MEETING
STATE OF CALIFORNIA
AIR RESOURCES BOARD

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SACRAMENTO, CALIFORNIA

THURSDAY, JANUARY 23, 2020
9:02 A.M.

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APPEARANCES

BOARD MEMBERS:
Ms. Mary Nichols, Chair
Sandra Berg, Vice Chair
Mr. Hector De La Torre
Mr. John Eisenhut
Supervisor Nathan Fletcher
Senator Dean Florez
Ms. Judy Mitchell
Supervisor Phil Serna
Dr. Alexander Sherriffs
Professor Daniel Sperling
Ms. Diane Takvorian

STAFF:
Mr. Richard Corey, Executive Officer
Ms. Edie Chang, Deputy Executive Officer
Mr. Steve Cliff, Deputy Executive Officer
Mr. Kurt Karperos, Deputy Executive Officer
Ms. Ellen Peter, Chief Counsel
Ms. Veronica Eady, Assistant Executive Officer
Ms. Annette Hebert, Assistant Executive Officer
Ms. Analisa Bevan, Assistant Division Chief, Sustainable Transportation and Communities Division (STCD)
Mr. Joshua Cunningham, Branch Chief, Advanced Clean Cars Branch, STCD

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Mr. Wesley Dyer, Attorney, Legal Office
Mr. Rhead Enion, Senior Attorney, Legal Office
Ms. Jennifer Gress, Division Chief, STCD
Ms. Gloria Pak, Air Resources Engineer, Advanced Clean Car Regulations Section, STCD
Mr. Andrew Panson, Staff Air Pollution Specialist, Mobile Source Control Division
Mr. Sam Pournazeri, Branch Chief, Mobile Source Analysis Branch, Air Quality Planning and Science Division
Ms. Shobna Sahni, Manager, Advanced Clean Car Regulations, STCD
Mr. Ryan Sakazaki, Board Clerk
Ms. Annalisa Schilla, Manager, Transportation Systems Modeling Section, STCD
Ms. Melanie Zauscher, Air Pollution Specialist, Transportation Systems Modeling Section, STCD

ALSO PRESENT:

Ms. Fariya Ali, Pacific Gas and Electric
Mr. Don Anair, Union of Concerned Scientists
Mr. Dave Asti, Southern California Edison
Mr. Will Barrett, American Lung Association
Ms. Roxana Bekemohammadi, Ballard Power Systems
Mr. Timothy Blubaugh, Truck and Engine Manufacturers Association
Mr. Nico Bouwkamp, California Fuel Cell Partnership
ALSO PRESENT:
Ms. Melanie Caton, Nikola
Mr. Glenn Choe, Toyota
Mr. Dave Edwards, Air Liquide
Mr. Tom Fulks, Volvo Group
Ms. Katherine Garcia, Sierra Club California
Mr. Gary Graham Hughes, Biofuelwatch
Mr. Austin Heyworth, Uber
Ms. Judy Kruger, Los Angeles County Economic Development Corporation
Mr. Bill Magavern, Coalition for Clean Air
Mr. Cody Naylor, Transportation Analysis Section, California Public Utilities Commission
Mr. Mike Neuenburg, Sacramento Metropolitan Air Quality Management District
Mr. Scott Powell, Great Sacramento Economic Council
Ms. Katerina Robinson, Office of Senator Nancy Skinner
Mr. Jeffrey Serfass, California Hydrogen Business Council
Ms. Eileen Tutt, California Electric Transportation Coalition
Mr. Brett Williams Center for Sustainable Energy
Mr. David Yow, Port of San Diego
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| Adjournment                      |      |

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CHAIR NICHOLS: Good morning, everybody. The January 23rd, 2020 public meeting of the California Air Resources Board will come to order. Before we do the roll call, we will rise please and say the Pledge of Allegiance to the flag.

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

CHAIR NICHOLS: All right. The Clerk will please call the roll.

BOARD CLERK SAKAZAKI: Dr. Balmes?

Mr. De La Torre?

BOARD MEMBER DE LA TORRE: Here.

BOARD CLERK SAKAZAKI: Mr. Eisenhut?

BOARD MEMBER EISENHUT: Here.

BOARD CLERK SAKAZAKI: Supervisor Fletcher?

BOARD MEMBER FLETCHER: Here.

BOARD CLERK SAKAZAKI: Senator Florez?

Assembly Member Garcia?

Supervise Gioia?

Ms. Mitchell?

BOARD MEMBER MITCHELL: Did you say my name?

(Laughter.)

BOARD CLERK SAKAZAKI: Senator Monning?

Mrs. Riordan?
Supervisor Serna?
Dr. Sherriffs?

BOARD MEMBER SHERRIFFS: Present, a little confused.

BOARD CLERK SAKAZAKI: Professor Sperling?
BOARD MEMBER SPERLING: Here.

BOARD CLERK SAKAZAKI: Ms. Takvorian?
BOARD MEMBER TAKVORIAN: Now, I'm confused. I'm here.

(Laughter.)

BOARD CLERK SAKAZAKI: Vice Chair Berg?
VICE CHAIR BERG: Here.

BOARD CLERK SAKAZAKI: Chair Nichols?
CHAIR NICHOLS: Here.

BOARD CLERK SAKAZAKI: Madam Chair, we have a quorum.

CHAIR NICHOLS: Great. A couple of announcements before we get started. For safety reasons, we ask everybody to note the emergency exit at the rear of the room. And in the event of an alarm that will be very loud, you're required to exit through the lobby and go down the stairs, not taking the elevator, and gather in the park until we get the all-clear signal to come back.

We ask anybody who wishes to testify to fill out a request-to-speak card. They're available in the lobby.
outside the Board room. Please turn it into a Board assistant over at the table here and do it before the item that you want speak on is called, so that we can put together the list and make sure that we're on it.

Also, we ask that everybody be advised that there is a three-minute limit on testimony and that includes the time that it takes you to say your name and all the rest of it. So please, if you possibly can, be ready when your time is called and also when your name is called, and also just summarize your remarks, if you have written testimony. You don't have to read it into the record, since it will be entered into the record if you -- if you give us written testimony.

Okay. We have -- our first item this morning is a consent item, which is number 20-2-1, consideration of the proposed research contract with the University of California, Berkeley, entitled "Air Pollution Measurements Exposure Assessment, and Evaluation of the Sources of Particulate Matter in Fresno, California". It's listed on the consent agenda to comply with Board approval requirements from Government Code section 1091, because one of our Board members is affiliated with UC Berkeley. Dr. Balmes isn't here, so I'm not sure that that's relevant, but we can go through it anyway.

Have any witnesses signed up to testify on this
item?

BOARD CLERK SAKAZAKI: (Shake head.)
CHAIR NICHOLS: No.

Any Board members who would like to see this item removed from the consent calendar?

Seeing none. I will close the record on this agenda item, and ask for a motion and a second to approve the contract.

VICE CHAIR BERG: So moved.
CHAIR NICHOLS: Do I have a second?
BOARD MEMBER SPERLING: Second.
CHAIR NICHOLS: Second. Thank you.
Okay. All in favor please say aye?
(Unanimous aye vote.)
(Board Members Florez and Serna not present.)
CHAIR NICHOLS: Opposed?
None.

Great.
Okay. The first item is done. The second item on the consent calendar is Item number 20-2-2,
consideration of the proposed contract with UC Davis titled, "Barriers to Reducing the Carbon Footprint of Transportation Network Companies: A Survey of Drivers and Riders".

This item is listed on the consent agenda to
comply with the requirements again of section 1091 of the
Government Code, because we have two Board members
affiliated with UC Davis. Therefore, members Berg and
Sperling will abstain from the vote, but will remain at
the dais, because these items are on consent.

Have any witnesses signed up on this one?
BOARD CLERK SAKAZAKI: (Shake head.)
CHAIR NICHOLS: No.
Okay. Then we will proceed to close the record.
And with Members Berg and Sperling not voting. I will ask
for a motion.

BOARD MEMBER TAKVORIAN: So moved.
CHAIR NICHOLS: And a second.
BOARD MEMBER MITCHELL: Second.
CHAIR NICHOLS: Mrs. Mitchell.
Then all in favor, please say aye?
(Unanimous aye vote.)
(Board Members Berg and Sperling abstaining.)
(Board Members Florez and Serna not present.)
CHAIR NICHOLS: Opposed?
Okay. None. This is done.
Great. We're on a roll here.
The last item on the consent calendar is Item
number 20-2-3, consideration of the Compliance Offsets
Protocol Task Force Members and a chair pursuant to
Assembly Bill 398. This is the item where we're required by statute to appoint a committee to look at compliance offset protocols. And so we're going to be asked to approve the list of members.

Has anyone signed up to testify on this item?

BOARD CLERK SAKAZAKI: (Shake head.)

CHAIR NICHOLS: No.

Are there any Board members who would like to see this item removed the consent calendar?

Okay. Seeing none.

I will now close the record on this agenda item.

Everyone I believe is eligible to vote, if you had chance to review the resolution.

So can I have a motion and a second?

VICE CHAIR BERG: So moved.

BOARD MEMBER SHERIFFS: Second.

CHAIR NICHOLS: And second.

Alright. All in favor, please say aye?

(Unanimous aye vote.)

(Board Members Florez and Serna not present.)

CHAIR NICHOLS: Opposed?

None. Okay. Done.

Thank you all.

Our next item is 20-2-4, which is a report to the Board on our program priorities for 2020. The staff has
prepared a presentation on this. We know that in 2019, we had a very big year and we made some significant progress on our air and climate goals. But in addition to those accomplishments, which we would like to at least briefly review here, we want to talk about some of the key initiatives that are carried over and to take a look at what's ahead in 2020.

And Mr. Corey will present this item.

(Thereupon an overhead presentation was presented as follows.)

EXECUTIVE OFFICER COREY: And good morning, Chair Nichols and members of the Board. I plan to highlight our agency's key challenges, how we've addressed those challenges over the past year, and how we'll continue to make progress in 2020 and beyond.

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EXECUTIVE OFFICER COREY: So 2019 was a productive year, as the Chair just indicated. And as you know, the community air protection program is underway with the ten initial communities selected in 2018. We spent the year working with steering committees, the air districts to build relationships, understand local concerns, and develop strategies to reduce exposure in impacted communities around the state.

We also worked to establish a strong foundation
for community air quality improvement, and we continue to
push for improved air quality across the state.

We surpassed our 2020 GHG greenhouse gas emission
reduction target, and with formation of our early -- or
rather newly created Sustainable Transportation and
Communities Division are pursuing a more holistic approach
to reducing emissions from the transportation sector.
I'll be talking more about that in a minute. But more
broadly, we've taken a number of steps towards carbon
neutrality.

And finally, we've strengthened our relationships
with other states, and nations, and continue to serve a
world leader in air quality and climate policy.

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EXECUTIVE OFFICER COREY: We've made remarkable
progress in reducing Californian's exposure to ozone,
PM2.5, and diesel particulate matter.

For example, as shown in the top row, ozone
concentrations across the San Joaquin Valley have
decreased dramatically in the past decade, with about half
of the valley monitoring sites now meeting the 0.08, parts
per million eight-hour ozone standard. We've also made
progress in South Coast with a significant drop in the
highest concentrations and many monitoring sites meeting
the same standard. But as you can see, we have a lot more
work ahead of us to achieve health air quality throughout the state of California.

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EXECUTIVE OFFICER COREY: Topography and meteorology make reducing PM2.5 in the San Joaquin Valley a challenge. To further cut PM2.5 levels, the San Joaquin Valley Air Quality Management District adopted a comprehensive strategy in their latest State Implementation Plan in 2018 to accelerate reductions from the -- from agricultural equipment, trucks and buses, and residential wood burning. And as you know, we're working to identify additional opportunities for emission reductions and we'll be reporting back to you within the next few months.

Particulate matter levels in South Coast have been reduced substantially over the past two decades and now fall below the 15 microgram annual PM2.5 standard. South Coast and San Joaquin Valley are projected to meet the stringent 12 microgram annual standard in 2025.

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EXECUTIVE OFFICER COREY: But despite the progress of the past year, we face major challenges in meeting our air quality commitments and achieving our climate goals. Specifically, we will need to enhance our efforts to attain ozone standard in 2023 and 2031 in South
coast, and the PM2.5 standards in 2024 and 2025 in the San Joaquin Valley.

We'll need to continue making progress through our air quality protection program to reduce the disproportionate air quality burdens in highly impacted communities throughout the state.

Our 2030 and 2045 climate goals pose an immense challenge, immense challenge. And we'll need to accelerate greenhouse gas emission reductions across all sectors.

We also need to recognize the linkage between climate change and air quality, and how changes in climate-related meteorology is growing wildfire seasons and will impact our air quality throughout the State.

EXECUTIVE OFFICER COREY: While California is prepared to tackle these challenges, we need support and collaboration instead of resistance and outright opposition from the federal government.

Looking to the future, attaining federal ozone standards in South Coast poses a great challenge with significant additional reductions beyond already adopted federal and State regulations. South Coast will need to achieve about a 60 percent reduction in NOx by 2023 to meet the 0.08 parts per million standard, and a 72 percent
reduction by 2031 to meet the 75 ppb ozone standard.

Absent additional regulations by 2030, NOx emissions from federally regulated sources, such as interstate trucks, plains, trains, and ships will exceed emissions from CARB-regulated mobile sources.

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EXECUTIVE OFFICER COREY: We'll continue pursuing strategies to mitigate the effects of climate change while providing clean air for all Californians, while we drive for cleaner transportation through new regulations and by supporting zero-emission technologies, which is crucial for meeting many of CARB's ambitious clean air goals.

As we move into the next year of 617, we'll continue promoting community-driven air quality solutions and work towards improving air quality in California's most impacted communities. We're also working to address the growing wildfire seasons by mitigating exposure to smoke and improving public awareness of that exposure.

And as we look to the future, we're also making several changes to strengthen our organization that I'll be touching on.

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EXECUTIVE OFFICER COREY: But before I address how we'll approach these priorities for the coming year, I'd like to touch on this year's Board's calendar and the
latest State budget.

Here, I've highlighted five regulations you'll be considering over the course of the year:

The second of the two hearings of the Ocean-Going Vessel at Berth reg; the Advanced Clean Truck Regulation; the Heavy-Duty Low NOx Regulation; amendments to the 2588 Hot Spots Regulation, as well as the Small Off-Road Engines Regulation towards the end of the year; and finally, we'll have the proposed Heavy-Duty Inspection and Maintenance Program Regulation and our first of two meetings for the proposed Zero-Emission Transportation Refrigeration Units Regulation.

This is just a sampler of the very full agenda over the next year.

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EXECUTIVE OFFICER COREY: So turning now to the budget. Climate change mitigation and adaptation continue to be a priority in this administration. Govern Newsom's proposed State budget allocates 12.4 billion over five years to address climate change. The budget aligns the Greenhouse Gas Reduction Fund, or GGRF, funded by the cap-and-trade auctions, with a new climate resiliency bond, the general fund and several other expenditures, and a new Climate Catalyst Revolving Loan Fund.

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EXECUTIVE OFFICER COREY: With the climate budget, there are changes to the proposed funding levels for some of our programs as compared to last year, as you can see from the table that's projected here.

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EXECUTIVE OFFICER COREY: Now, I'd like to turn to our 2020 priorities, starting with transportation. CARB's leadership and policies will continue to pave the way for California's adoption of cleaner transportation through testing, promotion, and incentivizing cleaner technologies.

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EXECUTIVE OFFICER COREY: CARB's testing and promotion of low-emission and zero-emission technologies is instrumental in assisting California's transition to cleaner mobility.

For example, over the past few years, we've collaborated closely with the South Coast Air Quality Management District, U.S. EPA, automakers, and the Southwest Research Institute on a heavy-duty low NOx research program.

This program has demonstrated the feasibility of using low NOx technologies on on-road heavy-duty trucks. And the results of this program will be used to inform the proposed heavy-duty low NOx regulation coming to the Board
later this year.

We've also worked hard to support the growth of zero-emission vehicle refueling infrastructure to encourage the adoption of zero-emission light-duty vehicles. For example, since 2016, staff has certified 29 hydrogen fueling stations and expect to certify an additional 13 stations this year.

But zero is not just about cars and trucks. We're also promoting the adoption of zero-emission lawn and garden equipment, by loaning equipment to over 15 universities and municipalities across California in 2019. These efforts will continue to highlight the feasibility of zero-emission lawn and garden equipment in advance of new standards coming to the Board in late 2020.

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EXECUTIVE OFFICER COREY: Later this year, staff will bring back to you the Advanced Clean Truck Regulation. This regulation sets forth a holistic approach for accelerating the widespread adoption of medium- and heavy-duty zero-emission vehicles.

We're also working to establish the Clean Miles Standard, which is the first of its kind, aiming to reduce greenhouse gas emissions from ride-hailing fleets, such as Uber and Lyft. The team will be updating you on our status later today.
The Zero-Emission Powertrain Certification requirement was approved by the Board in 2019, establishing a benchmark for heavy-duty electric and fuel cell vehicle powertrains to ensure they are capable of meeting performance and durability expectations.

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EXECUTIVE OFFICER COREY: We're also focusing on new partnerships to strengthen CARB's role in land use and transportation planning with the goals of reducing VMT, improving accessibility, and enhancing housing affordability.

Some of these key activities this year include:

Working with State agencies on their funding programs to improve the linkage of transportation, housing, and climate; tracking regional progress and ensuring achievement of sustainable community goals; expanding research on travel behavior to identify opportunities to reduce VMT and replicate successful projects; strengthening tools to better assess impacts and mitigation for transportation and development projects and plans; and, evaluating key transportation and land use development projects to promote infill and low-carbon communities.

Expanded collaboration with other agencies will be fundamental to this work. As an example, the
Department of Housing and Community Development has been added to the CARB-CTC meetings, with the first one taking place this coming April.

EXECUTIVE OFFICER COREY: We've made a lot of progress on climate over the past decade, but we have a challenging road ahead of us.

Let's take a moment to reflect on the progress we've made this year and identify where we need to go to meet future greenhouse gas reduction targets.

EXECUTIVE OFFICER COREY: The outcomes of California's robust greenhouse gas policies are clear. Over the past two decades, California has reduced greenhouse gas emissions despite a growing population and economy. We've reduced per person GHG emissions by more than 20 percent and per GDP emissions by over 40 percent since 2000. As a result of these efforts, we met our AB 32 2020 emission's target three years early.

But much of the success has been due to the adoption of renewables in the electricity sector.

Transportation remains a challenge with emissions steadily rising over the past several years.

Our work must continue to focus on cutting emissions from the transportation sector by accelerating
electric vehicle adoption, and reducing vehicle miles traveled through continued development of sustainable communities.

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EXECUTIVE OFFICER COREY: And beyond meeting our 2020 target, here are a few other stats that showcase our progress on key climate programs.

As of August 2019, the climate change investments program has invested over 2.6 billion to benefit priority populations providing relief to communities through support of zero-emission transportation technologies and cleaning up mobile sources.

We've also continued to achieve a hundred percent compliance of the Low Carbon Fuel Standard fuel producers and are displacing 2.5 billion gallons -- 2.5 billion of petroleum-based fuels with low-carbon alternatives annually. Since 2018, 11,000 methane leaks in our oil and gas infrastructure have been identified and repaired.

Also, as a result of SB 350, 34 percent of the electricity generated in California now comes from renewable sources.

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EXECUTIVE OFFICER COREY: Our thinking about how to approach the climate challenge is evolving. To achieve carbon neutrality, we must work on both -- both sides of
the emissions and sequestration equation. We must continue to reduce greenhouse gas emissions from fossil fuels with a focus on transportation and reduce emissions from natural sources such as wildfires.

At the same time, we must increase carbon sequestration by increasing carbon storage in our natural and working lands, and capturing and storing carbon -- carbon from large emitters, such as cement plants, and refineries, and carbon from the atmosphere.

This will not come easy. Achieving carbon neutrality by 2045 will require the commitment of all sectors of the economy.

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EXECUTIVE OFFICER COREY: And as an agency, we've historically focused our efforts on improving air quality at a regional level. Now, with the adoption of AB 617 and the added focus of existing carbon programs -- or rather car programs, we're making effective strides toward cleaning up the air in California's most impacted communities.

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EXECUTIVE OFFICER COREY: The Community Air Protection Program is well underway and has made significant progress in selected communities under really very tight time frames. In February and March, you'll
consider the programs for San Joaquin Valley and South Coast communities. And as we continue to support the initial set of communities, you recently added three new communities, including Southwest Stockton, Eastern Coachella Valley, and the Southeast Los Angeles, where we'll have exciting opportunities to apply lessons learned from the first year of implementation.

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EXECUTIVE OFFICER COREY: We're also working hard to reduce exposure to toxics in communities, including the proposed control measure for ocean-going vessels operating at berth, which will come before you for the second time later this year.

A regulation for transitioning transportation refrigeration units to zero-emission technology will also be brought before the Board in 2020. In aggregate, these refrigeration systems lead to significant diesel particulate matter emissions, posing a particular health risk to communities near ports, distribution centers, and other areas with heavy truck traffic. Amendments to the Air Toxics Hot Spots Regulation will be brought to the Board later this year as well, reflecting the latest science regarding children's exposures and the resulting increase in lifetime cancer risk. In addition, we're expanding the list of reportable substances, which
EXECUTIVE OFFICER COREY: We've also focused on a range of activities designed to further reduce the impacts of the freight sector on communities. This past year, we've worked closely with the South Coast Air Quality Management District to develop new concepts to further reduce locomotive and railyard emissions. That work will continue this year.

We're also currently engaged in technical work to support the development of the upcoming commercial harbor craft regulation concept.

We developed materials that will support public discussion on the development of a Freight Handbook to encourage better land-use decisions, cleaner facility operations, and coordination amongst freight stakeholders to protect communities from the harmful effects of freight pollution.

This year we'll continue to work with the State and local agency partners to finalize the Freight Handbook and implement sustainability practices it identifies.

EXECUTIVE OFFICER COREY: We're supporting the development of community-driven air quality solutions by providing new sources of monitoring data and tools for
analyzing community level data. For example, the SNAPS Program began monitoring in Lost Hills in the spring of 2019 and preliminary data are now publicly accessible on our website. Monitoring in the next community, Baldwin Hills, begin this year.

This past year, the Enforcement Division -- our Enforcement Division launched a public-based tool for visualizing CARB enforcement activities across the State, including field inspections and case settlements. We're also in the process of developing tools to support AB 617, such as Community Air Quality Viewer, and launched a preliminary version providing public access to AB 617 air quality monitoring data.

An updated emission inventory system is being developed as well, along with the emissions control Technology Clearinghouse, which supports air districts and community groups in identifying the best control technologies for facilities in their communities.

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EXECUTIVE OFFICER COREY: CARB has partnered with air districts to continue expansion of AB 617 Community Air Protection incentive opportunities. We continue to expand our transportation equity projects with new areas, including a Clean Mobility in Schools Program providing incentives for reducing greenhouse gases from schools in
disadvantaged communities, as well as providing access to increased zero- and near zero-emission mobility choices for disadvantaged communities.

The Sustainable Transportation Equity Project was also established this past year. The goals of this pilot are to increase access to key destinations, address -- address community residents' transportation needs, and reduce greenhouse gas emissions.

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EXECUTIVE OFFICER COREY: Assembly 1628 strengthened the State's environmental justice definition with the addition of meaningful involvement. The intent is to ensure that environmental justice community members have greater opportunities to actively participate in environmental programs and efforts.

As part of AB 617, community residents have actively participated on steering committees, and have helped shape air quality plans and emission reduction programs. To assist in this effort, CARB awarded the second-year community air grants, including $5 million, to 29 community-based organizations. In 2020, we'll continue to prioritize actions to reduce cross-border pollution by working with a range of organizations, including U.S. EPA, CalEPA, the Imperial County Air Pollution Control District, the Border Relations Council, and Comite Civico
EXECUTIVE OFFICER COREY: As you all know, wildfires have been a growing concern for California for nearly a decade. Just last year, unprecedented high-wind events resulted in the most disastrous wildfire season in California's history.

EXECUTIVE OFFICER COREY: As the number of wildfires and prescribed burns increase, so does our responsibility for mitigating exposure to smoke and helping keep the public apprised of their local air conditions. As many of you have experienced in response to the risk of large wildfires, utilities have begun using public safety power shutoffs during the high risk weather -- or during high risk weather.

CARB staff is working with air districts to identify approaches to quantify, minimize, and mitigate the additional emissions burden from back-up generators used during these events. We're also working with air districts to prepare a wildfire smoke pollution emergency plan as an informational source for local agencies and the public during wildfire smoke emergencies.

And under AB 836 CARB will work on a pilot program to create a network of clean air centers in smoke...
prone areas, utilizing grant funding for retrofits to building ventilation systems.

CARB's new Smoke App will launch in 2020 demonstrating the importance of prescribed fire as a forest health management tool and providing the means to view smoke plumes and air quality readings in their area via mobile phones.

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EXECUTIVE OFFICER COREY: We also have several efforts underway to improve estimates of wildfire and prescribed burn smoke exposure. We're collaborating with the University of California, NOAA, and NASA to improve the wildfire emission inventory.

We're also utilizing mobile measurement technologies -- or rather techniques, stationary monitoring, and satellite data to improve our understanding of the effects of wildfires on California's regional air quality and indoor air quality. In 2019, we launched the prescribed fire smoke monitoring program to help implement air quality provisions of the 2018 Forest Carbon Plan.

The program provides local air districts with funding, monitoring equipment, and training to improve smoke monitoring of prescribed, and improving public awareness and their benefits and risks.
EXECUTIVE OFFICER COREY: Over the past year and looking to the future, we have been taking steps to strengthen the organization by increasing diversity and mentoring our next generation of leaders. In the past year, our team has been strengthened through the addition of leadership, including Annette Hebert who has been promoted to Assistant Executive Officer overseeing our Southern California operations, and many new division chiefs, including Allen Lyons, heading the new Emissions Certification and Compliance Division in Southern California, and Rajinder Sahota of the Industrial Strategies Division.

EXECUTIVE OFFICER COREY: Mark Fuentes is now heading the new Mobile Source Laboratory Division in Southern California; And Elizabeth Scheehle, the Research Division; Jennifer Gress, the newly created Sustainable Transportation and Communities Division; and Heather Arias, the Transportation and Toxics Division.

EXECUTIVE OFFICER COREY: Looking to the future, we've also implemented several programs to help develop next generation of leaders. With many of the current generation of CARB leaders retiring, we're actively
working to implement new strategies for succession planning, such as our Emerging Leaders Program, and other mentorship programs.

Our human resources team just launched a new career center and providing career development resources to foster and sustain a highly capable workforce. We're also working to address diversity in the workplace and our hiring practices by collaborating with other agencies.

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EXECUTIVE OFFICER COREY: Progress on our new Headquarters in Riverside is progressing quickly. First, second, and third floor plans -- or rather pads have been poured and columns are being placed. All six artists commissioned to provide art work are finalizing their designs.

Contracts for all the light-duty, heavy-duty, and portable emission measurement equipment have been awarded. Based on our latest discussions with the contractor, we're on track for a February 2021 completion of our Riverside facility.

Now, we have a short video to show you how the project is progressing.

(Thereupon a video was played.)

EXECUTIVE OFFICER COREY: Impressive progress and really the most comprehensive next generation mobile
source testing facility in the country and really the world that we learned from people all around the world before we move forward. So very exciting for the State of California and staff.

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EXECUTIVE OFFICER COREY: To complement our investments in our team and facilities, CARB is poised to leverage new data sources and pursue new innovative, analytical approaches. Here are a few examples.

Many of our programs now require analyzing millions, or in the case of the Clean Miles Standard, billions of records. As a result, we're now learning methods of analyzing big data and developing approaches to use machine learning to support our regulatory climate and air quality planning programs.

California is committed to working with partners to launch a satellite or constellation of satellites that can detect individual methane plumes. We've deployed a network of instruments that continuously measure mixing heights to facilitate more refined modeling of greenhouse gas emissions sources. In the first quarter of 2020, we'll also begin monitoring of fluorinated greenhouse gases.

An abundance of air quality data is now available thanks to the advent of low-cost personal sensors. We're
actively working to rigorously evaluate the quality of these sensors through a sensor evaluate program in coordination with South Coast and others.

Finally, using automated license plate readers, we've also initiated an effort with the San Diego Air Pollution Control District to better understand the age and types of vehicles traveling through portside environmental justice neighborhoods.

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EXECUTIVE OFFICER COREY: Our confidence in addressing the considerable challenge ahead of us is built on considering our achievements, which would have not been possible without collaboration with air districts, State and federal agencies, industry representatives, community organizations, the international community, and our research partners including research steering committees and small business. And as you know, the staff of the agency is extraordinary, extraordinary and the key reason for our success.

Lastly, I'd like to personally thank all the Board members for your leadership. Your vision, guidance, expertise, advocacy, and boldness, and the push often, has been and continues to be fundamental to CARB's continuing role as a global leader.

And with that, thank you and I conclude my
remarks.

CHAIR NICHOLS: Well, thank you, Mr. Corey. That actually is a highly superficial overview of what's going on around this place, which is just an enormous amount. But I think it at least touches on the major -- the major issues that we're contending with and where the priorities are, as far as the Executive Office sees them. And I'm sure every one of the Board members has some additional thoughts or perspective on all of this. But I'm wondering if we could, as the moment, sort of limit this to just questions or areas where you feel like something has been perhaps omitted that you need to touch on at this -- at this stage. I'm just looking to my left here. There's a lot -- there's a lot in this obviously.

BOARD MEMBER SPERLING: How about I'll just make an overarching comment.

CHAIR NICHOLS: Okay. Go ahead.

BOARD MEMBER SPERLING: You know, having been on the Board for awhile and having studied the Board, you know, before and since, I'm just stunned, struck by the -- how much the mission and activities of CARB have expanded, you know, building on what you just said, Chair Nichols.

And, you know, just 2006, we didn't even think about climate change. We weren't doing anything until then. And that wasn't so many years ago. Wildfires, AB
617, which is really a revolutionary approach that, you know, is so different from how we did it before regulated pollutants; the huge incentive programs that we're managing; the focus on VMT, which is new also and its connection with land use and housing.

And all this new leadership is really welcome, because, you know, we are changing and we are adding. So this is -- it's really exciting and impressive what's happening here.

CHAIR NICHOLS: Great. Thank you. Mr. Serna.

BOARD MEMBER SERNA: Thank you.

So I think like every member of this Board and those in the audience viewing the presentation hearing from Richard, I think, we're all very impressed and proud of the work we do.

I guess if the Chair is asking the Board for questions at this time, I guess the question I would have is -- I guess would be directed at Richard, and that is, is there anything that we think we can do within the envelope of the mission of this agency that is extremely proactive and innovative in terms of actually going over and above rulemaking, implementing legislation, on occasion appropriate -- on occasion appropriating resources to achieve our goals when it comes to addressing greenhouse gas emissions?
And I'm thinking more in terms of working with academia a little bit closer to promote, you know, facilities, initiatives that are intended to actually help us meet the intent to broaden market demand and availability for electric propulsion vehicles, for instance. I just think there's a lot that we've done, but there's also a lot that we can do. So I'd like to hear some thoughts on that.

BOARD MEMBER SPERLING: It wasn't enough, Richard.

(Laughter.)

EXECUTIVE OFFICER COREY: No, it was a great question and I think a few elements to this. And I'm first going to just go back to -- I'm going to make this point. It's going to be embedded in two elements in my response. And it is trans -- it's really transformation of the transportation sector. We don't get to health-based air quality standards, we don't get to our GHG targets, we don't get to community protection, without that transformation.

That is local rules, that's regulation, that's incentives, and that's certainly strengthening our partnership with other states and international jurisdictions, because industry responds to leverage. So those partnerships are fundamentally important and
strengthen the ability of California's program. And there's a reason why California, I believe, is a magnet for light-duty and heavy-duty electrification. There's a reason why we have a car manufacturer here, zero-emission, zero-emission bus manufacturing coming, zero-emission transit bus, school bus. It's because there's opportunities here. We need to strengthen that signal.

But to get to -- to kind of put a point so the question you just posed and the point that I just made about the role transportation plays with some more specificity, 50 percent of our GHG emissions are associated with the transportation sector, if you include upstream, about 80 percent of our NOx, 95 percent of our diesel PM.

And clearly, we need, as we are doing, double-down on the technology side. But on local land use, at the same time, we showed you how we've been moving forward in terms of our GHG target, VMT has actually gone up. Our work with you all and your relationship at the local level - cities, counties - that relationship needs to strengthen. I mean, it is an area that we haven't put as much focus on that needs to increase our efforts.

Clearly, the CTC ACD is a movement in that direction. But we have not catalyzed -- to me, fully capitalized at all on strengthening that relationship, not
to be at odds with one another and point fingers. How can we collaboratively make sure the right signals are there from a development standpoint to support walkable communities to reduce VMT to get at the core of all these problems? That is key and the board is fundamental to us being able to strengthen those relationships.

BOARD MEMBER SERNA: Great. Thank you.

CHAIR NICHOLS: Yeah, maybe even just to underscore that point a little bit. Everything that we are able to do here is dependent on the legislation. Of course, that gives us authority. The budget that we have. And then the role that we play within the national program, because of the federal Clean Air Act. And that is an important element behind everything we do.

The continuing efforts of the current administration, which I am sure will only accelerate if the same team is there after this year, is the biggest threat probably that we face. There is some objective backdrop to that as well. You know, California, because we were and still are somewhat more than ten percent of the auto market, vehicle market, has an outsized influence on what the manufacturers produce and sell.

But the United States, as a whole, is less important in the world than it was when we first started doing this work. And the auto manufacturers, although
they continue to participate, and to actively get involved, and respect our programs and our authorities are looking increasingly to China, and to India, and emerging economies as the market that they are really trying to develop for.

And all of this just puts an extra premium on the relationships that we have developed up until now, which are quite robust. Thank you, Dr. Sperling and your operation and others. But this is an area where I think we're going to -- we didn't really reference that in your report, but it's pretty clear that we have to be doing more than we have to both influence and coordinate with other countries on these standards, so that we will be able to get the kind of vehicles and systems that we need to address these problems. So other comments from this side here.

Yes, Ms. Takvorian, you've--had your hand up.

BOARD MEMBER TAKVORIAN: Go ahead.

BOARD MEMBER MITCHELL: Thank you, Richard, for the overview. It does set out a pretty ambitious program for us for the next year. I think as a representative from the South Coast, and probably my colleague Dr. Sherriffs has the same concerns, because we have these imminent deadlines coming up in, for me, 2023, for San Joaquin, 2024. And it's a constant worry.
I think, you know, what are we facing? How -- can we even get there? What are the consequences of not getting there?

And I also feel like here on CARB, we're running as fast as we can. We're trying to get the most -- the cleanest heavy-duty trucks and mobile sources out there, but technology is only going so fast, and -- so we're working on that. Obviously, CARB has put a lot of money into the pilot projects that we're doing. But I guess I would like your comments on that whole aspect of the burden that's on San Joaquin and South Coast, and how we're addressing that, and are we going to be able to resolve that.

EXECUTIVE OFFICER COREY: Right. And I -- we discussed with the Board earlier in 2019, both as part of the South Coast SIP, San Joaquin SIP, really a shortfall in terms of the trajectory on NOx and where we were with respect to the trajectory for attainment, recognizing the considerable progress, but the significant gap, particularly in short run, 2023, South Coast, 2024, I think, in San Joaquin.

We're engaged with both of those districts and the regions now in preparing for a report back to the Board in spring. And the whole objective of that report is this identification of additional strategies, and a
straight up report of here's the process we went through, additional opportunities for reductions, and where that's going to take us. So that is what we're directly engaged in.

But to a point you made, and I think this is really important to put on the table clearly is I talked quite a bit about regulations and the transition to zero. No doubt about it. I, you know, didn't pull any punches. That is fundamental to meeting our long-term targets.

The challenge on the near-term targets is the vehicle turnover. Turnover only occurs -- for instance, trucks, for instance. So, yes, we can have standards for the purchase, for instance, replacement of new vehicles. But that in-house vehicles, like trucks that we're working through the implementation of our Truck and Bus Regulation right now, and vehicles, what we find often is the vehicles last on the road a long time. And without expediting the turnover, which is often traditionally been the role that incentives have played, meeting those short-term targets, waiting for the new regs to come and play, doesn't square with the slow turnover rate of vehicles.

So it really is the handshake of incentives with regulation. And that -- I just underscore that point. And we clearly are looking at that and talking about
additional incentive tools.

CHAIR NICHOLS: Okay.

BOARD MEMBER TAKVORIAN: Well, let me just add my thanks to the report. I think it's really an encouraging report, and also very honest, and straightforward in terms of where we need to go. I really appreciated, first of all, the specific focuses on EJ as you -- on environmental justice, as you pointed out. But I think almost more importantly is the focus, the integration of environmental justice into so many of our programs. It's showing up everywhere. And I think that's really where we get the benefits and that's really where we're going to see the progress. And not that we shouldn't have both, but I think that's where it really counts.

And I -- I want to appreciate all the good work on AB 617, but also acknowledge that the Scoping Plan and the EJAC really set the table for that, because a lot of what we're able to implement now in 617 really came from the Scoping Plan. And we're able to use that and feed off of that really for a lot of the good ideas that we have.

Transportation being the highest priority, I agree. The one thing I would -- I would add to what you just said, Richard, is I hope that we can incentivize public transit, as well as rapid turnover. We may not need all of those vehicles. So let's think about how we
cannot have all those vehicles on -- on the road. Maybe they turn away. I don't know the other way of turn -- turning over, but they turn into something else. They turn into public transit. So I think that's critically important. I'm looking forward to the other reports that we have today.

The last thing I just wanted to say is I really appreciate, one, that we had the meeting in El Centro last week and I just want to call that out. That's the first time we've been on the border. So it's critically important that we acknowledge the impacts for border communities, and that we have a program that begins to address that.

And I want to add that to the list of frustrations that we have with the federal government, at this point. And I know we call those out and have been taking those on in an ambitious and appropriate way, but this is one of them. And I direct an organization that is binational. So we have seen directly the disinvestment from the federal government in Mexico and in the relationship between the U.S. and Mexico, and that includes California and Mexico.

So we really need to hang in there, so that when we have the opportunity to have a more robust program, again, like a more robust Border 2020, we have that
opportunity for CARB to be helping to lead the way there, because let's remember that's a whole other port -- international port at each of those borders that's bringing in trucks that are not compliant and are really impacting our communities. So I really appreciate our staying power there and want to encourage that to continue.

Sorry. There's not a question there, but I'd love your comment.

EXECUTIVE OFFICER COREY: I can make a very quick observation, a response I wanted to point this out. One, you're speaking our language, in terms of the number of vehicles, because VMT -- most people don't want to spend a few hours a day in a vehicle. In many cases, they don't have alternatives. And transit and alternative forms of mobility are key to getting at that issue.

And to your point about environmental justice considerations, really permeating the culture of the organization, and really coming from the conversations with the different committees over the last several years really led to the recommendation that was made to us to establish an Assistant Executive Officer, and executive officer leader in this organization, which is Veronica Eady, three years ago.

And I would say that part of that was
strengthening our communication and our relationship externally. It was also the internal culture. And I think people are seeing the impact that Veronica has been having across this organization, which has been greatly appreciated and just a privilege to work with her and see how she's executing in this role.

BOARD MEMBER TAKVORIAN: Well, said. Thank you, Veronica.

CHAIR NICHOLS: Okay. Dr. Sherriffs.

BOARD MEMBER SHERRIFFS: Thank you.

You know, slide 16, you probably should have reproduced it five times in the report, you know, in case anybody missed the message, transportation. In case you miss the message, transportation.

(Laughter.)

BOARD MEMBER SHERRIFFS: You don't want people to miss the message.

The word "health" is never mentioned. It's implied over and over and over, but it's never mentioned. And again, I think it's well worth making the point and making it very, very, very clear. I mean, why do we talk about toxics? Health. Why do we talk about freight? Health.

What motivates communities to get involved in 617? It's cause they see or smell something, and what
it's doing to my health, what's it doing to my kid's health. But I think it's well worth saying it again, and again, and again.

And it's a reminder. You know, I talk about branding and how important it is that we talk about the climate investments, because this is the Cap-and-Trade money coming back into the communities working in our communities. And I think it's important for the public to understand that. And it's not just the branding. But just like scientists are very poor in sharing their information with the public about what it means, I think we could do a much better job in terms of educating the public about our work, about the impact, about why we do it and we need to keep it in mind.

Maybe a motto, "ARB, Good for Your Health".

(Laughter.)

BOARD MEMBER SHERRIFFS: I don't know.

CHAIR NICHOLS: T-shirts.

BOARD MEMBER SHERRIFFS: But very, very important. I want to share my appreciation for the visits to the communities. I think it's absolutely correct that we're going to the communities to consider those 617 plans, both out of respect for all the effort that the communities have made, but in terms of our understanding, because every community is different. And there's no -- I
think there's no substitute for going there. And I really appreciate the effort that staff makes to make those meetings work. The work that the folks on the ground do in terms of the tours how informative those are, and how important.

So it's a big deal for all us -- it's different every time, you know, and we trip up on some of the details every time. But it is so worthwhile and thanks to everybody for doing that.

So, "ARB, Good for Your Health".

(Laughter.)

CHAIR NICHOLS: Okay. Thank you.

Yes, Mr. Fletcher.

BOARD MEMBER FLETCHER: Thank you. I just want to reiterate a point that Mr. Corey made earlier that I think is really important, not just as a Board, but as a state, in that we have these, at times, conflicting or intersecting goals, particularly around housing.

We know that as a state, we have to build more housing. We know that that's a -- it's a real challenge. It's not just for the homeless issue. But at 4:00 a.m. this morning in San Diego, we started our point-in-time count to survey the number of homeless people. And it was an important enough problem and issue that the Governor of California was out at 4:00 a.m. in San Diego helping us
count homeless people.

But as we seek to address that issue, a lot of times the challenges that you get faced, combined with the NIMBYism of neighborhoods and communities, leads folks to put housing in places where it should not go. And we are certainly fighting that battle in San Diego County. And we are not alone in the direction that a lot of housing wants to go. And so when we have a sector -- not to rain on all the great work that's being done, but when we have transportation numbers, GHG numbers that are moving in the wrong direction, when we've recouped tremendous progress from the electrical system and grid, and we have increasing VMTs, and a need for increasing housing, if not put in the right place, if not made the right investments, we are going to face incredibly difficult challenges in terms of where we need to go.

And so it really is figuring out as a state how we're going to -- how we're going to take these two goals and have them aligned into one with our climate goals, our greenhouse gas goals, and our housing goals, along with our transportation systems.

And I think along with that commitment, one slide that causes me great concern, and this is certainly not the only available pot of money, but the GGRF expenditure plan for CARB proposed 20-21 is $200 million less than
19-20. And that's where we're going to need the active participation and help of the Legislature and others to make sure that we, as an entity, continue to have the investments, so that we continue to provide the incentives, and the technology, and the other things that we need, because I think 2030 is not a long way away, but the 2030 goals are certainly a long way away.

And so we have a lot to do. Thank you.

CHAIR NICHOLS: Okay. We have one person who signed up to address the Board on this item.

Gary Hughes.

MR. HUGHES: Thank you, Chair, members of the Board. My name is Gary Hughes. And I work with the organization Biofuelwatch. And it's impressive that I'm the only one up here to make a comment today. Actually, I tried to defer to the amount of work that you have and did not sign up to make comments on the Compliance Offsets Protocol Task Force membership and chair item.

I really hope people pay more attention to this issue and that you take a good look at the membership. There's a couple things that stand out, and that there is one organization that has two members of their board of directors on -- on the board there, so -- on that committee, so it's worth looking at.

There is a lot of work to be done. I appreciate
the presentation. I wanted to draw attention to a couple things that I think really merit more attention. And essentially it's geoengineering, and the fact that geoengineering has now become a part of California's climate agenda, but it's not being called that.

Direct air capture, capturing air from the atmosphere, this is carbon dioxide removal, CDR. This is recognized as a geoengineering technology. So I think the members of the Board really could do the public a great service by trying to elevate this reality. That we're now looking to depend on unexisting -- non-existing technologies to respond to the climate crisis. And that also the association of the fossil fuel industry with these technologies over the decades is well recognized, well documented.

So I really hope that there's more attention paid to this move towards geoengineering, and really this move towards holding your fingers crossed, that we're able to respond to the climate crisis.

With that, also the natural and working lands element is based upon the Forest Carbon Plan, which is very deficient scientifically, very industry friendly. But the natural and working lands, you know, aspect of the Scoping Plan, it's been more than a year since the draft was offered for public comment and nothing has really
happened with that. And what happens with this is there's an attrition of public participation, okay, that things kind of just kind of disappear. They fall off the radar screen.

And then when it does come back for attention, it's so hard to muster. So I think there's some real questions of the democracy that's involved with that.

In my last seconds, I really do want to address the fact that there's so little publicly available information about California's collaboration with other states and nations. And, in particular, Chile's presiding over COP25 this year and California's direct involvement with Chile -- with the Chilean government and the direct relation to climate policy, climate action in Chile with the persecution of environmental defenders.

So I think this needs a great more attention. And I'm surprised no one else wants to make any comments today, folks. What's going on?

CHAIR NICHOLS: Thank you.

No other witnesses have signed up to speak on this item. It is an informational item. I think it gives us a pretty good road map of what's going to be coming before the Board in the coming year and lots to think about.

So thank you, Mr. Corey.
I think we should move on to the next item. We want -- we'll want to take a break at some point, maybe between the next item and the last one. Although, they're -- they are closely related to each other. But if we can move ahead here on the zero-emission vehicle report. That would be helpful.

This is -- this item arises from legislation, which asked us to develop recommendations for how to increase the use of zero-emission vehicles. It's a topic that needless to say we've been spending a lot of time and effort on.

We have been taking a multi-pronged approach to reducing emissions from the transportation sector including actions to reduce vehicles miles traveled, targeting new mobility services as we're going to be talking about in the next item, the last item on the agenda, and promoting zero-emission passenger cars, buses, trucks, and every other kind of emitting equipment that we can get our hands on.

The Board has adopted a number of complementary regulatory incentive and supporting programs to catalyze zero-emission technologies, in order to achieve the state's air quality and climate controls -- climate goals. And I would say that every time we take action, we find that technology has moved further than we thought it was
going to, and that costs have come down, and things that
seemed impossible one day, look very possible and maybe
even out outmoded, you know, a short time later. So it's
a challenging area in which to be a relevant and effective
regulatory agency.

But in the meantime, we have been playing a key
role here in helping to spread technologies, including
seeing other transportation sectors beyond the passenger
cars where we first started paying attention, and now
increasingly looking at zero-emission buses, trucks,
heavy-duty equipment, all coming into the market.

And this is all very encouraging. But as the
last report just pointed out, we're far from where we need
to be. So the regulatory landscape has been threatened as
well, as a result of the current federal administration,
which has issued a final rule that purports to preempt
California's passenger vehicle greenhouse gas emissions
standards, and our ZEV regulations, and revoke
California's waiver under the Clean Air Act to adopt these
regulations.

Of course, we are challenging this rule in the
courts. But with or without the federal government, we
remain resolute in doing everything else we can do to
promote the transition to a zero-emission future. In
doing that, we need to rely on partnerships with some of
the same folks that we're suing, frankly. And we have to be sophisticated about how we do that. We also need to be looking at other agencies and local governments, the Legislature, of course, and consumers, and other stakeholders and looking for new tools that we can develop.

So to that end, this report recommends a number of policies that the Legislature might wish to consider in order to further accelerate the adoption and use of zero-emission vehicles in California, and to continue fostering the investments and innovation that the ZEV market still needs, if we're going to be successful in achieving our public health, air quality, and climate goals.

Mr. Corey, would you please introduce this item?

EXECUTIVE OFFICER COREY: Yes. Thanks, Chair.

In 2017, the California Legislature passed Senate Bill 498, directing CARB to review its programs that affect the adoption of light-, medium-, and heavy-duty zero-emission vehicles; compare CARB's zero-emission vehicle programs with those in other states and countries; identify policy recommendations for increasing the use of zero-emission vehicles in the state; and identify actions fleets can take to increase the use of zero-emission vehicles within their operations.
SB 498 requires that the Board consider public comments on the policy recommendations prior to submitting the full report to the Legislature. CARB staff developed the policy recommendations based on the review of the Board's zero-emission vehicle programs and has consulted -- and has consulted with sister agencies, stakeholders, and the public to solicit input.

Staff held a public workshop in May of 2019 and in July presented policy concepts to you for your feedback. This work culminated in a report that was released for public review and comment in December of 2019. Today, staff will present these policy recommendations.

I'll now ask Melanie Zauscher of the Sustainable Transportation and Communities Division to begin the staff presentation.

Melanie.

(Thereupon and overhead presentation was presented as follows.)

AIR POLLUTION SPECIALIST ZAUSCHER: Thank you, Mr. Corey. Good morning.

Today, I will present the draft policy recommendations to increase the use of zero-emission vehicles in response to Senate Bill 498 authored by Senator Skinner and signed into law in 2017.
AIR POLLUTION SPECIALIST ZAUSCHER: SB 498

requires CARB to write a report on all our programs that affect the adoption of zero-emission vehicles across the light-, medium-, and heavy-duty sectors.

Specifically, the bill asks CARB to consider public comments at a Board hearing on draft policy recommendations to increase the adoption of ZEVs. So those policy recommendations are the focus of this presentation.

The draft report, which was published in December, is broader and also includes a review of CARB's ZEV Programs, a comparison of our programs with those of other jurisdictions, and actions fleets can take to increase the use of zero-emission vehicles in their operations.

AIR POLLUTION SPECIALIST ZAUSCHER: As discussed in the previous Board item, and to repeat the message, enabling clean air transportation is critical to California's public health, air quality, and climate goals. The figure on the right shows that mobile sources are the largest contributor of criteria pollutant and greenhouse gas emissions in California.

There are three strategies to cleaning up the
transportation sector: using cleaner fuels, driving less, and electrifying vehicles, which includes both electric and hydrogen fuel electric vehicles.

California must implement all three of these strategies. But because SB 498 is focused on zero-emission vehicles, the rest of this presentation is too.

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AIR POLLUTION SPECIALIST ZAUSCHER: There are three types of ZEV programs that complement each other: regulations, incentives, and supporting programs. Regulations help ensure there is a supply of ZEVs by requiring that they are produced. Incentives help encourage consumers and fleet demand for ZEVs. And supporting programs help address market barriers and support ZEV adoption, such as through charging and refueling infrastructure and education.

The programs listed on this slide are examples of our ZEV programs. The take-home message here is that the impact of all our programs together on the ZEV market is greater than the impact of the individual programs.

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AIR POLLUTION SPECIALIST ZAUSCHER: This slide illustrates the stakeholders we engaged with to develop these draft policy recommendations. The policy
recommendations build upon the Governor's 2013, 2016, and 2018 ZEV action plans; Executive Order N-19-19, which outline actions that State agencies must take to reduce greenhouse gas emissions; and CARB's staff report that identified barriers that low-income Californians face in accessing zero-emission transportation options in response to Senate Bill 350.

The process started through bottom-up discussions within CARB staff working on the various ZEV programs. CARB staff then sought feedback from other State agencies involved with ZEVs in recognition that collaboration and coordination among agencies is crucial.

Per SB 498, CARB staff consulted with experts at the University of California Institute of Transportation Studies. Stakeholders have been involved through a public workshop held last May and at the Board hearing presentation last July.

The policy recommendations are also informed by the review of CARB ZEV programs and comparison with other jurisdictions.

The carbon neutrality study being developed by the California Environmental Protection Agency will identify additional strategies to achieve carbon neutrality for the transportation sector.

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AIR POLLUTION SPECIALIST ZAUSCHER: CARB staff have identified eight policy areas to increase light-, medium-, and heavy-duty ZEV adoption and use. These would either require or benefit from legislative action.

The policy recommendations outline areas of opportunity to grow California's ZEV market, despite the actions by the federal government that threaten to undermine California's momentum on ZEVs.

The next few slides will walk through each of these areas.

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AIR POLLUTION SPECIALIST ZAUSCHER: The first set of recommendations consists of incentives on pricing strategies. ZEVs currently cost more than their conventional counterparts, so a suite of complementary policies is needed to expand the ZEV market beyond early adopters and to ensure equitable access to zero-emission mobility.

There are three main ideas:

First is to provide CARB with predictable and expanded funding for light-, medium-, and heavy-duty ZEV incentives programs that is sufficient to drive consumer demand. Incentive certainty entices consumers and fleets, nudges manufacturers to invest and innovate to bring a wider array of ZEVs to market, and encourages dealers to
promote ZEVs.

Next recommendation is to provide CARB with increased incentive funding to ensure priority populations and school districts can access zero-emission transportation.

The last recommendation in this category is to establish statewide pricing strategies, such as usage- or emission-based fees or a feebate system that could create a new source of founding for ZEV incentives.

Additionally, other pricing strategies, such as exemptions from registration fees and sales taxes, and other non-monetary incentives, such as zero-emission truck lanes along freight corridors could also motivate ZEV adoption

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AIR POLLUTION SPECIALIST ZAUSCHER: The next policy recommendations category aims to lower ZEV fuel costs. Predictable, cost-competitive, and stable electricity and hydrogen fuel costs are critical to encourage consumers and fleets to choose ZEVs. Electricity costs for transportation electrification are difficult to predict and can be high, especially for commercial entities, due to complex rate structures and demand charges. The California Public Utilities Commission has an open rulemaking to design electricity
rates that support transportation electrification.

The first recommendation is to define Senate Bill 350 transportation electrification to be inclusive of renewable hydrogen. Currently, hydrogen is not explicitly included and thus not eligible for utility investment.

Reduced electricity rates that support renewable hydrogen generation could support the fuel cell electric vehicle market by attracting private investments in hydrogen generation and infrastructure.

This recommendation could also benefit the electricity grid by encouraging the use of excess renewable electricity that would otherwise be curtailed for the production of hydrogen.

Next, is our recommendation to set targets for technologies and strategies to implement vehicle-grid integration, on-site renewable energy generation, energy storage, and other related strategies that could reduce demand charges.

The last recommendation in this category is to require the integrated resource plans submitted by publicly-owned utilities to include details of electricity rate design for transportation electrification across the whole transportation system.

These integrated resource plans, which describe the path each utility is taking to decarbonize the
electricity sector, while simultaneously minimizing costs, ensuring grid reliability, and minimizing negative impacts on priority populations are also required to include information on transportation electrification, but this is limited to the light-duty sector.

With this recommendation, POU customers and fleets operating or considering medium-, heavy-duty, and off-road electric vehicles could more clearly predict the cost of paying for electricity for these vehicles.

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AIR POLLUTION SPECIALIST ZAUSCHER: The third category of recommendations is focused on expanding ZEV refueling infrastructure. Current ZEV infrastructure cannot support the growing ZEV population, and long-term holistic infrastructure planning and investment is critical to giving consumers confidence in ZEVs and to expand ZEVs to more market segments, including heavy-duty applications.

This category has the most recommendations underscoring the critical nature that infrastructure plays in the transition to transportation electrification.

A is to extend the California Energy Commission's Clean Transportation Program beyond 2023 and promote ZEV fuels to continue closing the gap between needed ZEV refueling infrastructure and the State's ZEV deployment.
targets.

  The next recommendation is to convene a multi-agency working group with the goal of accelerating heavy-duty and off-road ZEV infrastructure and especially hydrogen to be on par with the light-duty ZEV infrastructure. There are a number of new and upcoming heavy-duty and off-road ZEV regulations that need infrastructure to be successful. Thanks to AB 1 -- 2127 and SB 350, State agencies are collaborating to assess the electric vehicle infrastructure needs across all transportation applications, but there is no similar effort in the hydrogen space.

  C is to require that electric vehicle charging infrastructure provisions in California's Green Building Standards Code include mandatory installation of level 2 charging in new construction and at existing buildings undergoing major renovations.

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AIR POLLUTION SPECIALIST ZAUSCHER: The next policy recommendation in the infrastructure category is to exempt sales taxes on electric vehicle recharging and hydrogen refueling infrastructure.

  E is to require charging infrastructure at both new and existing State facilities where feasible in order to support the State fleet, employees, and the public.
Another recommendation is to provide CEC with additional funding for the deployment of ZEV infrastructure within and near low-income and disadvantaged communities and schools.

G is to direct CEC and the CPUC to identify investment priorities for ZEV infrastructure to serve high-mileage fleets and to build the business case for ZEV infrastructure.

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AIR POLLUTION SPECIALIST ZAUSCHER: Continuing with infrastructure policy recommendations, H is to increase funding for state-of-the-art ZEV regional readiness planning and implementation, including engagement with local jurisdictions in order to enable support of light-, medium-, and heavy-duty ZEVs within each of California's regions.

A related recommendation is to expand the focus of transportation funding to reflect ZEV infrastructure needs at seaports and freight distribution facilities. For example, when improving a conventional roadway in freight areas, an adjacent zero-emission truck parking and refueling facility could also be installed.

The last recommendation in this category is to direct the Electric Program Investment Charge, or EPIC, Program, implemented jointly between CEC and the
investor-owned utilities, to include research and
development into the next generation ZEV infrastructure
technologies and operational strategies, including a focus
on growing ZEVs in disadvantaged communities.

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AIR POLLUTION SPECIALIST ZAUSCHER: The next
category involves local governments. Local governments
currently do not have explicit authority or a uniform
statutory framework to implement policies such as
zero-emission zones, road usage, or emission-based
pricing. These policies are likely to yield substantial
local air quality benefits, could create new local
revenue, and would send a strong signal to encourage the
use of light-, medium-, and heavy-duty ZEVs. These
policies should be developed in the context of the
jurisdiction's general plan.

The first policy recommendation is to provide
explicit authority to local jurisdictions to create
zero-emission zones. These zones should be designed with
equity considerations to minimize the exposure of
sensitive populations to air pollution.

Similarly, the next recommendation is to provide
explicit authority to local governments to implement
equitable pricing mechanisms that favor pooling and ZEVs
in a way that meets the mobility needs of priority
populations. These could be congestion pricing, cordon pricing, or operating fees on new mobility sources.

The last idea in this category is to incentivize local governments to develop local readiness plans that align with the regional plans and implement local policies to encourage the use of ZEVs such as preferential discounted parking programs and curbside charging.

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AIR POLLUTION SPECIALIST ZAUSCHER: The fifth set of policy recommendations is related to fleets. As a wider array of ZEVs and plug-in hybrid electric vehicles becomes available, light-, medium-, and heavy-duty fleets of all types will have more opportunities to adopt and use them, with the potential to rapidly expand market growth and consumer awareness of ZEVs and zero-emission miles.

The first recommendation is to direct CARB to adopt zero-emission mileage requirements in all high-mileage fleets and new mobility fleets, while ensuring that these requirements also aim to minimize vehicle miles traveled overall by building connections to transit and active transportation wherever possible, similar to how the Clean Miles Standard is being developed, which we'll hear about in the next Board item.

California's Department of General Services is currently leading by example by requiring all non-public
safety sedans purchased by State agencies to be ZEVs. But more can be done, such as establishing zero-emission vehicle miles traveled targets for the State's light-, medium-, and heavy-duty fleet to ensure the use of these vehicles. And setting ZEV targets for other vehicles used by the State, such as rental cars and new mobility services used for State employee travel.

And because local governments should also lead by example, the last recommendation in this area is to establish ZEV targets for local government fleets as ZEV models become available to meet their need.

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AIR POLLUTION SPECIALIST ZAUSCHER: The next set of recommendations is focused on outreach and education. Awareness of light-, medium-, and heavy-duty ZEVs remains low, affecting consumer acceptance and implementation of supporting policies like infrastructure.

The first recommendation is to create a State electricity rate ombudsperson to provide expertise to fleets that are transitioning to ZEVs on the electricity rate structures and other strategies to optimize charging behavior to minimize fuel costs.

Next is to increase funding for existing and new programs for ZEV consumer, and fleet outreach, and education campaigns with a focus on priority populations.
and heavy-duty fleet operators.

C is to fund training for local government inspection, building, and planning officials, and builders and developers about ZEVs and ZEV infrastructure to achieve electric vehicle charging and hydrogen refueling infrastructure permit streamlining for light-, medium-, and heavy-duty applications.

The last recommendation of this category is to provide funding for CARB to establish partnerships with industry and the academic community to foster experimentation and innovation, explore sustainable business models for ZEV manufacturers and refueling, assess ZEV opportunities in the freight sector, and provide a forum to share best practices.

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AIR POLLUTION SPECIALIST ZAUSCHER: This policy recommendation category centers on workforce development. The ZEV transition will require a growing workforce that can manufacture, service, and operate zero-emission vehicles and infrastructure. With California leading the ZEV market, this can create opportunities for quality job creation and for increased access to quality employment for disadvantaged and underrepresented workers.

The first recommendation is to increase investment in existing California Workforce Development
Board and Employment Training Panel programs that target occupation and skill gaps and promote job preparation through partnerships between educational institutions and ZEV-related employers.

The other recommendation in this category is to fund the California Workforce Development Board to conduct research on the net job benefits from public investments in zero-emission vehicles and infrastructure and identify strategies to maximize the quality and accessibility of these jobs.

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AIR POLLUTION SPECIALIST ZAUSCHER: The final policy category revolves around increasing ZEV program flexibility. Agencies administering ZEV incentive and infrastructure programs need flexibility and long expenditure deadlines for funding to respond to the rapidly evolving ZEV market, keep programs streamlined and easy to access and understand by consumers, support ZEV development, especially in the earliest stages of commercialization, and respond to the needs from priority populations.

First is it explore methods to increase ZEV program flexibility. And a good example of program flexibility needed is to continue providing six years as the deadline to spend ZEV-incentive funding, as was done
in the 2019-2020 budget, especially for technology demonstration projects, pilots, and programs that include ZEV refueling infrastructure in order to ensure sufficient time for building pre-commercial vehicles, designing, permitting, and installing ZEV infrastructure and collecting data.

These eight sets of policy recommendations build off our current programs and will help further accelerate the adoption and use of ZEVs in California and to continue to foster the environment of investment and innovation that the ZEV market still requires if California is to meet its public health, air quality, and climate goals. But to the extent that the ZEV market is not able to grow as quickly as needed, California will need to take bolder and more aggressive steps.

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AIR POLLUTION SPECIALIST ZAUSCHER: Through the comment period that closed two days ago and the public workshop in May, we have received supportive and constructive comments in the draft policy recommendations.

CARB staff recommend the Board approve resolution 20-3, which states that the Board supports the recommendations presented today, that staff will explore actions to implement these, and that staff will evaluate
comments received during the public comment period and
revise the report as appropriate.

Once the report has been revised, we will submit
it to the Legislature.

Finally, I want to thank everyone that has
contributed to this report, CARB staff, staff from other
agencies, the academics and the public.

This concludes my presentation.

CHAIR NICHOLS: Okay. So we will be asked to
support the recommendations and transmit them. But before
we do that, we need to hear from the public. We have 18
commenters who've signed up, so let's get started here.

I won't really call everybody's name. You can
just look up on the sheet there on the Board and come down
when it's your turn.

Thank you.

MS. ROBINSON: Hello. My name is Katerina
Robinson. I'm here on behalf of Senator Nancy Skinner
today just to make a few brief comments on this item,
which features policy recommendations that flow from her
bill SB 498. So thank you to the Board for your
indulgence just to make a few quick comments today.

First, she wanted to thank the Board staff for
diligent implementation of this bill. I know they've all
been working hard on these policy recommendations. And
we've been asking excitedly for them hoping that we can
get some moving, potentially even in this legislative
session. So thank you for getting those out before bill
introduction deadlines this year.

We were particularly interested. There were
several unique proposals here, but particularly interested
in the items on keeping fuel costs low, and especially in
today's climate, where we're increasingly concerned about
costs of electricity on the grid and this affect -- may
affect green hydrogen costs as well as EV costs. We are
reading through those and seeing if there's something that
we can do to help move that forward.

And finally, we do hope that funding continues to
stay strong to help California on its path toward
zero-emission vehicles, and that it becomes more robust in
the administration's May revise. As CARB notes in this
report, there is a strong need for stable purchase
incentives for zero-emission vehicles and for their
infrastructure. And to Supervisor Fletcher's point, it
didn't seem that that was reflected in the January budget.
So we hope that continues to be strengthened over time.

And we did note, however, that there's this new
Climate Catalyst Fund in the January budget and looking
forward to that potentially being an innovative new
funding source for transportation technologies and other
technologies as we move towards zero-emission vehicles.

So thank you very much.

CHAIR NICHOLS: Thank you. Appreciate your participation, also your indulgence, since the report is late, so -- but we were working hard on it.

Yes.

MR. NEUENBURG: Good morning, Chair Nichols, CARB Board and staff. My name is Mike Neuenburg and I'm representing the Sacramento Metropolitan Air Quality Management District. It is a pleasure for me to speak to all of you today in support of the proposal to consider policy recommendations to increase the use of zero-emission vehicles per Senate Bill 498 and to share some highlights within the Sacramento region.

Transportation emissions are a dominant source of air pollution within the Sacramento region and disadvantaged communities. The policy recommendations outlined today will have a direct immediate impact, while ensuring the long-term sustainability need for zero-emission technology deployment. The Sac Metro Air District in cooperation -- in cooperative efforts with SACOG and local governments is actively deploying and influencing numerous zero-emission projects including well over 100 school buses, 25 transit buses, 75 medium-duty and heavy-duty trucks, plus many infrastructure projects.
Examples include:

The big Class 8 trucks with Lion and Tesla, microtransit and airport shuttle buses, food delivery, and refuse trucks; reducing overall exposure to air pollution; and, providing economic benefits for the communities we serve.

Additionally, we have moved into the light-duty and mobility markets by piloting Our Community CarShare, a unique car-sharing and ride-hailing program; supporting new mobility hubs, such Green Tech; and we are in the final stages of breaking ground with Clean Cars 4 All, furthering assistance to the disadvantaged communities most at need, while also providing education and technical training opportunities.

Funding for these programs have come from our local SECAT, Moyer, and Community Air Protection Programs. And new vehicle purchasing without scrap is under SECAT, which operates similar to the State HVIP program, has been extremely successful. This year, within a couple days, the State HVIP for fiscal year 19-20 was fully allocated, highlighting a critical need to identify additional funding sources. Making a minor change to the State Moyer guidelines to allow this provision would accelerate zero-emission deployment and allow fleets additional funding opportunities.
This effort would support the Sacramento and West Sacramento's Mayor Climate Commission to get 70 percent of new vehicle registration to be zero-emission vehicles by 2030 and 100 percent electrification for all vehicles by 2045 to meet the overall goal of being carbon free in 2045.

Sac Metro Air District supports our partner SMUD in leading the efforts with the California Mobility Center, or CMC. The CMC effort have brought public, private, and academia together to focus on the research, policy, development, and manufacturing of the most innovative zero-emission transportation technologies. Some of our local partners include SMUD, UC Davis, CSU Sacramento, Los Rios community colleges, the Greater Sacramento Economic Council, the City of Sacramento, and many others, pushing transportation -- transportation technology and policy to zero to achieve our California climate goals.

And thank you for allowing our agency the opportunity to speak to you today.

CHAIR NICHOLS: Thank you.

MR. BOUWKAMP: Good morning, Madam Chair, Board members. My name is Nico Bouwkamp and I'm with California Fuel Cell Partnership. And I appreciate we can make comments here.
We largely -- while we largely agree on all the recommendations in the report, we have some specific comments that may strengthen -- may add to the strengthening of the report. I have eight points and I'll keep it light, because you have the comments that we submitted, so that it expands more on what I will say.

These eight points are not aligned with the presentation of eight points. This is -- that's -- there's no connection there.

The first one is to authorize and allocate funds to provide certainty of funding. I think we've heard quite a few comments about that, but it's about certainty of funding, that's the main thing. And especially for heavy-duty fuel cell vehicles, these allocations will be critical in helping fleet operators to meet the requirements of the forthcoming Advanced Clean Truck Rule later this year, but already to implement and adopt the Innovate Clean Trans -- Innovative Clean Transit Rule, which transit fleet operators are working on meeting, and also the Zero-Emission Airport Shuttle Rule.

The next one is that we need to focus on heavy-duty in addition to light-duty. And our members have had significant experience with that, but they recognize inter -- interdependence between vehicle categories. In simple terms, light-duty vehicles help
drive down the cost of the vehicle components, where heavy-duty vehicles will help drive down the cost of hydrogen fuel for light-duty. So both of them should be included.

I want to add to this that with regards to cost reduction and cost competitiveness, that the Hydrogen Council recently released a "Path to Hydrogen Competitiveness Report", and this concludes that most hydrogen mobility applications will reach total cost of ownership parity with other low carbon alternatives by 2030. That's a note to make it. I also have the report here, so I've submit that in addition to my comments. And I can provide a digital copy as well, if paper is too much.

The next one, align State agency's considerations and align public policies to facilitate optimal ZEV rollout to create certainty for private industry to invest. With this, we should give equal considerations to DC fast charging and hydrogen refueling for all vehicle applications.

Support renewable hydrogen to allow hundred percent decarbonized hydrogen by 2030. Renewable hydrogen capacity will facilitate also the grid -- the electric grid to expand and integrate a higher count of renewable power and meet their 2045 decarbonization goals.
Fifth, the infrastructure first, because with stations, people are willing to buy vehicles. And this needs to be coordinated with the vehicles, the infrastructure, to provide market certainty. Market certainty is one of the most important signals that California can give through policy and funding for industry to invest.

And then within the funding programs, prioritize scale focused projects -- may I Finish?

CHAIR NICHOLS: Finish the sentence, please.

MR. BOUWKAMP: I'll make it a long sentence.

(Laughter.)

MR. BOUWKAMP: Prioritize scale-focused projects while benchmarking conventional medium- and heavy-duty vehicle operations. Listen to the voice of the consumer, while also establishing a dedicated full-time GO-Biz heavy-duty ZEV position to support meeting these regulations for heavy-duty.

Thank you.

CHAIR NICHOLS: I would like to say that -- sorry. There's a separate effort underway, which the PUC, I believe, is leading, but which we're involved in to look at the role of hydrogen and our future -- our energy future as a state. So this is not the only place in which this topic is being examined.
Thank you.

MR. BOUWKAMP: Thank you.

MR. EDWARDS: Good morning. My name is Dave Edwards. I work for Air Liquide, a hydrogen supplier into the market in California.

First off, as a general comment, we appreciate the efforts that are being made by the report and the recommendations that we're generally in support of. The State of California has a track history of supporting and successing with vehicles and markets in this area.

What we'd like to recognize is that state success with respect to environment and health outcomes is tied to market success from a private industry perspective, in order to the provide reliable hydrogen fuel supply that is low cost, low carbon, reliable, and scalable. All of those components are necessary for success for the industry and are necessary for success from the state.

I'd like to make a couple of comments as we think about the recommendations that come with this report. First off is that the private investment aspect of this is really critical. For every dollar that we anticipate the State putting into these programs, we can anticipate private investment having many dollars of matched funds into the infrastructure that will be required for this.

And today, that number is approximately 10 to 1.
For every dollar that the State is putting in today, we're seeing matched funding from industry in supply, distribution, production, stations, vehicles at about a 10 to 1 rate.

If you look at light-duty vehicles, for example, the match of policy, growth opportunity, and customer adoption has led to some success. The AB 8 funding for stations, the ZEV mandate for vehicles, the LCFS fuel programs, for example, are examples of policies that have enabled market certainty. And market certainty follows with investments.

As an example, our company has invested in the last year approximately $200 million in the production, distribution of renewable hydrogen into the California mobility markets. These are the signs of market success.

My second comment is respect to the added emphasis of heavy-duty into the mix of vehicles. Historically, we've had a lot of emphasis on light-duty vehicles and we're starting to see the policies catching up in heavy-duty, medium-duty, and transit applications, and we strongly encourage that.

But it's not one at the expense of the other. It needs to be inclusive of all. From a hydrogen supply perspective, for example, it is the same fuel, the same production, much of the same distribution networks for
example that we can leverage at scale to bring costs down and bring reliability up.

My last comment comes down to pathways for renewables. We would like the State to continue to support policies that incentivize the outcomes of low carbon fuels, but not through prescribed pathways. Processes, such as the Low Carbon Fuel Standard, which gives us a target for carbon but doesn't prescribe a pathway that's necessary to meet, allows us the flexibility to provide reliability, make investments, and ensure low cost for our consumers.

And lastly, the industry is committed to making this transition to renewables in supplying hydrogen with renewable content that exceeds that of the electric grid today and will continue to for the future.

Thank you very much.

CHAIR NICHOLS: Thank you.

MR. ASTI: That was some perfect timing, wasn't it?

Good morning. I'm David Asti with Southern California Edison. Appreciate the opportunity to provide some brief comments this morning. We applaud the staff for the comprehensive and hard look at the policies necessary to support and facilitate this transportation transition. As we've mentioned before, the next three to
five years are critical years for the EV market and
strong, clear, and consistent funding signals are
important.

Thus, SCE strongly agrees with the first
recommendation included in the report that adequate and
reliable funding for incentives are essential. The State
has made key investments in EV adoption incentives, but we
can't pull back now or slow down any, because the
decisions and investments we make now will determine our
long-term success.

With respect to ZEV fueling infrastructure,
investment here is critical to ensuring the State can
achieve its ZEV deployment and climate goals. Those
infrastructure investment decisions must be informed by a
comprehensive and consistent interagency view of
infrastructure and system planning needs, a view that is
forwarded looking and incorporates all of CARB's mobile
source rules and the State's climate and air quality goals
and policies.

And this comprehensive perspective of
infrastructure needs should shape and inform utility
programs and investments for the future. We look forward
to working with CARB and all of the other critical
stakeholders to further these important efforts. And
thanks again for the opportunity to provide comments.
MS. KRUGER: Good morning, Chair Nichols and Board members. I'm Judy Kruger with the Los Angeles County Economic Development Corporation. And we strongly support the policy recommendations of the ZEV programs in Senate Bill 498. We do also recommend, however, developing additional programs that support the ZEV cluster in California.

And I know that CARB is aware of that cluster that's developing, because you referenced it in the draft report. If I could point out to the Board, I submitted this key findings report here. And we're launching an EV ZEV industry economic and jobs report, along with our partners, Southern California Edison, South Coast AQMD, DWP, L.A. Metro, and SCAG. And the report findings show some very interesting figures that you may already know. This industry employs now 275,000 good paying jobs that are about an annual wage of 91,000. These are really good paying jobs.

And it's projected to increase about 27 percent over the next few years. But if I could also point out, we are identifying the cluster through the asset maps on the back. And, of course, you may know about Tesla and Faraday Future, but do you also know about Lucid, and Canoo, and the new Fisker, Inc. at a price point at about 30,000 per vehicle.
We have an exploding industry in the state of California. And as economic developers, we're very much focused on what is happening with this ecosystem, how can we grow these businesses, how can we grow good-paying jobs here in California? So we would strongly recommend policies and programs under Senate Bill 498 and it's funding to grow this system. In particular, I submitted a memo that would include California SmartMatch.

We have, over the last couple of years, been meeting with BYD, and Proterra, and Fisker, and saying what do you need as far as local suppliers? Can we match you up with the supply chain that is here in California with minority, women-owned, disadvantaged businesses and grow this ecosystem, mitigate tariffs, help you with production?

And so we would submit that that would be an additional program that CARB could partner with us on. Establishing a supplier directory in setting up certification for the minority businesses, and also market a Buy California EV campaign.

This is a win-win for the environment and it's a win-win for California businesses.

Thank you.

CHAIR NICHOLS: Thank you.

MS. CATON: Good morning. I'm Melanie Caton on
behalf Nikola Motor Company.

Light-duty and heavy-duty zero emission vehicles offer a great opportunity to significantly reduce emissions and help California reach their CO2, PM, and NOx emission reduction targets.

The CARB mandate has been instrumental in accelerating the ZEV progress to these goals. Nikola supports California's new heavy-duty ZEV mandate proposals for both battery and fuel cell electric vehicles for Class 8 applications.

However, for long-range heavy-duty vehicles, especially Class 8, the only zero-emission technology that can provide comparable payload, range, and fast fueling near and long term is the hydrogen fuel cell electric truck. For these reasons and many others, heavy-duty ZEV programs should focus on hydrogen and fuel cell technologies now, and in the near term to encourage adoption in the long haul trucking industry and support shared hydrogen fueling infrastructure deployment.

Thank you

CHAIR NICHOLS: Thank you.

MR. YOW: Good morning, Chair Nichols, Board members. I'm David Yow with the Port of San Diego.

The Port of San Diego is updating currently its 2007 Clean Air Action Plan and turning the page in this
new year to begin the process on a new maritime clean air strategy. And this is going to be a framework for transitioning to zero and near zero technologies. And I think it will dovetail nicely with what we're hearing today in the plan that you're preparing to release. So a few quick thoughts to add.

One, system change for electrification that's taking place right now, and we're talking about electric vehicles and automated -- sorry autonomous vehicles, that's -- that's -- that's as big as the 1900s going from horse and buggy to cars. Lots of unknowns, tremendous opportunity, but there has to be lot of thoughts that go into designing what that system is going to be and how it's going to work. So any prescriptive requirements, thinking about charging locations, anything that could have unforeseen outcomes, just requires us to anticipate in advance that magnitude of what's coming, rather than having to redo things later. And, of course you know this, this is where collaboration with entities like State Lands Commission and others makes a lot of sense and you're doing that.

The second point is whenever it comes to funding, there are shortcomings of one-off discretionary grant programs that are based on really a snapshot in time, rather than a formula program the MPOs administer that
frankly is -- are more flexible for wholesale innovation and transformative change.

In the case of transformative change to a system, it would be helpful to have a regional -- regionally distributed program that can design, permit, and implement and operate these programs.

The bottom line is intelligent design of tomorrow's transportation is going to require goals with flexibility.

Thank you.

MR. CHOE: Good morning, Madam Chair and Board members. My name is Glenn Choe from Toyota Motors North America. Today, I'd like to make a few comments regarding the SB 498 report from staff. In general, we do support many of the items that was proposed within the report. However, I would like to make specific comments on a couple of the line items related to infrastructure and incentives.

First, on the incentives, we do support the staff member's recommendation about predictable and expanding the funding for ZEV incentives. We do realize from our experience with Mirai and Prius Prime sales that CVRP is an important component in terms of providing consumers incentives to consider these vehicles. As Mr. Corey mentioned, there is a handshake mechanism that does work
with these incentive programs.

As Toyota gets ready to release or launch our Prius -- I'm sorry, our RAV4 plug-in hybrid, as well as our next generation Mirai, we're excited to see these programs develop further. However, we are concerned that the budget for CVRP is being shrunken this year.

Secondly, in terms of infrastructure, we're grateful to both CARB and CEC for continued support for hydrogen infrastructure. We've certainly -- we have seen the release of the latest GFO for the next tranche of light-duty hydrogen infrastructure.

This would really support us as we expand our volumes for Mirai as it comes into market with it capable of going up to 400-mile range.

Therefore, we do support staff's recommendation of continuance of the CEC Clean Transportation Program beyond 2023. We do believe it will make a huge difference for both promotion of both hydrogen and also charging infrastructure.

And I would like to also explain a little bit further about the fact that we do support some of the sales exemption proposal that staff has written. If we could ask maybe another consideration to make on top of that is to provide incentives for even property owners and also that have business owners, given the fact that we're
hearing from a lot of the workshop that some of these entities don't have skin in the game. If we could offer some additional incentive for them, whether it's a property tax break, or even a tax credit for these entities, it may also spur some adoption of this infrastructure.

We do believe infrastructure is very critical going forward, given the fact it is a security blanket, to accelerate the ZEV into California's market.

Thank you.

CHAIR NICHOLS: Hold it. Just a second. Excuse me. We have a question.

BOARD MEMBER DE LA TORRE: Yes. Kind of a question and I a comment. So we really like predictability too. We've had that with the deal with Washington for several years. And Toyota was willing to go in a direction that was not predictable in joining up with the Feds against our policies, which are the same policies that your company has been following now for several years. And so, you know, when we get folks coming here asking for predictability, and we're not seeing that elsewhere, that's problematic.

In terms of all of those incentive programs - which I absolutely support. I think this Board is very supportive of. Staff works very hard on - the
predictability of that deal that we had with the federal
government, which Toyota has now gone in the other
direction on, goes against everything we just talked
about.

So California is doing the best it can to be predictable and to follow through on its commitments, yet, we're getting all this flak from Washington.

So, you know, appreciate you coming and saying this, but we're very clear about what's going on in the big picture here. We're going to keep doing what we're doing, but it's not helpful to have folks signing up with D.C. and going against the policies that we're doing here in California.

MR. CHOE: Thank you. I will note your comments, but it's --

CHAIR NICHOLS: Pass it on.

MR. CHOE: Will do. Thank you very much.

(Laughter.)

CHAIR NICHOLS: Okay. Thank you.

MR. POWELL: Mary Nichols, members of the Board, my name is Scott Powell. I'm the Senior Vice President of Business Development and Research Analytics for the Greater Sacramento Economic Council.

As a new California resident, I want to applaud the CARB Board for being a leader and an innovator, both
in air quality, not only for the state of California, but also for the nation.

And as your staff laid out in multiple prongs -- a multiple-pronged plan includes multiple solutions to increase adoption of zero-emission vehicles. Once such solution within the -- within Sacramento is launching this summer, and that is the California Mobility Center. As mentioned by a commenter earlier, this is a public-private partnership involving industry, academia, and the public sector to help companies start, innovate, and scale in the advanced mobility sector.

Mr. Corey mentioned in his comments at the beginning of this meeting that CARB wants to send a signal to industry that they're a partner. This is one such vehicle, if you will, to send that signal, you know, and to help companies grow, to create jobs across all industry sectors, and for California to continue to be a leader in advanced mobility sector.

So as your staff is looking for pilots and opportunities to partner with industry, the California Mobility Center, located right here in Sacramento, will be such an opportunity.

Thank you, guys, very much and have a great day.

CHAIR NICHOLS: Thank you for coming.

MS. ALI: Good morning, Chair Nichols and Board
members. Fariya Ali on behalf of PG&E. Today, we'd like to reiterate our support for increasing the adoption of clean fuel vehicles in California to help the State meet its climate, air quality, and clean transportation goals.

I want to thank staff for their hard work on this report and the thoughtful recommendations which we largely support. I'm going to highlight three areas of the recommendations, those around fuel costs, electricity rate ombudsperson, and ZEV infrastructure.

On fuel costs, we agree with the report that cost competitive and stable fuel costs are critical for encouraging customers to choose ZEVs. PG&E believes the most effective way to lower costs and provide predictability is to integrate EVs into the grid through rate design and load management strategies.

PG&E has offered two EV rate plans to residential customers for over a decade. And we are launching a first-of-its-kind commercial EV rate for medium- and heavy-duty operators later this year.

Related to this topic of fuel costs, we acknowledge the intent behind the recommendation for a State electricity rate ombudsperson to help support consumers. Given the complex nature of rates and how they vary across the state however, we believe that the utilities are best positioned to provide the most accurate
and up-to-date information on rates, including impacts to the entire bill.

Thus, if such a role were to be created, it should be clearly defined. And we would just want to make sure that it does not supersede the utility's experience -- expertise.

And third, we agree with the report's recommendations around the critical need for large-scale deployment of ZEV infrastructure. And, in particular, we strongly support the creation of a multi-agency and multi-stakeholder work group on ZEV infrastructure, not only for medium-duty and heavy-duty, but also for light-duty.

Last year, PG&E launched its EV fleet program aimed at supporting electrification of medium- and heavy-duty, and off-road vehicles. And we would look forward to sharing the insights we've already gained from this program in such a work group.

In closing, we appreciate the time and effort spent on this report and we look forward to the implementation of many of these recommendations, as soon as possible.

Thank you.

CHAIR NICHOLS: Thank you.

I have a question for you actually.
MS. ALI: Yes.

CHAIR NICHOLS: It relates to the use of ZEV vehicles as storage for electricity that's generated from renewables at times, when the state is oversupplied and is dumping -- currently dumping solar and wind energy, because there's no place for them on the grid.

MS. ALI: Um-hmm.

CHAIR NICHOLS: And I know there's work going on. At the moment, there's a proceeding that's trying to look at all of this. But I just would welcome your comment on whether you see this as a priority, something that's likely to actually be useful in the near future?

MS. ALI: Absolutely. I think the proceeding that you're talking about is the vehicle grid integration proceeding --

CHAIR NICHOLS: Yes.

MS. ALI: -- at the CPUC. We are actively involved in that work group and we encourage CARB to collaborate with CPUC and CEC in that proceeding, as we do think that it's a really important way to not only incentivize more EVs, but be able to take advantage of their capabilities to help balance the grid exactly as you were you talking about.

CHAIR NICHOLS: Right. Thank you.

MS. ALI: Um-hmm.
CHAIR NICHOLS: This is not Bill Magavern.

MR. SERFASS: No. This is Jeff Serfass.


MR. SERFASS: That's fine.

Chair Nichols, members of the Board, thank you.

I'm Jeff Serfass, Executive Director of the California Hydrogen Business Council. We're very thankful for the opportunity to provide comments on this very good policy recommendations report to increase, you know, the number of ZEVs in response to Senator Skinner's bill Senate Bill 498. Thank you.

We are very supportive. We list in our comments a number of specific points made in the report that we think address well hydrogen opportunities. I want to make three points in addition to that this morning. The first is we, as the Business Council, continue to advocate and request parity in State support of hydrogen fuel cell electric technologies, compared to other zero-emission options, namely those that are battery electric, emphasis on parity. The State ought to also encourage technology neutrality in the local government policies and grant opportunities in the transit sector.

My second point is we also request that the Board and staff support access to wholesale electricity rates
for electrolytic hydrogen production that would allow the
decarbonized hydrogen to more rapidly become competitive
with traditional fuels recognizing that electrolyzers can
also provide numerous grid benefits and are interruptible.
These rates should also be extended to electricity
consumption at hydrogen fueling stations to help reduce
operational costs for this developing technology.

And my third point is that we recommend that
hydrogen be held to the same standard to increase its
renewable content as grid electricity is held to a
standard, not to a higher standard. Renewable hydrogen
could match the renewable content provided in grid
electricity over the next decade. We already exceed the
required proportion of renewable hydrogen fuel in hydrogen
stations. And we support the Hydrogen Council's goal,
which we endorsed it in 2018, that already targets that
all hydrogen for transportation be decarbonized by 2030.

We look forward to working with the Board and
staff on implementing the recommendations in the report
and the work that will come from it.

Thank you.
of predictable and expanded funding sources for incentives, so I want to strongly agree with comments made by Supervisor Fletcher and Katerina Robinson that the proposal that the Governor made in his budget is really inadequate for our needs and we need to be working to make sure that it's significantly raised by the time the final budget is passed.

Also, we strongly favor the authorization for local governments to create zero-emission zones and to include in the definition of transportation electrification renewable hydrogen. I do want to call attention to one area of disagreement and then also some additional proposals that we have.

We do not agree that income caps for Clean Vehicle Rebate Project are statutory barriers that should be removed. In fact, the income caps have allowed CVRP to live within its means, instead of running out of money months and months early, which would have happened without the income caps.

And, in fact, research has demonstrated that the non-income capped EV incentives tend to concentrate at higher wealth levels, even though non-wealthy consumers are more influenced by the incentives. So we think the Legislature wants to keep the income caps, so I'm not too worried that that will change, but I wanted to make our
point on that.

And then a few additional recommendations of some actual statutory barriers that should be removed. Starting this year, there is a flat registration fee for all EVs and plug-in hybrids, which is arbitrary and particularly unfair for the owners of plug-in hybrids who are paying the gas tax when they buy gasoline and still paying this arbitrary EV registration fee, which is a disincentive for people wanting to buy and use electric vehicles. There are other ways and the report that UC Davis ITS did pursuant to SB 1 has some alternative ways to help fund the roads.

We also recommend that legislation authorized local governments to tax transportation network carriers. San Francisco has done this. And we think that tax should be tiered, so that the shared EV rides pay no tax and the highest taxes are on single occupant internal combustion engine rides.

So thank you for considering our views.

CHAIR NICHOLS: Thank you.

MR. FULKS: Madam Chair, Board members, my name is Tom Fulks. I'm here today representing Volvo Group of North America.

Volvo appreciates the opportunity to comment today. We have submitted formal written comments for the
docket that goes into great detail about some of our following remarks.

In general, Volvo Group supports many of the recommendations in this -- in this report. And we are here to address a couple of them specifically.

Volvo is currently operating with 15 partners on an electric heavy truck program called the Volvo LIGHTS Project. It's CARB funded. And Volvo, without a doubt, appreciates that support very much. Volvo is one of the world's leading manufacturers of trucks, buses, construction equipment, and marine and industrial engines. It's been in the heavy manufacturing industry for more than a hundred years, so it knows how to make things.

That said, we've got a couple of concerns that we wanted to bring to your attention. We want to stipulate and agree with every previous commentator about the need for sustained purchase incentive funding. Absolutely. And we agree with Bill Magavern in terms of the budget cuts that were -- that occurred to your low carbon investment plan. We -- what can we do to help, because we think more money is necessary for that.

Specifically with regard to charging infrastructure, there's not enough money for charging infrastructure right now, for grid upgrades, and for equipment installation.
One thing that hasn't been really drawn to your attention is the permitting and entitlement process at the local level. It's one thing to have EV zones. It's another to get into the permitting areas within cities and counties and say, people, this is a new thing. You've got to get on board. We've encountered this with the LIGHTS Project and it has caused serious delays and money.

Again, with regard to incentive funding, we'll just stipulate that more is necessary. Fleets do need confidence. But we have some -- four specific points that we wanted to highlight.

One, develop a formal structure and process that coordinates funding incentives for ZEV vehicles and infrastructure from State agencies. We -- we're looking for -- our fleet buyers want one single place to turn to for incentive funding for charging infrastructure and trucks. Bouncing around between the CEC, ARB, CPUC is not -- the color of the money doesn't make a difference to our fleet people. It's just what do you want them to do? And make it easy for them. Don't make it difficult for them.

Secondly, encourage closer collaboration between CARB staff and industry to share what we've learned from the current ZANZEFF and inform future regulations based on that knowledge.
And then lastly, we besiege you to find a way to provide for your ACT Rule compliance purchase incentives beyond the passage of the rule itself. Waive the prohibition against using incentive funding for regulatory compliance in this instance.

Because we have such a huge change in the paradigm, it's necessary, if you really want to make the heavy-duty space work and electrify it, deal with that prohibition against using purchase incentive funding for regulatory compliance, in this instance only.

Thank you.

BOARD MEMBER DE LA TORRE: Mary.

Mary.

CHAIR NICHOLS: Sorry. Excuse me, I think we have a questions here.

BOARD MEMBER DE LA TORRE: Well, it's a clarification.

CHAIR NICHOLS: A clarification.

BOARD MEMBER DE LA TORRE: Lest any of you -- any of you think I'm playing favorites. Volvo heavy-duty truck is separate from Volvo passenger vehicle. It's the other one that would have gotten something similar to what Toyota just received.

MR. FULKS: No, I do not --

BOARD MEMBER DE LA TORRE: You're a completely
different --

MR. FULKS: I'm a completely different company.

BOARD MEMBER DE LA TORRE: That's what I'm saying.

(Laughter.)

BOARD MEMBER DE LA TORRE: So those of you who don't know --

CHAIR NICHOLS: So you've escaped.

BOARD MEMBER DE LA TORRE: -- that they're two separate companies, they are. So thank you.

MR. FULKS: Thank you.

BOARD MEMBER DE LA TORRE: Keep up the good work.

(Laughter.)

MR. FULKS: I didn't want to have to say what I'm not, because --

(Laughter.)

MR. FULKS: So thank you.

CHAIR NICHOLS: Thank you.

MS. TUTT: Good morning. This is Eileen Tutt with the California Electric Transportation Coalition. Thank you, Madam Chair and Board members, and thank you to the staff for this report. I think it was very well done. And in all honesty, I take responsibility, because I wish I would have been more involved in the creation of the report.
We do have a few suggestions. First and foremost, I just want to say the Governor's budget that was released in January is well below what we need to invest as a state in transportation electrification, well, well below. Not only what was the GGRF funding cut to these very, very critical programs that you all run, but we need substantial funding beyond Greenhouse Gas Reduction Fund if we’re going to meet our ZEV goals. And that's in incentives for vehicles and infrastructure as well as a huge investment, as my colleague from the L.A. EDC said, in workforce training.

This transition, this transformation of the transportation sector provides such a tremendous opportunity for workforce and economic growth in this State in communities that are economically disadvantaged that this budget and this plan actually need to reflect that more fully. And that is not upon you, but we just want you to know that we are working on that along with many others that you've heard before here.

I do have a suggestion, because CalETC was one of the advocates for this working group on infrastructure, and really appreciated seeing it in the report very much so. So thank you.

We do -- we do think that this idea that heavy-duty needs to be on par with light-duty is nowhere
near what the scope and scale of the challenge is. We are -- we are so far beyond what is needed on the light-duty side and we have to seriously accelerate infrastructure investments on the light-duty side to get to five million vehicles by 2030.

So we need to go well beyond on par and we need this work group to focus on not just heavy-duty, but light-duty, medium-duty, and things like port equipment as well. So the scope and the scale of the challenge is huge, and it's not quite adequately reflected in the purview of this working group. So we'd like to see the working group expanded in terms of scope and scale.

The report also -- let's see. We also want to just say that from -- from our perspective, the work group does need to focus on this workforce challenge and we'd like to see them do that. We also do want to suggest that although I -- we are with our colleagues in the hydrogen world, we definitely need more hydrogen infrastructure. We are nowhere we need to be on the electricity infrastructure side either. And the utilities and CalETC are very committed to providing that infrastructure and helping with that. But it is not -- we are not there and this work group needs to include that.

So with that, I thank you very much and I really want to thank the staff again. I think this was a very
excellently done effort.

CHAIR NICHOLS: Thank you.

MR. BARRETT: Good morning. I'm Will Barrett with the American Lung Association.

First of all, thank staff for the great work that went into this report. We think it's very important.

As noted in the report, California will simply not achieve our clean air and climate standards without the widespread and rapid transition to zero-emission transportation technologies.

Transportation is by far the leading source of harmful pollution as discussed earlier by Mr. Corey in his presentation, in terms of smog-forming emissions, particle pollution, and climate forcing pollutants.

The recommendations related to reliable funding in the report are critically important and we will certainly be working with you all to make sure that those recommendations move forward.

We're deeply disappointed in the Governor's proposal to cut key zero-emission transportation resources. And as discussed earlier, I think you've heard from others speakers and members of the Board, there's a shared concern that without adequate and reliable funding, 2030 is going to get here sooner than we'd like. So we're prioritizing the budget. We're prioritizing looking at
ways that we can try to influence the development of the Climate Catalyst Fund to really emphasize transportation projects that will help us meet our clean air and climate standards.

We think that that fund is an opportunity that we should be looking at, but we also need to have certainty that it will support transportation programs.

The direct measures that CARB is designing and implementing now are critical. We're working with your board and staff on many of those and we're happy to see progress on many of these great programs moving forward, including the Advanced Clean Truck Program that you'll hear in a few months.

We do support strongly the inclusion of outreach and education recommendations in the report, as well as the local government implementation recommendations that Mr. Magavern pointed out. We know that we need local governments to have the authority to do more to support the transition to zero emission and to really support clean air programs and climate programs to support public health.

We believe the training -- workforce training, technical assistance, local code changes are all important to supporting the transition to zero-emission technologies, to supporting the deployment of...
zero-emission charging stations to implementation of hydrogen refueling stations. We know that these outreach efforts and the technical support are going to be really important for heavy-duty operators, for school districts, transit operators, and others to make sure that no one is being missed out on the transition to zero.

So in closing, thank you for the opportunity to speak. We know that the Legislature has a lot to think about with these recommendations. And we do appreciate the ongoing support of the Board and staff for driving as hard as we can to achieving our clean air standards to protect public health for every Californian.

So thank you very much.

MR. ANAIR: Hi. Good morning. My name is Don Anair. I'm with the Union of Concerned Scientists.

I just wanted to generally express our strong support for the work that staff has done in putting this comprehensive report together on what's needed to accelerate electrification in California.

Really, in terms of meeting our climate and air quality goals by 2030, and even more particularly by 2045, it's going to require these type of concerted actions. I think it's helpful to think about where we were a decade ago, since we're entering a new decade. And we've come a long way on this. One or two models were available in the
2010 time frame. Obviously, have dozens of zero-emission vehicle models available today. Costs are coming down on the technology in a significant way.

But we're not there yet. And I think this is where the next decade is really the critical point in reaching a tipping point on zero-emission vehicle technologies. We have to do that. We have to do that this decade or we're not going to be on track to meet our decarbonization goals.

And so I think a couple of key things I just wanted to point out. You know, what does that tipping point look like? It looks like on a cost perspective, obviously, the cost has to be competitive with zero-emission vehicle technologies with internal combustion vehicle technologies. It also means the experience, the refueling ability for consumers and for fleets needs to be seamless. So the focus on both the infrastructure and vehicle side in the -- in the next few years is really critical.

A combination of strong regulatory requirements coupled with smart incentive programs is key. And I think you've laid out a lot of the strategies here in this report that are going to be important.

One strategy I do want to call out, which will become increasingly important and I think increasingly
able to impact is making sure that the benefits of zero-emission vehicles are getting to the impacted communities that need that most, both from a light-duty perspective with more lower cost vehicles coming to market and used vehicles, as well as on the heavy-duty side.

And then finally just one specific recommendation on the report and some -- evaluating the benefits of some of the light-duty vehicle programs. The time frame for those benefits were evaluated on a two and a half to three year time frame. We understand why staff did this. We think we should also present the lifetime benefits of those projects to not undersell and underestimate the important impacts that these programs have been having.

Thank you.

CHAIR NICHOLS: Thanks.

MR. BLUBAUGH: Good morning. I'm Tim Blubaugh speaking on behalf of the Truck and Engine Manufacturers Association.

All EMA members are investing in, developing, and marketing zero-emission powertrains and commercial vehicles. As such, we support, strongly support, increasing the use of medium- and heavy-duty ZEVs in the state.

A sustainable zero-emission vehicle marketplace -- zero-emission commercial vehicle
marketplace will require three critical elements.

First, product offerings must meet the needs of fleet customers and EMA members are developing those trucks. Second, fleets need to transform their operations to be able to use ZEVs. Third, an adequate charging infrastructure must be in place at each fleet facility.

In our comments on the proposed Advanced Clean Trucks Rule, we pointed out that the most effective way to establish a sustainable zero-emission commercial vehicle marketplace is to achieve all three elements in prioritized specific market segments that are most readily suitable for ZEV technology. By holistically establishing those beachhead markets, we stand the best chance for a successful ACT Rule and for achieving the goals in Senate Bill 498.

Please note that commercial vehicles are not just big cars. They represent about two percent of passenger car sales, yet come in a wide variety of configurations for a very broad range of unique applications.

Most importantly, commercial trucks are capital -- capital assets purchased by businesses to increase profits. They are not chosen based on subjective criteria such as style, or comfort, but solely based on performance and cost effectiveness.

Therefore, until performance and lifecycle costs
of zero-emission commercial vehicles are competitive, businesses that operate trucks will not begin converting their fleets to ZEV technology. To overcome the cost and operational challenges of ZEVs, the State Legislature must allocate sufficient and sustained funding for the zero-emission commercial vehicle marketplace.

Fleets will need purchase incentives for -- to purchase new vehicles, money for new maintenance facilities and employee training, and capital to construct, maintain, and expand the charging infrastructure at facilities where they operate trucks.

We urge the Board to direct staff to include in the SB 498 report the need to develop the zero-emission commercial vehicle marketplace by prioritizing the most suitable beachhead market segments and to recommend that the Legislature allocate adequate funding to sustain those markets until ZEVs are cost competitive for the businesses that operate trucks.

Thank you.

CHAIR NICHOLS: Thank you.
I believe number 19 is next.

MS. BEKEMOHAMMADI: Yes.

CHAIR NICHOLS: Yes.

MR. WILLIAMS: So good morning.

CHAIR NICHOLS: Roxana?
MS. BEKEMOHAMMADI: Thank you. Good morning, Madam Chair and Board members. My name is Roxana Bekemohammadi here on behalf of Ballard Power Systems a global fuel cell manufacturer.

We applaud staff for their nuanced and accurate depiction of some of the challenges that the hydrogen industry faces and providing meaningful recommendations that we believe should be implemented. We would also like to thank the Senator from Berkeley for her dedication to these issues. Ballad Power Systems supports the approval of this draft report.

Thank you so much for your consideration.

CHAIR NICHOLS: Thank you. Okay.

MR. WILLIAMS: Good morning. My apologies to Roxana. This is not an excuse. I didn't do my homework, Professor Sperling. I just got off a plane and I was playing EMT helping the flight attendants. It had a happy ending, but it threw me off my game a little bit here, so...

My name is Brett Williams. I am the principal advisor for electric vehicles at the Center for Sustainable Energy. And, in essence, what that means is I help wrangle and make meaning from data produced by five statewide electric vehicle rebate programs.

So the first thing I'd like to do is just
congratulate the staff on a monumental effort. I believe we will be submitting -- our policy team at CSE will be submitting some comments applauding the effort and supporting a lot of the recommendations. And my primary purpose of being here today is just to highlight that fact.

If there is some time, I would like to drill down a little bit more from a researcher perspective on what Don Anair said earlier. And that is just to provide a little bit of user guide advice to the report. There's a lot in there, of course, right? It's difficult to digest it all. And one detail that is easy to lose in the footnotes is this quantification period from emissions reduction from light-duty vehicles.

It -- from its own perspective, it was set on a very commendably conservative perspective, according to program requirements that incentivized consumers own the vehicle for three years.

Of course, vehicles, light-duty as well as heavy-duty can have useful lives that provide benefits to California much beyond that. And so just to highlight that quantification period is three years for light-duty vehicles. In the same report, that quantification period for heavy-duty vehicles is 15 years.

And so just from a practical policymaker point of
view, it does complicate sort of the decision-maker's
direct comparison of programs when it comes to cost
effectiveness metrics as well. And so there's lots of
ways you can think about that. Other than highlighting
it, I can just, off the cuff, say a couple of things I do
in my head are to multiply up the greenhouse gas
reductions of light-duty vehicles by approximately 2X.
That brings it more in line with average car ownership
duration, which is about 6.6 years, as opposed to three
years.

So that's the type of thing you can do. You can
do what Don Anair suggested, which is focus on full-life
benefits of EVs, which speak to their absolute impact, but
there's uncertainties, of course, to whether those will be
fully realized or not. Or you could do something which
we've Done in the appendices of this report, which is to
look at year one benefits for the purposes of standardized
cross-comparison of programs. So the benefits that a
vehicle provides in its first year of use, look at that
across the board for standardization, and then go from
there and tailor it from there.

So those are just some thoughts from a good-faith
researcher point of view highlighting that detail. The
good news is all of the measures of impact are high. And
that is a finding we are seeing be true across all five
states of our electric vehicle rebate program.

So take courage from that. Thank you very much.

CHAIR NICHOLS: Okay. Thank you.

Questions.

BOARD MEMBER SPERLING: Brett, you were always a great student.

(Laughter.)

MR. WILLIAMS: Can I say thank you then?

Thank you.

(Laughter.)

CHAIR NICHOLS: All right. Okay. That concludes the list of witnesses. I believe that some Board members have additional comments or suggestions on the resolution starting with Mr. Serna.

BOARD MEMBER SERNA: Thank you, Chair.

I'd like to start by thanking staff for the report. I think it was very thorough. I had a very good conversation with Andrew, Melanie, and Annalisa yesterday about this.

I also want to thank the speakers, especially the two speakers here from the area that I represent, one from the local air district and the other from the greater Sacramento Economic Council who made specific mention of an initiative that is local but certainly has statewide consequence, and that's the California Mobility Center,
which I, along with some of my colleagues on the
Sacramento City Council, have been advocating for now a
couple of years, taking a couple of trips to Germany even
to see how the relationship between Aachen University and
Aachen, Germany is working with OEMs in terms of how best
to incubate new technologies when it comes to electric
mobility, something that we want to not only replicate but
enhance here in the Sacramento region.

And to freely admit this, the reason I asked the
earlier question of Mr. Corey when it came to our 2020 --
the discussion of our 2020 priorities, is I wanted to kind
of tee up what I'm about to introduce in terms of an
amendment to the resolution, and that is I think this
agency -- I feel strongly that this agency has a distinct
opportunity, if not a responsibility, to really promote
innovative thinking when it comes to how we incubate the
technologies that are going to be necessary, as one
speaker mentioned, to make electric mobility especially in
the medium- and heavy-duty sectors competitive.

And so what I'd like to respectfully ask of my
colleagues for consideration is that we add to the fifth
whereas, there's a list basically of kind of policy
priorities here. And one of -- one that I think is kind
of necessary here is to add technology incubation to that
list.
And I would again respectfully ask the Board to consider that. I would like to -- I know there's are others that are -- that are going to speak, Madam Chair. But I'd like to move the resolution with that addition and, of course, keep it open for discussion.

CHAIR NICHOLS: Thank you. If we'll have second.

BOARD MEMBER SPERLING: Second.

CHAIR NICHOLS: Any other additions or changes to the report that anybody -- or to the resolution rather, than anybody wishes to put forward at this time?

I guess I was struck by the presence of a couple of different witnesses who were here to talk about the growing ZEV economy in California, in terms of manufacturing and jobs that are associated with this industry. And it reminded me of the early stages of what became AB 32, and then SB 32 and how critical the presence of the Silicon Valley industry was in promoting that kind of policy.

And I just wonder if we are giving too short shrift to the importance of recognizing the need to at least acknowledge these folks and the fact that, you know, it's -- it really is remarkable that years ago you would have expected anything that was talking about ZEV mandates and ARB policies to attract nothing but opposition. And here we are at a point where we now have enough of an
ecosystem around support for our ZEV mandate, and our ZEV programs that we've got people coming up from the economic development world, you know, asking for more and for increased involvement and partnership.

It just seems to me that we could put something into the resolution that would highlight that point that this is not just about the vehicles themselves but about the production of them as well. I don't have language to propose, but it could go along with what you're suggesting as well.

BOARD MEMBER SERNA: Sure. Something specific to kind of the economic development benefit that comes with this.

CHAIR NICHOLS: Right.

Mr. Sperling.

BOARD MEMBER SPERLING: Yeah. And I support that. You know, the L.A. -- the L.A. initiatives, I think, are going in the right direction.

CHAIR NICHOLS: Um-hmm.

BOARD MEMBER SPERLING: And, you know, we need to -- I guess I would elaborate a little bit on what you just said to say that this is to support the initiatives by local governments --

CHAIR NICHOLS: Yes.

BOARD MEMBER SPERLING: -- and local
initiatives --

CHAIR NICHOLS: Right.

BOARD MEMBER SPERLING: -- you know, in -- you
know, in generating jobs, in attracting these companies
and supporting them, and so.

CHAIR NICHOLS: Um-hmm. Yeah, the local could go
in there as well.

Other thoughts, comments?

If not, we can just approve the resolution.

This report definitely needs to go. It's been
marinating for a long time.

So we have a motion and a second on the table.

I think we can just call for the vote.

All right. All in favor, please signify by
saying aye?

(Unanimous aye vote.)

CHAIR NICHOLS: Any opposed?

Any abstentions?

I don't know why there should be.

Okay. I am going to suggest that we give
ourselves a break. I know that there's -- Board members
have the opportunity to also have a bite of lunch. But,
you know, we don't want to prolong this meeting
unnecessarily. But I think if we gave ourselves a half an
hour, we could get a break, and stretch, and then come
back and do the last report, if that's okay.

    All right. We'll do that then. We'll talk a
half hour break and come back at noon.

    Thank you.

    (Off record: 11:29 a.m.)

    (Thereupon a lunch break was taken.)
AFTERNOON SESSION

(On record: 12:07 p.m.)

CHAIR NICHOLS: All right. We have sound. We're back in action.

Our next item, and our last item for this meeting, is number 20-2-7, which is an informational update -- excuse me, Board members -- an informational update on the new Clean Miles Standard, which establishes requirements to reduce greenhouse gas emissions and increase electric miles from ride-hailing companies, such as Uber and Lyft. This, as we've been discussing all along, difficult but essential that we find ways to reduce emissions from transportation.

Vehicle technology changes alone will not get us to our climate and air quality goals. We also need to reduce vehicle miles traveled. We need to make fuel available -- fueling available. We need to get the clean vehicles into the customer's hands.

The rise of ride-hailing companies creates new demand in the transportation system that is making this more difficult. In California, the growth of the miles from these companies has been exponential and is expected to continue. As more and more Californians embrace ride-hailing and other new services in transportation, we have an important opportunity to increase awareness and
accelerate the adoption of ZEV vehicles.

What I like about this proposal is that it will be designed is to promote zero-emission technologies, while also reducing vehicles miles traveled, a two-fer. It's a groundbreaking concept in that for the first time we will be regulating on-demand transportation services, and that is, as we know, an increasingly common way to move people. But in the future and even in the present, it is also looking like it's going to be a more common way to move goods around as well.

So this is a really groundbreaking regulation. And it's part of our multi-pronged strategy to reduce emissions from passenger transportation.

Mr. Corey, would you please introduce this item?

EXECUTIVE OFFICER COREY: Yes. Thanks, Chair.

This Board item rounds out today's agenda on sustainable transportation and communities. In 2018, the California Legislature passed Senate Bill 1014 directing CARB to adopt and the California Public Utilities Commission to, or PUC to implement a greenhouse gas emission reduction program for transportation network companies, or TNCs, which include Uber and Lyft among others.

The statute requires that by January 2021, CARB set annual targets to reduce greenhouse gas emissions per passenger mile traveled in ride-hailing services, while
also increasing electric vehicle miles. TNC compliance strategies to meet these two targets can include increasing the use of electric vehicles, reducing vehicle miles without passengers, and increasing the number of passengers or pooling in vehicle trips.

This informational Board item will provide background on the statute, its goals, and the status of developing the Clean Miles Standard, including the 2018 base year greenhouse gas emission inventory statewide and the corresponding vehicle activity of ride-hailing services.

With this item, we do have a resolution for the Board, which outlines the principles that the staff will be using to develop the regulation. Staff are set to bring a regulation package back to the Board near the end of this year.

After the staff presentation, Cody Naylor of the California Public Utilities Commission, will present the process for conducting their proceedings, and -- because as I noted, PUC has a role in implementing the regulation.

I'll now ask Gloria Pak of the Sustainable Transportation and Communities Division to give the staff presentation.

Gloria.

(Thereupon an overhead presentation was
presented as follows.)

AIR RESOURCES ENGINEER PAK: Thank you, Mr. Corey.

Good afternoon. Today, I will be presenting an informational Update on the Clean Miles Standard Program for ride-hailing services. Ride-hailing services are also called transportation network companies, or TNCs, who provide prearranged transportation using an on-line application to connect passengers with drivers using a personal vehicle. This program is being developed per the direction of Senate Bill 1014.

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AIR RESOURCES ENGINEER PAK: Before we get started, we wanted to give you an outline of what you will hear today. First, we will provide background on SB 1014, including the statutory deadlines and goals of the legislation. Next, staff will present key highlights from the analysis of the 2018 TNC base-year emissions and activity data. This includes information on the vehicles that are part of the TNC fleet, such as make, model, emissions, and miles traveled among other things.

After analyzing the data to set the targets required by the bill, staff will discuss three compliance strategies we are evaluating, which include electrification, increasing passengers per trip, and
reducing deadheading miles.

    We will briefly discuss potential regulatory
credit incentives being considered, followed by an outline
of our next steps in our process of developing the
regulation. Finally, we will summarize the proposed
resolution brought before the Board today.
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    AIR RESOURCES ENGINEER PAK: SB 1014, or the
Clean Miles Standard, requires CARB to adopt GHG reduction
targets for TNCs, and the CPUC to implement the program,
given that it already manages the operating permits for
TNCs in California.

    Staff collected trip level data from the TNC
fleet to establish the 2018 base-year emissions and
released a white paper, thereby meeting the first
statutory deadline of January 2020.

    Continuing to work with the 2018 data, staff will
evaluate and adopt annual targets by January 2021. Staff
will bring a regulatory package to the Board in late 2020
to meet this deadline.

    The TNCs will be required to meet their first
annual targets in 2023, when CPUC Implements the Clean
Miles Standard Program.
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    AIR RESOURCES ENGINEER PAK: The Clean Miles
Standard Program will include two compliance targets: a greenhouse gas reduction target in the metric of gram CO2 per passenger mile, and electric miles driven by zero-emission vehicles, which include fuel cell vehicles. This program is only applicable to passenger service on TNC platforms, meaning that miles traveled by TNC drivers for food or goods delivery are not captured in this program. Key goals for this program are promoting zero-emission vehicles, or ZEVs, and reducing vehicle miles traveled, or VMT.

Because larger cities of our state, in particular, are heavily impacted by ever-increasing congestion and vehicle emissions, reducing VMT would serve to mitigate these issues that impact public health and quality of life.

Staff will also strive to align the Clean Miles Standard with SB 375, SB 350, and the Zero-Emission Vehicle Action Plan through collaborative engagement with the respective program staff.

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AIR RESOURCES ENGINEER PAK: As previously mentioned, staff have established a base-year inventory of TNC emissions. Presented here are some highlights of the TNC activity extracted from trip record data. This TNC data set from the 20-- from 2018 included about 1.4
billion trip records. From the data, we learned that TNC operations contributed 4.3 billion miles to the state in 2018, which amounts to about one and a quarter percent of the State's light-duty vehicle miles.

    Of the 4.3 billion miles, 38 percent of those were without a passenger, known as deadhead miles. Deadhead miles result from a driver cruising while waiting for a ride request, and while en route to a rider after a request was accepted.

    Of the 62 percent of miles with passengers, about a fifth were from pool-requested rides. A pool request may not always get matched with multiple riders, if there are no others near a route to join the trip. Therefore, a pool-requested trip could still have just one passenger. Additionally, pooling service is only offered in select areas of the state based on demand.

    We have observed significant growth of TNCs since their inception and we expect to see continued growth of TNCs in California and globally.

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    AIR RESOURCES ENGINEER PAK: Here, we show the 2018 base year greenhouse gas emissions from TNCs compared to the California fleet. TNCs contributed 301 grams CO2 per passenger mile traveled. In contrast, the California fleet is at 203 grams CO2 per passenger mile. A factor
that contributes to this difference is the deadheading miles in TNC operations shown on the previous slide as 38 percent of TNCs total miles.

Deadheading is assumed to be zero for the California fleet with most of the VMT being from personal vehicle travel. With respect to emissions per mile, the TNC fleet tends to have lower CO2 emissions, 287 grams per mile compared to the 341 grams per mile for the California average.

The lower emissions of TNCs can be attributed to newer vehicles in the fleet and having a higher passenger car to light-duty truck mix.

To put into context, TNCs' contribution to the state's GHG emissions in the light-duty sector was one percent. Detailed analyses and assumptions used in determining the base-year emissions can be found in the staff white paper.

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AIR RESOURCES ENGINEER PAK: Staff have identified a set of principles to guide the development of the Clean Miles Standard Regulation and to ensure that the program supports the fundamental goals of SB 1014.

The first of these guiding principles is to decrease greenhouse gas emissions and encourage TNC fleets to increase zero-emission options. The program should
promote pooling, active transport, and use of transit, thus fostering strategies for reduction of VMT while supporting passenger miles traveled.

Additionally, the program should prepare for a mobility future that includes shared automated vehicles in TNT fleets and other emerging modes of transportation.

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AIR RESOURCES ENGINEER PAK: The work ahead involves evaluating the appropriate stringencies of annual GHG reduction targets. Staff have thought about ways in which TNCs can comply with those targets and identify three primary strategies.

The first strategy, which we believe may be the most impactful in reducing greenhouse gas emissions for TNCs is electrification. Increasing zero-emission miles will be part of the annual requirements that TNCs will be held to, per the direction of SB 1014.

The second strategy is to increase pooling, in other words, increasing the number of passengers per trip. Third is reducing deadhead miles, or miles traveled without a passenger in the vehicle. Reducing deadhead miles can make an impact not only on reducing greenhouse gas per passenger mile, but also on reducing VMT and congestion.

CARB staff are currently evaluating the
feasibility of each strategy by developing tools to model various scenarios and evaluate the associated costs.

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AIR RESOURCES ENGINEER PAK: The Clean Miles Standard will require increases in percent annual electric vehicle miles traveled, which we refer to as eVMT. This means putting more ZEVs in the hands of TNC Drivers. To accelerate the conversion to EVs, TNC companies may remove the capital cost barrier of purchasing an EV and provide EVs and partner rental fleets. To date, there have been several cities outside of California where EV rentals for TNC driving were made available on a small to medium scale.

However, even after overcoming the high capital cost of switching to an EV, the current price of DC fast charging is near the price of gasoline in some markets. Subsidizing fast charging until it becomes more affordable may encourage drivers to make the switch earlier. Staff are cognizant of the fact that many drivers may not be aware of the State, federal, and local incentive -- incentives available to EV purchasers. Improving access to EV information and education may be a cost-effective way to increase EV uptake by more consumers.

To determine an appropriate eVMT target, staff are evaluating the challenges of increasing
electrification and ways to overcome those challenges.

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AIR RESOURCES ENGINEER PAK: A second strategy to reduce greenhouse gas per passenger mile is to increase the passengers in the car. Pooling services are where drivers are matched with multiple riders along a similar route. A rider who requests a pooled service is given a discounted fare for opting to share their trip with other riders.

The Clean Miles Standard Program will encourage strategies, such as favorable pricing and picking up riders at a TNC hub, as well as expanding pooling services to areas that don't currently have it, such as the City of Sacramento.

There are, however, challenges to increasing demand for pooling as riders often cite reasons such as uncertain trip times and having to share a ride with a stranger as being deterrents. Though a lower priced fare is an incentive to pooling, the cost of a ride can only go down so low before it negatively impacts the driver.

Additionally, some literature points to a potential impact on other modes of transportation as the use of pooling increases. Nevertheless, getting passengers to share rides is important for GHG and VMT reduction benefits.

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AIR RESOURCES ENGINEER PAK: The third strategy for achieving lower GHGs per passenger mile is reducing deadhead miles. Methods that should be tested include prioritizing ride matches for drivers who choose to park and wait versus cruising around.

Additionally, TNCs have control over balancing supply versus demand by capping the number of drivers in an area and times when supply is high.

Current literature indicates that oversaturation of TNC drivers in a market inherently results in increased deadheading. One challenge of deadhead reduction is that places to park temporarily for free are very limited in urban areas. This is where agreements between TNCs and cities would be beneficial to both parties. Cities would benefit from reduced congestion and TNCs would reduce their GHGs per passenger mile emissions.

Another challenge is the uncertainty of whether or not parking and waiting would correlate with lower driver revenue due to lower ride — lower ride-match rates.

Lastly, reducing the amount of drivers constantly cruising around may potentially result in longer average wait times for riders.
AIR RESOURCES ENGINEER PAK: In addition to promoting ZEVs and reducing VMT, we must ask how can we use this regulation to promote a more efficient transportation system overall?

To that end, we are considering the inclusion of transit and active transportation miles, including micro-mobility and walking facilitated by TNCs. These miles can potentially be credited in the form of zero-emission passenger miles traveled feeding directly into the GHG per passenger mile compliance metric or as GHG credits that lower their annual emissions.

CARB staff have conducted numerous interviews with local transit agencies, MPOs, and private sector partners to seek information and data on current and past transit pilot programs. Partnerships between TNCs and transit are being tested in many areas across the state, often to address the first- and last-mile connections.

CARB staff are actively seeking data from such partnership to inform how to best incorporate these passenger miles into the Clean Miles Standard to support transportation system efficiency.

When it comes to active transportation, such as shared e-bikes and e-scooters, their nascency and occasional volatility in local markets means data is currently limited.
Staff are evaluating how to best incorporate active transportation and will continue to monitor its developments.

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AIR RESOURCES ENGINEER PAK: Before we conclude, we would like to share our process going forward. CARB staff will hold public workshops in early 2020 to present and receive feedback on the regulation design and preliminary targets. We plan to complete all analyses and develop a proposed regulation in the second quarter of 2020.

Staff will finalize a regulatory proposal by fall 2020 and present a regulatory package for the Board's consideration in December 2020.

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AIR RESOURCES ENGINEER PAK: Today, CARB staff is bringing a proposed resolution to the Board that encompasses the guiding principles for developing the Clean Miles Standard Program and directs staff to design the regulation to consistent with SB 1014. The new regulation should support CARB's mission as well as adapt to the new mobility landscape. The regulation should encourage TNC fleets to provide clean mobility options, including pooling, zero-emission vehicles, connections to transit, and active transportation, all while reducing
AIR RESOURCES ENGINEER PAK: CARB staff looks forward to bringing you and our stakeholders a first-of-its-kind proposed regulation for the Clean Miles Standard later this year.

Now, we will introduce Mr. Cody Naylor, Supervisor of CPUC's Transportation Analysis Section, who will present CPUC's process for developing and implementing the Clean Miles Standard Program.

(Thereupon an overhead presentation was presented as follows.)

MR. NAYLOR: Good afternoon, Chair Nichols, Board Members, staff, and members of the public. It is a pleasure to address you today. This is my first time appearing before you, but hopefully not my last. I love your emphasis on transportation.

My name is Cody Naylor and I supervise the Transportation Analysis Section of the California Public Utilities Commission. My team advises the Commission on the regulation of transportation, and we will be supporting the Commission's work and implementation of the Clean Miles Standard.

We are part of the Commission's Consumer Protection and Enforcement Division that is led by
Director Doug Ito, a name that may be familiar to many of you, as he was most recently a branch chief here. Unfortunately, Doug could not be here today, but he sends both his regards and his regrets. He really wanted to be here. I think he misses you all.

(Laughter.)

MR. NAYLOR: My brief presentation today focuses on two areas. First, the Commission's statutory roles under SB 1014, the California Clean Miles Standard and Incentive Program, and second, the general procedural steps that the Commission would take to implement its responsibilities under the Clean Miles Standard Program.

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MR. NAYLOR: Under SB 1014, the Commission is tasked to implement the greenhouse gas emission reduction goals adopted by the Board next year. Through the Commission's regulation of TNCs, we will need to address matters, including how to verify, monitor, and enforce compliance by the TNCs with respect to their plans on how they will meet the Board's targets and goals for reducing greenhouse gas emissions.

The statute further tasks the Commission broadly to address the impact of the Clean Miles Standard Program on low-income and moderate-income drivers, as well as to
ensure that it complements the sustainable land-use objectives of SB 375 and that it supports the clean mobility goals for low- and moderate-income individuals.

Furthermore, the statute tasks the Commission to advance the goals of the Clean Miles Standard Program in reviewing utility transportation electrification applications. This work is primarily addressed by the Commission's Energy Division, with which my team collaborates, and we will ensure that this team and energy also stays involved in the regulation design work that CARB staff will be conducting throughout 2020.

Since the statute requires the Commission implement the law by 2023, which is not far away at all, my team will continue the staff-level coordination with CARB that was initiated back in the fall of 2018 and that continues to this day.

Throughout 2019, Commission staff was notably involved in the collection of extensive data from TNCs that was then shared with CARB for purposes of calculating the emissions' baseline presented today. We also participated in the many meetings, workshops, and engagement with experts led by CARB staff throughout 2018 and 2019. I think we've gotten to know each other quite well.

I want to take a moment just to express my
gratitude to the CARB staff working on the Clean Miles Standard, of which there have been many for how easy this interagency collaboration has been. I hope that CARB staff would agree that we are building on a solid foundation of working together.

My team will continue to work very closely with CARB staff even more so in 2020 than in 2019 throughout the regulation design phases, so that we are developing our policy recommendations in parallel throughout the year with the intention that when the time comes for the Commission to initiate its formal rulemaking after the Board adopts its reduction goals, our Commissioners will have clear guidance from staff informed by our engagement with CARB staff and by the Board's actions from the outset of our formal rulemaking process.

And with that, I'd like to move on to discussing the Commission's formal processes.

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MR. NAYLOR: The Commission has numerous types of proceedings. Implementation of the Clean Miles Standard, what occurred through an Order Instituting Rulemaking, or OIR, by the Commission. Our Commission, which has five Commissioners, each of whom was appointed by the Governor and confirmed by the State Senate, has to vote to open a
formal rulemaking. Comments are then solicited on the rulemaking, particularly on the issues proposed to be captured within the scope of the proceeding.

Entities that participate in our formal process are referred to as "parties". After the OIR is issued, one of our Commissioners is assigned by the Commission President to oversee the proceeding, and an administrative law judge is also assigned to manage the rulemaking process and the development of the written record.

My team advises these decision makers at the Commission and further engage with stakeholders and the public to inform the Commission's decision-making process.

After a Commissioner and an ALJ are assigned, a public meeting called a prehearing conference is held to enable interested stakeholders become formal parties to the proceeding and to discuss the schedule and scope of the proceeding, including the need for hearings. The assigned Commissioner then issues a scoping memo that identifies the schedule for the proceeding and the set of issues that will be addressed in the rulemaking, after which written comments are invited from parties on the scoping memo.

After that memo is issued, the focus then turns to the construction of the written record of Commission uses as the basis for its decisions. This is the core of
the Commission's formal public process. Commission staff regularly engage with the public and with parties in numerous forums, including meetings, working groups, and public workshops. Then, based on the written record, a proposed decision is issued for a minimum of 30 days of public review before the Commission can vote on the item, after which time the proposed decision may be adopted.

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MR. NAYLOR: And the concludes my presentation today. Thank you again for the opportunity to address you. We look forward to continuing our work with CARB on joint implementation of this important program and I'm happy to receive any comments or answer any questions that I can at this time.

Thank you.

CHAIR NICHOLS: Thank you. I hope you'll stay with us then for the rest of this meeting. I suspect we'll have some questions at the end or comments.

BOARD MEMBER SPERLING: Chair -- Chair Nichols, I have a question about pro --

CHAIR NICHOLS: Yes.

BOARD MEMBER SPERLING: I have a question about process.

CHAIR NICHOLS: Go ahead, yes.
BOARD MEMBER SPERLING: So what I don't understand. There were some words you used about how these two are going to be coordinated, because, you know, we're going to vote on one thing -- we're going to vote on the -- basically, one part of it. But the PUC is going to be setting the targets, as I understand, the specific targets. And there's going to be the enforcement that goes along with it.

And when we've -- at least when I look at that, I'm going to have to -- when I vote on it, I want to know exactly what the targets are that I'm voting on and I want to know how the enforcement is going to take place, because we have some interesting innovations being designed in this. And it's unclear how that enforcement -- how effective it would be and how it would be done.

So the question is how are these two coming together and just looking at it parochially from me voting on it, for instance.

MR. NAYLOR: Well, to clarify under the statute, the adoption of the reduction targets and goals will actually be CARB's decision. What the Commission will do in its implementation action will be dealing with compliance monitoring and then ultimately enforcement.

But the planned approach is that within our
formal rule-making process, we will incorporate the
decisions that CARB has made into the evidentiary record,
so that the Commission can then make its separate
decisions about how compliance, verification, monitoring,
and then ultimately enforcement will occur.

So there is that separation in the enforcement
actions, given the Commission's regulation of the TNCs.

STCD ADVANCED CLEAN CARS BRANCH CHIEF CUNNINGHAM:
You want further clarification on that?

BOARD MEMBER SPERLING: Well, okay, just my
understanding then is CARB is designing it, CARB is
setting the targets, and PUC is figuring out how to
enforce it, is that right?

MR. NAYLOR: Correct.

BOARD MEMBER SPERLING: Okay.

STCD ADVANCED CLEAN CARS BRANCH CHIEF CUNNINGHAM:
That's correct.

MR. NAYLOR: And the work that my staff will be
doing as the CARB staff developed the regulations
throughout 2020 is to really prioritize what enforcement
mechanisms they feel may be necessary for the Commission
to consider in its adoption of its regulations.

BOARD MEMBER SPERLING: Okay. Thank you.

MR. NAYLOR: Thank you.

STCD ADVANCED CLEAN CARS BRANCH CHIEF CUNNINGHAM:
Yeah. And just to add to that, you can expect when we come back to the full Board later this year, that the regulatory proposal will look quite similar to other regulatory items that we typically do. So it will be a regulation. You'll have required emissions per passenger mile traveled. It's called targets in the statute, but we are taking that as a regulation. Those will be requirements annually. So we will establish those for your consideration. And then as Mr. Naylor mentioned, they would have their proceedings, develop enforcement, and the compliance mechanisms.

BOARD MEMBER SPERLING: So just one last question. So part of how we design it is going to depend on how we think it could be enforced. When you talk about, you know, transit access and pooling, it's not obvious how you enforce that. And so, I mean, I think we need to have some sense of -- we need to understand what those enforcement and compliance strategies are and how effective they're likely to be.

STCD ADVANCED CLEAN CARS BRANCH CHIEF CUNNINGHAM: Yes. We will be working very closely, as Cody mentioned, with the PUC throughout the year. Part of -- part of our consideration, as you're describing, is how enforceable it will be. So that will affect both the kind of flexibilities and credits we put into the program, the
data requirements that we would require. So we would define all that.

But as we make those decisions, we do have to have some consideration whether we think it's enforceable and implementable. So that's absolutely correct.

BOARD MEMBER SPERLING: Thank you.

CHAIR NICHOLS: Okay. I think we'll have more conversation about this as time goes on. But, yes, go ahead, Judy.

BOARD MEMBER MITCHELL: So I'm kind of trying to wrap my head around this whole idea, because it seems to me the way it's designed is a reduction in the CO2 emissions, probably annually a certain percentage comes down. But the fleets themselves are pretty fluid. I would guess you've got drivers coming in and out of those fleets and even the vehicles themselves changing rather frequently.

Will we be doing some kind of emissions inventory to determine what those emissions are and how often will we have to be adjusting those?

STCD ADVANCED CLEAN CARS BRANCH CHIEF CUNNINGHAM: Yeah. When we establish our regulatory proposal for your consideration, we will have in it requirements for -- I believe we're going to require annual data submissions. And that's not just for the PUC to be able
to implement, but it's also for ARB to be able to have ongoing learnings on developing our inventory, seeing where the trends are, and whether we need to revise the regulation if future years.

CHAIR NICHOLS: This is not a workable arrangement let me just say clearly. It's not. It was not designed, frankly, with that in mind. I think it's fair to say that, you know, the author did the best she could, given what the situation was at the time, in terms how to allocate responsibility. And this is with all due respect to our friends at the PUC who have the direct responsibility for regulating this industry. They -- the ride-sharing companies, ride-hailing companies are under their jurisdiction.

But the PUC is not a regulatory agency in this way, and they're not an enforcement agency in the way that we are. And melding these two types of programs together, I, frankly, don't think is going to work. But I think that the efforts that are being made by the staff with good will, and energy, and the commissioners also, by the way. I'm not -- not knocking the PUC at all is -- I think are intended to move us in the right direction. So I think, you know, everybody is going to try to make something happen here that makes sense.

I'm mostly upset by how long this is going to
take to happen, period. I mean, the problem with the
vehicles that are out there riding around today with no
passengers in them is happening right now. And as far as
I can tell, it's years before we think we could get a
handle on this.

So I am hoping that we're going to find a way to
get some action taken on this. But in the meantime, I
think it's worth listening to the ideas that the staff
have come up with in terms of how you would do a Clean
Miles Standard, because that is something never been done
before. It's new, it's different, it's interesting, and
valuable.

And so I think we should proceed, you know, to --
as best we can to try to carry this out.

BOARD MEMBER SPERLING: Just to allay the Board's
concerns here, so I've followed this very carefully. I've
been very involved --

CHAIR NICHOLS: Yeah.

BOARD MEMBER SPERLING: -- in this idea and --
all the way. And I think the staff has done a -- I mean,
it's a brilliant, innovative, unique --

CHAIR NICHOLS: Um-hmm.

BOARD MEMBER SPERLING -- and hugely --
potentially hugely important in the long run.

CHAIR NICHOLS: Um-hmm.
BOARD MEMBER SPERLING: But I think the staff has done a -- you know, a fantastic job in terms of getting the data together, understanding it, being creative. So I just want to, you know, set the stage as we go forward, you know.

CHAIR NICHOLS: Okay. Right.

BOARD MEMBER SPERLING: There's been a really good effort with really good work done.

CHAIR NICHOLS: Yes.

Yes, Phil.

BOARD MEMBER SERNA: Thank you, Chair. So on this item as well, we had a very rich conversation during our briefing yesterday. And I think this is one of the most fascinating areas for CARB with our sister agency to be considering. I understand and respect the comments made by our Chair about the difficulty -- the inherent difficulty of this.

But one of the things I'm going to be very interested in hearing back about is kind of the internet of things and how that affects where we go with this, because, as we know, technology, when it comes to the internet, happens very swiftly. And this has everything to do with that angle. We talked, for instance, during our briefing about whether or not to, you know, lower the number of deadhead trips. Is there a new -- is there a
new protocol that could be applied using current or anticipated GPS technology, so that you don't have folks chasing rides around at great distances, and therefore increasing VMT? Is there a way to, you know, monitor how fast these vehicles are going, and therefore how efficient -- fuel efficient they are when they're going to pick up rides or when they're taking patrons to their destination?

So I think there, necessarily just because of the nature of the subject matter, has to be a somewhat rich discussion, at some point, about how the, you know, the fast -- the quickly-changing internet applicability here is going to affect the opportunity to really achieve the objectives that staff has articulated today.

CHAIR NICHOLS: Thank you.

Can we now move to the witnesses then, beginning with the author's representative.

MS. ROBINSON: Good afternoon. I'm getting a two-for-one deal on legislative oversight today. So thank you again for allowing me to make some comments on behalf of Senator Skinner. And again, thank you to the Board and to the staff for implementation of Senator Skinner's bill SB 1014. And particularly on this bill, I'd also like to thank the stakeholders, both the transportation network companies and the other clean air non-profits and third
parties who have been participating in the staff workshops and sharing data. We're glad to see that that process was relatively smooth with the Board and hope that all parties will continue to work productively with the Board to implement this -- this important bill.

So we know -- all of us know that emissions from the transportation sector just continue to rise. Unfortunately, we were making progress on this until probably about 2016 and then now we're going back up in emissions. And so from Senator Skinner's perspective, we need every tool in the toolbox to tackle emissions from the transportation sector.

And particularly, it will be more and more important, as we are -- and continue to work in this new technological revolution in transportation, to keep an eye on these sectors that are changing dramatically and quickly. And we have an opportunity here to either influence those technological changes to dramatically reduce emissions or the opposite. And so this was our first attempt, through the Legislature, to try to get a handle on these emissions. And I do think, you know, this is just the beginning.

So CARB's findings that the emissions per passenger mile for ride-sharing vehicles are over 50 percent higher than regular vehicles is very concerning.
And the trends that -- the trend conflicts with California's air quality and climate protection goals. And for these reasons, we hope that the Board will continue to move forward with strong goals in reducing emissions per passenger mile traveled from transportation network companies and that the Board pushes toward a future where eventually a hundred percent of rides shared take place in zero-emission vehicles.

And we know there's a lot of work to still be done, and the State, in some ways, shares that burden, in helping ensure there's infrastructure and vehicle incentives to purchase those.

But we look forward to continuing to work with the Board on this.

Thank you.

CHAIR NICHOLS: Thank you.

MR. MAGAVERN: Hello, again. Bill Magavern with the Coalition for Clean Air. And we strongly supported this bill when it was in the Legislature. And Katerina and Senator Skinner did a really skillful job of steering it through the process and to being signed into law actually during the climate summit on a hybrid ferry out in San Francisco Bay. One of the more memorable --

CHAIR NICHOLS: I was there.

MR. MAGAVERN: Yes, I remember. Yeah.
So we really see this as a great opportunity to reduce emissions from the transportation sector, as many have said. And what I want to emphasize is the importance of electrification. Obviously, we can use this to reduce VMT, and also to get progress towards our ZEV goals. I think the staff presentation was excellent and really point out that electrification might be the best opportunity.

We think that that could be reflected more strongly in the resolution that's before you. And the letter that we've sent, a number of groups have sent to you, asks for a comprehensive evaluation of a hundred percent electrification of the TNC fleet by 2030.

We think TNCs are really ripe for electrification. They're on the road so much that the fuel savings add up very quickly. In fact, the analysis by ICCT found that operating cost per mile of electrified TNCs could be similar to those of hybrids within the next few years.

I also want to note our colleagues from NextGen California couldn't be here today, but asked me to pass on that they agree with the comments that we've made and they've joined with the letter. And they also see that there's great potential for near-term emission reductions by setting an ambitious 2023 standard, because this sector
can achieve those emission reductions even more quickly than the rest of the passenger car fleet.

Thank you.

CHAIR NICHOLS: I want to hold you up here for a minute, just because you were -- were centrally involved in all of this. How do you think this is actually going to work? What's -- what's going to happen?

VICE CHAIR BERG: To the drivers.

CHAIR NICHOLS: To the drivers, the people who are actually out there with these cars, their own cars?

VICE CHAIR BERG: And they're lower income.

MR. MAGAVERN: Right. I think that it would be a mistake to assume that the business model of these companies will be the same as it is now. And I don't know what it's going to be, and we're about to hear from one of the companies. But AB 5 has a big impact on that and this I think will have an impact on it.

So, you know, it's -- I don't think it's going to be a static situation. I don't know what the answer, but I do think that it's absolutely fair and ripe for us to ask for this sector to do its part, because we've seen what the impacts have been.

CHAIR NICHOLS: We should do the same thing for taxis too then. It's the same deal. It's a bunch of vehicles out there emitting stuff.
MR. MAGAVERN: No, I absolutely agree with that. Right now, taxis, in some jurisdictions, are actually held to a higher standard --

CHAIR NICHOLS: I know.

MR. MAGAVERN: -- than the ride-hailing companies. I think we should absolutely level that playing field.

CHAIR NICHOLS: Okay. Thank you.

Hi.

MR. HEYWORTH: Good afternoon. My name is Austin Heyworth with Uber Technologies. I will strive to be as brief as possible, but I do want to try to touch on many of the themes that were brought up.

CHAIR NICHOLS: Thank you.

MR. HEYWORTH: So I will try to hustle through this.

We're serious about our environmental impact. Our eyes are open about these data as well. Our goal is to reduce our emissions per passenger mile over time and report on the progress as we go. And that includes beyond the scope of this program we're working on with CARB and the PUC. We'll begin reporting our sustainability in a transparent way, in a way that serves all cities, and that can be tracked, you know, over time. And I think we're excited about doing that.
Over the next three decades, we see a tripling of mobility demand and a need to drop emissions in the transportation sector by 60 to 80 -- 60 to 80 percent at 2010 levels and that's never been done before. Though we look forward to demonstrating a partnership with CARB that ride sharing and platformability in general can be a really useful tool in this effort, not just because it could be measured very accurately with the smartphone data as has been discussed before, but because it's a way to harness demand and use this sort of demand for convenience in a way that can push towards better outcomes.

Long way -- long-winded way of saying we support the Clean Miles Standard and applaud both the work of CARB staff and the author of really getting this right in a lot of ways. And we look forward in collaborating and providing all the necessary data to build out this program as we go.

In particular, we applaud the use of carbon intensity and the center piece of the policy. Carbon intensity is an outcomes based performance-driven metric. And as illustrated in the latest baseline report, there are multiple paths for us to use to drive down our carbon intensity over time, enabling more passenger mobility and access. So it's not just about electrification and use of EVs. It's not just about pooling. It's not just about
deadhead management. And it's not just about connectivity to transit and micro-mobility options like the red bikes you see outside, it's all of those things.

And the outcomes based metrics and policies allows us to continue to innovate and find approaches that work rather than prescribing, you know, what -- one strategy about doing that. It's also worth noting, I think as was mentioned a minute ago by staff, this is the first of its kind in the entire world. We operate in over 65 countries today and this is the first sort of regulatory structure like this that evaluates real world transit data -- or travel data.

As the staff report noted, we remain a small portion of VMT and light-duty emissions, but we're up to the challenge, as an industry, of having this applied to us first. But we will continue to urge CARB and the Board to apply similar approaches to all modes of mobility. Measuring VMT, and as a subset of that, passenger miles traveled, of real-world mobility will be an incredible tool for evaluating private car use, transit, taxi, you name it of other ways of lowering carbon opportunities.

Also give our industry the opportunity -- it will also give our industry the opportunity to benchmark performance in a more apples-to-apple fashion. We believe this is the right direction and we will continue to
support this here and in other markets. It's worth noting that the state of Washington has an almost identical piece of legislation moving currently, which we're supporting as well. So this is being duplicated elsewhere and we're happy to see that happening.

We're also continuing to invest in product innovations that will improve these metrics.

Apologies. One moment here.

CHAIR NICHOLS: Why don't you finish --

MR. HEYWORTH: That includes a lot of things. You know, the heavy focus today is on pooling concepts, public and private EV partnerships, micro-mobility, as I mentioned, we have a new transit product, and increasing ways to manage deadheading, which was mentioned by, I think, a Board member a minute ago, particularly in areas like airports and where there's a concert venue, for example. There's huge opportunities there.

To develop these new approaches, we also need help. Public policy conducive on all these fronts. There are not yet a lot of targeted incentives here as part of this program. And I'd emphasize that this still requires economically-driven decisions by a bunch of individual actors that use our platform, both riders and drivers.

But we're bullish. Again, cutting ahead a little here. Research out of UC Davis shows there's a lot of
promise of investing in all three factors that we're investing in. Shared electrification, pooling, and automation has a lot of promise on this front.

And a final point, carbon intensity is a shared metric, driven by our actions as a platform, but also a lot of decisions made up and down the transit station value chain. So urban density matters, white zone space at curbs really matters in affecting deadhead rates. Consumer behavior impacts, you know, pooling. There's cultural dynamics in place there as well.

The design of vehicles, you know, generally built for drivers impacts the ability to do pooling as well. And drivers affordable access to EVs continues to be a challenge. We're transitioning folks in an EV, where people are, you know, oftentimes using their own personal vehicle they've purchased for other reasons has a lot of headwinds that come with it.

And we can't internalize all those externalities. But as I mentioned, we are optimistic that we can provide a tool not just to measure this, but also to drive things in the right direction.

Thank you.

CHAIR NICHOLS: Thank you. Just to be clear, and I think building on Professor Sperling's comments, this is an area that we are embarking on for the first time and
there are a lot of really exciting and interesting issues, and a lot of really exciting and interesting research that's already been done, and more to be done, I'm sure. And we need to be able to collaborate with you and other folks that are in this industry. I very much appreciate your coming -- your coming and your comments. I think they're really helpful, but I am anxious that we make some progress quickly, and not study this for many more years, while we wait around to try to figure out someway to actually get a handle on the emissions.

MR. HEYWORTH: If I could just end with one comment. Your concern about this taking years I think is valid. A lot of these things that can actually be drivers in the right direction don't take years. In some ways, we actually need the help of policymakers to clear the road on some of these areas and we're looking forward to discussing that in more detail.

CHAIR NICHOLS: Thank you.

MR. HEYWORTH: Thank you.

BOARD MEMBER TAKVORIAN: So could I just -- can I ask him a questions. I'm sorry.

CHAIR NICHOLS: Oh, sorry. Go ahead.

BOARD MEMBER TAKVORIAN: So what measures -- actions have you taken to increase the number of EVs that your drivers use?
MR. HEYWORTH: Yeah, that's a good question. There's been a lot of different pilot efforts all over the world actually. In parts of Europe, we have a product where you can order just an electric vehicle specifically. In a place like San Francisco, that would create challenges with even more deadheading while certain vehicles are traveling around.

In Sacramento, we've had a partnership with SMUD for the last year and a half where EV drivers, in a fully battery electric vehicle, get a $2 per trip incentive. And that has driven be incrementality over time. We've also -- have private partnerships with EV charging providers, like EVgo. The biggest challenge that EV drivers face is, unlike someone in a Prius that can stop at the many gases stations, is charging in public and charging fast in a way that's conducive to the way they work.

So we've also worked on incentive programs in those areas. So it's bit of a hodgepodge, but it's been in a larger research effort to understand what makes it easier. Right now, EV drivers have a little bit of an economic disadvantage to the folks that are driving a combustion engine.

CHAIR NICHOLS: Yes, Judy.

BOARD MEMBER TAKVORIAN: Are you going to ask the
question I want to ask?

BOARD MEMBER MITCHELL: I don't know.

BOARD MEMBER TAKVORIAN: Go ahead.

BOARD MEMBER MITCHELL: The question I want to ask is how many cars does Uber have operating in California?

MR. HEYWORTH: So we don't own vehicles.

BOARD MEMBER MITCHELL: No, but you --

MR. HEYWORTH: Drivers, I think, as you mentioned a moment ago, come on and off the platform.

BOARD MEMBER MITCHELL: Yeah.

MR. HEYWORTH: We define active drivers as someone who's done four trips or more in the last month. And there's a huge amount of variance there. But it's around 150,000 drivers in California. But many of those folks are doing as little as four trips a month. And so it's largely folks doing this part time for additional income.

So that -- it's hard to sort of answer it in terms of just vehicles. At any point in time, that's obviously very different than that number or in a given day, for example.

BOARD MEMBER MITCHELL: And then what measurements do you have in your own data files on the miles that each of those drivers have driven for Uber?
MR. HEYWORTH: Well, those inputs are really what went into the CARB report here. So we were able to measure that pretty specifically when people are on the app, not when they're off the app obviously. But the amount of miles - I think it was reported in the staff report - it is a large number.

It's also still a small proportion of, you know, overall VMT on California roads. We certainly want to drive up utilization. That's aligned with our business interests, right, the busier drivers, the better it is for everybody involved. But there is a level of granularity that's I think would be surprising in most cases.

BOARD MEMBER MITCHELL: Thank you.

BOARD MEMBER TAKVORIAN: That wasn't it, but that's okay. So do you have criteria for the types of cars that your drivers use?

MR. HEYWORTH: We do. Yeah. I have to check. Again, I don't want to misstate anything here. But there is, I think, a ten-year period of time. So vehicles older than ten years are not eligible on the platform. We also do a vehicle inspection. So they look at a 19-point factor to make sure the vehicle checks a lot of boxes.

While there's not criteria in terms of like fuel efficiency, for example, you do see a skew towards a cleaner type of vehicle type on our platform. It's,
again, people just making rational decisions that a more
clean efficient vehicle is better for somebody who's, you
know, getting paid as they drive, right? You save money
the more you save in gas, for example, so -- but no hard
criteria in that regard.

BOARD MEMBER TAKVORIAN: Thank you.
CHAIR NICHOLS: Okay. Thanks.
Hi, Will.

MR. BARRETT: Hi. Good afternoon. Will Barrett
at the American Lung Association.

The Lung Association was also heavily involved in
the development of the legislation and really appreciated
all the work that went into that. And we're glad that it
was passed and move to this point.

We also think that the Clean Miles Standard is a
really important early task for the new division at ARB,
coming out of the gate with something that can both
support zero-emission vehicles and VMT reduction. We know
we won't hit our clean air and climate standards without
both pieces of the puzzle, the electrification and the VMT
reduction. Chair Nichols noted this is a two-fer and an
urgent one, as the TNC sector grows. So we are looking
forward to working with you on that.

We are deeply concerned with the findings in the
report that TNC miles -- passenger miles are about 50
percent more polluting than the average car trip in California. So we think that really underscores the urgency of moving forward. Also, the fact that these trips tend to be in more heavily populated urban areas points to the fact that the direction to zero emission in this sector can really accelerate clean air and climate benefits in a targeted way in these locations.

I wanted to note the SB 375 implementation report, the SB 150 report from 2018, and that pointed out kind of the stark choice around this sector, basically saying that TNCs offer great promise that is still largely untapped improving mobility or TNCs may be putting former transit riders and cyclists back into automobiles increasing congestion, risking increasing VMTs, and leaving low-income people behind.

So a really clear fork in the road here and we're glad that you're digging into this as earnestly as you are.

As the Board moves forward, we would agree that looking at ways that the direction can be to near-term zero-emission vehicle targets, including a scenario for a hundred percent zero-emission targets by 2030. We think that's an important element of moving this process forward. We also see the incredibly important role of making sure as this sector grows that we are controlling
VMT and deadhead miles to really ensure that we're being as efficient as possible as we transition to a sustainable transportation sector for Californians.

In closing, just to elevate that point, in the SB 150 report, it was very clearly stated carefully crafted policy will be needed to ensure TNCs help, rather than undermine, State goals for climate, health, and the environment.

Again, there's a really clear choice that we need to make here as this sector grows, as the gap in pollution levels from these types of vehicles grow -- is uncovered. We think that there's a real opportunity here to make the right choices to support zero-emission and support all of the sustainability community health benefits that we know are possible, if we move forward correctly.

So thank you very much.

CHAIR NICHOLS: Thank you.

MR. ANAIR: Hi. Good afternoon. Don Anair with the Union of Concerned Scientists. I'm happy to provide comments today on this topic. This is really a critical issue that is going to be -- as I was saying earlier, this decade of transportation solutions, this is going to be part of -- part of our way to get to a low carbon transportation system.

Ride-hailing is growing as a mode of transport.
The current companies certainly have plans to continue to grow and we’re also likely to see the introduction of autonomous vehicles over the next decade as well, which this regulatory regulation would have -- would impact as well.

We are concerned about the data -- this is really the first time where the data has been available to evaluate the emissions from ride-hailing companies. And they're showing a 50 percent increase compared to the average car trip in California. When you look at the fact that not every ride-hailing trip is displacing a car trip, in fact, many of them are displacing transit and other modes of transportation, that impact is likely significantly more.

On the other hand, ride-hailing is providing mobility options that were never really available before, and they're convenient. I, today, used one myself to get from a BART train to an Amtrak on time. So that's an indication where that was enabling me to take a transit drip.

So I think ride-hailing is and can be a part of a low carbon transportation system in California, but we need to make sure it's getting on track to low emissions and electrification.

So we support, as others have commented, as part
of this rulemaking process to look at an ambitious target
to essentially getting to the equivalent of a hundred
percent electrification by 2030. We think this is the
venue to have that conversation. It's the venue where the
staff have data they can look at to some of these
questions you've raised about low-income drivers. What's
the percentage of travel happening by these vehicles? If
you electrify ten percent of them, can you get 30 percent
of the benefit, because they're traveling more?

And by evaluating that level of a target, we can
understand what are the costs and what are the potential
savings. We're actually looking at by 2030 these -- in
this application we can be seeing significant benefits.
It may require companies to subsidize drivers, so that
they can use an EV. How much is that going to cost? Is
it worth the cost? Are we getting significant benefits
from that?

So we really think it's critical that that
aggressive target be part of the evaluation of the
standard going forward, so we can have that dialogue and
really understand what it would take.

So with that, I would just say, you know, this
isn't the only policy that's going to get us on a
sustainable path. We clearly need policies that are going
to help support, along with incentives, local policies
1 that can help as well. That came up earlier in the
2 discussion around electric vehicle and zero-emission
3 vehicle policies.
4 But we think this is absolutely critical to get
5 this right and to be ambitious.
6 Thank you
7 CHAIR NICHOLS: Thank you.
8 Hi.
9 MS. GARCIA: Good afternoon. I'm Katherine
10 Garcia, policy advocate for Sierra Club California,
11 representing 500,000 members and supporters statewide.
12 Thank you to staff for their work on this regulation and
13 for their focus on reducing deadhead miles, increasing
14 pooling, and increasing electrification.
15 As transportation network companies contribute to
16 more of the transportation mix, California must ensure
17 that TNCs are driving clean miles on our roads and not
18 adding to the already health-threatening level of air
19 pollution.
20 To effectively comply with SB 1014, CARB should
21 address -- excuse me, CARB should assess a transition to
22 full electrification of TNCs by 2030 with bold benchmarks
23 starting in 2023. According to a study by UC Davis
24 Institute of Transportation studies researchers, the
25 environmental benefits for TNC electrification is enormous
due to the sheer volume of TNC rides in California.

Researchers found that the emissions benefits per vehicle are approximately three times higher for EVs being used by ride-hailing companies in California, compared to regular EV usage.

TNCs are already looking at how to expand EV deployment in certain markets. For example, Lyft just launched the Express Drive rental program in Denver last December, which added 200 EVs to their fleet. This initiative has rapidly increased EV accessibility for Lyft drivers in Denver. This program could be replicated in cities in California, but the TNCs need encouragement, and strong interim targets starting in 2023 could provide this encouragement.

Given the urgent need to rapidly electrify the transportation sector in California to meet air quality and climate goals, it is critical that CARB put TNCs on the road to full electrification.

Thank you.

CHAIR NICHOLS: Thank you.

That concludes the list of witnesses that we have. Does staff want to add any additional comments at this point?

MR. NAYLOR: Chair Nichols, I'm happy to just make a final comment. First of all, thank you again for
I think the Board members have identified some real valid challenges to how the State will be able to implement this new law. But on behalf of my team, we look forward to rising to this challenge and working very closely with CARB staff and with the Board to ensure that we can coordinate our efforts effectively, and we are really encouraged by the collaboration that's occurred to date. And we look forward to a very productive 2020 and a really strong set of rules that can make this as effective of a program as possible.

Thank you.

CHAIR NICHOLS: Thank you. I appreciate that.

And I think I'm probably feeling a certain amount of personal angst about all of this, because at least once a week I take a Lyft car from my home in Los Angeles to either Burbank or LAX. I have never had the same driver twice and I've never been in a car that was a ZEV. And I leave my own ZEV in my driveway when I do this, because I don't like the hassle of trying to park and, you know, take myself to the airport. So I'm feeling like I am contributing to this problem. And I, therefore, am anxious to try to get it fixed.

BOARD MEMBER SPERING: Can I -- can I make you feel better about that, Chair Nichols?
(Laughter.)

BOARD MEMBER SPERLING: The answer is that -- you know, this whole idea of mobility service companies, TNCs, is really -- in my experience, all my research, everything I know is by far the best opportunity we have to reduce VMT, to improve social equity and accessibility, there's nothing even close --

CHAIR NICHOLS: Um-hmm.

BOARD MEMBER SPERLING: -- And -- to reduce greenhouse gases and create truly sustainable transportation.

The challenge -- so what -- you know, I look at this as a little speed bump that you're -- you know, you're addressing personally. And so the challenge for us is how to get to this future. We want these future vehicles to be electric and pooled --

CHAIR NICHOLS: Um-hmm.

BOARD MEMBER SPERLING: -- which happen to be the title of a book I did recently.

(Laughter.)

CHAIR NICHOLS: Yes, I think I heard that.

BOARD MEMBER SPERLING: And -- but it -- you know, seriously, that's -- and what we're here doing is creating that, you know, first policy step to move in that direction. And so what we want is more TNCs doing more
pooling with electric vehicles. And eventually, they're going to be automated, and that's where the social equity benefit comes in, because the costs will come down in a way that allows a lot more people to get a lot better transportation and a lot better accessibility.

You know, even taxis now, you know, something like on average -- until recently, something like 35 percent of taxi rides were by low-income people. And the problem is they don't have other good options. So what you're describing and, you know, what Don Anair described is we're increasing the mobility options. And it's not just the TNCs, it's the bikes, and so I think -- so what we're doing here is so important and we ought to -- you know, we want to get it right and we want to do it fast, as we said, but I think everything this -- and it's even more important than that, because what we do here for California is still a tiny change.

What we do here is if it's mod -- if it's picked up by other states, other countries, we're going to have a much bigger impact. And when eventually automation comes along, then it's going to be a huge impact, and it's going to bring all these benefits. And, you know, maybe it won't play out in such a rosy way. But if it doesn't, that's bad news for all of us, because there aren't any other good options.
CHAIR NICHOLS: Right.

BOARD MEMBER SPERLING: And so that's why -- so
to respond to your concern and Vice Chair concern about
the drivers, is what's -- the way this is going to work is
the companies are going to adjust their incentives. So we
give them a performance standard, and they -- they need to
have drivers, and they need to meet performance the
standard. So they're going to change the incentives so
that, you know, there is a stronger benefit from having an
electric car. They're going to have to figure out exactly
how to do that.

We're not smart enough to be able to prescribe
everything. And that's -- you know, and they're going to
change the incentives. They're going to reduce deadhead
miles. So the only point I would have about the report --
the staff report, where I would take issue is where it
said that have more -- have TNC cars park. All -- that's
not the way it's going to happen. What is going to happen
is already happening is they're adapting their algorithms,
so that if a driver is doing something that we don't like,
like going to San Francisco -- like some of my grad
students. They drive to San Francisco to get more revenue
there.

So now what they do in the algorithm say if
you're going to San Francisco, we'll find you a ride for
someone going there. So they're reducing the deadhead miles already. And that's probably why they're not too upset with what we're proposing.

So there's a lot -- they -- they're tremendously creative companies, and we just need to direct them, you know, toward pooling, toward electrification. And that's why this pol -- you know, I know this is my little speech here, but --

(Laughter.)

BOARD MEMBER SPERLING: -- but I've devoted my last five years to this, so -- but it's this -- you know, I think the staff proposal is exactly right and I strongly support it.

CHAIR NICHOLS: Okay. Thank you. Sorry, I was -- I was hung up on the line about how you had students -- or grad students who were driving to San Francisco to make a better income and wondering why it is that their fellowships, or grants, or something --

(Laughter.)

BOARD MEMBER FLETCHER: Pay your grad students better.

CHAIR NICHOLS: -- aren't paying for them to live and get a graduate degree, rather than -- unless, of course, they're doing research as -- this is part of their research assignment?
BOARD MEMBER SPERLING: Actually, just
anecdotally, there was one graduate student, not mine,
that did his entire dissertation as an Uber driver --

CHAIR NICHOLS: Uh-huh,

BOARD MEMBER SPERLING: -- and he surveyed every
passenger. And he's actually one of the most important
research pieces behind this. So, yes, it can...

CHAIR NICHOLS: You know, I had a friend in law
school who made his living by going out to Vegas every
summer and playing poker. He was really good.

(Laughter.)

CHAIR NICHOLS: He was really good. I don't
know, that required more talent, I think. Maybe not.

Anyway. Okay. So I'm taking it that we're going
to move along with this resolution, but just expressing
our concerns.

Supervisor Fletcher.

BOARD MEMBER FLETCHER: Thank you.

No. I think I share some of the concerns about
the maybe clunky nature of this process with the PUC and
CARB. And I think to the point that was raised, the
effectiveness of any of this is really contingent upon the
enforceability of it and the incredible partners and
well-intentioned folks at PUC. But is that the best place
to have enforcement? That is where we have it and so we
have to try and figure out how we do it.

And then the speed at which we can move to put in place these goals will accelerate the speed at which a profit motivated industry will do things that may be not be in the interest of profit, but have that. And so if we have a long period of time to drag out, we could see a longer period of time before we begin to see compliance.

And if there's not strict enforcement then we could also see a long period of time before we see meaningful compliance with what's happening. And so I think we're right to be concerned there. It's also a little concerning in terms of the delivery aspect. I think we're all guilty of overutilization of delivery. And that's kind of an interesting area too, when you look at the role that these kind of play in delivery with that not being a part of it.

And then I am certainly incredibly well aware and well versed in the ongoing debate over the structure of these entities. And I'm just reminded a little bit of the UC Berkeley study that we talked about last month about the extreme difference in compliance with CARB regulations between trucking companies that are employees versus trucking companies that are independent contractors.

And those that are employers had a much greater compliance rate. And I think when you -- we are going to
have additional challenges when it comes to this -- when
you have entities who continue to say, well, they're not
our cars and they're not our drivers, they're a unique
relationship between them and their passenger in terms of
who ultimately bears responsibility for the compliance.
And it's not an insurmountable task. We regulate other
entities that are in similar things, but I think they're
things that we -- we just need to be aware of.

And then I'll -- I'll give an anecdotal example
of success we had in San Diego with our taxi fleets. We
came in through our airport, a partnership with our APCD,
along with the airport authority and we provided some
incentives. At the time, it was to get to hybrids, but we
also had pricing. The pick-up fee is exponentially less
if that taxi is a hybrid, or a electric, or a plug-in
electric, or a ZEV vehicle. It's significantly,
financially incentivized, both for the passenger who's
taking it and for the driver. And now, the overwhelming
majority of the taxis who come to our airport are not your
traditional gasoline engines.

And at the time that we did that, we have now
systematically undercut that entire industry by having
vehicles come in that have no incentives, and no
requirements, and no financial pricing. And so we are --
we are in large part setting back our progress we made in
one to replace the other.

And so it would be my hope that we could move swiftly. And I think pricing is going to be a part of this. I think it's going to have to be a mix of the compliance and the incentives. I -- you know, I appreciate that if you have an app and you can pick an electric vehicle. But if a tiny fraction of the total are electric vehicles, you're not going to wait for 95 minutes to get the one electric vehicle, if that's the only option.

And so merely adding that as an option, if you don't have a systematic effort to increase the electric fleet, is that market is just not going to be there. And so I would hope we would be very aggressive along with very thoughtful, and intentional, and enforcement. And perhaps as we go through this, there may be a need for some legislative tweaking to this to ensure that we can get where we need to be.

CHAIR NICHOLS: Thank you.

Other comments?

Yes, Diane.

BOARD MEMBER TAKVORIAN: Thank you.

Yeah, I -- I want to support, I think, the -- I want to support the overall resolution, but I'd like to explore the suggestion that I think this group of
environmental organizations made, and see if we can't -- what I'm -- what I'm understanding and I think it's right is can we evaluate a hundred percent ZEV by 2030 and put that into the resolution as a marker, so that we can take a look at it. It's not committing to that, but it's saying let's look at that as a goal. So I wanted to get a response to that from staff, and then I have another comment.

STCD DIVISION CHIEF GRESS: Yeah, I mean, that is something that we could explore. If you wanted to put it in the resolution, it's something we would evaluate.

BOARD MEMBER TAKVORIAN: Okay. So I'd like to ask that that get added to the resolution to evaluate the potential -- the feasibility for a hundred percent ZEV with the TNCs by 2030.

And so do I do that now or at the -- is that okay or till we make the motion for the -- do I need to wait till motion is being made and then add it then or can I just --

CHAIR NICHOLS: Yeah, I think procedurally that's probably the right way to do it.

BOARD MEMBER TAKVORIAN: Okay. So I would move the resolution with the amendment that we also add an evaluation of the feasibility of a hundred percent ZEV by 2030?
BOARD MEMBER EISENHUT: Second.

CHAIR NICHOLS: That's been seconded. Made and seconded.

BOARD MEMBER TAKVORIAN: Okay. Then the other --

CHAIR NICHOLS: Go ahead.

BOARD MEMBER TAKVORIAN: Just the other comment I wanted to make was I feel like there's -- I would like to make sure that as we're looking at incentives, because that seems to be a major potential strategy, that we're also -- I think there's systemic problems and Judy has talked about some of those. But if we have folks that are driving four times a month --

CHAIR NICHOLS: Um-hmm.

BOARD MEMBER TAKVORIAN: -- then I don't think they are the ones that we would think about as being the ones that could qualify for incentives. So I think there's systemic infrastructure problems here with this -- the whole corporate model, frankly, and so I think those have to be taken into consideration.

At the same time, I think there are low-income drivers who couldn't afford a ZEV and for whom this could be a good potential. So those might be conflicting statements, but I'm hoping that we can get a little more clarification and insight about that, because I think there's some potential here. And we'd -- I'd like to see
that explored a little bit more.

CHAIR NICHOLS: It seems to me that's a design issue, which has to be addressed, but would be part of their thinking in doing that, yeah.

Okay.

STCD ADVANCED CLEAN CARS BRANCH CHIEF CUNNINGHAM: Yeah, would like staff response to that, is that what you're looking for?

BOARD MEMBER TAKVORIAN: If you have it now, that's great. I just thought as you're exploring the design for the incentives, I just wanted to ask you to take that consideration.

BOARD MEMBER SHERIFFS: Overwhelming enthusiasm will be accepted.

(Laughter.)

CHAIR NICHOLS: So just yes, we'll do it.

STCD ADVANCED CLEAN CARS BRANCH CHIEF CUNNINGHAM: Yeah. Yeah, of course. Of course.

CHAIR NICHOLS: Okay. Great.

Yes, Dr. Sherriffs.

BOARD MEMBER SHERIFFS: Once again, setting good goals is really important. And I would like to add to the two goals of -- that we think the future that we want is a hundred percent zero emissions, parentheses electric, pooled. And I don't know how to measure the pooled. But
thinking somewhere in this, just as we've said, well, what if we say a hundred percent electric by 2030, what can we say about pooling that may be more specific.

But the third item is connected to transit. And, you know, I salute the staff, because once again as they think about a problem, they think broadly. And the context of this is how the policy -- part of it is how this policy can support the other policies we're involved in. So thank you for that third guiding principle in terms of promoting pooling, active transport, and transit usage, because indeed that is -- that is critical.

Thinking a little bit about, you know, 2023. Well, I think the sense, the bar at 2023 coming into the gait should be pretty high, because people have fair warning this is the direction we're moving. And, you know, it's not that people would have seven years to achieve 100 percent electrification. But, you know, at 2023, we're already incentivized and at a significant level of penetration, if you will, because 2023 seems like actually pretty far off. Although, there's a lot of work to do and I admire staff for accepting the challenge enthusiastically and digging -- digging in.

You know, obviously from our standpoint, enforceability, if the measure is just electrification, that's a petty easy measure.
And the other -- the comments that have been made, you know, the TNCs, they are in the business of data, and we should use that. Let them collect the data. They're good at that. That helps drive their model. That helps them be successful. And I don't think we necessarily have to worry about collecting the data. Although, we do have to, from an enforceability standpoint, be able to verify what they're telling us.

But, you know, they live on data and we can use that beneficially to the public and to the work that we need to accomplish or we don't have to worry about doing it again ourselves.

So thank you.

CHAIR NICHOLS: Any additional -- yes.

VICE CHAIR BERG: Yes, I have a comment.

CHAIR NICHOLS: Oh, I'm sorry. Ms. Berg first and then Dr. Sperling.

VICE CHAIR BERG: So I really want to focus my comments specifically on do no harm to the drivers out the gate. And I have the same concerns, as Chair Nichols, on everything else. I do think my fellow Board members have run the gamut from being pretty concerned, very concerned about this to optimistic, because there is optimism in the room.

I really appreciated Mr. Naylor's highlighting
the fact that the senator did recognize that there is
going to be an impact on the lower income drivers. And --
and also, we have the off -- the opposite, that it's going
to -- as Dr. Sperling pointed out, that there is going to
be increased mobility.

So it does seem that we do have a tremendous
opportunity here. And maybe that opportunity is also
working interagency, because truly we are going to have to
get better at that, as we really want to tackle and get to
a hundred percent or carbon neutrality. So maybe that's
going to give us some real opportunity as well.

But I get back very concerned, as we're saying,
okay, now we're going to look into a hundred percent by
2030, so in ten years. Right now, it was surprising to me
a hundred and fifty thousand drivers and four trips or
more a month. This is really feeling like the truck and
bus, 50 percent of the drivers had one to three trucks.

And so we're going to change the model again.
We're going to affect people that have an instrument right
now to go out and make extra money where they wouldn't
have other jobs. This really, really concerns me.

And it also concerns me that I honestly believe
that in the regulation it has to be a hundred percent
incumbent on the TNC companies. So Lyft and Uber, because
those are the names we know - I think there's going to be
others involved in the regulation - have to be responsible for the electric fleet. And if that -- I loved your rental idea. You know, if it is full-time drivers, that they can help subsidize and get into electric vehicles, that's great. But we really, really do not want a financial burden, because it looks like a shiny new thing that they can somehow get into between our incentives and somebody else, and all of sudden then they're not driving. They can't afford the insurance. And you've got a lot of people, and it is -- it's just -- we need to be careful that we are promoting, in a very positive way, these electric vehicles to a constituent, in my opinion, that are challenged all the time.

I know in my electric experience, I've gone 12 weeks without a car, because I couldn't get the part for 12 weeks. So there -- there is issues. And I just hope that we can be sensitive to -- I appreciate and agree with Dr. Sperling that this is a performance standard. Both Lyft and Uber really smart people. They -- they're going to figure this out, but let's -- they're going to protect their business model. And however all that works out, I appreciate Supervisor Fletcher.

And I think also a comment was made we don't know what this is going to look like. So let's just make sure CARB thinks over the next few years that we are going to
protect those drivers.

Okay. Thanks.

CHAIR NICHOLS: Okay.

BOARD MEMBER SPERLING: I just wanted to make one suggestion for a small change in the resolution -- a proposed change in the resolution.

CHAIR NICHOLS: Yes.

BOARD MEMBER SPERLING: That the language be not -- not an analysis of a hundred percent ZEVs, but an analysis of the equivalent of a hundred percent ZEVs, you know, following the spirit of this law and that it's a performance standard. So if they can get it by a lot of more pooling, or getting people to use a lot more transit, then, you know, that would be the scenario we look at, you know, just as a modification of that proposal.

CHAIR NICHOLS: Do you want to Accept that revision to your suggestion or not?

BOARD MEMBER SHERIFFS: I think the staff can consider --

BOARD MEMBER TAKVORIAN: Yeah, I -- you know, it would be -- that's good. They could consider. I'm just not sure how you'd do that, because if they're taking riders away from transit, which seems like what's happening now --

CHAIR NICHOLS: Yes.
BOARD MEMBER TAKVORIAN: -- then I'm not sure how you put it back. And maybe that's just my limited brain. But if it could be in addition, could we also consider that as to how they contribute to -- I don't see how you get to zero if you're not driving a ZEV. So I guess I'm having trouble with that.

BOARD MEMBER SPERLING: They'd just do a benchmark. You'd just do a benchmark and you say, okay, what's the equivalent emissions? And, of course, it's zero emissions, and -- but you can get -- you know, you can see how much that incremental change is.

Well, we've got a smart staff here. They'll figure it out. That's, you know --

BOARD MEMBER TAKVORIAN: Can we just have that go as a comment and ask staff to include that? I just don't know where we start from a baseline, because it seems like they've upped the baseline in terms of --

CHAIR NICHOLS: Let's -- let's stick with the zero and interpret it, if need be, later on, if that's okay.

All right. So we have a resolution in front of us with additional language. And I think we're prepared to call for a vote then.

All in favor please say aye?

(Ayes.)
(Board Member Florez not present.)

CHAIR NICHOLS: Opposed?
None.
Thank you very much, all.
And that's the final item on our agenda.
Is there any public comment -- general public comment?

BOARD CLERK SAKAZAKI: (Shake head.)
CHAIR NICHOLS: There is not.
Okay. Then we are done.
Thank you very much.

(Thereupon the Air Resources Board meeting adjourned at 1:30 p.m.)
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 29th day of January, 2020.

JAMES F. PETERS, CSR
Certified Shorthand Reporter
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