

MEETING

STATE OF CALIFORNIA

AIR RESOURCES BOARD

ZOOM PLATFORM

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

BYRON SHER AUDITORIUM

1001 I STREET

SACRAMENTO, CALIFORNIA

THURSDAY, APRIL 28, 2022

9:03 A.M.

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

APPEARANCES

BOARD MEMBERS:

Liane Randolph, Chair

Sandra Berg, Vice Chair

Hector De La Torre

John Eisenhut

Senator Dean Florez

Davina Hurt

Gideon Kracov

Senator Connie Leyva

Tania Pacheco-Werner, PhD

Supervisor Phil Serna

Dan Sperling, PhD

Diane Takvorian

Supervisor Nora Vargas

STAFF:

Richard Corey, Executive Officer

Edie Chang, Deputy Executive Officer, Planning, Freight,  
and Toxics

Chanell Fletcher, Deputy Executive Officer, Environmental  
Justice

Annette Hebert, Deputy Executive Officer, Southern  
California Headquarters and Mobile Source Compliance

Edna Murphy, Deputy Executive Officer, Internal Operations

APPEARANCES CONTINUED

STAFF:

Rajinder Sahota, Deputy Executive Officer, Climate Change and Research

Craig Segall, Deputy Executive Officer, Mobile Sources and Incentives

Ellen Peter, Chief Counsel

Analisa Bevan, Zero-Emission Infrastructure Specialist, Mobile Source Control Division (MSCD)

Joshua Cunningham, Chief, Advanced Clean Cars Branch, Sustainable Transportation and Communities Division (STCD)

Rhead Enion, Senior Attorney Legal Office

Katherine Garrison, Air Resources Engineer, Transportation and Toxics Division

Jennifer Gress, PhD, Division Chief, STCD

Kelli Johnson, Attorney Legal Office

Stephanie Palmer, Air Resources Engineer, ZEV Market Advancement Section, STCD

Sydney Vergis, PhD, Division Chief, MSCD

ALSO PRESENT:

Marc Aprea, ChargePoint

Mitchel Baker, Assistant Deputy Director, California Department of Housing and Community Development

Angie Balderas, Sierra Club My Generation Campaign

Daniel Barad, Sierra Club California

Billy

Nick Blair, Association of California Water Agencies

APPEARANCES CONTINUED

ALSO PRESENT:

Michael Boccadoro

Morgan Caswell, Port of Long Beach

Dave Cook, Rail Propulsion Systems

Kristian Corby, California Electric Transportation  
Coalition

David Craig, California Bioenergy

Carleen Cullen, Cool the Earth

Frank Donnelly, Tractive Power Corporation

Steve Douglas, Alliance for Automotive Innovation

Annabel Drayton, Northwest Energy Coalition

Tyson Eckerle, Deputy Director, Zero-Emission Vehicle  
Infrastructure, Governor's Office of Business and Economic  
Development

Evan Edgar, Edgar and Associates

Ari Eisenstadt, California Environmental Justice Alliance,  
Regenerate California

Bill Elrick, California Fuel Cell Partnership

Sara Fitzsimon, California Hydrogen Business Council

Jay Friedland, Plug In America

Marc Geller, EV Charging for All Coalition

Gillian Gillet, California Department of Transportation

Elliot Gonzalez, Sierra Club

Paula Gruendling, Supervisor, Transportation  
Electrification Section, California Public Utilities  
Commission

APPEARANCES CONTINUED

ALSO PRESENT:

David Haake, MD

Ashley Hernandez, Communities for a Better Environment

Gary Hughes, Biofuelwatch

Aravind Kailas, Volvo Group

Chris King, Siemens Mobility

Tom Knox, Valley Clean Air Now

Kyle Krause, Deputy Director, Codes and Standards,  
California Department of Housing and Community Development

Sofi Magallon, Central Coast Alliance United for a  
Sustainable Economy (CAUSE)

Bill Magavern, Coalition for Clean Air

Kevin Maggay, Navistar International

Lisa McGhee, San Diego Airport Parking Company, GreenPower  
Motor Company

Miles Muller, Natural Resources Defense Council

Natalie Nax, Electric Vehicle Charging Association

Lori Pepper, Deputy Secretary for Innovative Mobility  
Solutions, California State Transportation Agency

Leela Rao, Port of Long Beach

Hannon Rasool, Deputy Director, Fuels and Transportation  
Division, California Energy Commission

Anja Raudabaugh, Western United Dairies

Enrique Rodriguez, Associate Construction Analyst,  
California Building Standards Commission

Priscilla Rodriguez, California Cotton Ginners and Growers  
Association, Western Agricultural Processors Association

APPEARANCES CONTINUED

ALSO PRESENT:

Catherine Ronan, Sierra Club California

Susanna Saunders

Akash Singh, Union of Concerned Scientists

Mikhael Skvarla, California Hydrogen Coalition

Sarah Swickard, Pacific Gas and Electric

Karim Tarraf, Hawa Dawa

Sven Thesen

Francesca Wahl, Tesla

Francis Yang, Sierra Club My Generation Campaign

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PROCEEDINGS

1  
2 CHAIR RANDOLPH: All right. Thank you very much.  
3 Good morning, the April 28th public meeting of the  
4 California Air Resources Board will come to order.

5 Do we do the Pledge of Allegiance?

6 BOARD MEMBER SERNA: Yes.

7 CHAIR RANDOLPH: I didn't know that, because we  
8 didn't do it when we were remote. So, okay. What do we  
9 do?

10 There it is. Okay.

11 (Laughter.)

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

14 CHAIR RANDOLPH: Okay. Once again it is great to  
15 be back in person.

16 Okay. Board Clerk will you please call the roll.

17 BOARD CLERK ESTABROOK: Yes. Dr. Balmes?

18 Mr. De La Torre?

19 Mr. Eisenhut?

20 BOARD MEMBER EISENHUT: Here.

21 BOARD CLERK ESTABROOK: Senator Florez?

22 BOARD MEMBER FLOREZ: Here.

23 BOARD CLERK ESTABROOK: Assemblymember Garcia?

24 Ms. Hurt?

25 BOARD MEMBER HURT: Present.

1 BOARD CLERK ESTABROOK: Mr. Kracov?

2 BOARD MEMBER KRACOV: Here.

3 BOARD CLERK ESTABROOK: Senator Leyva?

4 Dr. Pacheco-Werner?

5 BOARD MEMBER PACHECO-WERNER: Here.

6 BOARD CLERK ESTABROOK: Mrs. Riordan?

7 Supervisor Serna?

8 BOARD MEMBER SERNA: Here.

9 BOARD CLERK ESTABROOK: Professor Sperling?

10 BOARD MEMBER SPERLING: Here.

11 BOARD CLERK ESTABROOK: Ms. Takvorian?

12 BOARD MEMBER TAKVORIAN: Here.

13 BOARD CLERK ESTABROOK: Supervisor Vargas?

14 BOARD MEMBER VARGAS: Here.

15 BOARD CLERK ESTABROOK: Vice Chair Berg?

16 VICE CHAIR BERG: Here.

17 BOARD CLERK ESTABROOK: Chair Randolph?

18 CHAIR RANDOLPH: Here.

19 BOARD CLERK ESTABROOK: Madam Chair, we have a

20 quorum.

21 CHAIR RANDOLPH: Okay. Thank you so much. Okay.

22 We will begin with a few housekeeping items before we get

23 started this morning and our housekeeping items are

24 different now that we're in person. You guys are going to

25 get sick of me saying this clearly.

1 (Laughter.)

2 CHAIR RANDOLPH: So we are conducting today's  
3 meeting in person, as well as offering remote options for  
4 public participation both by phone and by Zoom.

5 Anyone who wishes to testify in person should  
6 fill out a request to speak card available in the lobby  
7 outside the Board room. Please turn it into a Board  
8 assistant -- assistant prior to the commencement of the  
9 item. If you're participating remotely, you will raise  
10 your hand in Zoom or dial nine, if calling in by phone.  
11 The clerk will provide further details regarding how  
12 public participation will work in just a moment.

13 For safety reasons, please note the emergency  
14 exits to the rear of the room through the lobby. In the  
15 event of a fire alarm, we are required to activate this  
16 room immediately and go down the stairs to the left of the  
17 elevator and out of the building. When the all-clear  
18 signal is given, we will return to the hearing room and  
19 resume the hearing.

20 A closed captioning feature is available for  
21 those of you joining us in the Zoom environment. In order  
22 to turn on the subtitles, please look for a button labeled  
23 CC at the bottom of the Zoom window, as shown in the  
24 example on the screen now.

25 I would like to take this opportunity to remind

1 everyone to speak clearly and from a quiet location,  
2 whether you are joining us by phone or on Zoom.  
3 Interpretation services will be provided today in Spanish.

4           If you are joining us using Zoom, there's a  
5 button labeled "Interpretation" on the zoom screen. Click  
6 on that interpretation button and select Spanish to hear  
7 the meeting in Spanish. If you are joining us here in  
8 person and would like to listen to the meeting in Spanish,  
9 please notify a Board assistant and they will provide you  
10 with further instructions.

11           I want to remind all of our speakers to speak  
12 slowly and pause intermittently to allow the interpreters  
13 the opportunity to accurately interpret your comments.

14           (Interpreter translated in Spanish)

15           CHAIR RANDOLPH: I will now ask the Board Clerk  
16 to provide more details on today's procedures.

17           BOARD CLERK ESTABROOK: Thank you, Chair  
18 Randolph.

19           Good morning, everyone. My name is Katie  
20 Estabrook and I am one of the Board clerks. I will be  
21 taking care of calling the commenters who are joining us  
22 today remotely and my co-clerk Lindsay Garcia will be  
23 calling on commenters who have signed up to speak and are  
24 joining us here in the room.

25           I'm going to provide some information on how

1 participation will be organized for those who are joining  
2 us in Zoom or are calling in to today's meeting. If you  
3 are joining us remotely and you wish to make a comment on  
4 one of the Board items or during the open comment period  
5 at the end of today's meeting, you will need to be using  
6 Zoom webinar or calling in by phone. If you are  
7 calling -- currently watching the webcast on CAL-SPAN and  
8 you wish to comment remotely, please register for the Zoom  
9 webinar or call in. Information for both can be found on  
10 the public agenda for today's meeting.

11 To make a verbal comment, we will be using the  
12 raise-hand feature in Zoom. If you wish to speak, please  
13 virtually raise your hand as soon as the item has begun to  
14 let us know you wish to speak. To do this, if you are  
15 using a computer or tablet, there is a raise hand button.  
16 If you are calling in on the phone, dial star nine to  
17 raise your hand. Even if you previously indicated which  
18 item you will be speaking on when you registered for the  
19 Zoom webinar, you must raise your hand at the beginning of  
20 the item, so that you can be added to the queue and your  
21 chance to speak will not be skipped. If you will be  
22 giving your verbal comment in Spanish and require an  
23 interpreter's assistance, please indicate so at the  
24 beginning of your testimony and our translator will assist  
25 you. During your comment, please pause after each

1 sentence to allow the interpreter to translate your  
2 comment into English.

3           When the comment period starts, the order of  
4 commenters will be determined by who raises their hand  
5 first. And I will call each commenter by name and will  
6 activate each commenter's audio when it is your turn to  
7 speak. For those calling in by phone, I will identify you  
8 by the last three digits of your phone number. You will  
9 not see a list of commenters in Zoom. However, I will be  
10 announcing the next three or so commenters in the queue,  
11 so you are ready to testify and know who is coming up  
12 next. Please note that you will not appear by video  
13 during your testimony.

14           I would also like to remind everyone to please  
15 state your name for the record before you speak. This is  
16 important -- especially important for those who are  
17 calling in by phone to testify on an item. There will be  
18 a time limit for each commenter. The normal time limit is  
19 three minutes, though this could change based on the  
20 Chair's discretion. During public testimony, you will see  
21 a timer on the screen. For those who are here in person,  
22 there will be a clock running here in the room. And for  
23 those that are calling in by phone, we will run the timer  
24 and let you know when you have 30 seconds left and when  
25 your are time is up. If you do require Spanish

1 interpretation for your comment, your time will be  
2 doubled.

3           If you wish to comment -- if you wish to submit a  
4 written comment on one of the items today, please visit  
5 CARB's send-us-your-comments page or look at the public  
6 agenda on our webpage for links to send these documents  
7 electronically. Comments will be accepted on each item  
8 until the Chair closes that item.

9           If you experience any technical difficulties,  
10 please call (804)772-2715 and an IT person can assist you.  
11 This number is also on the public agenda.

12           Thank you, Chair. I'll turn it back to you.

13           CHAIR RANDOLPH: Thank you.

14           The first item on the Agenda is Item 22-6-1, an  
15 informational update on zero-emission vehicle  
16 infrastructure. If you're here with us in the room and  
17 wish to comment on this item, please fill out a  
18 request-to-speak card and submit it to the Board  
19 assistant. If you are joining us remotely and wish to  
20 comment on this item, click the raise-hand button or dial  
21 star nine now. We will call on both in-person and remote  
22 commenters when we get to the public comment portion of  
23 this item.

24           Zero-emission infrastructure is critical to  
25 meeting our clean air, climate, and community goals. I'm

1 focused on working with many State, and local government  
2 bodies, and the private sector to support deployment of  
3 reliable and accessible zero-emission infrastructure.  
4 Prioritizing equity as we consider how this infrastructure  
5 should be deployed will be critical to the success of that  
6 deployment.

7           It's timely that we're hearing an informational  
8 item today on the State's infrastructure goals and  
9 activities. Many of our regulatory decisions in the  
10 coming year will have a zero-emission technology focus and  
11 infrastructure is critical to the rollout of these  
12 measures.

13           I especially appreciate our partner agencies who  
14 are here to provide a complete picture of the actions that  
15 the State is undertaking in a coordinated way to support  
16 zero-emission infrastructure development.

17           Mr. Corey, will you please introduce the item?

18           EXECUTIVE OFFICER COREY: Yes. Thanks, Chair.

19           And as you mentioned, zero-emission  
20 infrastructure deployment is crucial to meeting our goals.  
21 CARB is working with our State partner agencies, as you  
22 noted, to ensure fueling infrastructure sufficient to  
23 support the market now and as well as in the future for  
24 zero-emission vehicles and equipment.

25           Starting with an overview from CARB's



1 Zero-Emission Infrastructure Specialist, Analisa Bevan,  
2 today we'll hear from a panel of State agency  
3 representatives on the breadth of analysis, planning, and  
4 actions underway to support zero-emission fueling  
5 infrastructure. We'll hear from the Governor's Office of  
6 Business and Economic Development, the California Public  
7 Utilities Commission, the California Building Standards  
8 Commission, the California Department of Housing and  
9 Community Development, the California State Transportation  
10 Agency, and the California Energy Commission. These  
11 activities support the State's ZEV targets outlined in  
12 Governor Newsom's Executive Order N-79-20.

13           To meet the State's ZEV targets, CARB staff are  
14 developing a portfolio of new zero-emission regulations  
15 across many sectors as you know. And in the year ahead  
16 presentation that I gave in January, we touched on  
17 regulations the Board will hear this calendar year.

18           Already, the Board has heard two of these  
19 regulations. In February, the Board adopted the first  
20 Off-Road Fleet Regulation in the nation requiring  
21 zero-emission equipment when it approved the amendments to  
22 the transport refrigeration units Airborne Toxic Control  
23 Measure. In March, the Board considered amendments to the  
24 Commercial Harbor Craft Regulation that included a  
25 zero-emission requirement for vessels.

1           The Board will consider several more  
2 zero-emission regulations this year, among them the  
3 Advanced Clean Cars II this summer and the Advanced Clean  
4 Fleets Regulation later this fall. More regulations from  
5 other sectors will come in the next few years.

6           To meet these needs now and in the future, as  
7 CARB's Zero-Emission Infrastructure Specialist, Ms. Bevan,  
8 is leading CARB's coordinated effort with the State's  
9 partner agencies to ensure a zero-emission infrastructure  
10 network will be in place to support the portfolio of  
11 CARB's planned zero-emission regulations.

12           It is critical that this infrastructure be  
13 equitably distributed and priced, reliable, and open to  
14 all. Ms. Bevan will provide an update on CARB's  
15 activities and coordination with our State agency partners  
16 on the fueling infrastructure system, private and public,  
17 that will increase the operational range and penetration  
18 of zero-emission technologies throughout the State in  
19 rural areas, cities, disadvantaged communities, and  
20 everywhere in between.

21           CARB has been contributing to the development of  
22 infrastructure in several ways, including through  
23 regulation, through providing critical data and analysis  
24 for statewide planning, and through facilitating  
25 communication between regulated parties, fuel providers,

1 and infrastructure providers.

2 With that, I'll now ask Analisa Bevan to begin  
3 the staff presentation that will include presentations  
4 from our sister State agencies, as I noted.

5 Analisa.

6 (Thereupon a slide presentation.)

7 MSCD ZERO-EMISSION INFRASTRUCTURE SPECIALIST

8 BEVAN: Thank you, Richard.

9 Good morning, Chair Randolph and members of the  
10 Board. My name is Analisa Bevan. I am CARB's  
11 Zero-Emission Infrastructure Specialist. In this new  
12 role, I've been working with divisions across the agency  
13 who have ZEV programs, as well as with our partner  
14 agencies, with lead rolls in infrastructure planning and  
15 funding to assess needs, coordinate efforts, and assist  
16 with stakeholder engagement. Over the last year, I've  
17 been working with our partners and with staff across CARB  
18 to better understand what concerns stakeholders have  
19 regarding fueling infrastructure and what actions the  
20 State is taking to address those concerns.

21 Today's presentation will provide an overview of  
22 these issues and actions with presentations from six of  
23 our partner agencies on their programs. We welcome  
24 questions and conversation about the infrastructure  
25 rollout and hope that this informational item will help

1 create a foundational background on infrastructure, in  
2 preparation for the upcoming regulatory proposals the  
3 Board will hear this year.

4 As you no doubt know, California is transitioning  
5 aggressively to ZEVs. The Governor's Executive Order  
6 N-79-20 sets targets for a hundred percent new car ZEV  
7 sales by 2035 and full fleet transition of trucks, buses,  
8 and off-road equipment between 2035 and 2045. The time  
9 frames identified in the EO will be achieved through a  
10 variety of actions to build the market, including  
11 regulation, incentives, infrastructure, and educational  
12 outreach.

13 --o0o--

14 MSCD ZERO-EMISSION INFRASTRUCTURE SPECIALIST

15 BEVAN: We need to transition to ZEVs in order to meet  
16 health based air quality standards and climate targets.  
17 Many of the measures in the State SIP strategy are ZEV  
18 focused, and similarly, the Draft Scoping Plan scenarios  
19 for reaching our climate emission reduction targets are  
20 dependent on phasing out combustion and growing  
21 electrification for transportation.

22 --o0o--

23 MSCD ZERO-EMISSION INFRASTRUCTURE SPECIALIST

24 BEVAN: The ZEV market transformation will not succeed  
25 without fueling infrastructure. How and when

1 infrastructure is deployed is critical to ensuring  
2 success. Equitable access to infrastructure, meaning  
3 convenient, reliable, and affordable access for all is  
4 crucial. This is especially important in communities long  
5 burdened by transportation emissions.

6 Thus, infrastructure activities complement CARB's  
7 regulation actions. The Board has heard and adopted  
8 several regulations recently with ZEV components, and  
9 nearly every motor vehicle and off-road regulation planned  
10 will similarly have ZEV requirements.

11 For today though, I'll focus on two regulations  
12 the Board will hear this year, Advanced Clean Cars II, and  
13 Advanced Clean Fleets, as illustrative of the  
14 infrastructure needs and actions in play.

15 We've heard through development of these  
16 regulations concern about infrastructure issues. This  
17 presentation will cover those issues and many of the  
18 actions the State is taking to address them.

19 --o0o--

20 MSCD ZERO-EMISSION INFRASTRUCTURE SPECIALIST  
21 BEVAN: Considering equity at every step in this  
22 transition to ZEVs is critical. ZEVs have to work for  
23 everyone. They should, in fact, be a pathway to improving  
24 transportation in communities for underserved and  
25 disadvantaged populations. And fueling infrastructure

1 cannot be a barrier to excess -- accessing ZEVs.

2           When building something new, we have an  
3 opportunity to do things differently, to do them right  
4 from the start. That exists now with ZEV infrastructure.  
5 We must keep equity and accessibility in mind while  
6 creating new systems for fueling.

7                               --o0o--

8           MSCD ZERO-EMISSION INFRASTRUCTURE SPECIALIST

9 BEVAN: ACC II is slated to come to the Board in June.

10 This regulation will chart a path to a hundred percent  
11 ZEVs by 2035. The proposal includes several consumer  
12 assurance provisions and I'll touch on the infrastructure  
13 related items.

14           The proposed regulation would require  
15 standardization of the power requirements for on-board  
16 chargers and require vehicles to have DC fast charge inlet  
17 compatible with the SAE CCS standard, taking the state one  
18 step closer to a single standard for DC fast charging.

19           Additionally, the regulation includes a provision  
20 requiring the inclusion of a charging cord set that would  
21 enable convenience charging at either a 110-volt outlet or  
22 a 220-volt outlet.

23                               --o0o--

24           MSCD ZERO-EMISSION INFRASTRUCTURE SPECIALIST

25 BEVAN: The Advanced Clean Fleets Regulation is scheduled

1 to come to the Board in October. This regulation  
2 complements the Advanced Clean Trucks Regulation, which  
3 requires the sale of zero-emission trucks. ACF proposes  
4 requirements that will transition public, drayage, and  
5 high priority fleets to a hundred percent ZEVs by 2040,  
6 and the earliest requirements for fleets to begin  
7 transitioning to ZEVs start in 2024.

8 The variety of fleets included in this proposal  
9 points to the broad infrastructure solution set that will  
10 be needed for these fleets.

11 --o0o--

12 MSCD ZERO-EMISSION INFRASTRUCTURE SPECIALIST

13 BEVAN: I'll turn now to what is needed for successful  
14 infrastructure beyond sheer numbers.

15 A focus on home charging, that's -- for  
16 light-duty vehicles the priorities include a focus on home  
17 charging. That's where most fueling happens. It's a  
18 significant benefit of driving an EV and therefore it's  
19 important to ensure all homes, especially multi-family  
20 homes, have access to charging. Similarly, it's important  
21 to establish a robust public charging and hydrogen fueling  
22 network to create an environment where ZEVs can fully  
23 replace conventionally fueled vehicles.

24 We are increasingly hearing concerns that we make  
25 sure there is rural coverage for ZEV fuels, and ensuring

1 equitable access to zero-emission fuels is a top priority.  
2 Consumers need confidence that zero-emission fueling will  
3 be reliable and available. And accessing -- accessing  
4 zero-emission fuel should be as easy as accessing  
5 conventional fuels.

6 --o0o--

7 MSCD ZERO-EMISSION INFRASTRUCTURE SPECIALIST

8 BEVAN: On the medium- and heavy-duty side, we've learned  
9 from our ACS development process that fleets need the  
10 following. Both electricity and hydrogen will be relied  
11 upon by fleets sometimes even the same fleet. Equitable  
12 access is a priority especially for small and  
13 owner-operated fleets. A public contract -- a public or  
14 contracted off-site fueling network that supports fleets  
15 with and without access to their own depot fueling is  
16 important.

17 With the proposed implementation schedule for  
18 ACF, we need a rapid and large scale deployment plan.  
19 Fleets want assurance that the grid will be able to handle  
20 the increased and sometimes concentrated load and fueling  
21 standards geared to heavy-duty vehicles for both  
22 electricity and hydrogen are needed to ensure reliable  
23 fueling.

24 --o0o--

25 MSCD ZERO-EMISSION INFRASTRUCTURE SPECIALIST



1 BEVAN: Our panel will demonstrate many State agencies  
2 play a role in supporting the development of needed  
3 zero-emission infrastructure. CARB has several broad  
4 roles, including targeted regulation, a critical  
5 analytical data source for planning, and as a conduit for  
6 communication between vehicle, and infrastructure  
7 stakeholders.

8 Some of our regulatory roles include the  
9 following. We're tasked with adopting and implementing  
10 the EVSE access regulation, which you'll hear more about  
11 in the next item on today's agenda. We include vehicle  
12 provisions that enable infrastructure as part of the ACC  
13 II regulation. CARB is a subject matter expert for  
14 development of the CALGreen Building Standards, HCD and  
15 BSC will cover CALGreen later in this panel. And we  
16 developed fueling protocols and testing standards for  
17 hydrogen.

18 --o0o--

19 MSCD ZERO-EMISSION INFRASTRUCTURE SPECIALIST

20 BEVAN: As an information source, we hold critical data  
21 regarding vehicle populations and projected fleet changes.  
22 Through programs developed for the statewide SIP and  
23 Scoping Plan, as well as our regulatory development work,  
24 we model zero-emission vehicle market growth. These  
25 projections, along with aggregated production plans,

1 reported to CARB aggregated fleet plans reported through  
2 the Advanced Clean Trucks Regulation feed into  
3 infrastructure planning efforts at energy and  
4 transportation agencies for both electricity and hydrogen.

5 For example, in addition to providing fleet and  
6 inventory data to CEC for infrastructure planning, we're  
7 supporting CTC's development of clean freight corridor  
8 assessments through emissions analysis and fleet data  
9 sharing. And as subject matter experts, we provide cost  
10 analysis and technical expertise in the development of  
11 CALGreen building code requirements for EVSE.

12 --o0o--

13 MSCD ZERO-EMISSION INFRASTRUCTURE SPECIALIST

14 BEVAN: As communications facilitator, we act to connect  
15 our regulated communities on the vehicle side, that's  
16 manufacturers, drivers, and fleets, with the  
17 infrastructure solution providers. I'm going to dwell on  
18 this role for a few slides to talk through one example of  
19 how we've been acting in this capacity.

20 Through our ACF workshops, it became clear that  
21 there was a need for concentrated infrastructure  
22 conversations. We held five workgroup meetings to hear  
23 stakeholders' concerns, bring the right experts together,  
24 and talk through issues and solutions. For these  
25 workgroup meetings, we were joined by our partner agencies

1 so that stakeholders could hear firsthand about programs  
2 to address infrastructure needs.

3 We used a large panel format to encourage  
4 back-and-forth dialogue. The panels included up to 40  
5 participants, while over 200 additional stakeholders  
6 listened in and used the chat feature to contribute. And  
7 all of the workgroup meeting recordings are posted on  
8 YouTube.

9 --o0o--

10 MSCD ZERO-EMISSION INFRASTRUCTURE SPECIALIST

11 BEVAN: As a way of grounding our workgroup conversations,  
12 we started each meeting with a word cloud exercise site.  
13 We invited all participants to tell us what they worry  
14 about with regard to zero-emission infrastructure topics  
15 we were discussing.

16 The image on this slide was pretty typical of the  
17 feedback we got during these word cloud exercises with a  
18 focus on cost, reliability, grid capacity, and  
19 interoperability.

20 --o0o--

21 MSCD ZERO-EMISSION INFRASTRUCTURE SPECIALIST

22 BEVAN: I'd like to provide now a very high level summary  
23 of the more common issues we discussed in these workgroup  
24 meetings. We heard loud and clear that many fleets and  
25 owner/operators will be depending on public

1 infrastructure -- on public infrastructure network, even  
2 if they have a home base and on-site depot fueling.

3           There is concern about the operational  
4 requirements that will be needed for medium- and  
5 heavy-duty fueling as well as overall concern about the  
6 reliability of such equipment. A number of fleets  
7 expressed concern about depending on electricity as a fuel  
8 because of the potential for interrupted service due to  
9 power outages, Public Safety Power Shutoffs or exceeding a  
10 available electrical load.

11           We discussed the environmental impacts of  
12 zero-emission fuels, specifically the availability of low  
13 cost and low carbon intensity hydrogen and electricity,  
14 and we had extensive discussion about the costs and time  
15 needed to install zero-emission infrastructure, and  
16 whether it could be done in time to meet regulatory  
17 timelines for operating zero-emission vehicles.

18           Further, the workgroups talked about equitable  
19 access to infrastructure, especially as it relates to  
20 small fleets and owner/operators. We also had some  
21 discussion around understanding how ZEV infrastructure may  
22 impact or benefit communities. A number of participants  
23 talked about how they may not have site control of their  
24 fleet location, and may not be able to get their landlord  
25 to agree to upgrades needed to install infrastructure.

1           Similarly, they may not have the space to  
2 accommodate zero-emission fueling. And the integration of  
3 on-site energy generation through renewables, coupled with  
4 energy storage, was discussed, especially as a strategy  
5 for ensuring uninterrupted electrical service to ensure  
6 operations are not impacted by power outages.

7                           --o0o--

8           MSCD ZERO-EMISSION INFRASTRUCTURE SPECIALIST

9 BEVAN: I don't want to portray these meetings as having  
10 solved all of those issues. They open the dialogue --

11                   (Laughter.)

12           MSCD ZERO-EMISSION INFRASTRUCTURE SPECIALIST

13 BEVAN: -- connect stakeholders to solutions, and point to  
14 further work. Fundamentally they provide a forum for  
15 listening. We learned that early information sharing is  
16 critical -- is critically important. We want to continue  
17 talking about how we can facilitate that. One concrete  
18 outcome from the meetings at the request of participants,  
19 GO-Biz has created a list of consultants available to help  
20 fleets with infrastructure. It's clear that more outreach  
21 tools, case studies, and opportunities to connect  
22 stakeholders is necessary.

23                           --o0o--

24           MSCD ZERO-EMISSION INFRASTRUCTURE SPECIALIST

25 BEVAN: There are many partners involved in making the

1 zero-emission infrastructure ecosystem work, from  
2 government agencies, to fuel providers, to infrastructure  
3 companies, vehicle manufacturers, and end users. It's  
4 important for all of us to work together. I'd like to  
5 turn now to our panel of State partners.

6 --o0o--

7 MSCD ZERO-EMISSION INFRASTRUCTURE SPECIALIST

8 BEVAN: Some of our key partner agencies are here today to  
9 talk about their important roles in developing the  
10 zero-emission infrastructure needed to support the state's  
11 ZEV market.

12 I'd like to introduce our panel now. We have  
13 Tyson Eckerle, the Deputy Director for Zero-Emission  
14 Vehicle Market Development at the Governor's Office of  
15 Business and Economic Development; Paula Gruending,  
16 Supervisor for the Transportation Electrification Section  
17 of the California Public Utilities Commission; Enrique  
18 Rodriguez, Associate Construction Analyst at the  
19 California Building Standards Commission; Kyle Krause,  
20 who's Deputy Director for Codes and Standards at the  
21 Housing and Community Development Division of Codes and  
22 Standards; and Mitchel Baker, Assistant Deputy Director,  
23 for HCD Division of Codes and Standards; Lori Pepper,  
24 Deputy Secretary for Innovative Mobility Solutions at the  
25 California State Transportation Agency; Hannon Rasool,

1 Deputy Director of Fuels and Transportation Division at  
2 the California Energy Commission.

3 So Tyson, I am turning the presentation over to  
4 you.

5 TYSON ECKERLE: Great. Thank you, Analisa, and  
6 thank you, Board. It's great to be here in person  
7 together.

8 --o0o--

9 TYSON ECKERLE: And I think, you know, if you  
10 take a step back and what California's secret sauce really  
11 is I think Analisa described it really well, as an example  
12 those workshops. It's -- you know, we have the right  
13 people at the table. Like, will it be easy, no, but do we  
14 have the right people there to solve the problems together  
15 and the answer is yes. And so that's what gives me a lot  
16 of confidence in folks -- hope.

17 And if you go to the next slide --

18 --o0o--

19 TYSON ECKERLE: -- that's really central to  
20 the -- what we have at the end of this is the staff market  
21 development strategy that we use to coordinate all of our  
22 stakeholders. And the idea there is to get everybody  
23 pulling in the same direction. It's agencies, it's  
24 industry, NGOs, federal government, utilities, you know,  
25 local, regional, tribal governments all pulling that same

1 direction. And I think if -- we've presented to the Board  
2 before, so I won't belabor the image here, but, you know,  
3 trying to get everybody around those four pillars of the  
4 market vehicles, infrastructure, end users, and workforce.  
5 And today, you know, we're really looking through the lens  
6 of infrastructure. And so if we get the infrastructure in  
7 the ground, it will enable end users to purchase the  
8 vehicles and put them to work.

9 One principle that I do want to make sure we  
10 dwell on a little bit is putting equity into every  
11 decision. And we're trying to do that as much as  
12 possible -- well, we are doing that as much as possible.  
13 We can always improve there.

14 And so if you go to the next slide --

15 --o0o--

16 TYSON ECKERLE: -- we have a bunch of  
17 information we're trying to simplify, you know, kind of  
18 what is State government doing, how is the market  
19 behaving. On our GO-Biz website, we have a bunch of this  
20 stuff. But I wanted to zone in a little bit on the agency  
21 action plans. And so you'll hear from a number of our  
22 agency partners today, but there's, you know, 29  
23 agencies -- you know, I should have counted those again.  
24 I think it's 29, that -- up there with agency action  
25 plans. And they all tie back to the objectives that are



1 laid out in the ZEV market development strategy, and then  
2 what we're going to do to help meet those objectives.  
3 It's -- you know, one example is -- you'll hear later,  
4 it's about the EVSE regulation, the importance of equity  
5 and access, and what CARB can do to make sure that EV  
6 drivers have access to charging stations no matter where  
7 their economic strata is and importance of that. And  
8 you'll hear more as you go down the table here.

9 If you go to the next slide --

10 --o0o--

11 TYSON ECKERLE: -- I wanted to zone in. This is  
12 kind of the new thing that we've just pushed out. And  
13 we're aggre -- starting to aggregate data and give a clear  
14 picture, where you can just pick up a couple pieces of  
15 paper and have an understanding for how the market is  
16 performing. And these trend lines look really good. And  
17 this is -- you know, we're not making anything up. We're  
18 just aggregating the data here. This is -- you know, we  
19 pulled the graph from below. You know, through 2021, we  
20 had over 12 percent market share in the light-duty sector.  
21 Quarter 1's 1 data is out now. This -- and we're at 16  
22 percent. So that's trending in the right direction.

23 There's, you know, 159 zero-emission vehicles in  
24 the HVIP Program, which is excellent as well. So we're  
25 trying to figure out ways, you know, we can just take a

1 snapshot. Each quarter we'll be publishing this, so you  
2 can see, okay, do we need to adjust some of these. That's  
3 on the vehicle side.

4 On the infrastructure side, if you go to the next  
5 slide --

6 --o0o--

7 TYSON ECKERLE: -- we just have the light-duty --  
8 you know, use these kind of as fundraising -- like a --  
9 you know, like a fund raising image type of thing. So we  
10 have our 2025 targets and we are on track to meet those,  
11 at least from a funding perspective. There's a lot of  
12 work ahead. This is on the light-duty side. We're  
13 working on the heavy-duty side to, you know, get a better  
14 picture of what that looks like, but oftentimes the  
15 heavy-duty stations are tied directly to fleets. And so  
16 the Energy Commission is actively collecting that data and  
17 we'll figure out how to visual that.

18 If you go to the next slide, you know, the  
19 end-user pillar is always kind of an interesting. Like,  
20 how do you capture a feeling? And are people confident  
21 that they can get into the market.

22 But the one that was interesting to us as a  
23 consumer reports thing, there's, you know, 26 percent of  
24 Californians surveyed in 2020 said they would consider a  
25 zero-emission vehicle or they would buy -- they're going

1 to buy a zero-emission vehicle for their next vehicle,  
2 which is good considering we're at 16 percent market share  
3 now. And but the interesting part is that was that, you  
4 know, compared to four percent of the national market.

5 So we're tweaking these and kind of -- you know,  
6 there's some -- some other -- some numbers up there.

7 And then finally, just on the workforce side, you  
8 know, all this investment, all this regulation -- if you  
9 go to the next slide --

10 --o0o--

11 TYSON ECKERLE: -- has really driven in, you  
12 know, what our -- what we're leading with in California.  
13 And so we're the number one spot for EV-related  
14 manufacturing. So we have over 13,000 EV manufacturing  
15 jobs in California. It's because of our strong regulatory  
16 policy environment and investments we make. We have 43  
17 ZEV-related manufacturers in the State. And we have  
18 investment to do more with that \$250 million that is at  
19 the Energy Commission to help make sure that we keep --  
20 expand and attract ZEV manufacturing. And on the topic of  
21 investment, if you go to the next slide --

22 --o0o--

23 TYSON ECKERLE: -- I won't go into all the  
24 detail. There's a lot of stuff up here and I think we've  
25 heard

1           But the top line thing says \$10 billion is the  
2 proposal. You know, and I think you're all pretty  
3 familiar with that. Up there, there's, you know, two  
4 types text. The black text is what was approved last year  
5 in the California Comeback Plan and then the blue text is  
6 the new stuff that we're adding. There's a bunch of  
7 investment in infrastructure. And Hannon will go into  
8 those details, so I won't -- I'll spare you here.

9           But I did want to also touch on the next slide --

10                           --o0o--

11           TYSON ECKERLE: -- is it's not the State  
12 government anymore, it's the federal government. We have  
13 a lot of investment coming in there, the five billion for  
14 building out EV charging infrastructure, which, you know,  
15 383 million will come to California. There's the  
16 competitive grants, which has 2.5 billion.

17           The hydrogen thing, we're actually coordinating  
18 the hydrogen hub application here at -- through GO-Biz  
19 where there's \$8 billion to create at least four hydrogen  
20 hubs throughout the State -- throughout the United States.  
21 I think we're in a very good position here to leverage  
22 that and create a robust, you know, transportation green  
23 hydrogen network.

24           And then just briefly on that, if you go to the  
25 next slide --

1                   --o0o--

2                   TYSON ECKERLE:  -- you know -- and we can go into  
3 more detail in another time, but, you know, just thinking  
4 about that federal investment and how we couple it with  
5 the State investment, what are we trying to do on the  
6 hydrogen side.  And it's really we're after three core  
7 outcomes: it's time, money, and innovation.  And on the  
8 time side, we're trying to accelerate the time to --  
9 accelerate the market as much as possible, so making sure  
10 that our transition is quick.  I think we can gain 5 or 10  
11 years with this investment.  It's the money side.  Making  
12 sure -- like in California, one of our unique things is we  
13 have the opportunity to create a financially sustainable,  
14 low carbon market.  And it's because of the great policies  
15 that have been permeated by this Board.  Like the Low  
16 Carbon Fuel Standard, for example, is always looked at as  
17 the leading reason that we are -- we have success in  
18 California and can build the economically viable market.

19                   And then on the innovation side, it's innovation  
20 on the technology, but it's also innovation on policy, and  
21 it's also looking at this Board.  And people look to  
22 California to lead and how can we create the economic  
23 signals to make this all gel and come together.  And once  
24 we get to this -- you know, those low cost hydrogen, you  
25 know, per kilogram, lost kilowatt hour for the fleets,

1 it's -- you know, it starts to become game over.

2           And so with that, I want to hand it over to Paula  
3 Gruendling -- did I nail it?

4           PAULA GRUENDLING: Yes.

5           TYSON ECKERLE: Okay -- at the CPUC.

6           Thank you.

7           (Thereupon a slide presentation.)

8           PAULA GRUENDLING: That's a good job, Tyson.

9           Thank you.

10           Good morning. I'm Paula Gruendling. I'm the  
11 Supervisor for the Transportation Electrification Section  
12 at the PUC.

13           So the Transportation Electrification team is  
14 responsible for the assessment of the regulated utilities  
15 transportation electrification budget requests, program  
16 oversight, and evaluation, as well as support on policy  
17 development and implementation. The team also supports  
18 infrastructure, planning activities.

19           Next slide, please.

20   --o0o--

21           PAULA GRUENDLING: So several activities took  
22 place since the release of the 2020 transportation  
23 electrification framework, or TEF, as we call it, which  
24 was a staff proposal on the draft rulemaking. So since  
25 then, we rolled out implementation of Assembly Bill's

1 841's requirement that all utility side of the meter cost  
2 be covered by ratepayers. The tariffs are available for  
3 all customers as of this month. Approved two major  
4 electric vehicle infrastructure programs for Southern  
5 California Edison and San Diego Gas and Electric. We also  
6 issued three decisions and provided other direction  
7 related to the 2020 TEF, so we kept that process going.

8 And we have been working to support alignment of  
9 planning activities related to transportation  
10 electrification, infrastructure deployment.

11 Next slide.

12 --o0o--

13 PAULA GRUENDLING: So the CPUC also issued a  
14 ruling with the staff proposed updates to the 2020 TEF  
15 outlining the structure for programs post-2025. Base on  
16 the feedback that we received on the original TEF and the  
17 activities since its release, the CPUC issued update to  
18 the proposal in February this year. The proposal  
19 establishes funding cycles and sets a budget for funding  
20 cycle 1 starting in 2025. It proposes a third-party run  
21 program for customer side of the meter rebates allowing  
22 the utility to focus on planning and deployment of  
23 customer side infrastructure, which will be quite an  
24 effort. And we expect the decision on these and the other  
25 remaining TEF issues this year.

1           Next slide, please.

2                               --o0o--

3           PAULA GRUENDLING: The staff proposal covers  
4 several updates, but one of the main features is  
5 establishment of funding cycles. So the proposed funding  
6 cycle structure allow for spending of authorized funding  
7 for existing programs through 2024. After that, it  
8 proposes \$1 billion over five years to support customer  
9 side of the meter infrastructure, technical assistance,  
10 and marketing, education, and outreach support, which  
11 would start in 2025.

12           This would be a statewide program, as I said,  
13 focused mainly on medium- and heavy-duty and most unit  
14 dwelling charging infrastructure and use, as we  
15 understand, to need still significant resources to support  
16 electric vehicle adoption growth.

17           And funding cycle 2, which would start in 2030,  
18 would assess the continue need for customer site support  
19 as well as other planning priorities that we identify  
20 along the way.

21           Next slide, please.

22                               --o0o--

23           PAULA GRUENDLING: So on grid planning  
24 activities, CPUC staff has been actively collaborating  
25 with Energy Commission, ARB, and CAISO at the Joint Agency



1 Steering Committee, the JASC, on the development of a high  
2 electrification demand scenario, which would include  
3 buildings and transportation, which would include higher  
4 assumptions for electrification load than what was  
5 included in the 2021 Integrated Energy Policy Report, or  
6 the IEPR.

7 For transportation electrification specific, the  
8 scenario will be forecasting the impact of CARB's pending  
9 Advanced Clean Cars II and Advanced Clean Fleets  
10 regulations over and beyond what would naturally occur out  
11 to 2035. And electrification planning assumptions are  
12 currently scoped in the distribution planning process as  
13 part of the high distributed -- distributed energy  
14 resources proceeding and in the integrated resources  
15 proceeding for assessment of infrastructure needs.

16 Next slide.

17 --o0o--

18 PAULA GRUENDLING: Finally, for the Public Safety  
19 Power Shutoffs, the update I have is that the regulated  
20 utilities are still implementing guidance provided in the  
21 2020 decision. The guidance covers how the utilities are  
22 to notice EV drivers about PSPS events, how they should  
23 increase the resiliency of charging infrastructure during  
24 and after a PSPS event, and how the utilities should  
25 provide off-grid charging options to areas impacted by

1 those events.

2 And that concludes my update. And with that,  
3 I'll pass on to Enrique Rodriguez from the California  
4 Building Standards Commission.

5 Thank you.

6 (Thereupon a slide presentation.)

7 ENRIQUE RODRIGUEZ: Thank you, Paula. I  
8 appreciate that.

9 Good morning, Madam Chair, and Board members. My  
10 name is Enrique M. Rodriguez, Associate Construction  
11 Analyst for the California Building Standards Commission.  
12 Thank you for giving CBSC the opportunity to present a  
13 high level overview of CALGreen, and the CBSC rulemaking  
14 process.

15 --o0o--

16 ENRIQUE RODRIGUEZ: The California Building  
17 Standards Commission's primary functions include the  
18 following: reviewing State building standards proposed by  
19 State agencies; developing building standards for  
20 non-residential occupancies, where there is no other State  
21 agency that has authority within CALGreen; adopting and  
22 approving building standards for publication; codifying  
23 approved building standards; filing approved building  
24 standards with the Secretary of State; contracting to  
25 publish California Building Standards code; and lastly,

1 acting as a State depository for local government  
2 modifications.

3 --o0o--

4 ENRIQUE RODRIGUEZ: A Little CALGreen history.  
5 Title 24, Part 11 is the California Green Building  
6 Standards Code, which we nicknamed to simply say CALGreen.  
7 It's the first in the nation Green Building Standards  
8 Code.

9 Back in 2007, CBSC was directed to develop Green  
10 Building Standards in an effort to meet the goals of  
11 California's landmark initiative Assembly Bill 32, known  
12 as the California Global Warming Solutions Act, AB 32,  
13 Chapter 88 statutes of 2006 added Division 25.5 to the  
14 California Health and Safety Code, an established law  
15 requiring a comprehensive program for the reduction of  
16 greenhouse gas emissions to 1990 levels by the year 2020.

17 Then in 2016 to further the goals of Assembly  
18 Bill 32, AB 32, of 2006, the Legislature enacted Senate  
19 Bill 32 -- SB 32 2016 which required -- requires CARB to  
20 ensure that California's statewide greenhouse gas  
21 emissions are reduced to at least 40 percent below the  
22 1999 -- 1990 levels by the year 2030. This bill was  
23 needed since AB 32's Scoping Plan identified buildings as  
24 the second largest source of California's greenhouse gas  
25 emissions.

1                   --o0o--

2           ENRIQUE RODRIGUEZ:  The main goals for the  
3 CALGreen code are to reduce greenhouse gas emissions in --  
4 from buildings, promote environmentally responsible, cost  
5 effective, healthier places to live and work, reduce  
6 energy and water consumption, respond to the environmental  
7 directives from the administration.

8                   --o0o--

9           ENRIQUE RODRIGUEZ:  The CALGreen Code was first  
10 published in 2008 with an effective date of August 2009.  
11 At the time, the CALGreen code only had voluntary code  
12 provisions.  Then in 2009, it -- during -- for the 2010  
13 CALGreen Code was created and established for the first  
14 time mandatory green regulations, which became effective  
15 January 1 of 2011.

16           The 2010 code was broken down by divisions:  
17 Planning and Design, Energy Efficiency, Water Efficiency  
18 and Conservation, Material Conservation and Resource  
19 Efficiency, and then lastly Division 5, which was  
20 environmental quality.

21                   --o0o--

22           ENRIQUE RODRIGUEZ:  This new 2022 CALGreen code  
23 that was just approved by the Commission is being --  
24 currently being published and will become effective  
25 January 1 of 2023.  We just started our 2022 intervening

1 code adoption cycle. This will develop the supplemental  
2 blue pages in the code books, and then this intervening  
3 code supplement becomes effective July 1 of 2024.

4 A little bit of the current timelines for this  
5 intervening code cycle that we're just started. It  
6 started mid-April with the -- what we call our pre-cycle  
7 workshops. We had a meeting -- a joint workshop BSC, HCD,  
8 and DSA, which was held April 14th.

9 Then between February and March of 2023, we will  
10 have the Code Advisory Committee meetings. Around April  
11 2023, we'll start our 45-day public comment period. And  
12 then in July of 2023, the Commission -- commissioners will  
13 convene and review the proposed rulemaking packages from  
14 the various State agencies.

15 --o0o--

16 ENRIQUE RODRIGUEZ: So for this recently approved  
17 2022 CALGreen Code, the significant changes that will  
18 become effective January 1 of 2023, basically this coming  
19 year, significant expansion of EV regulations for  
20 non-residential occupancies, which include newly  
21 constructed warehouses, grocery stores, and retail stores  
22 with off-street loading spaces, will require mandatory  
23 electric vehicle infrastructure for medium-, heavy-duty  
24 vehicles.

25 For the first time in Division 5.1, it will

1 require mandatory electric vehicle supply equipment,  
2 installations using Level 2 and/or direct current fast  
3 chargers. The use of automatic load management systems  
4 have also been added to the code, as an alternative  
5 compliance method.

6 And then lastly, Tier 1 and Tier 2, voluntary  
7 electric vehicle capable -- capable space code provisions  
8 have been increased from 15 to 30 percent for Tier 1 and  
9 20 percent to 40 percent for Tier 2. Both Tier 1 and Tier  
10 2 require that 33 percent of the EV capable spaces have  
11 electronic vehicle supply equipment installed.

12 --o0o--

13 ENRIQUE RODRIGUEZ: BSC, DSA, and HCD are  
14 currently conducting joint pre-rulemaking workshops with  
15 the first workshop already held on April 14th, 2022. The  
16 upcoming workshops are tentatively scheduled for June  
17 16th, August 18th, and September 22nd.

18 BSC is researching potential code changes for the  
19 intervening code cycle, which will produce the blue  
20 supplemental pages I mentioned before. And some of these  
21 possible changes may include to develop EV infrastructure  
22 for certain additions and alterations, to align with HCD  
23 for low power EV installations, and to develop a reference  
24 standard for automatic load management systems.

25 Finally -- next slide please -- I believe, oh

1 yeah. Finally to get involved with our BSC rulemaking  
2 process, you can attend our workshops and Code Advisory  
3 Committee meetings, and participate in the public comment  
4 periods as well. To stay informed access our website at  
5 [dgs.ca.gov](http://dgs.ca.gov), G-o-v forward slash BSC and visit the contact  
6 us page to sign up for our email notification list.

7 That concludes my presentation. Now, I would  
8 like to hand off the mic to Mr. Kyle Krause and Mitchel  
9 Baker from HCD.

10 (Thereupon a slide presentation.)

11 KYLE KRAUSE: Thank you, Enrique. Good morning.  
12 My name is Kyle Krause. I'm the Deputy Director of  
13 Housing and Community Development's Division of Codes and  
14 Standards. With me today, as you've heard, is Mitchel  
15 Baker, my Assistant Deputy Director who oversees our code  
16 development and analysis section in the State Housing Law  
17 Program.

18 Next slide.

19 --o0o--

20 KYLE KRAUSE: HCD falls under the Business and  
21 Consumer Services and Housing Agency. And we've been  
22 working on EV charging standards for almost a decade, in  
23 partnership with Building Standards Commission, CARB,  
24 Energy Commission, and all of our numerous stakeholders.

25 Next slide, please.

1                   --o0o--

2           KYLE KRAUSE: Mitchel will provide you with  
3 information HCD's authority and role in adoption of Green  
4 Building Standards.

5           Mitchel.

6           MITCHEL BAKER: Thank you, Kyle. Thank you,  
7 Board. The law identifies HCD as a proposing agency and  
8 delineates that HCD must adopt substantially the same  
9 requirements found in the current model codes. Also,  
10 relevant to the conversation HCD was charged with, pun  
11 intended, proposing for adoption multi-family electric  
12 vehicle charging infrastructure requirements, which I'm  
13 happy to report we accomplished through the triennial code  
14 adoption cycle.

15           HCD is also responsible for maintaining  
16 regulations in Title 25 of the California Code of  
17 Regulations. And as Enrique discussed, the Building  
18 Standards Commission takes on the role of a charge agency  
19 for Building standards.

20           Next slide.

21                   --o0o--

22           MITCHEL BAKER: HCD's role -- HCD's role includes  
23 proposing for adoption CALGreen Building Standards for  
24 residential occupancies. During the last triennial code  
25 adoption cycle, HCD made a quantum leap in launching



1 actual charger requirements from multi-family housing,  
2 hotels and motels, expanding on the 10 percent capable  
3 parking space requirements. The proposals which are  
4 effective January 1st, 2023, include, 25 percent low level  
5 power two receptacles.

6 Additional, five percent low level charger 2 are  
7 required when 20 or more dwelling units or guest rooms are  
8 provided. There are also triggers in place when parking  
9 facilities expand or undergo alterations. Is it important  
10 to note that building standards -- and these building  
11 standards in particular apply to new construction, and  
12 there are statutory protections in place for existing  
13 buildings to maintain their current construction.

14 Next slide.

15 --o0o--

16 MITCHEL BAKER: The next cycle is the 2022  
17 intervening code adoption cycle. And HCD plans to work  
18 closely with stakeholders through the newly reformed  
19 CALGreen EV Workgroup to incrementally and responsibly  
20 increase charging access in multi-family housing, hotels,  
21 and motels. We anticipate stakeholders will express the  
22 desire for more Level 2 -- low Level 2 power chargers or  
23 receptacles.

24 Back to Kyle.

25 --o0o--

1 KYLE KRAUSE: Thank you Mitchell.

2 Next slide, please.

3 --o0o--

4 KYLE KRAUSE: So in addition to our recent  
5 accomplishments achieving low power Level 2 charging  
6 receptacles --

7 (Phone disconnected.)

8 BOARD CLERK ESTABROOK: Okay. We're just going  
9 to take a break so we can reconnect to the Zoom, the  
10 call-in number, so people can hear us.

11 Chris, can you put up a technical difficulties  
12 slide.

13 Sorry, for the interruption.

14 (Laughter.)

15 (Reconnected to Zoom)

16 BOARD CLERK ESTABROOK: All right. We're ready  
17 to get back started.

18 KYLE KRAUSE: Thank you. Kyle Krause, HCD.

19 Just to get back into our presentation. As  
20 Mitchel pointed out, we were successful in increasing EV  
21 charging access in multi-family hotels and motels  
22 effective January 1st by adding 10 percent -- or I'm  
23 sorry, 25 percent EV charging receptacles. These are the  
24 low power Level 2 receptacles and also five percent of the  
25 parking will have Level 2 chargers -- full power Level 2

1 chargers.

2           Some of the challenges we face looking forward  
3 that we all need to be concerned about are concerns with  
4 the grid stability and challenges related to the grid and  
5 infrastructure. There's also cost barriers, such as  
6 retrofitting of existing buildings and utility company  
7 service capacity potential challenges, as well as on-site  
8 electrical panel capacity to handle additional electrical  
9 loads. These can present significant challenges to  
10 providing EV charging access, as well as identifying  
11 appropriate triggers to require retrofitting of existing  
12 building parking facilities. So that concludes HCD, now  
13 I'll kick it over to Lori with Cal STA.

14           LORI PEPPER: Great. Thanks so much, Kyle.

15           (Thereupon a slide presentation.)

16           LORI PEPPER: Good morning, Chair Randolph and  
17 members of the Board. Thanks so much for having me here  
18 today. I'm Lori Pepper and I'm the Deputy Secretary for  
19 Innovative Mobility Solutions at the California State  
20 Transportation Agency, which oversees the eight  
21 transportation-related State departments. In my role, I  
22 work to apply technology and best practices to the  
23 transportation ecosystem to ease mobility for people,  
24 goods, and services through the state.

25           So I work on a wide variety of issues, which

1 includes ZEV infrastructure. And today, I'm going to  
2 provide a brief overview of the Climate Action Plan for  
3 Transportation Infrastructure, or CAPTI, with which I  
4 believe you are all very well knowledgeable about, and how  
5 it addresses ZEV infrastructure investment, as well as a  
6 status update on the implementation of the National  
7 Electric Vehicle Infrastructure Program, or NEVI, which  
8 was created by the partisan infrastructure law.

9 I also want to note that we have a webpage on our  
10 website that provides resources related to implementation  
11 of the transportation provisions of the federal  
12 infrastructure law.

13 Next slide, please.

14 --o0o--

15 LORI PEPPER: So on July 12th, 2021, CalSTA  
16 unveiled the final version of CAPTI, which details State  
17 recommendations on investing discretionary State tran --  
18 or discretionary transportation dollars to aggressively  
19 combat and adapt to climate change, while supporting  
20 public health, safety, and equity. CAPTI builds on  
21 executive orders signed by Governor Gavin Newsom in 2019  
22 and 2020 targeted at reducing greenhouse gas emissions in  
23 transportation.

24 CalSTA developed the draft -- or developed the  
25 CAPTI through collaboration with many different State

1 agencies, including the ones represented on today's panel,  
2 along with extensive outreach and engagement with hundreds  
3 of stakeholders.

4           One of the investment strategies highlighted in  
5 CAPTI is to include deployment of light-, medium-, and  
6 heavy-duty zero-emission vehicle infrastructure as part of  
7 larger transportation projects, while supporting market  
8 innovation and equitable access to all.

9           I included an additional slide in your written  
10 materials to show how ZEV infrastructure deployment  
11 investments fit into the rest of the CAPTI principles.

12           Next slide, please.

13                           --o0o--

14           LORI PEPPER: So I want to first establish that  
15 implementation of the NEVI program is currently fluid as  
16 we are working with partner agencies and public  
17 stakeholders to create the deployment plan due to the  
18 federal joint office, which is an entity borne out of the  
19 U.S. Departments of Transportation and Energy.

20           So California expects to receive 383.7 million  
21 over five years to create a battery charging  
22 infrastructure network in the State. The guidance  
23 released by federal -- by the federal government tells us  
24 that the network should be publicly accessible and should  
25 first fill gaps in existing alternative fuel corridors.

1 So the plan I referenced earlier is due to the joint  
2 office by August 1st. And we will receive feedback and  
3 approval through Federal Highway Administration, or FHWA,  
4 by September 30th. Following approval of the deployment  
5 plan, FHWA will begin to release funding.

6 Next slide, please.

7 --o0o--

8 LORI PEPPER: We are creating a formal agreement  
9 with the Energy Commission that will rely on existing  
10 expertise at both Caltrans and the CEC in order to  
11 implement -- implement the NEVI program. And so this  
12 includes following the equitable access principles of the  
13 California Integrated Travel Program, also known as  
14 Cal-ITP, for inclusive payment systems filled out for all  
15 payment cards to be used, whether they're equipped with  
16 swipe, chip, or tap technology.

17 And the collaboration with the CEC would also  
18 ensure that this funding fits in with the principles of  
19 the ZEV Infrastructure Plan that the CEC is currently  
20 developing. We created a public stakeholder working group  
21 called Transition to Zero Emissions that currently focuses  
22 on NEVI implementation and expect to create additional  
23 venues for public input as the process progresses.

24 Finally, we are going to launch the NEVI  
25 Coordinating Council with the CEC to formalize State

1 agency input. And with that, I will turn it over to  
2 Hannon Rasool awe energy commission.

3 (Thereupon a slide presentation.)

4 HANNON RASOOL: Great. Thank you. Good morning.  
5 My name is Hannon Rasool. And I'm the Deputy Director of  
6 the Fuels and Transportation Division at the California  
7 Energy Commission.

8 California has a strong history of thoughtful  
9 policies, robust incentive programs, and regulations that  
10 provide direction to the market. In fact, that clear  
11 direction and signal has encouraged additional private  
12 investments in infrastructure and will continue to do so.

13 The Energy Commission and other agencies have  
14 made significant investments to prepare California for an  
15 equitable transition to zero-emission vehicles. State  
16 public investments are designed to complement private  
17 investments and to address gaps and ensure equity. This  
18 includes low income, disadvantaged communities, rural  
19 access, and also small businesses and independent  
20 owner/operators.

21 Significant and meaningful investments by the  
22 Energy Commission, the Public Utilities Commission, CARB,  
23 CalSTA, and Caltrans to name a few have already been made.  
24 Utilities have also made significant investment in equity  
25 and access across all vehicle segments. We also see

1 investments from local agencies and from the federal  
2 government as has been noted, both existing investments  
3 historically and also these new opportunities.

4           And then the private industry has also really  
5 been stepping up, because it is good business sense to  
6 invest in the future, as the world adopts to these new  
7 technologies.

8           Let me talk a little bit about our statewide  
9 Zero-Emission Vehicle Infrastructure Plan, or ZIP. This  
10 is a concise document, which describes and complements  
11 infrastructure planning efforts already underway and it  
12 relies on a data-driven approach. It is -- excuse me. It  
13 is an examination of on-site infrastructure but also grid  
14 readiness. We are on our way to deploying infrastructure  
15 at all levels, and we do not anticipate infrastructure  
16 being a barrier to our State goals with the sound  
17 investments we have been making and plan to make.

18           There is work to be done and we need to continue  
19 that work, but it is not insurmountable. Regulations and  
20 public investments can in fact send an important signal  
21 and encourage additional private investment. I want to  
22 note that the ZIP was developed through extensive  
23 cross-agency collaboration and public outreach. And many  
24 efforts feed into the ZIP, including planning and modeling  
25 efforts. I'll discuss a few including AB 2127, Senate



1 Bill 1000, and Senate Bill 643.

2 AB 2127 directed the Energy Commission to conduct  
3 a statewide assessment of the EV infrastructure needed to  
4 support five million ZEVs by 2030. We actually used eight  
5 million ZEVs by 2030 as our base case. Our inaugural  
6 report was released in 2021 and we plan to update it every  
7 two years. And we've already begun work on the second  
8 report.

9 The Energy Commission has deep modeling expertise  
10 and we seek to refine with each iteration. And we examine  
11 through this report both the light-duty Passenger vehicle  
12 infrastructure that we need as well as the medium-duty,  
13 heavy-duty truck and bus infrastructure. The Energy  
14 Commission analysis finds that we need to continue our  
15 scale-up in charging infrastructure to meet our goals for  
16 2030.

17 But again, it is achievable with strategic  
18 investments and it's achievable under several different  
19 scenarios, including the new investments that have been  
20 proposed by this year's State budget, which will help  
21 accelerate and create broader access.

22 On the light-duty side, we estimate that we need  
23 1.2 million light-duty chargers, and that was to support  
24 eight million vehicles. I want to note that that is a  
25 more aggressive scenario than ACC II. On the medium-duty,

1 heavy-duty side, an additional 160,000 chargers are needed  
2 by 2030. And we're starting our second phase of modeling  
3 through the HEVI-LOAD model. And we're committed to  
4 ongoing refinement and analysis as that Market matures as  
5 well.

6           With good planning, these vehicles will be good  
7 citizens of the grid. Some, but not all load, will be  
8 flexible load and respond to grid signals and rate design.  
9 This is one of many strategies to integrate the new load,  
10 including bi-directional functionality to create on-site  
11 resiliency, integration of solar and stationary storage,  
12 and State agencies are considering impacts of distributed  
13 energy resource proceedings across the board, knowing that  
14 no one size fits all.

15           Senate Bill 1000 is the examination of equity  
16 across three metrics, another report we did. This looks  
17 at population density, geographic distribution to ensure  
18 rural access, and also population income level, including  
19 low, middle, and high. And this analysis will inform our  
20 investments to target and remake our -- our investments  
21 and to address gaps.

22           And then Senate Bill 643 directs the Energy  
23 Commission to prepare a statewide assessment of hydrogen  
24 fuel cell electric vehicle infrastructure and hydrogen  
25 fuel production. We will continue to examine fuel

1 production, distribution, and infrastructure to meet our  
2 goals. Additionally, there is these Sustainable Freight  
3 Action plan, also a multi-agency effort and Senate Bill  
4 671, which established a Clean Freight Corridor efficiency  
5 assessment.

6           Next, let me talk about grid readiness. I know  
7 it's an interesting topic for a lot of folks. Grid  
8 resiliency and reliability and core components of our  
9 mission. And it is also a multi-agency planning effort.  
10 A lot of proactive work is being done and we continue to  
11 refine and improve in this area too, including the  
12 addition of a high electrification scenario in our 2021  
13 IEPR.

14           The transition to zero-emission vehicles is not  
15 expected to create a new systemwide peak. We will see new  
16 distribution circuit peaks, which we'll actively address.  
17 We do not expect a new systemwide peak. The State has  
18 advanced electric system planning processes and electric  
19 demand forecasting capabilities. The State agencies  
20 actively coordinate and collaborate on system planning.  
21 And again, this includes the Energy Commission's IEPR,  
22 which includes an energy demand forecast; CAISO  
23 transmission planning; and PUC integrated resource  
24 planning. And we continue to add new capacity to the grid  
25 where it is needed. In fact, we include -- we added

1 approximately 2,000 megawatts of new battery storage  
2 resourced to the grid within the last year.

3           Finally, let me talk a little bit about our  
4 funding solicitation. The Energy Commission has invested  
5 over \$1 billion towards transportation through the end of  
6 last year, and we're accelerating our investments. We  
7 will deploy at least another 1.2 billion in the coming  
8 years. And with these -- with this year's proposed  
9 budget, we'd add another two billion on top of that. And  
10 this is on top of the other Investments you've heard about  
11 today, including from the Public Utility Commission and  
12 other agencies.

13           We continue to build on successful existing  
14 programs and create new ones to target gaps. We leverage  
15 private investments through match funding requirements and  
16 will invest where the private market may not otherwise  
17 invest. We rely on a public stakeholder process and  
18 outreach to inform these investments.

19           On the light-duty side, we target our investments  
20 for disadvantaged communities, rural communities, low  
21 income and multi-unit dwellings, such as apartments. We  
22 use federal and State funding to create a strong network  
23 of high-powered fast chargers along travel corridors and  
24 in communities, and we expect to meet our 250,000 charger  
25 goal by 2025.

1           With this year's budget, we'll add funding and  
2   deploy towards our 2030 goals as well, all while  
3   supporting the private market and their investments.  
4   Specific solicitations include BESTFIT, which focused on  
5   innovative solutions. We funded a new solicitation for  
6   high-mileage vehicles, including Lyft, Uber and others.  
7   We launched a rural communities solicitation to deploy  
8   chargers in rural communities, and launched a multi-family  
9   housing solicitation to deploy chargers to support  
10  apartments, condos, and renters. And that is on top of  
11  launching several large block grants for broad and rapid  
12  deployment across all segments. Additionally, we've made  
13  significant investments in hydrogen fueling stations on  
14  our way to 200 stations to support 290,000 fuel cell  
15  vehicles.

16           Similarly on the medium-duty, heavy-duty side, we  
17  make broad investments to support the full range of trucks  
18  and buses, including retail charging stations open to the  
19  public and also those at depot behind a fence line. Our  
20  flagship program EnergIIZE is a block grant program, the  
21  nation's first statewide program for zero-emission  
22  vehicles. And this complements the investments made  
23  through HVIP. This supports both electric and hydrogen.  
24  And again, this will fund publicly available retail  
25  stations, as well as those dedicated behind the fence for

1 depot infrastructure. We support rural communities and  
2 those vehicles that do not return to base every night.  
3 And this will support independent owner/operators as well.

4 HVIP and EnergIIZE have a common implementer and  
5 are very much coordinated across the vehicle and  
6 infrastructure segments. A few solicitations in this  
7 segment include a drayage truck solicitation, which was  
8 done jointly between CARB and the Energy Commission to  
9 fund vehicles and infrastructure, both electric and  
10 hydrogen. We also had a zero-emission transit fleet  
11 infrastructure solicitation, which had a focused funding  
12 category for small fleets in rural areas. We have funded  
13 planning grants for ports and for fleets to plan for a  
14 hundred percent ZEV future. And we continue to advance  
15 our efforts for medium-duty, heavy-duty and coordinate  
16 with CARB to target gaps.

17 These investments put us in an excellent position  
18 to reach our zero-emission operations for both passenger  
19 vehicles and trucks and buses. State agencies will  
20 continue to collaborate and coordinate to support  
21 individuals, fleets, and California businesses. And this  
22 is all anchored by significant infrastructure investments  
23 by State agencies coupled with private investments.

24 In conclusion our goals are achievable. Thank  
25 you and I'll hand it back to Analisa.

1 MSCD ZERO-EMISSION INFRASTRUCTURE SPECIALIST

2 BEVAN: Thank you, Hannon. I'd like to round out our  
3 panel today with a few next steps.

4 --o0o--

5 MSCD ZERO-EMISSION INFRASTRUCTURE SPECIALIST

6 BEVAN: As mentioned, the Board will hear several  
7 regulations in the coming year that will need supporting  
8 fueling infrastructure for market success and, in some  
9 cases, have regulatory provisions directly supporting  
10 infrastructure implementation. I hope this presentation  
11 demonstrates the level of coordination taking place across  
12 agencies and programs. Clearly, continued tight  
13 coordination is needed, especially in our planning and our  
14 funding programs.

15 As our workgroup meetings demonstrated, bringing  
16 stakeholders together is valuable. We commit -- committed  
17 to continuing the dialogue between parties with a  
18 solutions orientation. And we look forward to tracking  
19 our progress in developing needed infrastructure across  
20 sectors and throughout the ZEV market development. I hope  
21 today's presentations also demonstrate the agency's clear  
22 commitment and focus to establishing successful  
23 zero-emission infrastructure.

24 I've been working in the ZEV space for about 25  
25 years and I'm deeply encouraged by the level of

1 cooperation between agencies that I see happening now. We  
2 have today, thanks to the Governor's Executive Order, the  
3 SIP strategy, the scoping document, the ZEV market  
4 development strategy document, and the energy planning  
5 documents a shared vision to reach the State's ZEV goals  
6 and priorities.

7 We look forward to continuing these efforts  
8 together. And this concludes our presentation and we look  
9 forward to answering the Board's questions and to  
10 discussion.

11 Thank you.

12 CHAIR RANDOLPH: Okay. Thank you for that great  
13 presentation. We will now hear from the public who signed  
14 up to speak on this item, either by submitting a request  
15 to speak card or by their raised hand in Zoom. So I will  
16 ask the Board clerks to get started on calling the  
17 commenters.

18 BOARD CLERK ESTABROOK: Yes. Thank you, Chair.

19 I will be calling on the commenters who have  
20 raised their hands in Zoom and Clerk Lindsay Garcia will  
21 call on those of you who have signed up to speak here in  
22 the room.

23 We currently have six commenters a with their  
24 hands raised to speak on this item in Zoom. If you wish  
25 to speak verbally on this item, please make sure you raise



1 your hand or dial star nine in Zoom. I apologize in  
2 advance if I mispronounce your name. And I would like to  
3 remind all commenters to please speak slowly and clearly  
4 for our interpreters and court reporter.

5 The first three commenters are Kristian Corby,  
6 Nick Blair, and Kevin Maggay.

7 Kristian, you can unmute and begin.

8 KRISTIAN CORBY: Good morning. Hi. My name is  
9 Kristian Corby and I am the Deputy Executive Director at  
10 the California Electric Transportation Coalition.

11 First, I want to thank the CARB Board and all of  
12 the agencies present today. This is exactly the  
13 conversation that we need to be having right now and these  
14 are the challenges that we face -- infrastructure  
15 challenges we face to reach our goals.

16 My comments today are going to focus on the  
17 medium- and heavy-duty ZEV infrastructure side. As we all  
18 now the ZEV -- ZEV trucks and infrastructure are in their  
19 very early stages of market development. And we need all  
20 of the tools available right now to help our transition to  
21 our transportation system, both vehicle and infrastructure  
22 incentives and a forward-looking planning process that  
23 helps identify locations for early infrastructure  
24 investment.

25 I strongly recommend that CARB continue the

1 Advanced Clean Fleets infrastructure meetings. They've  
2 been a very valuable forum for fleets and other  
3 stakeholders to discuss concerns and challenges. And I  
4 think as the regulation progresses, it will be an even  
5 more valuable resource and forum.

6           So to give a quick sense of a couple of the  
7 cutting-edge examples of medium- and heavy-duty  
8 infrastructure installations right now, Southern  
9 California Edison in partnership with EPRI and CALSTART  
10 received a RHETTA grant from the CEC to develop two demo  
11 sites for high-powered truck charging. They were awarded  
12 \$13 million and they were -- they're going to install two  
13 sites, one near the ports of Long Beach and LA and another  
14 in Ontario. And the RHETTA project is a very promising  
15 step forward and shows that the technical specifications  
16 and site designs, especially for high-powered --  
17 high-powered public truck charging are still in  
18 development.

19           So another example would be from private industry  
20 that's moving forward quite well is WattEV, they've  
21 created a truck as a service business model and are  
22 currently installing charging depots for medium- and  
23 heavy-duty trucks that are planned to open at the end of  
24 this year.

25           So for public charging, we can see that the

1 market is progressing, but still in a very nascent stage.  
2 And one of the things we need to identify are locations  
3 that are low to no risk for infrastructure deployment.  
4 Places that there's already a lot of truck traffic or  
5 parking and public charging will ultimately be a necessity  
6 there.

7           The West Coast Clean Transit Corridor Initiative  
8 and the California Regional Charging Network that was put  
9 together by the California utilities just the beginning of  
10 this year are both initiatives that are working on this  
11 issue. Public charging for trucks is developing. But  
12 clearly the fastest to electrify fleets will be those that  
13 can install their own infrastructure and operate a  
14 return-to-base style of charging. These entities will  
15 normally be well capitalized and own their property where  
16 their trucks park, which as we learned --

17           BOARD CLERK ESTABROOK: Thank you.

18           KRISTIAN CORBY: -- meeting was --

19           BOARD CLERK ESTABROOK: That concludes your time.

20           KRISTIAN CORBY: So I just want to -- yes, thank  
21 you very much. Thank you very much for your time.  
22 Appreciate it.

23           BOARD CLERK ESTABROOK: Thank you.

24           Next will be Nick Blair. Nick, you can unmute  
25 and begin.

1           NICK BLAIR: Good morning, Board members. I'm  
2 Nick Blair with the Association of California Water  
3 Agencies representing 460 public water agencies throughout  
4 Southern California and delivering approximately 90  
5 percent of water to California for domestic, agricultural,  
6 and industrial uses.

7           We appreciate the opportunity to comment today  
8 and have been active participants in the Advanced Clean  
9 Fleet Rule as well as others such as the CTC's ZEV  
10 Infrastructure Plan. I'll start by saying we appreciate  
11 the many dialogue opportunities we've had so far with  
12 agency staff and also with CARB Board members. I'm  
13 talking about the development of the Advanced Clean Fleets  
14 Rule and. We appreciate meetings like this where the  
15 various State agencies are working in tandem on the  
16 different efforts.

17           I do agree with Kristian Corby the continuing  
18 work group efforts on the Advanced Clean Fleets Rule is  
19 very good for dialogue between staff and stakeholders.

20           I'll be brief in my comments. Going back to  
21 Analisa Bevan's noted stakeholder concerns just to give a  
22 little flavor from ACWA's perspective, we have concern  
23 with charging infrastructure availability to meet medium-  
24 and heavy-duty fleet needs that require -- for duty cycles  
25 that require 12-, 16-, to 24-hour days. Initial

1 assessments by our members show that the capabilities of  
2 vehicles still raise concerns at this point as far as  
3 sizing and installing infrastructure. And duty cycles are  
4 case specific by agency, so there is no one-size-fits-all.  
5 So we will continue to provide input on that.

6 Also, we have concern about the cost of public  
7 water agencies to -- for starting up -- putting in  
8 infrastructure. The discussion on charging infrastructure  
9 has focused mainly on publicly accessible stations, but we  
10 want to continue the conversation on the needed start for  
11 public agencies to ensure that our operational demands are  
12 met throughout our service territories.

13 And thirdly, as noted in the presentation, grid  
14 reliability is a big -- is a big concern for us and the  
15 ability to charge essential public fleets is a  
16 consideration we have during PSPS events and during normal  
17 times. We want to be sure that the electric grid can meet  
18 the need -- meet the needs of our fleets as well as all of  
19 California's fleets as we continue to electrify. So I'll  
20 leave it at that.

21 Thank you for the opportunity to talk today. We  
22 will absolutely continue to partake in these conversations  
23 with comment letters, scheduling additional Board member  
24 meetings, and look forward to continued dialogue.

25 Thank you.

1 BOARD CLERK ESTABROOK: Thank you.

2 Our next speak will be Kevin Maggay. After  
3 Kevin, will be Morgan Caswell, Leela Rao, and Marc Geller,  
4 and then we will turn to some commenters in the room.  
5 Kevin, you can unmute and begin.

6 KEVIN MAGGAY: Hi. Can you guys hear me?

7 BOARD CLERK ESTABROOK: Yes, we can.

8 KEVIN MAGGAY: Thank you.

9 Good morning, Chair Randolph, Vice Chair Berg,  
10 and Board members. My name is Kevin Maggay. I'm with  
11 Navistar International. Navistar is one of the largest  
12 truck manufacturers in the country that sells  
13 international brand Class 4 through 6 commercial trucks,  
14 IC brand school and commercial buses. The company is  
15 based in Lisle, Illinois and has more than 11,000  
16 employees at our facilities throughout North America. My  
17 comments are specific to the medium- and heavy-duty  
18 sector.

19 Navistar was actually one of the first heavy-duty  
20 truck manufacturers to develop and deploy an all-electric  
21 delivery commercial van, the eStar, in 2009. Maybe that  
22 was a little bit head of its time. Today, Navistar is  
23 focused both on battery and fuel cell electric commercial  
24 vehicles. Navistar has commercial offerings and we are  
25 currently selling battery electric school buses and all

1 electric EV series medium-duty trucks to customers.

2           Also, Navistar and GM announced at partnership to  
3 develop and manufacture fuel cell Class 8 on-highway  
4 trucks for market by 2024. Navistar is -- fully supports  
5 the transition to a zero-emission future. But in order to  
6 properly transition, we all know that infrastructure is  
7 integral, but it also remains the largest hurdle for us to  
8 overcome. And I'm sure you already know and others will  
9 bring up all the challenges in just building out the  
10 infrastructure, so I won't get into that, but I do want to  
11 stress the timing of deployment and the urgency of  
12 deployment.

13           OEMs have requirements through the Advanced Clean  
14 Truck Regulation to sell zero-emission trucks, the  
15 Advanced Clean Fleet Regulation, which will soon be  
16 considered by the Board will -- would require fleets to  
17 purchase trucks. The deployment of infrastructure needs  
18 to keep pace with the vehicle deployment requirements in  
19 these regulations.

20           In fact, I think infrastructure deployment needs  
21 to exceed the pace of vehicle regulations. I think the  
22 infrastructure, needs to come first. This needs to give  
23 truck users some piece of mind that they can charge, while  
24 they're doing their job.

25           We announced our -- we're confident in our

1 products, just as a -- as I'm sure other OEMs area, but  
2 very concerned with the infrastructure, because the  
3 ultimate success of our products will rely on  
4 infrastructure. And we're very concerned with the  
5 near-term term availability of both private and public  
6 charging.

7           As, yes, we need to focus on immediate near-term  
8 rollout of infrastructure because there are immediate  
9 near-term requirements and users that -- as I mentioned.  
10 There's not enough sufficient infrastructure, users can't  
11 do their job, and quite frankly it makes electric trucks  
12 look bad, if they can't know where to charge. This is  
13 especially true for vocations like drayage that rely  
14 almost exclusively on public fueling or charging and have  
15 zero-emission requirements as soon as 2024, which is about  
16 a year and a half away.

17           We do appreciate all the efforts being made here  
18 by all the different agencies. California is clearly the  
19 leader in this space, but we don't have the luxury of only  
20 looking 5, 10 15, 20 years out anymore. We need to take  
21 things farther and faster, and we hope that the agencies  
22 on the panel can collectively and quickly develop and  
23 implement mechanisms to accelerate the immediate  
24 deployment of charging.

25           With zero-emission requirements right around the



1 corner, I feel that we're already behind on medium- and  
2 heavy-duty infrastructure and we need action and we need  
3 deployment now.

4           So thank you and we look forward to working with  
5 you on this urgent issue.

6           BOARD CLERK ESTABROOK: Thank you.

7           Next is Morgan Caswell. Morgan, you can unmute  
8 and begin.

9           MORGAN CASWELL: Great. Thank you. Good  
10 morning. I want to thank, you know, the California Air  
11 Resources Board for this opportunity to provide public  
12 comment. My name is Morgan Caswell and I am the Manager  
13 of Air Quality Practices at the Port of Long Beach.

14           We appreciate the actions the State is taking to  
15 address the substantial challenges infrastructure poses to  
16 successfully transition light-, medium, and heavy-duty  
17 vehicles to zero emission. I'd like to focus my comments  
18 on the importance of prioritizing funds for public  
19 charging to serve the drayage truck industry. The draft  
20 Advanced Clean Fleets Regulation as written proposes a new  
21 requirement that any new drayage trucks entering the State  
22 Truck Registry must be zero emission starting in 2024.

23           However, there are only a handful of planned  
24 public charging stations near the San Pedro Bay ports,  
25 based on our Public Trust charging and fueling studies

1 that was published late last year. While there is a lot  
2 of charging infrastructure funding that will become  
3 available, each program that administers grant funds will  
4 have different requirements. Private investment in the  
5 buildout of public charging infrastructure will be  
6 critical as well as the support of public subsidies.

7 Grant programs should allow these private parties  
8 to apply directly for funding, but a lot of the funding on  
9 the table today that is reference in public presentations  
10 are restricted to government entities or nonprofits and  
11 fund a variety of project types, above and beyond vehicle  
12 infrastructure.

13 The Port Infrastructure Development Program is a  
14 great example of a program that will be oversubscribed for  
15 not simply public charging, but also traditional  
16 infrastructure projects, such as rail and other efficiency  
17 improvements, great data exchange projects, resiliency  
18 projects, environmental projects such as shore power,  
19 clean harbor craft and zero-emission cargo handling  
20 equipment.

21 We need regional infrastructure now. And while  
22 government in particular will have an important role to  
23 play, a sustainable charging networker -- network can only  
24 be built if the business case makes sense to private  
25 entities long term and they need the public subsidy to

1 make it work in the early years.

2 Further, if we look at this issue through an  
3 equity lens, we can see that emission reductions from  
4 trucks is incredibly important to support attainment in  
5 the South Coast Air Basin and to improve public health.  
6 And it's also critically important that public charging,  
7 including overnight public charging, will be needed to  
8 ensure our independent owner/operators aren't left behind  
9 in this transition.

10 I'll conclude by asking that those entities who  
11 are still crafting requirements and priorities for public  
12 charging programs that you consider the incredible gap in  
13 public heavy-duty drayage truck charging infrastructure  
14 and the substantial impact that near-term investment in  
15 this area can have for our communities, our independent  
16 owner/operators, and the drayage truck industry at large.

17 Thank you.

18 BOARD CLERK ESTABROOK: Thank you.

19 Marc Geller, you can unmute and again.

20 MARC, are you there?

21 MARC GELLER: Yes, I am.

22 BOARD CLERK ESTABROOK: Perfect. We can hear  
23 you.

24 MARC GELLER: Thank you. I am Marc Geller from  
25 the EV Charging for All Coalition. We have been working

1 in the CALGreen Code process to achieve low power Level 2  
2 access for a hundred percent of newly constructed units in  
3 multi-family housing with access to parking. We believe  
4 this can and should be achieved in the interim process.

5 Our proposal advances equity by promoting direct  
6 access from parking to etch new unit's meter and panel to  
7 assure the lowest possible utility rates just as  
8 single-family home residents have.

9 Multi-family housing residents, often lower  
10 income, should not pay more for electricity to charge EVs.  
11 Our proposal is achieves goals desired by builders and  
12 property managers by simplifying the code requirements for  
13 access to power for EVs in multi-family housing.

14 We look forward to continuing to work with CARB,  
15 HCD, and BSC to achieve our mutual goals of access to  
16 power at home for all in California.

17 There's no place like home. Thank you.

18 BOARD CLERK ESTABROOK: Thank you.

19 Okay. So with that, I will transition and pass  
20 it over to Board Clerk Lindsay Garcia to call on some of  
21 the folks here in the room.

22 BOARD CLERK GARCIA: Thank you. We have six  
23 in-person commenters who wish to speak at this time. And  
24 I apologize in advance if I mispronounce anyone's name.

25 The first in-person speaker will be Sarah

1 Swickard. Sarah, if you could please come up now.

2 SARAH SWICKARD: Good morning. My name is Sarah  
3 Swickard I'm on the Clean Transportation Team at PG&E.  
4 Thank you for the presentations, and the discussion today,  
5 and the opportunity to provide some comments.

6 PG&E strongly supports State policies and CARB  
7 regulations such as Advanced Clean Fleets to decarbonize  
8 the transportation sector. As was discussed earlier, we  
9 have made significant progress in the state, but we still  
10 have a long way to go to meet the State's goals,  
11 especially when it comes to infrastructure in light of the  
12 complexity and time it takes to deploy. This is an  
13 all-hands-on-deck effort.

14 The recent ACF infrastructure workshops held by  
15 CARB have highlighted just how complex this transition  
16 will be and how much proactive coordination will be  
17 necessary between the State agencies, the infrastructure  
18 providers, and the customers who are transitioning their  
19 fleets.

20 Utilities have and will continue to play an  
21 important role in ensuring our customers can electrify  
22 their transportation needs through grid planning, rates,  
23 interconnection, educational resources, and make-ready  
24 infrastructure programs.

25 PG&E is preparing the grid to support our

1 customers who will electrify and is working closely with  
2 the various State agencies who presented today and is  
3 developing internal tools to accurately forecast where and  
4 when this EV load will appear. Additionally, we have a  
5 dedicated team in our service planning to assist customers  
6 who are seeking to install this infrastructure.

7           We also have utility make-ready infrastructure  
8 programs, which have been an important tool to increasing  
9 access to infrastructure in this still nascent market.  
10 Through our programs, we can provide turnkey solutions to  
11 customers who are ready to electrify but may not yet have  
12 the means.

13           To date, PG&E has been able to build nearly 5,000  
14 EV charging ports at roughly 200 locations across 66  
15 cities through its portfolio of programs and is planning  
16 on doing much more. Our current and future programs will  
17 continue to increase access to infrastructure for the very  
18 customers that CARB seeks to Transition to zero emission.  
19 These include are EV Fleet Program, which is focused on  
20 electrifying medium- and heavy-duty customers, our EV Fast  
21 Charge Program, which enables public fast charging and  
22 aims to install approximately 50 plazas of DC fast  
23 charging in a corridor and urban sites. And we have also  
24 recently proposed our EV Charge 2 Program to install  
25 16,000 Level 2 and DC fast charging ports across PG&E's

1 service territory.

2 PG&E will also implement its five Low Carbon Fuel  
3 Standard credit revenue funded programs in support of our  
4 customers who are making this zero-emission transition.  
5 Through these programs and our efforts to provide safe,  
6 reliable, and clean electricity to our customers, PG&E is  
7 committed to continuing to support CARB's efforts to  
8 reduce emissions in the transportation sector and achieve  
9 the ambitious goals laid out by the State.

10 Thank you.

11 BOARD CLERK GARCIA: Thank you.

12 Next, we'll hear from Steve Douglas.

13 STEVEN DOUGLAS: Thank you. Thank you, Madam  
14 Chair. Steve Douglas. I have to say it's great to be  
15 back. I've been doing this, like Analisa, for about 25  
16 years and this is the very first time that I actually  
17 looked forward to coming.

18 (Laughter.)

19 STEVEN DOUGLAS: So thank you for that.

20 Well, good morning, Chair Randolph, members of  
21 the Board. I'm Steve Douglas with the Alliance for  
22 Automotive Innovation. We represent car companies that  
23 produce about 95 percent of the new vehicles that are sold  
24 in California. Our 37 members also include the world's  
25 leading Tier 1 suppliers and technology companies. Our

1 members are committed to electrification, to a net zero  
2 carbon future. We support virtually every word that has  
3 been said by your staff and by the other agencies here  
4 today and we sincerely appreciate their work on this.

5           On a global scale, automakers will spend about  
6 \$515 billion on electrification by the end of this decade.  
7 Last year, more than 70 electrified models were available,  
8 and that includes battery, plug-in hybrid, fuel cell  
9 electric vehicles.

10           Finally, we're starting to see EVs in the most  
11 important vehicle segment in our industry and probably for  
12 the country in pickup trucks. This is a new world and  
13 we're pleased to see the Board is looking beyond  
14 technology feasibility, which has been your foray and  
15 looking more at market feasibility with presentations like  
16 today on EV infrastructure.

17           In virtually every aspect, market feasibility --  
18 technology feasibility is taking a back seat to the  
19 market. Simple concepts like affordability have to be  
20 analyzed through the market feasibility lens. Is a  
21 \$20,000 new car or used car, is that affordable. It's not  
22 if you can't fuel it or if you have to spend an hour or  
23 two away from home every week to do so.

24           Last month, Kelley Blue Book reported that the  
25 average transaction -- transaction price on an electric



1 vehicle was \$65,977. This suggests that the current  
2 market is predominantly driven by affluent buyers with  
3 ready access to safe, reliable, low-cost charging at home.  
4 That's where the charging is done.

5 Ready access to affordable and reliable electric  
6 charging and hydrogen network, allowing customers to fuel  
7 at or near their home where they work and where they play  
8 is critical for all communities and it's critical for  
9 market feasibility.

10 Again, we applaud the work of this Board, its  
11 staff, and all of the agencies here today. We commit to  
12 continuing our work together and look forward to building  
13 an EV market.

14 Thank you.

15 BOARD CLERK GARCIA: Thank you.

16 Next we'll hear from Anja Raudabaugh.

17 ANJA RAUDABAUGH: Good morning. My name is Anja  
18 Raudabaugh. I'm the CEO of Western United Dairies. Of  
19 the approximate thousand dairies left in California, I  
20 have the privilege and pleasure to represent 900 of them.

21 I wanted to dovetail on the comments today. Our  
22 members are extremely excited about this electrified  
23 future. I wanted to speak not just about leakage, which  
24 gets a lot of attention in the business community, but  
25 about local investment.

1           Two-thirds of the dairies that have taken  
2 incentivized grants to reduce their methane are not only  
3 doubling down with their private sector investments, but  
4 they have matched the cost share in order to bill  
5 long-term electrified infrastructure. This is something I  
6 think is really important with the perspective of this  
7 Board. We're in it with you and we want to be good  
8 partners.

9           The continued support of dairy methane incentives  
10 by the State will result in faster results while  
11 maintaining local food supplies. And that local  
12 investment that our farmers are making and doubling down  
13 on, we're really excited about that renewable future and  
14 with the electrification of our heavy-duty fleets looks  
15 like. So like I said, about two-thirds of dairies plan to  
16 electrify their heavy-duty fleet and they are making those  
17 investments now on their own dime to do so.

18           Thank you for the time today.

19           BOARD CLERK GARCIA: Thank you.

20           Next, we'll hear from Evan Edgar.

21           EVAN EDGAR: Chair -- Chair and Board members, my  
22 name is Evan Edgar. I'm an engineer for Edgar Associates,  
23 and we support SB 1383, RNG and, a circular economy.

24           And we don't have any leakage when it comes to  
25 diverting organics in the landfill and making RNG

1 in-state, and organic compost. There's no export or  
2 import. We're all localized.

3 RNG is in-state and we're carbon negative as  
4 defined by CARB. Our facilities are net zero greenhouse  
5 gases as defined by CARB. We're near zero NOx and we're  
6 zero pesticide with organic compost. And they're all  
7 based upon zero waste principles. But I'm not here on  
8 behalf of dairy. I'm a carbon cowboy. And what we do, we  
9 take a lot of compost and put it on the ranches and  
10 throughout California to sequester carbon.

11 As part of our 10-year, 20-year process to get  
12 off diesel, we do a lot of life-cycle assessments. I'm an  
13 engineer and do a lot of LCAs, and I believe that's the  
14 crux of the Low Carbon Fuel Standard. For pesticides, you  
15 hear about that nowadays, as well as for batteries. Right  
16 now, we are supporting -- the EU has adopted a resolution  
17 in order to have three points of their battery directive  
18 in order to have equity within technology.

19 And one of them is -- the first one is sourcing.  
20 You've got to responsibly source your cobalt, your  
21 lithium, and your nickel. And according to Amnesty  
22 International and the UN, there's a lot of slave child  
23 labor going in Congo right now. I talked to the EJ three  
24 times about this, yesterday again. And so far, nobody has  
25 responded for anything in writing. And these are credible

1 sources and references about sourcing. The EU has stepped  
2 up and I believe that California should adopt a European  
3 battery directive.

4           Number two has to do with the LCA, the carbon  
5 intensity of ZEVs. Let's say you use electricity alone on  
6 a California grid is plus 24. They're not 0. It's plus  
7 24 today and will be till 2045. They'll never be zero  
8 till 2045. Plus in manufacturing, basin upon the EU  
9 studies, are plus 40 to plus 60. And this was the  
10 European Union studies and that's what they're doing in  
11 Europe. We're turning a blind eye. Zero-emission  
12 vehicles are not zero. We keep on saying that. It's a  
13 lie. It's disingenuous. It's complicit. You're  
14 misinforming the public. Zero-emission vehicles are not  
15 zero.

16           And then another -- the third part is the end of  
17 life. You've got to have the end of life with regards to  
18 recycling these batteries. This is a proven four-year  
19 process in the European Union. California needs to adopt  
20 it now, because the fact that you're not telling the truth  
21 about zero-emission vehicles. And in the near-term what  
22 we're doing is working today. We're carbon negative  
23 today. We're taking RNG and it's a near term solution.  
24 You only have seven to eight years left, according to the  
25 UN IPCC to bend the climate curve. Everybody is, from

1 Biden to all the doctors saying methane is number one.  
2 And the short-lived climate pollutants is being left out  
3 of your AB 32 Scoping Plan study. Instead it's all ZEV  
4 all the time and forcing my industry to stay on diesel.

5 Thirteen years of diesel, because you chilled out  
6 the RNG market and now we're staying on diesel for 13 to  
7 18 years.

8 Thank you.

9 BOARD CLERK GARCIA: Thank you.

10 Next will hear from Mikhael Skvarla.

11 MIKHAEL SKVARLA: Good morning. Good to be in  
12 3-D.

13 (Laughter.)

14 MIKHAEL SKVARLA: Mikhael Skvarla here on behalf  
15 of the California Hydrogen Coalition. I want to express  
16 our appreciation to staff and everyone participating this  
17 morning. We're here to serve as a resource against the  
18 fear, uncertainty, and doubt when it comes to hydrogen and  
19 fuel cell electric vehicles in all weight classes. The  
20 more -- mobile source strategy that the ARB has developed  
21 in conjunction with the preliminary modeling for the  
22 Scoping Plan all indicate the need for millions of fuel  
23 cell electric vehicles in all weight classes.

24 However, infrastructure is not keeping up with  
25 the pace that's necessary for us to achieve our 2035 and

1 2045 goals. We often hear that we've outlaid enough funds  
2 for the 200 stations in the light-duty space to get us to  
3 250,000, as the Mobile Source Strategy has indicated,  
4 vehicles. However, our goals for 2030 go well beyond that  
5 Executive Order from Governor Brown.

6 We have in this year's budget, last year's  
7 budget, and the proposed three-year budget cycle from the  
8 Governor enough funds to bring light-duty hydrogen to self  
9 sufficiency today. We have enough funds to create a  
10 statewide network of heavy-duty hydrogen stations to fill  
11 up to 70,000 heavy-duty trucks throughout the State today.  
12 We have enough to fund all of the transit infrastructure  
13 necessary for the transit districts that want to adopt  
14 hydrogen today.

15 And that doesn't cut into the underlying budget  
16 necessary for charging. SB 100 has given the utilities a  
17 great rate-basing authority to help serve that market.  
18 Hydrogen is only funded through the Clean Transportation  
19 Program, which should be author -- reauthorized either  
20 later this year or next year with a guarantee that we will  
21 build statewide networks for both charging and hydrogen.  
22 There is a necessary need to get the infrastructure in the  
23 ground. I think we have embraced that vision for the  
24 charging community. We need to embrace that vision for  
25 fuel cell and hydrogen community.

1           We are offering renewable fuel. There are seven  
2 announced hydrogen production projects. All of those  
3 renewable in the state of California, none of them funded  
4 with public dollars.

5           Hydrogen self-sufficiency is achievable in this  
6 decade, if we continue to push. So to that end, we're  
7 here as a resource. We want to be helpful and we want to  
8 bring the zero-emission future as soon as possible.

9           Thank you

10          BOARD CLERK GARCIA: Thank you.

11          And finally, we will hear from Aravind Kailas.

12          ARAVIND KAILAS: Happy Thursday, everybody. It's  
13 so good to be here in person. And I'll start off by  
14 thanking the California Air Resources Board for convening  
15 this very, very important meeting. Very timely  
16 discussion. Thank you for the opportunity to provide  
17 public comments. My name is Aravind Kailas and I'm the  
18 Advanced Technology Policy Director for Volvo Group North  
19 America. Volvo Group is a global provider of transport  
20 and infrastructure solutions. In North America, we are  
21 the maker of Volvo trucks and Mack trucks in the  
22 heavy-duty Sector. We also make Nova and -- Nova buses in  
23 the transit sector and Prevost Coach commute -- commuter  
24 coaches. We also have Volvo construction equipment and  
25 then power solutions for the commercial and marine

1 sectors.

2 Sustainability is part of Volvo Group's DNA. So  
3 I'm proud to say that we're committed to the transition to  
4 zero-emission vehicles. The good news is we're already  
5 doing it all across the world. And I'm proud again to say  
6 that we're doing it in California. As a matter of fact,  
7 we started in California. So kudos to the California  
8 climate leaders. We were fortunate to take advantage of a  
9 number of State agency programs, including CARB's ZANZEEF  
10 Program, which resulted in Volvo LIGHTS, which I'm sure  
11 many of you have heard and been a part of.

12 Next, I'd like to thank the State agencies. And  
13 I see a lot of familiar faces. Kudos to the work that  
14 you're doing. I love this enriching information that you  
15 provided this morning. This is very important that you  
16 continue the work. Analisa, I've been part of your CARB  
17 working group for ACF and I think we need to continue  
18 those discussions. Very, very important.

19 As part of my comments, what I would like to  
20 offer for consideration is we heard a lot about the  
21 funding that California is investing. California is  
22 definitely an example not just for the U.S. but for the  
23 rest of the world in terms of putting money where its  
24 mouth is at. However, it's not just about throwing money  
25 at the problem. As I have brought up in several different



1 forums, we need to make sure that the infrastructure is  
2 built out in a timely manner. We have been putting trucks  
3 within 6 to 10 months, but then we have had to wait for  
4 infrastructure to be powered on and we're talking about  
5 250 kilowatt chargers being powered on for 14 to 18  
6 months.

7 Long story short, there are some laws in place,  
8 like AB 1236 and AB 970. That's a great start, but a law  
9 is not equivalent to enforcement. So we need to work  
10 together to get this enforced. There's a liable -- AB  
11 2700, we need things like that to happen to make sure that  
12 the energization, the interconnection processes are done  
13 in a timely manner and there's transparency that is  
14 provided to the OEMs and to the fleets. My fleets, my  
15 customers want to do this. We want to do this together,  
16 but we also want to do it the right way.

17 So as a closing remark, I'd like to offer that  
18 Aravind and Volvo Group is here to be part of the solution  
19 set. Once again, thank you so much for the opportunity to  
20 provide public comments.

21 BOARD CLERK GARCIA: Thank you. And that  
22 concludes the in-person commenters for this item. And I  
23 will turn it back over to Katie

24 CHAIR RANDOLPH: I think Board Member Kracov  
25 might have a comment.

1           BOARD MEMBER KRACOV: I was just going to say Mr.  
2 Kailas, I've probably met you 10 times. You're a very  
3 active participant in the South Coast with JETSI Program.  
4 This is the first time, even though we've done tours and  
5 spent probably hours together, that I've actually seen  
6 your face. So good to see you.

7           (Laughter.)

8           BOARD CLERK ESTABROOK: All right. Now, we will  
9 hear from the remaining five speakers who have raised  
10 their hands in Zoom. First will be Lisa McGhee, then  
11 Chris King, Priscilla Rodriguez, Sara Fitzsimon, and Bill  
12 Elrick.

13           Lisa, you can unmute and begin.

14           LISA MCGHEE: Hi. This is Lisa McGhee. I'm  
15 wearing two hats. I'm with San Diego Airport Parking  
16 Company as their former Operations Manager and still  
17 participate and manage all of their electrification. They  
18 have two pilot projects that they developed with San Diego  
19 Gas and Electric. I also am the business development  
20 manager for GreenPower Motor Company.

21           I want to say thank you very much to CARB's  
22 deeper engagement with stakeholders that you recently took  
23 as it relates to the collaboration and development of  
24 Medium- and Heavy-Duty Working Group. This was something  
25 very necessary and a step in the right direction. It

1 really has an opportunity to improve the comprehension and  
2 share the real-world lessons learned. So thank you very  
3 much. I did participate in each of the panels and want to  
4 thank Lisa[SIC] and CARB, and greatly appreciate the  
5 process and recommend to continue taking these types of  
6 deeper dives.

7 My comments will emphasize the medium- and  
8 heavy-duty and small- and medium-sized fleets that are  
9 private entities. Eighty-five percent of the population  
10 of medium- and heavy-duty truck and bus drivers are made  
11 up from private sectors and small- and medium-sized  
12 fleets. The small- and medium-sized private fleets will  
13 face the biggest challenges to meet the ZEV mandate. Your  
14 HVIP Program and the current EnergiIZE Jump Start lanes  
15 are examples that need to continue and are even more  
16 necessary due to the looming mandates.

17 The DAC and set-aside funding and projects have  
18 been prioritizing primarily only DACs. We need sustained  
19 process for small and private fleets, including for  
20 vehicle and charging rebates. My concerns include the gap  
21 and hardships the small and private fleets face. Lower  
22 utilization of charging will equate to higher rate  
23 averages when demand fees are included. Public charging  
24 rates can be twice the amount as a separately metered EV  
25 commercial innovative rate.

1           The medium- and heavy-duty public stations do not  
2 support large vehicles, including cable links, high tour,  
3 higher AC Level 2 outputs. We could have shared hubs by  
4 large entities, which could increase utilization and could  
5 be incentivized to share with local small operators.

6           Overall, the real-world experience with this  
7 technology averages a 50 percent baseline savings and  
8 averages another 50 percent in maintenance. I've  
9 experienced this at San Diego Airport Parking. This adds  
10 reliability, this adds up-time. Everything fleets  
11 require. The technology holds many promises and early  
12 adoption needs to prioritize small fleets and our  
13 dealerships that already have these medium- and heavy-duty  
14 relationships.

15           I want to continue and -- this advocacy work that  
16 started in 2016 and really appreciate CARB's support and  
17 want to announce that California -- that San Diego Airport  
18 Parking Company is 100 percent ZEV compliant today and it  
19 couldn't have been done without the funding rebate.

20           Thank you.

21           BOARD CLERK ESTABROOK: Thank you.

22           Chris King, you can unmute and begin.

23           CHRIS KING: Thank you. My name is Chris King.  
24 I'm Senior Vice President of Strategic Partnerships with  
25 Siemens Mobility. Siemens provides EV charging hardware

1 and software, including manufacturing in California. And  
2 we're on record to manufacture one million EV chargers by  
3 2025. As a corporation, we were among the first globally  
4 to commit to net zero carbon emissions by 2030. We're  
5 already halfway there and that includes electrifying our  
6 11,000 vehicle fleet.

7 I'm going to talk about three specific topics.  
8 This first one is building codes. We support the  
9 requirement for new construction to install EV chargers or  
10 charging plugs. However, our recommendation is that all  
11 the plugs be capable of both 110 volts and 220 volts, so  
12 that all of those locations could support Level 2  
13 charging.

14 There's strong evidence that Level 2 charging is  
15 needed for a successful EV charging experience for EV  
16 drivers. UC Davis found that 20 percent of EV owners  
17 actually switched back to ICE vehicles. And of those, 70  
18 percent were relying on Level 1 chargers. One driver said  
19 if you don't have a Level 2, it's almost impossible. JD  
20 Power found that satisfaction with charging speed is 35  
21 percent lower among owners of Level 1 chargers than among  
22 owners of Level 2 chargers, and only 57 percent of EV  
23 drivers using Level 1 chargers were satisfied.

24 The second topic is real-time data for public  
25 chargers and this applies to all types of vehicles. A

1 critical driver of EV adoption is a (inaudible)  
2 experience. And as mentioned by another speaker, it  
3 should be as easy to fuel an EV as an ICE vehicle.  
4 Reliability is a huge issue with one in four public  
5 chargers found not working in their recent study.

6 (Inaudible) the best consumer experience EV  
7 chargers need real-time data on whether chargers are  
8 working, whether they're occupied, what type of connector  
9 they have, what charging space is available, and what the  
10 price is. This could be easily accomplished by requiring  
11 the company to (inaudible) probably (inaudible) the  
12 chargers if available in ACI, for use by ACI developers to  
13 provide (inaudible) drivers in real-time as needed to find  
14 those charging stations.

15 Tesla already does this. It provides this  
16 real-time data and has achieved high customer satisfaction  
17 ratings for this capability.

18 And finally, all publicly-funded chargers should  
19 use open standards. Open standards protect customer  
20 choice by preventing vendor lock-ins, reduce costs through  
21 increased competition, and they also minimize the risk of  
22 stranded assets, and we've actually seen examples of  
23 stranded assets.

24 We applaud the progress that the agencies have  
25 made and thank you for the opportunity

1 BOARD CLERK ESTABROOK: Thank you.

2 Next is Priscilla Rodriguez. Priscilla, you can  
3 unmute and begin.

4 PRISCILLA RODRIGUEZ: Good morning, Madam Chair,  
5 members of the Board. My name is Priscilla Rodriguez,  
6 Assistant Vice President of California Cotton Ginners and  
7 Growers Association and Western Agricultural Processors  
8 Association, representing the cotton industry and hullers  
9 and processors of walnuts, almonds, pistachios, and  
10 pecans.

11 We appreciate that opportunity to provide public  
12 comments today. We understand we are responsible for  
13 creating clean air. We know we are part of the problem  
14 and want to be part of the solution. This was displayed  
15 when we worked with the air district, CARB, PUC and others  
16 for the deployment of AG-ICE to convert thousands of  
17 diesel-powered irrigation pumps over to electric pumps.

18 During this time, we were faced with challenges.  
19 Those challenges persist today, and include concerns over  
20 infrastructure that simply weren't sufficient in rural  
21 areas, where our members are located.

22 We saw many issues with utility substation  
23 deficiencies during the implementation of AG-ICE, where  
24 there simply wasn't enough capacity. In addition to that,  
25 it would cost hundreds of thousands to millions to

1 upgrade, consequently many areas that did not get  
2 converted for that simple reason. We had concerns with  
3 the necessary infrastructure at our members' facilities,  
4 especially older facilities where a large number of  
5 charging stations may need to be insolve -- installed.

6 One example is an almond processor that wants to  
7 replace 31 propane forklifts with electric, so PG&E told  
8 them they would have to drop another service and  
9 transformer into the facility and it would cost anywhere  
10 above \$750,000.

11 In addition to -- in addition, the timing to  
12 install new infrastructure is significant. Utility  
13 companies are anywhere out from 12 to 18 months out to  
14 come into that service. Compliance dates are around the  
15 corner and we are concerned the onus will be on our  
16 members when they are tied down by its disability,  
17 availability, and time to install infrastructure.

18 Again, I want to reiterate we want to be part of  
19 the solution and have members who have already converted  
20 part of their fleets over to electric where it's feasible.  
21 Going forward, we want to make sure that there is a plan  
22 for agricul -- agricultural operations we represent.

23 We look forward to working with CARB staff as we  
24 progress in this process. Thank you.

25 BOARD CLERK ESTABROOK: Thank you.



1 Sara Fitzsimon, you can unmute and begin.

2 SARA FITZSIMON: Hi. Thank you. Sara Fitzsimon  
3 from the California Hydrogen Business Council. The  
4 California Hydrogen Business Council represent around 135  
5 members who are working on the commercialization of  
6 hydrogen across the energy and transportation sectors.  
7 For my comments today, I do want to just focus on the ZEV  
8 market development strategy update given by Tyson Eckerle  
9 fro GO-Biz. Thank you for having me today to comment on  
10 this presentation and for holding this Board meeting, so  
11 that we can publicly comment.

12 Tyson, you did a great job in your overview.  
13 It's been wonderful getting to work with GO-Biz on these  
14 efforts to decarbonize our transportation sector. I would  
15 like to note that when we're tracking the progress of our  
16 ZEV market, it's really important that we maintain equity  
17 across all of our technologies. Fuel cell electric  
18 vehicles are wonderful vehicles. I can say this, because  
19 I drive one myself, a Honda Clarity fuel cell.

20 They're great for Californians, because they have  
21 a short fueling time, they have long range, they're very  
22 reliable, and they're zero-emission. Much of the fuel  
23 that fuel cell electric vehicles use, the hydrogen is  
24 around 90 percent or higher renewable, due to the LCFS  
25 Program. And it's been a great system that we've been

1 developing here in California, but it is too slow of  
2 progress in order to reach our goals for transportation  
3 coming up.

4           So in looking at the budget that was presented in  
5 this ZEV market snapshot, in passenger vehicles and big  
6 ZEVs, it's really important that we allocate those budget  
7 funds with parity as it relates to battery-electric  
8 vehicles as well. There are so many benefits to a fuel  
9 cell electric vehicle, especially for someone going from a  
10 gas vehicle to a cleaner vehicle, fuel cells are the  
11 easiest transition.

12           California can't reach these goals on one  
13 technology alone. It's really important that we diversify  
14 our options and give Californians an option to choose a  
15 type of car that works for them. Many people can't charge  
16 at home. Many people don't have the time to charge at  
17 home and having these hydrogen fuel cell vehicles  
18 available for those who don't have those options and who  
19 need long range is really important.

20           So when looking at these funds, I would just  
21 request that we analyze them in a way that relates to  
22 equity and also with parity across the technologies. I  
23 think hydrogen can really serve our state well and there's  
24 a lot of excitement and progress behind this sector, a lot  
25 of companies willing to do the work, and to work with the

1 State on this to make sure that this sector grows.

2 So thank you for your time and your consideration  
3 of these comments. I would like to also note that I  
4 second the comments of Mr. Skvarla earlier talking about  
5 the details on which we can advance our funding and push  
6 for more opportunities for the hydrogen space and tech --  
7 in this sector.

8 Thank you.

9 BOARD CLERK ESTABROOK: Thank. And our final  
10 commenter for this item is Bill Elrick. Bill, you can  
11 unmute and begin.

12 BILL ELRICK: Great. Thank you. As you said, my  
13 name is Bill Elrick. I'm the Executive Director at the  
14 California Fuel Cell Partnership. Thank you for the  
15 opportunity today. I want to start by applauding all the  
16 hard work CARB and all the agencies are doing on ZEVs.  
17 It's really appreciated and important work.

18 Analisa's comments let's start with. The ZEV  
19 infrastructure is not just critical, it's essential for  
20 ZEV deployment, and to reach California's aggressive  
21 climate and air quality objectives. Also noted was that  
22 infrastructure cannot be a barrier to ZEV adoption. And  
23 while some note the development of an entirely new  
24 hydrogen infrastructure is challenging, CARB appropriately  
25 stated that this is the opportunity to build a ZEV

1 ecosystem from the ground up with equity and accessibility  
2 in mind.

3           To that, light-duty fuel cell vehicles have  
4 global interoperability already and single station can  
5 support hundreds of drivers and thus one station can  
6 support multiple MuDs in supporting equitable  
7 accessibility. Furthermore, we can design hydrogen  
8 infrastructure to complement the electrical grid and BEV  
9 deployment with increased renewable penetration and  
10 providing increased grid resilience and durability.

11           California regulations have always been  
12 technology agnostic focusing on the objectives of 100  
13 percent ZEV adoption in reaching our climate goals, yet  
14 the language around ZEVs is not always reflecting this.  
15 For example today, the heavy-duty discussion we heard  
16 clearly the need to support all technologies that advance  
17 our objectives. Yet, we do not hear the same language  
18 when discussing light-duty ZEV objectives.

19           This agno -- agnostic approach and verbal  
20 language is as essential as the needed infrastructure, as  
21 it send clear signals to private and federal investment,  
22 which is especially important now considering the billions  
23 of federal hydrogen hub and private investment  
24 announcements coming out lately.

25           Related, Tyson highlighted the need for hydrogen















































































1 with the -- with the technology that you're looking at,  
2 that the charge -- the fast chargers would be accessible  
3 to older cars older ZEV cars?

4 HANNON RASOOL: We want to move in that  
5 direction. There's going to be some vehicles that are on  
6 the road today and that will be used vehicles in the  
7 future that won't necessarily have that already. You  
8 know, they're already on the road. And so there is that  
9 limitation in what we do going forward.

10 Certainly want to bring that full community  
11 forward with us, that vehicle population, but we -- we  
12 just quite honestly know there will be some limitations  
13 based on what was put out in the world, you know, five,  
14 six, seven years ago.

15 BOARD MEMBER TAKVORIAN: Yeah, my 2012 Bolt does  
16 not work with those. And I think that's a shame, because  
17 it's -- because I think we've talked a lot in this space  
18 about the secondary market and the importance of that  
19 market to -- to lower income communities. So maybe more  
20 work to do in that space.

21 Thank you.

22 CHAIR RANDOLPH: Yeah, I would -- I would agree  
23 with that. I actually had that experience with -- with  
24 your boss Chair Hochschild when we were driving back in  
25 his Bolt, and -- you know, and we found a Level 2 charger















1           With the ZEV market moving fast, it is imperative  
2 to facilitate consumer access and use of this  
3 infrastructure. The overarching goal of the EVSE  
4 Standards Regulation is to reduce the barriers that  
5 drivers, both today's drivers and tomorrow's, face when  
6 accessing public charging.

7           Let's talk more about the history of the  
8 regulation.

9                               --o0o--

10           STCD AIR RESOURCES ENGINEER PALMER: To address  
11 barriers to accessing and paying for charging, in 2013,  
12 the California Legislature passed Senate Bill 454, the  
13 Electric Vehicle Charging Station's Open Access Act. One  
14 problem the legislation intended to solve was the  
15 requirement imposed by charging companies that a driver  
16 must have a membership to access that company's charging  
17 network. Membership meant that a driver could only pay  
18 for charging using an RFID card or mobile app issued by  
19 the company provided the driver had a bank card on file or  
20 by calling a 1-800 number to confirm the driver's  
21 membership status and provide their bank card information.

22           To become a member, the driver may have to do one  
23 or more of the following: register with a cell phone  
24 number, email address, credit or debit, agree to be  
25 assessed a monthly fee, have funds reserved on a credit

1 card by the charging company and load a set amount of  
2 funds into the membership account, which may auto reload.  
3 This system limited who could access which public charging  
4 stations and made it confusing to drivers.

5 Pursuant to SB 454, staff developed the EVSE  
6 Standards Regulation with the goal of reducing these and  
7 other barriers to charging. To facilitate the broad use  
8 of ZEVs, it is important that drivers have confidence that  
9 they will be able to use and pay for charging with the  
10 card that they have in their wallet. The system must be  
11 simple and reliable.

12 Starting in 2017, CARB staff worked with  
13 stakeholders for nearly two years to develop the  
14 regulation, including determining which payment methods  
15 were the most broadly available. Public workshops and  
16 webinars were held in May 2018 through April 2019 to  
17 discuss regulatory concepts and proposed requirements. In  
18 June 2019, the Board adopted the EVSE Standards  
19 Regulation, which became effective on July 1st of 2020.

20 I will now turn to discuss some of the major  
21 requirements of the regulation.

22 --o0o--

23 STCD AIR RESOURCES ENGINEER PALMER: This  
24 regulation has many parts, but the three highlighted here  
25 have the most impact on a driver's ability to access



1 stations. The operators of the charging stations have to  
2 report charging station location information to the  
3 National Renewable Energy Laboratory Alternative Fuels  
4 Data Center. The purpose of this requirement is to  
5 provide drivers a single place to locate where they will  
6 be able to charge. All fees associated with the public  
7 charging session must be displayed, so drivers can clearly  
8 see what they will be paying for before they start a  
9 charge session. This includes any parking fees or  
10 non-membership plug-in fees at the station.

11 Lastly, the charging station must be equipped  
12 with a reader that supports both mobile payment options  
13 and the EMV chip-enabled payment cards. Mobile phone  
14 payments are supported by readers often referred to as tap  
15 or contactless. The purpose of this requirement is to  
16 ensure drivers are able to pay for a charging session with  
17 familiar methods the use frequently in their everyday  
18 lives.

19 At the time the regulation was adopted, EMV Chip  
20 was the most ubiquitous card technology in the U.S.  
21 market. With respect to the compliance dates for the  
22 payment card reader, all new DC fast charge stations that  
23 become operational after January 1, 2022 must be compliant  
24 with the payment hardware either on the charging station  
25 or a kiosk that may serve a bank of chargers.

1 All new Level 2 that become operational after  
2 July 1, 2023 must be compliant with the payment hardware  
3 either on the charging station or a kiosk. By the  
4 compliance deadline for Level 2, charging companies will  
5 have had four years to design and manufacture stations  
6 that meet the requirements of the regulation.

7 In response to stakeholders during the 2019  
8 process, the charging stations that exist prior to the two  
9 compliance dates will need to become compliant no later  
10 than July 1, 2033. This date allows the existing hardware  
11 to live at its useful life. If the station gets replaced  
12 for any reason prior to 2033, it will need to become  
13 compliant at that time.

14 As part of the regulatory development process in  
15 2019, staff completed a standardized regulatory impact  
16 assessment to better understand the economic impacts of  
17 the requirements staff is proposing. As part of that  
18 report, staff estimated that compliant payment hardware  
19 would cost \$370 with an annual maintenance visit costing  
20 round \$270. These costs reflect the combined cost of both  
21 the EMV chip and mobile payment technologies, not just the  
22 chip reader.

23 Staff continue to track the cost of payment  
24 systems and recent new data suggests the marginal savings  
25 of removing the EMV chip portion of the hardware may only

1 stave around \$70 per unit. That is roughly 1.1 percent of  
2 a Level 2 and 0.14 percent of the DCFC unit cost.

3 --o0o--

4 STCD AIR RESOURCES ENGINEER PALMER: I will not  
5 turn to the technology review itself and discuss the  
6 questions we sought to address, the methods we used, key  
7 findings from the review, and our next steps based off of  
8 those findings.

9 --o0o--

10 STCD AIR RESOURCES ENGINEER PALMER: Staff  
11 committed to monitoring the charging station market with a  
12 particular emphasis on the payment hardware and card  
13 market to understand if the program requirements continue  
14 to be appropriate. Based on Board direction in the fall,  
15 we expanded our work to look more bodily at barriers that  
16 drivers face when accessing charging systems including  
17 reliability.

18 This slide covers the questions that we sought to  
19 answer through the technology review: what barriers do  
20 drivers experience when using charging stations; what  
21 prompts their calls to customer service, to what extent do  
22 drivers experience inoperable charging stations, to what  
23 extent chip and contactless cards available and used by  
24 drivers, what payment methods are in use on charging  
25 stations.



1 consumer payment preferences for existing payment options,  
2 transaction fees, network reliability metrics, and  
3 response time for downed charging stations.

4 Two credit card companies responded to the  
5 survey, but did not provide direct answers to those survey  
6 questions. The objective of the survey was to hear  
7 directly from the credit card companies on the deployment  
8 of tap cards in California, potential barriers to issuing  
9 tap cards, and when they expect to reach 100 percent  
10 market penetration.

11 --o0o--

12 STCD AIR RESOURCES ENGINEER PALMER: The  
13 objective of the driver survey was to hear directly from  
14 drivers about the barriers they are experiencing,  
15 understand what payment methods they have and use, network  
16 membership status, customer service interactions, and  
17 sociodemographic data. This survey was distributed via  
18 social media and email lists from various groups.

19 The driver survey has a total of 1,290  
20 respondents, 1,175 of which were from California. There  
21 are three categories of drivers who responded. This  
22 included 761 respondents who are plug-in electric vehicle  
23 drivers who use public charging, 259 PEV drivers who do  
24 not use public charging, and 155 non-PEV drivers. Of the  
25 1,175 California respondents, 483 had an annual household

1 income of less than \$50,000, which is 41 percent of total  
2 California respondents.

3           It is important to note that because the  
4 distribution methods focused primarily on those related to  
5 electric vehicles, respondents to this survey are not  
6 necessarily representative of the California population.  
7 For example, 65 percent of the respondents from California  
8 are electric vehicle drivers, whereas only about two  
9 percent of vehicles on the road today are ZEVs.

10                   --o0o--

11           STCD AIR RESOURCES ENGINEER PALMER: Let's talk  
12 about the results of this work. This slide summarizes the  
13 key findings culminating -- culminating from staff's  
14 stakeholder engagement, literature review, and surveys.  
15 Inoperable stations and payment issues are the most  
16 significant barriers to drivers. Membership requirements  
17 may be a perceived barrier for drivers in accessing  
18 chargers. Multiple payment methods exist, but most EVSPs  
19 rely on tap.

20           Tap-enabled cards represent a small segment of  
21 the cards in-use today nationally, but deployment is  
22 accelerating. Tap has the potential to expand payment  
23 options for un- and underbanked drivers, but barriers  
24 still remain. I will talk -- talk about each of these  
25 findings in more details on the following slides.

1                   --o0o--

2                   STCD AIR RESOURCES ENGINEER PALMER: The driver  
3 survey asked PEV drivers who have used public charging  
4 stations the barriers they have encountered. Thirty-two  
5 percent of responses indicated membership requirements  
6 were barrier, such as they didn't have a membership and  
7 didn't want to sign up for another membership, twenty-four  
8 percent of respondents indicated charging station  
9 operability issues was a barrier, and lastly, 12 percent  
10 of our responses indicated they had payment issues.

11                   To better understand barriers and the use of  
12 1-800 numbers, the driver survey also asked if PEV drivers  
13 had to contact customer service? Seventy percent of  
14 respondents indicated they called due to inoperable  
15 stations and 20 percent indicated they called due to  
16 payment issues such as there is no way to pay with a  
17 credit card, not a member of the network, and general  
18 billing issues.

19                   --o0o--

20                   STCD AIR RESOURCES ENGINEER PALMER: The driver  
21 survey also asked PEV drivers who used public charging  
22 stations why they had created a membership account with an  
23 EVSP followed by how many memberships the driver has.  
24 Seventy-six percent of PEV drivers who used public  
25 charging stations said they had a membership and 67

1 percent of these said they needed a membership to access a  
2 station. Sixty-two percent of respondents have two to  
3 five memberships.

4 One of the key components to open access is to  
5 ensure membership with an EVSP is a choice and not a  
6 requirement to use a charging station. The driver  
7 responses are indicating that the regulatory requirements,  
8 as they stand are still needed because drivers are feeling  
9 the need to rely on one or more memberships for public  
10 charging.

11 Given that SB 454 and CARB's EVSE Standards  
12 Regulation prohibit requiring membership to use a station,  
13 more work is needed to understand the extent to which  
14 membership may be a real or perceived barrier for drivers.  
15 For example, was membership truly required or did the  
16 driver simply not have the right payment method to use at  
17 the station?

18 --o0o--

19 STCD AIR RESOURCES ENGINEER PALMER: One question  
20 on the survey of electric vehicle service providers asked  
21 what payment options their networks support. The  
22 responses showed that while the service providers offered  
23 multiple options, including membership and non-membership  
24 options, the foundational technologies these options are  
25 based on heavily reliant on the RFID reader, which enables





1 support the chip reader requirement and until tap  
2 technology was sufficient, staff evaluated the deployment  
3 in use of tap-enabled cards specifically.

4 We consulted reports from the financial services  
5 industry and surveyed credit card companies to assess the  
6 deployment of tap cards, and we surveyed drivers as to the  
7 use of these cards. Through this work, we found that  
8 tap-enabled cards are a small segment of cards today, but  
9 deployment is accelerating.

10 Visa reported that the market share of tap  
11 payment cards is 15 percent nationally. MasterCard  
12 estimated that their market share for tap will be 25  
13 percent nationally in the next two years. These are the  
14 primary data points that is convincing staff that it is  
15 premature to change payment requirements given the  
16 majority of card holders are unlikely to have this card  
17 technology until the mid-2020s.

18 It is noted that none of the credit card  
19 companies were able to provide California specific data.  
20 However, our driver survey did provide some limited  
21 information on California drivers. I want to emphasize,  
22 that the driver survey reaches early vehicle adopters,  
23 which is not wholly representative of the tap market  
24 penetration. In the driver survey, 70 percent of drivers  
25 said they have tap cards, but half of the drivers

1 indicated that they do not use them. Out of 819 drivers  
2 who own tap-enabled cards, 15 percent of respondents  
3 indicated they never use the tap technology, 37 percent of  
4 respondents indicated that they only use tap payment  
5 technology when present 25 percent of the time, indicating  
6 that nearly half of the drivers do not prefer to use tap  
7 cards for their regular purchasing habits. This clearly  
8 shows that while many drivers responded that they have  
9 tap, it is not a feature that they use.

10 --o0o--

11 STCD AIR RESOURCES ENGINEER PALMER: The driver  
12 survey asked respondents to indicate their incomes so that  
13 we could evaluate whether there are any difference in  
14 access between low -- lower and higher income drivers.

15 With respect to access to tap-enabled cards, 79  
16 percent of respondents with income above \$50,000 reported  
17 having tap cards, while only 57 percent of respondents  
18 with income below \$50,000 did. CARB lacks the detailed  
19 data on the broad distribution of tap cards among  
20 Californians generally.

21 The data also -- are reflective of drivers who  
22 are engaged in PEV activities and who took the time to  
23 complete the survey. Because survey respondents tended to  
24 be technology forward based on owning or interest in  
25 electric vehicles, it is possible a broader disparity

1 exists amongst Californians more generally. Further work  
2 will -- would be needed to explore these issues and is  
3 important to consider as PEVs move from an early market  
4 technology to mainstream use.

5 --o0o--

6 STCD AIR RESOURCES ENGINEER PALMER: We also  
7 sought to understand the needs of under and unbanked  
8 individuals. Interestingly, about 15 percent of survey  
9 respondents reporting having no payment card at all.  
10 According to the household banking survey by FDIC minimum  
11 balance requirements is a key factor in keeping unbanked  
12 households unbanked.

13 As the banking industry has changed, peer-to-peer  
14 mobile applications offered by companies, such as Venmo  
15 and Cash App are removing barriers to traditional banking  
16 by not requiring a minimum balance. These peer-to-peer  
17 apps demonstrate the potential benefits of tap  
18 technologies but barriers remain. For example, a driver  
19 cannot pay for charging using a peer-to-peer app.  
20 Peer-to-peer companies are starting to issue cards  
21 associated with their accounts that they could use to  
22 access charging, but it is not clear how many drivers  
23 utilize this option.

24 In addition, peer-to-peer payment companies  
25 heavily rely on smartphones that require Internet

1 connectivity, which depends on cellularly -- cellular  
2 network or WiFi. While there is broad availability of  
3 smartphones that tap-enable payments in general, the  
4 results suggest that drivers with low incomes may have  
5 less access to smartphones with the capability for tap  
6 payments.

7           In short, while the results find that tap payment  
8 technology can expand payment options for under and  
9 unbanked drivers, further work is needed to explore how  
10 they are or could be used for paying for charging.  
11 Understanding the payment needs of lower income drivers  
12 and drivers who are un and underbanked is especially  
13 important as electric vehicles move from an early market  
14 technology to mainstream use.

15                           --o0o--

16           STCD AIR RESOURCES ENGINEER PALMER: The  
17 technology review does not conclude staff's work on these  
18 issues, and I will now turn to describe our next steps to  
19 continue monitoring implementation of the regulation.

20           Staff will continue to track -- track tap  
21 deployment of credit card companies, including the  
22 national percentage of cards deployed that are tap and the  
23 percentage of transactions that use the technology. This  
24 information will come from a company's earning's report  
25 and public reports on usage of payment technologies.



1 the EVSE Standards Regulation is one of many programs that  
2 facilitates the transition to zero-emission vehicle  
3 future. A full transition to the zero-emission vehicles  
4 will require meeting consumers where they are in making it  
5 as easy as possible to access charging.

6 Ensuring chargers allow for multiple payment  
7 methods that meet -- that meets the needs of a range of  
8 drivers, including low-income drivers, will be critical to  
9 facilitating the transition. When we think about equity  
10 and access, our judgment is that it is important to ensure  
11 all Californians, not just early adopters with the latest  
12 credit card technology, can access these vehicles. And  
13 the simple truth is that tap technology, even in its  
14 most -- its most common and affluent communities will not  
15 be broadly deployed for years to come, while the cost of  
16 ensuring comparability for most cards is minimal.

17 Moreover, as technology rolls out, drivers need  
18 to have the confidence that they can use the most commonly  
19 available payment technology, which is the EMV chip reader  
20 at this time.

21 Protecting access for all will give drivers  
22 confidence in public charging and enables the State to  
23 move away from the old infrastructure at a faster pace.  
24 We will continue to monitor the availability and use of  
25 payment technologies and we will come back to the board

1 with amendments to the regulation when appropriate.

2 That concludes my presentation for today. Thank  
3 you.

4 CHAIR RANDOLPH: Okay. Thank you.

5 We will now hear from the public who signed up to  
6 speak on this item either by completing a request to speak  
7 card here in the auditorium or a raised hand on Zoom.

8 I will now ask the Board clerks to begin calling  
9 the public commenters.

10 BOARD CLERK GARCIA: Thank you. We currently  
11 have two people who wish so speak pique at -- or two  
12 in-person commenters I should say who wish so speak at  
13 this time.

14 The first speaker will Marc Aprea.

15 MARC APREA: Thank you. There we go.

16 Madam Chair, members of the Board, Marc Aprea.  
17 I'm here on behalf of ChargePoint. Thank you for allowing  
18 us the opportunity to testify today. We all share a  
19 common goal of getting increased access to EV charging for  
20 all Californians. And we appreciate CARB's effort to  
21 conduct the recent EV Supply Equipment technology review.  
22 And while the technology review shared some meaningful  
23 insights, we believe that it missed some industry trends  
24 and understanding of consumer behavior regarding payment  
25 methods.



1           We also believe the review has not taken into  
2 account the significant impact of EV chip regulation on  
3 Level 2 chargers. We are here to ask that CARB to  
4 promptly open a new rulemaking to have a third-party  
5 conduct a technology review before the end of the year and  
6 for staff to conduct further cost analysis of this  
7 regulation with updated data. Let me explain why we're  
8 making this request.

9           One of the reviews findings concluded that access  
10 to tap technology is not widespread. However, the review  
11 missed a key marker for the payment industry that  
12 disagrees with this finding. A 2021 study done by PULSE,  
13 a Discover Card company, found that 94 percent of all  
14 debit cards will have contactless capability by 2023. In  
15 this report, debit card issues cited contactless debit  
16 cards as their top priority.

17           So how fast is this transition taking place? In  
18 2019, only 11 percent of debit cards were contactless. In  
19 2020, that number jumped to 30 percent. Last -- 64  
20 percent last year in 2021 and projected for 2023 again 94  
21 percent. Debit card issuer report was not cited by the  
22 technology review, nor did the technology review make a  
23 distinction between the issuance of contactless credit  
24 cards, debit cards, and the use of peer-to-peer platforms.  
25 Now, there was a reference to peer-to-peer platforms, but

1 there isn't a distinction in terms of how those devices  
2 are used and by what populations.

3           So I want to also address that the questions by  
4 some of the members were asked in terms of how do low  
5 income individuals make their payment, that that question  
6 was not addressed completely.

7           More importantly, as rapid as the payment  
8 technology is evolving, CARB will not be able to keep up  
9 with the changes without periodic updates on the  
10 technology review. And while we appreciate staff's  
11 comments today, we ask that the Board open up a new  
12 rulemaking. Thank you for your time.

13           BOARD CLERK GARCIA: Thank yo.

14           Next, we'll hear from Tom Knox.

15           TOM KNOX: Madam Chair and Board members, thank  
16 you very much. I'm Tom Knox of Valley Clean Air Now. As  
17 part of our work with helping low-income disadvantaged  
18 community residents transition to zero-emission vehicles,  
19 we're very interested in how we can make EV charging both  
20 home and public more affordable and more available.  
21 Thanks to the GO-Biz ZEV education program, this created  
22 the opportunity to partner with the California Integrated  
23 Travel Project, or Cal-ITP, to test how we can best use a  
24 debit card for our customers to have easier access to  
25 public charging.

1           The idea here is to get some real-world data.  
2 This is mentioned in the staff report that there is really  
3 a lack of understanding of the mechanics of how people are  
4 most comfortable with paying for charging, which really  
5 are the barriers out there. And this project wouldn't be  
6 possible without -- we have the opportunity to speak to  
7 many of the EVSPs as we were formulating this. All were  
8 very generous with their time and input. We really  
9 learned a lot about a very complex topic here. So really  
10 appreciate the support of the EVSPs during this process.

11           Cal-ITP then has been working with CARB staff on  
12 how we can align with the needs mentioned in the staff  
13 report to collect more data on how customers pay for EV  
14 charging. We anticipate starting this project within the  
15 next month or two. We'll work closely with CARB staff to  
16 share findings and then incorporate their input as the  
17 project proceeds.

18           So we really look forward to what we're about to  
19 learn here. We think this will be an important step to  
20 addressing any of the issues brought up in the staff  
21 report, so thank you, everyone.

22           VICE CHAIR BERG: Mr. Knox, before you leave,  
23 great to see you.

24           TOM KNOX: Thank you.

25           VICE CHAIR BERG: You know as we're weighing what

1 to do now, what would your be -- advice be to this Board,  
2 given that everything is emerging. We're trying so hard  
3 to get it right. And yet, we're hearing from some of the  
4 charging providers that it's increasing costs  
5 unnecessarily. And we do know that increased costs  
6 affects most low income. So do you have a bit of wisdom,  
7 given that we still have time, the Level 2 doesn't go  
8 until summer of next year. Thoughts?

9 CHAIR RANDOLPH: Keeping in mind that he  
10 carefully did not say anything about that issue.

11 (Laughter.)

12 VICE CHAIR BERG: I know. I was going to put him  
13 on the spot, because you have so much knowledge. And  
14 please just feel comfortable what you can share.

15 TOM KNOX: Thanks, Vice Chair Berg for your  
16 leadership on this. Thanks for the opportunity. We  
17 briefed you last month as we were starting to get this --  
18 starting to get this nailed down.

19 So you have put me on the spot. This is a  
20 complicated issue and there are a lot of very good points  
21 being made by all the stakeholders here. We sympathize  
22 with the need to control costs. We also sympathize with  
23 the need to make this as broadly accessible as possible.  
24 I agree with the staff report's conclusion that there's a  
25 lot of data missing here. I would say -- I mean, our

1 whole orientation with Valley CAN is just get out and find  
2 what works with our customers. Have a lot of  
3 conversations, have hands-on experience. I'd rather  
4 answer that question in three months, if you don't mind,  
5 but I think getting some real world feedback from  
6 customers on how they're most comfortable doing this  
7 stuff.

8 I really appreciate Cal-ITP's focus on the  
9 underbanked. I think that's really a key point here is  
10 the really rapid expansion of services to the underbanked  
11 through a lot of these new financial service providers is  
12 opening up a lot of things that did not seem possible a  
13 year or two. I think this is a field that's in a very  
14 fast transition. I would hate to make future rules based  
15 on past facts. And so I would recommend that study is  
16 needed, progress is needed, and I'd rather lean toward  
17 fast progress and real world results, rather than imposing  
18 conclusions now.

19 VICE CHAIR BERG: I really appreciate that and we  
20 do have some time, so we really do look forward to what  
21 you are going to discover and especially the conversations  
22 that are going on in the three communities that you are  
23 interacting with. So thank you so much.

24 TOM KNOX: Thank you.

25 BOARD CLERK GARCIA: Thank you.

1           That concludes the in-person commenters for this  
2 item. I will turn it over to Katie for our remote  
3 commenters.

4           BOARD CLERK ESTABROOK: Thank you. We currently  
5 have 14 people with their hands raised in zoom. If you  
6 would like to comment on this item, please raise your hand  
7 now. Our first three commenters will be Leela Rao,  
8 Gillian Gillet, Miles Muller. Leela, you can unmute and  
9 begin.

10           LEELA RAO: Thank you, Chair Randolph and members  
11 of the Board for the opportunity to make comments on the  
12 EVSE technology review. My name is Leela Rao and I'm with  
13 the Port of Long Beach.

14           The Port has previously submitted a comment  
15 letter on the draft EVSE technology review, but we would  
16 like to reiterate our comments in a letter here today. As  
17 you know, the Port aims to transition its heavy-duty  
18 drayage truck fleet to the -- to zero emissions by 2035.  
19 Achieving this ambitious goal will require a significant  
20 number of new charging stations, many of which will need  
21 to be publicly accessible to support independent  
22 owner/operators without a home base for overnight  
23 charging.

24           The Port is concerned that the Electric Vehicle  
25 Supply Equipment Standards Regulation could inhibit the

1 deployment of heavy-duty truck charging in this very  
2 nascent market, an impact that was not evaluated in the  
3 technology review. The Port strongly urges CARB to  
4 clarify whether the EVSE standards regulation applies to  
5 charging stations dedicated to heavy-duty trucks, and if  
6 so, to evaluate the regulation's potential impacts on the  
7 heavy-duty public truck charging market.

8           While the regulation itself does not make a  
9 distinction between EVSE intended for light-duty versus  
10 heavy-duty, the underlying statute and supporting  
11 regulatory documents exclusively reference and analyze  
12 light-duty vehicles. If the EVSE regulation applies to  
13 the heavy-duty market, the Port is concerned that its  
14 requirements could stifle much needed public charging  
15 investments in these early years of the transition.

16           Due to the complexity of the public charging for  
17 Heavy-duty trucks, it's expected that private fleets will  
18 be the early adoptive -- early deployers of charging  
19 infrastructure at their facilities. These fleets should  
20 be encouraged to make their charging stations publicly  
21 available, at least part of the time, to independent  
22 operators who have no access to overnight charging.

23           EVSE Standards Regulation requirements however  
24 may deter fleets from doing so. The reporting  
25 requirements alone would likely be sufficient to deter

1 private facilities from making Heavy-duty EVSE partially  
2 publicly available, notwithstanding the added cost and  
3 complexity with requiring specific payment methods that  
4 may not be the most efficient or compatible with a  
5 semi-public heavy-duty truck charging business model.

6           The technology review does not address the EVSE  
7 Standards Regulation's potential impacts on the heavy-duty  
8 truck market, focusing entirely on passenger car drivers.  
9 If the EVSE Standards Regulation applies universally, the  
10 Port strongly recommends that CARB analyze the potential  
11 impacts on the heavy-duty truck market in the technology  
12 review.

13           Thank you.

14           BOARD CLERK ESTABROOK: Thank you.

15           Gillian, you can unmute and begin.

16           It looks like her hand went down.

17           Miles, you can unmute and begin.

18           MILES MULLER: Good morning, Chair and members of  
19 the Board. My name is Miles Muller speaking on behalf of  
20 the Natural Resources Defense Council. I'd like to start  
21 off by thanking staff for their work on the technology  
22 review and these regulations, which are aimed at  
23 addressing a critical barrier that EV drivers in  
24 California have faced for several years.

25           To meet California's statewide goals of creating



1 a mainstream market for electric vehicles and increasing  
2 access to those vehicles for low income households and  
3 residents of disadvantaged communities, it's imperative  
4 that all drivers have convenient and reliable access to  
5 electricity as a transportation fuel where they live, work  
6 and play.

7 CARB's existing regulations promote reliable  
8 access by requiring stations to accept credit card payment  
9 in the forms that would most align with customer  
10 expectation and open access. Customers should be able to  
11 pay for charging at these stations just as they would at  
12 gas stations or parking meters, not resigned to  
13 alternative payment methods, which many customers still  
14 currently lack.

15 Staff's report find that tap-enabled cards are  
16 not widely available and they EMV chip cards will continue  
17 to be the foundation for payment transactions until tap  
18 becomes more broadly deployed. Accordingly, the report  
19 concludes that changes to the EVSE Standards Regulation  
20 are not warranted at this time. We agree with this  
21 assessment and strongly support staff's recommendation.

22 Most pre-paid debit cards available today still  
23 lack contactless capability and the majority of prepaid  
24 debit cards still aren't compatible with mobile wallets  
25 like Apple Pay or Google Pay.

1           Although the landscape of payment technology is  
2 gradually changing, unbanked and un -- unbanked and  
3 underbanked drivers relying on prepay debit cards still  
4 face barriers to paying for charging without chip card  
5 readers. CARB's existing standards and commitment to  
6 continuing to evaluate barriers for all users at public  
7 charging stations with regular updates to the Board  
8 highlighting the progress of the industry are aligned with  
9 both the present and future of customer charging needs  
10 ensuring equitable access to charging as electric vehicle  
11 adoption expands to a broader and more diverse base of  
12 drivers.

13           We appreciate the opportunity to comment today  
14 and look forward to working with CARB on continuing to  
15 promote the achievement of California's climate, air  
16 quality, and equity goals.

17           Thank you.

18           BOARD CLERK ESTABROOK: Thank you.

19           Our next speakers will be Daniel Barad, a phone  
20 number ending in 645, and then Kristian Corby.

21           Daniel, you can unmute and begin.

22           DANIEL BARAD: Good afternoon. Daniel Barad on  
23 behalf of Sierra Club California and our 500,000 members  
24 and supporters statewide expressing support for the  
25 findings and conclusions in the staff's EVSE Standards

1 technology review.

2           To facilitate the transition away from internal  
3 combustion engines towards a zero-emission future, not  
4 only do we need to significantly expand electric vehicle  
5 charging infrastructure as we heard this morning, we also  
6 must ensure that this infrastructure is accessible. This  
7 accessibility is particularly important for low- and  
8 moderate-income Californians.

9           The staff report finds that tap-enabled cards are  
10 now widely available and chip-enabled cards will continue  
11 to be the foundation for payment transactions until  
12 tap-enable -- tap becomes more broadly deployed.  
13 Therefore, the report concludes that changes to the EVSE  
14 Standard Regulations are not needed at this time.

15           We agree with this conclusion. Most debit cards  
16 and even many credit cards are not tap enabled and Apple  
17 Pay and Google Pay are not available to everyone, nor are  
18 they compatible with all cards.

19           As staff is committed to do, CARB should continue  
20 to identify barriers to charging and engaging stakeholders  
21 to ensure that vehicle charging is as accessible and  
22 equitable as possible. Again, we support the findings and  
23 conclusions in this report and we believe that changing  
24 the EVSE standard regulations would not be prudent at this  
25 time.

1 Thank you very much.

2 BOARD CLERK ESTABROOK: Thank you.

3 Phone number ending in 645, you will hear a  
4 prompt to unmute and then I will be announcing when you  
5 have 30 seconds left and then when your time is up.  
6 Please state for your -- your name for the record and then  
7 go ahead and begin.

8 Phone numbering in 645, are you there?

9 You might need to dial star six to unmute. All  
10 right -- oh, you're unmuted now.

11 SVEN THESEN: This is Sven Thesen calling in.  
12 Big advocate for these charging stations. And I want to  
13 go back to what Dan Sperling said and a number of other  
14 Board members about the compliments or -- no, not  
15 compliments, just the truth around Tesla's ease of use. I  
16 have both a long-range Tesla and a Leaf. And trying to DC  
17 fast charge the Leaf, I have not yet in five years not had  
18 a problem at the station to charge the Leaf. Either  
19 something is wrong with the app, something is not working  
20 at the station, the station is down, it is incredibly  
21 difficult to fast charge the Leaf right now. So anything  
22 you guys can do to reduce the unreliability of the current  
23 networks -- non-Tesla networks - and again that's been  
24 spoken about already - would be helpful.

25 Simultaneously, if there's a way - again, I know

1 they're working on a standard - to reduce the costs of  
2 those DC fast charging stations, because we are going to  
3 need them. And when you look at the -- further, when you  
4 look at the electricity cost of a DC fast charging  
5 station - we just did a survey in SoCal - it's double --  
6 more than double the price of electricity than you can get  
7 on a TMU rate for residential. Specifically, it's on the  
8 order of \$0.45 to \$0.50 per kilowatt hour, which makes the  
9 cost of fuel well in excess of gasoline. So why would you  
10 switch to more -- a more expensive fuel? And that's, you  
11 know, \$0.45 to \$0.50 per kilowatt hour versus a SoCal  
12 Edison rate of \$0.22, if you're in a residential  
13 situation.

14           So we -- by eliminating the payment methods and  
15 putting it on the vehicle, or on -- simply on a app is --  
16 hopefully will reduce the cost of those chargers and  
17 reduce -- enable them to reduce the cost. But as been  
18 said earlier, that there needs to be some better business  
19 model, because just as was repeated, Tesla has a vested  
20 interest to keep these stations in operation versus the  
21 other EVSPs that may not, unless it's actually written in  
22 there. So thank you.

23           I would encourage all of you to experience this.  
24 You can Turo an electric car. I would encourage you on  
25 your next long distance trip to Turo a Bolt and experience

1 how difficult it is to fast charge on a DCFC, and then  
2 Turo a Model 3 and you can tell the sweet difference  
3 between the two.

4 Thank -- and if you -- oh, because if we're  
5 advocating this dog food, then we all need to  
6 simultaneously eat the dog food.

7 Thank you.

8 BOARD CLERK ESTABROOK: Thank you.

9 Can you please reiterate your name for the record

10 SVEN THESEN: Yeah. First name is Sven, S-v-e-n.  
11 Last name is Thesen, T-h-e-s-e-n. I have the nation's  
12 first curbside charger in front of my house. I've given  
13 away over a quarter of a million miles worth of EV  
14 driving.

15 BOARD CLERK ESTABROOK: Thank you.

16 SVEN THESEN: And especially that Level 2 station  
17 has never been down.

18 BOARD CLERK ESTABROOK: Thanks.

19 Our next speakers will be Kristian Corby, Bill  
20 Magavern, and Carleen Cullen.

21 Kristian, you can unmute and begin.

22 KRISTIAN CORBY: Good afternoon. Hi. My name is  
23 Kristian Corby. And I'm the Deputy Executive Director at  
24 the California Electric Transportation Coalition. So  
25 really want to thank CARB and the CARB staff and their

1 hard work on this issue. This is a really good report and  
2 we support staff's findings and conclusions. And we do  
3 have a couple recommendations that we think would help  
4 inform the market going forward.

5           So we recommend setting up a timeline for updates  
6 to the report and the regulation. And if not a formal  
7 update, perhaps just an annual informal report on progress  
8 in the industry. For example, we should seek to align  
9 with the U.S. Department of Transportation's federal  
10 guidance that will be coming out on the NEVI funding,  
11 which should be released in May. And it's -- it is  
12 expected to include guidance on payment methods. And then  
13 we also recommend CARB specify a standard that contactless  
14 payment technology should meet to be considered widely  
15 accessible to underbanked or unbanked Californians.  
16 Providing a clear standard would give the industry a  
17 little bit of certainty on the specific end goal that CARB  
18 wants the market to work toward.

19           And then finally we absolutely support CARB's  
20 continued investigation into whether or not membership is  
21 a real or perceived barrier to charging. And to that end,  
22 we recommend CARB consider a universal payment option by  
23 requiring like a user interface capability with a  
24 third-party payment application, such as ParkMobile or  
25 ParkWhiz. These have been really useful applications for

1 municipal agencies and private parties to pay for parking  
2 venues. And we see -- we've seen these systems be able to  
3 interface very well with back-office municipalities and  
4 other -- other systems. And they're already being used in  
5 hundreds of U.S. cities. So we -- we think that could be  
6 a very viable option to kind of ease the constraints  
7 around payment options.

8           So I just want to thank you again for your time  
9 and effort in this report and really look forward to  
10 working with CARB and CARB staff in all our various  
11 ventures going forward.

12           Thank you.

13           BOARD CLERK ESTABROOK: Thank you.

14           Bill Magavern, you can unmute and begin.

15           BILL MAGAVERN: Thanks, Madam Chair and members.  
16 Bill Magavern with the Coalition for Clean Air. We  
17 submitted a letter along with partners in the Charge Ahead  
18 California campaign. And I'm in agreement with the  
19 comments made earlier about my colleague Miles Muller with  
20 NRDC.

21           We joined with NRDC and others in starting the  
22 Charge Ahead California campaign eight years ago, because  
23 we think there's a real need to democratize electric  
24 vehicles in California and to make the cleanest  
25 transportation accessible to low-income Californians and



1 those in disadvantaged communities, who are harmed the  
2 most by the emissions from combustion engines, but in the  
3 past have been the last to benefit from the cleanest  
4 technology. And it's for these reasons that we support  
5 the recommendations in the staff report.

6 We do not think there should be any membership  
7 required to charge an EV just as there's no membership  
8 required to fuel a combustion vehicles at a gas station.  
9 So we agree with the staff approach to continue evaluating  
10 barriers for all users at public charging stations and  
11 make regular updates to the Board.

12 And I think it's a particularly wise decision  
13 that you're partnering with Valley CAN to do some of this  
14 information gathering, because Valley CAN has many years  
15 now of experience working closely with low-income  
16 customers and helping them to get into plug-in vehicles.  
17 And their empirical and data-driven approach will very  
18 much bolster this effort.

19 Thank you very much.

20 BOARD CLERK ESTABROOK: Thank you.

21 Carleen Cullen, you may unmute and begin.

22 CARLEEN CULLEN: Yes. Good afternoon. Hi. My  
23 name is Carleen Cullen and I'm the Founder and Executive  
24 Director of Cool the Earth, a non-profit focused on carbon  
25 mitigation. I am honored to have served as Governor

1 Newsom's EV Policy Advisor for his Gubernatorial Campaign  
2 and applaud his bold leadership in advancing the ZEV  
3 market.

4 I am here today to share findings of a recent  
5 reliability study we undertook with UC Berkeley and share  
6 recommendations for solutions to meet the needs of  
7 drivers. We tested every open system DC fast charging  
8 plug in the Bay Area. Our study found that 27 percent of  
9 the 657 plugs failed to charge. Only half of the  
10 functional chargers completed payment by credit card chip  
11 in the first attempt. This conflicts with the rosy  
12 picture painted by charge providers who report uptimes of  
13 95 to 98 percent.

14 Causes of 23 percent of the failures were  
15 unresponsive or unavailable screens, payment system  
16 failures, charge initiation failures, network failures or  
17 broken connectors. We performed a random evaluation of 10  
18 percent of the stations about eight days after our first  
19 evaluation and found no overall change in functionality.  
20 We have embarked upon an additional follow-up study.

21 We make the following recommendations. First,  
22 the findings suggest a need for shared, precise  
23 definitions of and calculations for reliability, uptime,  
24 downtime, and excluded time. New State contracts must  
25 have both enforceable conditions and penalties for

1 noncompliance. There must be evaluation and verification  
2 of uptime performance by a third party. We believe the  
3 CE -- CEC should be responsible and the lead agency to  
4 develop the criteria in the contracts.

5 Secondly, we believe the payment methods EMV,  
6 tap, plug and charge, and mobile wallet are evolving very  
7 rapidly and recommend that a third party conduct  
8 additional technology reviews within the next six months.

9 Additionally, in light of the 50 percent failure  
10 of chip in the first attempt, we would recommend that CARB  
11 study why there are so many failures. It appears the  
12 payment ecosystem at the station, including back-end  
13 technology is much more complex than has been anticipated,  
14 and suggest the issue may need to be addressed by the  
15 likes of our national labs or similar entities. It is of  
16 no value to have a point-of-sale regulation in place while  
17 at the same time drivers experience frequent payment  
18 systems failures.

19 Lastly, we believe CARB and CEC should convene  
20 key stakeholders, including non-profits such as ours and  
21 others, that represent the driver perspective. It is  
22 imperative we have reliable infrastructure for all  
23 drivers, especially those in our low-income communities  
24 who rely heavily on these systems.

25 Thank you.

1 BOARD CLERK ESTABROOK: Thank you.

2 Our next speakers will be Annabel Drayton, Jay  
3 Friedland, and Natalie Nax.

4 Annabel, you can unmute and begin.

5 ANNABEL DRAYTON: Good afternoon, Chair Randolph  
6 and members of the California Air Resources Board. My  
7 name is Annabel Drayton and I'm a Policy Associate with  
8 the Northwest Energy Coalition and I'm calling in today  
9 from Seattle, Washington.

10 The Northwest Energy Coalition advocates for  
11 clean, affordable, and equitable energy across the four  
12 northwest states and has been working to increase access  
13 to the benefits of various zero-emission transportation  
14 options.

15 I want to thank the California Air Resources  
16 Board for their leadership in establishing Electric  
17 Vehicle Supply Equipment, or EVSE Standards. These  
18 standards help ensure the most accessible payment options  
19 are made available to current and future users at public  
20 electric vehicle charging stations. The EVSE Standards  
21 are of broader importance, as California can drive the  
22 market in a manner that helps increase access, and the  
23 region is looking to California to continue leading on  
24 this issue with Washington State currently undertaking a  
25 rulemaking to adopt minimum payment method standards at

1 public electric vehicle charging stations.

2           Similar to California, it has become clear in  
3 Washington that not all residents, especially those who  
4 rely on a personal vehicle and are under or unbanked  
5 renters, high mileage drives, or live -- or folks living  
6 in multi-family housing have access to convenient,  
7 reliable, and affordable electric vehicle charging.

8           California's EVSE Standards are one strategy to  
9 address this issue and provide a framework for other  
10 states, like Washington, looking to support more equitable  
11 zero-emission transportation options.

12           The Northwest Energy Coalition supports staff's  
13 recommendation and we urge the California Air Resources  
14 Board to maintain the current EVSE Standards and uphold  
15 the foundational payment method requirements.

16           Thank you for your leadership and for the  
17 opportunity to comment today.

18           BOARD CLERK ESTABROOK: Thank you.

19           Jay Friedland, you can unmute and begin.

20           JAY FRIEDLAND: Good afternoon, Chair Randolph  
21 and ARB Board members and ARB staff. My name is Jay  
22 Friedland and I'm with Plug In America, a non-profit  
23 advocating for hundreds of thousand of EV drivers. Today,  
24 I'm representing a broad coalition, which includes EVSE  
25 manufacturers, environmental groups, and consumer

1 organizations. And we speak for a broader group who want  
2 to become EV drivers, especially those in underserved  
3 communities.

4 We were the original sponsor of SB 454 in 2013,  
5 which created the EVSE Regulation before you. We've been  
6 working on this consumer protection issue for more than a  
7 decade. All along, ARB staff has worked diligently to  
8 balance the concerns of all stakeholders.

9 Imagine you just purchased a used EV with the  
10 help of CARB incentives and pulled up at a charger, but  
11 found out you didn't know how much it cost or if it would  
12 take your money. And then in order to fuel you had to  
13 first download an app, call an 800 number, or join a club  
14 just to fill your car. SB 454 was created to make sure  
15 this didn't happen.

16 EMV card readers, credit, debit, and prepaid, are  
17 the most basic way of never leaving any driver stranded at  
18 a public charger. It's what people have in their wallets.  
19 In their recent annual report, Electrify America indicated  
20 that one-third of their transactions came via cards.

21 We're here today to encourage, not relitigating,  
22 the important work that ARB -- that the ARB Board and  
23 staff have accomplished. We need to first ensure open and  
24 universal access to publicly available charging stations,  
25 especially since many of them were installed with public

1 taxpayer fund. And second we need to consider the needs  
2 of disadvantaged communities, not all of whom possess  
3 smartphones, credit cards, or bank accounts, yet who want  
4 to buy EVs to save on their transportation costs.

5 As ARB staff's data shows, these underserved  
6 computers -- consumers do not yet have broad access to  
7 prepaid contactless cards and may not for a number of  
8 years. As a quick example, Social Security payments are  
9 now finally being made with prepaid EMV chip cards. They  
10 do not have tap.

11 Let's take a moment also to discuss reliability  
12 of the public EV charging networks. Plug In America  
13 recently surveyed 5,500 EV owners and 1,400 consumers  
14 intent on buying an EV. The number one concern of those  
15 drivers, 25 percent said broken and non-functional  
16 chargers. This wasn't caused by card readers, because  
17 most of today's chargers don't have them. EVSE hardware  
18 vendors tell us communication failures are likely the  
19 cards -- cause, like the recent 3G network shutdowns,  
20 which equally impact tap or app-based payments. We need  
21 to establish fundamental standards on EV charging  
22 reliability, if we hope to reach California's EV goals.

23 The regulations opponents you'll hear from today  
24 want you to believe that the cost to add card readers  
25 would place an extreme burden on them. But while other

1 fuel options still have card readers, EV charging needs  
2 this basic access feature. Isn't it reasonable to provide  
3 real open access meeting consumers where they are rather  
4 than where the industry says they will be?

5 Thank you.

6 BOARD CLERK ESTABROOK: Thank you.

7 Our next speakers, I'll go ahead and read off the  
8 rest of the list here today, will be Lisa McGhee, Chris  
9 King, Akash Singh, Francesca Wahl, Gillian Gillet, and  
10 Emily Saserny. Lisa, you may unmute and being.

11 LISA MCGHEE: Hi. My name is Lisa McGhee and I'm  
12 had on behalf of GreenPower Motor Company and our medium-  
13 and heavy-duty fleet customers. Much of my EV  
14 demonstration activities include many hours and experience  
15 of public charging use.

16 How many of the 1.1 million chargers today  
17 support medium- and heavy-duty? How many of the 6.4  
18 million by 2030 will support medium- and heavy-duty  
19 including the EV technology advancements, such as: higher  
20 Level 2 outputs; high voltage fast charging; wireless  
21 charging; cable length for large vehicles; app filters to  
22 support medium- and heavy-duty access, such as ingress,  
23 egress, garage, and height limits; the OEM make of a  
24 charger due to the many medium- and heavy-duty  
25 interoperability challenges that exist today and that we



1 need to know what is the make of the charger; public  
2 charging fleet rates with volume discounts; innovative  
3 real time and dynamic rate design integrated into public  
4 chargers.

5           How many of the 1,250 survey respondents were  
6 fleets? There has already been a gap. Let's not forget  
7 the commercial ZEV mandates and 85 percent of the  
8 population of the medium- and heavy-duty fleets, which are  
9 small medium-sized, private-sized fleets and drivers.

10           Today, public charging rates do not support  
11 medium- and heavy-duty fleets having a fuel switching  
12 benefit as per SB 1000. Interoperability medium- and  
13 heavy-duty vehicle charging issues are excessive. This  
14 type of reliability issue can be resolved. The charger  
15 and medium- and heavy-duty vehicle OEMs each need to work  
16 together to perform interoperability testing. And the  
17 charger OEMs should provide free testing to medium- and  
18 heavy-duty vehicles OEMs.

19           Tap card access may not have -- may not have the  
20 same respondent levels until exploring more broadly and  
21 once you consider medium- and heavy-duty fleets. I see  
22 the fleet access of broadly using RFID or tap cards.

23           EVSE standards and next steps. Medium- and  
24 heavy-duty fleets should develop metrics for the medium-  
25 and heavy-duty and track the fleet use. Track small in

1 size private fleet utilizations. This may likely end up  
2 as a larger sector that will depend primarily on public  
3 charging unless other large entities share their hubs or  
4 there is another mechanism developed.

5 Equity and access. There is a gap of fleet  
6 engagement and medium- and heavy-duty standards, including  
7 and specifically the small- and medium-sized fleets and  
8 private entities. The lessons of fleets need to be  
9 integrated and standards supported immediately. Standards  
10 make technology affordable and scalable for all.

11 Thank you for this opportunity.

12 BOARD CLERK ESTABROOK: Thank you.

13 Chris King, you may unmute and begin.

14 CHRIS KING: Thank you. This is Chris King with  
15 Siemens again. Siemens has been actively involved in the  
16 initial rulemaking on this topic and we participated in  
17 the workshops, provided comments, and testimony. We've  
18 remained active and we participated with staff on this  
19 technology review. We feel staff has done an excellent  
20 job of assessing this topic.

21 We bring the perspective of being an EVSE  
22 manufacturer as well as extensive experience globally. In  
23 Europe, open standards and open payment systems have led  
24 to more rapid EV adoptions, higher consumer satisfaction  
25 with public charging, and higher utilization of public

1 chargers to the benefit of those providers.

2           In contrast here in the U.S., public charging has  
3 been the subject of walled gardens. Only Tesla drivers  
4 can use Tesla's extensive and great network. And for  
5 other public chargers, drivers have to download multiple  
6 apps and enroll with each separate network provider to use  
7 them. These barriers have slowed EV adoption, according  
8 to multiple market surveys. Our view is that fueling EVs  
9 should be as easy as fueling ICE vehicles.

10           The vast majority of gasoline purchases continue  
11 to use credit cards and not require any kind of  
12 membership. Card readers also improve equity, because  
13 consumers can use credit, debit, or even prepaid cards,  
14 such as those used by Supplemental Nutritional Assistance  
15 Program recipients or Social Security as Jay was  
16 mentioning. The overall effect of card readers actually  
17 is to take down these walled gardens.

18           Finally, as a manufacturer, we already provide DC  
19 fast chargers with card readers, no ish there, and see no  
20 unreasonable cost increase to provide the card readers for  
21 Level 2 AC chargers. Card readers themselves cost about  
22 \$400 compared to a DC fast charger cost of \$20,000 or  
23 more, and even an AC charger costs that range from \$2,500  
24 to \$8,000 or so.

25           So for these reasons, we agree with and strongly

1 support staff's conclusions and recommendations of --  
2 further support the recommendation that this not be  
3 relitigated at this time. And thank you very much for the  
4 chance to comment.

5 BOARD CLERK ESTABROOK: Thank you.

6 Next is a Akash Singh. You may unmute and begin.

7 AKASH SINGH: Good afternoon, Madam Chair and  
8 members of the Board. Thank you so much for providing  
9 this opportunity for public comment. My name is Akash  
10 Singh and I am the Western States Policy Advocate at the  
11 Union of Concerned Scientists. I'm writing in support of  
12 the proposed requirement that EVSEs have both a  
13 credit/debit card chip EMV reader and mobile payment  
14 options.

15 Access to charging is critical in enabling,  
16 sustaining, and expanding transportation electrification.  
17 To ensure access, we simply must have multiple payment  
18 methods at charging stations. While a plethora of  
19 individuals have access to digital wallets, app based  
20 payment systems, and tap payment systems, not everyone has  
21 access to smartphones and/or has the capacity to use a  
22 smartphone to enable EV charging.

23 Using a widely available technology like card  
24 readers that are found in nearly every gasoline pump  
25 remove the barrier to access for many drivers. The

1 proposed requirement to have a chip reader does not  
2 preclude the use of just tap or mobile payments. It  
3 simply adds an equitable choice to accommodate more EV  
4 drivers.

5           In addition to increasing access, having multiple  
6 independent methods for payments means that there is  
7 simply a greater likelihood that an EVSE will be usable in  
8 the event that one or other methods are temporarily  
9 unavailable to a driver.

10           Chip readers are not some new or challenging  
11 technology. EVSE companies have had adequate lead time to  
12 incorporate readers, and as we look to broaden the EV  
13 market, having the simple zero friction payment methods --  
14 method is incredibly important for access.

15           Thank you so much to the Board and especially the  
16 staff who put so much work behind this report. Thank you.

17           BOARD CLERK ESTABROOK: Thank you.

18           Our next speaker will be Gillian Gillet. You may  
19 unmute and begin.

20           GILLIAN GILLET: Hello. Thanks for giving me  
21 another shot while I worked out the technology.

22           Chair Randolph, Vice Chair Berg, and Board  
23 members, thank you for this opportunity to comment. I'm  
24 Gillian Gillet, Program Manager of California Integrated  
25 Mobility at Caltrans.

1           The Integrated Travel Project, Cal-ITP provides  
2 technical assistance to State and local agencies in  
3 removing structural barriers in transportation to make  
4 travel reliable, cost effective, and inclusive.

5           Our focus has been on standardizing trip planning  
6 and payments. Last year, we introduced direct payments by  
7 bank cards on five transit services in California followed  
8 by procurement with the Department of General Services for  
9 all transit systems in the United States to obtain the  
10 interoperable technologies to accept contactless payments,  
11 so you can pay for transit the same way you pay for  
12 coffee.

13           Scores of more transit agencies are applying to  
14 do the same thing. While we've started with removing  
15 barriers in transit, in meeting with our colleagues at  
16 ARB, we offer technical assistance and our team's global  
17 payment expertise to public EV charging. So I'm here  
18 today to say on the record that Cal-ITP supports ARB's  
19 interoperability and equity focus on reducing barriers to  
20 accessing public EV charging and hopes to partner with  
21 staff on financial inclusion regarding which the State is  
22 a critical agent and catalyst of change.

23           Bank cards are how the vast majority of Americans  
24 pay for goods and services today. And so we agree that  
25 ensuring that Californians can pay for EV charging with

1 the card that is already in their wallet will ensure  
2 interoperability across EV service providers and  
3 geographies for those Californians, the same as in  
4 transit.

5 We are excited to work with your team on the  
6 reporting periods and the next stages of this evolving  
7 regulatory process and also hope to jointly develop  
8 recommendations that could be used to -- improving the  
9 next phase of ARB's Clean Cars for Now[SIC] and other  
10 government benefit programs.

11 For example, we are working with Valley CAN,  
12 Valley Clean Air Now, to test the use of reloadable  
13 contactless debit cards for low income EV drivers in the  
14 San Joaquin Valley to pay for zero-emission vehicle  
15 charging at public stations.

16 The goal of this and other demonstrations is to  
17 gather standardized data about how bank cards are used in  
18 paying for travel with the view of information sharing and  
19 generating policy and program recommendations to improve  
20 access to mobility and improve financial inclusion in  
21 California, which is the core issue here.

22 We are excited to contribute to this important  
23 process. Thank you for this opportunity and my team and I  
24 are here if you have any questions.

25 Thanks.

1 BOARD CLERK ESTABROOK: Thank you.

2 All right. We have two more speakers for this  
3 item and that is a phone number ending in 556 and then  
4 Susanna Sanders.

5 Phone number ending in 556, please state your  
6 name for the record and then you may begin.

7 NATALIE NAX: Good afternoon. Can you all hear  
8 me?

9 BOARD CLERK ESTABROOK: Yes, we can.

10 NATALIE NAX: Great. My name is Natalie Nax and  
11 I'm speaking on behalf of the Electric Vehicle Charging  
12 Association, also known as EVCA.

13 EVCA is a non-profit trade association comprised  
14 of 15 companies across the EV ecosystem dedicated to  
15 increasing EV adoption through innovation, competition,  
16 and business model inclusivity. EVCA greatly appreciates  
17 ARB's raising this issue of charger reliability. There is  
18 also a lot of activity happening on this topic already at  
19 both the federal and state levels.

20 First, three of our members are sponsoring  
21 legislation this year to address EV charging reliability  
22 and also the Energy Commission is conducting a robust  
23 stakeholder process to increase reliability requirements.  
24 Second, the PUC is discussing the importance of  
25 reliability requirements via filing form from PG&E and



1 also the Federal Highway Administration is currently  
2 developing reliability requirements for EV charging funds  
3 for all 50 states, including California. So given these  
4 existing processes, we believe that the State is taking  
5 meaningful concrete action to address this topic. And we  
6 would be happy to brief ARB Board members in more detail  
7 about these processes and incorporate their concerns and  
8 feedback into our work on this issue.

9 BOARD CLERK ESTABROOK: Thank you.

10 Our next speaker is Susanna Saunders. Susanna,  
11 you may unmute and begin --

12 SUSANNA SAUNDERS: Good afternoon. My name is  
13 Susanna Saunders and I want you to know that I was one of  
14 the main testers for the UC Berkeley study. So I got a  
15 really up-close look at the 27 percent failure rate for  
16 the DC fast chargers. And my -- my thoughts are that in  
17 order for this transition to happen to electric vehicles,  
18 we must have a reliable charging system. Along the way, I  
19 met many frustrated drivers and heard their stories.  
20 These standards must be enforceable with a mandatory 97  
21 percent uptime. And my suggestion would be that there  
22 needs to be an escrow account for maintenance, which  
23 accounts for a large portion of the cost of these machines  
24 to ensure it gets done.

25 The cables are not long enough and that is a big

1 problem. I'm having to back in to reach many of the  
2 chargers and it is frightening to not want to hit a pole  
3 or a car on the opposite side of the parking lot, and  
4 having to back in. So my suggestion would be that the  
5 design needs to be so the cables can reach all the cars.

6 I met a older couple along the way who were  
7 trying to charge. It was hot. They couldn't read the  
8 screen. They had a Mach-E Ford. They were trying to plug  
9 in. The charge would not initiate. The husband was  
10 getting very frustrated. He started yelling at the wife.  
11 And I just thought how sad that here is this couple that  
12 has done the right thing and chosen a car that will have  
13 zero emissions and won't cause air pollution and they're  
14 having this frustrating experience and that's very common.

15 So I also wanted to say that I saw myself first  
16 cut cable yesterday, because I know that the copper -- so  
17 that is very expensive and something that people are going  
18 to try and steal, so that's something that needs to be  
19 start thinking about, maybe retractable cables.

20 And I also want to say that a large part of the  
21 failure rate is for the credit card readers. And I think  
22 we need to plan for the future where most people have  
23 smartphones that the apps work better. So my -- so that's  
24 something we need to think about in planning for the  
25 future that one thing I've learned is that the credit

1 cards have to go through multiple software and connection  
2 issues, and it causes a large part of the problems. And  
3 all of the charging manufacturers will tell you that the  
4 apps have a better initiation rate.

5           And like I said, the design of the chargers  
6 and -- must be fixed. And we must go back and fix the  
7 existing charging stations. You know I talked to many  
8 frustrated folks along the way, and this is just something  
9 that has to be fixed. The existing charging stations have  
10 to be fixed and the new ones have to have enforceable  
11 standards. They will not do it on their own and there  
12 needs to be pressure and I sincerely hope that that will  
13 happen to ensure that we transition to electric vehicles.

14           Thank you.

15           BOARD CLERK ESTABROOK: Thank you.

16           Our final speaker is Francesca Wahl. Francesca,  
17 you may unmute and begin.

18           FRANCESCA WAHL: Good afternoon, Chair Randolph  
19 and members of the Board. My name is Francesca Wahl. And  
20 I'm here today on behalf of Tesla. As you may know, Tesla  
21 currently has about 270 fast charging locations with over  
22 4,000 fast chargers in California and about 40 percent of  
23 those sites are actually located in disadvantaged  
24 communities.

25           We greatly appreciate staff's diligence in

1 undertaking the technology review. As we know, it was a  
2 very time-consuming and intensive, yet very worthwhile,  
3 effort.

4           We did submit brief comments on the technical  
5 review articulating our support for the review process  
6 generally, and more broadly looking at technology  
7 availability for EV charging and drivers across the state.  
8 To provide a more seamless charging experience over time,  
9 customer payment technology innovation continues to be  
10 necessary.

11           In our comments, we specifically focused on some  
12 technical recommendations, two of which I'll briefly  
13 discuss here. The first, which has also been articulated  
14 by other speakers today, is the need to conduct ongoing  
15 technology reviews with an emphasis on gathering  
16 additional data on the availability, as well as the usage  
17 of the various payment mechanisms, and also starting to  
18 look at distinctions potentially between fast charging use  
19 cases and applications and Level 2 charging. Each of  
20 those are related to different dwell times whenever you're  
21 sitting there for 30 to 45 minutes or several hours, and  
22 there may be some distinctions that need to be looked at  
23 in the context of the payment methods used for each  
24 technology type.

25           The second recommendation would be to also

1 evaluate an opportunity for a potential third-party  
2 assessment to ensure that the technology review or future  
3 reviews do not become overly burdensome and time consuming  
4 for staff and also to ensure additional clarity can be  
5 incorporated.

6           This technology review and staff's next steps, as  
7 outlined in the presentation today are great first steps  
8 in providing more insight into the payment technology, is  
9 that as you've heard from many of the speakers, there's  
10 still a lot of questions outstanding. All EV drivers need  
11 to have confidence that they will be able to use a  
12 charging station reliably across the entire state. And  
13 this has been a key principle of the design for the Tesla  
14 fast charging network. So we appreciate the opportunity  
15 to provide brief comments today and staff continued work  
16 on this issue, as it's extremely important for driving EV  
17 adoption broadly across California.

18           Thank you.

19           BOARD CLERK ESTABROOK: Thank you.

20           Chair, that concludes the commenters for the  
21 item.

22           CHAIR RANDOLPH: All right. Thank you very much.  
23 Questions or comments from Board members?

24           By the way, this is an informational item, so no  
25 need to officially close the record.

1 All right. Board Member De La Torre is first.  
2 Who else raised their hands though?

3 BOARD MEMBER HURT: I did.

4 BOARD MEMBER SPERLING: Me too.

5 BOARD MEMBER DE LA TORRE: Okay. Thank you,  
6 staff. Thank you for going through this yet again. You  
7 know, the data still shows what it showed before and we  
8 keep having this conversation. And the folks are  
9 complaining about it. And it's a problem in search of a,  
10 you know -- or it's a solution in search of a problem,  
11 whatever the saying is.

12 I'm frankly as frustrated as I've been the other  
13 times we've had this conversation. We're talking about  
14 something that may or may not exist and may or may not be  
15 an issue, et cetera, et cetera. Cost and quality are an  
16 issue. We heard it over, and over, and over again today  
17 during the public comment. Cost and quality are issues  
18 for charging. Quality meaning reliability.

19 That's my concern. That's what I want to be  
20 focused on. That's where we need to be expending our  
21 energies, you need to be expending our en -- your energies  
22 with our collaborators at the PUC and the other agencies  
23 that have a hand in this. So I hope that this is the last  
24 time we have this conversation for a while and we can zero  
25 in.

1 I know there are three others studies not done by  
2 us that are out there in the cost and quality reliability  
3 space. Staff shared those with me. I'm not going to talk  
4 about them right now, but -- but that's where we -- we  
5 need to be looking at the results of those kinds of  
6 studies and what do we do about it, because as I've said  
7 before, we're the ones who are pushing this technology.  
8 And there cannot be a situation where we're promising  
9 something and what consumers are seeing out there is very  
10 different.

11 So again, as many times as this thing comes up,  
12 I'm going to focus on the two things that do matter to  
13 consumers, not some inside baseball arguments by vendors.

14 Thank you.

15 CHAIR RANDOLPH: Board Member Hurt.

16 BOARD MEMBER HURT: Thank you, Chair. So I guess  
17 on the other side of your comments, I'm going to jump to,  
18 you know, since I've joined this Board last year, I've  
19 seen the power of CARB's policies and regulations that  
20 activity help signal or push the market in appropriate  
21 directions. And I'm curious whether this is another  
22 opportunity, a moment in time in the payment market that  
23 we can signal what is the gold standard that centers  
24 people with enhanced customer service promotion, and  
25 whether we can do this today by refining this standard.

1 You know, what is the most ideal and equitable accessible  
2 way? And based upon that resource -- research, how are we  
3 focusing on the under and unbanked individuals.

4 At the last meeting, I asked for more details  
5 around that. I still haven't seen enough. I think the  
6 survey is a great start and I'm actually really blown away  
7 at how many people with ZEVs took the survey and they have  
8 an income under \$50,000 and they responded.

9 I'm wondering what those ZIP codes are, but, you  
10 know, the baseline is affordability and easy access. And  
11 I'm wondering, you know, peer to peer, and apps, and tap  
12 and pay, and contactless versus this chip EMV. And I know  
13 you said we've kind of already talked about this over and  
14 over, but the market is evolving and I think we have to  
15 keep talking about it. But one thing I haven't heard a  
16 lot is how are we going to bring everybody along with  
17 those who are unbanked again and underbanked.

18 And I think we do have some models and I'm glad  
19 folks from Caltrans called in in the public transit  
20 sector. What are they currently doing? What's working  
21 and what's not working for low-income households and the  
22 modes of travel that they use? What are the lessons that  
23 we can learn on the way that they pay to travel. And I  
24 think we already have a lot of that data in our local  
25 transportation agencies that we can look to and model.





























































































































































