energy. And thank you so much for the opportunity to testify on this really important matter.

We strongly support staff's efforts to develop a mobile source strategy. We also strongly agree that significant NOx, PM2.5, and the greenhouse gas emission reductions are required to meet federal and State air quality goals.

We also strongly support the Air Resources Board's call to action to accelerate low NOx, electrification, and renewable fuel strategies that meet these daunting challenges.

We do recommend that the following modifications be put forward for your consideration. First, and I think the Chair mentioned it, and was right -- was very spot on in her comments, the report's framing, or narrative, is very important. We would ask that staff focus on the goals or milestones to achieve clean air, and allow technologies that can achieve these goals work -- to work
together. This would support business confidence to
further develop technologies, such as the Cummins Westport
genesis that was just mentioned, which is about 50 percent
cleaner than the current California grid mix, when you
look at NOx emissions.

That's a tremendous technology advancement, and
that's something that this plan should acknowledge and
accelerate. It would also encourage further development
of the renewable fuels, like renewable natural gas that
currently makes up 50 percent of all the fuels being put
into natural gas vehicles today under the Low Carbon Fuel
Standard.

We also believe that the vision document or the
vision model that's being used should consider cost
effectiveness. Extremely important, given the penetration
or deep penetration expectations of the plan, but also
look at historical adoption rates of advanced
technologies, not just adoption of new fleets, but
adoption of advanced technologies. I think it's going to
be really important for us to get this right, especially
with 2023 and 2031 looming over our shoulders.

I also recommend that we have significant
investments -- or significant investments will be required
to make this transformation, and it is a significant
transformation.
The focus -- more focus should be placed on the heavy-duty sector to ensure deep penetration of low NOx technologies, as well as electrification technologies as they develop. But I think most importantly, this sector is the largest source of NOx for both the South Coast and San Joaquin Valley, and yet they only make up a fraction of the vehicles on the road. They are also a significant source of diesel particulate matter, as my colleagues from SoCalGas, Jerilyn Mendoza, mentioned the enormous carcinogenic risk associated with these engines.

Fourth, we also support the certification for innovation technologies to apply to all advanced technologies, low NOx, electrification, et cetera.

And then fifth, heavy-duty mobile source measures being recommended within the report that impact transit, airport shuttles, and last mile fleets should embrace all advanced technology strategies to ensure timely compliance with federal and State air quality rules.

The draft mobile source strategy states that it will regulate low NOx technologies, but incentivize zero emission vehicle technologies. And I think to conclude that we should embrace all technologies to get us to where we need to go.

Thank you.

VICE CHAIR BERG: Thank you.
DR. REICHMUTH: Hello again. I'm David Reichmuth speaking on behalf of the Union of Concerned Scientists.

First, I want to thank the ARB and the staff for developing the comprehensive plan that builds upon the past successes and aims to meet the combination of targets with air quality challenges, climate targets, and oil savings targets that the State has committed to achieving.

Cleaner combustion technologies, electrification, lower carbon fuels, and strategies to reduce VMT are all essential components of this plan. And the combination of incentives and regulations and infrastructure development will be needed to be successful.

As the plan development moves forward, there are several areas of the plan where greater clarification is needed and additional strategies should be considered. First, large portions of the expected emission reductions come from strategies characterized as further development of cleaner technologies for each source category.

These strategies are the least detailed, and rely significantly on identifying new sources of incentive funding. We urge the Board to further detail these approaches and examine the funding needs and sources to achieve the desired emission reductions. We also strongly support the efforts to develop and deploy heavy-duty electrification technologies as part of a comprehensive
strategy, and support the inclusion of several categories
of vehicles, including transit and last mile delivery
trucks.

We also urge the Board to identify additional
heavy-duty categories for deploying zero tailpipe emission
technologies in the 2020 to 2030 time frame. For example,
drayage trucks are an emerging application for electric
drive. And development is currently being supported
through ARB's funding programs.

Providing a clear indication of the intent to
move towards electrification in this category, along with
identifying metrics and milestones for moving forward with
regulatory action would provide more certainty for
technology developers and fleet owners and encourage
greater investment.

ARB correctly notes the importance of
electrification to our long-term transportation emissions
and petroleum reduction goals and focuses on measures to
develop and deploy various vehicles and equipment. Given
the critical nature of deploying infrastructure alongside
electric vehicles, we encourage the plan to explicitly
capture both the vehicle and infrastructure measures
necessary to achieve the expected emissions reductions.

Finally, we note that the baseline scenario
anticipates over 15 percent ZEV sales in the light-duty
auto sector by 2025, and the cleaner technologies in fuel scenario increases the sales to 40 percent by 2030. Due in part to credit oversupply and bank credits, the ZEV regulations will not ensure that those targets will be met. The current ZEV regulation would need to be strengthened to provide some certainty that the ZEV vehicles will be available in the numbers and diversity of models needed to meet the plan's sales goals.

Thank you.

BARCU MANAGER ANDREONI: David Puzy and David Rothbart.

MR. PUZEN: Good morning again, Madam Chair and the Board. David Puzy again on behalf of NRDC.

We believe the draft provides a well crafted basis for a comprehensive strategy to meet the State's air quality climate goals. And thank you CARB for continued strong leadership. It's also been real helpful to be able to examine the data from the new vision model.

NRDC believes this is a great start towards meeting the State's 2020 greenhouse gas emission targets. But in order to continue the progress and meet attainment goals, we do indeed need to prepare to extend a strong set of programs around clean cars, sustainable freight, and low carbon fuels beyond the 2020 and '25 time frames.

As my colleagues Simon Mui will speak on the next
agenda item, we also agree about the central importance of
accelerating the passenger vehicle fleets transition to
zero emission technology and expanding the charging
infrastructure.

The ZEV program needs to be shored up to deliver
the vehicle targets outlined in the strategy. But with
the right incentives and standards, we are confident that
they can be achieved.

On sustainable freight, NRDC supports the low NOx
ingine efforts to clean up the existing fleet together
with the cited transition strategy for early adoption of
medium-, heavy-duty and off-road electrification.

We encourage CARB to continue pushing EPA to move
further and faster on the low NOx freight strategies to
capture out-of-state vehicles, as well as other sources,
like aviation and locomotives. NRDC agrees we do need an
all-hands-on-deck approach across the agencies, air
districts, as well as federal and international partners.
And we will certainly support efforts to collaborate
behind meeting the State goals.

The last two points, we recommend that CARB put a
greater emphasis on the SB 375 toolkit to further reduce
the need to drive. This was one area of the draft
strategy that could have been further strengthened, and
since early adoption is also important in areas such as
land-use planning.

NRDC hopes that the timeline proposed in the draft for implementing VMT reductions can be expedited. Also, in the spirit of focusing on real-world emissions performance, we encourage CARB to use this process to further examine the impact of the dirty emissions from unregistered vehicles. We appreciate the open discussion and the great responsiveness we've had from stuff thus far, and look forward to working with you further to develop the draft strategy.

Thank you.

MR. ROTHBART: Madam Chair, Board Members, good morning. I'm David Rothbart. I'm with the Los Angeles County Sanitation Districts. We support the draft mobile source strategy. As you're aware the South Coast Air Basin is in extreme nonattainment for ozone. And mobile sources are responsible for the vast majority of emissions which form ground-level ozone.

It's important to note that South Coast AQMD has done an excellent job in controlling stationary sources, and there is no remaining low-hanging fruit available to reduce emissions from stationary sources. As a result, mobile sources must contribute their fair share to help us achieve clean air.

However, the mobile source strategy will be
costly, so it is very important that adequate funding be provided to make this vision for clean air a reality. For example, we recommend that cap-and-trade funds be directed towards the implementation of cost effective emission control strategies.

Thank you very much.

BARCU MANAGER ANDREONI: Chris Shimoda, Steven Douglas, and then the last one is Sharon Cooney.

MR. SHIMODA: Good morning, Chair Berg and Chair Nichols in Sacramento. Chris Shimoda, California Trucking Association. We'd first like to thank staff for the hard work that's gone into this discussion draft. As you know, this is really just the beginning of a process. And so keeping that in mind, we'd just like to offer some brief high level comments to inform the work to come.

So first, we'd like to stress the importance of harmonization. We'd urge you to continue your work with the federal EPA, as well as local air districts like the South Coast to ensure that mobile sources are not faced with a patchwork of different State, federal, and local requirements.

And second, as staff noted in the written report, over 77 percent of the needed reductions for 2030 for heavy-duty sources come from existing measures. And of all the folks in attendance here today, I don't think I
need to tell the Board what was asked of truckers to get those reductions.

    Natural turnover to lower NOx engines, plus incentives that we already have secured, will get us up to nearly 93 percent of the needed reductions. And so further deployment to get to that last seven percent, which will require both more low NOx engines, as well as selected introduction of zero emission technology is going to require new incentive dollars, which we have not yet identified.

    And so we will commit to working both with your staff and other stakeholders to both identify and secure those funds moving forward. And we look forward to the discussion.

    Thank you.

    MR. DOUGLAS: Good morning, Vice Chair Berg, and Chair Nichols. I'm Steve Douglas with the Alliance of Automobile Manufacturers. And we appreciate, like everyone else, staff's work on this and their willingness to be inclusive and include all the different stakeholders, including the automakers.

    We intend to work with the staff going forward on this as they revise and finalize the mobile source strategy document.

    For my part, I'd like to I guess kind of frame it
and just point out that the mobile source strategy document is important. However, it's not a roadmap. It's not a starting point. It's kind of a mathematical exercise, or what I'd consider a top-down analysis, where you start with the answer, and you work your way backwards.

ARB sets regulations. They set the standards based on a bottom-up analysis, where you start with where we are today or at some point in the very near future. And then you add regulations, you build up regulations based on what's technically feasible, what's cost effective, considering the likely technological advances, the cost reductions, the market acceptance, et cetera.

This bottom-up approach, this is the reason that ARB has the reputation -- the sterling reputation it has because of the bottom-up analysis.

And so I just want to clarify that the scenarios identified in the mobile source strategy document they do not reflect staff's conclusions on what is technically feasible or cost effective. That analysis, those conclusions will require thousands of hours of work and technical and economic analysis that we'll do for the 2022 through 2025 standards next year, as part of the mid-term review. And then for the 2026 and beyond standards, that analysis of work, that bottom-up review will be done as
part of the 2020 rule-making, and that's identified in the scoping plan.

So again, this strategy document is very important, and we look forward to working with ARB on this document, as well as on the future rule-makings.

Thank you.

VICE CHAIR BERG: Thank you. And as Sharon comes up, I'd like to give a heads up to Sacramento. We have three speakers that will be testifying or are witnesses on this item. So we want to give you a heads up. After Sharon, Sacramento is going to be ready to go. Thank you.

MS. COONEY: Good morning. My name is Sharon Cooney, and I work for the San Diego Metropolitan Transit System. I'm pleased to be here today. I was very interested in seeing the mobile source strategy documents come out.

I'm here really just to speak to one element of that, and that would be in chapter 6 the advanced clean transit measure. We appreciate the process that has been going on. We have been in conversations with staff at ARB for some time on this issue. We were a bit alarmed to find that it is being moved down the road as quickly as it is, and no pun intended on that.

(Laughter.)

MS. COONEY: But we did feel we had to come here
today to talk about this on behalf of our customers and
the communities we serve.

As a partner with CARB, we have been early
adopters and innovators at MTS. We've been aggressively
pursuing clean fuel strategies at a considerable cost to
our agency within our tight budgetary constraints.

We continue to grow our extensive all electric
light rail system. We've converted 86 percent of our
heavy-duty buses to CNG, and we consider that we will be
finished with that process in the next year. We've
invested in hybrid technologies, and are moving forward
with a gasoline conversion to propane on our mini-bus
fleet. And that's going to occur next year.

Finally, by next year, our entire CNG fleet will
be on biogas, a renewable source of energy. However,
we've been giving careful thought to the zero emission bus
purchase requirement that's being proposed by staff, and
we really do believe that there's unintended consequences
that this Board should be aware of. The proposal is to
require transit agencies to purchase these electric
vehicles, and to use that to spur the technology in the
marketplace, but we really don't believe that the
technology, as it stands today, is ready for all the
applications that an urban transit system really needs to
have in place.
I have a letter that I've distributed -- or given
to the clerk. I hope you'll read it. It's got a lot of
detail in it. I won't get into that right now.

But I think one of the biggest unintended
consequences is how are we going to pay for this
requirement? And some of what I've detailed in my letter
is to show you the consequences in 2018 of what that
requirement will be in San Diego.

One of the things I want to highlight is that our
ridership is extremely transit dependent, very low income,
and very disadvantaged and a lot of disabled. And those
are the people who would be hurt by the significant
service cuts we'd have to put in place.

So in conclusion, I do ask that -- I do want to
stress we're committed to work with CARB on this advanced
clean transit strategy, but I think it should be results
based, rather than a technology based type of program.

And we'd very much like it if you'd put together
a transit advisory team to really work with CARB to try to
come up with some performance measures.

Thank you.

VICE CHAIR BERG: Thank you. And now we'll turn
to Sacramento. We have three witnesses testifying in
Sacramento.

MR. MUFFETT: Okay. First, we're going to hear
from Tom Knox, followed by Michael Pimentel, followed by Bill Magavern.

MR. KNOX: Vice Chair Berg, Chair Nichols, members of the Board, I'm Tom Knox. I'm with Valley Clean Air Now. We manage a light-duty small repair program on behalf of the valley air district. And I wanted to comment this morning on something that's missing from what's otherwise a very comprehensive document, is a look at the older vehicles that are likely high emitting, that have evaded controls to date. We see this as a major opportunity to reduce criteria pollutants, to improve the fleet overall as quickly as possible.

But what's missing right now is data to support the number of the vehicles out there, the emissions that they have and the pattern they're following to fall out of vehicle registration. We would request that staff starts to look at this issue. We did submit some written comments this morning with some data analysis done by Dr. Jeffrey Williams at UC Davis.

In the valley, we're seeing about 4,000 vehicles per year that are unregistered. We have an analysis in here of the 1,800 that we did repair. Last calendar year, it showed that there are a lot of miles being driven by some very, very dirty cars. We believe that the same pattern is true in any SB 535 zip code statewide. And it
would be a great addition to the mobile source plan to start to look at how to address this issue.

So thank you.

MR. PIMENTEL: Madam Chair and Board members, Michael Pimentel here today on behalf of the California Transit Association.

I want to start off by thanking ARB staff for presenting under evolving strategy for meeting the State's air quality and greenhouse gas emission targets, reducing petroleum consumption, and decreasing the health risk associated with the transportation sector.

California's transit agencies support these goals and stand ready to assist the State to ensure that they are achieved. However, we've come before you today to highlight our concerns of the specific component of the strategy before you, and that is the advanced clean transit regulation, which is summarized on page 66 of the mobile source discussion draft.

The proposed advanced clean transit regulation would require transit agencies across the state to purchase ZEVs beginning 2018 and would require a transition to 100 percent zero emission bus technology by 2040. Now it's true that ZEV technology has made considerable gains since the fleet rule for transit agencies was first adopted in 2000. And for that reason,
we think it's appropriate that ARB staff revisit the role that ZEV technology may play in its mobile source strategy.

Now, for us, we've got a number of concerns however expressed by many of our agencies, San Diego MTS being one of them, with regards to the cost, range, and reliability of ZEV technology relative to conventional technologies. And we question whether the mandate contained in the proposed regulation could be applied broadly without disruption to critical transit service. And as you heard from a previous speaker, that's largely a function of funding.

Now, we've expressed these concerns with the ARB staff across various formal communications, as well as in private meetings, including with Deputy Executive Officer Alberto Ayala, and we've seen some modest improvements to the proposed regulation's framework. And we hope that these inroads foretell the finding of more common ground.

As the proposed regulation moves forward, we welcome the opportunity to share with each of you our perspective on the regulation, including our understanding of its benefits and challenges. We look forward to working with you and your staff to advance our common goal of cleaner air for Californians, and hope to find a collaborative way to increase the adoption of ZEV
technology without placing undue burden on transit
agencies. Thank you so much.

MR. MAGAVERN: Good morning again. Bill Magavern
with Coalition for Clean Air. I'm going to add some
comments to the ones that Joe Lyou has already made, since
you've given us the opportunity for this north/south
double team, we'll take advantage of that.

(Laughter.)

MR. MAGAVERN: First of all, when it comes to the
light-duty fleet, we strongly support the proposed
measures to tighten the standards for both LEV and ZEV.
These have been very successful programs, and we need to
continue the progress to get the necessary emission
reductions.

Secondly, when it comes to the heavy-duty fleet,
we can make a lot of progress and fairly quickly with the
proposed clean diesel standards, which can reduce
particulate matter, NOx, and also carbon dioxide. So we
strongly support that measure concept also.

And then speaking of diesel, the Volkswagen
scandal gives us a very clear and alarming demonstration
of the importance of using on-road testing to check the
lab results that are reported, and also the importance of
strong enforcement. So we urge you to include in the SIP
strong enforcement measures, and also make sure that you
have in-use on-road testing to actually achieve the
emission reductions that we're expecting to get from these
measures.

And also along those lines, I want to second the
comments of Tom Knox from Valley CAN that we should be
looking to the unregistered vehicles and adopting measures
to retire, or at least to repair, the dirtiest of those
unregistered vehicles to make sure that we're getting the
real-world emission reductions, particularly in areas that
have got the worst pollution, like the San Joaquin Valley
and the South Coast Air District.

Thank you.

VICE CHAIR BERG: I think on my notes I see that
there was supposed to be three speakers, so I want to make
sure I'm not cutting anybody off? Are we all done in
Sacramento?

MR. MUFFETT: Yes, that was all.

VICE CHAIR BERG: I see a yes. Okay. Great.

Well, thank you very much for that participation. This is
an informational item only, and so there's no need to
close the record.

But with that, this is a very important process
and -- that we're going through and I'm sure my fellow
Board member will have some comments. And so who would --
John, you want to start?
Thank you.

BOARD MEMBER EISENHUT: Thank you, Vice Chair
I just had a question primarily of staff. As Chair Nichols said, this is a -- this is a issue with many moving parts. I noted in the presentation that primarily the references were to South Coast. And I didn't hear testimony from other air boards nor see specific references to the involvement of other air boards. And I just would like an indication, because of the need for State coordination, that that coordination is being conducted.

DEPUTY EXECUTIVE OFFICER KARPEROS: Yes, Mr. Eisenhut, it is. The reductions in the 2030 time frame we expect to be driven primarily by the ozone standard in the South Coast, and reductions in the San Joaquin Valley, the other most challenging area in the State. Attainment of the PM standards in the middle of the next decade will be what drive the reduction needs.

We're in the beginning stages of the modeling with -- working with the valley district on emission inventory and the modeling to identify what the emission reductions need will be.

And we continue to work with them on what would be this sort of unique strategies that would be appropriate for a region like that in reflecting the type
of sources -- the differing sources that we do see in the
valley versus South Coast.

VICE CHAIR BERG: Yeah. Why don't we go ahead
and continue. Dr. Balmes.

BOARD MEMBER Balmes: So thank you, Vice Chair
Berg. First off, I want to join the appreciation that
staff has been receiving about getting this kind of
planning effort, strategic effort out before the public,
so that we can get stakeholder input, which we've gotten
today, and also to say that I'm very proud of the
integrated approach that we're taking to deal with both
air quality and climate change together in our planning,
because of the co-benefits that we get in terms of public
health by doing that, not to mention the fact that it
makes more regulatory sense, in terms of ease of
understanding on the part of all stakeholders.

And so I definitely think we do need to continue
to make progress with regard to air quality, including
reduction of NOx. And, you know, as somebody who owns a
cheater Volkswagen, I'm sorry that Bill Magavern stole my
line. And I do think that we have to be careful that the
technology that we're pushing is actually doing the job.

And I think I've heard for the first time about
the potential unintended consequences of zero emission
buses that we're proposing in this strategic plan. And I
would be concerned that one of those unintended consequences that has been mentioned would be to make bio-derived methane less attractive, because that would be a pretty clean option.

So, you know, I'm not an expert in this. I'm not, you know, pushing a particular agenda here, but I do think that we should be careful about those unintended consequences. And again, conceptually a performance standard rather than a technology based standard, you know, makes sense to me.

I think my colleague Dan Sperling isn't yet in Sacramento in our view, but he generally favors performance standards as opposed to technology standards. And conceptually, I like that comment too or that concept too.

So overall, I'm very pleased with the strategic plan, but I'm glad that we're not voting on it today, as something that is going to be in stone. Thank you.

VICE CHAIR BERG: Thank you.

Supervisor Roberts.

BOARD MEMBER ROBERTS: Thank you, Madam Chairwoman. And I do want to comment on a couple things, but I think -- I'm getting a lead in from Dr. Balmes comments and his concern for transportation -- public transportation and for performance driven rather than
technology driven. This is has been one of my pet mantras the 20-plus years I've been on this Board.

BOARD MEMBER BALMES: I guess I finally learned something from you.

BOARD MEMBER ROBERTS: And I would -- I think it's very appropriate here. There was a recommendation that I heard Sharon Cooney make that we should have a transit advisory board, I think it is. That is imperative. That's absolutely imperative. I've had a lifetime of involvement now in public transit, and I think in our exuberance of -- and our wanting to be on the cutting edge, you know, I don't want to see transit being on the receiving edge of the cutting edge so to speak.

(Laughter.)

BOARD MEMBER ROBERTS: Yet the performance of electric buses today, if you try to match those up with urban bus routes, you'll see how problematic it is. If you look at the cost of infrastructure associated with it, it's not just the first cost of the bus, it's the whole system of things. There's basically three manufacturers that are available to -- for California for electric buses.

It's not a very competitive field. They all use different infrastructure. The technology with respect to the recharging, they're all completely different. Their
performance is different. None of them have the performance that we would like to see on the kinds of routes that we traditionally have in urban areas, which means that you then have to figure out what do you do with the bus, because you've got to keep the bus drivers moving. It's an operational concern, but there's tremendous expense.

I think what I heard is that we really need to look at, if we -- as we've done in so many other things, look at the system. When you have a system that is 88 percent, about to go to 100 percent CNG with then a light rail system that's all electric, and you're seeing -- you're going to change over all your buses, and you're going to start buying only electric buses, there seems to be something inherently wrong in that approach from a performance standard as a system that's making every effort, and has really been quite successful in implementing the kinds of changes that we want.

And I know that they are just putting in place a new maintenance facility for CNG buses. That's like $85 million. The investment is enormous, based on what we've been asking for and how we're looking, at least discussing right now how we change this.

I would just ask that you meet with transit officials so you have a better grasp of the functioning of
a public transit line, and not just rush blindly into
electric buses, because it's very, very early in the
evolution of that particular product. It's way behind
electric cars in the infrastructure and the support system
and the operating cost.

I would hate to have to reduce transit service to
those disadvantaged communities we've heard about
repeatedly today, because we're enforcing rules that are
giving us a marginal benefit in an area that's already
spent a huge investment in cleaning up the air. So let's
work together on this, because I think the overall where
we would like to get I don't think -- you know, I noticed
nobody spoke in opposition to this. Everybody is either
neutral or in support, and I think the transit district
was.

We want to work with the people that are out
there. Natural gas is -- we shouldn't be ready just to
completely discard that. And I don't represent any gas
company, but there's a tremendous investment, a successful
tremendous investment in the public transit agencies in
the CNG. And this is something we've encouraged for
years.

So with that and the emphasis on keep looking at
performance, not technology, that is the key, and that we
wouldn't have to do as we've had to do sometimes in the
past, retreat.

I just have one other comment I want to make, and that is, in the mid-nineties, I remember there was a lot of discussion and a feeling that somehow vehicle miles traveled was a good metric. I think it's one of the worst metrics we have for anything. And I think we're falling into that trap again.

In the mid-nineties, we were told the only way we're going to clean up air pollution is to reduce vehicle miles traveled. And I can show you every chart that shows vehicle miles traveled going up and air pollution coming down dramatically. There's absolutely no positive correlation. Maybe a negative correlation, if anything.

And I think we're starting to go down that same road again. I sense that there's some people out there that just don't want to have driving a car as an option. And that's fine for some, but it doesn't fit everybody.

I think that we need to, at the very least, when we talk about vehicle miles traveled, we ought to be considering how we can discount the zero emission vehicles from that. I mean, why don't we treat them the same way as, you know, we've got this -- from all aspects, we've -- when we start to log in how many vehicle miles traveled, we -- completely electric vehicles are counted just like in normal, or even the partial -- the zero electrics,
the -- even the hybrids, there should be some kind of
discount on the vehicle miles traveled, unless we're -- if
we're talking about -- if we're talking about greenhouse
gas and we're talking about air quality, I suspect some of
us have gotten into thinking maybe we're a highway
organization and we've just got to cut down on the number
of miles being driven. And I think that's the wrong way
for this organization to go.

So if we talk about vehicle miles traveled, I
think we have to recast that model and to develop some
type of a metric that has a relationship between what
we're trying to regulate and what we're actually
enforcing.

VICE CHAIR BERG: All right. Thank you.
Supervisor Gioia.

BOARD MEMBER GIOIA: So I just wanted to add, I
appreciate some of the comments hearing from transit. I
think the goal here is we're trying to be aggressive, but
we're trying to understand their needs. So I just wanted
to add an additional voice that -- it sounds like there
will be further discussion to understand how to implement
the moving towards zero emissions in the public transit
sector without having a real negative impact on the
finances. We know the challenges that exist with funding
public transit. Many areas are funding local
transportation measures to fund public transit. We hear all the time the shortfalls both on the capital and the operational sides.

So just understanding that, but also pushing that. And I live in an area that actually AC Transit that has the -- probably the largest fleet -- I think it has the largest fleet of hydrogen fuel cell buses in the country. And so they're ramping up. They're studying that, and that's very promising, but just the voice to continue to work with public transit on that.

VICE CHAIR BERG: Thank you.

Ms. Mitchell.

BOARD MEMBER MITCHELL: Thank you. First of all, I want to give a big thank you to the staff of the Air Resources Board and to the staff of the South Coast District for coming together and working on this document. As you know, as a nonattainment region, we really need to attack our mobile sources and to have the support of the Air Resources Board. And your staff working on it is so meaningful to us. And we're very, very grateful. Thank you very much all of you.

I want to be reminded that this is a draft document, and it is a vision document. And it's a good roadmap for us to be looking at as we try to reach our goals and our targeted reductions in the future.
I think we need to embrace all technologies. We're living in a world where technology is changing by the day, and we need to be cognizant of new technologies that might come along that may move us into a different direction. And for that purpose, we should be flexible as we look at this document and what it embraces for our future.

Someone mentioned that we need to be cost effective in what we do here. And I think for me that means that we should be looking at where we can get the most reductions for the best expenditure of our funds. And so I think that should be part of our process in the future.

Also, I think the integrated approach that we're following is very good. We've been talking about getting the co-benefits of reductions in greenhouse gas emissions, but also reductions in criteria pollutes and air toxics. And A lot of the strategies that are embraced in this vision document can do both, and I think we should focus our attention on that.

I am concerned, as other Board members, about this issue with the zero emission buses. And we note that just recently CARB certified an 8.9 liter engine at 0.02 grams per brake horsepower. And in the last meeting of our South Coast District board, we approved four some
million for further work on an 11.9 liter engine.

These are the heavy-duty trucks that cause the most pollution in our State, and so if we focus on the kind of performance standard that would look at 0.02. And I understand that when they did the testing on this truck, it actually tested at 0.01, but we certified at 0.02. So we may even get to 0.01 eventually.

But those are the kinds of advances that we're seeing in engine development. And I think we need to pay attention to that, and embrace those kind of improvements in engines as we look at this vision document.

And so thank you. I think you guys have done great work. Thank you very much.

VICE CHAIR BERG: Thank you.

Dr. Sherriffs and then we'll turn to Chair Nichols.

BOARD MEMBER SHERRIFFS: Thank you. You know, I think that where they tested at 0.01, but they give them 0.02 credit, that's -- there's a coefficient -- VW coefficient that you double it.

(Laughter.)

BOARD MEMBER SHERRIFFS: Did I get that right? Just to be on the safe side.

(Laughter.)

BOARD MEMBER SHERRIFFS: Sorry.
(Laughter.)

BOARD MEMBER SHERRIFFS: Mostly points that have already been made, but to reemphasize. Yes, the gross polluters, the unregistered vehicles, we really do need to think about quantifying that and how to get a much better handle on that. It's so important. And doing that in a proactive, positive kind of way in terms of the scrap and trade programs that we need to be -- but we do need to have a better understanding of how much we're missing by not being more proactive in that.

There have been a lot of comments about transit. And it's great the everybody has gotten excited about transit. And we don't want to make transit more expensive by burdening it with some of these ideas. We want to make it accessible to people. And it's raised the issue, we need to think a little bit more. And Mr. Roberts spoke to this about it. You know, it's not the vehicle miles. It's the emissions per person per mile. And that probably isn't even the right measure.

But are we measuring the right thing as we think about? We need to think a little bit more about what we're measuring. So again, it's performance, and we're measuring the right performance and not pushing a technology, because technology is changing.

You know, I guess I would say on the technology,
I think we have no idea what transportation is going to look like in 15 or 20 years when we look at things like Lyft and Uber and what we can do with our smart phones, and how connected people are, and the changing interest in millennials and actually owning a car or knowing how to drive it.

And vehicles that can drive themselves really potential change what transit means and what public transit means. And I should probably copyright this before I say it, but, you know, Zuber, we need to be thinking about zero emission Uber.

(Laughter.)

BOARD MEMBER SHERRIFFS: It really -- we need to be careful about what we're pushing, because we just -- we don't know what the future is going to look like.

And the last comment, again going back to the beginning of the low NOx engines, how important it is that we are going to be -- I'm surprised at the question that we're going to be petitioning the EPA. We really have to be pushing the EPA to adopt this ultra low NOx standard. That is critical for the South Coast. It is critical for the South Coast. It is critical for the Central Valley. It's critical for the State. It's critical for the health of our citizens.

So thank you.
VICE CHAIR BERG: Thank you. And Chair Nichols, can you wrap us up, please?

CHAIR NICHOLS: Thank you. I think this has been a very robust and interesting discussion, and certainly isn't the end, but it is time perhaps to appreciate the breadth and diversity of the input that we've seen here, and to acknowledge that there is more stakeholders out there that also need to be consulted as well. I have to say, I was a little disappointed in the discussion about zero emission transit, for the simple reason that two days ago I was at a meeting of the California Fuel Cell Partnership. It was chaired by -- or co-chaired, I guess, by Dr. Parker from the South Coast Board, and included representatives of the manufacturers of heavy-duty vehicles, as well as the Energy Commission and others.

And we heard from two transit agencies, one Alameda, and the other Foothill, that are pioneering in the use of fuel cell buses. And I know there are others out there, and there are other innovative engines being used as well. Zero emission doesn't automatically mean batteries by any manner of means.

And I think it is important that we escalate and elevate this discussion with the transit community, because it's disappointing to hear this being set up as either clean air or more expensive transit for people who
can least afford it.

I think a number of other people have pointed out that we need more people using transit, both to meet our air quality and climate goals, and to meet the needs of a population that doesn't always want or need to drive.

So we clearly need to be working together, and I think we can start from the assumption that we all want to see transit available. The State has now really put its money where its mouth is on these issues, because the Greenhouse Gas Reduction Fund is being used to provide, for the first time from the State, money that's available for operating subsidies, not just construction in the transit area.

So I don't think there's any doubt of the commitment that we have to work with the agencies, but certainly we could make it more clear, and hopefully a more interactive process, if we were to follow the suggestion of creating an advisory committee or at least a regular working group to begin to pursue this issue more seriously.

So I think it's been great that we've had this discussion and raised the profile of the issue, because it is an area where change is slow and expensive. And so we want to make sure that we're doing the right thing as we move forward, and not just debating philosophical
And I think you can say the same thing about other elements of this as well, that we're coming to the point now, where because of deadlines in the Clean Air Act, we will have to start making real commitments, not just as regulators but also as government agencies that provide funding support that will promote the cleanest technologies out there. And we have to keep our options opening, as we've said, and recognize that we don't yet know everywhere technology will take us.

Fortunately, there's always new and interesting developments on the horizon, but we definitely need to put a stake in the ground in terms of what our needs are to protect the health and environment of our people.

So a good start to the discussion. It is still a draft. And it probably will continue to be a draft for a while, but it will also receive updating and see some changes as well.

So I think with that, I'm ready to close this item if the folks in Diamond Bar are as well.

And I'm not sure what your next plan is. Madam Chair, is this the point at which you were going to take a break?

VICE CHAIR BERG: Yes. We're going to go ahead and take a lunch break at this time. And then we come
back, we're going to combine the last three items, and then have one witness testimony period and one Board discussion based on the last three items. And so we will miss you, as I know you have a conflict this afternoon, and have obligations from this point forward, but truly appreciate your joining us here for this morning. I think it's been remarkably successful. And thank you for setting this up, and we'll look forward to seeing you next month.

CHAIR NICHOLS: Thank you. Thanks to the people here in the auditorium for keeping me company, so I wasn't here all by myself.

(Laughter.)

VICE CHAIR BERG: And we hope to see them back after lunch. So we will be having a vibrant discussion after staff presentation after lunch, so be sure to return.

Before we close the last item, I would just like Richard Corey to tell the Board what are our next steps, and what can we -- what are the next steps going forward on this item?

EXECUTIVE OFFICER COREY: Yes, Vice Chair, Berg. Next steps would continue to work with South Coast. We talked about the work that we've been doing over the last several months with South Coast and with stakeholders
externally. Based on this discussion and the comments that we received, we'll be having follow-up workshops in terms of as we refine this document -- because a number of comments were pertaining to the level of detail, comments respecting -- with respect to the magnitude of potential funding, structurally where regs may have a role versus incentives and so on. We need to drill down more. So those are the areas that there will be further refinement to the document through a workshop process, over the next several months. The refined document will return to the Board in the mid-2016 time frame, am I correct, Kurt?

DEPUTY EXECUTIVE OFFICER KARPEROS: Yes.

EXECUTIVE OFFICER COREY: But that will follow several workshops that we need to have, posting drafts, exchange, follow-on analysis. In addition to that, and I did want to touch on this, because I -- it gives me an opportunity to -- because there were a number of comments on -- with respect to transit. We have been reaching out to the folks. In fact, I was at AC Transit on Friday. In fact, I spent half the day there.

BOARD MEMBER GIOIA: That's right. You saw those hydrogen fuel cell buses.

EXECUTIVE OFFICER COREY: They're are very impressed with it and they've been key, key partners historically from an incentive standpoint from the
investments they made from the air quality improvements. We will look though at terms of the opportunity to pull a workgroup, some other instrument to even enhance the communication that's been underway, so you don't take into heart the comments that have been made and we have some additional work to do for certain.

VICE CHAIR BERG: So I encourage Board members as stakeholders are reaching out to you, please feel free to interact with staff. This is a living document that is going from draft, will come back to us mid next year. So with that, we are going to break for lunch. And we will take a one hour lunch. Be back here at 20 minutes to 1:00 and finish up our final three Board items. And look forward to the lively discussion this afternoon.

Thank you very much.

(Off record: 11:37 AM)

(Thereupon a lunch break was taken.)
AFTERNOON SESSION
(On record: 12:42 PM)
VICE CHAIR BERG: I'm going to ask everybody to take their seats and we will get our afternoon on the way. Before I introduce the next agenda items, we wanted to welcome Professor Sperling. He is joining us in Sacramento. I think we'll have him on the screen here in just a minute. And so welcome, professor.
BOARD MEMBER SPERLING: Thank you. Pleasure.
Hello, everyone. Sorry I missed you.
VICE CHAIR BERG: Our afternoon session is going to consist of three updates from staff all around our clean -- Advanced Clean Cars programs. What we have decided to do is we're going to hear all three staff presentations. That's going to take a little bit of logistics, because staff is going to have to change, and we'll take that opportunity if we need to get up and stretch, because it will be about an hour and a half of presentation.
But what this is going to allow us to do is our first presentation is on the Advanced Clean Car program, the second presentation is an update on all the different support mechanisms that support this program, and where it is, the status of that information. And then our third item is Advanced Clean Cars particulate matter. So they
all do tie together.

These regulations, and what we need to accomplish from these regulations is very comprehensive. And I think to get the three presentations and the overview of the three will allow the comments, by the people that are testifying, to be consistent, and for you to be able to communicate full thoughts across all of these three spectrums.

I know that some people have come with prepared slides and testimony time. We will be very supportive of making sure everybody has the time. But what I want to be able to do is also be very efficient. So in our time we'll be able to thank staff, one, so I've said you about 20. Seconds

(Laughter.)

VICE CHAIR BERG: And if we really look at the first two items, they do go together. And so comments around those for about three minutes. And then, of course, the PM is a little more technical. We will be allowing some time.

So I wanted to let you know don't be anxious about the testimony time. That said, I will be writing herd that you don't try to take advantage as well. So with that, we'll get started.

So our first presentation is a report on the
Advanced Clean Cars program and mid-term review. Approved by the Board in January 2012, the Advanced Clean Cars program lays the foundation for substantial personal mobility in California. It does this by setting ambitious yet achievable reductions of criteria pollutants and greenhouse gas emissions from passenger vehicles through 2025 model year.

The program also fosters the commercialization of ultra clean vehicles, such as pure electric vehicles, and fuel cell vehicles that will benefit -- that will be needed to achieve our long-term criteria pollutant and greenhouse gas goals and obligation.

When the program is fully phased in, California consumers will be driving the cleanest and most efficient vehicles available, while at the same time saving thousands of dollars over the lifetime of these vehicles in maintaining.

The Advanced Clean Car program includes about halfway through the years covered by regulation, and the mid-term review or evaluation to reevaluate the current state of the vehicle technology. This review will be done in cooperation with U.S. EPA and provides an opportunity to determine whether any adjustments to the stringency of the 2022 through 2025 model years are appropriate.

Staff is committed to providing the update to the
Board throughout the mid-term review process. Today's update will cover progress on work underway to support the mid-term review of the federal greenhouse gas standards and the California review of the zero emission vehicle regulation.

And if my memory serves me right, I think this is the second review from staff, and we look forward to that. So, Mr. Corey, would you please introduce this item?

EXECUTIVE OFFICER COREY: Yes. Thanks, Vice Chair Berg. And as you noted, today staff will be providing the Board with an update on the progress we've made on the Advanced Clean Cars program and the mid-term review. As you know, in addition to greenhouse gas standards, the Advanced Clean Cars program includes the Low Emission Vehicle III, or LEV III, program for criteria pollutants and the zero emission, or ZEV program.

Because the LEV III greenhouse gas requirements were developed through a coordinated effort with the federal government, California agreed to participate in the mid-term review with the U.S. EPA and NHTSA, as you mentioned, to evaluate the continued appropriateness of those standards for model years 2022 through 2025. Staff has committed to provide the Board with updates on progress made on the mid-term review.
Staff will present work that is underway to support the joint federal State mid-term review of the federal greenhouse gas standards, and staff will provide an update on manufacturer's compliance status with the federal greenhouse gas light-duty fleet average standards. Additionally, this year California has passed 150,000 ZEV and plug-in hybrid sales with increasing momentum of pure ZEV sales, a significant milestone. California and the states have adopted California standards, rather than the federal standards, the Clean Air Act Section 177 states. And they account for the majority of the ZEV and plug-in hybrid sales in the United States. Staff will present the results of surveys of the ZEV and plug-in hybrid owners, the status of ZEV regulatory credits, and staff's initial analysis of driving data.

Anna Wong, of the Emissions Compliance Automotive Regulations and Science Division will now give the staff presentation.

Anna.

(Thereupon an overhead presentation was presented as follows.)

AIR POLLUTION SPECIALIST WONG: Thank you, Mr. Corey. Good afternoon, Vice Chair Berg and members of the Board. Today, I will present an update on the Advanced
Clean Cars program and the mid-term review efforts.

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AIR POLLUTION SPECIALIST WONG: California continues to be faced with significant climate change and air quality challenges. Near- and long-term emission targets have been established to ensure we are on track to meet the federal air quality standard and global climate stability. In addition to these existing targets, Governor Brown announced earlier this year a 2030 GHG target of 40 percent below 1990 levels in California.

In 2012, the Board approved the latest round of fleet average standards for all new passenger vehicles. The Low Emission Vehicle program, or LEV III, is intended to produce criteria pollutant emissions to help attainment with 2023 and 2031 air quality requirements, as well as contribute to reductions needed from the transportation sector to meet the 2020 and 2030 greenhouse gas emissions targets.

However, as last year's scoping plan update and recently released mobile source State implementation plan also indicated, future standards will likely be needed to keep California on track to meet both the mid- and long-term targets.

Projections for meeting long-term climate and air quality goals continue to show the need for full
electrification of new light-duty vehicle sales by 2050. The zero mission vehicle, or ZEV, regulation was amended in 2012 to continue forcing the advanced technology that will be needed to enter the marketplace today if we're going to transform the fleet boy 2050. The LEV III and ZEV programs together compromise(sic) California's Advanced Clean Cars program.

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AIR POLLUTION SPECIALIST WONG: As you heard earlier this morning, ARB staff have completed a mobile source strategy report that, in addition to listing potential policy actions, describes updated vision scenarios targeting strategies that can help the State meet our emission targets. This graphic shows the technology roll-out for the light-duty vehicle fleet, that would put us on the path to achieving the greenhouse gas, air quality, and petroleum reduction targets. In this scenario, electric vehicles move well beyond the current ZEV regulation, scaling up to 100 percent of all vehicle sales by 2050, and putting 4.3 million ZEVs and plug-in hybrids on the road by 2030.

This scenario captures the latest major trends in the vehicle technology from ARB's ongoing technology assessments, including significant efficiency gains, VMT reductions and widespread availability of low carbon
renewable fuels. Additionally, plug-in hybrids are assumed to have a larger role in these scenarios, but pure ZEVs remain the dominant technology necessary for deep emission reductions.

The plug-in hybrids assumed here would need to operate on electricity 80 percent of the time for passenger cars and at least 40 percent for trucks. That's an average of 60 percent electric vehicle miles traveled for all plug-in hybrids by 2050.

This analysis represents a potential pathway to long-term emission targets and emphasize the role to -- the need to further reductions from all Advanced Clean Cars regulations.

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AIR POLLUTION SPECIALIST WONG: In 2012, the Board adopted the Advance Clean Cars program. It directed staff to participate in the mid-term review of the standards adopted. In this regard, we have been working closely with our federal partners on a variety topics in the joint review of the GHG standards.

In April of this year, California finished its research contract on road load potential and mass reduction in the light-duty vehicle fleet, and I will present the findings later in this presentation.

To improve projections on the effectiveness of
emission reduction technologies, EPA continues to test and benchmark advanced engines and drivetrains. Consumer acceptance of such technologies in comparison to projected vehicle price increases also remains an area of focus. Lastly, EPA and NHTSA are wrapping up their tear downs of various technologies which are helpful in informing future standards.

For the ZEV portion of the review, staff is conducting an internal analysis of manufacturers ZEV credit banks in California and the section 177 states, which I will go into further detail later in this presentation.

Staff is also conducting a technology assessment of the latest developments in plug-in hybrids, battery electric and fuel cell electric vehicles. Additionally, staff continues to review data provided by the OEMs late last year on a selection of plug-in hybrids and battery electric vehicles. We are also reviewing consumer awareness and attitudes towards plug-in hybrids and ZEVs. Lastly, we plan to look at the State of infrastructure for both electricity and hydrogen.

The third part of California's mid-term review is an assessment of the one milligram per mile particulate matter standard. Later today, you will be hearing from a part of our mid-term review team on measurement
feasibility. Next year, we plan to present the full picture of the accelerating the phase-in of the one milligram per mile standard, which will include vehicle feasibility and testing.

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AIR POLLUTION SPECIALIST WONG: You may recognize this timeline from staff's 2013 update. We've stayed on track. And this year, you will hear from staff later today about the particulate matter measurement.

Next year, we plan to present all staff's analysis on the various elements of California's mid-term review.

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AIR POLLUTION SPECIALIST WONG: The next few slides will update you on the status of the greenhouse gas portion of the review. In summary, manufacturers are overcomplying with the current GHG standards nationally, and even more so in California. Additionally, while we continue to work with our federal partners on the joint agency technical assessment report, we are encouraged by two recent reports showing pathways for manufacturers to comply with standards for future model years.

The National Academy of Sciences concluded that the current GHG standards are feasible and can be met with conventional technologies.
Also, earlier this year, ARB finished its contract on road load reduction technologies concluded that the current best-in-class technologies for road load reductions can produce one-fourth the necessary reductions toward meeting the 2025 model year requirements.

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AIR POLLUTION SPECIALIST WONG: Let's take a look at where we are with compliance with the current standards. The standards shown here were calculated based on the sales-weighted average footprint of passenger cars and light-duty trucks from the six large volume manufacturers that are subject to greenhouse gas requirements. Since the sales weighted footprint of California fleet is smaller than the federal fleet, because Californians buy more cars than trucks, the greenhouse gas requirement for the California fleet is lower than for a federal fleet.

Compliance with the greenhouse gas requirements can be achieved by reducing tailpipe CO₂ emissions and earning off-cycle credits. Off-cycle credits reflect the use of greenhouse gas reducing technologies that are not captured by standard emission's tests, like through improving the efficiency of air conditioning systems or using a refrigerant with a low global warming potential.

The blue bars shown here illustrate that for 2012
model year, manufacturers were able to achieve compliance with the greenhouse gas standards entirely through the reduction of CO\textsubscript{2} emissions from the tailpipe. Once off-cycle credits are included, the greenhouse gas reductions from the vehicle fleet become even greater. As you can see, for the 2012 model year, manufacturers overcomplied with the greenhouse gas standards nationally by 13 grams per mile.

For California, the benefits were even greater with 21 grams per mile below what was required. For the 2013 model year, the results are similar. It looks like the manufacturers are headed in the right direction.

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AIR POLLUTION SPECIALIST WONG: A study on the Corporate Average Fuel Economy standard, or CAFE standard, commissioned by NHTSA and conducted by National Academy of Sciences concluded in June of this year. The study was to assess the 2017 through 2025 CAFE regulation and analysis used to set the standards, as well as assess costs and technologies likely to be implemented through 2030. The study found that the analysis conducted during 2011 to 2012 by the agencies was thorough and of high caliber.

Additionally, the committee concluded conventional gasoline technologies can be used to meet the future standards. Lastly, the report acknowledged the
California ZEV regulation to be driving the surge in ZEV sales. ARB appreciates the committee's report and looking -- looks forward to incorporating their suggestions into the mid-term review.

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AIR POLLUTION SPECIALIST WONG: To meet the greenhouse gas standards, it is expected that the vast majority of reductions will come from improvements to vehicle powertrains, specifically the engine and transmission. However, there are other improvements that can increase efficiency and the agencies did assume some reductions were from these areas.

Notably, items like vehicle aerodynamics, low rolling assistance tires, and making vehicles lighter can have an appreciable contribution by reducing the road load of these vehicles.

To better understand some of the possibilities for these other technologies, ARB commissioned a "what-if" study. The study analyzed all available vehicles in 2014 model year, identified the better performers, and then upgraded the entire vehicle fleet to have best-in-class aerodynamic, tire rolling resistance, and mass efficiency.

Starting from a baseline average of 263 grams per mile CO₂, five grams per mile of reductions came from applying best-in-case aerodynamics to each vehicle class.
Another five grams per mile were taken off by applying best-in-class tire rolling resistance. And seven grams per mile of the reductions were achieved by applying best-in-class mass efficiency.

Once these efficiency improvements were made, the engine was made slightly smaller and reoptimized to maintain the original performance, which achieved the additional benefits of the ten grams per mile. As a reminder, this study did not include any powertrain improvements like replacing a naturally aspirated engine with a downsized turbo engine or adding a more efficient transmission, where much further gains would be expected. This shows that 2014 model year technology, technology that is on the road today, could be used to get the average California fleet emissions from 263 to 236 grams per mile.

This is a little over 25 percent of what is needed to meet the 2025 standard without even considering powertrain improvements or considering technology that has already or will be introduced after the 2014 model year.

Some of these improvements are already on the road today with brand new 2015 and 2016 model year vehicles that are made from lightweight materials and contain more advanced powertrains. Further, off-cycle credits were not part of this contract, which
manufacturers use today and will use in future years to meet the requirements.

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AIR POLLUTION SPECIALIST WONG: Okay. Moving to the ZEV review. This next set of slides will focus on staff's review of the ZEV regulation. In summary, staff has found that the ZEV credits currently in the banks will continue to provide appropriate flexibility for manufacturers, however requirements will continue to require greater volumes of ZEVs into the future.

Additionally, the market in California for ZEVs and plug-in hybrids continues to appear healthy, with the number of pure ZEVs continuing to increase. I will also update you on surveys staff conducted earlier this year on CVRP recipients, which showed buyers were pleased with their plug-in electric vehicle purchase decisions, many of them willing to pay more for greater electric range.

Lastly, staff will show analysis conducted on data received from a few manufacturers, which will show the electric vehicle miles traveled of plug-in hybrids to be highly variable across vehicle platforms, as well as for the same type of vehicle.

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AIR POLLUTION SPECIALIST WONG: As part of this review, the Board has been very interested in the status
of the ZEV credit banks, both in California and in section 177 states. In general, manufacturers use, generate, trade, and purchase credits in very different ways. However, for this analysis, we looked at the industry as a whole, including trading across manufacturers.

For this first scenario, in the shaded area you can see the manufacturers' requirements for California and the section 177 states in terms of vehicles. The purple and orange lines show actual sales from 2012 through 2015 model year. In our first scenario, we assume sales to continue at model year 2015 levels through 2025.

Then we asked how far would the credit banks get you assuming current sales levels? We found that manufacturers could comply through 2021 model year. However, this would mean manufacturers would need to comply at significantly higher levels starting in 2022 model year.

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AIR POLLUTION SPECIALIST WONG: In our second scenario, we took a more realistic approach and wanted to see what the requirements would look like if the manufacturers supplemented their requirements with credits from their banks each year.

On this chart, we started with the same requirement you can see in green and blue shaded areas,
and with the current sales in purple and orange. You can see when I apply the credits left in the bank, they are able to comply with a combination of sales and credits through 2025 model year. These two scenarios are meant as bounding cases for how to interpret the credits in the bank. The manufacturers continue to use, generate, trade, and purchase credits, which is important flexibility in the regulation.

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AIR POLLUTION SPECIALIST WONG: Moving onto sales trends. This plot of data from IHS Automotive shows how California's ZEV market has developed over time. The size of the orange bubble on this figure is scaled to the total number of new ZEV and plug-in hybrid registrations in California in 2011. Each bubble is positioned horizontally, according to the new vehicle sales sold that year, and positioned vertically to indicate the market share that is ZEV or plug-in hybrids.

Over the past few years, the bubbles have been rising steadily thanks to many of the ZEV-enabling actions that you will be hearing about in the next presentation. Extrapolating current data available to cover the full calendar year, we project that the number of new ZEVs and plug-in hybrids sold this year to be about the same as 2014.
However, given the sales record for all new vehicle sales expected this year, constant volume translates into a slight drop in market share. Of course, California is not the only state with the ZEV requirements. Nine other states have adopted the California ZEV regulation, including many northeast states, as well as Oregon. The lighter bubbles on the right represents the market in our partner states. And in the next presentation, state representatives will provide more detail about the ongoing work and recent developments to grow and elevate their bubbles.

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AIR POLLUTION SPECIALIST WONG: Returning to California's market, this figure shows the manufacturer diversity of each of those bubbles. The height of the bar shows the portion of California's new car sales that were plug-in hybrids or ZEVs. The increasing color diversity in the bars on the right shows how a greater number of manufacturers are now offering ZEV products.

While we noted that the overall market share has dipped slightly this year, the market share of pure ZEVs has continued to grow every year. And so far, in 2015, pure ZEVs have outsold plug-in hybrids at a nearly 2 to 1 ratio. However, whether this trend continues, the remainder of the year is uncertain.
AIR POLLUTION SPECIALIST WONG: So far this year, the number of models commercially available to consumers was roughly the same as last year, with new introductions replacing discontinued models. Notably, just yesterday, Toyota delivered the first fuel cell Mirai to California -- to a California household. By the end of this year, an additional five plug-in hybrid models are expected to be released, including several all-wheel drive crossovers. And with the recent launch of the redesigned Chevrolet Volt, the plug-in hybrid market may very well resurge in the coming months. But these plug-in hybrids will face some stiff competition from their all-battery counterparts, with the new Nissan Leaf offering over 100 miles of real-world electric range and Tesla's 250 mile Model X Crossover beginning deliveries as well.

So the next question is if manufacturers build them, will the consumers buy them?

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AIR POLLUTION SPECIALIST WONG: This spring ARB surveyed over 6,000 plug-in electric vehicle drivers who received a clean vehicle rebate. Survey respondents spanned an array of 18 vehicle models and have been driving their plug-ins a minimum of eight months, and on average for over a year and a half.
Both battery electric and plug-in hybrid drivers alike would overwhelmingly recommend their vehicle or plug-in electric vehicle to someone they know looking for a new car.

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AIR POLLUTION SPECIALIST WONG: And when asked what technology they would purchase if suddenly needing to replace their car, only a small fraction would switch to conventional technologies. Most BEV drivers would stay with BEV technology, while most plug-in hybrid drivers would stay with plug-in hybrids.

Most -- some BEV drives would add a gas engine while a slightly large fraction of plug-in hybrids would rather shed their gas engine. And finally, fuel cell electric technology is already starting to attract some potential customers. In this dynamic market, actual future purchases may deviate when new vehicle options become available or household needs change. However, overall, we interpret these results to mean consumers area satisfied with ZEV technologies. That's not to say there's no room for improvement.

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AIR POLLUTION SPECIALIST WONG: When asked how they would change their vehicle, only about one-fifth of respondents are completely satisfied with their vehicle
and would not make any changes. Overwhelmingly though, drivers want more all-electric range, whether they have to pay for it as part of an increased vehicle price or sacrifice performance or both.

Faster or wireless charging was of interest only to a relatively small portion of drivers. Of course, there are some respondents who chose other and stated that more range should be offered at the same price, given the decrease in battery costs. It turns out these are savvy customers.

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AIR POLLUTION SPECIALIST WONG: Now, focusing on those battery costs. They are falling faster than what was projected in the 2012 Advanced Clean Car staff report. This gray area represents the range of battery costs for plug-in hybrids and battery electric vehicles projected for 2018 used for staff -- for 2018 used for staff's 2012 analysis, which shows a $350 to $650 per kilowatt hour range.

However, based on reports and public announcements released in the last year, costs for batteries are far lower than staff's projections. Some recent international research projected 2018 battery costs of 20 -- $230 per kilowatt hour. The 2014 Tesla battery report released by Advanced Automotive Batteries projected
the 70 kilowatt hour battery pack from Tesla would cost $221 in 2018.

A few weeks ago, General Motors announced $145 for the battery cell. The expected range of a dollar per kilowatt hour cost for an entire pack is shown in the shaded overall on this slide.

Lastly, the red X shows the $125 target set by the U.S. Department of Energy for the year 2022, which appears to be achievable when considering these latest projections.

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AIR POLLUTION SPECIALIST WONG: In 2012, the Board asked for staff to better understand the usage of plug-in hybrids. Additionally, a group of manufacturers along with the Idaho National Laboratory presented an analysis showing an average of electric miles of a Chevy Volt are very similar to those of a Nissan Leaf warranting more favorable treatment of plug-in hybrids within the ZEV regulation.

Some manufacturers, though not including General Motors, submitted vehicle data to staff last year for our own analysis. This is a chart where the X axis shows the projected annual vehicle miles traveled, or VMT, and the Y axis is the percent of a vehicle miles that are driven electrically, also known as electric vehicle miles,
traveled, or EVMT.

The first set of points, the blue squares you are seeing come from those Nissan Leafs. We've also plotted the Ford Focus EV in green, and the Honda Accord EV in red. As you can see, all of these vehicles sit on the 100 percent EVMT line, because these vehicles are full battery electric vehicles and can only travel on electricity.

Next, the large filled circles that are now appearing represent that average, annualized VMT, and percent EVMT for all of the vehicle models. Those on the 100 percent line represent the BEVs in this analysis, while those listed lower down in the graph represent the plug-in hybrids, and match the annual average presented last year in the Idaho National Laboratory analysis.

However, when you plot the EVMT for the individual vehicles, one can notice the extreme variability and the data. The first set of dots in orange show data from the Honda Accord plug-in hybrid. The line appearing with the data is an approximate trend line to illustrate this general direction of the data.

The red dots appearing belong to the Toyota Prius plug-in hybrids. The data from those vehicles show a large variance in the annualized VMT with some vehicles traveling large distances in one year. The data is followed by the Ford Fusion Energi plug-in hybrid in green
and the Ford C-Max Energi in blue. We've also recently received some data from Tesla. Like the other full electric vehicles, all of the vehicles sit on the 100 percent EVMT line, but notably the annual average VMT is over 13,000 miles, which is consistent with the national average VMT.

These data require further study. Staff will continue to work with the manufacturers to better understand the trends and correlations, and has also sponsored research to understand vehicle usage in the household context. Additionally, internal testing at our El Monte facilities will help ensure we understand the emission profiles for these vehicles.

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AIR POLLUTION SPECIALIST WONG: Staff is currently on track to return to the Board by the end of 2016 with California's full Advanced Clean Cars mid-term review. Additionally, we believe it's appropriate to hold a public Advanced Clean Cars symposium to present staff's analysis and hear from others on their analyses next year before we bring the full review to the Board. We are targeting a two-day symposium in September 2016. Staff is looking forward to presenting its full findings next year to the Board.

This concludes my presentation.
VICE CHAIR BERG: Thank you very much. It's a great presentation. Very thorough. We appreciate it. Any burning questions or can we go on to the next?

Great. Our next presentation is going to piggyback very nicely with our last one. In October, we received an update from our multi-state ZEV Action Plan partners on the status of zero emission vehicle infrastructure. Today, we welcome back our multi-state ZEV Action Plan partners and other California ZEV Action Plan partners to update us on the various efforts underway to support the full commercialization of ZEVs.

California remains the leader in this exciting yet young market for zero emission vehicle adoption. Our Governor has set ambitious goals for us of 1.5 million ZEVs on the road in California by 2025, a multitude of actions will ensure California continues on track to accomplish this goal.

We are very pleased to hear from a number of presenters representing the Governor's office, public-private partnerships, and our ZEV State partners speaking on the successes to date and future actions in the update on the ZEV market enablers.

Mr. Corey, would please introduce this item?

EXECUTIVE OFFICER COREY: Yes. Thanks, Vice
Berg. This series of presentations will provide updates on our California ZEV Action Plan, hydrogen and electric charging infrastructure, activities led by the California Plug-In Electric Vehicle Collaborative, California Fuel Cell Partnership, and multi-state MOU ZEV State Implementation Teams, as well as describe actions within the new international ZEV alliance.

Joshua Cunningham of the Emissions Compliance Automotive Regulations and Science Division will now give the staff presentation or basically set the stage for those to follow.

Joshua.

(Thereupon an overhead presentation was presented as follows.)

ADVANCED CLEAN CARS BRANCH CHIEF CUNNINGHAM:

Thank you, Mr. Corey, Vice Chair Berg, and members of the Board.

I'll be leading this briefing of the status update on zero emission vehicle market enables.

I will begin with a few introductory slides to provide context, but then I will individually invite a number of guest speakers to present an overview on the many market enabling efforts occurring throughout the State and beyond.

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ADVANCED CLEAN CARS BRANCH CHIEF CUNNINGHAM:

Zero emission vehicles are a critical strategy for achieving deep emission reductions in California and abroad. There are a number of ZEV related targets in California that provide important signals for the market and for stakeholders that pursue actions to enable the market.

As you are aware, our current zero emission vehicle regulation requires an increasing amount of ZEV sales through 2025. Our current likely compliance scenario was projected to result in approximately 15 percent sales of ZEVs and plug-in hybrids by 2025. The Governor's office Executive Order establishes a target of 1.5 million vehicles in the same time frame which is consistent with the ZEV regulation.

Additionally, the Executive Order stipulates a second target requiring sufficient infrastructure by 2025 to support up to a million zero emission vehicles. Finally, as you heard earlier this morning in the presentation about the mobile source strategy report, ARB staff are beginning to explore strategies that will achieve additional emission reductions beyond 2025. One path of the light-duty vehicles that achieves the necessary emissions and petroleum reductions involves a large expansion of ZEVs and plug-in hybrids.
This strategy achieves 100 percent light-duty vehicle sales of ZEVs and plug-in hybrids by 2050 and results in approximately 4.3 million electric vehicles and plug-in hybrids on the road in 2030.

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ADVANCED CLEAN CARS BRANCH CHIEF CUNNINGHAM: ZEV sales require market enabling actions by many different stakeholders. Critical market enabling actions include consumer and community leader awareness, infrastructure for both hydrogen electric charging, and a myriad of partnerships between different stakeholders to collectively address barriers for vehicle consumers.

An essential outcome of zero emission vehicle enabling actions is to foster higher sales rates, and ensure diversity of ZEV products or on the market to draw consumer demand.

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ADVANCED CLEAN CARS BRANCH CHIEF CUNNINGHAM: The outline presented here shows you topic areas and guest speakers that I have convened to help provide this briefing.

Wade Crowfoot from the Governor's office will be describing the Governor's ZEV action plan and recent successful efforts by many agencies in California. He will describe how State agency cooperation is critical to
address common barriers.

Tyson Eckerle will present on the status of the California ZEV infrastructure and progress towards the Governor's 2020 infrastructure targets. Christine Kehoe and Bill Elrick both executive directors of their respective partnerships will describe their current workplans and how important multi-stakeholder partnerships are to accelerate market adoption.

And finally, we've invited several leading officials from our partner sections 177 states to speak about the importance of the coordinated state efforts on ZEVs, where they will share examples of local actions that are influential in their regions.

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ADVANCED CLEAN CARS BRANCH CHIEF CUNNINGHAM:

Given the importance of zero emission vehicle markets and challenges of introducing different technologies to consumers, Congress in its 2012 appropriations for the U.S. Department of Energy requested that DOE commission a study by the National Academies to identify market barriers that are slowing the purchase of electric vehicles and hindering the deployment of supporting infrastructure.

As a result of the request, the National Research Council appointed the Committee on Overcoming Barriers of
Electric Vehicle Deployment which prepared an interim report published earlier this year.

California is already working on many of the recommendations made by the committee, which may be contributing to the higher than average market share of ZEVs in California.

Two of the barriers discussed prominently in the conclusions that of expanding fueling infrastructure and addressing a lack of consumer awareness are strong elements that the market enablers discussed today.

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ADVANCED CLEAN CARS BRANCH CHIEF CUNNINGHAM:

Building on one of those elements, in the 2015 National Academies report, ARB conducts and supports a number of outreach efforts to expand consumer awareness. This includes our long standing drive clean consumer information portal. This website includes information on new plug-in and fuel cell electric vehicles, incentives that are available, and provides tools to calculate user benefits such as fuel cost savings.

In addition to the drive clean information outreach, ARB administers the Clean Vehicle Rebate program, with unique incentive levels for bearing technology types. As you heard earlier today, vehicle incentives are a critical aspect of encouraging zero
ADVANCED CLEAN CARS BRANCH CHIEF CUNNINGHAM: But before I invite the first guests to brief you, I want to summarize the current ZEV and plug-in hybrid sales globally and in California. This graphic developed by the International Council on Clean Transportation shows the expanding sales rates around the world, emphasizing recent growth in China and Europe following the successful launch of the ZEV market in California.

An important milestone was surpassed in September, global cumulative sales of zero emission vehicles and plug-in hybrids reached one million vehicles. Throughout this five-year period of ZEV sales, California has been the leading leader pushing the market. With over 150,000 cumulative sales of ZEVs and plug-in hybrids in California since 2010, vehicles in our State comprise 16 percent of this one million global ZEV fleet. This represents a much larger fraction than our conventional vehicle market share where California is only two percent of global sales.

Additionally, a number of automakers and fuel providers are making product announcements globally to launch exciting vehicles and fuels. Along with the many exciting plug-in electric vehicle announcements by varying
automakers, Toyota just announced a target of 30,000 global fuel cell electric vehicle sales by 2020, expanding their technology.

At the same time a public-private partnership was recently formed in Germany to help facilitate the roll-out of 400 hydrogen stations by 2023 with strong participation from industry.

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ADVANCED CLEAN CARS BRANCH CHIEF CUNNINGHAM:

Finally, as you saw in the mid-term review presentation earlier, this is a robust market with vehicle sales in California surpassing three percent of the light-duty vehicle market in 2014. These values will continue to grow in the near future as technology costs continue to decline, broader product diversity enters the market, and the ZEV regulation stringency becomes stronger.

I would like to now invite our first guest speaker on the ZEV market enablers to present his findings. Speaking remotely from ARB's Board room, Mr. Wade Crowfoot is the Deputy Cabinet Secretary and senior advisor to Governor Jerry Brown.

Mr. Crowfoot has overseen the establishment of the Governor's ZEV action plan and coordination across agencies.
Mr. Crowfoot.

MR. CROWFOOT: Thanks so much for the opportunity to join you from Sacramento. I can assure you that Dr. Sperling is paying close attention to all the presentations despite being not in-person with the Board in Diamond Bar today.

I first and foremost want to underscore the Governor's priority for transportation electrification. It's clear that this is a major priority for Governor Brown. He established in 2012 the Executive Order calling for 1.5 million zero emission vehicles on California roadways by 2025. As you know, that largely tracks to the ZEV mandate established by the Air Resources Board.

Earlier this year, in January, in his final inaugural address, he mentioned ZEV expansion as part of an ambitious target to reduce petroleum dependence by 50 percent in California by 2030. And then as recently as last week, he spent time with auto companies, utilities, infrastructure providers, and other major companies in Los Angeles discussing how to continue to expand electric charging infrastructure to enable more ZEVs on the road.

I'm here because this is a priority for Governor Brown. I want to share with you the work that's been done on an interagency basis since the Governor's Executive Order almost four years ago.
We view the transportation electrification and the expansion of ZEVs on California roads not to be a project of ARB, but to be an administration wide project. In 2013, we rolled out an action plan, the so-called ZEV Action Plan, that specifically numerated all of the actions that State agencies would take to facilitate market expansion for these vehicles. And it's notable that I believe over -- it was 14 agencies were specifically identified in that action plan having central responsibility for a concrete step action task that would help build this market.

The 2013 action plan was split into four categories, expanding consumer awareness and demand, which we heard about today being an important priority, continuing to build more infrastructure, charging infrastructure, fueling infrastructure that enables these cars to be driven, transforming fleets, particularly public fleets really an early example of leadership that we can provide in the State, and then lastly capturing economic benefit from this transition within California.

The action plan listed over 100 specific tasks that a specific State agency or department would take responsibility for with time frame on when that task would be completed. We were really focused, due to the Governor's direction, to hold ourselves accountable for
actually making progress as a State government supporting the market.

I'll give you a few examples of successes or actions that were taken. One suggestion was made in the formation of that action plan that the carpool stickers, which are of such value to ZEV drivers, be provided when the car is purchased at the dealership. Traditionally, that sticker had been provided weeks after the purchase of the vehicle once that -- the driver submitted an application.

And we all know that instant gratification helps sell consumer products. And so we heard that actually making those carpool stickers available immediately would help sales. The Department of Motor Vehicles, one of the agencies that was part of the formation of plan, stepped up and actually reformed their process and sent carpool stickers in advance attached to VIN numbers to dealers, so that that ZEV purchaser could actually receive the carpool sticker on site when they purchased their vehicle.

Another example is improving the State's building code to assure ZEV ready new homes, and new parking structures and commercial buildings that actually have electric vehicle charging built in as they're constructed. That was leadership demonstrated by the State's Building Standards Commission, another agency that helped form the
action plan.

And then lastly, you'll hear from -- last example anyway is you'll hear next from a speaker named Tyson Eckerle, in the Governor's Office of Business and Economic Development. Tyson has done wonderful work helping to facilitate and get on line this network of hydrogen fueling stations. Well, Tyson's position was actually a recommendation made in the ZEV Action Plan that we needed somebody at a high level in the Governor's office specifically focused on infrastructure roll-out on hydrogen fuel stations. So those are just three examples of actions that were called for in the plan that have been achieved.

In order to actually implement the action plan, we established an interagency working group comprised of these 14 agencies meeting on a bimonthly basis out of the Governor's office. Myself and colleagues within the horse shoe convening and coordinating that work.

So it really has been an administration-wide effort to get where we have as it relates to State support for the market. I'm happy to announce that we're planning to issue an updated action plan for 2015, early 2016, based on the evolving market, and growing awareness of other actions that the State can take to support market growth.
Earlier this year at the ARB hearing room here at the CalEPA building, we held a workshop, a public workshop, with stakeholders on this topic to invite input that would help us form the 2015 action plan. And as I said, that's forthcoming. I'll note that there -- we're expanding those four categories that I mentioned to seven categories, reflecting growing priorities within the administration and stakeholders. And those three additional categories are, one, enabling broader access of zero emission technology to Californians. In other words, Californians of different income levels, really ensuring that regardless of your income level, you have an opportunity to experience zero emission vehicle technology, whether it's on a bus, in a used car, in an affordable new car. So we view that as very much a priority.

Secondly is working to expand the use of zero emission technologies within the medium- and heavy-duty fleets, including freight and eventually rail, recognizing the Governor and the State's and ARB's priority for sustainable freight and developing a long-term path for sustainable freight.

And then third, expanding the national market and international market for zero emission vehicles. Governor Brown likes to say we can't do it alone as it relates to
building the electric car, the hydrogen fuel cell car market in California. We really need market growth in other places. We're very fortunate to have close allied states, which you'll hear from today, our ZEV 177 states. And we think California can do even more to support the expansion of sales in those states but then beyond, including internationally.

So I'm very thankful. The CARB Board should know you have excellent staff working on this, highly committed, focused, and very well organized. They're a pleasure to work with. And just know that the Governor, as long as he remains Governor, will hold this electrification of transportation as a core and central priority.

Thank you.

ADVANCED CLEAN CARS BRANCH CHIEF CUNNINGHAM:

Thank you, Wade. I would like to next invite to the podium our second guest speaker, Mr. Tyson Eckerle is the ZEV Infrastructure Project Manager in the Governor's Office of Business and Economic Development.

Mr. Eckerle.

MR. ECKERLE: Thank you very much, Joshua. And it's great to follow Wade there. And I couldn't agree more, the staff at ARB has been tremendous to work with. And this is an incredibly exciting time to be working in
zero emission vehicle infrastructure. I think admittedly infrastructure is not quite as sexy as the vehicles, but they say you can't drive sexy without fuel.

(Laughter.)

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MR. ECKERLE: And so what I wanted to do is go through -- and let's see how does this -- so I can use this thing.

Okay. We'll go through the -- you know, kind of the status update of where we are with -- in terms of both hydrogen and plug-in infrastructure, and where we need to go. And so I think there's been a lot of great progress out there.

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MR. ECKERLE: So this is a snapshot here of where we are currently in the network. And if I was really cool about it, it would build up, but we've got the whole snapshot right here. And so currently we have -- starting from the bottom of the graph, we have two hydrogen stations that are fully open to the public, one is within walking distance, and it's not very often you get to say that, right here in Diamond Bar. The second is in West Sacramento.

If we kind of build our way up the graph, we have six stations that are open, but they are non-retail, and
that means they don't accept credit cards. They have a
fuel by agreement between the automaker and the fueler --
and the fueling provider. Eight more stations have been
fully constructed, and so they're going through a variety
of commissioning. Four of those stations are just about
to open and become fully public retail.

And it's worth talking about that. There's been
a lot of collaboration of how do you go from a fully
constructed station to an open retail station? There's a
number of steps that need to take place. One of them is
the authority having jurisdiction, so the local community
has to verify that the station was built to the
specifications that they approved. The other one is the
Department -- Department -- Division of Measurement and
Standards from the California Department of Food
Agriculture, has to verify that a kilogram of hydrogen
sold is a kilogram received. And so they've been working
tirelessly across the state getting those stickers our
there and it's outgoing very, very well.

The third piece is that the station developer,
whoever developed the station, needs to say that they're
ready for this. And then finally, we've been working very
closely with the automakers to go there and actually
confirm that the station is performing to the protocol
that everybody has agreed to. And that's been a herculean
effort on the part of the automakers. So I want to thank
them and those in the room. They've been working very
hard to get these stations open.

So once all those pieces are in place, then we
call that station open to the public. And so you'll see
that number grow. So we have eight full constructed
stations, as I said, 15 more that are under construction,
two more that have full approval to build, and then four
more with planning approval.

And I'll stop there, so you know we're at 30
plus, 36. I should have added it before I got up here.
This is probably not 36 now that I'm looking at
it.

(Laughter.)

MR. ECKERLE: So -- but those are the stations --
you know, from there on down is where you can be fairly
confident those are going to become real stations. And as
you work your way down the list, it's more and more
certainty in terms of timing when they will become
stations.

The seven above that are in some form of
permitting. So they've submitted their permits, and then
you can kind of work your way up the list. One thing to
call attention to is the top 7 there is -- they're seeking
new sites. One of the major challenges, and this is -- it
spans across both the hydrogen and the plug-in is finding locations for these cites where all the property lines up. You can imagine any number of things. When it goes right, there's usually one reason. When it goes wrong, there's a myriad of reasons for why that might be.

And so -- so that's kind of the snapshot where we are. So we're working our way towards 53. Just -- you'll hear different numbers out there, and it depends on how you count. There's 56 stations in total, if you add in the bus-only stations that we have in the State. There's 42 fully public retail stations in development, so not including -- if you subtract out those non-retail stations. So you'll hear a variety of things.

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MR. ECKERLE: But the fact is if you look at the geography of it here, that's a pretty good coverage map. These are all the stations that have planning approval or better. So I mentioned that -- see you see we have San Diego, L.A. and Orange County are very well covered. Santa Barbara, working our way up into Coalinga. I actually got to fuel there on Monday. We drove from Long Beach up to Sacramento as a group, which was very exciting, in the Bay Area, and Tahoe as well. So that's a very good snapshot.

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MR. ECKERLE: So where are we?
As we mentioned, the ARB staff has been
tremendous. This report, I'm sure you all are very
familiar with it, from AB 8 that came out in July of 2015.
Basically -- I mean, our network is on track, but really
post-2018, we are going to be running into a capacity
shortfall. So we really -- and the funding that we have
through the AB 8 program will not be able to keep up with
projected demands. We're really working on trying to
figure out how do we get above that and keep pushing this
market forward.

That brings in the Energy Commission and Air
Resources Board are working on the December report for the
AB 8. And this will focus a lot on kind of the financing
mechanisms. How do we start pulling in private capital
and other types of mechanisms that would help amplify what
the public has?

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MR. ECKERLE: This is a snapshot of the
permitting time on there. I put that up there for a few
reasons. The first one is if you look at the funding, and
it got a little shifted, but the 2009 stations are to the
left, you know, followed by working our way to 2013. If
you look at the days, you know, it's about a year, plus or
minus, to permit one of these stations, which is
relatively in line with what a normal station might be, if you were developing a gasoline station.

We've been going a lot of proactive outreach. And many of you on these -- on the Board have helped us with that with reaching out to local communities. So thank you for that. But the local communities have been very, very receptive.

The other thing to point out there is that the -- you know, the planning approval process, I mentioned, that is usually one of the longest ones. And I think, you know, as we've learned through time that, you know, planning is really an art, and art is subjective. Whereas once you get past the planning process and into building and fire approval that has gone very, very smoothly. So that's a snapshot.

So let me make sure here I didn't miss anything that I wanted to say.

Yeah. Okay. Oh, yeah, well, of course, I put that picture on the top. So we are putting out a permitting guide book, capturing lessons learned. And that should be published -- well, last week, but it will probably be next week as far as when it finishes.

(Laughter.)

MR. ECKERLE: And that should be a good tool that captured a lot of our lessons learned.
Okay. So that's kind of a snapshot of the hydrogen network. Now, want to go into the electric vehicle network.

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MR. ECKERLE: And this -- I got to take this slide from last year. And this is a reminder of kind of what we're talking about. We have the Level 2 -- or Level 1 to start with. You know, the normal 110 outlet, the Level 2 dedicated 220 volt, and then the DC fast charging.

So we will be talking mostly about Level 2 and DC fast charging just for lack of -- for time purposes, but I just wanted to highlight that Level 1 is still very, very important here.

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MR. ECKERLE: So this is a snapshot of where we are in the marketplace. The currently installed table there at the top has the workplace charger. So we -- and we organized this as chargers, not stations. So there could be more chargers -- you know, one station could have multiple chargers. We did this to line up with the projected need.

So before I get ahead. So you have workplace Level 2. You know, we have about 1,700 chargers. You know, and then about 6,000 Level 2 public chargers and you work your way down the list. I don't have to read through
the numbers.

The projected need, we use the National Renewable Energy Lab was contracted by the California Energy Commission to do an assessment of if we had a million plug-in ZEVs on the road by 2020, how many chargers would we need? And they came up with two scenarios.

So the highest scenario is when we -- think we might need the most. And that's a work -- what's the word? Well, there's a home dominance scenario. And then -- I can't think of what it is.

So the low scenario is when most chargers are -- most people are charging at home. The high scenario is when -- high public access. Sorry. Thank you. It came back.

So the high public access scenario is when a lot -- when the home charging gets diminished a little bit and people rely more on the public network. Now, I want to point out that home charging in both of these scenarios is ultimately the lion's share of this. So we're focusing in though on the public and workplace for the rest of the analysis.

But on the home charging note, I'm not going to address multiple unit dwellings. And that is a big issue and we need to figure out how to solve that. We just don't really have any good solutions at the moment, aside
from just doing more of what we're trying to do. So
that's kind of a snapshot of where we are and where we
think we need to.

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MR. ECKERLE: So next, I worked with PlugShare
and say, okay, what if we do this on a spatial -- spatial
scenario? So on the left-hand side, we have the home
dominant scenario pointed out. So we took the NREL
numbers and we also took where we think a million plug-in
vehicles would exist county by county, and then
distributed the chargers on that ratio county by county.

And if you look at the green counties, it says,
you know, a very high progress. We have more than 50
percent of what we were looking for in the 2020 NREL
projections have been met in that county as of today. And
you can--you can look your way up, you know, so the
yellow counties have a little ways to go, you know, the
light green, 30 to 50 percent of that projected 2020 needs
are covered.

If you go to a high public access scenario there,
you'll see that the colors start to fade towards the
stopping sign of the stop light. So if we're depending
more on, you know, public charging, we have a little
further to go. So this is kind of a way to show a little
spatially where we are.
I didn't put up the workplace map there, because basically that whole state is red, in both scenarios, with the exception of the home dominant scenario. If you go with the home dominant scenario, Santa Clara County is actually doing pretty well. It's turned a light yellow, relatively speaking. So we have a long way to go with workplace charging.

The DC fast charging, that map actually looks slightly better. There's been some talk that the NREL numbers might be a little low, based on what we've learned since 2014.

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MR. ECKERLE: So another way of looking -- and the purpose of putting this up is just to -- it's to look at reliability. So the letters here are much too difficult to read on this slide. But what this is is looking at five counties -- and five most populated counties in terms of chargers. And PlugShare has a reliability score. And so when you get -- show up to a station and you're using the PluShare App, you can either check in, and it's neutral, or you can give a positive review or a negative review.

A negative review is usually with, you know, if it was congested, they weren't able to get their charge, there was vandalism, the charger was shut off, or as
trivial as there was soda spilled on the handle.

So the -- a poor score, which is in the red
category is basically what they're saying is fewer than 80
percent of the check-ins were positive. And so according
to PlugShare, that's actually more than two times as many
negative reviews as the average overall network. So it's
a pretty poor performing station.

I asked the question looking at this, I thought,
okay, is the kind of squeaky wheel scenario? You know, if
you go on Yelp, the people who seem to have the most
complaints seem to write the most. And it turns out 90
percent of the PlugShare's reviews are positive or
neutral. And so that's kind of a good indicator. And
they also are well on their way to 60,000 check-ins for
the year. So it's a decent data set.

The point of bringing this up is even if you have
the numbers out there, that doesn't mean they're all
performing well. And they might not be in the right
place, or in -- so there's still a ways to go. So I just
wanted to use that as kind of -- throw up as a word of
cautions in terms of just looking at overall numbers.

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MR. ECKERLE: So now what I want to go into is
kind of some of the State agency actions that have been
done to help close the gap. We talked about the public
utilities. Wade already introduced the Building Standards Commission, Energy Commission, and there's also some private investment. And again commending the automakers for stepping up to help out with that as well, and the private charging networks.

So we'll start with the PUC proposals. I'm not going to go into much detail at all here, but these -- I think a lot of people are familiar that the independently-owned utilities all have proposals in with the Public Utilities Commission that are being heard. And each of these utilities have ideas for how they might help start filling the gap for chargers.

So what this shows here is really the proposals vary from make-readies. So essentially, you know, you have the piping and everything that the panels are set up to full chargers. The circles there, so the dark circle, represents the number of connectors, and the light circle is the market size. So we're just trying to kind of calibrate it and thanks to Noel at the PUC for putting this together.

The magnitude of these proposals range from about one-fifth to maybe one-third of the 2020 goals, based on that NREL assessment, so you can -- it's a pretty big magnitude.

None of this has been decided, so we can't count
on any of this yet. The Public Utilities Commission is
going through a big process to determine these things. So
the two on the left, the San Diego Gas and Electric and
Southern California Edison will be heard by the Commission
before the end of this year is the plan. And then PG&E
should be -- a decision should be issued by June 2016, so
that's kind of the time frame. We should have a little
bit more certainty on those.

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MR. ECKERLE: The other key Public Utilities
Commission action was the NRG Energy crisis settlement.
They submitted -- you know, part of that settlement was to
do 200 Freedom Stations and 10,000 make-readies. So I
would argue the Freedom Stations are going pretty well,
especially with the experience I've had in hydrogen, in
terms of securing property and permitting and everything.
They have 127 stations out at 92 sites. These are DC fast
chargers and Level 2 systems.

The make-readies is taking a little longer.
They're trying some new approaches in terms of marketing,
but really it's the one-off negotiations take a long time.
So to get to 10,000 it's hard. You really need to have
that larger scale to get there. So that's been a little
slow. So you have about, you know, 1,200 sites that have
been done -- 1,200 make-readies have been done at about
MR. ECKERLE: So how does this all stack up?

If you look near the dark blue section, I'm looking at the Level 2 charging network. Now, the dark blue is where we are, and then the two dotted lines, you have the low range and the high range. That's where we want to be based on those NREL numbers.

So if you add in the proposals and all of those go through, you can see we start to go over the low range, which is a good thing. If you add in NRG's remaining stations, which is the Freedom Stations, it hardly makes it -- registers on the graph. They're working our way to the Energy Commission. They have about $12 million for Level 2.

And then if we kept doing the Energy Commission investments, not saying the Energy Commission is doing this or anything, but then to say if we had about $12 million in public funding year on year until 2020, then we would potentially get to the high range. And so again, I just want to take us back to the reliability.

So before declaring victory on any of this stuff, there's a lot of uncertainty out there. And the other thing is the NREL number is going to assume that this charging network is distributed appropriately and people
can get a charge when they charge. So there's probably
some issues there.

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MR. ECKERLE: This next thing is going into the
Buildings and Standards Commission. So the Air Resources
Board staff has done tremendous work with this. This is
part of the California CalGreen Code. It's Part 11 of
Title 24, The Building Standards Code.

And essentially what it does is, you know, all
new single and double, you know, so townhouse develop --
dwellings with a garage have to have make-ready installed.
So all new ones get that.

Multiple-unit dwellings same thing, if you have
17 or more parking spots, you have to have make-readies.
And then the workplace, they have to do three percent of
their parking spots, if they have 51 or more parking
spaces. ARB staff put together a gap analysis, which
we'll go into, where they recommended increasing this to
six percent of the parking spaces and decreasing the
threshold from 51 paces to 10 spaces. And we'll see here
in just a moment how that impacts things.

The other thing I want to point out is these
voluntary standards are really important, because there's
a lot of progressive communities. And I think that led a
lot by those counties that we saw up there earlier on the
reliability chart that are able to adopt these voluntary standards as mandatory, and help ensure that their communities grow.

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MR. ECKERLE: So this is the workplace charging analysis that ARB put together, and I edited just slightly. So if there's anything wrong there, it's my fault. But the -- you look at the bottom. So the dark -- the dark ones are existing stations. So we're about 3,000 total -- 1,700, 3,000 total.

So if you start adding in, you know, what -- what ARB did -- I'm going to take a step back here. There's essentially a gap of 64,000 to 134,000 chargers. And what they did on the low range, they assumed we got the maximum IOU -- and that's actually the maximum IOU, and then we got the low scenario. So that -- you know, if you take the low scenario, subtract what we think we have, we have a 64,000 station gap.

If you do the high scenario, and we don't get the IOU proposals at the volume that has been proposed, then you're up to 134,000

So if you take these stations here -- if -- well, I'll call your attention to the three percent thing. So if you add in proposed stations on both of these, if you add in three percent, you're getting -- you're still below
the low thing. So that's that purple bar graph there. If you added the six percent requirement that's been proposed, we start to perhaps address the low scenario needs in the workplace charging.

So in terms of that workplace charging, that, you know, nearly -- in terms of that proposal, nearly three-quarters of new construction is projected to happen in the six regions where we need it the most. So that's a very positive thing.

And the other benefit, as you know, when you do it with new construction, the cost is supposed to be about a tenth of a percent of the cost of new construction to add what they're projecting.

These proposed changes have been put out by the Building Standards Commission are actually open for public comment as we speak. I think it closes November 23rd. And so the Building Standards Commission has taken that next step to get this out there.

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MR. ECKERLE: So those are kind of a summary of the actions that are happening. You know, in summary, I just want to say there's -- it's a big year ahead especially -- well on both sides. Hydrogen is huge. We're going to learn a lot. You saw the Mirai out in the parking lot. And it's a very exciting time. We have
Hyundai has been out there in the marketplace. I just drove with Mercedes across the state.

On the plug-in side, we need to make sure that all these opportunities, especially the make-readies become actual stations. If that doesn't happen, we're -- we have a long ways to go.

Reliability for both is absolutely critical and customer satisfaction. And, you know, as Joshua had pointed out, we need to make sure that customers are aware of the incentives and everything, and so -- and that's part of what we're working with through the ZEV Action Plan and everything.

So thank you very much. And I guess that's it.

VICE CHAIR BERG: Thank you very much, Tyson. That was really a fabulous report. I'm going to jump in here, understanding that we've just got a couple of questions for you, and great to see you again.

MR. ECKERLE: Yeah, you too.

VICE CHAIR BERG: Supervisor Gioia has a quick question.

BOARD MEMBER GIOIA: Hi, Tyson. Good to see you here. On the new green building standards, one of the things, just to bring to your attention, which I think makes some sense to look at from the local jurisdiction standpoint, I've suggested, we're going to approve this in
Contra Costa here coming up shortly, an ordinance that not just takes the voluntary numbers and makes them -- and makes them mandatory, but actually requires the build-out of the charging station, not just to make it ready, because I know the Building Code says -- which I think is great. It's a great start. It's building the conduit and the electrical power, but doesn't require the installation of the station itself.

So what we're doing is an ordinance that -- so for new development, for the multi-family developments, office, shopping, things -- you know, things like that, and commercial retail, that the -- there be the minimum number that would be based on the voluntary standard that are in the Building Code, but then require the installation of the actual charging station. I want to -- and I was wondering why that wasn't included in the legislation, why just the electrical infrastructure, because what happens then in a multi-family, where we really need -- of course, this is with new and not existing multi-family, of course, but we -- you leave it up to the developer to decide whether to put the station in, the developer of the housing project, whereas a local jurisdiction requires it as part of the development, at least you have it there.

MR. ECKERLE: Right.
BOARD MEMBER GIOIA: Do you know what the reasoning was of why the actual station itself wasn't required just the make-ready?

MR. ECKERLE: That -- for me, it would only be a guess, so I don't want to --

BOARD MEMBER GIOIA: Yeah.

MR. ECKERLE: I don't know what happened with the negotiation. I mean, there's --

ADVANCED CLEAN CARS BRANCH CHIEF CUNNINGHAM: I can help with that, Tyson, if you'd like?

MR. ECKERLE: Yeah, sure.

ADVANCED CLEAN CARS BRANCH CHIEF CUNNINGHAM: The -- part of it is to ensure that we were doing the right amount of cost effectiveness in the policy.

BOARD MEMBER GIOIA: Right.

ADVANCED CLEAN CARS BRANCH CHIEF CUNNINGHAM: But the other is that you want to make sure that when you make that final equipment installation, you're doing it at the right location on the property --

BOARD MEMBER GIOIA: Right.

ADVANCED CLEAN CARS BRANCH CHIEF CUNNINGHAM: -- you have the right actual number of people that have the vehicles ready to use it.

BOARD MEMBER GIOIA: So, I mean, the good news is it's the local jurisdictions that are approving these
developments. So at the time of the project approval, we would then be -- see, we're going to require under our ordinance to actually put in the charging station. And that can usually be determined on the site plans when you're proposing a new development.

So it seems to me that that would be -- so we're going to actually try to sell ours as a model ordinance in the Bay Area to say that really other cities and counties should adopt this as part of approving new development.

MR. ECKERLE: I was just going to ask if you could send that.

BOARD MEMBER GIOIA: I will.

MR. ECKERLE: I do get people asking for examples of that.

BOARD MEMBER GIOIA: Yeah, we'll send that.

MR. ECKERLE: That sounds great.

ADVANCED CLEAN CARS BRANCH CHIEF CUNNINGHAM:

Good. Thank you.

VICE CHAIR BERG: Great. Well, I'm sure there will be more questions. And so we'll move along in the presentation, but I know this was a burning one, so thanks.

MR. ECKERLE: Thank you.

ADVANCED CLEAN CARS BRANCH CHIEF CUNNINGHAM:

Thank you, Tyson. I would like to invite to the
podium our next guest speaker, former Senator Christine Kehoe is the executive director of the California Plug-In Electric Vehicle Collaborative.

Mrs. Kehoe.

(Thereupon an overhead presentation was presented as follows.)

MS. KEHOE: Good afternoon, Vice Chair and Board members. And I'm going to be clicking my slides. Okay. I'll do that.

Thank you very much for allowing me to join you today and talk about one of my favorite topics, the California Plug-In Electric Vehicle Collaborative.

And let me just get to the right...

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MS. KEHOE: There we go. Thank you.

Again, my thanks to you for allowing me to attend today and to update you on the California Plug-In Electric Vehicle Collaborative.

My goal is to demonstrate that public-private partnerships and collaboration are essential for growing the PEV market in California.

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MS. KEHOE: The Plug-In Electric Vehicle Collaborative is a public-private organization focused on accelerating the adoption of plug-in electric vehicles to
meet California's economic, energy, and environmental goals. Using the expertise of our 45 members, the collaborative convenes, collaborates, and communicates on emerging PEV market trends and works to address challenges and enables strong PEV market growth.

You can see that our membership is a unique alliance of government agencies, NGOs, universities, global automakers, California utilities, charging and network providers, and others, and we're all working together to identify PEV market opportunities, and to develop solutions to overcome barriers.

ARB is a founding member of the Collaborative, and provides three staff members on loan. Thank you. Our entire staff is four people, including the executive director, that's me, and all of our revenues are derived from dues -- our member dues.

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MS. KEHOE: We are very, very excited about the progress being made in PEV sales since the collaborative was launched in late 2010. We now have over 55,000 PEVs on California's roads. This number grows by an average of 4,000 or more vehicles a month. And the PEVC uses a conservative number that includes several different data sets. So ours might be a little bit different than some of the other numbers you'll see this afternoon.
Also, with more than 20 makes and models available -- oops, I think I jump ahead a little bit -- consumers have more EV choices than ever. PEV drivers know that their vehicles deliver great performance, reduce overall fuel costs, and emit much fewer or no tailpipe emissions. And one of our major challenges is getting that message out to more and more Californians.

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MS. KEHOE: Although PEV sales are steadily increasing, we know much more needs to be done to inform Californians about the many benefits of PEVs. Our market is still fragile. Through our three member meetings a year, we convene in order to examine market-moving trends and set annual priorities for our organization.

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MS. KEHOE: Working with our broad membership -- I keep hitting the wrong button here -- we identify -- our members identify the top challenges to PEV market adoption. And then we determine actions that the PEV Collaborative can take to address these barriers.

The last couple of years the PEV Collaborative has identified several high priority areas. And I'll provide a few more details later. But to summarize, our priority activities this year and into next year will be supporting greater charging at work, apartments and
condos, charging public -- targeting public education efforts, increasing corporate commitments for workplace charging, and developing California and other partnerships that share best practices to advance PEV sales.

MS. KEHOE: The Collaborative membership has identified a robust and reliable network of charging infrastructure as critical for supporting the PEVs that are on the road today and those that are coming.

As you just heard Tyson mention, the growth of charging, especially in the public -- on the public side destinations and at work is critical. Two key areas that we have identified in the collaborative for special attention include workplace charging, and multi-unit charging, that is apartments and condos.

Over 50 percent of Californians live in multi-unit dwellings. And that is, as you've heard, a particularly challenging scenario. It is really a building-by-building discussion at this point. And that may change, but for right now, it is -- it is a barrier to PEV adoption. And it may be that workplace charging becomes the second most used charging available for people -- or rather, it becomes the primary charging available for people who live in multi-family dwellings.

For those of us that have access to our own
parking spaces, of course, charging at home is still about 90 percent of the charging activity. We have also found that there is significant demand from local government, property owners, and managers, and small businesses for information about all aspects of charging.

The Collaborative has developed content for and hosted six webinars on key topic areas over the last five or six months, each webinar having on average about 75 attendees, and several have had more than 120 attendees.

We're also meeting with large property owners in California, speaking at key conferences and meetings, publishing articles and industry publications, and developing a series of case studies of charging solutions in apartments and condos that illustrate best practices.

The Collaborative has identified some key areas of guidance for workplaces as well. In November, we'll publish a new document entitled, "Plugging In At Work: How to Effectively Install, Share, and Manage Electric Vehicle Charging Stations". And that includes current thinking around management issues, such as planning for future demand, developing etiquette policies, and designing increasing for EV charging at the workplace.

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MS. KEHOE: Our members have directed the staff to develop a targeted education campaign of test drives
this year. They get customers into these terrific cars, and they have a chance to experience firsthand the really, the thrill of electric drive.

We know that getting drivers behind the wheel of a PEV is seen as the most effective way to convey the many benefits of driving electric.

Our campaign is entitled, "Best Ride Ever". It targets underserved and geographically diverse areas. We've been in Fresno, Bakersfield, National City, Arcata, and there will be several more. They've been extremely successful. We've had dozens of people at each one. And we're doing a drive-to-purchase metric after each of the test drives. And we look forward to sharing those results once they're tallied to see what the follow up is after they've had the opportunity to drive the EV.

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MS. KEHOE: To complement the work that we're doing in California, in 2013, we signed an MOU with the Netherlands, Coast to Coast E-Mobility group, which is kind of a parallel organization in the Netherlands. We agreed to share best practices and learn from PEV successes in the Netherlands and to work on a project together.

Since then, we've been actively sharing best practices with Coast to Coast, and they have been sharing
with us. In addition, our Chair Janea Scott of the California Energy Commission, and the PEVC Deputy Executive Director have participated in delegations traveled to Holland to learn more about the EV programs there that are extremely successful and aggressive.

We also have a Dutch student intern with us through the end of the year. And I can't mention our Holland California connection without mentioning Peter Van Deventer, who is assigned to the Dutch Consulate in San Francisco and the Governor's Office of Planning and Research in Sacramento. He is an active participant with the Collaborative and a liaison between California and the Netherlands.

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MS. KEHOE: On slide eight, I just wanted to mention our very exciting event last week in Los Angeles, Drive the Dream 2015. Our high energy gathering was -- took place at the Creative Artists Agency in West Los Angeles. And it was a very successful event, and fully funded by the membership of the PEVC.

At the event, Governor Brown welcomed 40 corporate leaders and public sector partners to discuss challenges and successes in the deployment of PEVs and PEV charging at their worksites, new and substantial commitments for workplace charging, employee purchase
incentives, and fleet purchases were announced by NBC Universal, the U.S. Navy, and Honda. AT&T, CBRE, JP Morgan, Fox Network, Vision Fleet, and many other companies participated in the gathering. We will produce a follow-up survey of all the commitments that we'll be happy to share with you in the coming weeks.

Our final member meeting of the year takes place in November in Sunnyvale. And our members will look at the final approval of our 2016 workplan and next year's budget. Our members remain focused on the priorities of workplace and multi-unit dwelling charging, consumer driving experience and education, and convening for the purpose of candid and current conversation about the California PEV market.

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MS. KEHOE: Again, I want to thank you for the opportunity to speak to you today about the collaborative. ARB is a key member, and has always been one of our biggest supporters. I look forward to continuing to work with you to grow the PEV market in California.

And I just want to remind everybody, if you want more information on the resources we offer, they're on our webpage. You can see our web address there. All our documents are public. So for you or anyone in the audience download them, share them, get them around. We
also invite you to sign up eBlast where we'll keep you involved in real time on the latest PEV news and happenings of the Collaborative.

And I just want to thank you again for your time and attention, and I appreciate all the support from ARB.

ADVANCED CLEAN CARS BRANCH CHIEF CUNNINGHAM:

Thank you, Mrs. Kehoe. Very helpful.

I would like to next invite to the podium our next guest speaker, Mr. Bill Elrick is the executive director of the California Fuel Cell Partnership.

Mr. Elrick.

MR. ELRICK: Thank you, Joshua. Thank you all for the opportunity to be here. Very grateful to give a high level -- thank you -- overview of the collaboration and progress in the hydrogen and fuel cell vehicle market. If you have any questions throughout, please, I welcome them.

(Thereupon an overhead presentation was presented as follows.)

MR. ELRICK: All right. It's an exciting time for us. Our commercial product is now available. We're the last, but hopefully one of the more exciting to the market. Hyundai, as you heard, has been on the market with a leased fuel cell vehicle since last year. Yesterday, Toyota unveiled and actually gave the keys to
the first customers who will purchase a fuel cell electric vehicle. You'll hear more to come. At the L.A. Auto Show I expect to see a lot more excitement there.

Earlier today, we heard Chair Nichols talk a little bit about fuel cell electric buses, and the progress there what we heard this week at one of our meetings. What was very exciting there was the updates on the increased reliability, the longevity, the all American buses being rolled out, and the expansion plans at the two, not just California leading, but national leading agencies at AC Transit, and SunLine. But even a step further, when they spoke of their expansion plans, they spoke of sharing these experiences and sharing these as models for other transit agencies.

So we're really looking at leveraging what they've done right and going from there. We also heard a discussion earlier, and I want to take the opportunity we heard about biogas and just remind everyone here that that biogas can be the feedstock for renewable hydrogen or electricity in the ZEV market. So there's many uses for that.

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MR. ELRICK: I won't spend much time here. You heard earlier from Tyson on the progress of the infrastructure. I just reinforce how exciting it is to
see the initial retail market coming together. And it
seems like weekly he's telling us more on the stations
that are opening. And we thought we might have some this
week, but I guess it may be next week another handful of
stations opening up.

So these products I just mentioned can -- now,
customers can go into the showroom floors and be more
confident in making the leases and purchases of these new
vehicles.

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MR. ELRICK: So these new markets developing them
are a little bit like nesting dolls. It seems to be a
limit -- limitless amount of challenges to overcome. For
us, we have the major codes and standard in place, and now
we're working to communicate that to the local
jurisdictions and levels. So that's in play.

We have the major commitment of the automakers,
the infrastructure, and, of course, government to see this
through, and we have the different planning documents from
the roadmap we put out a few years ago to the new AB 8
reports to guide us in this coordinated effort going
forward.

This is -- the good news is that these -- again,
these larger ones that were meeting these and overcoming
these obstacles. And the obstacles that will be before us
now are relatively smaller, and we'll just keep on those.

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MR. ELRICK: So the California Fuel Cell Partnership continues its collaborative work on these technical barriers. Again Tyson discussed the permitting guide book for the AHJs that's coming out. We're very excited that, as a tool, we're communicating that at the local level.

The automotive -- another exciting part is the automotive and infrastructure stakeholders have been working more and more together in unison. They've worked on a coordinated approach to station operability, so they're not pushing against each other as much as working together for the success. And they have been working collaborative -- collaboratively as industry to feedback to government on funding and programmatic activities, again so it's a unified activity and unified effort to bring all this technology to market.

The partnership also continues to take these lessons and share these lessons and experiences with the current and future stakeholders, and the consumers going forward. Again, you heard awareness and education is always one of the biggest challenges and resources to getting the word out.

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MR. ELRICK: Early in -- earlier -- I'm sorry. Early next year, one of the expectations we have is to publish a medium- and heavy-duty action plan. This is exciting, because what we see as the release of this document will help advance this sector, much like previously in the light-duty sector we released action plans and road maps to really put everybody on the same page, point the same direction, and make some of the advances we're now seeing coming to light.

So it's a great time. It's none too soon to see this collaborative effort and publication coming out. So anticipate earlier next year the action plan for this market will come out.

We're seeing increasing consumer access -- or we are increasing consumer access to station information. That is one of our big activities within the partnership and within the stakeholders. We'll be adding additional upgrades and interactive pieces to our SOSS, or our Station Operational Status System, which lets the consumers know via phone app or their on-board navigation, not only where the stations are, but that they're up and running as they should properly be, as well as upgrades to the station maps, so you can see the network as it's -- again it's developing in real time before our eyes. The list gets greater and greater every year -- or every month
and week, so we want to report that in real time.

And then earlier this year, we released with the Department of Energy -- or at least we supported the Department of Energy's release of a national hydrogen and fuel cell emergency response toolkit. It's part of a broader package of safety information, and we're very excited that this is now a uniform approach to safety, and getting the awareness and education out there on a base level for everyone. It creates a lot of harmony across the Board.

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MR. ELRICK: And then we work with our members and other stakeholders and participate in hundreds of events, and have been reaching tens of thousands of people to get the word out.

In 2015, we've focused more on the cities where the early stations are being deployed, and, of course, the consumers in those communities that we're expecting and looking forward to purchasing and leasing these new vehicles.

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MR. ELRICK: And I want to thank you again. You know, it is an exciting time for us. As hydrogen and fuel cell electric vehicles, you know, take the field, we're coming to the commercial market, and we're looking forward
to this being part of ARB and the ZEV technology shared
economic and environmental goals that we all have.

BOARD MEMBER GIOIA: Thanks for the picture,
since Cal will be playing UCLA 30 miles from here tonight.

Go Bears.

(Laughter.)

BOARD MEMBER Balmes: And as a Cal Professor, I'm especially pleased to see.

(Laughter.)

MR. ELRICK: Thank you.

BOARD MEMBER GIOIA: Go Bears.

ADVANCED CLEAN CARS BRANCH CHIEF CUNNINGHAM:

Thank you, Mr. Elrick.

For our last topic on the ZEV market enablers, I would like to invite to the podium our next set of
speakers representing California's partnership with our sister states on zero emission vehicle markets.

Mr. Rob Klee is a Commissioner of the Connecticut Department of Energy and Environmental Protection.

Mrs. Christine Kirby is the Director of Air and Climate Programs at Massachusetts Department of Environmental Protection.

And Mr. Dave Nordberg is the coordinator of the Low and Zero Emission Vehicle Program at the Oregon Department of Environmental Quality.
And I believe Mr. Klee is beginning.

(Thereupon an overhead presentation was
Presented as follows.)

MR. KLEE: Hi there. My name is Rob Klee, the
Commissioner of Connecticut's Department of Energy and
Environmental Protection. We are the state agency in
Connecticut charged with protecting, conserving and -- our
natural resources and environment, and with bringing
cleaner, cheaper, and more reliable to the citizens of
Connecticut.

And I wanted to thank Vice Chair Berg and the
members of the Board.

And today my colleagues and I from Massachusetts
and Oregon are going to talk about some of our recent
successes in establishing market enabling mechanisms in
the ZEV MOU states.

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MR. KLEE: So like California, our states are
committed to both reducing greenhouse gas emissions and
electrifying our transportation sector. All of our states
have adopted greenhouse gas reduction goals, which are
comparable to California's goals. We understand that
transitioning our transportation sectors away from fossil
fuels is essential if we're going to achieve these
ambitious goals.
As you can see on the indexed graph on the left-hand side of the slide, like California, the ZEV 177 states are making steady and significant progress in reducing overall greenhouse gas emissions. California and the 177 ZEV states are clearly the nation's climate leaders. And collectively, the 177 states have an economy, population, and CO$_2$ emissions that are actually nearly one and a half times greater than California.

Together, with California though, we are the world's largest emitters of greenhouse gases and the largest economies. All of this is to say that California's success is tied to the success of the section 177 states.

We are vital partners with California in the effort to set the nation on a climate path that will avoid the worst effects of climate change, which as a Commissioner in Connecticut who has suffered through three recent significant storms, we are feeling those effects in Connecticut as I know you are here in California.

While we made significant progress reducing our emissions from the power sector, reducing emissions from our transportation sector remains our biggest challenge to achieve our climate goals.

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MR. KLEE: As you can see from this pie chart in
this slide, the transportation sector accounts for nearly half of the CO$_2$ emissions in the section 177 ZEV states. We recognize that transportation electrification is essential to achieving our emissions reduction goals, as well as the 3.3 million ZEV target set by the ZEV MOU. And we are committed to building robust ZEV markets in our states.

Since the release of our multi-state ZEV Action Plan nearly 18 months ago, we've been working on multiple fronts to develop the market in our states. We don't have time to talk about all that we're doing, so we're going to highlight a few of the real key recent important programs and activities just to give you a sense of what's going on in our states.

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MR. KLEE: Establishing vehicle and charging station purchase incentive programs have been a high priority for the 177 states. When the action plan was released only one section 177 State offered purchase incentives. Today five of the eight ZEV MOU states offer vehicle purchase incentives. And all of the ZEV MOU states are incentivizing charging station deployment.

For instance, in Connecticut, this year we've piloted a new vehicle incentive program that we call CHEAPR, the Connecticut Hydrogen and Electric Automobile
Purchase Rebate. CHEAPR offers Connecticut residents point-of-sale rebates of up to $3,000 for the purchase or lease of a new ZEV.

The rebate program has been very popular and the uptake rate is good. And I go around everywhere I speak encouraging folks to come on down and check out the cars. I feel like I am a car salesman at half the time that I'm out talking.

Our neighbors to the north, Massachusetts, have also established a point-of-sale vehicle rebate program, the MOR EV program, Massachusetts Offers Rebates. Massachusetts residents are eligible for a $2,500 rebate towards the purchase of a PEV.

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MR. KLEE: A big focus of our efforts, of course, has been on the deployment of infrastructure. In the two years since the ZEV MOU was signed, the section 177 states have added roughly 2,800 new public and non-residential private charging stations. In the aggregate, the section 177 states now have more than 5,000 non-residential charging stations. And that's the equivalent of one charging station for every five ZEVs on the road.

And our states are continuing to invest in infrastructure deployment. For example, New York is installing DC fast chargers at their rest stations all
along the New York State freeway. Connecticut is also supporting infrastructure for fuel cell vehicles. So I'm proud to follow the previous speaker. The state has allocated funding to leverage private investment in hydrogen fueling infrastructure in the Hartford area, which is our state capitol.

We've asked for private sector proposals this year and received three bids for construction of two new fueling stations. The proposals are currently under consideration. We expect to make awards by the end of this year, and have stations operational by 2017, and access to hydrogen fueling stations to jump start the market for fuel cell vehicles in our State.

Demonstrating my governor, Governor Malloy's leadership in addressing climate change and moving to zero emission vehicles just last Friday, Connecticut committed an additional two and half million dollars to ramp up our ZEV implementation in Connecticut, one million of that will be added to our CHEAPR program, the incentive at the point of sale to make sure we have sufficient dollars to cover the ongoing -- the current State fiscal year, and another million and a half dollars will be allocated towards a new workplace charging initiative, and fleet incentive program.

The grants application is for fleets. And
workplace chargers are going to be on line at our EV Connecticut webpage next week, and we anticipate some good uptake in both those programs.

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MR. KLEE: And I'm going to close with actually a picture of me without a beard. I'm the guy on the far right in the picture there, and talk a bit about dealerships. And the dealerships, particularly in Connecticut, have been critical partners in our efforts to increase ZEV sales. We've built -- been building relationships with our dealership associations and individual dealers in our states in a number of different ways.

We're educating dealers about the federal and State incentives. We're engaging our dealership associations and stakeholder policy workgroups. We're also providing sales incentives to the dealers. For instance in Connecticut, we offer $300 to the dealers for each of the ZEVs that they sell or lease through the CHEAPR incentive program. We're partnering with dealers on ride and drive events, and we established dealership recognition programs.

And this picture is from last year when my State partnered with the Connecticut Auto Retailers Association to establish a model dealership award program, the
Revolutionary Dealer Award, which Connecticut our State motto is that we're still revolutionary, so it fits on a number of levels, to recognize Connecticut dealers who have leaders in selling and leasing plug-in electric vehicles. And on November 20th, at our Connecticut auto show, we would will recognizing another dealer who has become a ZEV champion. And I can't reveal the name here. I won't do it.

(Laughter.)

MR. KLEE: But a lot going on on the east coast and in the ZEV 177 states.

Next, up is Christine Kirby from Massachusetts.

MS. KIRBY: Thank you, Rob. Good afternoon, Vice Chair Berg and members of the Board. This is my third October appearing before you. I'm happy to be back.

(Laughter.)

MS. KIRBY: So it's nice to be here from the east coast.

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MS. KIRBY: I'm going to cover our progress on fleets, workplace charging, and partnerships.

First, on fleets, we recognize that electrification of our public fleets is an important state -- lead-by-example state initiative. Our states are engaged in a number of efforts to electrify fleets. All
states are purchasing ZEVs and installing charging
stations at government buildings, and many of -- and ZEV
MOU states have established or are in the process of
establishing targets in line with the ZEV MOU targets.

We did make a commitment to electrify our State
fleets in the ZEV MOU. My State of Massachusetts is one
of five ZEV MOU states offering fleet incentives. And to
further our work promoting green communities, the
Massachusetts Electric Vehicle Incentive Program began two
years ago with the municipalities, and has since expanded
to include State fleets, driving schools, universities and
colleges, and car share companies.

The photo on this slide is a slide of the City of
New Bedford which held an event in June. They had
purchased 10 new Nissan Leafs. It was a very exciting
event. They applied for our funds. And the vehicles are
being set aside for the City's health inspectors, which is
a perfect application of battery electric vehicles.

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MS. KIRBY: Workplace charging. We recognized
early on that access to workplace charging can be a
tipping point in a consumer decision to buy or not buy an
EV - you heard from earlier speakers that point as well --
especially, consumers didn't have access to at-home
charging. So in that vein, expanding workplace charging
is a high priority for all of our states.

To highlight some of the activities going on in our states, a number of our states are funding workplace charging. For example, New York State has helped fund installation of workplace charging at more than 50 employer locations. And in my state of Massachusetts, we held an employer event in 2014. We announced a $1.4 million investment in workplace charging. We fund 50 percent of the charging station hardware at employer locations. And earlier this week, we have funded 359 units at 176 separate addresses.

One interesting statistic for our MOR EV program that Rob talked about, 35 percent of our applicants have reported that they have access to workplace charging, which is a great statistic, and hopefully helping EV purchasing. And under this program we are now starting to see original applicants reapply for funding as EV awareness grows at their workplaces.

Our states are also working directly with employers to promote workplace charging. In Vermont, following the Plug-In Electric Vehicle Collaborative successful model, Governor Shumlin participated in last month's very successful Drive The Dream Vermont event. And 21 major employers in Vermont made commitments to promote plug-in vehicles in the workplace by taking
action, such as providing employee purchase incentives, installing workplace charging stations, or adding plug-in electric vehicles to corporate fleets.

And as you just heard from Commissioner Klee, Connecticut is preparing to launch a $1.5 million new workplace charging fleet grant program, which is very exciting.

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MS. KIRBY: On partnerships, we've engaged with a number of partnerships, and I'd like to talk about two of them. To advance the ZEV market, we're working with a wide range of partners. And first, the ZEV MOU states have been working very collaboratively with the automobile manufacturers since execution of the ZEV MOU, and we call this our collaboration for ZEV success.

Automakers were active participants in development of the ZEV MOU action plan that was released last year. And the ZEV MOU states and automobile manufacturers hold monthly calls to share updates about relative -- excuse me, relevant state and federal legislation, implementation of our state initiatives, new product developments and automaker activities. And it's encouraging to see many of these representatives on our collaborative today here that are representative -- represented here today.
We also hold in-person meetings to do a deeper dive on some issues, discuss sales data and other market analyses with individual automobile manufacturers -- excuse me, automakers, about product offerings and implementation of the action plan.

Second, the 177 states are partnering with the U.S. Department of Energy in a number of areas that would benefit from collaborative federal and state action, including consumer outreach, which is very important and needed, and utility engagement.

The 7 -- the 177 states intend to build on the work that the California utilities and the California PUC are doing to facilitate utility investment and infrastructure deployment and consumer education on the associated ratepayer benefits. And we are now in the process of working with DOE to explore the establishment of the west coast northeast collaborative and stakeholder group to promote the deployment of rate-based charging infrastructure and utility engagement and consumer education -- consumer outreach and education.

I'm going to turn it over now to my colleague from Oregon, and then I'm going to come back at the end to talk a little bit about the travel provision.

(Thereupon an overhead presentation was presented as follows.)
MR. NORDBERG: Consumer outreach and education is another important area where we can and need to do more. ZEV MOU states are engaged in a variety of outreach activities, such as ride and drive events, as well as others.

For instance, Oregon has partnered with dealerships to train sales staff for selling EVs. Oregon's tourism agency, called Travel Oregon, also collaborates with Oregon wineries that have EV chargers by designating an electric vehicle byway -- or byways, I should say. Designated routes connecting wineries with EV chargers allow EV owners to take a pleasant wine tasting tour in the country knowing they have multiple opportunities to recharge should they run low.

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MR. NORDBERG: Despite these efforts, recent studies and consumer surveys sponsored by the ZEV states point to the need for a campaign to increase consumer knowledge and understanding to plug-in electric vehicles.

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MR. NORDBERG: The national multi-media campaign, Go Ultra Low, launched in the United Kingdom to raise consumer awareness and interest is a good model for a similar effort in this country.

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MR. NORDBERG: What's unique about the ultra low campaign is that it's jointly funded by seven auto makers and the United Kingdom office for low emission vehicles. The campaign is now going into its third year and is clearly making a difference in moving the needle on consumer awareness and interest in electric vehicles.

Consumer surveys and internet analyses show that 50 percent of those who recognize the campaign are thinking about buying an electric vehicle, as compared to 20 percent for the rest of the population -- the new car buying population.

Seventy-five percent of new car buyers have taken some action as a result of seeing the campaign. Seeking more information, talking to friends, or visiting an automaker's website. The twitter campaign has driven more than 35,000 visitors to the go ultra low website, which is at a very low cost. We think a similar effort in this country could be very effective. While it's not clear whether or not automakers would support such a campaign in the U.S., we recognize the need to close the knowledge gap and generate more interest in the technology. And we're committing to do what we can.

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MR. NORDBERG: Technological advances. In addition to the word -- the work that the MOU states are
doing, there are other factors we can expect to
significantly boost ZEV sales. Technology and development
product offerings in additional market segments, such as
SUVs and light trucks, and the expiration of the travel
provision after model year 2017 are such things.

We are very excited about the GM and Tesla
announcements that they will be offering all electric
vehicles with a range of 200 miles at a price that is
similar to that of a Nissan Leaf.

With the introduction of the Chevy Volt and Tesla
model 3 in model year 2017, these vehicles can -- these
offer a range of affordable battery electric vehicles that
will have more than doubled in just five years.

The introduction of fuel cell vehicles is -- to
the market is also very exciting, where these vehicles can
provide consumers with a range of more than 300 miles. We
welcome their introduction.

These cars and others like them will help bridge
the gap between the early adopters and the mainstream
consumers by providing range, confidence, and addressing
cold weather concerns.

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MR. NORDBERG: Trucks and all-wheel drive
vehicles, offering plug-in electric options for trucks,
SUVs, and vehicles with all-wheel drive will also boost
sales of ZEVs -- the ZEV markets. As you can see from these pie charts, on the left, light-duty vehicles comprises about half of the in-use fleet in both California and the section 177 states. Offering ZEVs in markets segments beyond passenger cars such as SUVs and crossovers will enhance the overall ZEV market by appealing to wide array of consumers. We're encouraged that some automakers have plans to offer electric vehicles in these growing market segments.

The pie charts on the right show a big difference between California and the section 177 states in preferences for all-wheel drive -- all-wheel vehicles. In California, they comprise about one-sixth of the market. Whereas, in the section 177 states, they're half of the market.

We're pleased that some of the automakers are already offering all-wheel drive vehicles and others are planning to do so in the coming year. This will be a help to boost the market especially in states where this is an important feature.

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MR. NORDBERG: Now, when it comes to all-wheel drive range and performance, Tesla has demonstrated that electric vehicles can be equipped with all-wheel drive without compromising range or performance. In fact, if
you can see the figures on the slide comparison, the all-wheel drive model S is actually improved on the mileage and range of its rear-wheel drive version. These are encouraging developments for the future of the ZEV market in our states.

And, Christine.

MS. KIRBY: Okay. The last item is on travel. And we want to emphasize that the expiration of the travel provision in the ARB regulation for BEVs at the end of 2017 is another factor that will boost sales in the 177 states. As you know, the travel provision allows the automakers to place BEVs and fuel cell vehicles in any state with a ZEV program and travel the credits to every State with a ZEV program and get credit in those states.

In other words, an automaker gets credit in all of the other states without having to place a car in those states. As described in previous ARB ZEV rule-makings, the intent of the travel provision was to allow the auto manufacturers to focus early development and marketing efforts in California until electric vehicles where commercialized.

During the rule-making for the 2012 ZEV amendments, CARB staff recognized that extending the travel provision for BEVs through 2017 would result in significantly fewer BEVs being placed in the section 177
states through 2017. And that is exactly what has occurred. Availability of vehicles in our states, in terms of both numbers and models, has been spotty. We talked about this last year when we were here and it's still the case.

The graph on the slide depicts the ZEV sales requirements in California and the 177 states from 2014 through 2018. For the sake of simplicity, it assumes compliance achieves solely with 100-mile battery electric vehicles and not with a large amount of banked credits that have been amassed that you heard about earlier through the CARB presentation.

To keep things in perspective, keep in mind that the market in the 177 states is nearly 1.5 times greater than California's market. Because the travel provision is in effect for BEVs through 2017, there is no regulatory obligation to place ZEVs in the section 177 states until model year 2018.

However, almost all the automakers have elected to follow the optional section 177 compliance path in the ARB regulations, and this provides automakers with a reduce ZEV obligation in 2018 through 2020, if they place a modest number of BEVs in their states in 2016 and 2017.

The point is that in 2018 we expect significantly more vehicles and a wider diversity of models that will
appeal to more car buyers with a corresponding increase in sales.

In closing, it is clear transportation electrification is essential to protecting the environment and economy, and is a cornerstone of our long-term greenhouse gas reduction strategies. We recognize that the transformation we are striving for in the transportation sector depends on the efforts of multiple stakeholders.

As states we are firmly committed to doing our part, but a robust ZEV program that drives technology development and deployment and creates economies of scale is also essential to our ultimate success.

In that regard, we grateful to the Board for its critical leadership in setting the nation's sector on a path toward a low carbon sustainable future. As states with aggressive greenhouse gas reduction goals, we value our partnership with California and look forward to continued collaboration on our joint effort to electrify the transportation sector.

Thank you for the opportunity to be here today.

ADVANCED CLEAN CARS BRANCH CHIEF CUNNINGHAM:

Thank you, Mr. Klee, Mrs. Kirby, and Mr. Nordberg.

That concludes our Board briefing on the status
of ZEV market enablers. We welcome your input at this
time. Thank you.

VICE CHAIR BERG: Thank you very much, Josh.

That was a great program that you put together, a lot of
information, and really gave us a terrific update on the
enablers that are critical to making this program happen.

I think what I'm going to do, as a little Vice
Chair prerogative, take a little break right now while the
others staff comes in and brings on the final
presentation. And so let's say five, six minutes. Let's
not take long, but take a nice break and get back here
at -- well, by 10 till, by 10 till 3:00. Okay. Thanks.

(Off record: 2:38 PM)

(Thereupon a recess was taken.)

(On record: 2:50 PM)

VICE CHAIR BERG: Okay. If we can come back
please, take that one last stretch, and find your seat.
We're headed to finish up our program today.

Before we start the next staff presentation, I am
going to ask Professor Sperling for a few thoughts. He
has a time constraint and will not be able to stay with us
through the next presentation and our stakeholder
comments. So I thought we'd take a few minutes and have
his comments at this time.

Professor Sperling.
BOARD MEMBER SPERLING: Thank you very much. I'm sitting here. I've listened to all these great presentations by the staff and others. It's been a great education and update, but I feel lonely here --

(Laughter.)

BOARD MEMBER SPERLING: -- without my fellow Board members. Fortunately, there's some people here in the audience to keep me company.

(Laughter.)

BOARD MEMBER SPERLING: And as Wade Crowfoot did say, I am listening carefully. So I just wanted to offer some summary comments from what we've heard so far, my own personal summary. And then I have three thoughts or three suggestions that I want to leave on the table as we move forward, as the staff moves forward, and discussions happen.

So here's my summary. Number one, engineers are the heroes.

(Laughter.)

BOARD MEMBER SPERLING: That's because we've seen huge progress in the internal combustion engines, we've seen huge progress in batteries, we've seen high quality ZEV vehicles being put on the road. So that's point number one.

Point number two is I think we've seen that the
policies we've developed have been, for the most part, well designed and implemented. They're performance based. There's lots of incentives in terms of dollars, HOV lanes for vehicles, and I especially want to endorse the plug-in pinot program of Oregon. 

(Laughter.)

BOARD MEMBER SPERLING: And -- but the third point is that there is a real issue with consumers in the markets. And, you know, we're going to -- partly my comments here are anticipating presentations are going to be made by different stakeholders, and are based upon some of the comment letters that are put in, but that's clearly where we need a lot more focus. And that's especially the case if we see oil prices not rising significantly in the future.

So anyway, that's my summary of what we've heard so far.

So here's my three thoughts, three suggestions. Okay. One of them is based upon a presentation that's going to be made by a couple of the car companies based upon research that Dr. Susan Shaheen did at UC Berkeley, and that is a proposal to extend the credit program for car sharing. And I just want to make -- I want to endorse that. And I've always thought that we should do that, and -- but it was kind of more of an intuitive sense, but
the study that was done by Dr. Shaheen shows that car
sharing and bringing people into the vehicles -- into the
car sharing vehicles is perhaps one of the most effective
ways of doing -- of marketing -- of doing the marketing of
the vehicles. We're seeing -- we're going to hear a lot
more about that, but we're having problems really getting
more vehicles out there.

You know, in some ways, it's a success, but in
other ways, I think given the incentives that are
available and the pricing, we would have expected a lot
more vehicles to be sold and being sold, and it's not
happening. In the New England states and the northeast
states, it's -- you know, they have a special challenge
because of other circumstances are a little different.

So anyway, I think -- I strongly endorse that
proposal to create some extra -- to extend the program
beyond 2017.

Number two -- my number two proposal or thought
is that -- and I suggest this as an immediate action. And
that is we have a category of transitional low emission
vehicles. And I'm going to suggest that that's an
ideological, inappropriate name to be using, calling them
transitional. There's a lot of evidence that if -- that
plug-in hybrid vehicles could play as much or as big a
role or even bigger role than pure EVs. We just don't
know. And to call them PHEVs transitional I think is just wrong. So I did notice the staff stopped using TLEV, and I want to endorse that, and as we go forward, think about how to create more flexibility in the program, because the way it's designed now there is a strong bias towards pure battery EVs. And at one point, that seemed like the right thing to do, but I'm not sure that's correct anymore. And I know there's a letter from New York State that states the same thing.

And the number three item I want to suggest is that we really -- as we think about flexibility -- a little more flexibility, the way to anchor it or constrain it is to say that we're strongly committed to the 1.5 million vehicle target for 2025, and that we even consider the possibility of it being a little higher in a sense, and as a reward, or as compensation for providing more flexibility that we construct the formulas and so on, so that there might be a few more vehicles, and to make it -- and do it in a way that's more performance based than we have it now.

So those are my thoughts. And I thought great presentations, and I wish I could hear testimony, but I talked to many of the stakeholders and I've read all the comment letters. So I have a good sense of what's going to be heard. So thank you very much, Vice Chair Berg.
VICE CHAIR BERG: Thank you for joining us Professor Sperling. We'll look forward to catching up with you later.

Okay. Well, we'll get on with staff's final presentation. And our last presentation for today is an informational update on the Advanced Clean Cars particulate matter, or PM, measurement feasibility.

Approved by the Board in January 2012 as part of the Advanced Clean Cars program, the third generation of low emission vehicle regulation known as LEV III set ambitious but achievable reductions of criteria pollutants and greenhouse gas emissions from passenger vehicles through the 2025 model year.

The LEV III regulation included more stringent PM standards for light- and medium-duty vehicles for model year 2017 through 2025. Staff has committed to provide -- providing updates to the Board as part of the mid-term review. Today's update will cover the progress on PM measurement and the very low emission levels that our future standards will require.

Mr. Corey, would you please introduce this item?

EXECUTIVE OFFICER COREY: Yes. Thanks, Vice Chair Berg.

As you heard earlier today, meeting California's multiple air quality and climate goals will require
significant reductions from mobile sources. Further
efforts to deploy cleaner technologies in the light-duty
sector will be an essential component of this overall
effort. Staff will provide the Board with their
assessment of the feasibility of measuring PM emissions at
the level required to comply with the one milligram per
mile standard, as part of the LEV III regulations.

As noted in 2012, the Board adopted new PM
standards of three milligrams per mile beginning in the
2017 model year, and one milligram per mile beginning in
the 2025 model year for passenger cars, light-duty trucks,
and medium-duty passenger vehicles. The standards will be
phased in incrementally with full implementation of the
one milligram per mile standard by model year 2028.

At the 2012 hearing, some concerns were expressed
over the lowered PM standards, particularly the one
milligram per mile standard. The two areas of concern
were, first, could the one milligram per mile standard be
measured in the laboratory consistently; and, second, was
the one milligram per mile standard achievable with the
evolving technology by 2025 or could it be done even
earlier?

Today, we'll address the first element of the
measurement feasibility of PM levels at and below one
milligram per mile standard. The second element, whether
the one milligram per mile standard is achievable with the expected technology by 2025 or earlier will be before the Board next year.

Inna Dzhema of the Emissions Compliance Automobile Regulation and Science Division will now give the staff presentation.

Inna.

(Thereupon an overhead presentation was presented as follows.)

AIR RESOURCES ENGINEER DZHEMA: Thank you, Mr. Corey. Good afternoon, Vice Chair Berg and members of the Board

Today, I will be presenting an update on ARB efforts to evaluate the capability to measure particulate matter emissions from light-duty vehicles at very low levels.

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AIR RESOURCES ENGINEER DZHEMA: In 2012, the Air Resources Board approved more stringent particulate matter or PM standards for light- and medium-duty vehicles as part of the Advanced Clean Cars rule-making.

Beginning with the 2017 model year, the PM emission standards will drop from 10 milligrams per mile, to three milligrams per mile. For 2025 and later model years, the PM standard will drop to final value of one
These standards ensure light-duty vehicles will continue to emit at the lowest possible PM levels, even as new technologies are being introduced to simultaneous reduce greenhouse gas emissions.

When adopted, industry expressed concerns about whether the current method could reliably measure PM emissions at one milligram per mile. As a result, the Board directed staff to conduct a technical investigation on measurement capability.

The Board also directed staff to evaluate the feasibility of vehicles using new and emerging GHG engine technologies to meet the one milligram per mile standard and whether the standard could be implemented earlier than 2025 model year.

The focus on today's presentation is on the first task of looking at PM measurement capability. Moving forward, staff will evaluate the vehicle feasibility aspect including implementation time of one milligram per mile standard and report back to the Board in late 2016.

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AIR RESOURCES ENGINEER DZHEMA: Before we get started, I would like to walk you through the basic elements of how we have traditionally measured PM
emissions from vehicles. This illustration shows the major elements of the emission testing process. Starting at the top, the exhaust from a vehicle is directed to a sampling system where it's diluted with ambient air. The diluted exhaust is then directed to the PM sampler where PM is collected on a filter. The filter is then transported to a clean room, where it's weighed to determine the collected PM mass.

With that schematic in mind, let's turn to the real world with a quick tour of ARB's laboratory where the testing is actually done.

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AIR RESOURCES ENGINEER DZHEMA: First, a test vehicle is placed on the dynamometer to simulate typical on-road driving. The driver follows a specific vehicle speed profile for the emission test.

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AIR RESOURCES ENGINEER DZHEMA: Vehicle exhaust is transferred to the sampling system where it's diluted with filtered air.

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AIR RESOURCES ENGINEER DZHEMA: Before the test starts, sample filters are placed in the PM sampler.

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AIR RESOURCES ENGINEER DZHEMA: After testing is
done, the samples are transported to a clean room where
they are weighed with an automated system.

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AIR RESOURCES ENGINEER DZHEMA: As I mentioned
before, industry has voiced concerns regarding PM
measurement capability. These concerns include, whether
the current matter is capable of measuring PM at one
milligram per mile level. And what are the sources of
variability in laboratory measurements? Can PM be
measured reliably at different laboratories? And more
recently, are the different sampling options allowed
actually equivalent?

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AIR RESOURCES ENGINEER DZHEMA: So what did we
do?

As any good scientist or engineer would do, staff
methodically approached the problem and designed and
conducted multiple test programs to collect data that
would address each of these concerns. The test programs
also took the next step of evaluating alternative methods,
which determine PM by counting particle numbers, measuring
particle size, and measuring the black carbon content.

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AIR RESOURCES ENGINEER DZHEMA: Over the past
couple of years, staff has done an extensive amount of
testing to better understand measurement capability at very low levels. This has involved eight separate test programs, encompassing more than 350 emission tests of 67 unique vehicles.

Analysis covered more than 2,000 individual samples, and utilized 10 different instruments. This work also led to publication of five peer-reviewed scientific papers.

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AIR RESOURCES ENGINEER DZHEMA: To summarize the detailed findings of all this work, staff also prepared and publicly released a detailed technical support document. The TSD can be downloaded from ARB's website at the link provide in the slide.

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AIR RESOURCES ENGINEER DZHEMA: The first step in investigating the mass-based measurement capability is to quantify all the sources of measurement variability. Staff identified three major potential sources of variability.

First is the mass analysis, which includes the actual weighing and processing of the filters. Second is the sampling system, which includes dilution of the vehicle exhaust and collection of PM filter on a filter in the PM sampler. The third is the emission source itself,
namely the vehicle and the driver. For this measurement evaluation, staff focused on quantifying the contribution to variability from the first two of these three sources.

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AIR RESOURCES ENGINEER DZHEMA: For the first category of mass analysis, staff utilized data collected over the last two years and found that the mass measurement itself is very consistent and certainty is less than two percent of the standard.

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AIR RESOURCES ENGINEER DZHEMA: For the second category of Sampling system, the contamination from the ground air and sampling system was found to be approximately ten percent of the standard at ARB's laboratory. This appears to be comparable to that of industry's labs, based on a survey of 12 separate labs.

Further, the regulatory test procedures already allow a correction for background contamination that is more than sufficient to account for these levels from the sampling system.

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AIR RESOURCES ENGINEER DZHEMA: After the contribution from mass analysis and the sampling system were determined, the next question to ask is what is the precision of the measurement, or, in other words, how
different are the results of repeated measurements?

The schematic on this slide depicts the set-up used for the precision determination. Five PM samplers were used to simultaneously collect exhaust samples, and the results were compared to each other. Testing was repeated across multiple low PM vehicles using various engine technologies and tested over different driving cycles. The precision was found to be 11 percent, which is comparable to other widely accepted scientific measurements.

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AIR RESOURCES ENGINEER DZHEMA: Next, staff took steps to estimate the impact of using different test cells or laboratories when measuring PM. That is, do we get the same results when a vehicle is tested in different test cells?

For this study, staff repeatedly tested a single low PM vehicle across three of ARB's test cells as an approximation of lab-to-lab variability. Different sampling equipment, drivers, and operators were used in each test cell.

So what did we find?

That there was no statistically significant difference in the average emissions across all three test cells. And, that the results showed that the test-to-test
variability is consistent across three test cells indicating that the method is robust.

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AIR RESOURCES ENGINEER DZHEMA: Recent modifications in the federal test procedure allow the use of different sampling options to collect PM for measurement. Yet, there is limited data available to ensure these options are indeed equivalent.

ARB staff evaluated the option allowing a single sample per test rather than the conventional three samples per test method. The single sample option is of great interest due to a potential testing cost reduction, such as a reduction of analysis time and material use.

The comparison study confirmed that both sampling options generated equivalent emission results, and staff expects this option will likely be used by ARB and industry going forward.

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AIR RESOURCES ENGINEER DZHEMA: With regard to the regulatory method for measuring PM mass, staff's findings, as a result of this technical evaluation, include the following:

First, the conventional mass-based method is still suitable and adequate for measuring PM emissions at one milligram per mile levels.
Second, the existing regulation already allows a subtraction that accounts for contamination that occurs in the sampling system.

Third, the determined precision confirms that the measurement capability is sufficient at the low PM levels.

And lastly, the test-to-test variability caused by measurement is low and consistent among ARB's test cells.

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AIR RESOURCES ENGINEER DZHEMA: Now, I would like to talk briefly about a few alternative methods that staff also investigated as part of this technical assessment.

These methods include counting particles, sizing them, and measuring the black carbon component of PM in lieu of traditional mass-based methods. The European Union's solid particle number method was also evaluated.

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AIR RESOURCES ENGINEER DZHEMA: First and foremost, the study of these alternative metrics included their comparison to PM mass by simultaneously using the alternative and a traditional measurement of PM mass. The evaluation found several noteworthy observations.

Generally, a good correlation with PM mass has been observed for each of the alternatives. Thus, as the title of the slide says, as one goes, so do all others.
What we mean by this is that reduction PM mass also reduces black carbon and particle number.

However, the exact relationship with PM mass can vary significantly across vehicle technologies and test cycles and is different for each of the alternatives. That is, while we did see the same directional trends when measuring higher or lower PM vehicles, the alternatives did not give us equivalent test results to the mass-based method.

We also found that the alternative methods had similar levels of measurement repeatability to the traditional mass-based method.

These alternative methods do utilize some form of real-time data on PM emissions during the test, which can be provide useful insight to better understand when PM is being emitted. And, such an approach can provide near immediate emission estimation, thus offering potential coast savings associated with sampling and analysis resources.

However, all of these alternative methods exclude some PM constituents from their measurement, thereby adding some uncertainty in determining total PM emissions.

And, critical for good laboratory measurements, the instrumentation used for the these alternatives lack an equivalent level of robust calibration procedures to
make sure the equipment maintains its quality control and quality assurance and the results can be comparable.

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AIR RESOURCES ENGINEER DZHEMA: While I have focused today on the first task of confirming measurement capability, I wanted to remind you that we still have work to do on the second task. As part of the Advanced Clean Cars mid-term review that you heard about earlier today, we will be back next year to report on the second task.

Specifically, we are beginning work to reassess the feasibility for future vehicles to meet one milligram per mile standard. This evaluation will include looking at vehicles utilizing newer technologies to reduce greenhouse gas emissions and looking at the improvements of PM control strategies to reduce vehicle variability.

As part of this feasibility assessment, staff will also reevaluate whether it's possible to accelerate implementation of one milligram per mile standard to earlier than the 2025 model year.

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AIR RESOURCES ENGINEER DZHEMA: At this point, I would like to present the staff's conclusions on the conducted technical work.

They are:

The conventional measurement method will remain
the approved test method for ARB's LEV III PM emission standards.

Continue to use mass based standards for PM will also achieve reduction in particle number and black carbon emissions.

Consistent with ensuring our laboratory stays at forefront of measurement capability, ARB will continue to research alternatives sampling and measurement methods, which may lead to potential quality improvements or testing cost reductions. With that, I conclude my presentation. Thank you.

VICE CHAIR BERG: Thank you very much. That was a great presentation on a very technical issue. And very nice job thank you very much for that.

So with the nod of my fellow Board members, I think we'll go right to testimony. And this time, we're actually going to start with Sacramento. Sacramento, can you guys get up and ready. I think we have about four people -- four or five people ready to testify in Sacramento.

MR. MUFFETT: Yeah, we have five in Sacramento.

VICE CHAIR BERG: Okay. Five. So can we -- we'll take Sacramento first and we have 16 here.

MR. MUFFETT: Excuse me, actually four. We had someone sign up twice. So we'll start with Will Barrett,
to then Diana Vasquez and then move on to Bill Magavern.

VICE CHAIR BERG: Okay. And I'm asking that we stay within the three minutes. And I'd appreciate that.

MR. BARRETT: Thank you, Chair Berg. I'm with the American Lung Association in California.

Our organization has long championed the goals of the Advanced Clean Cars program and the ZEV programs. We view these programs as really just working to clean up the air and limit community exposures to toxic traffic emissions. We believe the mid-term review should really continue to advance these benefits and appreciate all the discussion here today.

We're in support of the 2012 adoption of the Advanced Clean Cars package, along with dozens of health organizations and hundreds of public supporters and individual medical professionals. These policies really are working to reduce smog, soot, and climate pollution. And to spread the transition to a zero emission future, they're all critical to improving health and protecting our climate, both in California and throughout the United States.

In particular, the zero emission vehicle mandate is really necessary for a clean air future. California has been leading the way on the ZEV program and ZEV incentive programs. It was very exciting to see the
presentations from the other 177 states today, and really
want to stress that we have made tremendous progress, but
we have a long way to go to really achieve our clean air
future through the ZEV program.

There's really an urgent need to continue to ramp
up deployment of battery electric vehicles, fuel cell
vehicles as we work to achieve not only our ozone
standards, our particular standards, and our climate goals
in California and beyond, as all the other states noted
today.

We believe that the mid-term review should really
set a path for stronger ZEV and criteria pollution
emission standards, not only to meet the new goals but
really to put more ZEVs on the road. We can't continue to
focus on the credit aspect of it. We really need to see
more ZEVs hit the road and provide cleaner benefits.

We do agree with the commentary from
Massachusetts on the sunsetting of the travel provision.
It's a top priority of ours here at the Lung Association
of California, but also among our colleagues and Lung
Associations throughout the country. We need to really
drive more ZEVs on the road into more states, rather than
just getting more credits on paper for the vehicles placed
here in California.

On the particle pollution standard, we really did
appreciate that presentation. Agree it's a technical topic, but a really nice presentation. We want to really thank staff for their continued focus on this and really urge the continued efforts to understand the measurement capacities and other methods going forward and really bringing that standard on line as soon as possible to provide the best benefits to the health of Californians and folks in the other states.

We do believe also that ARB should continue to move quickly towards expanding emission's testing on road in use to ensure that all the benefits we're hoping to see out of these programs really are being provided to the people breathing traffic pollutants.

We can't afford to continue -- to continue on without getting these benefits. We really believe that the mid-term review is an important step to reaffirming the commitment to all of these programs.

Thank you.

MS. VASQUEZ: Hi. Good afternoon in Diamond Bar. This is Diana Vasquez. I'm here on behalf of Sierra Club California.

And specifically, we just want to comment staff amend again on the SIP mandate, what you guys have been doing on this specific issue. And we're really proud to really work with you on it. And one of the things that
the Club is actually working on, along with Acadia Center in Conservation Law Foundation, is we really see a report specifically to -- it's called, "Charging Up: The Role of States and Utilities and Auto Industry", that is looking at dramatically accelerating and increasing the ZEV mandate throughout the ZEV states. And how do we actually work with all -- multiple stakeholders throughout the country, but specifically states, and see how can we actually expand this mandate, not just in California, but throughout the nine ZEV states.

And one of the things I really want to highlight are the nine vital steps that we actually looked at. The first one, we're looking into how these partnerships are being build at the State level, specifically within the State, but at the local as well.

The second one is consumer incentives to make EVs less expensive and more convenient. Specifically, looking at how can these programs actually work within low income communities, and specifically how do we get these vehicles into low-income residents.

The fourth one is looking at programs and incentives to actually look at EV adoption and infrastructure.

The fifth one is policies to promote widespread availability and consumer friendly charging stations. And
then really have -- multiple emphasis has been done
throughout the presentation is how do we actually get
public education and awareness to everybody? And how do
we actually get individuals to adapt to this new
technology.

So we really hope that this report that is going
to come out at the end of this month can actually
highlight some of the things that other states,
specifically California, like I mentioned, the other nine
EV states can actually do. And hopefully, this is
something that at least the Club can actually advocate
here in California, but throughout the country in other
nine -- other ZEV states.

But with that, we really are really thankful for
everything that you have been doing. The mandate for us
has been going really well. We definitely see
acceleration, working into California. But again, our
emphasis is how do we actually get this throughout the
country, throughout the world? The more they're be
healthy would be more of help to really getting this
information to our consumers, to our members and
supporters here in California, but also other states.
Okay. So thank you for that.

MR. MAGAVERN: Good afternoon, Board members,
those that I can see, and those that can I can't see.
Bill Magavern with the Coalition for Clean Air, and we really appreciate the efforts being made by all the different entities who are trying to get our zero emission vehicles out on the road. And, in particular, I noticed that both Wade Crowfoot and Christine Kehoe talked about trying to expand access to advanced clean vehicles to those that have not had that access in the past, particularly people in disadvantaged communities where the air pollution is the worst, so the need for these cleaner vehicles is the great.

And this is a key objective of the Charge Ahead California campaign that we are a part of. And we all know that there needs to be more education of consumers and all sectors need to play a role in doing that. We're trying to do our part by hosting a ride and drive in Wilmington next month. But I think one sector that really needs to step up that could be doing a lot better is the dealers, where some are really -- are doing their job in educating drivers about ZEVs, but a lot of them really are not, and that's a gap that needs to be filled.

One thing that's very important as others have mentioned is that the travel loophole needs to be allowed to sunset as planned, so that we can see the full ZEV rule take hold in all the states that have adopted it.

And in the staff report, I saw that it's
projected that the companies are well on their way towards complying with the ZEV mandate. What wasn't clear to me was whether we're also well on our way to having the number of vehicles on the road that we're planning to. In California, we have a statutory goal of a million by 2023, and the Governor's Executive Order a million and a half by 2025. And if a lot of the compliance is by credits rather than by cars, then we certainly would fall short of that.

For that reason, we agree with Board member Sperling that we should be looking at a higher target for vehicles and ways to actually get them on the road. And, of course, one of those ways is through incentives. So returning to a theme that many of us addressed this morning, show us the money. We have incentive programs, but in California, those are funded now until January at best, so we need for the legislature and the Governor to work together to make sure that the rest of the money is passed.

Thank you very much.

MR. MUFFETT: Okay. And then our final speaker is going to be John Shears.

MR. SHEARS: Good afternoon, Vice Chair Berg and members of the Board. My name is John Shears. I'm with the Center for Energy Efficiency and Renewable Technologies based here in Sacramento. We're members of
both the PEV Collaborative and the Fuel Cell Partnership. So needless to say, we support all the efforts now and going forward on implementing and deploying as many ZEVs and the necessary infrastructure to make those ZEVs sexy and fueled on the roads going forward.

Given that, I'll focus my comments on the PM issue. I just again want to thank staff and department to have staff confirm my confidence going back to 2011 and 2012, when we were having the discussions about the measurability of a one milligram PM limit. Glad to see that that is turning out to be practical, at least in a laboratory setting. And look forward to working with CARB staff and likely having many conversations with members from the auto industry going forward on how this will all play out in terms of accelerating the compliance ramp to earlier than completion in 2028, but also how this might work in the OBD setting -- OBD II settings, and avoiding the PM paradox that I mentioned at the last Board meeting, and that John Storey at the Oak Ridge National Lab is recommending that we seek to avoid in terms of the differences in terms of how PM is being addressed on the diesel cars versus what is the likely path that industry would like to pursue on the GDI direct -- gasoline direct injection path, especially given the recent SNAFU with Volkswagen and in-use performance issues.
So look forward to working with staff on addressing the issues also around that particulate matter. So thank you.

VICE CHAIR BERG: Well, thank you very much to all the witnesses in Sacramento. You've done a fabulous job today participating with us, and the technology is working great.

So with that, we'll turn back to our witness list here at South Coast. And I'll turn it over to Lori.

BARCU MANAGER ANDREONI: Henry Hogo, Steven Douglas and then following Julia Rege.

MR. HOGO: Good afternoon again, Vice Chair Berg and members of the Board. I just want to make some comments regarding the program. First, I want to thank Mr. Corey and staff for a very comprehensive update on the Advanced Clean Car program.

We, at the South Coast AQMD, have been working very closely with the Plug-In Electric Vehicle Collaborative and the California Fuel Cell Partnership to really advance zero emission technologies. And of the 53 station -- fuel cell hydrogen stations that was mentioned, 30 of them will be in this region. So we expect to see those on board within a year or so.

Our board recently approved $1 million of fund -- local funding to help buy down electric vehicle charging
stations for home use, but we do recognize that the challenges are in the workplace and with the multi-unit dwellings.

So we have -- actually, our board adopted a protocol for employers to generate credits for installing electric vehicle charging units at the workplace. And these credits are used in our ride-share equivalent program. So we think that's a very good way of getting more electric vehicle charging units into the workplace. And we work very closely with our local utilities to establish that.

I do want to point out that under the EFMP Plus-Up, there is an element that allows consumers to install a charging station at the home. And of the handful that we have seen come across our desk, two of them are actually in apartment units. So we've been able to fund families, residents that live in apartments. So it's a good start and we'll look more to that.

The last thing I just want to point out that relative to the PM measurements, we're in full agreement with the conclusions made by staff, that it is feasible to measure PM at these levels. So with that, I thank you again for allowing us to comment today.

MR. DOUGLAS: Thank you. I'm Steve Douglas with Alliance of Automobile Manufacturers. I represent 12 auto
makers that produce vehicles for mainstream consumers. These are the farmers, the teachers, the nurses, the moms and dads who carry the kids to school and then drive to work.

They don't read ZEV regulation. They don't track the ZEV blogs. This is our market. And collectively, this is our challenge. If we ever want to achieve the goals of 15 percent or 25 percent or 50 or 100 percent ZEVs, that's the market we have to achieve.

We're committed to the same goals as ARB, and that's a successful, vibrant, growing ZEV market. And I should say that a successful market is one where the sales price of a ZEV covers the cost to produce it without incentives from either the automakers or from government.

We offer 23 different ZEVs. There are over 20 different ZEV models this year. More are coming. We're starting to see second generation ZEVs with longer range, better performance. These vehicles are safe, reliable, efficient. They're fun to drive. And moreover, they're offered at unbelievable and, quite frankly, unsustainable prices.

Just an example, the effective lease rate of one well reviewed electric vehicle is about $60 per month. So that's -- you could get two of those for the price of a cell phone -- a monthly cell phone plan. That's not
sustainable.

In terms of market share, ZEV sales are down in California slightly this year. This is the first time we've seen it drop. So I say all that to say this, the ZEV market is still in its infancy. But if we ever hope to achieve our goals of transitioning to a zero emission transportation, we have to include those mainstream consumers. And the sales price of the ZEVs must cover the cost without incentives from the manufacturers or from government.

So moving on, a couple of things in preparation for next year. We'd ask the Board to look at two areas as they relate to the ZEV regulations. The first Dr. Sperling hit upon and that's the plug-in hybrid electric vehicle credits and the credit cap.

For the credit, we think that the credits should better reflect the zero emission miles of the vehicles traveled. And for the cap, currently PHEVs can only make up 25 percent of the total ZEV. And we think that plug-in hybrids will appeal to a broader range of mainstream consumers. And unnecessarily limiting that discourages introductions and a growing ZEV market.

And finally, regional ZEV market differences. Sales are still weak in the northeast, but we are working collaboratively with the northeast states, and we hope to
improve the ZEV market. However, the mid-term review should include a sober assessment of the market and whether regional differences result in requirements that are much more difficult to meet in one region compared to the other.

So thank you.

MS. REGE: All right. I guess we're in the last call here of the day. So Julia Rege with Global Automakers.

Progress under the Advanced Clean Car program is promising, but we are still in the early years of the program. The standards are and will continue to be challenging going forward. This year in particular we are experiencing a lot of changes in the marketplace, including overall total sales are increasing, lower gas prices, and changing vehicle preferences.

There's also an ongoing disparity in ZEV sales between different markets. And it's troubling to see that there's a lot of volatility in ZEV sales as well with decreases in California and across the U.S. as well this year.

As the regulations become more stringent, the use of credits becomes all the more important to provide that margin for compliance for these new risky technologies.

But we have to say that ZEV technology is no
longer the barrier. The technology continues to improve and advance. And our members are selling great products today. Yet, a salesman mandate, regardless of the policy intentions, will not by itself increase the ZEV market share, and all stakeholders must play a role in developing the market.

Additional State level efforts and investments are needed to develop and grow the market, install infrastructure, and increase consumer acceptance and awareness. These are all critical aspects of enabling, and ultimately creating a sustainable and successful market.

We have increased our efforts working with California and the section 1787 states, as part of the State's MOU commitment to support ZEV markets, and to evaluate market enablers and challenges that we face.

There's still a long road ahead, but we do want to recognize the early progress with the creation of new incentive programs in Connecticut, refunding of exist programs like Massachusetts MOR EV.

And then more recently, the work that we did through the Collaboration for ZEV Success to bring vehicles to the national drive electric events across the U.S. And this is part of our efforts to help increase consumer awareness.
Typically, I get up here and I think I've said it in past years, and I say we've spent billions of dollars to develop ZEV technology, and that is absolutely true. But our investments go far beyond just bringing these vehicles first with hybrids and plug-ins and then fuel cell vehicles, it's also all the other resources and time that are spent by the automakers to enable the ZEV markets.

And just a couple of examples, increasing product offerings and availability, improving the technology over time, marketing and promoting the vehicles through ride and drive, State fairs, auto shows, and other public forums, working in the public-private partnerships - and we had great presentations from some of those partnerships today - to build the markets and create consumer demand.

And then on the infrastructure side working with charging providers, suppliers, utilities, and partnering with hydrogen providers in California and the northeast. Also, offering charging options for the customers, so once the customer has the vehicle they have an option at home, or free charging options, or a variety of ways that they can fuel their vehicles.

And then finally working with the states to implement incentives for vehicles, infrastructure, and other market-driven options. So we're invested in ZEV
technology and we'll continue our efforts, but this work can't be done alone and we all have a shared responsibility.

Thank you.

BARCU MANAGER ANDREONI: Amy Lily, Gill Castillo, David Reichmuth.

MS. LILY: Good afternoon. My name is Amy Lily, and I represent the Hyundai Kia Technical Center in Ann Arbor.

Hyundai and Kia are strong supporters of ZEV technology, and we'd like nothing more than to be able to sell our ZEV vehicles throughout the country in mass quantity. The technology is viable, and that can be seen through the appreciation we've received from all of our customers that have purchased at leased the Soul EV and the Tucson fuel cell vehicle.

We just need to make sure that we can offer it at a reasonable price, and that a sustainable infrastructure network is in place to provide a reliable and positive experience for our customers.

I would like to express our appreciation for all the work that California has done to date to support the ZEV program, providing for incentives, for vehicles and infrastructure, and in taking a leadership position and collaborative efforts with automakers and section 177
states.

As a result, we're starting to see a network of fuel cell and electric vehicle charging stations that are coming together in California. Also, despite some promising strides, the section 177 states are only now starting the same process they've begun in California some years ago. We heard earlier some of the great things that the section 177 states are doing, and we really applaud the incentive programs in Connecticut and Massachusetts, particularly at point of sale, and also some of the rebates that Connecticut has provided for the dealers that sell ZEV vehicles. We think that is really important.

We do struggle with our dealerships. While we are seeing the implementation of methods to ensure the quality of hydrogen, there are still some hurdles to overcome in regards to the price of hydrogen and with expanding the network quickly.

As for electric charging, we strongly support efforts to incentivize workplace charging and to place chargers in locations that provide customers the confidence that they can go about their daily activities without running out of fuel.

We've learned that workplace charging is key. I think other people have said that before today, and we've also believed that there's a need to incentivize DC
charging centers for reliable, safe, and convenient charging to meet the upcoming array of longer range EVs and larger batteries.

Furthermore, to support large volumes of ZEV vehicles, we need a reliable, large, and well established network that's scalable over time, because we're going to see more and more vehicles come on to the market.

As OEMs, our challenge is to close the gap between the cost of the technology and the price the average consumer is able to pay. I think Steve touched upon that a little bit about the difference in the price.

We know that economies of scale and technology advances will reduce the cost of technologies over time. However, until we can close those gaps, it will be essential for California and the 177 states to continue supporting the technology through incentives.

And while budget decisions are made on a yearly basis, we need assurance that California and the states will continue to support these incentives, as long as the gaps exist. And we heard that a little bit this morning when we talked about the CVRP funding.

Just real quickly, Gill Castillo was going to testify next, but he was not able to make it, as well as Steve Kosowski, but their comments are going into the record. So I really hope that you can look at that,
because they have some real live examples from selling the
of Soul EV and the Tucson fuel cell vehicle.

Thank you.

DR. REICHMUTH: Vice Chair Berg and members of
the Board, my name is Dave Reichmuth. I'm speaking on
behalf of the Union of Concerned Scientists, and our over
69,000 supporters here in California.

I'm not supposed to do, but thank you staff for
your work on this update.

(Laughter.)

DR. REICHMUTH: We're really encouraged by the
process -- the progress that's been made in the market for
EVs. There's really no doubt in the last five years, that
there's been incredible progress in the ZEV program and
the manufacturer's response to it. We've begun to produce
a transformation in the vehicle market with over 350,000
EVs sold in the U.S. and 150,000 in California alone.

We're also seeing more choices, more than 20
models available to consumers -- plug-in models available
to consumers here in the State and fuel cell vehicles
coming to market even just this week.

These success are all evidence that the program
is beginning to lay the foundation for transformational
change in the light-duty vehicle market towards zero
tailpipe emissions and electric drive. In fact, the
progress in both volume and vehicle capability has been much more than was anticipated. And this has significant implications for the effectiveness of the ZEV program going forward.

When the Board approved updates in 2012, staff anticipated compliance would require ZEV sales in 2025 reaching over 15 percent with at least six percent true zero emission vehicles, fuel cell or battery electric vehicles.

Analysis by us and others and staff's presentation today shows that meeting the ZEV requirement will require -- will likely require much lower sales due to both bank credits and vehicle technology that is progressing much faster than expected. For example, the 2015 Nissan Leaf already would receive more credits per vehicle in the post-2018 scheme than were assumed for the average 2025 BEV.

And technology advances over the next 10 years will make this credit oversupply issue worse. And bank credits will also reduce the number of vehicles that have to be delivered. Staff's presentation today showed that would be more than 100,000 vehicles in 2025 that would be lost.

So the vehicles that will have to be delivered under the ZEV program in 2018 onward will be much lower
than was anticipated in 2012, and also much lower than
what the mobile source plans anticipates. The goal of the
ZEV program is to ensure that California achieves the
transportation -- transformation in the light-duty vehicle
market to meet the State's long-term quality and global
emissions targets.

It's going to be necessary to have sufficient
volume and a variety of these vehicles on sale by the end
of 2025 to put us on a path to meet these goals. And we
urge the Board to investigate policies as part of the
mid-term review that would restore the type of market
transformation that was intended in the adoption of the
ZEV standard.

Just one more issue. The ZEV program is not the
only program necessary to meet our long-term goals. And
reducing carbon emissions from gasoline diesel vehicle
powered vehicles is an equally critical part of Advanced
Clean Cars.

I also need to raise concern over a discussion
draft recently released from the House of Representatives
that would award greenhouse gas credits for safety and
crash reduction technologies. This change would increase
emissions by at least nine grams per mile with no proof of
real world emissions benefit. For California, this would
increase emissions in 2025 by more than 1.4 million metric
tons of CO$_2$ per year equal to putting about 385,000 more
gasoline cars on the road.

And this legislation could also result in the
elimination of California's waiver under the Clean Air Act
jeopardizing many of ARB's vitally needed programs. We're
troubled by this proposal and we strongly oppose those
changes.

BARCU MANAGER ANDREONI: Simon Muni -- Mui,
sorry. Mike Hartrick and Diarmuid O'Connell.

MR. MUI: Good afternoon. You've almost made it.
Thank you. I'm Simon Mui with Natural Resources Defense
Council.

I'd just like to say amazing work, I think,
around the clean cars program and the progress being made
over the past six years. We are on track and we continue
to make rapid progress. As we embark upon the mid-term
review that is now already under way, I'd like to draw our
attention and echo some of the comments around emphasis on
real world performance. As we've seen over the past
month, real world performance is a critical issue.

As we are focusing on whether it's NOx, whether
it's the number of ZEV vehicles on the road, I encourage
and urge ARB to take greater vigilance and emphasis on
ensuring that the wonderful programs that we've developed
going forward that we keep on making sure that the issues
around crediting, the calls for special credits and flexibility, that we do think about the performance -- the real world performance.

As we've seen, if these flexibilities are at times merged with automaker's intent on gaming the system, it can lead to vast underperformance and erosion of the emission benefits. Two cases in point, the ZEV program today, as we've seen by ARB's analysis, but that NRDC has now found as well through our analysis, the program will need to be significantly tightened up in terms of the credit system, if we are to deliver the 1.5 million vehicle goals needed for ZEV compliance. ARB can work to tighten up going forward our crediting system as it considers the many, many different proposal being put before it to reward additional credits into the system.

We need to make sure that we're looking at the ZEV program in terms of real world vehicles on the road, not this sort of paper credit vehicle approach.

I'd also like to echo my colleague Dave Reichmuth and flag real concerns about this proposal in Congress now seeking to legislate more paper credits for GHG emission reductions. Not only is this eroding real world emission, but even more egregious that same flawed proposal includes amendments to the Clean Air Act that would, in a practical sense, remove California's ability to retain its current
clean cars waiver.

This shot across the bow is not a helpful way to start the mid-term review, either at the federal level or the State level. And we do hope the more thoughtful voices that are here today within the auto industry will help us in convincing peers at the federal level to reconsider this strategy.

Thank you.

MR. HARTRICK: Good afternoon, Board. Mike Hartrick from FCA U.S., formerly -- or more well known as Fiat Chrysler.

I want to take the chance to address you today regarding the ZEV credit bank and analysis performed by the staff. Appreciate the work that they did. It seemed to be a pretty fair and balanced assessment. One note that we've heard some other speakers today say that these are paper credits. These are credits for vehicles that have actually been put on the road, and actually have been put on the road earlier than required by the requirements. We should keep that in mind.

So a couple points here regarding that analysis. First of all, this was an aggregated study looking at manufacturers as a whole. So, as such, it can't accurately reflect any particular manufacturer's status. You know, so when we look at the credit banks that have
been built so far, just as an example, over two-thirds of
the bank credits that went into the banks in 2014 could be
attributed to two manufacturers alone.

Secondly, the credit banks are an important
flexibility for manufacturers. They help us manage many
risks in our production and design of vehicles. For
example, product development delays can occur, market
failures can occur, and general speaking, recessions can
occur. Remember that the regulation is based on previous
model year sales. So even if a recession occurs and the
entire market shrinks, we're still held to the same
volumes that we would have been required to meet based on
previous year's sales, not that current year's sales.

A couple of these speakers have suggested
manufacturers may choose not to build vehicles because of
credit banks. We happen to agree that -- with staff that
that's a pretty unlikely scenario. From a development,
manufacturing, and marketing perspective, it's unrealistic
to assume that we cannot build any vehicles and then all
of a sudden years later jump to a much higher volume than
we would have otherwise been required to meet to try to
catch up, if you will.

Finally, again, these were benefits to
California -- real benefits to California by having these
vehicles come into the State early. It's supporting more
rapid market development, and is providing cumulative emission reductions that might not have otherwise occurred if those vehicles weren't already in the market.

So thank you for the opportunity to address you today. We look forward to working with the staff to talk to them about our individual credit banks and compliance strategies. And the ZEV credit bank has provided and is expected to continue to provide much needed flexibility to manufacturers to meeting these goals.

Thank you.

MR. O'CONNELL: Board members, how are you? It's good to be here today. I'm doing to do something new. I'm going to use some PowerPoints slide. So I hope they come up here.

Okay. Good. I'm trying.

(Thereupon an overhead presentation was presented as follows.)

MR. O'CONNELL: So as we went into the mid-term review this year, we have invested, as all of you know, in an evidence based and deeply analytical process here. We want to stop -- we want to shift the focus from the rhetoric to the actual facts of the matters, so -- but before I do that, let me just character -- reflect some of the comments we've heard from our competitor manufacturers and their associations.
It basically boils down to the same version of the old story, which is we're trying really hard. The market is not ready. It would be really helpful if you did X.

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MR. O'CONNELL: Well, the effect of that kind of lobbying, that kind of effort has been really insidious over the course of time.

Here's a chart we did for a presentation in Michigan earlier this summer, which showed that if we'd actually held the line with CAFE 20 years ago, we'd actually -- we'd be driving vehicles with corporate average fuel economy of something on the order of 75 miles per gallon. Now, it's really neat that we got to 34.2 this year, but we probably could have gotten there on the same curve earlier in around 1990.

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MR. O'CONNELL: The effect has been similar here in California. I'm afraid to say that relative to the original mission and requirements of the mandate through lobbying and litigation, most of it successful, we've had basically a 16-year delay in the performance as it was originally specified. We finally achieved two percent market penetration for electric vehicles, something that was set out as a 1998 target in the former era.
MR. O'CONNELL: The problem that we have right now with the mandate is fundamentally it's too weak. And it's weak for a number of reasons. The bottom line, at this point, is that even with the goals as set and specified, which we should all feel good about, because we've finally turned the corner up, we're still looking at 16 percent of total sales by 2025.

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MR. O'CONNELL: That's in terms of credits. If you translate that into vehicle sales, that actually means two percent of vehicles on the road. The result -- this is the result of basically cranking the printing press on ZEV credits over the course of time. There have been many appeals, and the result is this, you've got this sort of Delta. That two percent number is going to sound familiar, because it's basically where we are today.

So just to remind, by 2025, we're going to hit two percent sales on the current track based on the inflation of the credit system as created.

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MR. O'CONNELL: To put that in further context, we're talking about essentially 12,000 more vehicles than are being sold today, if we stick to the current track, 42,000 vehicles in total, 40,000 of those, I would posit,
we're going to produce.

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MR. O'CONNELL: So what do we do about this?
I'm not going to get there first.
We've talked about infrastructure. I think
infrastructure is helpful on the margins. We've certainly
seen the benefit of DC long-distance charging that we've
done on our own dime, something on the order 10,000 -- of
1,000 stations throughout the state of California. We
should do more of that. As others have said, we should
focus on workplace charging, and to the degree we can, on
multi-unit dwellings.

Incentives. There's already $10,000 on the books
for California -- for citizens of the State of California.
That's pretty compelling, but not compelling enough to get
to true market adoption. If you wanted to go down that
path, I'd recommend Norway. Norway, you basically have 50
percent of the vehicle is returned to you. That's led to
vast penetration in the market, the leadership of electric
vehicles.

But it really comes down to compelling product
and mass market production. Compelling product means a
car that people want to drive that has high utility. Mass
market means true mass market production programs.

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MR. O'CONNELL: To put this in context and to make a final point, if we really wanted to get to our goals, we would actually be looking at quadrupling the current requirements of the market to take care of the current requirements of the ZEV mandate to eliminate this delta between credits and vehicles that sell.

So I'd urge our consideration of this issue, and I offer all resources to staff as we go forward here to consider the analysis that we produced. Thank very much.

BARCU MANAGER ANDREONI: Eileen Tutt, Michelle Kinman and Michael Lord.

MS. TUTT: Good afternoon. Eileen Tutt with the California Electric Transportation Coalition. I represent -- our Board is made up of all of the largest utilities in California, as well as some of the small publicly-owned utilities. And we work very closely with our automaker members, as well as others, who produce the clean technologies that you've heard a lot about today.

We have a very long history of supporting the ZEV program, and we are not going to change any part of that history. So we look forward to working with all of you, with the staff, with all of the other stakeholders over the next year, a little over a year, as you build up to a mid-term review and then consider any possible modifications after that.
I want to just say there's a couple things that I've heard today. We also very much support this idea of linking zero emission miles to the Zero Emission Vehicle Program credit. I noticed today on one of Ms. Wong's slides, there is kind of -- you know, the pure battery electrics got 100 percent. And I think the challenge there is that they actually -- the people who own battery electric vehicles, I would bet almost 100 percent of them use a gasoline vehicle some times. So I think it's a little -- I don't know how that comparison was made, but I would say that I think we need to be a little bit more transparent on how people drive, if they own a battery electric, if they own a plug-in hybrid.

The plug-in hybrids may be the only option for some people. We also think we need -- definitely need to support the pure battery electrics and the fuel cell vehicles. They're all really important technologies. But as we compare the two, we want to make sure that we're comparing them in a way that's fair. And I think it is difficult to suggest that, you know, somebody who buys a pure ZEV, at this point in time when we don't have the needed infrastructure, would not ever use any other internal combustion engine vehicle.

The other thing I want to say is that we also -- it was very good to hear from the northeast states and
Oregon today. Thank you so much for inviting them, and I really want to thank them for coming. I think the interesting thing that I heard from them and that we would agree with is that the ZEV program is one of only a -- one of a suite of policies that we're going to be -- need to get to the goals, the one million goal and the 1.5 million goal.

We can't hang that all on the ZEV program. The ZEV program has never been a numerical goal for electric vehicles. It is a credit goal. But if we want to meet our numerical goal, we need our incentives. I totally agree with what Bill Magavern said. We need the other programs that California has put in place. We need ride and drives, all the things the Plug-In Electric Vehicle Collaborative is doing, and the Fuel Cell Partnership. We need all of those things together. It cannot be just the responsibility of the ZEV mandate.

I have more to say, but I'm out of time, so I -- this is a long process, look forward to working with you, thank you.

(Thereupon an overhead presentation was presented as follows.)

MS. KINMAN: Good afternoon. My name is Michelle Kinman, and I'm the clean energy advocate for Environment California Research and Policy Center.
I know I don't have to convince this Board that global warming is happening and is happening now, or that the single largest source of global warming pollution in California is our transportation sector. And you certainly know that Governor Brown has made reducing global warming pollution a cornerstone of his administration. And with all that in mind, I'd like to applaud the Air Resources Board for your leadership in advancing smart and needed programs to make zero emission vehicles more accessible to more Californians.

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MS. KINMAN: Now, you've got plenty of experts in the room today who can give you highly technical bar graphs and projections of future sales, and even the occasional slide of Russian nesting dolls. But what I want to share with you today are the faces of some of the Californians across the State who I've met over the past couple of years at EV test drive events that I've organized in low income communities of color as part of the Charge Ahead California campaign.

These are photo from events that we've organized in Boyle Heights, Carson, Long Beach, Riverside, Stockton, and other cities. And I can tell you that time and again I've seen the huge smiles on the faces of Californians as they emerge from their first test drive of an electric
vehicle. Let there be no doubt that Californians are
excited about driving electric, the benefits of electric
vehicles, and the critical State programs supporting EV
purchases.

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MS. KINMAN: In addition to the excitement and
demand that is growing among the public, I am pleased to
share the over 150 mayors, city council members, and local
elected officials around the State have officially
endorsed the ZEV goal. Specifically, they've signed on to
say yes I endorse Governor Brown's pioneering vision to
place 1.5 million zero emission vehicles on California's
roads by 2025. By accelerating the deployment of clean
vehicles, we can clean up our air, reduce global warming
pollution, improve public health, save Californians money
at the pump, and stimulate economic growth.

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MS. KINMAN: With all this momentum from the
public and locally electeds and diverse communities, it's
certainly not time to talk about reducing or slowing down
the ZEV program. Let's talk instead about improving and
expanding upon the program and working intentionally with
community partners to create more awareness in low income
communities of color.

And I want to leave with you a picture of the
gentleman there on the left of our screen, his outstretched hands. I think that says it all. That's Mark who lives in the South Coast, and who just recently retired his high-polluting SUV and got his Chevy Volt thanks to the EFMP Plus-Up Program. And he couldn't be prouder of the State of California for putting him in the driver's seat of the clean vehicle revolution.

And I look forward to the day with CARB's continual leadership when Mark is but one of the 1.5 million Californians who are driving zero emission vehicles.

Thank you.

MR. LORD: I'm waiting for the timer to reset.

Okay. Good afternoon, Vice Chair Berg, and Board members. I'm Mike Lord representing Toyota. And first of all, I just wanted to say that I echo support of Steve and Julia's comments on what we'd like to see out of the mid-term review. But mostly, I'd like to talk a little bit about our vehicle we just launched yesterday, the Mirai. The Mirai, which means Future in Japanese is 151-mile horsepower electric vehicle that gets over 300 miles on a five minute refuel.

A little more information about it. Initial demand has exceeded expectations. We have more than 2,000 order requests since the site went live July 20th. The
first retail deliveries, as I mentioned, were yesterday to a network of eight dealerships. The ownership experience program includes significant incentives, extended warranty and complementary fuel. We've announced that 3,000 Mirais will be produced for the U.S. market for the end of 2017. And the northeast launch is scheduled for calendar year '16 for New York, New Jersey, Massachusetts, Rhode Island and Connecticut.

So the hydrogen and the fuel cell future is here today. Of course, Toyota and other fuel cell manufacturers can't get Californians and others in other states into these great vehicles without infrastructure to fuel them. We definitely appreciate the efforts of the California Air Resources Board, the CEC, the Governor's office for the work they're doing. We're off to a good start, but we need to move more quickly. And this is why Toyota continues to work directly with fuel providers. But we also believe California and other states must consider the transition to hydrogen to be on a grand -- a grand scale public effort worthy of State investment.

So as we announced last week in Tokyo -- this was mentioned earlier -- Toyota has upped the ante again on fuel cell volumes. We are now targeting 30,000 vehicles per year globally starting around 2020. Although the number that we can expect in California is still not
fixed, much will depend on the state of infrastructure and consumer demand.

Ready access to stations and compelling incentives are critical. We also announced that Toyota is developing fuel cell buses for the Tokyo Olympics. This is another example of the multi-faceted benefits of fuel cell technology. And we encourage ARB and the State to look at hydrogen, not just as something to fuel sedans and SUVs, but also as a way for fuel cells to power a wide range of transport as well as to provide stationary power and energy storage opportunities.

This is the broader hydrogen society that Toyota envisions, and we look forward to continuing to work with ARB and California to make this vision a reality.

Thank you.

BARCU MANAGER ANDREONI: Azita Khalili, Elliott Martin, John Tillman, and the last speaker would be Joel Levin.

(Thereupon an overhead presentation was presented as follows.)

MS. KHALILI: Good afternoon, Vice Chair Berg and members of the Board. My name is Azita Khalili. I'm environmental regulations manager with BMW.

Thank you for the opportunity to talk about the ZEV enabling factors. I'm actually one of three speakers.
We're going to share the slides. Thank you.

So this slide -- I actually borrowed a lot of my slides. So this is a slide from ARB staff from earlier this year. And we couldn't agree more with them. We had some commenters talking about the more stringent regulation. But we couldn't agree more with the staff that actually there's a number of drivers for the ZEV market. And the mandate is one of them. The policy tools, actually there's a bunch of other factors that play a role here. And I want to focus on the consumer awareness.

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MS. KHALILI: The next slide I borrowed is from a UC Davis researcher that was presented at the ZEV Summit, Governor's ZEV Summit. And I want to look at the consumer. We talk about consumer awareness. Awareness is only the first step of a complex process where a consumer is exposed to something new. They hear about it, then they have to get some information about it, then they have to experience it, then they build an opinion about it. And, at that point, they will consider maybe owning it.

If I have owned this brand of smart phone for the past nine years, I need to be convinced to consider a new brand with a new operating system, because I'm actually pretty happy with this one. So looking at the consumer,
and how we can actually access them.

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MS. KHALILI: If I borrowed the ARB slide again, on the right, what are the factors that we actually have in the consumer awareness space? The communication of OEMs, we have vehicle launches, that's just one factor. Then the dealers do test drives, that's another factor. Then we have outreach campaigns like the National Drive Electric Vehicle. That's another factor. And then we have education on infrastructure and incentives.

But what we have found out is that actually putting electric vehicles in car-share fleets moves beyond the space of just getting exposed about it and hearing an ad.

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MS. KHALILI: The dealer, the ride and drives, they are moving in the first points in that chart, the awareness and knowledge. But putting in extra vehicles actually in the car-share fleet move the consumer closer to trying it on and finding if it fits for themselves.

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MS. KHALILI: So to that extent, actually we're happy to see that the Governor's ZEV action plan also agrees with us. Cost share programs were part of the consumer awareness and outreach recent study that proceed
also outreach programs. There was a recent study that Professor Sperling also mentioned. It was published by the University of California, Berkeley. And I'm going to invite Elliott Martin from that -- one of the co-authors of the study to talk about their findings.

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MR. MARTIN: Thank you. Good afternoon, members of the Board. My name is Elliott Martin. I'm a research engineer at UC Berkeley. I'll just give a brief summary of this study that we did, evaluating what sort of impacts have occurred due to exposures of EVs -- from consumers of EVs to car sharing.

Sure. Thanks. So this study is available on-line on our website. And basically, it was motivated by the need to evaluated what impacts exposure through car sharing has had on people's impressions of plug-ins and electric vehicles. And we want to understand how those impressions have shifted relative to car-sharing members who have not had exposure to EVs.

So we did a bit of a paired survey with a control survey and a experimental survey with car sharing members. The control survey was -- consisted of car sharing members that did not have exposure to EVs through their systems, and then the experimental survey did have exposure to EVs and plug-in hybrid electric vehicles.
MR. MARTIN: We found that there was a demographic difference between sort of the standard profile of what EV and plug-in hybrid electric vehicle owners looked like. We found that those exposed to car sharing through the experimental survey were more gender balanced. It was roughly 40 percent female versus sort of roughly 20 percent females owning the vehicles, and that, in general, the members of the experimental survey were younger.

MR. MARTIN: We also asked people as a result of their exposure to these vehicles, plug-in hybrids and electric vehicles, whether -- what their -- how their desire to own had changed? And we found that most people, say roughly 40 percent of the respondents considered their desire to have increased, that they were greater or much greater to own these vehicles, as a result of their exposure to car sharing.

MR. MARTIN: We also asked directed questions about whether people would recommend others try driving a plug-in hybrid electric vehicle or an electric vehicle. And we found that there was a difference in sort of the degree to which people agreed with this statement within
the experimental survey. Those within the experimental
survey were far more inclined to agree with that statement
and be far more willing to actually recommend driving or
to recommend others consider buying such a vehicle.

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MR. MARTIN: And we also asked about vehicle
purchase expectations, that is before and after. So
before people joined car sharing, what vehicles were they
interested in buying? What did they think they would by?
And I'll just draw your attention to sort of the red box
there, where we showed this sort of shift between the
experimental group and also the control group, and that is
is that those within the experimental group seem to
indicate more broadly that they had a stronger desire that
their -- they had a greater increase in the percentage of
respondents interested and believing that the next time
that they would buy a vehicle it would be either of a
plug-in type or of a hybrid type, so -- or an all electric
type.

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MR. MARTIN: So overall we found through the
results of this study and other questions, that car
sharing programs seem to be playing a role in promoting
greater appreciation of these technologies, and that they
facilitate long-term exposure to it. And that that's an
important mechanism for giving consumers exposure to these vehicles. And then over time car sharing programs with ZEVs would potentially act as gateways to improving the penetration of PHEVs and EVs in this market.

Thank you.

MR. TILLMAN: Good evening, Vice Chair Berg and members of the Board. My name is John Tillman. I represent Mercedes-Benz. And today, I'm also representing our car2go car sharing vehicle program.

As a conclusion to my previous two colleagues and the associated car sharing study presentation that you see here, Mercedes-Benz strongly supports the use of car sharing programs to inform educate and engage consumers about the use and value of electric vehicles. We realize that consumer education on electric vehicles and the associated infrastructure is crucial to the future market growth, and therefore car sharing programs are a critical component in our efforts to bring these vehicles to market.

Essentially, what all this comes down to is a simple ask. Our ask is that the Board consider extending the current transportation system ZEV credits allowance beyond its current 2017 sunset, and allow us to continue to bring these vehicles and educate consumers on the use and value of electric cars.
Thank you.

MR. LEVIN: Good afternoon. My name is a Joel Levin, and I'm with Plug In America. Plug In America is a national non-profit organization that works to accelerate the roll-out of electric vehicles. One main focus of our organization is outreach and education to the public.

We're big believers that because plug-in vehicles are new and a different technology for the public. And in order for people to get comfortable with them and discover what great cars they are, it's important for people to have the opportunity to experience the cars directly. The sales effort, the sales -- the work that needs to be done with people is a little bit more than typically just selling a normal car to someone. There's a lot more that needs to be explained.

So we do a lot of ride and drive events in California and all over the country. And we've found that these are extremely effective in changing people's attitudes about the vehicles and dispelling myths that people might have in getting the cars sold. And I think this is a consistent with what you're hearing from a lot of other folks as well about letting people experience the cars directly.

So I just want to speak up for the critical importance of public outreach and education on electric
vehicles. Even today, many California -- a lot of the public is still unaware of the existence of these vehicles at all. And for people who are aware that they exist, there's still a lot of misperceptions that are out there in the world. But once people understand the vehicles, once they have a chance to really experience them, people like them. People really value these vehicles.

And so I would encourage you to just think about how to ratchet up your efforts on public outreach, and you will see demand appear. And you'll see the market really take off once people really have a chance to experience the vehicles.

Thank you.

VICE CHAIR BERG: Thank you. And thank, everyone for such great participation today. You know, we've had a lot of information. There's been a lot of information through our staff reports, through stakeholders coming, and giving us updates. And this is a big deal. We're at a cross-roads here that's really quite exciting. So I'd like to turn it over now to my fellow Board members as we have -- really have a chance to hear where we are, and that we are in a possess of working through to the end of next year and bringing this to a conclusion in how we're going to obtain our goal.

And so, Supervisor Serna, I think I'll have you
start off.

BOARD MEMBER SERNA: Great. Thank you, Vice Chair Berg. And thanks to -- certainly to all of our staff for the -- all the information we received today, and to all the presenters and speakers. It's a lot to take in over the course of several hours, but I think it's obviously very thematic. There's a common thread across all the presentations, and I would even say from -- an extension from our morning items.

And that's where I want to kind of start my commentary is that -- while I understand most of today is reserved for taking in a lot of information and understanding the progress that's made and challenges that remain in terms of our portfolio of programs and policies aimed at reducing emissions and greenhouse gases associated with light-duty mobile sources.

I guess what I'm trying to reconcile for myself, and I suspect there's others in the room that might feel similarly, is that we have this challenge that was presented to us, or at least explained this morning in terms of funding gaps. And the one that's most notable for me is CVRP funding gap that we might be staring the barrel -- staring down the barrel of next spring.

And then this afternoon we hear about some of the great progress we're making on the ZEV mandate and the
clean cars as well. And I guess what I'm trying to articulate here is, is there a way we -- if we're not doing it as well as we think we could, impress upon the legislature what we heard today? And maybe we are doing that and I'd certainly ask staff to chime in and correct me if I'm wrong.

But it seems to me if -- if, like me, you're trying to reconcile those two things, the fact that we're making great progress. We do have extreme challenges, most notably I would argue is the infrastructure, whether it be for hydrogen or for charging across the State of California. We have some clear legislative directives that we've had for years now in front of this agency to implement. And then I find it very frustrating that we don't have some of the ability to have the resources available to do the implementation for something as important as this.

And then we hear from our partners in the northeast and in Oregon some of the great progress that they're making. And understandably, they have some of the same challenges and maybe slightly different ones associated with climate and other factors. But that's something I'd like to hear back from staff is if we're not impressing upon the legislature the connection between the need for resources, the need for, quite frankly, political
will to appropriate those resources timely to do what
they've asked us to do, what else can we or should we be
doing to make that connection for them?

EXECUTIVE OFFICER COREY: Yes, Supervisor. So
I'm going back up a little bit in terms of responding to
that. And I'm going to relate really the question you
raised. If I think about the ZEV targets, if I think
about the criteria pollutant, the ozone targets that we
talked about earlier today, the freight plan, short-lived
climate pollutant plan, as well as the GHG targets, 2030
and beyond, it's been crystal clear and the point was
emphasized here in terms of the role the transportation
sector plays with both of its contribution to GHG
emissions, as well as ozone precursors and toxics.

As part of those plans, there have been a number
of great things, legislatively, and we certainly have had
substantial support from the administration, and Wade and
others have been involved in those as well. But in
addition to that, as we advanced, for instance, one
example is the three-year investment plan in terms of the
greenhouse gas reduction plan. It clearly lays out the
role of transportation and the need for ongoing funding to
advance these efforts.

So in one perspective -- and I get the fact that
what happened the session was a partial appropriation.
There's clearly more discussion. I think there's opportunity to continue those briefings, both by us but as well as others. I mean, several folks here that have came up to the mic underscored the same point that I'm making, that you're making. I actually think what's -- honestly, what's effective is multiple voices, multiple sectors weighing in. It's important. And I get there's competing issues, and that's the very nature of budget. And there's never enough dollars, but I think there's recognition by many, certainly us and many across the Board, in terms of the importance role of funding for this sector and an important -- an transition that we're really in at this time.

So, you know, our hope, expectation is that we -- those funds will be available and we can continue to implement.

So I -- the only thing I would ask or pose in addition to the point that I made about the briefings that have been taking place and the ongoing ones, kind of call on folks here to continue to help from the Board in terms of those conversations. I think it's a key point. It's a key time. And I'm looking to even be one of those areas where we can be even more effective from the communications standpoint.

But I want to be crystal clear, those
conversations are certainly happening, and we're certainly being as clear as we possibly can in terms of the role that those funds need and can play in terms of moving us forward.

BOARD MEMBER SERNA: And I appreciate that Richard. I guess I'm -- and I'm sure there's others that feel the same way. I guess I'm really sensitive to the fact that many of the programs that we're asked to implement are intended by design to affect consumer confidence. And that can be a very fickle thing and it can be a very delicate thing.

So when we are asked to do that, and do it with a lot of thoughtfulness and be very deliberate about what we're trying to incent in the marketplace, and then, quite frankly, we're looking at the possibility of one of our great tools having a gap unfulfilled that -- you know, unfulfilled funding that permits us to do that, I get pretty nervous about it. I'm sure others do.

And I think that again -- not to, you know, be too aggressive with scare tactics, but I think that's something that definitely needs to be emphasized. And I agree with you, it can be emphasized in an individual conversation with folks, from different agencies' perspectives from different nonprofits that have those relationships with decision makers at the Capitol, but
it's one that we shouldn't lose sight of, because I think it's -- as the clock begins to tick closer to the spring, especially we're going to have to be very cognizant of what's being said. If what's being said is not enough, we've got to regroup and figure out what to do next, but -- and I would much rather not work in crisis mode. And I'm not suggesting we're in crisis, but I think it's something that has got to be one of our top priorities in the coming months.

VICE CHAIR BERG: Thank you.

Supervisor Gioia.

BOARD MEMBER GIOIA: Thank you. It's always great to hear the various perspectives. And I think what we -- we always know is we've come a long way, but we've got a long ways to go. And I think we say this with all of our various experiences. As someone who owns an electric vehicle and no longer actually has now a registered gasoline car to drive, so I rely totally on the electric vehicle, I represent in Contra Costa, communities where I live that are disadvantaged communities and which we're facing a lot of the same challenges about how to have communities of color and low income communities get expose to these vehicles. And then I'm on a local air district that's funding grant opportunities for creating more electric vehicle infrastructure. So we deal with
this many -- with all -- the many hats we wear.

   And it's complex. It's not easy. And so I just
want to talk about two areas where I'm -- I think we
continue to need to focus attention on.

   There wasn't a lot of discussion about point of
sail. Frankly, I can watch all the ads on TV about a
great product, I can get exposed to this product by a
friend who has it, but if I show up in the store and I'm
trying to find a salesperson, and they can't find the
product or know nothing about it, you're not going to have
a great deal of success.

   So this is really a challenge to all the
manufacturers -- to all the car companies. And hearing
what -- I forgot which north east talked about the
incentives to dealers. I mean, we fail at the point of
sale, period. I mean, that's to me pretty obvious having
gone through that experience and talked to many others.

   You can hardly find one salesperson that knows
something about how to sell the vehicle, what the vehicle
is, what the rebates are, the HOV sticker, and all of
that. And then you have to, you know, hope that that
person is working when you want to go in to buy it.

   Think about it. If we're trying to go to a store
to buy a product in a large department store and we've got
to search around for the salesperson to sell us the
product we're looking for and we can't find it, we're not going to be successful.

So, you know, I think we need to be talking about that more and we need to come up with a strategy of how we're going to get dealers at the point of sale at the time when people are going in to make a decision of what car to buy. We're so far relying on people walking into the dealership wanting to buy an electric vehicle, because of all the good work that's gone on out in the community, by agencies, this and others, by advocacy groups to get people to buy electric vehicles.

But we need to do a -- so the focus is what do we do point of sale? So I just -- I'd like to see us really look at how we can think about incentivizing that point more.

And then the issue of the infrastructure, especially in lower income communities. And I think we heard a number that -- of the large number of people who live in multi-family units. And, yes, we now can have requirements in new multi-family units there will be the charging infrastructure provided or the electrical conduit. The fact is we've got all those units out there now with millions of people living there. And, yes, they have workplace as an option. So that issue of -- continues to need greater attention and hopefully the PUC
deals with that and the applications by the various
electric utility companies to build charging stations.
And so I just wanted to focus on two discrete areas.
Because there's -- the other good work that's
going on I don't think it's carrying over into lower
income communities very much as well. And I know that
while the rebate is greater, that rebate still alone is
not going to be the answer. And how we connect with
organizations and messages in those communities is going
to be important. So more focus in that area.
So those are sort of my general comments about --
there's a lot of things that we're all going to say and I
think all feel about this, but those are sort of the most
important ones for me about how to take some big steps.
VICE CHAIR BERG: Thank you.
Ms. Riordan.
BOARD MEMBER RIORDAN: Thank you very much. I
want to reiterate what was just said. You took my idea
away from me. We really do need in the room the
dealerships, and for them to totally understand what a
good story we have to tell about the product. And I would
bet that many of the dealerships, those people who are
actually charged with selling the vehicle, have not really
experienced the incredible quality of the vehicles that
are now on the market.
I may be wrong, but my instinct tells me that we've kind of missed that boat. I don't recall a dealership ever approaching me, as an individual who sits on this Board, for any kind of input or comment. They have been totally missing. And I don't know how we reach them. I suspect the manufacturers could help us with that. And I know that there's like a division of work there that everybody says, well, the dealership does this, and the manufacturer does this, then the twain doesn't meet somewhere.

I really think we need to somehow corral those people, and get their input and then go about telling them how great this program is, because it truly is a great program. So, Supervisor, thank you for giving my speech.

(Laughter.)

VICE CHAIR BERG: Thank you for backing it up.

Supervisor Roberts.

BOARD MEMBER ROBERTS: Thank you, Madam Chairwoman. We've sat here so long that I've forgotten what I wanted to say way back. But I do remember something that Dan Sterling said that -- Sperling that really, I think I would agree with. You may be shocked, but in it's entirety --

VICE CHAIR BERG: I'll make sure to pass it on to him.
(Laughter.)

BOARD MEMBER ROBERTS: He was talking about the plug-in hybrids, I think, and that they're -- you know, and I think he recognized them as the range -- the all-electric range is increasing. That there should be some recognition of that and they shouldn't be sort of assigning this really minimal sort of position in our overall planning, if I understood him correctly.

And I just agree with that wholeheartedly. You know, sometimes we're so purist that we overlook the fact that there are things out there that will pretty much get the job done that we want. And I think that deserves to really be underscored. So I would join wholeheartedly in those comments.

Secondly, without even knowing about the Berkeley study, we launched a program in San Diego. In fact, we got a grant as part of the greenhouse gas money to put green -- excuse me -- the GHG. We are putting a program in one of the low income areas for car sharing. It's an area where they would not have gone if we hadn't worked with them. And we think it will have precisely the impacts that the Berkeley study has suggested.

So we'll do another study when it's all done and see if that's the case, but it seems to me, which is overlooked, is that the resale price and I almost don't
want to say this publicly, and none of us have, but the resale price on these cars is so bad. It drops like a rock when you drive them out of the dealership, which means they become very affordable in low income neighborhoods and any other neighborhoods.

And I think that the exposure to these kinds of cars, maybe on a rental basis, may help them to bridge that gap. And then if you can make that final connection, you know, there's a lot of these cars in very, very good shape available at relatively low cost. I'm not talking but Tesla, but those dropped too. Probably drop a lot faster than anything else.

But this is some -- this is what's happening in the marketplace. And it's something that can work to our advantage. And that's -- we've had a trickle down effect. Instead of saying we're going to try to put the most expensive things in, let's see if we can get cars in so people start to get used to them. I think that's worth really taking a look at.

Pet peeve, the funding gap. We have so much money coming in through the greenhouse gas program. If it were prioritized, there would be no funding gap. There's not a revenue gap. There's a priority gap. And it's unfortunate, but that's the truth.

The effective programs that could be launched
that don't have money for -- are probably a result of there not being a really comprehensive coordinated attack using the resources that are available. And I think that that's a very frustrating situation.

To correct some -- a comment that our Chair -- she's not here to defend herself, but she said that this will be the first time that the State has gotten into the funding of public transit operations. And that's not true. If you o back just a few years ago, it used to happen. And then the State really pulled the plug on all those programs.

And it's being reinstituted in a different way from when it used to exist, but it has been there in the past, and it's just part of the frustration running a public transit agency where the money is there and then it disappears and now it's coming back and not nearly as robust as it was at one time.

Finally, a kudo for Chris Kehoe, who's not here any longer. She had to run back to San Diego. She's been tireless in promoting electric vehicles, that she's put on, I can tell you, throughout the State. And I know those that have worked with her in San Diego and trying to introduce people to cars, shows where people can come and drive the cars. They can kick the tires. They can hear people. Unlike the criticisms I hear about going to the
dealerships, we have many very experienced people that are
good out there who can talk to anyone that comes in and help
them better understand different manufacturers, different
models. Those things are really positive.

If you walk onto a dealership, the first thing
they ask you what are you interested in? And if you're
not -- you don't say electric vehicle right off the bat, I
guarantee you, they're not going to -- they want to know
what you're -- they're going to sell you what they think
you're interested in or else you've got to go next door
and find what you're interested in somewhere else.

So, you know, I don't -- I don't want to kick the
dealers too much, because I suspect there's some of that
going on, but there's a competition that, you know, if
you're going to sell something, you better know what
you're -- have a good idea what your customer wants.

And if they try to substitute something else, you
may find that the sale is going to go somewhere else also.
But Chris Kehoe has been doing a super job in heading the
coalition of companies that she shared with us here in
organizations as being one of them and trying to really
increase the awareness across all different brands of
electric cars.

And hopefully, that will increase the market in a
significant way. And I think awareness, education, these
are things that are so critical, because I think we're
reaching certain limits now of the first generation of
people that care about these things. And we're seeing
kind of a little kickback now in terms of the sales. And
I think you've got to -- we've got to reinvigorate sort of
another group, a little harder to reach group that's out
there. It's going to take a lot of different programs,
and it's going to take some -- I think some thinking
that's a little different that would be given instead of,
you know, kicking people and threatening people and having
penalties.

We've got to figure out how to get the consumer
educated and then get the acceptance. And I think the new
products still are going to do that. You know, I think
what General Motors is doing now with the Volt, I think,
is -- I'm very impressed with what they will be bringing
out. It's going to be a much better vehicle with a lot
longer range. And I think there are others that will
follow that lead. So the future is bright if we don't
mess it up and I -- you hear me, Richard --

(Laughter.)

BOARD MEMBER ROBERTS: -- be careful. You won't
have enough money to do everything, but we'll do what we
can and maybe we can also get some of the elected
officials to understand a little more help, a little more
focus on what priorities ought to be that will get us there.

    Thank you, Madam Chairwoman.

VICE CHAIR BERG: Thank you.

Mr. Eisenhut.

BOARD MEMBER EISENHUT: Yes. Thank you Chair Berg. It's been said now, more than once, but it's something that's strongly on my mind, and so I'll address the same issue that my colleagues have addressed. And that has to do with access and enabling. And I'll share that in the last month, I set out to buy an electric vehicle, a plug-in vehicle. I went to the dealers with that intention. And one of the reasons I'm speaking is because there are representatives from manufacturers here, and it's really you folks I want to address.

    My experience was -- ranged from the good, the very good, to the very ugly. And if we're going to make this a success, we're going to have to do better in that arena, and I'll leave the message at that.

    And I think also as a representative of the San Joaquin Valley, now that I'm accessing my mobile app and I have what some call -- what I will call a range awareness, I'm --

    (Laughter.)

BOARD MEMBER EISENHUT: I'm distinctly aware of
the very, very limited numbers of opportunities to extend
the range of my plug-in vehicle. We, in the valley -- San
Joaquin Valley generally -- I would say, I'm not aware of
workplace charging. I'm not aware outside of Sacramento
of parking lot charging. There are very, very limited
opportunities to extend the range beyond. For the most
part, those of us who have electric vehicles are home
chargers.

And if we're going to make this program and this
mandate a success in that part of the world, the
infrastructure -- I don't like to use the word enabling.
My wife is a drug counselor. It's kind of a charged word.

(Laughter.)

BOARD MEMBER EISENHUT: And so hopefully we can
find a different way to talk about this. But we're going
to have to provide access, and I think that needs to be a
strong part -- as it was in the staff presentation, a
strong part of our awareness. Thank you.

VICE CHAIR BERG: Thank you very much.

Ms. Mitchell

BOARD MEMBER MITCHELL: Thank you. Thank you to
staff and to everyone who came today to testify and for
all the materials that educate us and Educate the public.
I'm very excited about this market, about electric cars,
and where we're going with fuel cell vehicles. I think we
live in exciting times, and I'm gratified to be a part of it.

There are some things that I want to talk about, because as we approach the mid-term review, there's some things that I'd like staff to take a look at. One of the things that I think will be important is to evaluate the battery market, as we move forward. What are the costs in that market, what are the improvements in the market, and how will that ultimately affect the cost of vehicles, and the quality of these vehicles?

The other thing that I'd like staff to look at more closely is what are the emissions of the hybrid vehicles? We need to delve into that a little bit better. And if we're going to look at granting credit for eMiles, I think it's really important that we know what we're getting into, what that will be.

Third, I would like our staff to look at the credit market and how credits are going to affect our actual sales. We've heard some testimony from people that the credit market being what it is, we are not going to get the number of vehicles, the actual vehicles, in the real world that we want on the road.

So that is something I think that ought to be looked at closely, and how do we do that? Do we increase our target of vehicles we want on the road, do we reduce
the credits, or do we do a combination of those, and what would that look like? I think we need to be kind of headed in that direction.

For the MOU states, I think it's important we continue with that sunset date. I wouldn't be persuaded to extend that. I think, you know, getting more cars in the northeast states helps us. It helps us here too. It helps the national market, which we need to be thinking about.

There was also discussion about car sharing. And maybe we can look at some incentives for car sharing. I'm not sure that we want to go to extending more credits in that market, because we're looking at maybe we have too many credits out there. So I think we need to kind of sort of finesse that and massage it and see what we might do there.

The other thing that was mentioned earlier today was we really need more money. We need more money in our AQIP funding. The Air Resources Board is doing the heavy lifting job of reducing carbon, reducing pollution, and all of that for the benefit of the public to improve health and to clean the air.

And as we said earlier, it's discouraging when there's an interruption in that funding. But we need to keep looking at that, and getting the money that we need
for the incentives and to push this market forward.
So those are basically the things that I'd like
our staff to take a look at as we move into the mid-term
review in 2016.

    Thank you.
VICE CHAIR BERG:  Thank you, Ms. Mitchell.
Dr. Sherriffs.
BOARD MEMBER SHERRIFFS:  My colleague here poked
me. Since she mentioned the credit for eMiles. If we're
going to look at that, then I think we -- well, we really
need to think about household miles, if we're going to
look more broadly at what happens with the car. In
fact -- and we have to think about what happens with the
household, how all of the transportation is being done
within a household, if we're going to drill down that way.
I can't remember was the incentive for dealer
$300 or a bottle of pinot, which was it that we were --

    (Laughter.)
BOARD MEMBER GIOIA:  They can choose.
    (Laughter.)
BOARD MEMBER SHERRIFFS:  They can choose.
    Maybe we send the voucher to the buyer and then
they can give it to the dealer when they get sold. I
don't know.
You know, going back to the legislative
awareness, and in some ways I think this involve is kind of hokey suggestion, maybe it's a very good suggestion. You know, Plug In America, the Governor's office working together. We need to be sure every legislators have an opportunity to ride in a hydrogen fuel car or a battery electric car. That is a great way to raise their awareness and to change their perspective as they are considering these things, thinking about the funding, thinking about how important ongoing reliable funding is to the work that they've asked us to do and that everybody here is struggling to do.

VICE CHAIR BERG:  Dr. Balmes.

BOARD MEMBER BALMES:  Last, but hopefully not least, I have the benefit of following the sage comments of my fellow Board members, so I will be brief, especially following Ms. Mitchell, because she said almost exactly what I wanted to say.

I want to emphasize I, too, think we should look carefully at the credit market. And with regard to the northeast where we need to have more zero emission vehicles, you know, given the weather in the northeast -- I lived in Connecticut for a number of years, lived in New York for a couple of years. I'm from Chicago, so I know about cold weather. And I think the batteries don't do as well in cold weather. Maybe there will be technologic
improvements, so that will change over time. But I think fuel cells are a way to go in the northeast that might be more palatable to driving habits and the weather conditions there.

So I really think that the northeast states need to work hard in developing a hydrogen fueling infrastructure.

VICE CHAIR BERG: Thank you very much. Well, I will wrap-up this session with I think the comments from my fellow Board members have been extremely thoughtful. And as we look at the next year -- and Richard, maybe before I finish up my comments, maybe you could give some final comments as to how you see the timings working, remind the Board what we have coming forward, and then I'll close.

EXECUTIVE OFFICER COREY: Sure, Vice Chair. So if anything, it was clear from the discussion today both by staff and the presentations and the presentations by the speakers, the presenters, was the comprehensiveness of the program, comprehensiveness of the overall Advanced Clean Car program, both in terms of the GHG element, the ZEV, element and the discussion on the PM measurements. Very comprehensive studies that are underway that are going -- that will continue to go forward leading up to the report back to the Board in December 2016.
But there are a number of milestones that will lead up to getting us there. And at that point, that will be proposed -- that will be a discussion in terms of the assessment of the comprehensive evaluation that has gone on, and an engagement and discussion with the Board, in terms of direction going forward with the program.

But leading up to that, leading up to December 2016, we'll be releasing a number of studies that are underway. In fact, a number of the studies that Supervisor Mitchell referred to, battery technology, consumer acceptance, secondary market uptake, and the secondary market in terms of the value of the vehicles, the continued collaboration with the -- our MOU state partners all clearly are part of this assessment. And there are a number of studies that will be released as they're completed.

The collaboration with the EPA and NHTSA and the release of the technical assessment report will be -- it's targeted for mid-2016. There will be an extensive public comment period on that document.

We made reference in our staff presentation of a technical symposium that we'll have after the release of that document for further engagement, all leading to an overall staff assessment and some recommendations that will be discussed with the Board that will inform
subsequent actions in 2017.

So very busy between now and the report to the Board and the engagement the latter part of 2016 with a number of interim steps.

VICE CHAIR BERG: Wonderful. And I guess I would like to close with the fact that this is a very exciting time, and we are at a crossroads. And the crossroads, in and of itself, is very exciting as well.

These markets aren't developed overnight. For those of you -- Ms. Riordan, Supervisor Roberts, who can go back a long time, many, many of these ZEV updates that you have done, but also the actual regulations and going through the fight, we're in a much different place today than we certainly were even the 10, 12 years ago when I joined the Board. And from that perspective, it's very, very exciting.

I've been really encouraged by participating and going to the Plug-In Collaborative meeting and some of our other sister stakeholders that are doing incredible things, and really engaged and fighting their way through their barriers and their challenges.

But nevertheless, we're still at the beginning, and we're still at the tipping point. And when I read on -- that iPhone sold 10 million phones in three days of the 6 and the 6 plus, three days, 10 million phones. But
if we go back to six, seven years ago when they first started, how did they build that brand? How did they get people so excited about things?

And I do think it's time to bring some really smart people in the room and challenge people as to how we're going to overcome some of these very specific barriers, because the car companies have said to us, we've built the cars. We've got them. We need the customers. No questions. We've got to bring those dealers around. They are separate entities. They are owned separately, and we've got to bring them in the loop.

But all this comes together, it is a perfect storm for success. And then we've gotten over that hump and into commercial -- commercialization.

So I'm very excited. I think a few years ago, I could say that I was more nervous about more of these pieces. I am much more encouraged about all of the pieces. But like my fellow Board members, we need to see how this is going to come together and what role do we need to play through this mid-term review to really get the sense that we have what we need in order to push and push all stakeholders, because we still need to push. And there's no question about that.

So thank you very much to my Board members for really hanging in there with our agenda this afternoon.
Thank you very much, staff, and especially to all of the sister agencies and fellow stakeholders that came, and the rest of you.

We do have one person that is signed up for public testimony. And so I'm going to take that now. If John Craig would come up. We have three minutes for you, and -- on the greenhouse gas.

MR. CRAIG: I guess this is the last one.

Thank you very much. My name is John Craig. Good afternoon. I am running a grass roots non-profit called Recompost. That's we as in you and I.

I started this non-profit because I was extremely concerned about the effects of climate change on the planet. By composting our organic waste, we achieve a number of goals that benefit the environment. Not least of these benefits is its ability to offset greenhouse gas emissions. According to the Marin Carbon Project, applying one ton per hectare of compost increases the soil's ability to sequester carbon by 25 to 75 percent.

Extrapolating that number is very possible to completely offset the annual emissions for commercial and residential energy use in California.

To bring awareness and promote the benefits of composting organic waste, I have colorized the recycling symbol. I believe each one of you have a copy of that?
That's it.

Blue representing the air and water, brown the humus, the composting's end result, and green representing the enormous amount and diversity of life in the soil.

It is my hope that the ARB adopts this symbol to help promote composting as a means to clean the air and combat climate change. This symbol is completely free and available to you.

Thank you for your valuable time.

VICE CHAIR BERG: Well --

MR. CRAIG: And I have I think a minute. Do you have any questions?

VICE CHAIR BERG: Yeah. Thank you very, very much for coming. And I know you came earlier and that you came back, and I really appreciate that. And we'll make sure that Chair Nichols also gets one of your stickers, and passes on this information.

MR. CRAIG: Thank you.

VICE CHAIR BERG: Thank you.

So with that, do I have any other business before our Board?

Seeing none. Then I will close the meeting and thank you very much. See you next month.

(Thereupon the Air Resources Board meeting adjourned at 4:58 PM)
CERTIFICATE OF REPORTER

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 4th day of November, 2015.

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